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# UNITED STATES
# PATENT OFFICE
## VOL. 914
## SEPTEMBER
## 1973

MICRO PHOTO DIVISION

BELL & HOWELL

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# OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 4, 1973 Volume 914 Number 1

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# PATENT OFFICE NOTICES

## Board of Appeals Decisions Rendered in the Month of July 1973

| | |
|---|---|
| Examiner affirmed | 140 |
| Examiner affirmed in part | 22 |
| Examiner reversed | 51 |
| Total | 213 |

## Statements Filed Under Atomic Energy Act and NASA Act

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This Office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

Aug. 18, 1973.

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**3,091,912**, Stoddard and Seem, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY, **filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1610–C–PF, *Lex-Tex Ltd., Inc.*, v. *Wayne Weavers Mills, Inc., doing business as Stephen Wayne*. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1611–C–JLK, *Lex-Tex Ltd., Inc.* v. *Rohm and Haas Company*. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami). Doc. 72–1612–C–JE, *Lex-Tex Ltd., Inc.* v. *Reva Knitting Mills, Inc.* **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1613–C–WM, *Lex-Tex Ltd., Inc.* v. *Alro Knits, Inc.* **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1614–C–NCR, *Lex-Tex Ltd., Inc.* v. *Jack Fried*. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1615–C–CA, *Lex-Tex Ltd., Inc.*, v. *Steve Portman*. **Same, filed** Oct. 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1656–C–PF, *Lex-Tex Ltd., Inc.* v. *Irwin Redmond*, **Same, filed** Oct 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1657–C–JE, *Lex-Tex Ltd., Inc.* v. *L. Jay Steinhardt*. **Same, filed** Oct. 31, 1972, D.C., S.D., Fla. (Miami), Doc. 72–1719–C–JE, *Lex-Tex Ltd., Inc.* v. *Serbin Fashions, Inc.* **Same, filed** Mar. 3, 1973, D.C., S.D. Fla. (Miami), Doc. 73–418–C–WM, *Lex-Tex Ltd., Inc.* v. *Federated Department Stores, Inc.*

**3,112,300**, Natta, Pino and Mazzanti, ISOTATIC POLYPROPYLENE, **filed** May 16, 1972, D.C. (District of Columbia), Doc. 987–72, *Karl Ziegler* v. *Montecatini Edison S.p.A.*

**3,273,156**, H. Doundoulakis, RADIO TELESCOPE HAVING A SCANNING FEED SUPPORTED BY A CABLE SUSPENSION OVER A STATIONARY REFLECTOR, **filed** Nov. 1. 1972, Ct. Cl. (District of Columbia), Doc. 412–72, *Helias Doundoulakis, Constantine A. Michalos and William J. Casey* v. *The United States of America*.

**3,307,469**, H. R. Bohanon, VENTILATING AND CIRCULATING AIR SYSTEM, **filed** Mar. 2, 1973, D.C., W.D. Wis. (Madison), Doc. 73–C–59, *Acme Engineering & Manufacturing Corporation* v. *Berg Equipment Corporation, et al.*

**3,337,218**, F. A. Hurley, AMUSEMENT APPARATUS; **3,357,703**, same, COMBINED CLOCK AND CHANCE DEVICE; **3,377,517**, same, RELAY COMPUTER CIRCUITS; **3,583,538**, same, ELECTRIC PING-PONG GAME AND THE LIKE; **3,604,707**, same, ELECTRIC DART GAME AND THE LIKE; **3,637,212**, same, BIRD SHOOT GAME AND THE LIKE; **D. 202,629**, same, GAME PANEL; **D. 202,630**, same, GAME DISPLAY PANEL; **D. 202,794**, same, DISPLAY PANEL FOR A COIN OPERATED AMUSEMENT DEVICE; **D. 202,795**. same, ELECTROLUMINESCENT PANEL FOR A COIN OPERATED AMUSEMENT DEVICE; **D. 204,894**, same, CLOCK, **filed** Mar. 5, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73–500, *Funtronics of Texas, Inc.* v. *Electronic Sensing Products, Inc. and M. Greenberg*.

**3,357,703**. (See 3,337,218.)

**3,377,517**. (See 3,337,218.)

**3,378,940**, R. J. Potvin, Jr. MOCCASIN SHOE AND BLANK THEREFOR, **filed** Oct. 26, 1972, D.C., Mass. (Boston), Doc. 72–3277–C, *The Stride Rite Corporation* v. *England Brothers, Inc.*

**3,416,507**, A. J. Little, ETHER INJECTION ASSEMBLY FOR INTERNAL COMBUSTION ENGINE, **filed** Dec. 15, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3174, *Stewart-Warner Corporation* v. *Colt Industries Operating Corp.*

**3,478,509**, M. Miyamura, METHOD FOR THE ARTIFICIAL CULTURE OF SHRIMP, **filed** Jan. 5, 1972, D.C. Del. (Wilmington), Doc. 4805, *United States of America* v. *Marifarms, Inc. and Mitsutake Miyamura*. Decision: It appearing that Marifarms, Incorporated, one of the defendants in the above civil action and assignee of all the right, title and interest in and to the patent in suit, has caused the reissue application of the patent in suit to be abandoned and has dedicated to the public for the full term thereof the patent in suit; and it further appearing that there remain no other issues to be litigated; and that the individual defendant has neither been served nor appeared in the action; pursuant to Civil Rule 41 (a)(1) the action is hereby dismissed, Dec. 26, 1972.

**3,487,947**, E. M. Bogar, Jr., FISHING ROD HOLDER, **filed** Jan. 12, 1973, D.C., E.D. Mich. (Detroit), Doc. 39497, *Earl M. Bogar, Jr.* v. *Detroit Marine Engineering Corporation*.

**3,541,994**, Meng and Sauey, CALF STALL, **filed** Oct. 17, 1972, D.C., W.D. Wis. (Madison), Doc. 72–C–379, *Humane Equipment Corporation* v. *Berg Equipment Corporation*.

**3,572,245**, B. W. Grayson, APPARATUS AND METHOD OF CONDUCTING STRING SHOT OPERATIONS, **filed** May 5, 1971, D.C., E.D. Calif. (Fresno), Doc. F–525–C, *Bobby W. Grayson* v. *Ward W. Fisher, Velma L. Fisher, and Fisher Oil Well Service*. On Mar. 1, 1973, stipulated judgement entered that defendants have infringed patents and are enjoined from further infringement.

**3,583,538**. (See 3,337,218.)

**3,604,527**, W. H. Price, TRACTOR SUBASSEMBLY, **filed** Feb. 28, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–86, *Gilson Bros. Co.* v. *Jacobsen Manufacturing Company*.

**3,604,707**. (See 3,337,218.)

**3,637,212**. (See 3,337,218.)

**3,647,124**, O. V. Spicer, PHOTOGRAPHIC DEVELOPING MACHINE AUTOMATIC CUTOFF, **filed** Jan. 8, 1973, D.C. Tex. (Lubbock), Doc. 73–10–C–JE, *Elec-Trol International, Inc.* v. *Interstate Instruments, Inc.*

**3,710,996**, Smilow and Kayen, DISPLAY BELT HANGER, **filed** Feb. 23, 1973, D.C., S.D.N.Y., Doc. 73–C–827, *Gary Plastics Packinging Corp* v. *Berger & Gorin, Inc. et al.*

**3,711,066**, L. P. Niemiec, SNAP LOCK PLASTIC FENCING, **filed** Feb. 27, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c521, *Leo P. Niemiec, etc.* v. *Montgomery Ward & Co.*

**D. 202,629**. (See 3,337,218.)

**D. 202,630**. (See 3,337,218.)

**D. 202,794**. (See 3,337,218.)

**D. 202,795**. (See 3,337,218.)

**D. 204,894**. (See 3,337,218.)

### Certificates of Correction for the Week of Sept. 4, 1973

D. 225,706
D. 226,748
3,517,579
3,539,898
3,547,583
3,583,659
3,637,748
3,640,947
3,666,810
3,670,858
3,686,101
3,690,888
3,691,008
3,691,100
3,694,178
3,700,688
3,703,889
3,704,072
3,704,086
3,707,259
3,708,737
3,708,848
3,710,656
3,711,393
3,712,890
3,713,556
3,714,414
3,714,696
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3,715,611
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3,719,080
3,719,751
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3,720,526
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3,721,166
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3,721,586
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3,721,875
3,723,172
3,723,341
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3,723,533
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3,723,731
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3,724,005
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3,724,272
3,724,396
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3,725,067
3,725,281
3,725,315
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3,725,402
3,725,540
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3,725,766
3,725,957
3,726,208
3,726,332
3,726,821
3,726,978
3,727,277
3,727,825
3,727,841
3,727,848
3,727,857
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3,728,314
3,728,656
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3,729,660
3,729,920
3,730,324
3,730,993
3,731,150
3,731,254
3,732,550
3,732,978
3,733,216

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### Disclaimer and Dedication

3,676,116.—*Ivar T. Krohn, Geoffrey A. Page* and *Gedeminas J. Reinis,* Rochester, N.Y. IMAGE REVERSAL IN MANIFOLD IMAGING USING AN ELECTRICALLY CONDUCTIVE RECEIVER SHEET. Patent dated July 11, 1972. Disclaimer and dedication filed, Apr. 26, 1972, by the assignee, *Xerox Corporation.*

Hereby disclaims and dedicates to the Public the portion of the term of the patent subsequent to Apr. 11, 1989.

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### Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,150,299, R. N. Noyce, SEMICONDUCTOR CIRCUIT COMPLEX HAVING ISOLATION MEANS, decided Feb. 26, 1973, Interference No. 97,184, claim 4.

Patent No. 3,288,858, W. I. Lyness and D. E. O'Connor, SULFOXIDES AND SYNTHESES THEREOF, decided May 4, 1973, Interference No. 97,934, claim 7.

Patent No. 3,358,152, N. G. Alexakis, TEMPERATURE COMPENSATED TRANSISTOR AND MEANS FOR CONTROLLING, decided Mar. 9, 1973, Interference No. 97,126, claims 4, 5 and 6.

Patent No. 3,419,737, M. Toda, HALL EFFECT INDUCTIVE ELEMENT, decided Mar. 12, 1973, Interference No. 97,341, claims 1 and 5.

Patent No. 3,450,925, P. D. Johnson, MERCURY BISMUTH HALIDE PHOTOCHEMICAL ARC LAMP LIGHT SOURCES, decided Mar. 28, 1973, Interference No. 97,505, claim 1.

Patent No. 3,558,345, G. Baum and J. G. Koelling, FLUOROCARBON RESIN TO GLASS BONDING, decided June 11, 1973, Interference No. 98,075, claims 9, 10, 11, 12, 13 and 14.

Patent No. 3,562,344, R. Hengstebeck, PARAXYLENE RECOVERY, decided May 29, 1973, Interference No. 97,946, claims 1, 2 and 3.

Patent No. 3,567,485, J. Monnot, HIGH STRENGTH STEEL CONTAINING CHROMIUM AND SULFUR, decided May 29, 1973, Interference No. 97,820, claims 1, 2, 3 and 4.

Patent No. 3,619,152, S. A. Yalof and R. T. Williams, CUTTING TOOL WITH BORON FILAMENT COMPOSITE, decided May 31, 1973, Interference No. 98,066, claims 1, 2 and 3.

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### Disclaimers

2,928,867.—*James O. Kirk,* Lake Charles, La., and *Edsel L. Miller,* Houston, Tex. PREPARATION OF STABLE ALKARYL SULFONATES. Patent dated Mar. 15, 1960. Disclaimer field Jan. 26, 1973, by the assignee, *Continental Oil Company.*

Hereby disclaims the remaining term of said patent.

---

3,339,789.—*Ralph J. Stolle,* Lebanon, and *Elton G. Kaminski,* Sidney, Ohio, and *Frederick J. Close,* Pittsburgh, Pa. SCORED METAL CAN. Patent dated Sept. 5, 1967. Disclaimer filed Nov. 12, 1971, by the assignee, *The Stolle Corporation.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

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3,460,523.—*Alvin B. Stiles and Paul Clifford Yates,* Wilmington, Del. CATALYTIC OVEN COATING COMPOSITIONS. Patent dated Aug. 12, 1969. Disclaimer filed Mar. 26, 1973, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

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3,470,236.—*Arnold Hausweiler,* Cologne-Flittard, *Ingeborg Hammann,* Cologne, and *Wolfgang Behrens,* Cologne-Stammheim, Germany. PHENYL-N-METHYL CARMAIC ACID ESTERS. Patent dated Sept. 30, 1969. Disclaimer filed June 29, 1973, by the assignee, *Farbenfabriken Bayer AG.*

Hereby enters this disclaimer to claim 7 of said patent.

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3,478,667.—*Paul A. Bourquin,* Pleasantville, N.Y. TOP DISCHARGE AIR DUCT SYSTEM AND AIR DUCTS THEREFOR. Patent dated Nov. 18, 1969. Disclaimer filed Feb. 16, 1973, by the assignee, *Wolff & Munier, Inc.*

Hereby enters this disclaimer to claims 1, 3 and 12 of said patent.

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3,655,971.—*Werner E. L. Haas* and *James E. Adams,* Webster, *James H. Becker,* Penfield, and *Joseph J. Wysocki,* Webster, N.Y. IMAGING SYSTEM. Patent dated Apr. 11, 1972. Disclaimer filed Nov. 20. 1972, by the assignee, *Xerox Corporation.*

Hereby enters this disclaimer to claim 27 of said patent.

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3,733,939.—*Joseph R. Paysinger,* Ahwaz, Iran, and *Eugene F. Sims* and *Jerome W. Nelson,* Houston, Tex. APPARATUS FOR FORMING PRECISION SURFACES ON ENDS OF LARGE PIPES AND LIKE WORK PIECES. Patent dated May 22, 1973. Disclaimer filed Mar. 19, 1973, by the assignee, *CRC-Crose International, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Sept. 28, 1988.

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# PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF AUGUST 4, 1973

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director<br>Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 5-30-72 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director<br>Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 8-01-72 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director<br>Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 7-03-72 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director<br>Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 6-01-72 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director<br>Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 3-23-72 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director<br>Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 12-27-72 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director<br>Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 11-07-72 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director<br>Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 10-02-72 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director<br>Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 2-23-72 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director<br>Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 11-17-72 |
| DESIGNS, GROUP 290—R. L. CAMPBELL, Director<br>Industrial Arts; Household, Personal and Fine Arts. | 11-17-71 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director<br>Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 11-01-72 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director<br>Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 7-05-72 |
| AMUSEMENT, HUSBANDRY; PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director<br>Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 10-18-72 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director<br>Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 9-25-72 |
| MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director<br>Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 9-01-72 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

| | |
|---|---|
| Patents | Numbers 2,757,378 to 2,761,141, inclusive |
| Plant Patents | Numbers 1,505 to 1,508, inclusive |

# PATENTS

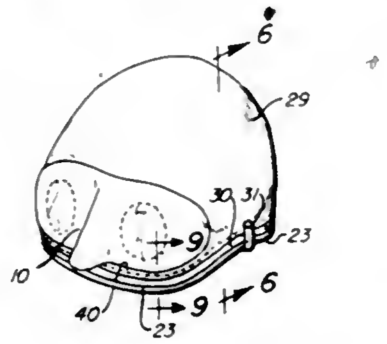
## GRANTED SEPTEMER 4, 1973

## GENERAL AND MECHANICAL

### 3,755,819

### SWIMMING HEADGEAR

**Donald J. Douglas, 10 Glasgow Rd., White Bear Lake, Minn.**
**Filed Nov. 11, 1971, Ser. No. 197,691**
**Int. Cl. A61f** *9/00*
**U.S. Cl. 2—14 W** **25 Claims**



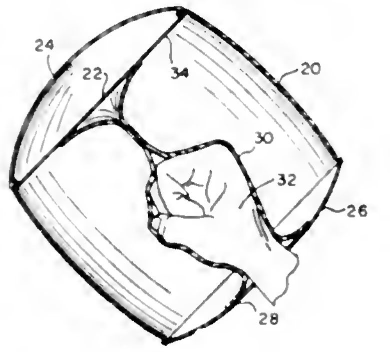
The swimming headgear comprises a protective head covering member. This member may consist essentially of a substantially semi-rigid plastic sheath structure adapted to be placed in spaced relationship over the eyes and nose of an individual, or a plastic bonnet, or both. Head-contacting peripheral means substantially excludes environmental water from entrance under the covering member. Preferred head-contacting peripheral means comprises a substantially water-tight seal structure including a flexible conformable plastic film shaped into a tubular chamber and a porous deformable and resilient organic plastic body strip extending throughout the tubular chamber and completely enclosed therewithin. Details of the illustrated sheath include eye accommodating portions on each side of a nose accommodating portion, with lateral perimeter portions of the sheath contoured toward temple areas of a user individual. Each eye portion comprises outer and inner plate members. The outer plate member extends from the nose accommodating portion to the respective lateral sheath perimeter portion or "temple" portion adjacent the eye portion. The outer plate member has transparent eye-vision area. The inner plate member is equipped with an opening therein aligned to coincide over the eye-vision area and form a visual border thereabout. Between the plate members, and formed by the plate members, is an internal annular channel recess. It extends peripherally outward from the eye-vision area, and particularly extends as a contoured recess laterally rearward within the sheath toward the temple area. The channel recess is adapted to serve as a water reservoir permitting the wearer of the headgear to preliminarily place a small amount of water in the recess for use while swimming to slosh over the eye-vision area to clear it of fog. The contour of the channel recess is such that the sloshing water does not migrate over the eye vision area during normal head movements, except a head movement in a downward looking stance. The nature of the water reservoir recess, especially at the temple area, permits upside down swimming substantially without the annoyance of water spilling out of the recess onto the eyes.

### 3,755,820

### INFLATABLE BOXING GLOVE OR PILLOW

**Victor Petrusek, 14611 Halsted St., Harvey, Ill.**
**Continuation-in-part of Ser. No. 229,009, Feb. 24, 1972, abandoned, Continuation-in-part of Ser. No. 159,774, July 6, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,221**
**Int. Cl. A41d** *13/08*
**U.S. Cl. 2—18** **10 Claims**

An air inflated boxing glove or pillow. The glove includes a casing having an axially disposed open ended tubular sleeve. The sleeve is encompassed by an annular cylindrical band to which bell shaped end shell sections are fixed along the opposite edges. The bell shaped sections are provided with axial openings in which the ends of the sleeve are fixed. An air valve is provided in the casing.



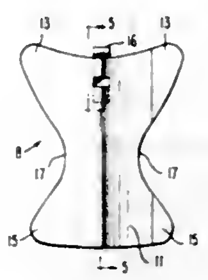
A modified form of the boxing glove has a partition at one end of the cylindrical band to which one bell shaped end shell section is fixed about the periphery thereof. An opening is provided through the partition so that air may inflate the end shell section.

A further modified form of the boxing glove eliminates one bell section, and a circular partition is provided in the tubular sleeve.

### 3,755,821

### NO-KNOT TIE

**Frank A. Tellone, St. Petersburg, Fla., assignor to Squire Ties Ltd. Inc., St. Petersburg, Fla.**
**Filed Aug. 10, 1972, Ser. No. 279,405**
**Int. Cl. A41d** *25/08*
**U.S. Cl. 2—153** **11 Claims**

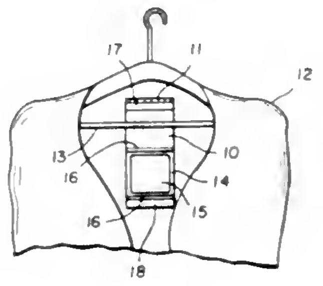


A pre-tied, clip-on tie giving the appearance of having no knot at the end of the tie attached to a collar of wearing apparel consisting of a rigid tie form on which the tie fabric is placed for attaching the tie to the wearing apparel of the user. The tie fabric is placed smoothly around the rigid form so that the fabric pattern is continuous from the neck of the wearer to the opposite end of the tie with no wraps, wrinkles, folds, twists or bends being present on the front side of the tie, thereby presenting a no-knot appearance at the end of the tie attached to the wearer, and an unbroken continuity in fabric design. The rigid form gives the simulated appearance of a bulk area at the point of attachment to the wearer's apparel and presents a controlled flare area in the zone of the bulk area. Hooks or clips of a special design are attached to the back of the rigid form opposite the side on which the fabric is positioned for attaching the knotless tie to the collar of the apparel of the user.

### 3,755,822

### GARMENT SECURER

**Stuart Bobry, 10 Falconbridge Dr., Pittsford, N.Y.**
**Filed May 11, 1972, Ser. No. 252,208**
**Int. Cl. A41d** *27/22*
**U.S. Cl. 2—271** **5 Claims**

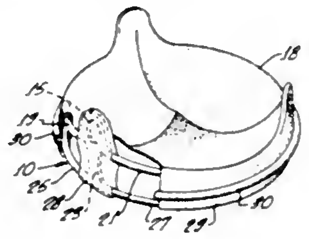


A garment securer uses a strip of material fastened to the middle of the inside of the back of the garment above the crossbar of a supporting hanger with the free end of the strip hanging downward. A two-part fastener is arranged on the fixed end and the free end of the strip so the free end can be looped over a hanger cross-bar and secured to the fixed end to hold the garment on the hanger and identify the garment.

### 3,755,823

### FLEXIBLE STENT FOR HEART VALVE

**Warren D. Hancock, Santa Ana, Calif., assignor to Hancock Laboratories Incorporation, Orange, Calif.**
**Filed Apr. 23, 1971, Ser. No. 136,832**
**Int. Cl. A61f** *1/22*
**U.S. Cl. 3—1** **27 Claims**

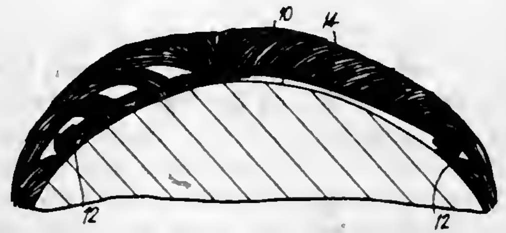


An arrangement for heart valves that includes a stent having apexes interconnected by arms, the apexes being deflectable inwardly upon hemodynamic loading of the heart valve for reducing the stress in the valve tissue, the stent being covered by a cloth sleeve which may have an integral bead or flap for attachment to the heart, padding being provided beneath portions of the sleeve for protection, and a reinforcing ring extending around the assembly over the marginal portions of the heart valve, with sutures extending through the reinforcing ring and tissue of the heart valve for forming an attachment to the stent.

### 3,755,824

### METHOD FOR AVOIDING THE APPEARANCE OF BALDNESS

**Arnold J. Sperling, Uniondale, N.Y., assignor to Plus Hair Centers International, Inc., New York, N.Y.**
**Filed Sept. 24, 1971, Ser. No. 183,452**
**Int. Cl. A61b** *17/04;* **A61d** *1/00*
**U.S. Cl. 003—001** **2 Claims**

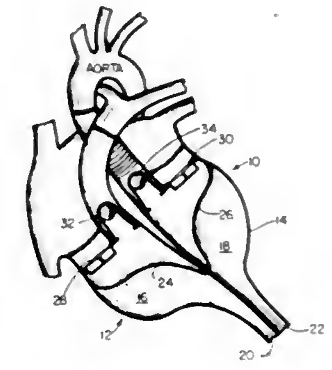


A method for enabling a balding person to avoid the appearance of baldness comprising the steps of locating sutures at strategic locations on the person's scalp, securing a scalp net to said sutures with said scalp net having synthetic fibres which simulate hair secured to the portions of the net which cover balding areas on the scalp. The scalp net has openings where it covers a person's natural hair which extends through said openings.

### 3,755,825

### ARTIFICIAL HEART CONSISTING OF A BIVENTRICULAR PUMP WITH CONTROL MECHANISMS FOR TOTAL REPLACEMENT OF HUMAN HEART

**Michael E. DeBakey, Houston, and C. William Hall, San Antonio, both of Tex., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.**
**Continuation of Ser. No. 37,181, May 14, 1970, abandoned. This application May 18, 1972, Ser. No. 254,566**
**Int. Cl. A61f** *1/24*
**U.S. Cl. 3—1** **3 Claims**

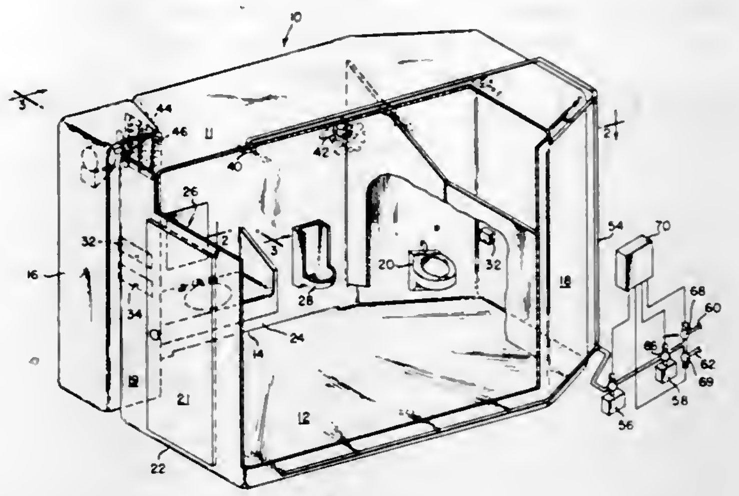


A pneumatically controlled biventricular artificial heart lined with Dacron reticular fabric and including a left and right ventricular pump unit with controls for operating the left and right ventricular pumps at different and controlled pressures.

### 3,755,826

### SELF-CLEANING REST ROOM

**Frank D. Roberts, Bellevue, Wash., assignor to SCR Corporation, Seattle, Wash.**
**Filed Oct. 29, 1971, Ser. No. 193,649**
**Int. Cl. A47k** *17/00;* **E03d** *11/12*
**U.S. Cl. 4—1** **10 Claims**



A molded unitary substantially watertight structure is provided with an entrance opening and an enlarged drain opening. Rest room fixture are provided within the structure with means for covering paper dispensers and waste receptacle. A plurality of various types of spray nozzles are provided within the structure to create a fog, a direct spray on the rest room fixtures and overlapping sprays throughout the structure, and floor flushing sprays for flushing debris through the drain opening. A combination heater-blower distributes the fog and dries the structure and fixtures. Various types of liquids are used to clean, sanitize and deodorize the structure. In one embodiment the heater-blower and nozzles are attached to a self-contained independent ceiling structure which may then be secured to a conventional rest room.

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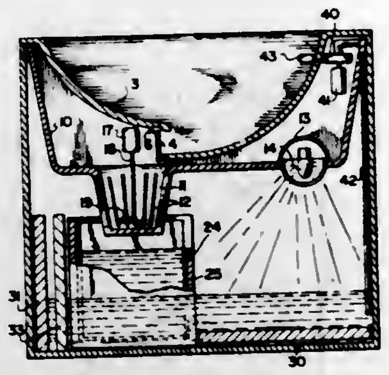
### 3,755,827
### TOILET

**Rogers Riedel, and Anthony Lepore, both of Belleville, Ontario, Canada, assignors to Thelford Corporation, Ann Arbor, Mich.**

**Filed Mar. 2, 1972, Ser. No. 231,277**
**Claims priority, application Canada, Dec. 31, 1971, 131514**
**Int. Cl. E03d** *5/016*; **C02b** *1/82*; **A61l** *11/00*
**U.S. Cl. 4—10** **7 Claims**



A combined toilet and sewage treatment apparatus comprising a bowl provided with a drainage aperture; a primary treatment chamber providing a first electrolyte reservoir, a secondary treatment chamber providing a second electrolyte reservoir; means for circulating electrolyte between said second reservoir and said bowl to flush said bowl, the electrolyte during circulation passing from said bowl through said drainage aperture to said first reservoir and from said first reservoir to said second reservoir when its level in said first reservoir reaches a predetermined level; and a pair of electrodes positioned in each of said first and second reservoirs so that when current is supplied to said electrodes, electrolysis of sewage in the electrolyte in both said reservoirs occurs.

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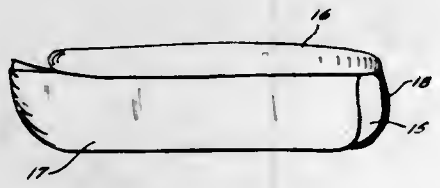
### 3,755,828
### DISPOSABLE BEDPAN PILLOW

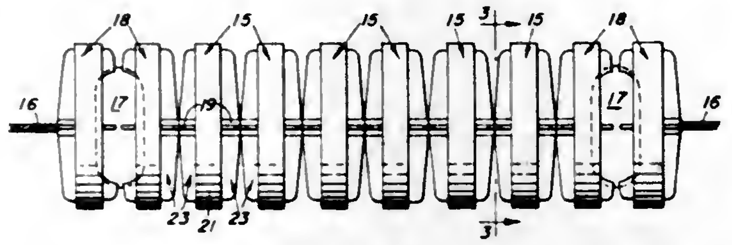
**Patricia Ann Sattler, 103 Maple St., Parchment, Mich.**
**Filed Apr. 6, 1971, Ser. No. 131,660**
**Int. Cl. A61g** *9/00*
**U.S. Cl. 4—113** **3 Claims**



A disposable bedpan pillow made of flexible plastic film and comprising an inflatable, substantially U-shaped collar adapted to be superimposed over the upper portion of a bedpan and binding means adapted to secure the inflatable collar to the bedpan.

### 3,755,829
### TURBULENCE SUPPRESSION APPARATUS FOR A BODY OF WATER

**Mercer Donald Walkiet, Medina, Ohio, assignor to Adolph Kiefer McNeil Corporation, Akron, Ohio**
**Filed Mar. 28, 1972, Ser. No. 238,798**
**Int. Cl. E04h** *3/16, 3/18*
**U.S. Cl. 4—172** **17 Claims**



A multiplicity of perforated disc-shaped elements are maintained in axially aligned, axially spaced relationship by means of a taut cable to define a barrier which substantially eliminates transmission of water turbulence from one side to the other of the barrier. The elements are individually revoluble about horizontal axes supported approximately at mean water level to absorb, aerate, and dissipate the kinetic energy of wave action.

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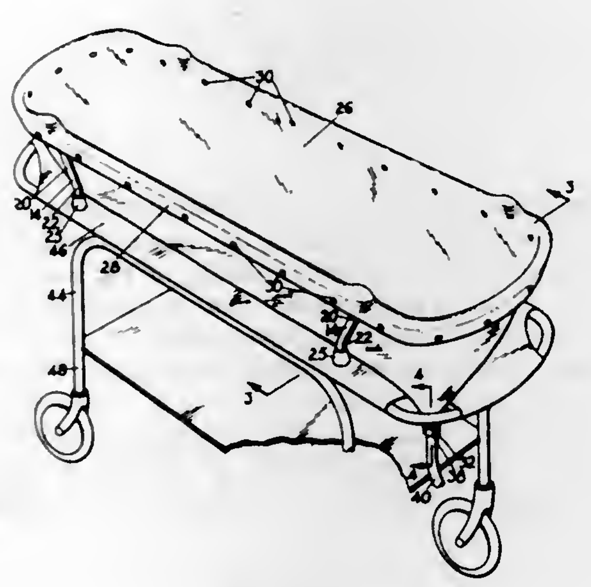
### 3,755,830
### PORTABLE BATHTUB

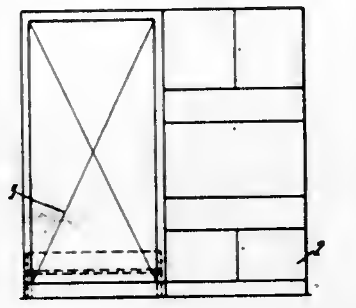
**Mary K. Johns, 146 Fir St., P. O. Box 345, Kalama, Wash.**
**Filed May 26, 1971, Ser. No. 146,920**
**Int. Cl. A47k** *3/06*
**U.S. Cl. 4—177** **3 Claims**



A portable bathtub having a frame portion, a liner portion, and leg portions which facilitate use of the bathtub on a carrier surface such as on a stretcher. The frame includes a horizontally disposed, open center member made up of a plurality of telescoping portions. The dimensions of the open center of the frame are larger than the carrier surface. The legs are pivotally attached to the frame, and at least two of the legs are contoured so that upon selected rotation thereof the bottom support end can be located in different lateral positions whereby upon positioning the legs inwardly the tub can be supported on a stretcher and upon positioning the legs outwardly the frame can be lowered below the carrier surface with the liner thereof draped over the carrier surface and the frame and leg portions hanging down the sides, whereby to provide a flush surface on the carrier for easy movement of patients onto the carrier surface.

### 3,755,831
### FOLDING BED UNIT

**Ernst Bergmann, Detmalder Strasse 119, 4792 Bad Lippspringe, Germany**
**Filed Mar. 1, 1972, Ser. No. 230,861**
**Claims priority, application Germany, May 2, 1972, P 22 05 412.2**
**Int. Cl. A47c** *13/18, 17/14*
**U.S. Cl. 5—2** **35 Claims**



An upright box has an open side and a bed is connected with the box so it can be folded in and out of the same through the open side. At least one shelf or similar piece of furniture is located laterally adjacent the open side of the box and an additional piece of furniture is located in front of the box and can be shifted laterally so that it will either conceal the open side of the box or will expose the open side, being located in front of the additional piece of the piece of furniture. Guide means connects the additional piece of furniture with both the upper and lower ends of the box and with the piece of furniture in order to support the additional piece of furniture when it is shifted.

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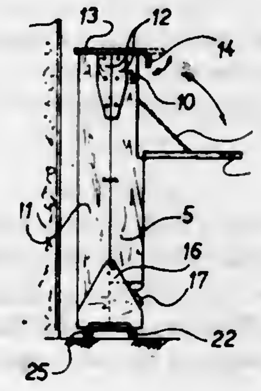
### 3,755,832
### SELF-ENCLOSED FOLDING BED

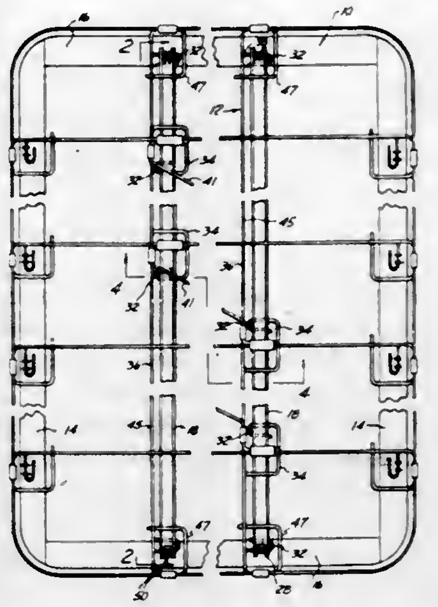
**Lawrence A. Bennett, 41 Vandry St., Lennoxville, Quebec, Canada**
**Filed Apr. 3, 1972, Ser. No. 240,662**
**Int. Cl. A47c** *17/40*
**U.S. Cl. 5—2** **4 Claims**



A folding bed adapted to form a cabinet-like structure when folded and a bed when extended, including a pair of bedstead sections which are pivoted one to the other and which are arranged to form the cabinet-like structure, thereby using the same frame structure for both the extended bed configuration and the folded cabinet configuration. The bedstead sections constitute shallow box-like structures each supported by a leg structure pivoted thereto and both arranged to be displaced relative to each other and to the floor to facilitate handling of the bed.

### 3,755,833
### BOX SPRING FRAME

**Walter V. Slominski, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich. and Sealy, Incorporated, Chicago, Ill., part interest to each**
**Filed Dec. 15, 1971, Ser. No. 208,292**
**Int. Cl. A47c** *23/02*
**U.S. Cl. 5—247** **7 Claims**



A generally rectangular box spring frame consisting of wooden end and side rails and metal cross rails which are supported on the side rails and are particularly constructed in an inverted U-shape cross section so as to efficiently resist loads. The cross rails are assembled with the box springs that they support so as to enable use of some of the box springs in attaching the cross rails to the side rails.

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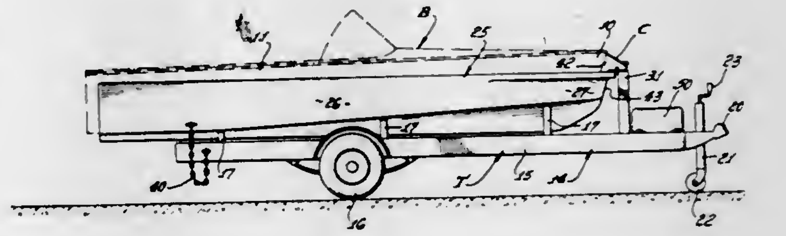
### 3,755,834
### BOAT TRAILER

**Henry T. M. Rice, 1213 Ramona St., San Gabriel, Calif.**
**Filed Feb. 16, 1971, Ser. No. 115,294**
**Int. Cl. B63c** *13/00*; **B60p** *3/10*
**U.S. Cl. 9—1 T** **8 Claims**



A boat trailer including a trailer frame carrying a float member thereabove adapted to receive and support a boat, the float member being movable vertically relative to the frame. When the trailer is disposed in the water, its frame drops vertically relative to the float member to an extent limited by the float member, enabling the boat to back off from the float member and trailer under its own power, as well as to move forwardly into the float member and over the trailer to a position to be supported by the trailer when it is pulled fully onto land by a towing vehicle.

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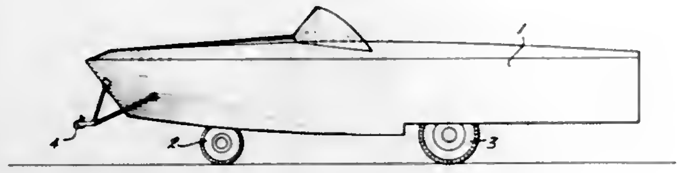
### 3,755,835
### WHEELED BOAT

**Harry R. Boersig, 8715 Dolly Madison S.W., Tacoma, Wash.**
**Filed Aug. 13, 1971, Ser. No. 171,509**
**Int. Cl. B63c** *13/00*
**U.S. Cl. 9—1 T** **6 Claims**

A runabout boat has a tricycle undercarriage retractable for travel of the boat in water, and extendable for transporting the boat on land, either self-propelled or as a trailer. The undercarriage includes a single forward wheel mounted on a strut swingable about a transverse axis to move the wheel between raised retracted position within the hull, and lowered position projected below the hull. In projected position, the wheel is steerable by the boat's steering wheel. Two rear wheels are supported by struts for swinging between retracted



positions in wheel wells above the hull bottom and two projected positions extending partially below the hull, in one of which positions the wheels are free-wheeling, and in the other of which projected positions the wheels are power-driven by friction gears. Skid fins are mounted for projection when the rear wheels are retracted, and for retraction when the rear wheels are projected.

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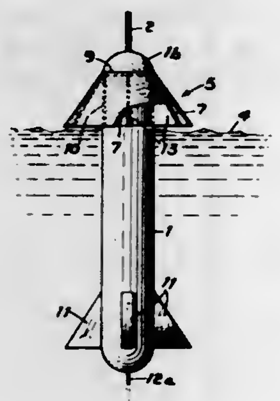
### 3,755,836
## STABILIZATION ARRANGEMENT FOR COMMUNICATION BUOYS

**Frank M. Milazzo, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**
**Filed Sept. 28, 1970, Ser. No. 75,964**
**Int. Cl. B63b** *21/48, 21/52*
**U.S. Cl. 9—8** **15 Claims**



In association with a communications buoy of the type launched from a submerged vessel, an automatically deployable surface stabilization arrangement for preventing inundation of the buoy even under severe environmental conditions. A collar of continuous and flexible material such as mylar film is arranged around the buoy proximate to the water line, and is attached to the buoy via the top portion thereof in a substantially leak-proof manner with the bottom portion open in a conical or umbrella-like fashion. The collar is rapidly deployed by a series of spring-loaded or bowed arms fabricated of a resilient material and spaced from one another around the buoy. Release of the force constraining the arms against the buoy, such as occurs upon launch of the buoy from the submerged vessel, permits the collar to automatically deploy, thus forming around the buoy at the water line a pocket to trap air. The collar may be compartmentalized to better maintain the air pocket and insure stability. A plurality of spring-loaded fins may also be provided on a submerged portion of the buoy remote from the collar to provide broad surfaces for further damping of the forces acting on the buoy.

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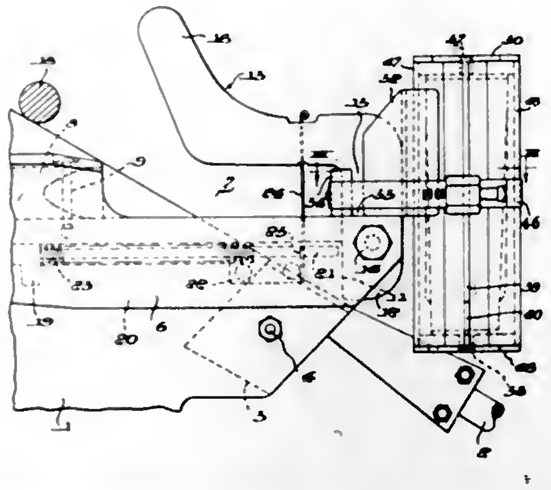
### 3,755,837
## SIGNAL FLARE FOR FLOATING MINES

**Robert Temple, Swissvale; Ernest E. Temple, Murrysville, and Joseph L. Giebel, Swissvale, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.**
**Filed Mar. 8, 1961, Ser. No. 94,179**
**Int. Cl. B63d** *21/52*
**U.S. Cl. 9—8.3 R** **15 Claims**



This invention relates to the cutting of the lines by which explosive mines are anchored in bodies of water, and more particularly to signal flares that are carried by the cutting tools until the lines are cut.

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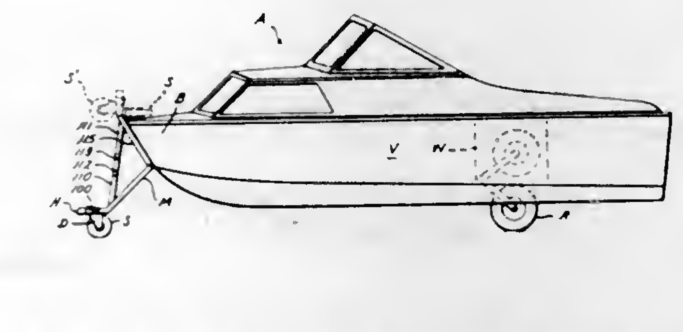
### 3,755,838
## INTEGRATED BOAT-TRAILER-CAMPER APPARATUS

**Lawrence G. Dunagan, 205 Height Blvd., Houston, Tex.**
**Filed Apr. 30, 1971, Ser. No. 138,945**
**Int. Cl. B63c** *13/00*
**U.S. Cl. 9—1 T** **8 Claims**



A new and improved integrated boat-trailer-camper apparatus, movable on land and on water, with longer service life, easier entry into and removal from the water, improved handling and maneuverability while in the water, and improved means for support when used on land.

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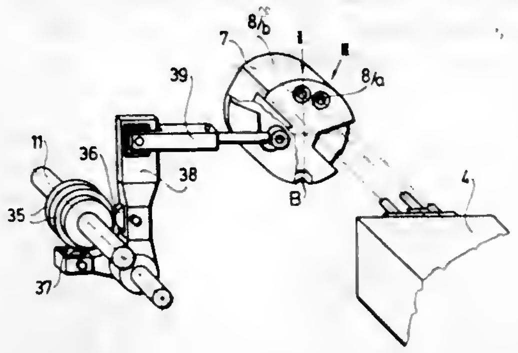
### 3,755,839
## AUTOMATIC QUICK PRESS FOR MANUFACTURING SMALL-DIAMETER SHORT-SHANK BOLTS

**Emil Enody; Sandor Kovacs; Istvan Gelanyi, all of Budapest; Bela Kacsmarek, Pilisvorosvar, and Bela Karoly, Budapest, all of Hungary, assignors to Csavaripau Vallalat, Budapest, Hungary**
**Filed Oct. 28, 1971, Ser. No. 193,324**
**Claims priority, application Hungary, Nov. 11, 1970. CA-296**
**Int. Cl. B21k** *1/44*
**U.S. Cl. 10—13** **5 Claims**

A press for the production of short-shank small-diameter bolts comprises an angularly oscillatable diehead having two die members disposed along an arc centered upon the axis of oscillation of the head and juxtaposed with a ram carrying three forming tools arranged upon a similar arc of the same axis with the same angular spacing as said die. Indexing means

is provided for enabling the head to be displaces into either of two angular extreme positions whereby, in one position, the central tool and another tool of the ram form workpieces in



the dies while the third tool is not ineffective, and a position in which the central tool and the third tool form workpieces in the die and the second tool is ineffective.

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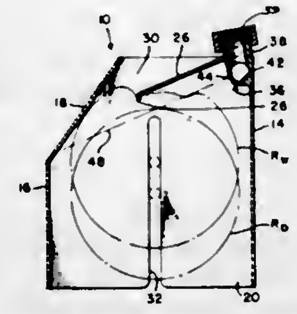
### 3,755,840
## CLEANING, SPINDRYING AND FLUFFING PAINT ROLLER DEVICE

**Winslow H. Barger, 4525 S. W. Concord St., Seattle, Wash.**
**Filed Feb. 22, 1972, Ser. No. 227,923**
**Int. Cl. B08b** *3/02*
**U.S. Cl. 15—1** **13 Claims**



An elongated generally rectangular housing having an open bottom. The device has a top wall, front and back walls, and end walls. A view slot is provided in the top wall. A portion of the rear wall forms an anti-splash control section. A baffle wall extends rearwardly either horizontally or downwardly at an angle from the top wall. A manifold is located in the area of the top front corner and directs a curtain of jet spray rearwardly across the upper portion of the housing, which impinges on the anti-splash control portion of the rear wall when it is not impinging on the roller. End wall slots are provided so that the roller mounting shaft of the paint roller handle can be inserted to raise the paint roller upwardly into the jet spray curtain for cleaning and spin-drying.

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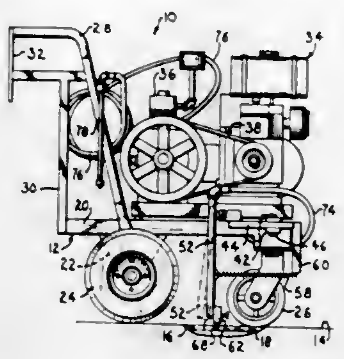
### 3,755,841
## MACHINE FOR CLEANING PAVING CRACKS

**Robert L. Goethe, Shawnee Mission, Kans., and Robert R. Green, Kansas City, Mo., assignors to Crestmark Products Company Incorporated, Kansas City, Kans.**
**Filed Feb. 8, 1972, Ser. No. 224,560**
**Int. Cl. A47l** *5/00, 9/00*
**U.S. Cl. 15—334** **11 Claims**

Apparatus for cleaning material from cracks in a surface, such as a highway pavement. A mobile vehicle is moved along the surface and has a depending, pivotally mounted arm that has a projection extending into the crack. The arm is mounted for pivotal movement about both horizontal and vertical axes to allow the projection to follow an irregular crack and avoid being damaged by an unyielding object in the crack. Yieldable biasing means normally holds the arm in relationship to the surface and will yield under force to accommodate pivotal movement of the arm. A source of pressurized air is also carried by the vehicle and is coupled with an appropriate delivery conduit to provide an airstream which is directed down into the crack, in perpendicular relationship to the latter, immediately behind the aforementioned projection. The airstream thus blows material from the crack to complete the



cleaning operation. Also coupled to the air source is an elongated flexible conduit terminating in a hand lance which can be used by an operator to provide an airstream at a remote location from the vehicle for cleaning the surface or to operate other devices requiring pressurized air.

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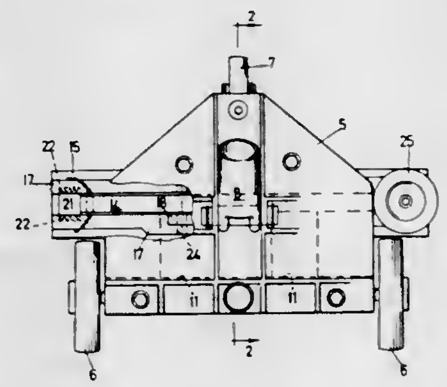
### 3,755,842
## SUCTION CLEANERS SUITABLE FOR USE IN SWIMMING POOLS

**Renaldo Ernst Kislig, P.O. Box 809, Johannesburg, Republic of Transvaal, South Africa**
**Filed June 14, 1971, Ser. No. 152,720**
**Claims priority, application South Africa, June 12, 1970, 70/4025**
**Int. Cl. E04h** *3/20*
**U.S. Cl. 15—1.7** **7 Claims**



In a suction cleaner for swimming pools and the like a sliding collar is provided around the suction nozzle. The collar hangs from the nozzle and rests on the floor. To accommodate unevenness of the floor the collar is articulated. For effective suction along the length of the nozzle, the suction outlet is connected to equal lengths of the nozzle by a manifold system. The nozzle is carried by a body with three wheels, the centre one of which is a castor wheel.

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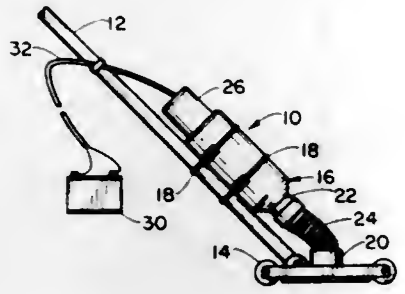
### 3,755,843
## POOL VACUUM SYSTEM

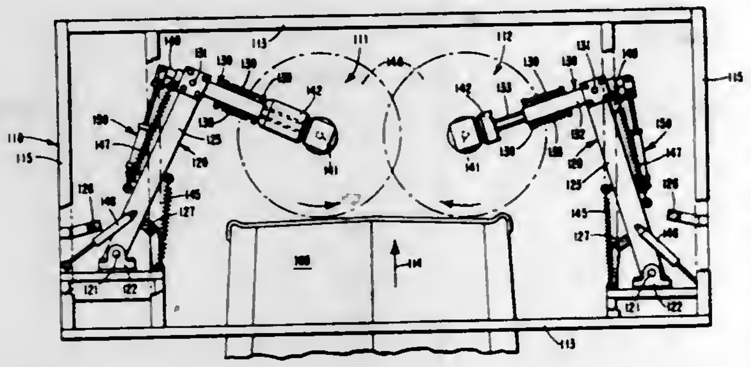
**John Goertzen, III, 20212 Septo St., Chatsworth, Calif., and Robert W. Hargrave, 7722 Glassport, Canoga Park, Calif.**
**Filed June 24, 1971, Ser. No. 156,370**
**Int. Cl. E04h** *3/20*
**U.S. Cl. 15—1.7** **10 Claims**

Herein described is a fully contained pool cleaning and vacuuming system. The system includes a housing in the form of a canister enclosing a filtration element therein which is directly attachable to a vacuum head by a flexible tube. A pump is disposed in the canister along with a power source for moving the water from the vacuum head through the filter unit.



### 3,755,844
### VEHICLE WRAP-AROUND CLEANING APPARATUS

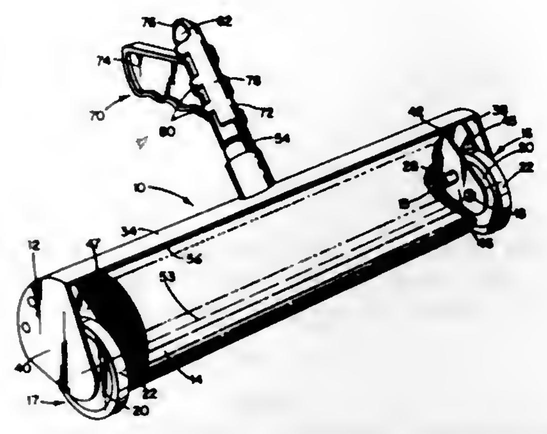
**George Thomas Ennis, 1354 E. State St., Sharon, Pa.**
**Continuation-in-part of Ser. No. 178,191, Sept. 7, 1971, Pat. No. 3,720,972. This application Aug. 10, 1972, Ser. No. 279,364**
**Int. Cl. B60s** *3/06*
**U.S. Cl. 15—21 D** **11 Claims**



A first embodiment includes a vehicle wrap-around rotary brush-type cleaning assembly having a first arm pivotally mounted at one side of the path of a vehicle and a second arm pivoted thereto carrying rotatable brush means at one end. Spring tensioning means are connected between the first arm and the frame and between the second arm and the first arm to maintain the arms in a normal open position. A compression spring is positioned between the two arms to limit relative movement in one direction and urge the arms back to their normal position. A damping cylinder connected between the arms by a pin and slotted plate connection permits relative initial movement between the arms prior to any damping taking effect. The brush moves across the front, along the side and across the back of a vehicle. Two brush assemblies may be disposed directly opposite each other on each side of the path with the brushes in overlapping relation to clean both sides of a vehicle. In an alternative embodiment the second arm may comprise an outer portion pivotally connected to the first arm and an inner portion which moves telescopically within the outer portion and which carries the rotatable brush means. In the alternative embodiment the pin and slotted plate connection between the damping cylinder and the arms is replaced by a linearly sliding lost motion linkage, and the travel of the arms away from the vehicle path is more limited to maintain the arms within the laterally outermost dimension of the supporting frame of the assembly.

### 3,755,845
### FRICTION-DRIVEN ROTARY CLEANING APPARATUS HAVING PLURAL OPERATING MODES

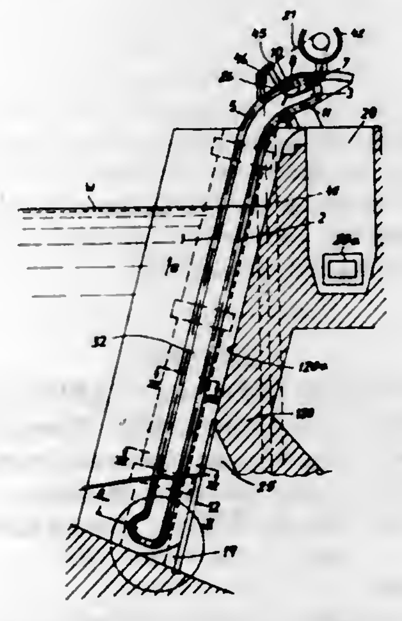
**John H. Coult, One Leland Rd., Natick, Mass.**
**Filed Feb. 23, 1971, Ser. No. 117,939**
**Int. Cl. E01h** *1/02*
**U.S. Cl. 15—79** **3 Claims**



This disclosure depicts a number of embodiments of lightweight, highly maneuverable, friction-driven ground and floor cleaning apparatus. Lightweight, multi-function housing means serves to support for rotation a cylindrical brush and a pair of drive wheels of smaller diameter than the brush. The apparatus has two operating modes - an "upright" mode wherein the apparatus has a first set of operating characteristics including a relatively high handle operating position, and an "inverted" mode wherein the apparatus has a second set of operating characteristcs, including a relatively low handle operating position.

### 3,755,846
### TRASHRACK CLEANER WITH SELF-DRIVEN CLEANING UNIT

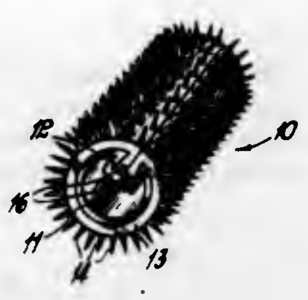
**Karl Sandler, Schuberstr. 7, 3100 Saint Polten, Austria**
**Continuation-in-part of Ser. No. 109,199, Jan. 25, 1971, abandoned. This application June 14, 1972, Ser. No. 262,686**
**Int. Cl. E02b** *8/02*
**U.S. Cl. 15—93 R** **10 Claims**



A carriage supporting a cleaning comb for a trashrack has a pinion driven by a reversible motor and engaging a generally vertical guide rack for reciprocation along a track having two parallel stretches which are interconnected by an upper and a lower loop. The carriage has a lead roller, moving up and down in the stretch remote from the trashrack to be cleaned, and a follower roller whose distance from the lead roller exceeds the spacing of the two stretches and which is so guided by the track as to move in a closed path, ascending in the stretch proximal to the trashrack and descending in the other stretch so that the carriage assumes different attitudes on ascending and descending. The comb mounted on the carriage stands clear of the trashrack when moving down but sweeps the trashrack when moving up, discharging the sweepings into a basin at the top of its stroke. The remote stretch has a spur, tangent to the upper loop, into which the lead roller can escape as the follower roller moves through that loop before descending, the mouth of this spur being obstructable by a deflecting lever having a curved edge for the guidance of the follower roller through the upper loop.

### 3,755,847
### BRUSH

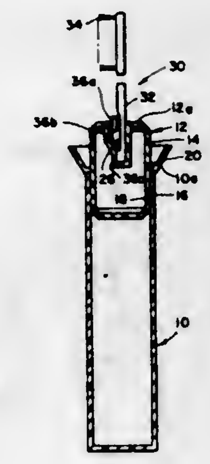
**Johannes Liebscher, Nassau/Lahn, Germany, assignor to Firma Leifheit International Gunter Leifheit K.G., Nassau/Lahn, Germany**
**Filed Aug. 18, 1971, Ser. No. 172,707**
**Claims priority, application Germany, Sept. 12, 1970, G 70 33 969.4**
**Int. Cl. A46b** *1/00, 13/02*
**U.S. Cl. 15—179** **4 Claims**



A cylindrical brush including a rigid support member and a flexible bristle support carrier provided with a plurality of bristles of a synthetic plastic material. The support member and support carrier are provided with means for connecting the members with one another.

### 3,755,848
### TOOTHBRUSH FOR ARTHRITICS

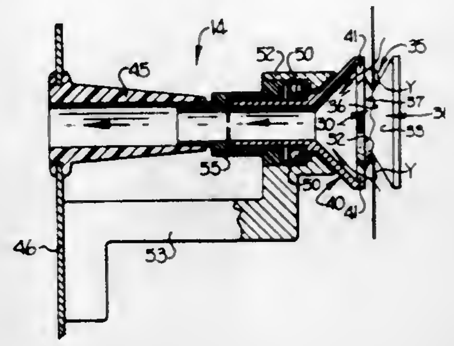
**Charles B. Mutrie, 268 Grove St., Apt. 1, Auburndale, Mass.**
**Filed Mar. 8, 1971, Ser. No. 121,830**
**Int. Cl. A46b** *5/02, 17/04*
**U.S. Cl. 15—184** **4 Claims**



A toothbrush for arthritics has an extended hollow body forming a handle for a removable brush which extends axially from the body when the brush is to be used and which is inverted and inserted into the hollow body for storage when not in use. The cross section of the body portion is sufficiently large to prevent contact between the fingers and the palm when the fingers are wrapped around the body portion in gripping relation, so that curling of the fingers is minimized in grasping the brush.

### 3,755,849
### YARN CLEANING ROLLER ASSEMBLY FOR TEXTILE YARN PROCESSING MACHINE

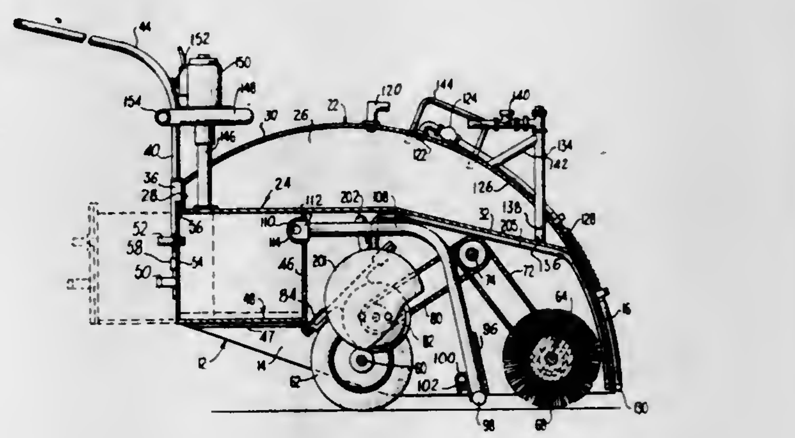
**Heinz Fink, Krefeld, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany**
**Filed June 8, 1972, Ser. No. 260,857**
**Claims priority, application Germany, June 12, 1971, P 21 29 260.4**
**Int. Cl. A47l** *5/38*
**U.S. Cl. 15—308** **8 Claims**



A cleaning roller assembly for a textile yarn processing machine for cleaning dust and undesirable particles from the yarn. The assembly comprises a pair of rotatable cooperating roller discs forming a groove therebetween for receiving yarn therearound to frictionally clean the yarn. The assembly further includes a funnel-shaped air suction conduit secured to and surrounding one of the roller discs and extending coaxially from the axis of rotation of the roller discs for rotation with the roller disc, and a stationary air conduit mounted coaxially with and extending from the rotary funnel-shaped suction conduit and being in cooperative suction communication therewith. By the above assembly, an air suction stream is created which flows from around the yarn receiving and cleaning groove coaxially with the axis of rotation of the roller discs to eliminate undesirable accumulations of dust and other particles which might cause clogging and prevent free rotation of the roller disc.

### 3,755,850
### STEAM CLEANING MACHINE

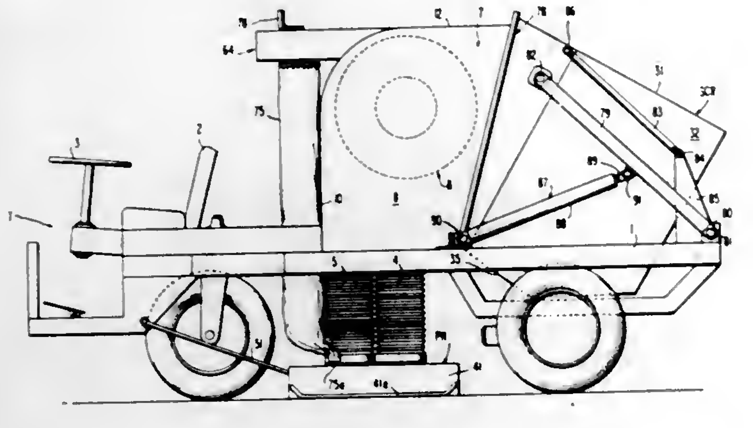
**Virginia I. Porter, 1228 Kingsley Cir., N.E., Atlanta, Ga.**
**Filed Feb. 15, 1972, Ser. No. 226,408**
**Int. Cl. A47l** *7/00*
**U.S. Cl. 15—320** **5 Claims**



A combination rug, upholstery and surface cleaner of the type in which detergent suds are deposited on a surface by a machine and the detergent suds are worked into the surface by a moving brush, the dirt and suds there being removed from the surface by a vacuum in which the surface is bathed in steam immediately after the suds are deposited on the surface.

### 3,755,851
### GAS CLEANING APPARATUS

**John K. Williams, Waco, Tex., assignor to Central Texas Iron Works, Inc., Waco, Tex.**
**Filed Oct. 28, 1971, Ser. No. 193,514**
**Int. Cl. A47l** *5/14*
**U.S. Cl. 15—346** **33 Claims**



Apparatus for separating particulate solid material from a stream of gas, such as air, entraining such material includes a blower, a solids collection receptacle, ducting connected to the blower and to the receptacle and communicating with a source of gas with entrained particulate solid material, the blower, receptacle and ducting providing a substantially closed system in which gas is recirculated, the solid material being separated from the circulating gas and deposited in the collection receptacle. A portion of the circulating gas, usually not exceeding 30 percent by volume, is bled from the circulatory system and discharged to maintain the average pressure in the circulating system at a desired low value so as to prevent leakage blow-out of gas and entrained dust or fine solids. Means for bleeding gas off from the system is situated within structure housing the blower and a separation chamber. The solids collecting receptacle is mounted so as to be bodily movable away from the blower and ducting housing structure and so as to respond to such bodily movement by tipping to dump accumulated solids. The gas cleaning apparatus is disclosed in connection with mobile surface sweeping equipment including a pick-up head having means for regulating the flow of air from a pressure chamber against the surface being cleaned and into a suction chamber in the pick-up head.

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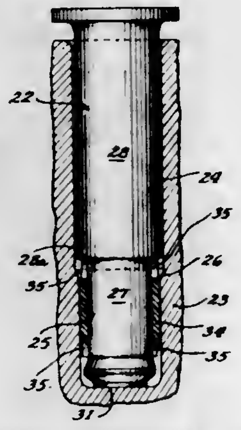
### 3,755,852
### CASTER FASTENING RETENTION

**Frederick C. Greene, St. Joseph, Mich., assignor to Shepherd Casters, Inc., St. Joseph, Mich.**
**Filed Apr. 5, 1971, Ser. No. 131,339**
**Int. Cl. B60b** *33/00*
**U.S. Cl. 16—37** **6 Claims**



A tilted axle caster pivot fastening. The pivot is formed with an end enlargement without the necessity for machining operations and is received within a plastic sleeve which is frictionally engaged with the inner end portion of the pivot boss bore in the caster body.

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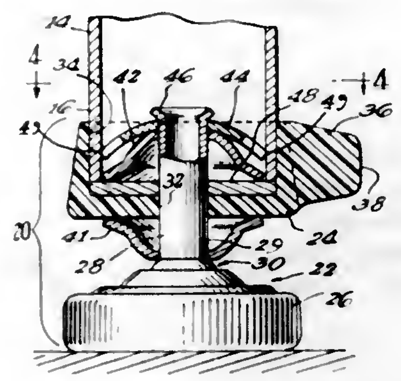
### 3,755,853
### STACKING CHAIR GLIDER ATTACHMENT

**Peter Barile, Barrington, Ill., assignor to Shelby Williams Industries, Inc., Chicago, Ill.**
**Filed July 28, 1971, Ser. No. 166,948**
**Int. Cl. A47b** *91/06*
**U.S. Cl. 16—42** **5 Claims**



An assembly adapted to be mounted to the bottom of a stacking chair leg and which includes a glide for engaging a floor and a bumper having a protuberance arranged to engage the leg of a nether chair in a stacked arrangement of chairs.

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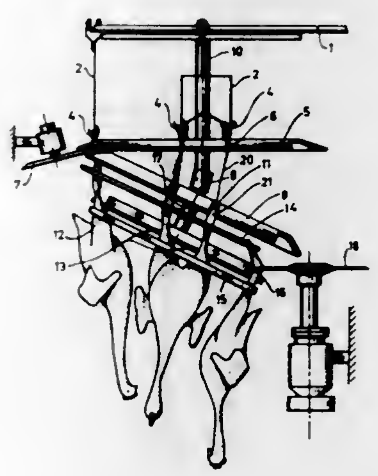
### 3,755,854
### DEVICE FOR REMOVING THE METATARSUS AND THE ACHILLES TENDON FROM POULTRY

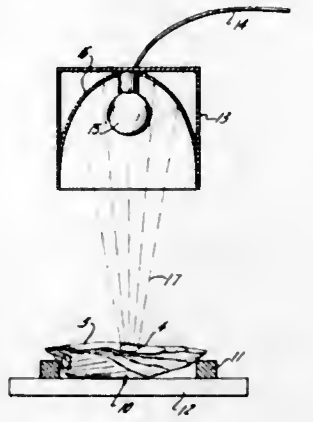
**Martinus Petrus Gerardus Van Mil, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands**
**Filed Sept. 27, 1971, Ser. No. 184,148**
**Claims priority, application Netherlands, Sept. 28, 1970, 7014260**
**Int. Cl. A22b** *3/08*
**U.S. Cl. 17—11** **2 Claims**



A device for removing the metatarsus and the achilles' tendon from poultry hanging on a conveyor track with means for breaking the metatarsus and with a drawing member positioned under the conveyor and moving synchronously therewith, acting directly above the joint between the metatarsus and the tibia and directed away from the conveyor over a vertical distance exceeding the length of the metatarsus below the point at which it is suspended.

### 3,755,855
### METHOD FOR OPENING SHELL FISH

**Willem Bian Gwan Ouw, Upper Montclair, N.J., and Albert Lester Johnson, Greenlawn, N.Y., assignors to Long Island Oyster Farms, Inc., Americas, N.Y.**
**Filed Oct. 29, 1971, Ser. No. 193,762**
**Int. Cl. A22c** *29/00*
**U.S. Cl. 17—48** **5 Claims**



A method for opening shell fish such as oysters by exposing the shell overlying the adductor muscle to a concentrated beam of infra-red light for a period of time sufficient to weaken or sever the attachment of the muscle to the shell and then removing the shell.

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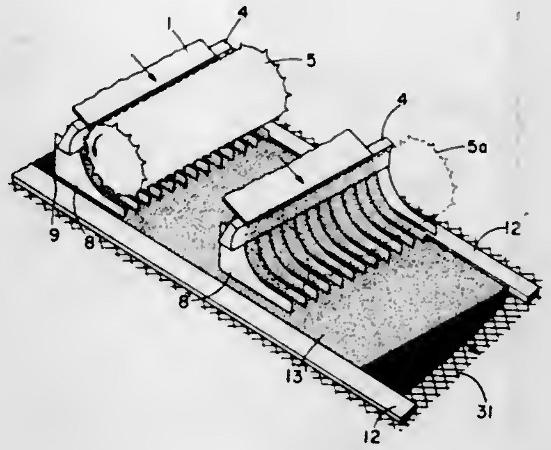
### 3,755,856
### METHOD AND APPARATUS FOR THE FORMATION OF FIBER FLUFF

**Charles T. Banks, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.**
**Continuation-in-part of Ser. No. 647,757, June 21, 1967, abandoned. This application Apr. 23, 1971, Ser. No. 136,745**
**Int. Cl. D01g** *25/00*
**U.S. Cl. 19—156.3** **7 Claims**



Wood pulp fiber batts of uniform and controlled density are produced by picking fibers from compacted wood pulp and impelling the fibers to a receiving surface passing beneath a multiplicity of panel-like dividers disposed to provide a forming chamber for a unitary batt and to substantially prevent turbulent air currents from the formation zone.

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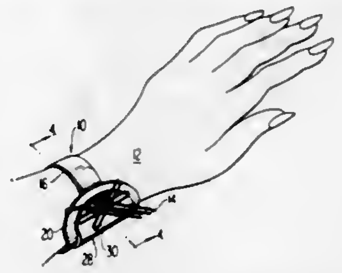
### 3,755,857
### MAGNETIC HAIR CLIP HOLDER

**Curtis J. Simoneaux, Belle Rose, La.**
**Filed May 24, 1972, Ser. No. 256,467**
**Int. Cl. A44b** *21/00;* **A45d** *44/00*
**U.S. Cl. 24—3 A** **8 Claims**

A wrist-mounted implement for holding small metallic articles, such as hair clips, bobby pins or the like adjacent the hands of the wearer for convenient removal and use is presented. The implement preferably includes a C-shaped, plastic bracelet having outwardly curved end portions for easy removal. An arcuate plastic mounting plate is attached at a side of the bracelet adjacent the inner side of the wearer's wrist. The long axis of the plate preferably extends transverse to the bracelet. At least one thin, elongated magnet is mounted on the outer surface of the plate, the polar axis of said magnet being normal to a plane tangential to the face of the magnet, and the distance between the poles being less than the width thereof so that the face of the magnet is a pole and the attractive force for metallic articles placed thereon will be concentracted throughout that portion of the article contacting the face.



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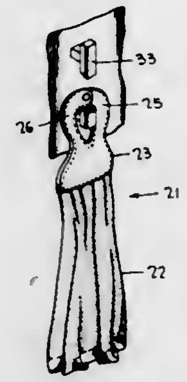
### 3,755,858
### TOWEL HOLDER

**Margaret L. McPhaul, 7417 Upshur St., Landover Hills, Md.**
**Filed May 31, 1972, Ser. No. 258,387**
**Int. Cl. A44b** *21/00*
**U.S. Cl. 24—73 R** **2 Claims**



A towel having a fabric flap sewn thereto along one end of the flap, the other end of the flap being looped for suspending the towel from a support, and means for fastening the looped end over the support.

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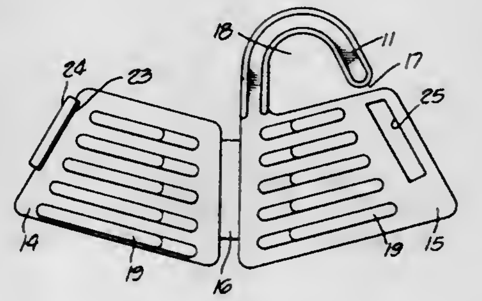
### 3,755,859
### HANGER CLIP

**Ray L. Solari, 10679 Holman Ave., Los Angeles, Calif.**
**Filed Dec. 15, 1971, Ser. No. 208,360**
**Int. Cl. A44b** *17/00*
**U.S. Cl. 24—84 B** **6 Claims**



The hanger device for supporting articles has a generally elongated one-piece plastic body with a central flexible hinge separating two end portions which are folded onto one another in use. Each of the end portions includes a plurality of longitudinally extending raised ribs or ridges in staggered arrangement so as to fit between one another when folded. The outer edge of one end portion includes parts which cooperate with parts on the other end portion for securing the same in folded relation.

In another version, a one-piece body which first and second portions is interconnected by a flexible hinge enabling the two portions to be folded onto one another. The facing surface of one of the portions has a plurality of raised ribs or projections and the facing surface of the other portion has an equal number of openings registering with the ribs or projections such that when folded each rib or projection passes through an associated opening.

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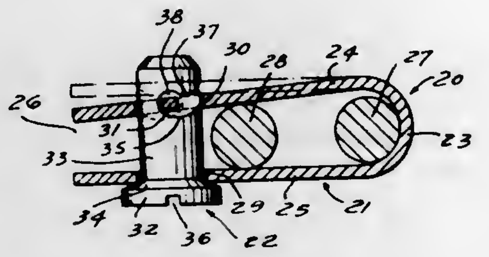
### 3,755,860
### LOOP LOCK
**Peter Schenk, and Theodore Dzus, Sr., both of West Islip, N.Y., assignors to Dzus Fastener Co., Inc., West Islip, N.Y.**
**Filed Mar. 17, 1972, Ser. No. 235,512**
**Int. Cl. A44b** *21/00*; **E05d** *5/02*
**U.S. Cl. 24—243 R** **8 Claims**



A loop lock adapted to engage and retain two adjacent members in fixed position with respect to one another. A resilient body is provided having an arcuate closed end portion terminating in a pair of opposed legs. The legs are normally spaced apart to receive two adjacent members therebetween. An opening is in each leg with the openings being substantially aligned. A stud is provided with a flanged end portion and a body portion which is removably extendable through the openings in the legs until the undersurface of the flanged end bears against the first of the legs. At least one tab extends laterally from one of the second leg and the body of the stud and the other of the second leg and the body of the stud has a cam slot therein engageable with the tab. The stud is rotatable between a locked and unlocked position and when the stud is rotated into the locked position, the tab follows the cam slot and will cause the legs to be bent toward one another and engage and capture the two members therebetween. When the stud is rotated into the unlocked position, the tab will follow the cam slot in the opposite direction thereby releasing the resilient legs to permit them to automatically return to their normal position and disengage the two members.

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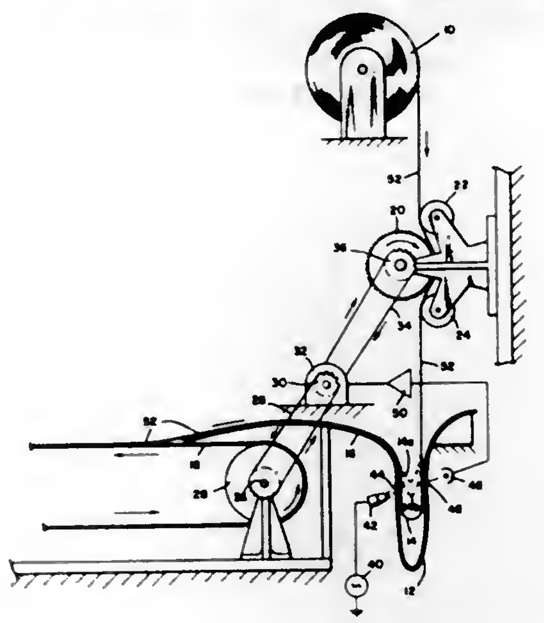
### 3,755,861
### TENSION FREE CLOTH DISPENSING APPARATUS
**Rodolfo Castro, La Palma; William J. Newton, Lakewood, and Esteban J. Toscano, Oceanside, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**
**Filed June 28, 1971, Ser. No. 157,247**
**Int. Cl. D06c** *3/00*
**U.S. Cl. 26—54** **5 Claims**

Means and method for spreading cloth on a moving support surface from a roll or bolt of cloth with a negligible amount of tension on the cloth to cause the cloth to lie flat. The cloth is rolled off the bolt into a slack loop where sensing means determine the extent of the loop and generate signals to control the dispensing of cloth off of the roll into the loop. The cloth is then pulled out of the slack loop over a smooth surface onto the surface of a belt by the mere friction between the cloth and the belt, the tension in the cloth on the belt being minimal, thereby avoiding forming of tension wrinkles in the cloth.



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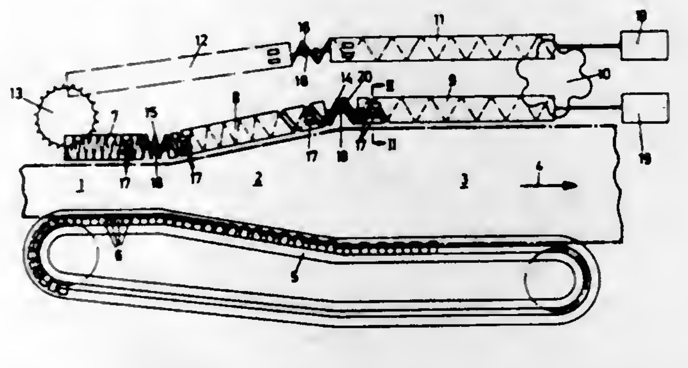
### 3,755,862
### MACHINE FOR SIMULTANEOUS BIAXIAL STRETCHING OF A WEB OF THERMOPLASTIC SHEETING
**Udo Molz, Muhler, Germany, assignor to Erwin Kampf Maschinenfabrik, Wiehl, Germany**
**Filed Nov. 26, 1971, Ser. No. 202,383**
**Claims priority, application Germany, Dec. 11, 1970, P 20 60 965.8**
**Int. Cl. D06c** *3/00*
**U.S. Cl. 26—57 R** **3 Claims**



A web stretching machine has serially arranged gripper driving screws extending at angles relative to each other. Helical coil springs are secured to adjacent ends of adjacent screws to define flexible gripper advancing helixes for the continuous driving of grippers from screw to screw.

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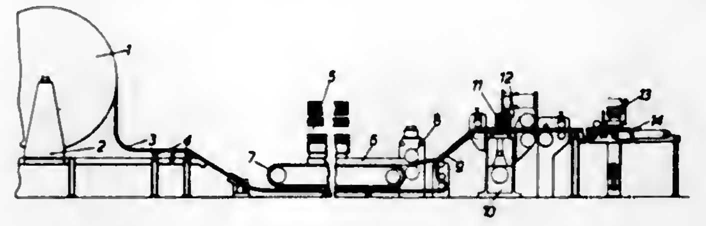
### 3,755,863
### INSTALLATIONS FOR THE CONTINUOUS PRODUCTION OF NEEDLED MULTI-PLY MATERIALS
**Antonio Betere, General Sanjurjo 55, Madrid-3, Spain**
**Filed Feb. 3, 1971, Ser. No. 112,319**
**Claims priority, application Spain, Aug. 5, 1970, 382469**
**Int. Cl. D04h** *18/00*
**U.S. Cl. 28—4 R** **1 Claim**

An installation for the continuous production of a composite multiply material intended for use in mattress making, for upholstery and the like. The installation includes means for combining a sheet of foamed material with a sheet of textile material for forming a multi-ply web. A needling device is disposed adjacent the multiply web for needling same to cause securement of the individual sheets together. The needling device includes needles for penetrating both the center and edge portions of the web, with the needles disposed for engaging the edge portions being positioned closely adjacent so as to cause a substantially higher needle penetration density along the edge portions of the web. A cutting device is disposed adjacent the web for cutting the web into predetermined lengths.



An auxiliary needling device is disposed adjacent the cutting device and has a high needle density thereon for penetrating the web with a high penetration density within a strip extending transversely across the web, which strip is located in the vicinity where the web is cut so that all edges of the cut web are needled together with a penetration density substantially greater than the penetration density present in the center portion of the web.

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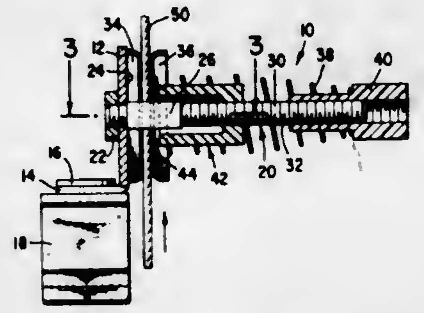
### 3,755,864
### YARN TENSION CONTROLLERS AND SLUB CATCHERS
**Lester Mishcon, Miami Beach, Fla., assignor to The Singer Company, New York, N.Y.**
**Filed Feb. 23, 1972, Ser. No. 228,698**
**Int. Cl. D01h** *13/22*
**U.S. Cl. 28—64** **5 Claims**



A yarn tension controller and slub catcher includes discs between which yarn may be fed to a knitting machine, adjustable spring means for urging one disc toward the other to maintain a predetermined tension in the yarn, and adjustable stop means for limiting the distance by which the discs may be separated by a slub acting against the discs and thereby the effective size of a yarn guide located between the discs.

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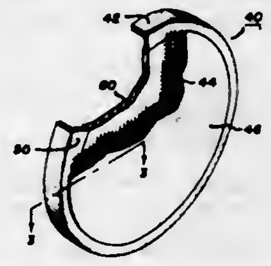
### 3,755,865
### NOVEL MESH-REINFORCED SEC TARGET FOR CAMERA TUBES
**Ideal T. Saldi, Manlius, N.Y., assignor to General Electric Corporation, Owensboro, Ky.**
**Division of Ser. No. 820,782, May 1, 1969, Pat. No. 3,564,321.**
**This application Sept. 17, 1970, Ser. No. 73,125**
**Int. Cl. H01j** *9/20*
**U.S. Cl. 29—25.17** **5 Claims**



A method is disclosed for making a target structure having superior electrical properties and mechanical strength. The target comprises a layer of KCl supported by a dielectric material which in turn is deposited on a fine nickel metal mesh which provides mechanical support for the target. This structure is particularly useful in the construction of secondary electron conduction (SEC) targets.

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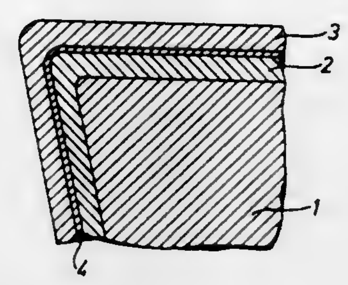
### 3,755,866
### INSERT FOR CUTTING OF STEEL, CAST IRON OR SIMILAR MATERIAL
**Fall Johan Olof William Ohlsson, Enskede, Sweden, assignor to Sandco Limited, Ottawa, Canada**
**Filed May 17, 1971, Ser. No. 144,056**
**Claims priority, application Sweden, June 26, 1970, 8872/70**
**Int. Cl. B26d** *1/00*
**U.S. Cl. 29—95 C** **9 Claims**



A metal-cutting insert comprises, in addition to a body portion of sintered hard metal, a thin coating of material having higher wear resistance than the body portion, said thin coating consisting essentially of two layers of fine-grained metal carbides disposed one on top of the other, the wear-resisting coating containing no binder metal.

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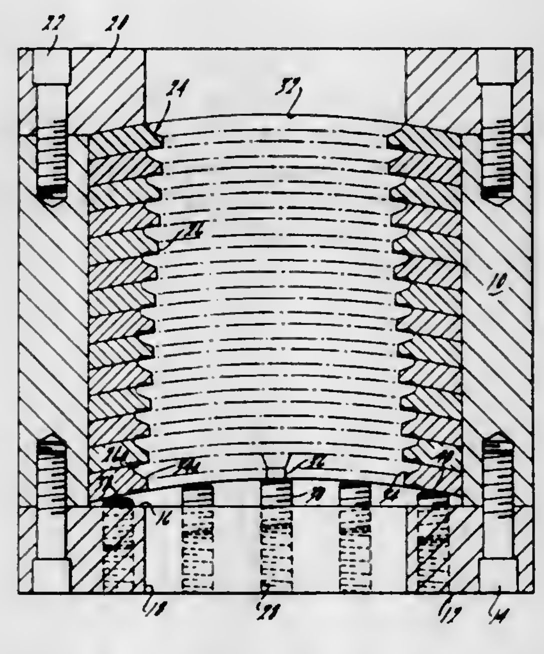
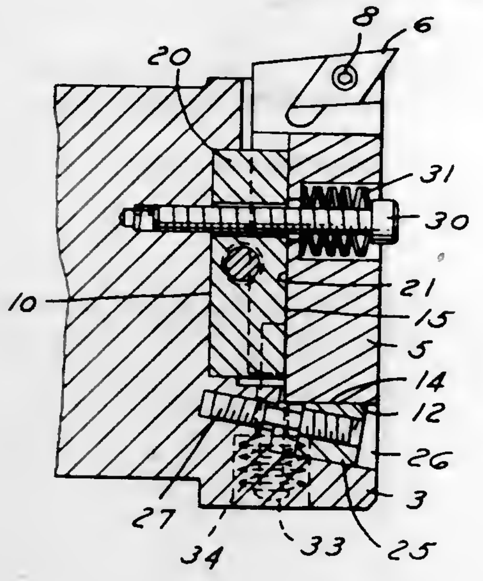
### 3,755,867
### POT BROACH
**Russell W. Anthony, Harper Wood, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.**
**Continuation of Ser. No. 132,834, April 9, 1971, abandoned.**
**This application Aug. 17, 1972, Ser. No. 281,450**
**Int. Cl. B26d** *1/04*
**U.S. Cl. 29—95.1 R** **12 Claims**



A pot broach having an assembly of a multiplicity of internally toothed broach rings. The rings are normally flat and have corresponding parts of all cutting teeth occupying a plane. In assembly, the rings are bent about a diameter so as to provide progressive displacement of cutting teeth axially of the holder which provides for progressive initiation of cuts by at least some of the teeth of each ring.

### 3,755,868
### ADJUSTABLE CUTTING TOOL

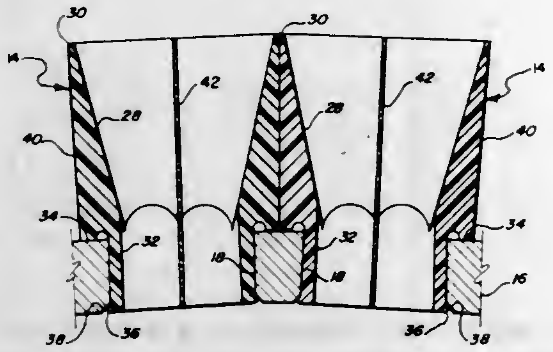
**Richard A. LaForge, Sterling Heights, and Paul W. Falls, St. Clair Shores, both of Mich., assignors to General Electric Company**
**Filed July 23, 1971, Ser. No. 165,540**
**Int. Cl. B26d** *1/12*
**U.S. Cl. 29—96 R** **6 Claims**



An adjustable cutting tool of the type in which an adjustable cartridge is mounted on a toolholder. The toolholder has a recess at one end thereof for the reception of the cartridge. The recess has a base and three upstanding sides. The cartridge is releasably secured in the recess with two parallel sides of the cartridge adaptable for slidable engagement with the parallel sides of the recess. Two wedges are mounted in the recess, each one of which contacts a surface of the cartridge. Adjustment screws engage each of said wedges, and by adjustment of the wedges the cartridge is moved either longitudinally or laterally. Preload means operate in cooperation with the adjustment means to maintain the cartridge under near constant load during adjustment.

### 3,755,869
### HONEYCOMB ROLL

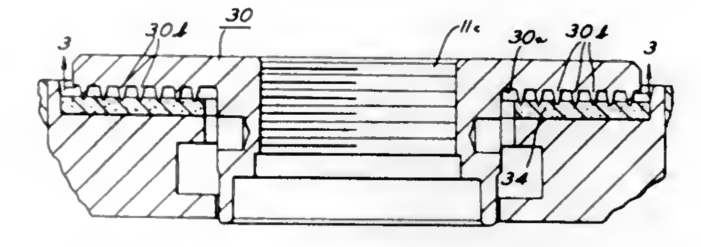
**Christoph W. Aurich, Clemson, S.C., assignor to Gaston County Dyeing Machine Company, Mount Holly, N.C.**
**Filed Mar. 31, 1972, Ser. No. 240,010**
**Int. Cl. B21b** *27/02*
**U.S. Cl. 29—121 R** **5 Claims**



A honeycomb roll is provided that employs hollow pyramidal elements secured on a tubular foundation member to form the honeycomb working surface of the roll.

### 3,755,870
### PRESSURE RETAINING FACE SEAL AND METHOD

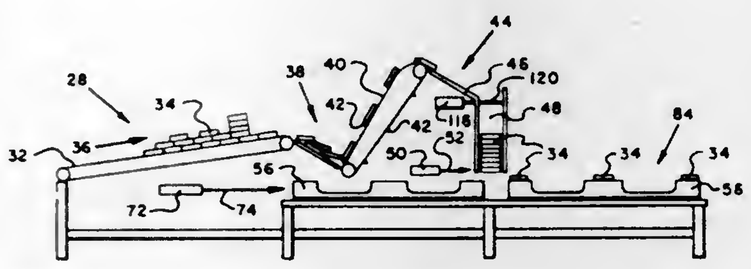
**James L. Young, Guilford, and Kurt H. Conley, Hamden, both of Conn., assignors to Entoleter, Inc., Hamden, Conn.**
**Filed Dec. 20, 1971, Ser. No. 209,691**
**Int. Cl. B23p** *7/00;* **B21d** *39/00*
**U.S. Cl. 29—148.4 S** **2 Claims**



A seal for a rotating shaft comprises a generally annular body fixed to the shaft which has a plurality of concentric circular projections which extend generally parallel to the axis of the shaft. A second, generally annular member made of a heat-resistant yieldable material such as sintered metallic fibers includes a plurality of concentric circular grooves formed therein which mate with the corresponding projections of the first member. The method of making the seal is to bring the annular member having the projections into compressive contact with a generally annular blank of the yieldable material so that the projections form the corresponding mating grooves in the annular blank.

### 3,755,871
### COMPONENT ASSEMBLER AND METHOD

**William B. Nelson, Jr., 226 Nevada Dr., West Monroe, La.**
**Filed June 29, 1972, Ser. No. 267,510**
**Int. Cl. B23p** *19/00;* **B23q** *7/10*
**U.S. Cl. 29—200 A** **11 Claims**



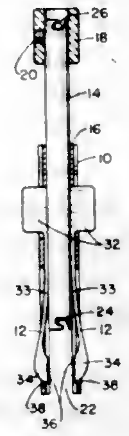
A unique automatic assembling machine and method for use in the formation of pallets and other structures wherein fabricated stringer and solid stringer type pallets may be quickly and automatically formed and assembled. A partial pallet or a complete pallet may be formed in the machine which comprises new and novel means for feeding the stringers into the machine and positioning them at a pre-determined position in the machine. While the stringers are being positioned, the pallet deck boards are automatically delivered, unscrambled and accurately fed sequentially onto the stringers at the proper location for later fastening together.

The unique concept of the invention may also be utilized in the formation of other structures such as boxes, crates and the like with minor modifications in the machine.

### 3,755,872
### WIRE WRAP TOOL

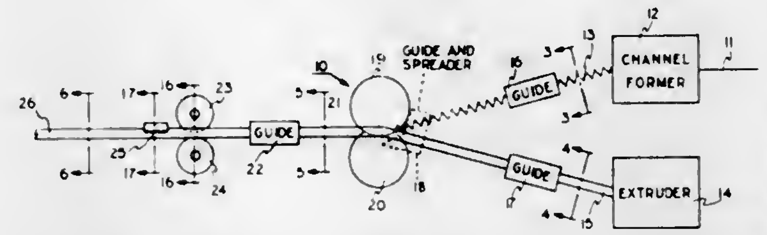
**Ted C. Dorsey, 4479 Westmont, Ventura, Calif.**
**Filed Mar. 2, 1972, Ser. No. 231,278**
**Int. Cl. H05k** *13/04*
**U.S. Cl. 29—203 H** **5 Claims**

A hand tool for loosening coiled wire wrap electrical connections by engaging the end of the wire wrap, rotating the wrap in a loosening direction and then lifting the loosened wrap off from the terminal pin. For reinstalling the coil of wire, the procedure is reversed with a pair of collet jaws being squeezed together at intervals to form the coil wrap back into position on the terminal.



### 3,755,873
### WEATHERSTRIP ASSEMBLY APPARATUS

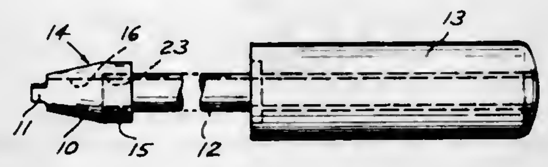
**Frederick J. Lansing, Rochester, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.**
**Filed Apr. 27, 1972, Ser. No. 248,287**
**Int. Cl. B23p** *19/04*
**U.S. Cl. 29—202.5** **5 Claims**



A zig zag wire carrier is continuously formed into a channel shape, and a continuously formed, elastomeric covering strip having a weatherseal element is wrapped around and secured to the channel. The wire channel is guided to straddle an inserter roll, and the body of the covering strip has inturned edges that are spread open by a spreading device as the strip approaches a wrapper adjacent the inserter roll. The wire channel is inserted in between the spread edges of the covering strip, and the wrapper roll presses the covering strip around the wire channel so that the inturned edges of the covering strip are tucked inside the wire channel. Then the legs of the channel are bent inward to complete the product.

### 3,755,874
### APPARATUS FOR WRAPPING SCREW-TYPE ELECTRICAL TERMINALS

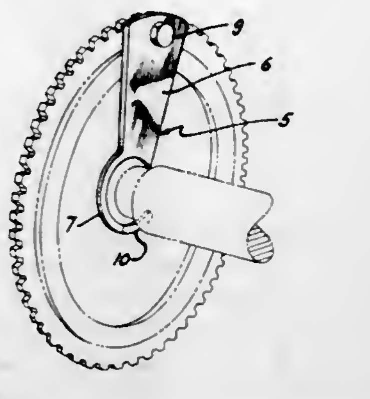
**David L. Kellems, 5842 Hilltop Rd., Calabasas, Calif.**
**Filed Dec. 29, 1971, Ser. No. 213,497**
**Int. Cl. H01r** *43/04;* **H05k** *13/04*
**U.S. Cl. 29—203 H** **15 Claims**



The apparatus comprises a tubular member which is telescopically insertable over a standard terminal screw and which has a length such that it will extend down to the terminal on which the screw is mounted and still enclose the head of the screw when the screw is fully retracted or withdrawn. The tubular member is provided at its outer end with a projecting tongue for wrapping the end of a wire around the threaded screw post as the tubular member is turned. The tongue is preferably inclined toward the axial center of the tubular member and sharpened along its leading side edge in the direction of turn of the tubular member to enable it to bite into the wire and hold it while the tubular member is turned. A wire containing tubular cup or ring may initially be mounted on the terminal to facilitate the wire wrapping operation of the tubular member. The tubular member may be constructed to coact with a screwdriver to fasten the wrapped wire end.

### 3,755,875
### REAR CRANKSHAFT SEAL REMOVER

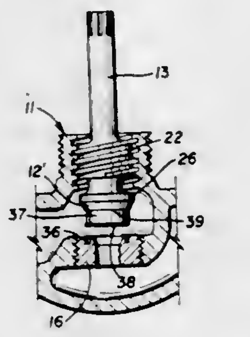
**Marion F. Staab, Catherine Rt., Hays, Kans.**
**Filed Dec. 1, 1970, Ser. No. 94,024**
**Int. Cl. B23p** *19/04*
**U.S. Cl. 29—240** **4 Claims**



This invention consists of a flat sheet metal handle having the configuration of a trapezoid when viewed from the front, and which has its smaller end terminating in circular ring sector that is adapted to be placed around that portion of the crankshaft that passes through the flywheel of an internal combustion engine. The wide end of the aforesaid handle is provided with a centrally located opening through which is placed a bolt that secures the handle to the just-mentioned flywheel. The tool is then used in the manner described later on in this specification.

### 3,755,876
### METHOD AND APPARATUS FOR REPAIRING VALVE SEATS

**Joseph D. Beasley, Box 33, Grand Valley, Colo.**
**Filed July 10, 1972, Ser. No. 270,137**
**Int. Cl. B23p** *7/00*
**U.S. Cl. 29—401** **15 Claims**

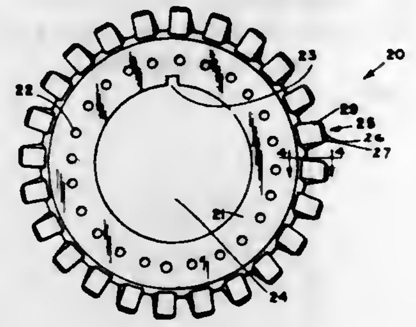


A system and apparatus for the repair of valves that use a faucet washer for mating engagement with a seat disposed perpendicular to the axis of the valve stem wherein the washer and seat are damaged. A provided cutter that is centered with respect to the seat and/or stem cuts a torus groove in the original seat structure for the reception of a ring formed replacement seat. A bond cement that is non-soluble with respect to the fluid carried by the valve holds the replacement seat engaged in the groove, and a soluble adhesive can be used to bond the replacement ring to a replacement washer to assure correct alignment of such seat, its receiving groove and the replaced washer.

**3,755,877**

### METHOD OF REPAIRING GEAR CUTTER WHEELS WITH A WELDING FIXTURE AND GRINDING FIXTURE THEREFOR

**Frank C. Thompson, 6642 Hythe Rd., Indianapolis, Ind.**
**Filed Nov. 8, 1971, Ser. No. 196,596**
**Int. Cl. B23p** *7/00*
**U.S. Cl. 29—401** **2 Claims**

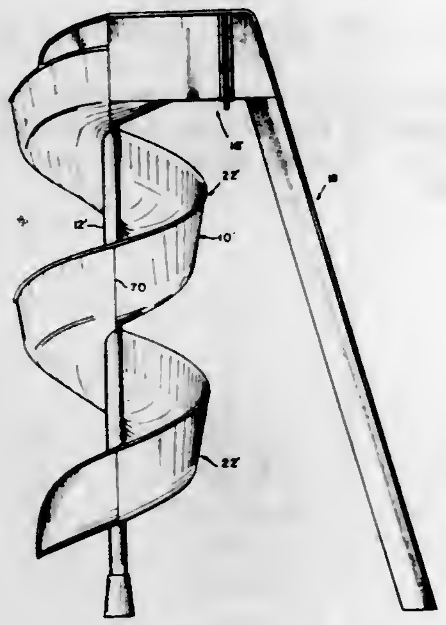


A method is disclosed for repairing used gear cutter wheels. The method includes removing portions of the old used gear teeth and welding in place metal inserts. The metal inserts are then machined into final tooth form. A fixture is disclosed for holding the gear cutter wheel during the welding of the metal inserts to the cutter wheels. Another fixture is disclosed for holding the gear cutter wheel during the removal of portions of the old teeth and during the final machining of the old teeth and metal inserts.

**3,755,878**

### METHOD OF MAKING A SLIDE

**Steven A. Henning, Anderson, Ind., assignor to American Playground Device Co., Anderson, Ind.**
**Filed Feb. 7, 1972, Ser. No. 224,108**
**Int. Cl. B23p** *15/00*
**U.S. Cl. 29—456** **9 Claims**

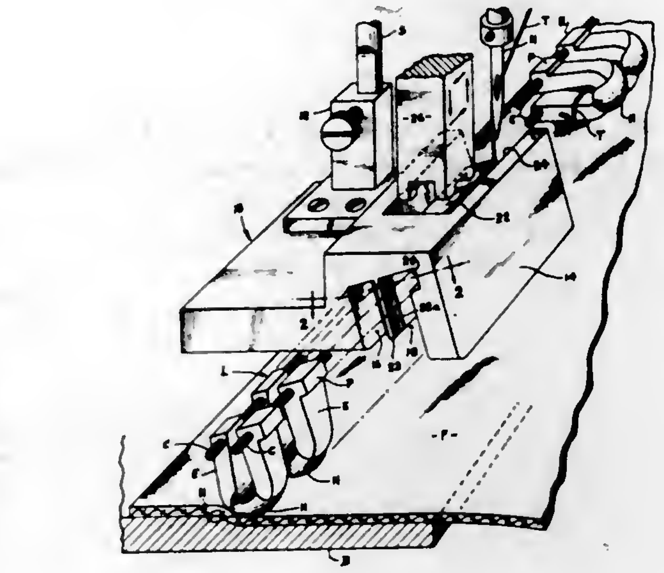


A slide and method of making it in which there is an upright ground-engageable post having a helical channeled bedway extending axially therealong with a ladder interconnected to the upper end of said bedway. The bedway is formed from an annular body having inner and outer radially spaced circumferential edges. After the body is formed, it is cut thereacross, a post is inserted through said body, and the inner circumferential inner edge of said body adjacent one of its ends is connected to said post. The opposite end of said body is pulled axially along the post to cause said body to project radially outwardly therefrom with its inner circumferential edge abutting said post along a helical path. Said inner circumferential edge is fastened to the post, and the ladder is then interconnected to the upper end of the extended bedway.

**3,755,879**

### SLIDE FASTENER MANUFACTURE

**Eric Engel Cuckson, Penrith, New South Wales, Australia, assignor to Scovill Manufacturing Company, Waterbury, Conn.**
**Filed June 5, 1972, Ser. No. 259,490**
**Int. Cl. B23p** *11/00, 19/04*
**U.S. Cl. 29—408** **4 Claims**

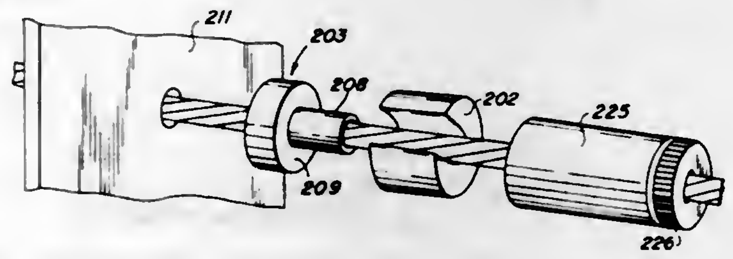


U-shaped fastener elements are held against fabric with their heads engaging same, the legs of the elements are spread and the elements are stitched to the fabric. Attachment for sewing machine incorporates means by which spreading and positioning is accomplished.

**3,755,880**

### TENSIONING DEVICES

**James S. Simms, 5301 W. Patterson, Chicago, Ill.**
**Division of Ser. No. 861,364, Sept. 26, 1969, Pat. No. 3,703,030. This application Oct. 21, 1971, Ser. No. 191,246**
**Int. Cl. B21d** *39/00*
**U.S. Cl. 29—452** **8 Claims**

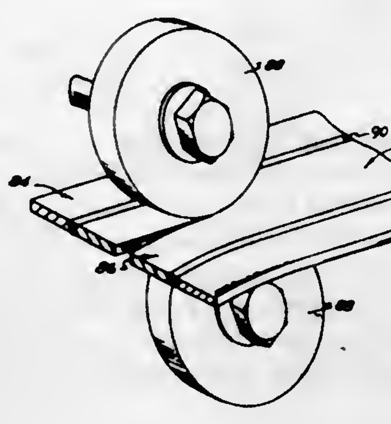


A method for tensioning cables embedded in concrete, including fluid actuated units, cable gripping members, jacking means and a de-tensioning assembly permitting to cut off the excess portion of the cable without danger to personel and equipment.

**3,755,881**

### METHODS FOR MAKING EDGELAY THERMOSTATIC BIMETALS

**Sheldon S. White, Brookline; Henry Ty, Attleboro; Jacob [illegible] Ornstein, Norton; Wesley V. Dudovicz; Rene A. Dubuc, and Joseph E. Clark, all of Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.**
**Filed June 11, 1971, Ser. No. 152,121**
**Int. Cl. B23k** *31/02*
**U.S. Cl. 29—471.3** **11 Claims**

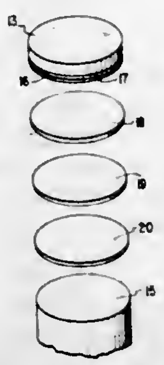


A method for making an edgelay thermostatic bimetal is disclosed in which two relatively long and thin strips of metal having the same coefficient of thermal expansion are continuously advanced into edgewise abutting engagement with respective lateral edges of a third, central strip of metal of widely different coefficient of thermal expansion. The pairs of abutting strip edges thus formed are then welded together substantially simultaneously as by tungsten inert gas shielded welding or the like. The simultaneous nature of the weld formation results in substantially uniform heating of all three of the strip materials at the weld location, thereby to avoid the excessive warping and twisting of the resulting, welded composite material which might otherwise occur due to the wide difference in coefficient of thermal expansion between the central strip material and the other strip materials. After cooling of the welded composite, the composite material is slit longitudinally through the central strip of metal to divide the composite into two substantially identical edgelay bimetals each embodying a strip element of relatively low coefficient of thermal expansion and a strip element of relatively high coefficient of thermal expansion. The disclosed apparatus includes means for advancing the three strips of metal in edgewise abutting relation to each other over the periphery of a large metal roll which has two circumferential grooves formed therein, the grooves being arranged to be aligned with pairs of abutting strip edges as the strips are advanced over the roll. A pair of welding means are disposed in closely spaced relation to each other to weld respective pairs of abutting strip edges together substantially simultaneously while the strip edges are positioned over the roll grooves, the large metal roll serving to rapidly conduct heat away from the strips as they are welded to minimize the width of the weld formed between each pair of the metal strips. In a preferred embodiment of the apparatus, additional rolls engage other surfaces of the metal strips being welded to conduct additional heat away from the strips for further reducing the widths of the welds formed between the strips.

**3,755,882**

### METHOD OF MAKING SEMICONDUCTOR COMPONENTS

**Peter Flohrs, Nurnberg; Horst Schafer, Wendelstein, and Theo Tovar, Nurnberg, all of Germany, assignors to SEMIKRON Gesellschaft fur Gleichrichterbau u Elektronik mbH, Nurnberg, Germany**
**Filed July 13, 1970, Ser. No. 54,344**
**Claims priority, application Germany, July 11, 1969, P 19 35 143.0**
**Int. Cl. B23k** *31/02*
**U.S. Cl. 28—471.7** **10 Claims**

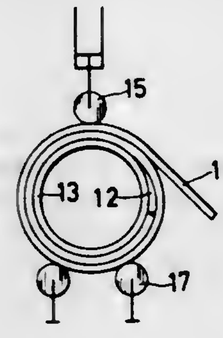


A molybdenum contact platform of a semiconductor wafer is brazed to a metallic carrier body using as solder an alloy of aluminum at 15 to 60 weight percent, remainder silver, or magnesium at 44 to 60 weight percent, remainder silver.

**3,755,883**

### MANUFACTURING A SPIRAL MULTI-LAYER PIPE

**Dengo Shimizu; Masao Tanaka, and Kunihiko Saotome, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan**
**Continuation-in-part of Ser. No. 798,631, Dec. 31, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,497**
**Int. Cl. B23k** *31/02*
**U.S. Cl. 29—476.5** **4 Claims**



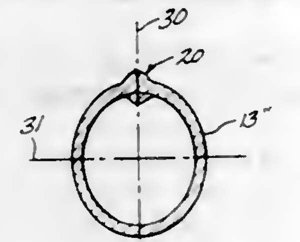
A method of manufacturing a multi-layer pipe for pressure apparatus purposes, which pipe consists of a hoop spirally wound around and fastened to the outer surface of an inner cylinder, characterized in that a wedge-shaped filler and the hoop, held together in a body, are fixed to each other by tack welds at both sides of the wedge-shaped filler at the end leading to the inner cylinder, then they are wound around the inner cylinder and the tack welds are removed after forming a starting laminate of many layers of the hoop, and then are wound again to complete the whole laminate.

**3,755,884**

### PROCESS FOR SCARFING WELD BEADS

**Jerome M. Dupy, Wood River, Ill., assignor to Olin Corporation, New Haven, Conn.**
**Filed Nov. 19, 1971, Ser. No. 200,564**
**Int. Cl. B23k** *31/02*
**U.S. Cl. 29—481** **5 Claims**

A process and apparatus for scarfing a longitudinally extending weld bead on the outside surface of a welded metal tube. The process comprises peaking the tubing so that the major transverse tube axis is from about 5 to 40 percent longer than the minor transverse tube axis, followed by removal of the weld bead substantially flush with the outside surface of the tube. The process and apparatus is particuarly applicable to tubing having a wall thickness to diameter ratio of 2½ percent or less and, more particularly, to copper or copper base alloy tubing. The apparatus includes means for peaking the tubing as aforenoted, the preferred means being the use of adjustable side enclosure rolls.



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### 3,755,885

### METHOD OF FORMING A SEALING COATING ON A METALLIC MEMBER

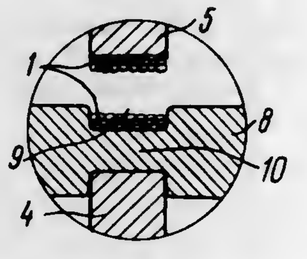
**Georgy Filippovich Polyakov, ulitsa Akademicheskaya, 23, kv. 8; Vladimir Lvovich Vanin, ulitsa Gogolya, 31, kv. 35, and Vladimir Alexandrovich Kamardin, ulitsa Dachnaya, 25, kv. 71, all of Novosibirsk, U.S.S.R.**

**Division of Ser. No. 887,222, Dec. 22, 1969, Pat. No. 3,655,209. This application Jan. 3, 1972, Ser. No. 214,953**

**Claims priority, application U.S.S.R., Feb. 20, 1969, 1300958**

**Int. Cl. B23k** *31/02, 35/38*

**U.S. Cl. 29—494** **5 Claims**



A hermetic sealing coating is formed on a surface of a metallic element to be brought into sealing contact with another element by pressing the first element against a metal member in a vacuum at a pressure and temperature to ensure molecular diffusion cohesion of the metal of the first element with the metal of the contacting member whereafter the two are parted. The procedure is repeated until a finely dispersed layer is formed on the surface of the metallic element.

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### 3,755,886

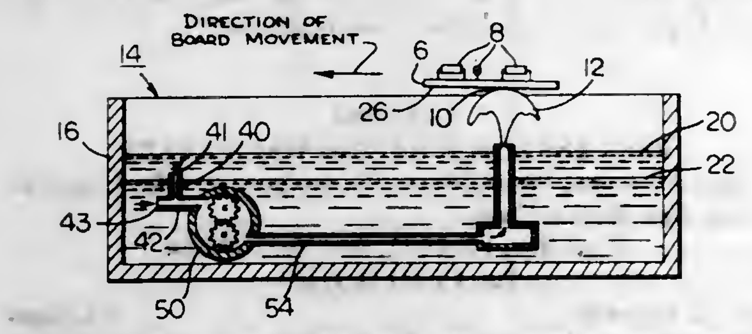
### METHOD FOR SOLDERING ELECTRICAL CONDUCTORS

**Philip E. Hermann, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.**

**Continuation-in-part of Ser. No. 813,989, April 7, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,845**

**Int. Cl. B23k** *31/02, 35/36*

**U.S. Cl. 29—496** **5 Claims**



In the process of soldering electrical connections in printed circuits, the printed circuit is passed through the crest of a fountain of solder which includes a water soluble hydrocarbon, polyethylene glycol, which wets the surfaces to be soldered. After soldering, a water wash is used to remove the polyethylene glycol and dross from the printed circuit work piece which may then be air dried with a dip in isopropyl alcohol if desired.

The use of a water soluble additive provides the soldering advantages which are obtained with presently used non-water soluble materials, such as Shell Oil Company's Peblum Oil (or equivalent) for example, and additionally provides the advantage of the use of an effective yet simple and inexpensive cleaning operation of the board after soldering by washing with water. This eliminates the necessity of using solvents which are relatively expensive and sometimes toxic and detrimental to the printed circuit component parts, their protective coatings, and identification markings.

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### 3,755,887

### METHOD OF MAKING COBALT ALLOY STEEL COMPOSITE ARTICLE

**John C. Simoudis, Justice, Ill., assignor to Continental Can Company, New York, N.Y.**

**Filed Nov. 12, 1971, Ser. No. 198,269**

**Int. Cl. B23k** *31/02, 35/24*

**U.S. Cl. 29—498** **7 Claims**

A method is provided for preparing a cobalt alloy-steel composite article wherein the alloy body is bonded to the steel body with a weld material having a low yield strength, the steel having a coefficient of thermal expansion greater than the cobalt alloy; the weld material, when cooled from the maximum temperature to which the composite article is heated during welding, undergoing a contraction no less than the construction of the cobalt alloy and no greater than the contraction of the steel.

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### 3,755,888

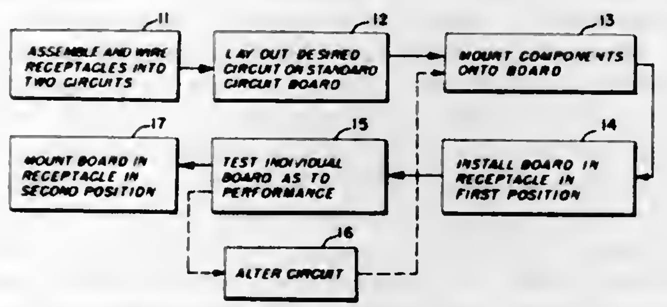
### METHOD OF TESTING MODULAR ELECTRONIC CIRCUITS

**Fred G. Geil, San Diego, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 17, 1972, Ser. No. 272,276**

**Int. Cl. G01r** *31/28*

**U.S. Cl. 29—593** **5 Claims**


11
ASSEMBLE AND WIRE RECEPTACLES INTO TWO CIRCUITS
12
LAY OUT DESIRED CIRCUIT ON STANDARD CIRCUIT BOARD
13
MOUNT COMPONENTS ONTO BOARD
17
MOUNT BOARD IN RECEPTACLE IN SECOND POSITION
15
TEST INDIVIDUAL BOARD AS TO PERFORMANCE
14
INSTALL BOARD IN RECEPTACLE IN FIRST POSITION
16
ALTER CIRCUIT

This invention pertains to a method and means for construction and operation of electronic circuits. A circuit board having a conducting copper pattern configured in a standard universal layout is employed to mount the components comprising the desired circuit. A socket having two rows of connectors is used to mount each individual circuit board. Each electrical socket is adapted to receive the circuit board in either of two oppositely facing positions. Each row of connectors is designed to make circuit connection with the board in one position. Both rows of connectors are wired for power, synchronizing signals, etc. However, only one row of terminals is wired to connect the circuit board to other sockets and the circuit boards installed therein. The remaining row of connectors are wired to connect the input and output of the circuit board in a suitable test configuration. The circuit board is connected to the desired row of terminals by inserting it in the socket in the corresponding particular position. Connection to the other row of terminals, when desired, is made by removing the board and reversing it and replacing it in the socket in an oppositely facing direction.

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### 3,755,889

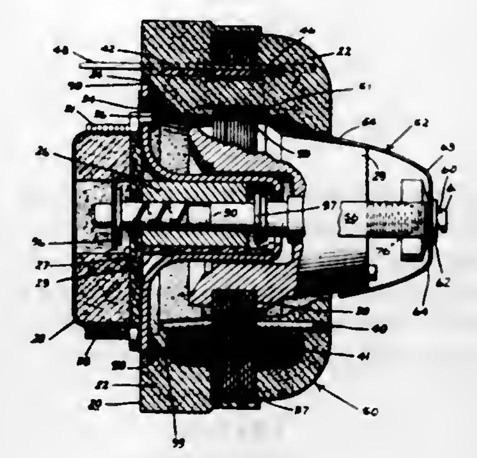
### METHOD AND MEANS OF ASSEMBLING A DYNAMOELECTRIC MACHINE

**Vincent V. Busian, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.**

**Filed Sept. 15, 1971, Ser. No. 180,771**

**Int. Cl. H02k** *15/00, 15/14, 15/16*

**U.S. Cl. 29—596** **17 Claims**



Procedure for establishing alignment of a rotor within a stator bore including at least approximately positioning shim means within a stator core bore and thereafter placing a rotor within the bore to establish a final position of the shim means and a preferred position of the rotor relative to the bore. Shim means includes a plurality of shim elements interconnected together to form shim cluster or shim pack that includes a centering element or disc. Plurality of shim elements are substantially simultaneously moved into stator bore and rotor is thereafter placed within the bore with at least part of the shim elements disposed in an air gap between rotor and stator. After the air gap between the rotor and stator has been permanently established, the individual shim elements are substantially simultaneously removed from the air gap. With "unit bearing" motors, it is advantageous to move shims in a first axial direction; move a rotor in the same axial direction; assemble a bearing system; once again move the shim elements in the same first axial direction.

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### 3,755,890

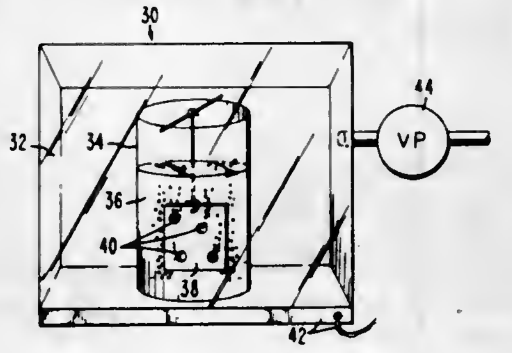
### VACUUM-HEAT TREATMENT OF PRINTED CIRCUIT BOARDS

**William G. Klehm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Continuation-in-part of Ser. No. 794,686, Jan. 28, 1969, Pat. No. 3,708,876. This application Jan. 12, 1970, Ser. No. 2,019**

**Int. Cl. H05k** *3/22*

**U.S. Cl. 29—625** **16 Claims**



Relates to the avoidance of electrical discontinuities arising in the production of two-sided printed circuit boards having plated-through-holes and particularly occurring in the use of solder for improving the electrical interconnections. Research disclosed that the cause of these discontinuities lay in the material of the boards surrounding the holes which either included entrapped gas or matter vaporizable under the high temperatures of the liquid solder applied to fill the holes and which impaired the attainment of reliable plated-through-hole connections. A vacuum evaporation operation is incorporated in the fabrication process and found highly useful and efficient in the production of reliable hole connections substantially reducing if not completely eliminating any need to apply solder touch-ups to the boards thereafter. Specifically, the boards are treated prior to the soldering of the plated-through holes to a temperature of approximately 250° F while concurrently being exposed to a vacuum of approximately $10^{-2}$ mm Hg for a sufficient time to drive out of the boards all matter vaporizable under such conditions. In carrying out this vacuum-heat treatment operation, inert gas is initially used in the treatment chamber to hasten the heating of the boards following which the chamber is exhausted of the gas and subjected to high vacuum while maintaining the temperature to which the boards have been raised. In returning the heat treatment chamber to normal room conditions, an inert gas may be re-introduced into the chamber to hasten the cooling of the circuit boards. When there will be an elapse of time before the soldering operation is performed, the de-gassed circuit boards are preferably placed in sealed containers or bags to prevent contact with the atmosphere and the resultant absorption of moisture and deleterious gasses therefrom.

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### 3,755,891

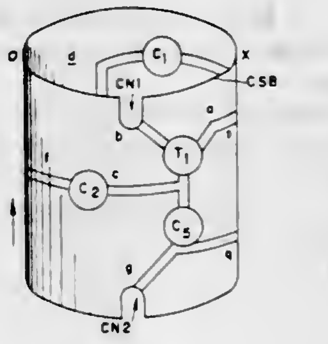
### THREE DIMENSIONAL CIRCUIT MODULES FOR THICK-FILM CIRCUITS AND THE LIKE AND METHODS FOR MAKING SAME

**William L. Muckelroy, P. O. Box 9685, Washington, D.C., and Sandra R. Hawkins, 406 Bernstein, Fort Bragg, N.C.**

**Filed June 3, 1971, Ser. No. 149,434**

**Int. Cl. H05k** *1/04*

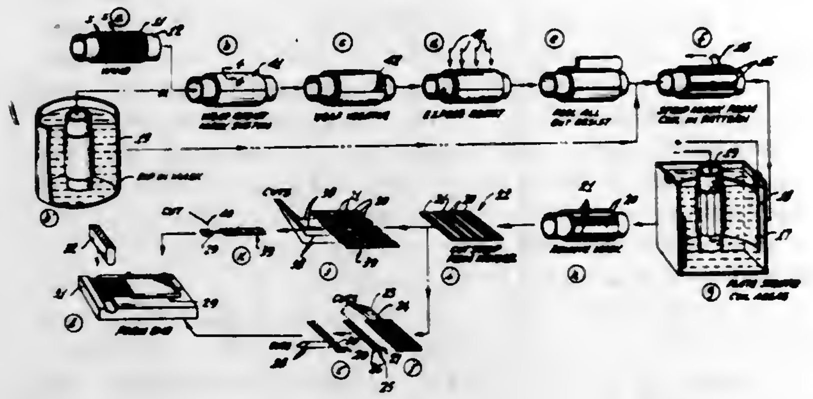
**U.S. Cl. 29—628** **5 Claims**



Three Dimensional Circuit Modules For Thick-Film Circuits And The Like And Methods For Making Same are provided in which such circuits are printed in selected portions on both the internal and external walls of a hollow cylindrical substrate to remove the crossovers normally present in an equivalent planar circuit configuration. The circuit sections are disposed on the substrate such that common connections therebetween are effected by conductive clips straddling the end faces of the substrate in notches or declivities formed therein to receive the clips. Like declivities are utilized to both physically and electrically interconnect a plurality of substrates and/or external circuit components and the like. These substrates also comprise a housing for self-contained functional circuit modules of the foregoing type.

### 3,755,892
### POTENTIOMETER CONTACT SPRINGS

**Frank L. Dieterich, 3979 East Blvd., Los Angeles, Calif.**
**Division of Ser. No. 146,360, May 24, 1971, which is a continuation-in-part of Ser. No. 728,683, May 13, 1968, Pat. No. 3,579,822. This application May 10, 1972, Ser. No. 252,118**
**Int. Cl. H01r** *19/00*
**U.S. Cl. 29—630 ES** **37 Claims**



A method of manufacturing miniature potentiometer contact springs by winding a substantial length coil of a single layer of fine, heat-treatable precious metal alloy wire on a generally cylindrical form, masking spaced strips longitudinally of the wire coil, plating the wire coil between the masked strips, removing the strips and cutting the strip-plated wire band from the mandrel as a sheet, cutting the wire sheet to produce contact strip blanks of various forms severable into individual contacts. A multi-layer masking system is used to photographically define the spaced strips. An adherent support about the wire coil permits the coil to be removed before masking and processed in sheet form.

Contact springs using wire of a reduced lateral diameter are produced by flattening the wire prior to winding on the form.

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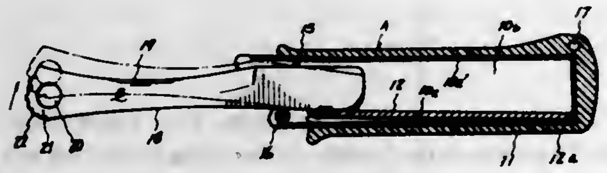
### 3,755,893
### ELECTRICIAN'S KNIFE

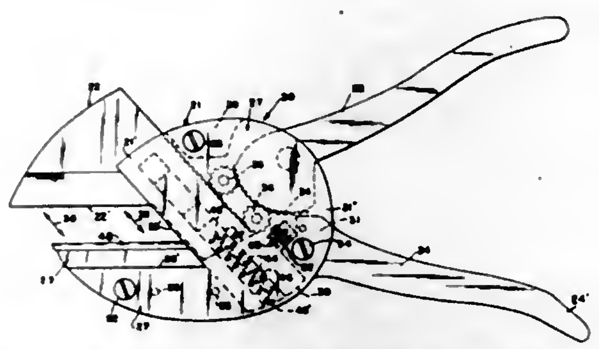
**Katsuyuki Nagaki, 26-1-chome Noenakano-cho, Joto-ku, Osaka, Japan**
**Filed Oct. 4, 1971, Ser. No. 186,282**
**Claims priority, application Japan, Feb. 27, 1971, 46/12520 (utility model)**
**Int. Cl. B26b** *3/06*
**U.S. Cl. 30—154** **7 Claims**



An electrician's knife usable for wiring is disclosed in which the handle portion thereof comprises an integral thick insulation and a substantially flat tube which serves as a sheath for receiving a cutting blade adapted to be axially slidable therein but inseparable therefrom. The cutting blade is easily pulled out of the sheath by the fingers, but once pulled out, it is held stable by means of a pair of support pins and a stopper projection formed on a plate spring unless a pressing force is applied thereto.

### 3,755,894
### MULTI-PURPOSE CUTTING TOOL

**Eugene A. Burdick, P.O. Box 757, Williston, N. Dak.**
**No Drawing. Continuation of Ser. No. 32,920, June 5, 1970, abandoned. This application July 28, 1972, Ser. No. 275,907**
**Int. Cl. B26b** *17/02*
**U.S. Cl. 30—181** **5 Claims**



The invention comprises a cutting tool having a head with a pair of handles projecting from the rear of the head and a pair of jaws projecting from the forward end of the head. One of the handles is pivoted toward the other handle to move one of the jaws rectlinearly and at an angle rearwardly toward the other jaw for cutting material therebetween.

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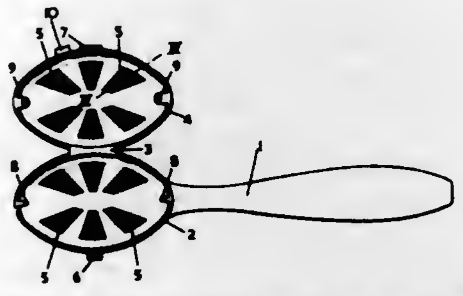
### 3,755,895
### HERB SPOON

**Antonius Bernardus Claasen, Sperwerlaan 4, Leende, Netherlands**
**Filed Mar. 30, 1971, Ser. No. 129,377**
**Claims priority, application Canada, Feb. 17, 1971, 105656**
**Int. Cl. B26b** *21/54*
**U.S. Cl. 30—326** **1 Claim**



A herb spoon comprising a handle and a scoop secured thereto, said scoop forming a dosage container to which there is hinged a lid securable to the dosage container in its closed position by snap action, while the container, or the container and the lid is or are provided with perforations, which perforations may be grid-like to increase the contacting surface, while the cross-sectional area of said perforations may decrease from the interior to the exterior.

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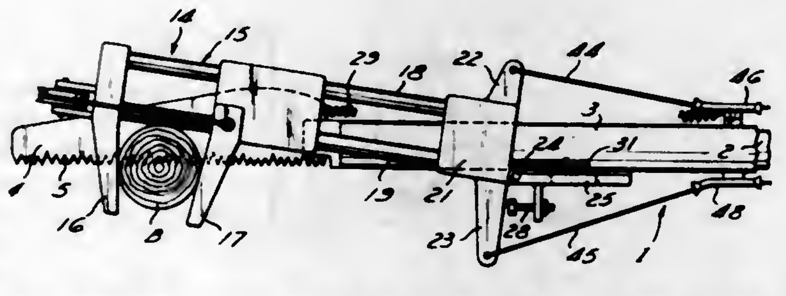
### 3,755,896
### PRUNING TOOL

**Carl C. H. Tommerup, Guldbjerg 5400 Bogense, Denmark**
**Filed June 9, 1971, Ser. No. 151,376**
**Int. Cl. B27b** *21/00, 11/04*
**U.S. Cl. 30—372** **8 Claims**



A pruning tool adapted to be used for cutting through branches of trees or shrubs at a distance from the operator. The tool comprises a pole of substantial length, one end of which is held by the operator who operates the tool. At the other end is a reciprocable cutting saw, and a vise for grasping the branch to be cut. The vise is tiltable with respect to the cutting tool so as to position the branch properly relative to the cutting tool as cutting progresses. Both the vise and the cutting tool are operated from the end of the pole held by the operator. The saw can be operated manually or by power means.

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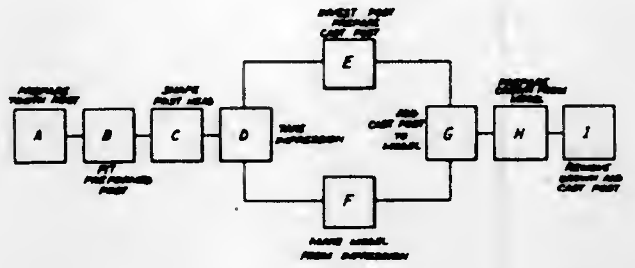
### 3,755,897
### DENTISTRY

**Peter Frank Kurer, Speakers House, 39 Deansgate, Manchester 3, England**
**Filed Nov. 4, 1971, Ser. No. 195,632**
**Claims priority, application Great Britain, Nov. 6, 1970, 53,036/70**
**Int. Cl. A61c** *13/00*
**U.S. Cl. 32—2** **3 Claims**



In the preparation of a cast post for use in dentistry a preformed, headed post of a material which dissipates under heat is applied to a prepared root canal, the head of the post is shaped into conformity with the surrounding teeth, the resultant post is removed and a corresponding cast post is produced in accordance with conventional investment casting practice. A purpose-made crown is produced by taking an impression of the preformed post, when in situ, and of the adjacent teeth, preparing a model embodying such preformed post and shaping a crown to fit the thus produced model.

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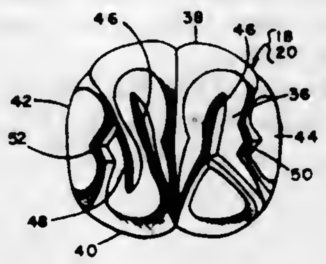
### 3,755,898
### ARTIFICIAL POSTERIOR TEETH

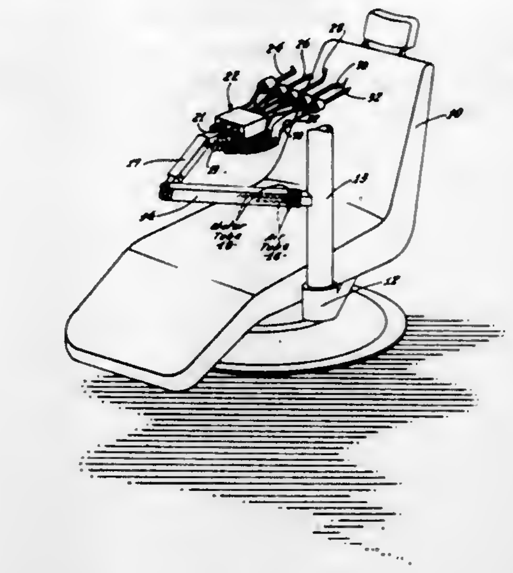
**William O. Warren, York, Pa., assignor to Dentsply Research & Development Corp., Wilmington, Del.**
**Filed Dec. 2, 1971, Ser. No. 204,025**
**Int. Cl. A61c** *13/00*
**U.S. Cl. 32—8** **4 Claims**



A pair of artificial posterior teeth having co-engageable occlusal surfaces, the upper tooth having an incising ridge on its occlusal surface extending in mesial-distal direction and the lower tooth being concaved in a buccal-lingual direction on its occlusal surface and having sulci which are closed at one end and open at the other, whereby said incising ridge, when moving in lteral excursion in one direction effects shearing engagement with the closed ends of said sulci and when moving in the opposite direction, sluices sheared food from the open ends of said sulci.

### 3,755,899
### CONTROL UNIT FOR DENTAL

**Frank A. Betush, Encino, Calif., assignor to Progressive Machine Products, Inc., Los Angeles, Calif.**
**Filed Mar. 17, 1972, Ser. No. 235,558**
**Int. Cl. A61c** *19/02*
**U.S. Cl. 32—22** **7 Claims**



A control unit is provided for supporting a multiplicity of dental handpieces of the high-pressure air-driven type, and which includes a plurality of brackets for removably supporting the individual handpieces, and which individually control the flow of the pressurized air to the respective handpieces, so that the high pressure driving air may be supplied to the selected handpiece as it is removed from its bracket. Each of the aforesaid brackets comprises an elongated arm having a handpiece holder at one end, and having a pinch block at its other end. The pinch block is pivotally mounted in the frame of the control unit, and an overcenter spring is coupled to each arm so that its corresponding handpiece holder may be moved to an up position or to a down position when the corresponding handpiece is removed. The pinch block pinches a corresponding flexible tube against a pinch bar in the control unit when the socket is in its down position to cut off the supply of the driving high pressure air to the handpiece, and to permit the high pressure driving air to flow to the handpiece when the holder is in its up position. As will be described, the control unit may also control the flow of water to the selected handpiece, since many high speed drills also emit a jet of water onto the surface of the tooth being drilled, for cooling purposes.

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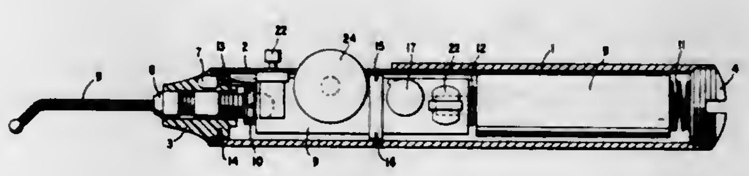
### 3,755,900
### DENTAL PULP TESTER

**Joshua Friedman, 350 E. 30th St., New York, N.Y.**
**Filed Mar. 3, 1972, Ser. No. 231,491**
**Int. Cl. A61c** *15/00*
**U.S. Cl. 32—40 R** **6 Claims**



A compact battery operated dental nerve stimulator, commonly referred to as a pulp tester is constructed so that a patient is not required to hold a ground electrode and so that the output voltage stimulus can be varied with one hand while the probe electrode remains in contact with the patient's tooth. A logarithmic output level control permits the operator to very gradually change the stimulus level at low voltages in order to minimize patient discomfort in situations where a tooth may be hypersensitive and to rapidly change stimulus level at higher voltages for the purpose of testing teeth with reduced sensitivity. Additionally, a switch is provided for turning the stimulus on and off independent of outout level and to simultaneously illuminate the work area.

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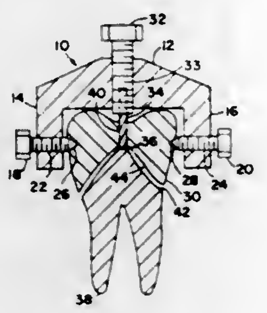
### 3,755,901
### CROWN REMOVER

**David J. Wilson, 207 N. Jefferson St., Athens, Ala., and David J. Wilson, Jr., 1302-A Boxwood Dr., N.W., Huntsville, Ala.**
**Filed Dec. 27, 1971, Ser. No. 212,486**
**Int. Cl. A61c** *3/16*
**U.S. Cl. 32—43** **11 Claims**



A dental crown remover consisting of a U-shaped body having a pair of oppositely positioned piercing screws for engaging opposite sides of a crown and threaded pressure pin supported by the bottom of the U-shaped body for adjustably applying pressure through a pre-drilled hole in the crown to the tooth to which the crown is attached.

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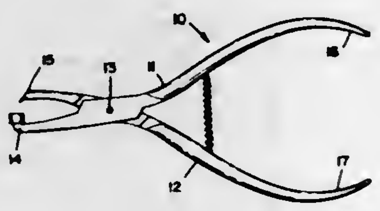
### 3,755,902
### TOOL FOR REMOVING AN ORTHODONTIC ONLAY THAT HAS BEEN CEMENTED TO THE FRONT SURFACE OF A TOOTH

**Michael E. Northcutt, 12720 Dianne Dr., Los Altos Hills, Calif.**
**Filed July 31, 1972, Ser. No. 276,716**
**Int. Cl. A61c** *7/00*
**U.S. Cl. 32—66** **4 Claims**



A tool for removing an orthodontic onlay or bracket from a tooth to which it has been cemented. The tool comprises pliers, having a pair of pivoted jaws and handles. One of the jaws has a raised pad having a resilient surface that is placed against the edge of the tooth, and the other jaw has a hard metal insert shaped to provide a chisel portion with a sharp edge for getting in between the tooth and the onlay. When the handles are forced together, the jaws move toward each other and the chisel portion separates the onlay or bracket from the tooth.

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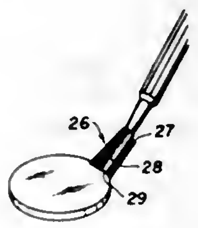
### 3,755,903
### ANTI-MISTING ATTACHMENT FOR DENTAL MIRRORS

**Ronald P. Spinello, 372 Post Ave., Westbury, N.Y.**
**Filed May 8, 1972, Ser. No. 251,452**
**Int. Cl. A61c** *3/00*
**U.S. Cl. 32—69** **16 Claims**

An anti-misting attachment for dental mirrors is disclosed for use particularly in conjunction with water-cooled dental drills, the spray from which generates water droplets which quickly blur mirrors to the point of uselessness. The surface mist is dispersed by a surfactant stored on an exposed carrier attached to the mirror in contact with the reflecting surface and released onto the mirror surface in minute quantities in the presence of ambient water spray which conveys the surfactant to the reflecting surface.



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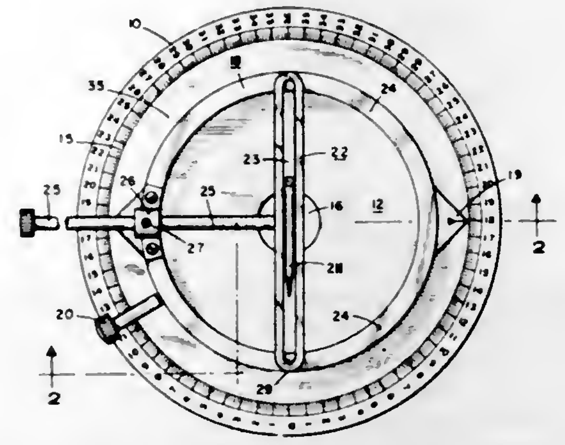
### 3,755,904
### MARKING INSTRUMENT FOR DENTAL CASTINGS

**Ralph Kestler, Houston, Tex., assignor to General Control Corporation, Houston, Tex.**
**Filed Jan. 29, 1971, Ser. No. 110,906**
**Int. Cl. B43l** *13/00*
**U.S. Cl. 33—18 R** **3 Claims**



An instrument is provided for applying trimming lines on the surfaces of castings, such as dental castings. The instrument has a calibrated base member defining a circular track for rotatably supporting a collar means. Marker guide means are movably associated with the collar means to allow marker lines to be drawn on the upper surface or outer periphery of the casting in dependence upon the position of the guide means on the collar, or the angular position of the collar relative to the base.

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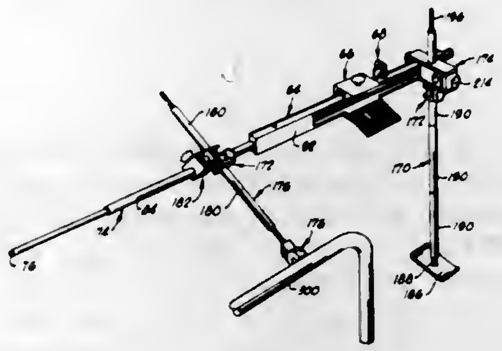
### 3,755,905
### METHOD AND APPARATUS FOR OPTICAL ALIGNMENT OF INDUSTRIAL EQUIPMENT

**Robert L. Blubaugh; Robert A. Ruckle, and Hubert J. Watts, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.**
**Continuation-in-part of Ser. No. 702,478, Feb. 1, 1968, abandoned. This application June 25, 1969, Ser. No. 836,503**
**Int. Cl. G01c** *21/00*
**U.S. Cl. 33—286** **12 Claims**



A method and apparatus for aligning kinematic trains of industrial apparatus by optical metrology, the method including the steps of establishing a reference line of sight adjacent the devices in the kinematic train and extending generally parallel to the train, then obtaining precise measurements to reference points on the several devices by optical measurements. The measurements are made when the apparatus is in a cold, inoperative state. Then, after the apparatus has become heated and is in operation, a reference line of sight is again established adjacent the devices in the kinematic train, and measurements are again made from the line of sight to the same reference points on the devices that were used in obtaining the cold measurements. Comparison of the sets of hot and cold measurements is then made to determine the shift or change in position of the devices relative to each other which has occurred in the course of the operation of the apparatus.

In carrying out the described method of the invention, apparatus is utilized which permits very accurate measurements to be taken between the reference line of sight and the reference points on the apparatus in the kinematic train. This apparatus includes an optical scale mounted in a scale holder which securely retains the scale in a measuring position, and which is constructed of materials which are affected to a minimum extent by changes in the thermal environment. The scale holder is constructed to allow maximum flexibility in usage, and so that it may be firmly contacted with tooling balls mounted on the apparatus in the kinematic train and functioning as reference points. The apparatus also includes structure for supporting the scale holder in selected positions for purposes of measuring from the reference points to the reference line of sight. Such scale holder supporting apparatus includes a vertical standard having a clamping device pivotally mounted thereon for clamping the scale holder, and a horizontal stabilizer rod having a clamping device thereon for clamping the scale holder.

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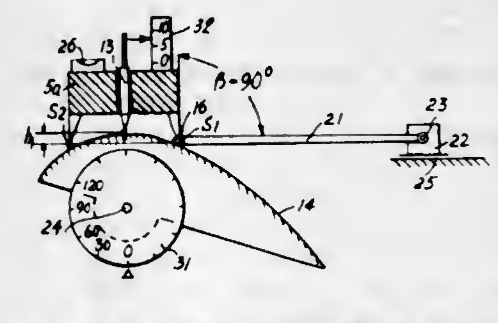
### 3,755,906
### APPARATUS FOR MEASURING THE RADII OF CURVATURE OF CAM DISCS

**Richard Unterberger, 20 Gellertstrasse, Munich, Germany**
**Filed June 17, 1970, Ser. No. 46,933**
**Claims priority, application Germany, June 18, 1969, P 19 30 769.8**
**Int. Cl. G01b** *5/20*
**U.S. Cl. 33—172 R** **6 Claims**



An apparatus for measuring the radii of curvature of cam discs comprises a sensitive tracer of which the housing bears a headpiece with two fixed measuring points, the tracer point to be applied to a cam being situated between these latter. A mounting support for the sensitive tracer, in order to enable the position of the latter to be fixed, is pivotable about a swivel shaft which is preferably situated on one and the same line with one of the measuring points but perpendicular to the measuring plane and is displaceable parallel to itself. A shaft which is likewise perpendicular to the measuring plane and thus parallel to the swivel shaft of the mounting support serves for rotating the cam disc of which the radius of curvature is to be measured. For guiding the apparatus in the measuring plane, the swivel shaft of the mounting support is articulated to one end of a connecting rod of which the other end is provided with a bore parallel to that which accommodates the swivel shaft, the connecting rod being pivotally connected, via said bore and by means of a pin, to a bearing member displaceable, in the measuring plane or parallel thereto, along a straight and preferably horizontal guide.

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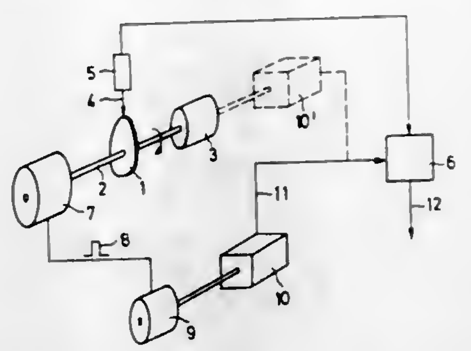
### 3,755,907
### SYSTEM FOR DETERMINING THE TOLLERANCE VALUES OF THE FORM CURVE OF A CAM

**Kurt Kreiensen, 773 Villingen, Konigsberger Str. 5a, and Karl Hutter, 722 Muhlhausen, Lerchenweg 195, both of Germany**
**Filed Oct. 23, 1970, Ser. No. 83,406**
**Int. Cl. G01b** *5/00*
**U.S. Cl. 33—174 L** **10 Claims**



The invention relates to a system for determining the tolerance values of the form curve of a cam, in which the cam is rotated and the actual cam vlaues are measured at each desired angular position. A device for determining the tolerance values of the form curve of a cam is mounted for rotation. On the cam an electrical transducer or caliper for linear measurements rests with its plunger.

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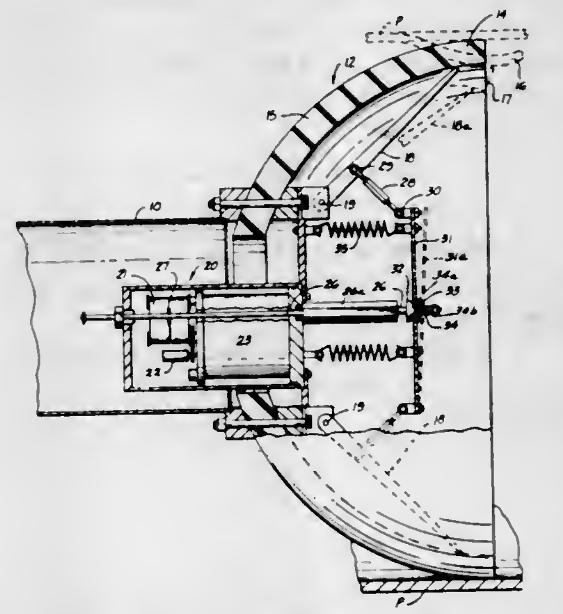
### 3,755,908
### PIPELINE PIG

**Burton VerNooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.**
**Filed Jan. 13, 1971, Ser. No. 106,194**
**Int. Cl. E21b** *47/08;* **G01b** *5/12, 5/20*
**U.S. Cl. 33—178 F** **10 Claims**



A pipeline caliper pig is disclosed which can be passed through a pipeline to provide indications of or a record of deviations of the inner pipeline wall from a normal configuration as such deviations may occur along the pipeline. The pig employs a resiliently outwardly biased circumferential portion which slides along the inner wall of the pipeline so that segments of such portion move laterally in conformity with such a deviation and caliper means are provided which sense these lateral movements by a plurality of sensors so that substantially full-circle coverage of the inner pipeline wall is afforded with a limited number of sensors. Also, these sensors are isolated from the pipeline wall by the circumferential portion of the pig and are not subjected to the stresses and wear involved in maintaining sliding contact with the pipeline wall. The arrangement can be such that only the net change in pipe diameter is indicated.

### 3,755,909
### WIDE RANGE DIMENSION MEASURING APPARATUS

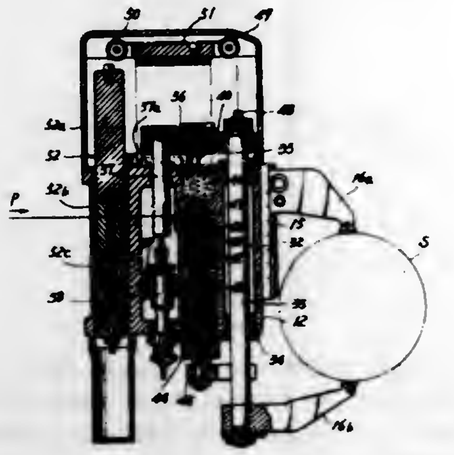
**Hiroaki Asano, Kariya-shi, and Ikuo Ohtsu, Toyota-shi, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan**

**Filed June 21, 1971, Ser. No. 154,922**

**Claims priority, application Japan, July 1, 1970, 45/57968**

**Int. Cl. G01b** *5/08*

**U.S. Cl. 33—143 L** **19 Claims**



Wide range dimension measuring apparatus comprising a measuring head movable toward and away from an object to be measured. A movable block is mounted on the measuring head to be movable relative thereto, a first measuring member is secured to one side of the movable block, a slidable member slidably received in the movable block, and a second measuring member is secured to the slidable member on the same side as the first measuring member so as to embrace the object between the first and second measuring members. A displacement detector is positioned to measure the relative displacement between the slidable member and the movable block for producing an electric signal. A first balancing weight means is provided for supporting the force of gravity or weight acting on the movable block, and a second balancing weight means is provided for supporting the force of gravity or weight acting on the slidable member.

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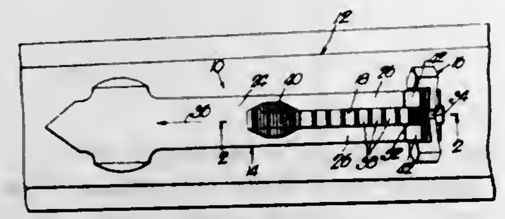
### 3,755,910
### FOLDING REAR SIGHT FOR RIFLES

**William E. Osborne, Guilford, Conn., assignor to The Marlin Firearms Company, North Haven, Conn.**

**Filed Apr. 5, 1971, Ser. No. 130,891**

**Int. Cl. F41g** *1/28*

**U.S. Cl. 33—255** **4 Claims**



Folding rifle rear sight, of which the resilient base is, with the exception of an anchor key, a blanked metal part with spaced rear prongs of which endlengths are offset and have intermediate their outwardly projecting and aligned fingers that extend into apertures in spaced ears on the sight leaf for pivotal support of the latter on the base, with these fingers being applied to these apertured ears by resiliently flexing the spaced base prongs toward each other for entering the fingers between the spaced ears and into alignment with the apertures therein, and then simply releasing the base prongs for snap of the fingers into the apertures in the ears.

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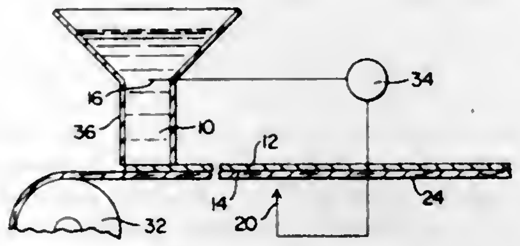
### 3,755,911
### LIQUID REMOVING APPARATUS AND METHOD

**Robert R. Candor, 5940 Munger Rd., Miami Township, Ohio, and James T. Candor, 5440 Cynthia Ln., Washington Township, Ohio**

**Continuation-in-part of Ser. No. 842,807, July 7, 1969, Pat. No. 3,517,234, which is a continuation-in-part of Ser. No. 696,639, Jan. 9, 1968, which is a continuation-in-part of Ser. No. 639,354, May 18, 1967, Pat. No. 3,405,452, which is a continuation-in-part of Ser. No. 532,266, March 7, 1966, Pat. No. 3,330,136, which is a continuation-in-part of Ser. No. 219,587, Aug. 27, 1962, Pat. No. 3,238,750, said Ser. No. 842,807, is a continuation-in-part of Ser. Nos. 748,298, July 29, 1968, Pat. No. 3,491,456, and Ser. No. 769,155, Oct. 21, 1968, Pat. No. 3,543,408, and Ser. No. 807,539, March 17, 1969, Pat. No. 3,633,282. This application Oct. 28, 1970, Ser. No. 84,598**

**Int. Cl. F26b** *3/34*

**U.S. Cl. 34—1** **14 Claims**



This disclosure relates to a laundry apparatus, paper making apparatus or the like wherein the moisture or liquid in the wet laundry, food materials, paper slurry or the like, disposed therein is removed by an electrostatic means that provides a differential in the potential of the moisture in the laundry, food materials, paper slurry or the like and an electrode means for the moisture to tend to cause the moisture to leave the laundry, food materials, paper slurry or the like and move toward the electrode means.

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### 3,755,912
### METHOD OF DRYING TREATMENT FOR COALS

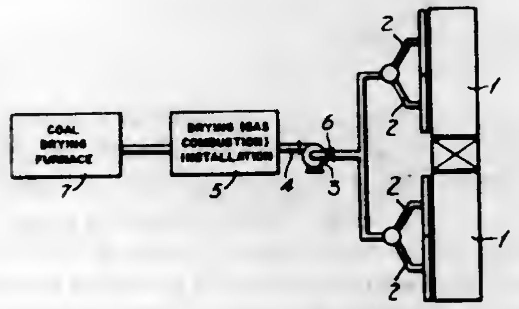
**Kazuyuki Hamada, Kawasaki; Miki Yamagishi, Tokyo, and Kyoji Sasguri, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed Jan. 22, 1971, Ser. No. 108,701**

**Claims priority, application Japan, Jan. 23, 1970, 45/5689**

**Int. Cl. F26b** *3/08*

**U.S. Cl. 34–10** **2 Claims**



The invention relates to a method for the drying treatment of coals, where floating coals which are ground into desired grain sizes on a drying hot current whose temperature is controlled to provide a fluidized drying operation wherein the method mixes the combustion waste gas whose temperature is less than that of the desired current into one part at least of said drying hot current to control the temperature as well to make use of the enthalpy of said combustion waste gas, and besides this method maintains oxygen bearing on the drying hot current low, thereby accomplishing any one or two of the purposes of decreasing the using amount of heat-source or combustion gas for drying treatment, increasing the treating amount of drying coals and moderating the control of the temperature, and thus the method safely and exactly dries coals by means of the comparatively miniaturized drying installation and the simple measuring means.

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### 3,755,913
### PROCESS AND APPARATUS FOR CONTINUOUS TREATMENT OF DUSTY, POWDERY AND GRANULAR MATERIALS

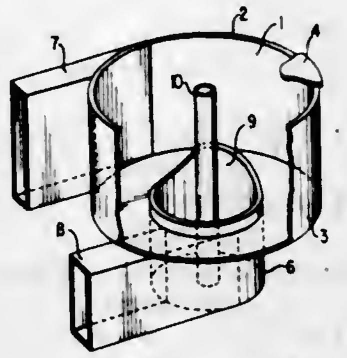
**Hans Koller, and Urs Frey-Portner, both of Muttenz, Switzerland, assignors to Buss A.G., Basel, Switzerland**

**Filed Nov. 12, 1971, Ser. No. 198,376**

**Claims priority, application Austria, Nov. 16, 1970, A 10313**

**Int. Cl. F26b** *17/10*

**U.S. Cl. 34—10** **2 Claims**



A process for continuously drying dusty, powdery and granular materials by means of the sensible heat of gas serving simultaneously as the heating medium and the carrier gas for the materials to be treated. A gas stream containing the material to be treated is introduced tangentially into a circular path of motion and the stream so introduced moves a number of revolutions in this path to create a revolving ring of particles. The revolving ring of particles if formed while the gas is continuously drawn off below the inlet level of the gas stream with the formation of a potential vortex sink. The untreated particles flowing in from the outside displace the already revolving particles until the revolving particles, after progressive treatment, are picked up by the suction of the exiting gas stream which carries them out of the circular path. The apparatus for carrying out this proces comprises a treating chamber in the form of a ring chamber with an inlet which opens up tangentially to an outer wall of the chamber and an outlet in the form of a container which is arranged axially and at least partially under the bottom of the ring chamber, the container having a tangential takeoff duct. The ring chamber is provided with a bottom which has a slightly rising radial slope toward the center of the ring chamber. The process and apparatus may also be used for cooling the materials and for reactions carried out by exchange between gaseous and solid-phase materials.

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### 3,755,914
### PNEUMATIC DRIER SUPPORT STRUCTURE

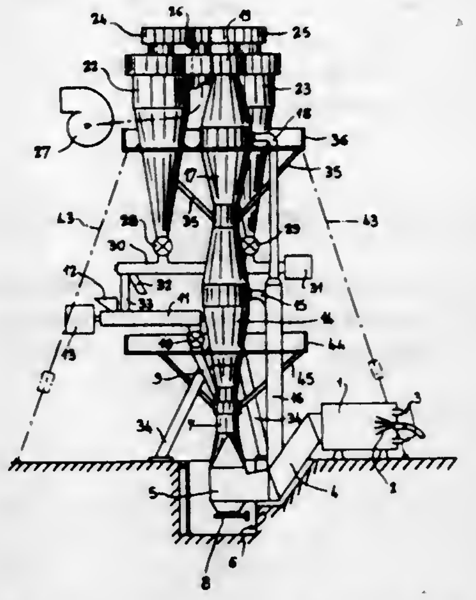
**Andre Mark, 54 Cours Lafayette, Lyon, France**

**Filed Aug. 26, 1971, Ser. No. 175,216**

**Int. Cl. F26b** *17/10*

**U.S. Cl. 34—57 A** **9 Claims**

In a pneumatic drier including a drying conduit formed with one or more drying chambers, preferably of the biconical type with tangential hot air inlet, this conduit constitutes the main supporting element for one at least of the separators into which the said conduit opens, thus dispensing from any separate main supporting framework. The separator or separators is or are carried by a platform which is in turn supported by the drying conduit through devices allowing substantially free expansion of the conduit under the action of temperature changes.



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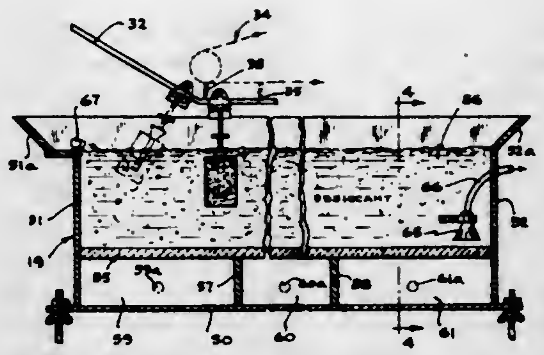
### 3,755,915
### INVESTMENT CASTING SHELL MOLD DRYING AND DESICCANT REACTIVATION APPARATUS

**Carleton D. Nagell, Harvey, Ill., assignor to Nalco Chemical Company, Chicago, Ill.**

**Filed Dec. 10, 1971, Ser. No. 206,771**

**Int. Cl. F26b** *13/26*

**U.S. Cl. 34—95** **6 Claims**



Drying slurry coatings on expendable patterns in making investment casting ceramic shell molds by moving the slurry coated patterns slowly through a fluidized bed of desiccant, and continuously reactivating the desiccant to provide an automated desiccant shell drying and desiccant reactivation process.

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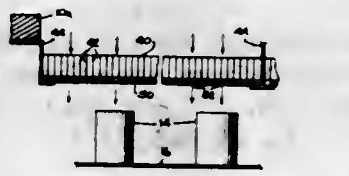
### 3,755,916
### PLENUM DISCHARGE FACE EMPLOYING HONEYCOMB LAYER

**Vartan Gulaian, Gates Mills, Ohio, assignor to Bangor Punta Operations, Inc., Greenwich, Conn.**

**Filed Aug. 13, 1971, Ser. No. 178,517**

**Int. Cl. F26b** *25/00*

**U.S. Cl. 34—105** **6 Claims**



An improved nozzle apparatus for convection ovens comprises a honeycomb material layer adapted as the discharge face of a fluid supply plenum to thereby provide a multiplicity of elongated passages or nozzles for directing fluid flow onto products moving through the oven; the fluid flow therefrom being exclusively perpendicular to the direction of product movement. A perforated plate is positioned on the discharge side of the honeycomb material layer to provide desired fluid distribution and flow velocity.

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### 3,755,917

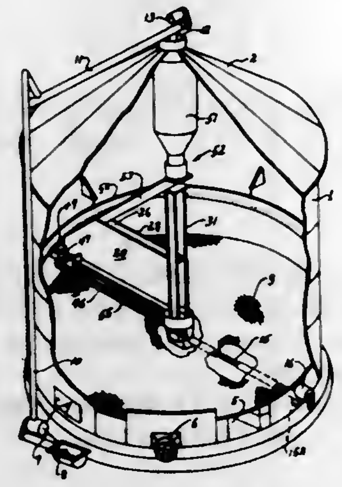
### ROTARY SWEEP APPARATUS FOR DRYING WET GRAIN

**Charles F. Lambert, Jr., Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Buckner, Ky.**

**Filed Apr. 3, 1972, Ser. No. 240,695**

**Int. Cl. F26b** *11/12*

**U.S. Cl. 34—179** **9 Claims**



A rotary sweep duct is mounted in a grain drying bin for rotational sweep movement about the vertical center axis of the bin and fashioned to provide a radially-wide, "rotationally-narrow," vertically-high passageway having an upper or top inlet to receive incoming wet grain and a bottom radially-wide, "rotationally-narrow" slot-like grain outlet extending over the radial width of the perforated floor of the bin. The duct has four vertical walls including (a) inner-axial and outer-peripheral end walls and (b) front and rear radially-wide vertically-high side walls, the lower radial edge of the front wall being closely adjacent the floor, and the lower radial edge of the rear wall being spaced, upwardly from the floor, a predetermined distance corresponding to the desired thickness of the layer of grain to be deposited or formed on the floor.

The incoming wet grain is fed to the upper inlet of the duct and falls gravitationally through the duct which constrains it to pile up on the floor and in the duct in the form of a radially wide "rotationally-narrow" column, the lower end of which rests upon the bin floor. A drive motor outside of the bin rotates the duct forwardly so that the lower radial edge of its rear wall now levels off the lower end of said column at said desired thickness and thus permits the gravitational feed of additional grain from the column in the rotating duct to the floor. Wet grain feed means is provided to supply incoming grain to the upper inlet of the rotary sweep duct at a rate sufficient to maintain said column of grain within the duct.

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### 3,755,918

### GRAIN STORAGE BIN CONSTRUCTION

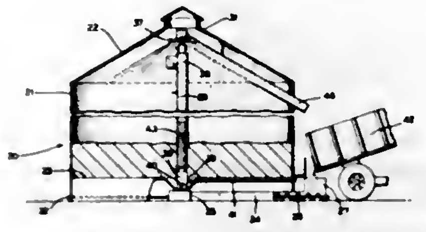
**Dale W. Parrot, Rural Delivery, Apple Creek, Ohio**

**Filed July 9, 1971, Ser. No. 161,019**

**Int. Cl. B65g** *65/30*

**U.S. Cl. 34—236** **4 Claims**

A Grain Storage Bin Construction formed preferably of metal and having cylindrical side walls, a floor at the bottom and a roof at the top; a horizontal conveyor located under the floor and having one end communicating with the exterior of the bin and the other end located at a point closely adjacent to the center of the bin, a vertical conveyor with its lower end communicating with the interior end of the horizontal conveyor and located within. The bin with its axis generally aligned with the cylindrical axis of the bin, the lower end of the vertical conveyor having selective port means being movable from open to closed position to selectively permit communication between the lower end of the conveyor and the interior of the bin, aeration means surrounding the vertical conveyor and extruding from a point above the port means to the top of the vertical conveyor and detachable conduit means located at the top of the vertical conveyor for selectively conveing material from the vertical conveyor to a point outside the bin.



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### 3,755,919

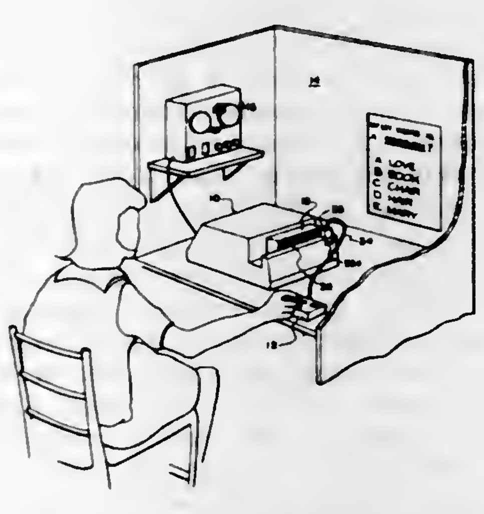
### SLIDE PROJECTOR SPECIALLY ADAPTED FOR SELF-TEACHING

**Donald E. Chittick, Newberg, Oreg., assignor to William E. Bales, Newberg, Oreg., a part interest**

**Filed Apr. 29, 1971, Ser. No. 138,578**

**Int. Cl. G09b** *7/02*

**U.S. Cl. 35—9 A** **21 Claims**



A remote controlled automatically cycling slide projector for successively displaying photographic slides, each containing a visual question or problem and multiple choice answers thereto. The frame of each slide is provided with a notch on the top edge thereof specially positioned to correspond to the correct answer choice to the problem posed by the slide. Each slide is displayed in a specially adapted slide holder equipped with a series of tumbler actuated electrical switches respectively aligned with and adjacent to notch positions on the edge of the frame corresponding to answer choices to the problem. Each of the tumbler switches is spring biased to its closed position, but the insertion of a slide in the slide holder opens all of the switches except the one whose tumbler is in alignment with the notch corresponding with the correct answer. The closed tumbler switch partially completes a circuit which, when fully completed, actuates the automatic slide advance mechanism of the projector. The student operating the projector is provided with a remote control panel having a series of response push buttons corresponding to the multiple choice answers presented on the displayed slide. Each push button closes a normally open electrical switch connected in series with a respective one of the tumbler actuated switches. When any related pair of tumbler and push button switches are closed by the student's depression of the button corresponding to the correct answer, the slide advancing circuit is fully completed and the projector cycles to the next slide, in the process informing the student that he has selected the correct answer. If the student selects the wrong answer no slide advancing circuit is completed and the failure of the projector to advance informs the student of his error. In such case the student makes other selections until the correct response button is pressed and the slide advances. The student's remote control panel is also provided with a switch for reversing the succession of the cycled slides in case the student wishes to review previous slides. In reverse mode the cycling circuit bypasses the tumbler switches and the student need only press one designated response button for successive reverse cycling of the slides rather than the correct answer button for each slide. The remote control panel has lights indicating whether the projector is in forward or reverse cycling mode, and is further provided with a focusing control. It also has a socket for the projector manufacturer's standard remote control device which, when connected to the socket, completely bypasses all the aforementioned specially adapted teaching circuitry and allows operation of the projector in normal manner with or without notched farme slides. A modified form of the student's remote control panel has additional circuitry for automatically actuating an audio tape player in synchronization with the slide display.

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### 3,755,920

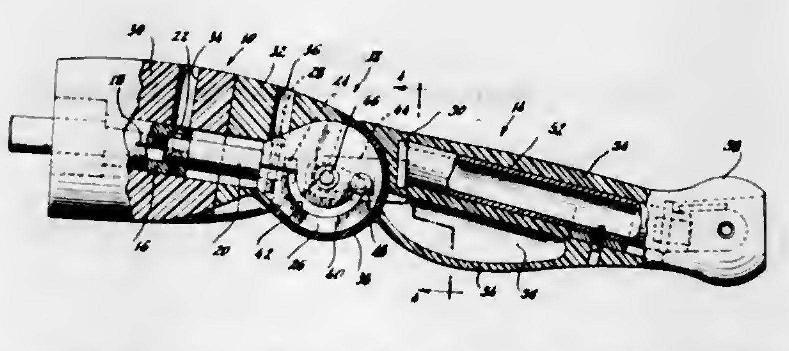
### LEG FOR A TEST DUMMY

**Joseph G. Smrcka, Norwalk, Conn., assignor to Alderson Research Laboratories, Inc., Stamford, Conn.**

**Filed June 9, 1972, Ser. No. 261,538**

**Int. Cl. G09b** *23/30*

**U.S. Cl. 35—17** **10 Claims**



There is disclosed a leg for a test dummy which has a range of motion about the knee joint similar to that of the human and greater than the motion range of prior art legs. This is achieved by offsetting the simulated bone of the lower leg and molding a compressible cavity into the calf portion of the leg. The knee includes an impact housing connected directly to the upper leg bone structure so that knee impacts are not transmitted through the joint.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

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### 3,755,921

### FLASH-CARD EDUCATIONAL AID FOR TEACHING SEQUENCES

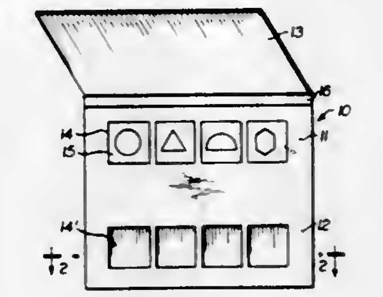
**Aaron Heller, 23 W. 68th St., New York, N.Y.**

**Filed May 8, 1972, Ser. No. 251,323**

**Int. Cl. G09b** *19/00*

**U.S. Cl. 35—22 R** **5 Claims**

A flash-card type educational aid comprising a board having top and bottom (or left and right side) portions, each of which portions is provided with an equal and identically arranged plurality of slots for removably mounting indicia bearing inserts therein to form a sequence comprising said inserts, and a cover pivotally secured to one of said portions for alternately revealing and concealing a sequence of indicia bearing inserts formed in one of said plurality of slots whereby the ability to duplicate a flashed sequence in said other plurality of slots may be tested.



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### 3,755,922

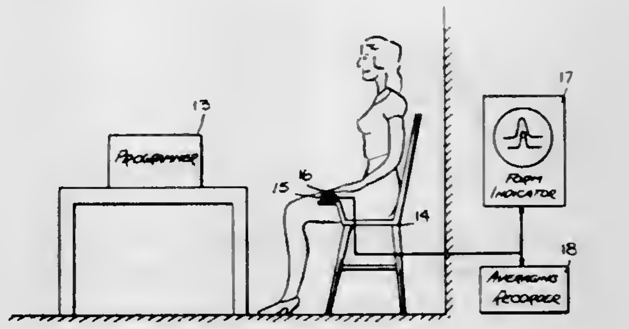
### SYSTEM FOR PRODUCING PERSONALIZED SENTOGRAMS

**Manfred Clynes, Lawrence Ln., Palisades, N.Y.**

**Filed July 21, 1972, Ser. No. 274,070**

**Int. Cl. G09b** *19/00*

**U.S. Cl. 35—22 R** **7 Claims**



A system for producing a set of personalized sentograms constituting a personality relationship profile of the subject being diagnosed. The system includes a programmer presenting to the subject a predetermined sequence of names, each identifying an individual with whom the subject has a close relationship or about whom the subject has a distinct feeling. Each name presentation is repeated at random intervals or is followed by a series of short signals occurring at random times, commanding the subject to express his feeling about the named individual by a single physical action. Means are provided that are responsive to the physical action to produce a transient waveform representative thereof, the waveforms initiated by the series of signals being averaged to create a personalized sentogram. The set of sentograms resulting from the sequence of names provides a personality relationship profile of the subject.

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### 3,755,923

### KALEIDOSCOPIC GAME

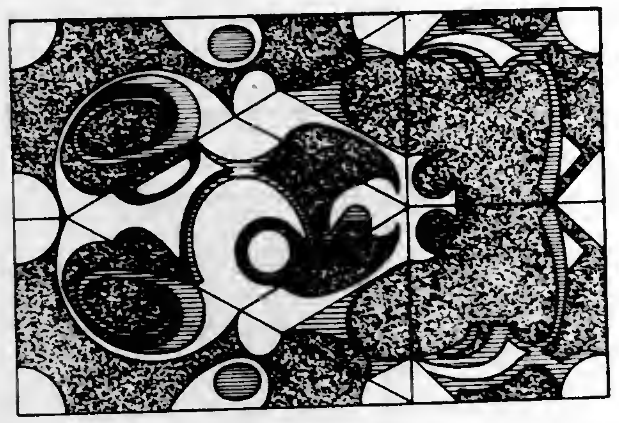
**Fernando Krahn, Ebro 2743, Santiago, Chile**

**Continuation-in-part of Ser. No. 879,360, Nov. 24, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,050**

**Int. Cl. A63f** *9/10*

**U.S. Cl. 35—27** **9 Claims**

Kaleidoscopic game comprises a plurality of sets of flat, multicolored pieces. The pieces in each set are of the same size and shape, but the pieces of different sets may be of different shapes. However, each piece in each set has at least one edge of the same length as one edge of each piece in each other set, and the colors on each piece are so arranged that they register at each edge with the colors at edges of all the pieces in all sets which are of the same length.



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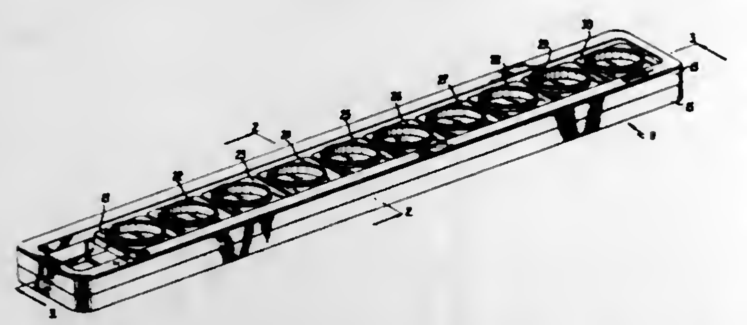
### 3,755,924
### ARITHMETIC TEACHING DEVICE

**Michael Langieri, Jr., Butler, N.J., and Michael Meyers, Monsey, N.Y., assignors to Questor Corporation, Toledo, Ohio**

**Filed Aug. 3, 1972, Ser. No. 277,500**

**Int. Cl. G09b** *19/02*

**U.S. Cl. 35—32** **4 Claims**



An arithmetical teaching device having an elongated housing with a plurality of aligned slidable buttons secured therein. The buttons have transparent faces. Indicia is printed on the interior base of each of the buttons. One space equivalent to the size of one button is provided so that the movement of the buttons may be accomplished. The lowest number indicia is printed on the interior base of the housing at one end thereof. Each of the buttons except one includes opaque means extending from within the buton for covering and uncovring the indicia of an adjacent button as they are moved in one direction and the other within the housing.

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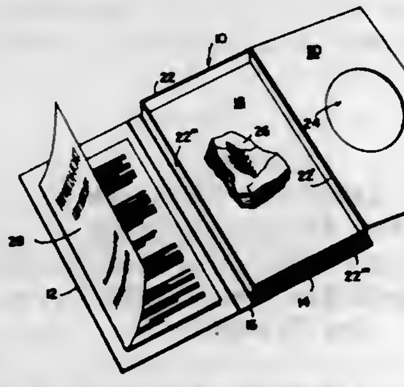
### 3,755,925
### SPECIMEN BOOK

**Arthur E. Court, 10 Hotaling Pl., San Francisco, Calif.**

**Filed May 15, 1972, Ser. No. 253,075**

**Int. Cl. B65d** *5/00*

**U.S. Cl. 35—49** **8 Claims**



A holder for at least one specimen composed of a front cover, back cover and spine corresponding in appearance to a conventional hard-covered book and including secured between the covers an open top container and an overflap corresponding in size to the size of the open top in the container for positioning over the open top. The flap is provided with at least one aperture for viewing specimens in the container. Attached to the inside of the front cover are a plurality of pages bearing indicia relative to the specimen.

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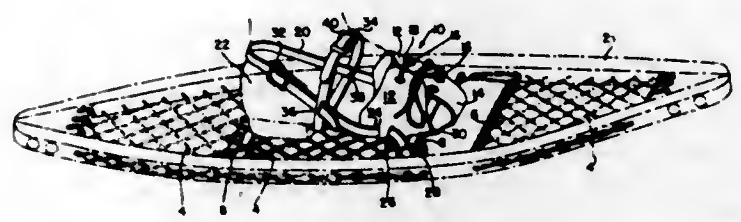
### 3,755,926
### SNOWSHOE HARNESS

**David M. Schonbrun, 15047 Linden Ave., Seattle, Wash.**

**Filed May 1, 1972, Ser. No. 248,979**

**Int. Cl. A43b**

**U.S. Cl. 36—2.5 AB** **6 Claims**



A snowshoe harness fabricated substantially of flexible lightweight material with the exception of buckles and the like wherein the wearer's boot is securely held in position. The securement of the boot is accomplished without placing a compressive force upon the toes and thus impairing circulation. The flexibility of the material allows the harness to be secured to a relatively fixed portion of the snowshoe and still allow the harness to pivot relative to the shoe, while at the same time providing a continual bias or torsion bar effect tending to return the wearer's boot to proper contact with the snowshoe.

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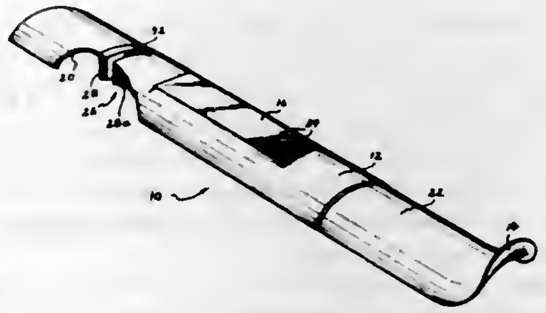
### 3,755,927
### SNOWSHOE

**Henry Alexander Dearborn, 10A Chauncy St., Cambridge, Mass.**

**Filed May 25, 1972, Ser. No. 256,644**

**Int. Cl. A43b**

**U.S. Cl. 36—2.5 AB** **10 Claims**



A plastic snowshoe having a longitudinal blade with an upturned blunt leading edge. The blade is arched from side-to-side with the concave side down to provide a ground-bearing surface. A downwardly extending "skeg" is positioned within the concavity of the blade to inhibit rearward slippage of the blade while still allowing forward gliding movement. A longitudinal ridge or keel extends along the center underside of the snowshoe blade to improve the structural rigidity of the blade while at the same time preventing "ankle roll". A conventional binding or foot stirrup is mounted on a horizontal portion of the upper surface of the snowshoe blade. In the preferred embodiment, a removable, friction-fitted transversely extending "centerboard" is provided to inhibit rearward slippage on extremely steep slopes.

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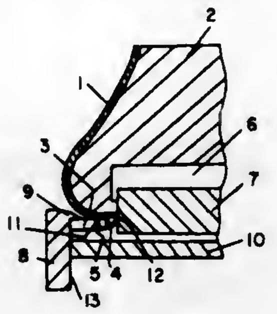
### 3,755,928
### SHOES

**Horace R. Auberry, and Anton Liebecher, Waynesville, N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.**

**Division of Ser. No. 120,078, March 2, 1971, Pat. No. 3,701,273, which is a continuation-in-part of Ser. No. 34,003, May 4, 1970, Pat. No. 3,659,301. This application Aug. 14, 1972, Ser. No. 280,100**

**Int. Cl. A43c** *13/08*

**U.S. Cl. 36—14** **4 Claims**



The invention refers to the manufacture of shoes with uppers lasted by pulling a string secured to the lasting margin of the upper. Improvements are presented which reduce costs of manufacture especially if the sole is molded directly to the upper. The method of manufacture includes use of a last deformed to obtain preselected location of the lasting margin and to prevent the formation of undesirable spew.

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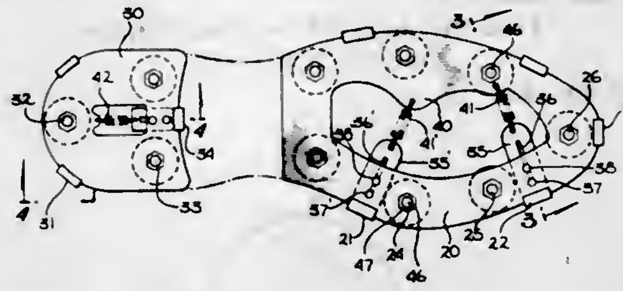
### 3,755,929
### SHOE ATTACHMENT FOR GOLFERS

**Natalie A. Frisch, 6900 Bobbyboyar Ave., Canoga Park, Calif., and Hubert J. Vallis, 21150 Ventura Blvd., Woodland Hills, Calif.**

**Filed Nov. 24, 1971, Ser. No. 201,868**

**Int. Cl. A43b** *3/10*

**U.S. Cl. 36—7.6** **7 Claims**



An attachment is disclosed herein for removably securing a pair of plates to the heel and sole of conventional street shoes for converting the shoes for golf use. Each plate inclaudes edge grippers for gripping the peripheral sides of the heel and sole respectively and a plurality of downwardly depending spikes extending about the edge marginal region of each plate so that the spikes are located about the corresponding edge marginal region of the heel and sole. Selected ones of the edge grippers are resiliently carried on the plates to facilitate attachment and detachment. The selected resilient grippers are yieldably biased by resilient devices to forcibly grip with a portion of the respective heel and sole edge.

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### 3,755,930
### SNOW GRADER

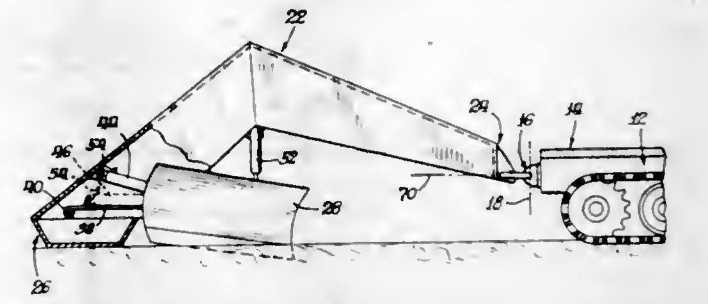
**Claude R. Brandt, and Paul A. Brandt, both of c/o R.D. 2, W. Mountain Rd., Glens Falls, N.Y.**

**Filed Dec. 18, 1970, Ser. No. 99,625**

**Int. Cl. B30b** *9/00*

**U.S. Cl. 37—10** **7 Claims**

A snow grader including a frame and a blade thereon, the frame being pivotally connected at a single point behind a towing vehicle, on both transverse and vertical axes so that the grader trails free; the blade is angled for moving the snow laterally, this producing a lateral reaction, and its leading end is tilted down, and because, in this position, the leading end is moving more snow than the trailing end, a reaction force is developed which counteracts the lateral reaction; as a consequence the frame, with the blade, follows straight behind the towing vehicle; the device also includes manually operated means for controlling the positioning of the blade.



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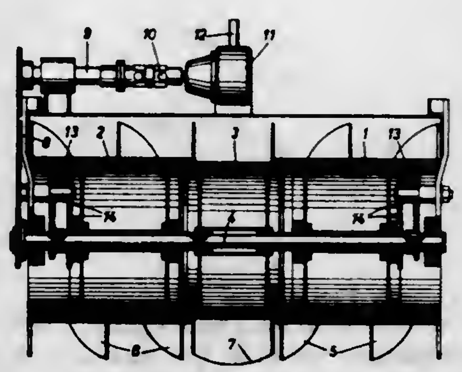
### 3,755,931
### SNOW CUTTERS

**Hans Gisler, Cantor of Bern, Switzerland, assignor to Firma Marcel Boschung, Schmitten (Canton of Fribourg), Switzerland**

**Filed Aug. 4, 1971, Ser. No. 168,907**

**Int. Cl. E01h** *5/00*

**U.S. Cl. 37—43 E** **7 Claims**



The invention concerns snow cutters having a rotatable drum cutter and a rotatable drum ejector, the cutter and ejector being disposed coaxially and horizontally, and transversely with respect to the direction of travel of the snow cutter. Means are provided adapted to rotate the ejector at a higher rotational velocity than the cutter. Such snow cutters have the advantage of good manoeuvrability and large snow throwing distances.

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### 3,755,932
### JACK-UP DREDGE

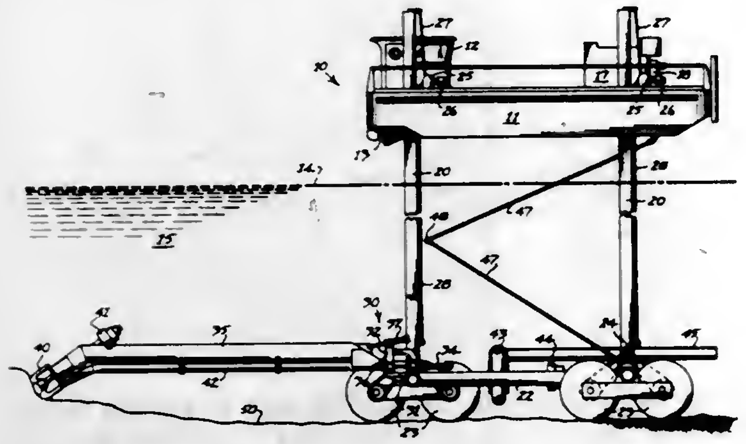
**Neil H. Cargile, Jr., c/o American Marine & Machinery Co., P.O. Box 1067, Nashville, Tenn.**

**Filed June 23, 1971, Ser. No. 155,934**

**Int. Cl. E02f** *3/88*

**U.S. Cl. 37—67** **1 Claim**

A dredge having a hull connected to a mobile platform by vertically extendable and retractable legs so that the mobile platform can be lowered to engage and move over the bottom of a body of water, and further so that the hull can be jacked-up above the surface of the water after the platform has engaged the bottom. Mounted upon the platform for operative engagement with the bottom is the dredging tool, such as a rotary cutter head, which may be mounted on the outer extremity of a ladder swingably mounted at its inner end to the platform. The hull is adapted to be propelled on the surface of the water when the platform is retracted, and is also adapted to



support personnel and the controls for the operation of the dredge. A separate propulsion means is provided for moving the platform along the bottom.

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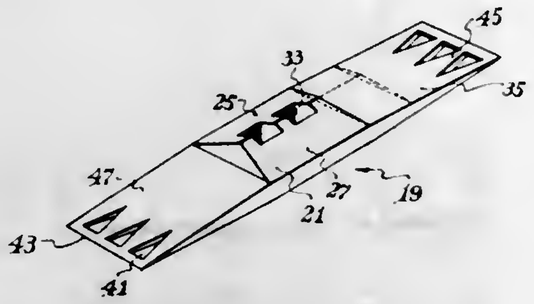
### 3,755,933
### DIGGER TOOTH AND MOUNTING THEREFOR

**Ernest C. Lowrey, 110 W. 3rd St., Owasso, Okla.**
**Filed Dec. 17, 1971, Ser. No. 209,146**
**Int. Cl. E02f** *9/28*
**U.S. Cl. 37—142 R** **5 Claims**



A digger tooth is held by a bolt against a beveled mounting that prevents relative rotation. The tooth is reversible end-for-end and has triangular holes therethrough such that when new, the tooth is well adapted for loose dirt; when worn down part way, the tooth is useful for hard dirt; and when worn down still more, the tooth is useful in rocky soil.

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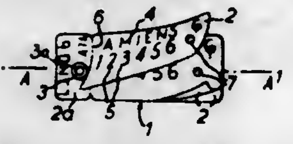
### 3,755,934
### IDENTIFICATION MEANS

**Alain Porcher, and Michael L. Lis, both of 16 Rue Dumont, D'Urville, Paris 16e, France**
**Filed Oct. 7, 1970, Ser. No. 78,885**
**Claims priority, application France, Oct. 10, 1969, 6934783**
**Int. Cl. G09f** *3/08*
**U.S. Cl. 40—2 F** **5 Claims**



A booklet of tickets suitable for identification purposes comprising a plurality of metallic tickets each lying one above the other in substantially parallel planes; a plurality of metallic counterfoils each lying one above the other in substantially parallel planes, and each being detachably affixed to a ticket; each counterfoil being affixed to the remaining counterfoils which together form a stub having means for attachment of the booklet to an item to be identified; and each ticket having the same three-dimensional identification mark and having means for attachment to an item to be identified.

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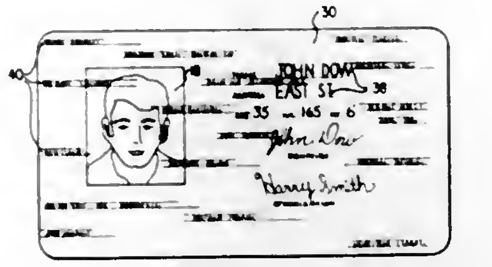
### 3,755,935
### DOUBLE PHOTOGRAPH IDENTIFICATION CARD

**Maurice Annenberg, Pikesville, Md., assignor to Maran Plastic Company, Baltimore, Md.**
**Filed May 28, 1971, Ser. No. 148,019**
**Int. Cl. G09f** *3/02*
**U.S. Cl. 40—2.2** **6 Claims**



An identification card is disclosed which consists of a laminated plastic structure having a double-sided photograph embedded within it. The card includes identification information as well as a pattern or design, printed on the back or inner surface of transparent overlay panels which are laminated over either side of a core panel carrying the double-sided photograph. The use of the double-sided photograph together with the printing on the inner surface of the overlay panels provides the completed card with a substantial resistance to tampering.

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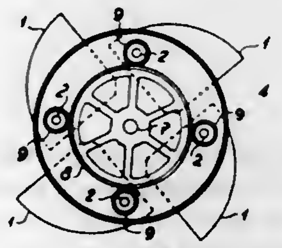
### 3,755,936
### ADVERTISING OR LIGHTING FIXTURE

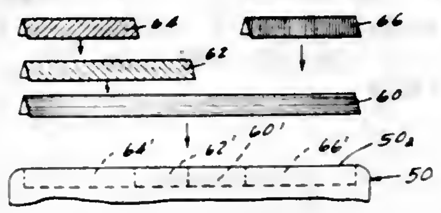
**Alberto Raul Terre, 155 Calle No. 9, Cerro de la Rosas, Coroba, Argentina, and Jacobo Simon Zand, 408 W. 34th St., New York, N.Y.**
**Filed Oct. 14, 1971, Ser. No. 189,164**
**Int. Cl. G09f** *11/10*
**U.S. Cl. 40—33** **9 Claims**



An apparatus which changes its exterior shape and faces may be used, for example, as an advertising or lighting fixture. In one embodiment the apparatus is driven by an electric motor to be a rotating cube and then is transformed in appearance to a rotating round shape. In that embodiment the apparatus comprises a motor which rotates, relative to a base, a shaft having mounted upon it a first wheel. Two supports, which are connected but spaced apart, are rotatably mounted on the base. Each of the supports, away from their axis, have pivots which rotatably mount vertically extending members between the supports. Each member at its top pivot has a friction clutch-like transmission wheel which contacts the rim of the first wheel. The first wheel pivots the members to change the shape presented, and then with possible slippage of the transmission wheels rotates the supports along with the members.

### 3,755,937
### RECORD CARD AND METHOD OF INDEXING

**Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Evanston, Ill.**
**Filed May 3, 1971, Ser. No. 139,589**
**Int. Cl. B42f** *21/00*
**U.S. Cl. 40—78.15** **2 Claims**



Record cards including film jackets and/or film record cards may be readily and conveniently indexed for filing and retrieval by applying a coded pressure sensitive tape at an edge of the record card after the record card has been dated or up-dated. Advantageously the pressure sensitive tape may be applied along an edge or a portion of an edge of the card with the length and location of the tape serving an indexing function. The tape is preprinted with striping or other indicia and is color coded. Application of the tape to only a portion of the edge allows the use of the edge for additional means of indexing such as notching. In addition, the tapes may be superimposed on each other. Where the film jacket is transparent the pressure sensitive material may be a transparent material bearing printed matter which printed matter will be reproduced with the microfilm in the jacket.

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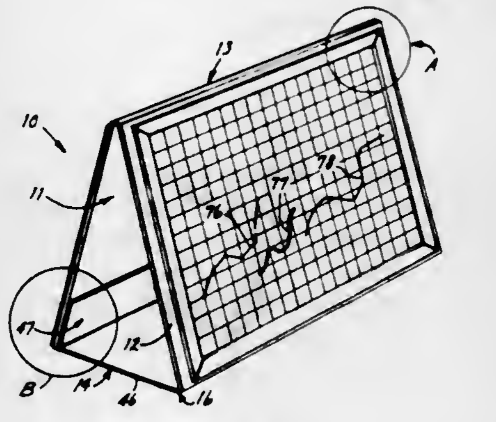
### 3,755,938
### GRAPHMATIC MAGNEGRAPH

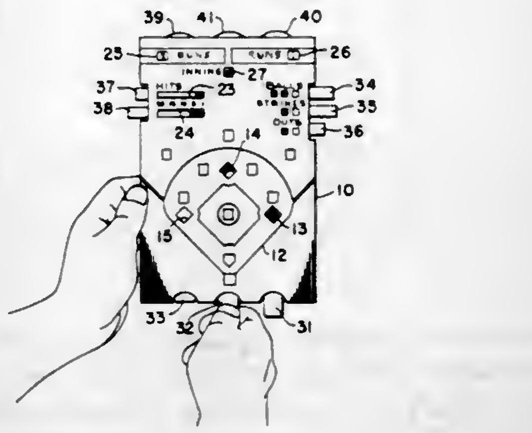
**Alvin J. Bytwork, Kalamazoo, Mich.**
**Filed June 14, 1971, Ser. No. 152,506**
**Int. Cl. G09f** *1/10*
**U.S. Cl. 40—102** **5 Claims**



A visual display device has a pair of semirigid panels hingedly connected together along one edge and adapted to be folded into an overlapped and parallel position. The panels, when unfolded, are disposed with the inside surfaces of said panels facing outwardly. Magnetizable sheet means are provided having a substantially flat mounting surface, said magnetizable sheet means being secured to the inside surface of at least one of the panels so that the mounting surface faces outwardly from the panel. Releasable clamping means are also provided on the one sheet and is adapted to hold non-magnetic sheet means on the mounting surface. Magnetizable display members are provided with either the magnetizable sheet means or the magnetizable display members having a permanent magnet characteristic so that the display member will be magnetically attracted to the magnetizable sheet means.

### 3,755,939
### BASEBALL TALLY CARD

**Robert E. Denega, 6831 Greenbrier Dr., Parma Heights, Ohio, and Edward S. Freska, 3086 Lincoln Blvd., Cleveland Heights, Ohio**
**Filed Dec. 6, 1971, Ser. No. 204,945**
**Int. Cl. A63b** *71/06*
**U.S. Cl. 40—70 R** **1 Claim**



(A baseball tally card having a number of indicator tab strips slidably mounted behind a flat, rigid front plate with a number of apertures therein and with indicia for first, second and third base, as well as balls, strikes, outs and hits. The card also has three rotating discs for recording runs and indicating the current inning. The tab strips extend from across the respective apetures to beyond the edge of the card so that they may be grasped by a spectator and pushed or pulled to the desired position relative to the respective aperture. The rotatable discs have a circumferential portion extending beyond the edge of the card so that the disc may be turned by finger movement to place numerals printed thereon in the respective aperture.)

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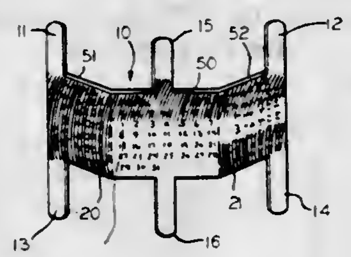
### 3,755,940
### THREE-MONTH WATCH BAND CALENDAR WITH JEWELRY-LIKE SURFACE

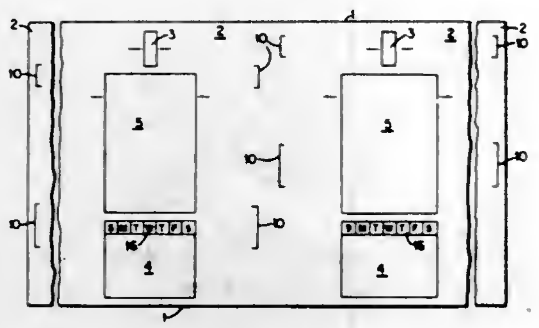
**Vincent Anderson, Chicago, Ill., assignor to Chicago Etching Corporation, Chicago, Ill.**
**Filed Nov. 3, 1971, Ser. No. 195,120**
**Int. Cl. G09d** *3/00*
**U.S. Cl. 40—107** **3 Claims**



A spinning disk abrades a sheet of metal either while it is stationary or while it is moved longitudinally. The disk thereby forms a pattern of nested circular or hyperbolic or somewhat semicircular score lines depending upon whether the metal is stationary or is moved. These score lines provide a background of light reflecting areas which change and move as the watch band tilts and tips with normal wrist movement. The scored metal is stamped out in discrete watch band units with the calendars of three months printed thereon. The metal is shaped and formed to preserve three flat panels which give an impression of jewel-like facets.

### 3,755,941
### PERPETUAL CALENDARS

**Arnold Ernst Zeiske, 6151 Palo Pinto Ave., Dallas, Tex.**
**Filed Nov. 18, 1971, Ser. No. 199,864**
**Int. Cl. G09d** *3/04*
**U.S. Cl. 40—109** **2 Claims**



A device for determining and displaying the calendar for ANY month of ANY year of ANY century, the novelty and essence of which reside in avoiding any separation of Leap from Common YEARS [thereby eliminating the necessity for TWO Januaries and Februaries (one for leap, and one for common, years)], and, instead, segregating pre-March, from post-February MONTHS. This necessitates a DIFFERENT year pattern for each of these two separate month groups. Each of these two sections consists of a face and two positionable members. The face has three windows or the like, and, at one of them, the seven week-day names, while the positionable members have, in one type: months and centuries on one, and years and calendar on the other, and in another type: months and years on one and centuries and calendar on the other. Month names and calendar are necessarily always on different positionable members, as are centuries and years. The desired month is set at one window, thereby fixing the century (or year) numerals in position; then the desired year (or century) is aligned with the desired previously positioned century (or year), thereby revealing in the second individual window the correct calendar for that setting, the century and year both appearing in a common (third) window. The same calendar is, of course, correct for every other so linked century-year combination. A mistake, due to not knowing whether a given year is, or is not, a leap year, is impossible with this perpetual calendar.

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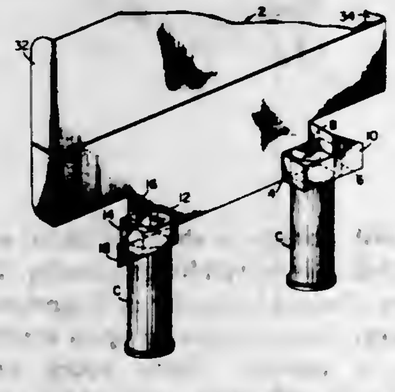
### 3,755,942
### DISPLAY BACKBOARD

**Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.**
**Filed Nov. 16, 1970, Ser. No. 89,895**
**Int. Cl. G09f** *1/00*
**U.S. Cl. 40—124.1** **1 Claim**



A display backboard for use with a plurality of cylindrical containers, the backboard including sets of tabs, each set including a pair of tabs parallel to each other and adapted to be folded outwardly from the board, portions of the parallel tabs being in different planes, such that a lower tab is adapted to pass slidingly along the outside of one of said containers and an upper tab is adapted to engage an upper surface of the same container whereby to stop further movement of the lower tab downwardly about the container.

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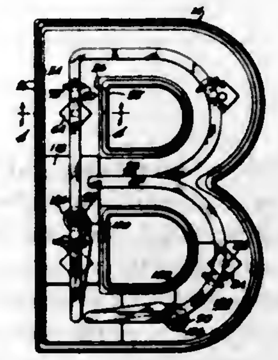
### 3,755,943
### PLASTIC SIGN SYMBOL

**Joseph D. Cesarotti, 687 W. 63rd Dr., Hialeah, Fla.**
**Continuation of Ser. No. 754,118, July 30, 1968, abandoned.**
**This application Nov. 6, 1970, Ser. No. 97,440**
**Int. Cl. G09f** *13/06*
**U.S. Cl. 40—130 D** **6 Claims**



A plastic sign symbol composed of an open channel-defining carrier and an outer translucent cover member sized to cover the channel, the said members being formed by molding thermoplastic material in sheet form and said symbol including means to interconnect the members. Electrical means may be supported within the carrier, which is opaque and of non-conductive, flame resistant thermoplastic material, to illuminate the symbol.

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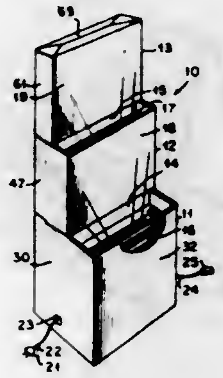
### 3,755,944
### DISPLAY EXHIBIT MODULE

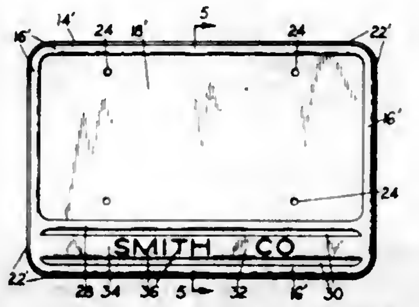
**Robert Kaulfuss, North Brook, and William Kaulfuss, Wilmette, both of Ill., assignors to General Learning Corporation, Morristown, N.J.**
**Filed Feb. 14, 1972, Ser. No. 226,158**
**Int. Cl. G09f** *13/00*
**U.S. Cl. 40—130 R** **6 Claims**



A display exhibit module is assembled from a series of inner sleeves and rectangular outer sleeves constructed out of paperboard. Each inner sleeve has a stepped construction such that the rectangular cross section of its lower portion is larger than the rectangular cross section of its upper portion. The lower portion of the inner sleeve is fitted snugly within an outer sleeve with part of its upper portion extending above the outer sleeve. The height of the exhibit module can be extended upward by placing a second outer sleeve snugly over the extended portion of the inner sleeve so that when it rests on the first outer sleeve, a portion of the second outer sleeve will extend above the inner sleeve. The display exhibit module can be further increased in height by adding additional inner sleeves and outer sleeves.

### 3,755,945
### VEHICLE LICENSE PLATE HOLDER

**Thomas A. McEwen, 7152 S.E. Harrison St., and Stanley L. Nelson, 11559 S.E. Powell Ct., both of Portland, Oreg.**
**Filed Mar. 29, 1971, Ser. No. 128,817**
**Int. Cl. G09f** *7/00*
**U.S. Cl. 40—209** **1 Claim**



A license plate holder for vehicles designed to protect the license plate from damage. The license plate holder includes a recessed portion of a depth at least as thick as the license plate. The holder is ribbed for structural strength and is constructed of a semi-flexible, tough, non-tearable material such as polyethylene plastic designed to withstand vibrations and distortions to which the holder may be subjected by commercial car washing apparatus or other outside forces. An embodiment of the holder includes extension means having a face surface upon which advertising or personal lettering may be applied.

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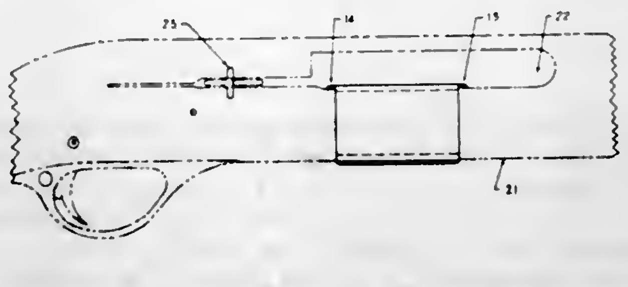
### 3,755,946
### CLIP-ON SHELL CATCHER

**F. Keith Tomlinson, 1027 Skyview Dr., West Carrolton, Ohio, and Harold E. Shell, R.R. No. 1, Box 58, Farmersville, Ohio**
**Filed Mar. 21, 1972, Ser. No. 236,738**
**Int. Cl. F41c** *27/00*
**U.S. Cl. 42—1 R** **8 Claims**



A clip-on shell catcher for use on multiple shot semi-automatic guns having a shell ejection port and shell ejection mechanism, which consists of a clip-type spring or plate which is removably applicable to the side of the receiver of the semi-automatic gun to the rear of and in the lower portion of the ejection port of the gun. The top edge of the catcher, as installed on a semi-automatic gun, is spaced above and in close parallel proximity to the lower edge of the ejection port opening and thus restricts that opening so that the body of an ejected shell will pass through the opening but the base rim of the shell is held inside the receiver of the gun. The catcher does not restrict the entire port opening so that manual removal of an expended shell and reloading of the gun is facilitated.

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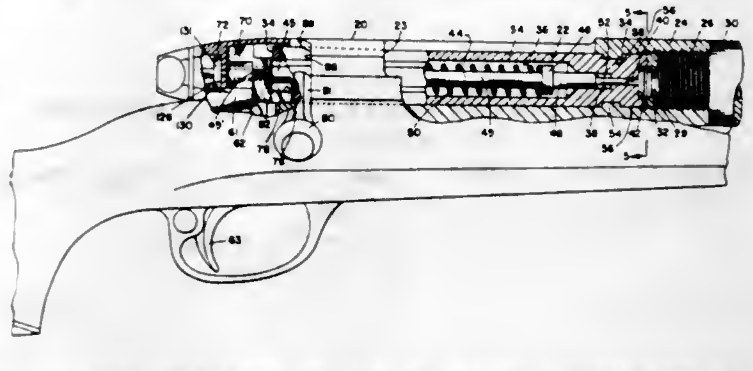
### 3,755,947
### BOLT ACTION RIFLE COCKING PIECE AND COVER THEREFOR

**Homer E. Koon, Jr., Gainesville, Tex., assignor to Firearm Development, Inc., Denton, Tex.**
**Filed Apr. 7, 1971, Ser. No. 132,111**
**Int. Cl. F41c** *11/00, 19/00*
**U.S. Cl. 42—16** **6 Claims**

A rifle bolt action having a cocking piece secured to a firing pin assembly carried within the bolt. A cam on the cocking piece rides on a cam surface of the bolt, so that the cocking piece cocks the firing pin when the bolt is rotated. The cocking piece is housed within a cover to prevent rotation of the cocking piece when the bolt is rotated. Cooperating surfaces of the cocking piece, the cover and receiver of the rifle bolt action prevent torque or stress from being exerted on the firing pin assembly when it is cocked.



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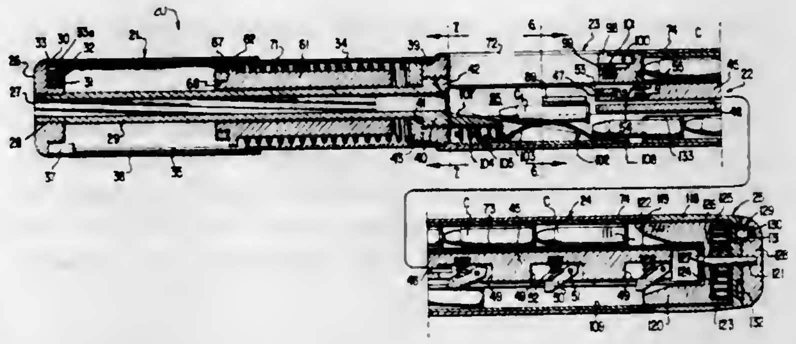
### 3,755,948
### TUBULAR FIREARM

**Joachim H. Heinicke, 2121 Cheyenne St., Golden, Colo.**
**Filed June 24, 1970, Ser. No. 49,366**
**Int. Cl. F41c** *13/00, 9/00;* **F41d** *1/02*
**U.S. Cl. 42—17** **10 Claims**



A tubular firearm having a concentric bolt, barrel, main spring, receiver, recoil weight and cartridge carrier. The carrier houses a plurality of cartridges in a series of circumferentially spaced tubes, the carrier being rotatable to successively fire all the cartridges from consecutive tubes.

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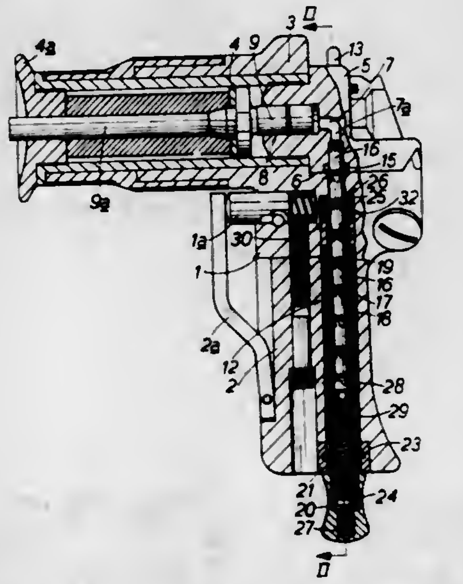
### 3,755,949
### CAPTIVE BOLT FIREARM AND MAGAZINE THEREFOR

**Roger John Hancox, Burntwood, England, assignor to Accles & Shelvoke Limited, Aston, Birmingham, England**
**Filed Mar. 27, 1972, Ser. No. 238,492**
**Int. Cl. F41c** *11/00;* **A22b** *3/02*
**U.S. Cl. 42—39.5** **8 Claims**



A firearm of the captive bolt type as used for humane slaughtering of animals wherein a column of cartridges for firing the bolt are housed in a removable magazine, the breech block is rotatable to and from a firing position and on such rotation the cartridge at the head of the column is automatically loaded into the breech block.

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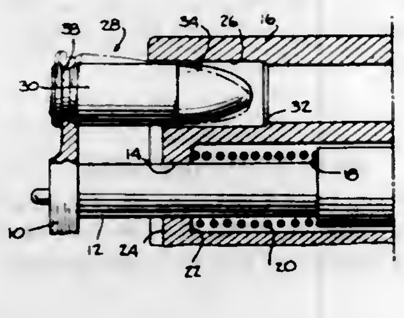
### 3,755,950
### CARTRIDGE LOADING AND EXTRACTOR ASSEMBLY FOR REVOLVERS

**William G. Gunn, Suffield, Conn., assignor to Bangor Punta Operatians, Inc., Greenwich, Conn.**
**Filed Oct. 12, 1971, Ser. No. 188,433**
**Int. Cl. F41c** *15/00, 1/00*
**U.S. Cl. 42—68** **5 Claims**



A cartridge loading and extractor assembly includes an extractor segment carried on the rearward end of an extractor rod mounted for reciprocating movement relative to the cylinder. Rearward positioning of the assembly permits the successive placement of each cartridge partially into the respective chambers with the extractor segment engaging the extractor groove of each cartridge to retain them until forward movement of the assembly fully chambers the cartridges simultaneously.

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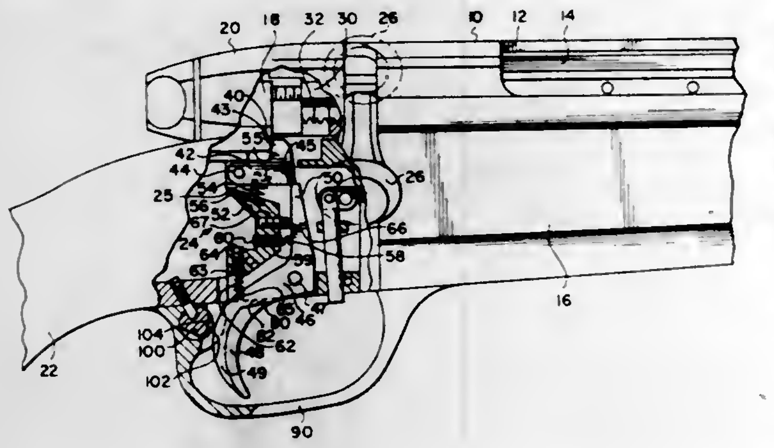
### 3,755,951
### TRIGGER MECHANISM FOR FIREARMS

**Homer E. Koon, Jr., Denton, Tex., assignor to Firearm Development, Inc., Denton, Tex.**
**Filed Apr. 7, 1971, Ser. No. 132,144**
**Int. Cl. F41c** *19/00*
**U.S. Cl. 42—69 A** **10 Claims**



A trigger mechanism for firearms that employs a pair of springs acting against a trigger piece tending to urge the trigger in opposite rotational senses, respectively, thereby providing a smoother trigger pull. Shoulders are provided on the trigger piece and trigger housing to act as a shoe to prevent over-pull of the trigger when the mechanism is fired.

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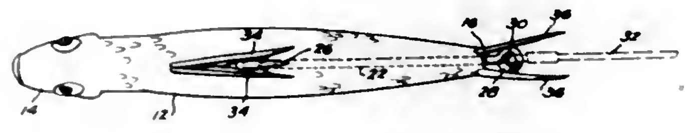
### 3,755,952
### FISH LURE

**Benjamin M. Oliphant, 3914 Martin, Detroit, Mich.**
**Filed Sept. 17, 1971, Ser. No. 181,431**
**Int. Cl. A01k** *85/00*
**U.S. Cl. 43—42.37** **3 Claims**



Simulated minnow has a hook embedded therein with the bight projecting out of its back and the point disposed toward its tail. The eye of the hook projects outwardly at the tail. Pairs of dorsal and tail fins conceal the hook and eye respectively.

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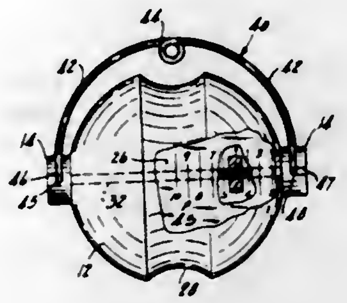
### 3,755,953
### DEEP SET FLOAT

**Gilbert Milner, 8474 S. Burrell St., Oak Creek, Wis.**
**Filed July 28, 1971, Ser. No. 166,859**
**Int. Cl. A01k** *93/00*
**U.S. Cl. 43—43.11** **1 Claim**



An automatic fishing line depth control device comprising a float having a rectangular passage through the center, a pair of bearings mounted at each end of the passage in recesses to allow for free rotation of the float with respect to the bearings. A threaded shaft is secured to the bearings and positioned within the rectangular passage and a rectangular nut having an outer configuration conforming to the shape of the passage is mounted for movement on the threaded shaft. Line guide hangers are secured to the bearings and have a pair of guide loops aligned in a transverse relation to the passage. A track is formed in the outer periphery of the float transverse to the passage and aligned with the guide loops, and a fishing line has a number of turns wrapped around the track with the ends of the line passing through guide loops in the hangers. The number of rotations of the float with respect to the bearings necessary to move the nut into abutting engagement with one of the bearings will determine the depth of line which will be released by the device as the float comes to rest in the water. The float has indicia means to indicate the length of line relative to the position of the nut.

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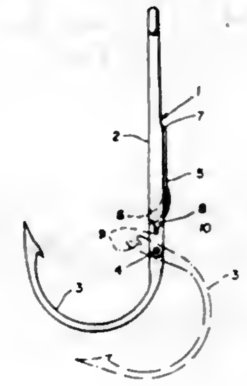
### 3,755,954
### FISH HOOK

**Harold D. Lucius, P.O. Box 222, Industry, Pa.**
**Filed Aug. 25, 1971, Ser. No. 174,689**
**Int. Cl. A01k** *83/00*
**U.S. Cl. 43—43.16** **4 Claims**

A fish hook in which the hook portion is pivotally and yieldably connected to the shank portion and has a leaf spring secured at one end to the shank portion. The free end of the spring engages the hook portion to yieldably maintain the hook in normally upwardly extending position. When the hook accidentally engages an obstacle in the water, such as the underside of a log, it will pivot about its connection to the shank against the holding action of the spring so as to facilitate easy withdrawal from the log.



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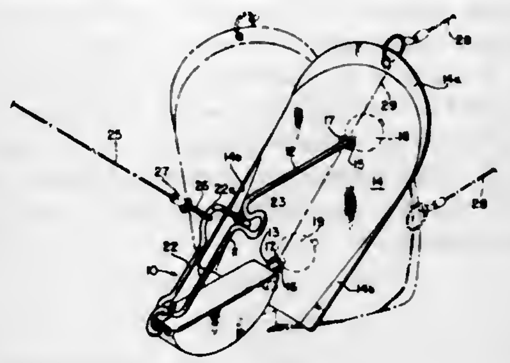
### 3,755,955
### OSCILLATING FISH PLANER

**Carmen Saia, P.O. Box 1295, Bellingham, Wash.**
**Filed Sept. 24, 1971, Ser. No. 183,457**
**Int. Cl. A01k** *91/04, 95/00*
**U.S. Cl. 43—43.13** **10 Claims**



A canted U-configuration wire bridle has the legs thereof extended through openings in a dished planer body, the planer held on the wire bridle by suitable means secured to the portions of the legs extending through the planer body. The openings are located on the midline of the body, and are substantially larger than the legs extending therethrough. A lead weight is secured to the lower one of the legs of the bridle. A hook line or lure is secured to the top of the planer body. A trolling or fishing line is slidably attached for movement along the base of the U of the wire bridle. If desired, an elongated rod is pivotally secured to the lower end of the base of the wire bridle and releasably attached to the upper end thereof. The trolling or fishing line is then slidably attached for movement along the elongated rod. Pulling on the trolling line with a predetermined force releases the rod and allows the fish planer to rise to the surface along with the hook or lure.

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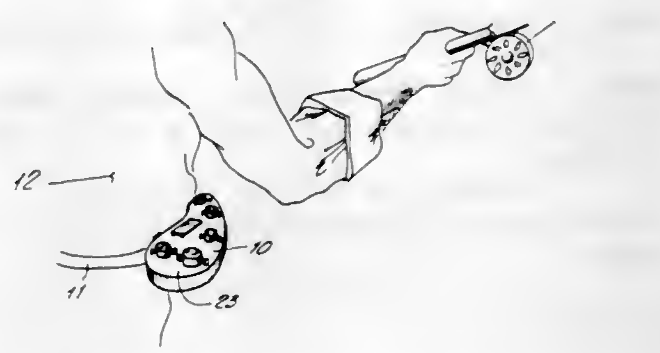
### 3,755,956
### LIVE BAIT DISPENSER

**Hans Spoerl, Great Falls, Mont., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Nov. 22, 1971, Ser. No. 200,987**
**Int. Cl. A01k** *97/04*
**U.S. Cl. 43—55** **1 Claim**

Apparatus for the holding and dispensing of live insect bait used by fishermen, and particularly for the holding and dispensing of grasshoppers. The device is in the form of a curved box adaptable to being worn on the belt of a fisherman, and contains a ventilated storage area for holding a quantity of grasshoppers, with one or more tubular traps projecting through the top of said box. Such traps are sized to contain only one grasshopper and are fitted with resilient prongs to hold a grasshopper that is attracted to the trap from the container by the light of the transparent trap cover. Plunger means are mounted on the prongs to bend the prongs towards each other so as to entrap a grasshopper therebetween. Removal of the trap cover permits the removal of the insect, without permitting additional insects in the bait box to escape.



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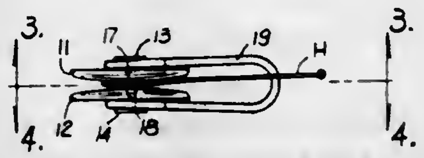
### 3,755,957
### FISHHOOK HOLDING SYSTEM

**August Neuman, 14283 Fordham, Detroit, Mich.**
**Filed Feb. 12, 1971, Ser. No. 115,018**
**Int. Cl. A01k** *97/06*
**U.S. Cl. 43—57.5 R** **8 Claims**



Fishhook holding means comprising a pair of movable buttons with male and female detent means on opposing faces thereof and yieldable means yieldably compressing said buttons together so that the opposing faces are in contact with each other. The yieldable means hold the buttons so that they are freely rotatable and capable of a rocking action against each other and are operative against the exterior face of each button. The buttons are constructed so that the barbed end of a fishhook can pass between the centers of the opposing faces, whereby the barbed end of a fishhook can be held securely and safely therebetween and can be extracted therefrom by being pulled upon whereupon said barbed end passes between the opposing faces.

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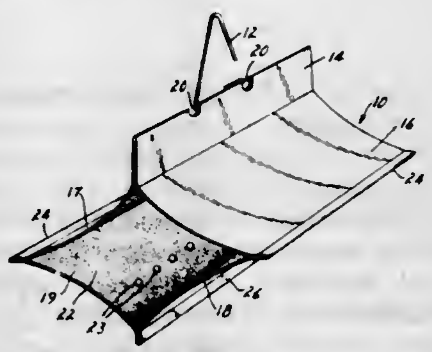
### 3,755,958
### INSECT TRAP

**Thomas I. Bradshaw, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**Continuation of Ser. No. 870,032, Oct. 28, 1969, abandoned.**
**This application Jan. 10, 1972, Ser. No. 216,836**
**Int. Cl. A01m** *1/14*
**U.S. Cl. 43—114** **3 Claims**



A disposable, collapsible insect trap comprising a generally rectangular housing open at at least one end containing therein an insect attractant and a tacky substance, the combination of which is used to attract the insects into the trap and hold them therein.

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### 3,755,959

### AXLE CONNECTION MEMBER FOR CONSTRUCTION TOYS

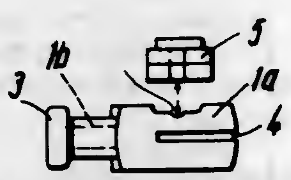
**Hermann Boberg, Horste/Lippe, Germany, assignor to Bielefelder Haushaltsgeraete GmbH & Co. KG., Bielefeld, Germany**

**Filed Oct. 26, 1971, Ser. No. 192,104**

**Claims priority, application Germany, Oct. 31, 1970, P 70 40 265.2**

**Int. Cl. A63h** *33/04*

**U.S. Cl. 46—23** **4 Claims**



An axle connection member for use in construction toys to permit wheel attachment to the construction member. The member comprises a body having an axle attahed thereto, a pin for mounting the body to a component of the construction toy and a detachable flange for securing a wheel on the axle.

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### 3,755,960

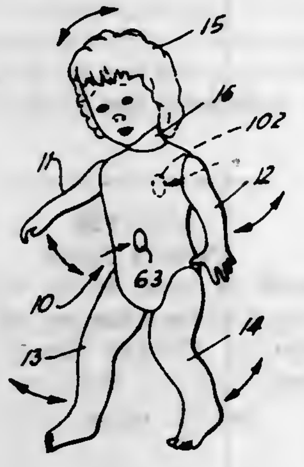
### DOLL GIVING PARTICULAR VOCAL RESPONSES ON MOVEMENT OF PARTICULAR APPENDAGES

**Sidney Tepper, Millburn, and Hyman P. Boydman, Springfield, both of , N.J., assignors to Topper Corporation, Elizabeth, N.J.**

**Filed July 30, 1971, Ser. No. 167,725**

**Int. Cl. A63h** *5/00*

**U.S. Cl. 46—118** **7 Claims**



A doll including a hollow body containing a talking mechanism. An appendage is movably mounted on the body, and means within the body responds to movement of the appendage for operating the mechanism. The appendage may be an arm, a leg, or the head of the doll. The talking mechanism may have several actuators for producing different spoken expressions, and movement of different appendages causes operation of different actuators. A talking mechanism actuator may be operated by depressing a depressible portion of the doll body. Movement of a particular actuator produces the same spoken expression each time. Means are provided to render the talking mechanism inoperative.

### 3,755,961

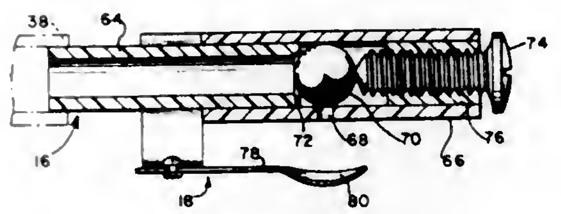
### IRRIGATION AND FROST PREVENTATION METHOD AND APPARATUS

**Donald N. McIsaac, 639 Adelaide Dr., Santa Monica, Calif.**

**Filed June 9, 1971, Ser. No. 151,353**

**Int. Cl. A01g** *13/00*

**U.S. Cl. 47—2** **11 Claims**



A method of and system for protecting plantings such as trees, plants, and the like, against frost damage by conducting a heated liquid into heat transfer relation with thermal radiators located adjacent the base of the plantings to heat the radiators and thereby create convection currents which circulate about the plantings to lower the minimum air temperature which the plantings can withstand without permanent frost damage and raise the air temperature about the plantings by the conjoint action of heating the air and circulating the relatively warm air from the air space above the plantings to the air space about the plantings.

A combined irrigation and frost protection system which is selectively operable in an irrigation mode wherein an irrigation liquid is supplied to the plantings through dispensers, preferably drip dispensers, located adjacent the base of the plantings, and a frost protection mode wherein the irrigation liquid is heated and utilized to heat thermal radiators mounted on the dispensers for creating convection air currents about the plantings. The combined system may also be operable in a fertilizing mode wherein a fertilizing agent is introduced into the irrigation liquid.

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### 3,755,962

### AERIAL PLANTING METHOD AND APPARATUS

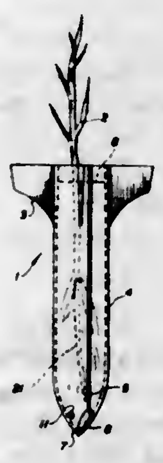
**John Walters, Whonnock, British Columbia, and Ian S. Gartshore, Vancouver, British Columbia, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**

**Filed July 28, 1971, Ser. No. 166,952**

**Claims priority, application Canada, Sept. 24, 1970, 093968**

**Int. Cl. A01g** *9/02*

**U.S. Cl. 47—34** **3 Claims**



The invention provides a method of planting seeds or seedlings whereby planting containers containing the seedlings are dropped from an aircraft. The planting container has fins for aerodynamic stability, a pointed nose for penetrating the soil and wall portions penetratable by the roots of the seedlings.

### 3,755,963

### ACTUATOR FOR A RUDDER OF MODEL PLANE

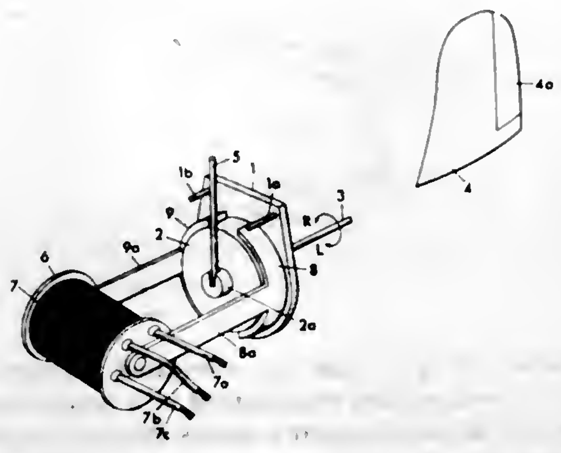
**Kenichi Mabuchi, Tokyo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan**

**Filed Dec. 8, 1971, Ser. No. 205,894**

**Claims priority, application Japan, Dec. 8, 1970, 45/121677**

**Int. Cl. A63h** *27/02, 33/26*

**U.S. Cl. 46—244 A** **1 Claim**



An actuator for a rudder of a model plane comprises a pair of arched yokes opposingly arranged around the periphery of a permanent magnet of disc form. An electromagnet having windings for separately magnetizing each of the yokes is provided. An actuating lever is secured, at its one end, to a shaft of the permanent magnet disc and a rudder of a vertical tail of the model plane is coupled to the other end of the actuating lever through an appropriate link mechanism. By selective energization of the windings of the electromagnet the magnet disc is rotated clockwise or counterclockwise, resulting in corresponding rotation of the rudder.

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### 3,755,964

### MULTIPLE-PLANT SUBSTRATE BODY

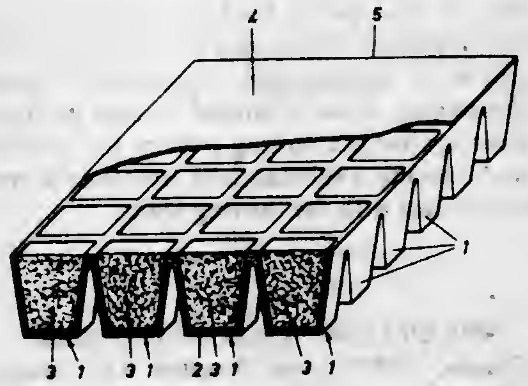
**David Rack, 17 Schwarzgrabenweg, Salzburg, Austria**

**Filed Jan. 7, 1972, Ser. No. 216,018**

**Claims priority, application Austria, Jan. 13, 1971, A 209/71**

**Int. Cl. A01g** *9/02*

**U.S. Cl. 47—37** **3 Claims**



A skeleton is provided, which forms a wrapper and has thin walls which define a plurality of chambers. The skeleton consists of elastic porous foam through which plants can grow. Soillike plant substrate material is contained in said chambers. Cover means close said chambers to prevent an escape of said substrate material therefrom.

### 3,755,965

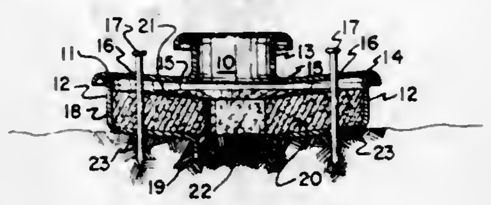
### PLANT CISTERN

**Dan D. Emery, 5514 State St., Boise, Idaho**

**Filed Dec. 20, 1971, Ser. No. 209,663**

**Int. Cl. A01g** *13/10*

**U.S. Cl. 47—27** **3 Claims**



The plant cistern of this invention comprises a cover portion and a cistern portion. The cover portion includes an inclined dish issuing downwardly at an angle to an upstanding shield portion in the centermost portion of the dish. Adjacent the upstanding shield portion are a multiplicity of entranceways through the dish. The cistern portion includes a bowl having a downwardly projecting tube-like protector portion at the centermost portion thereof and a cake fabricated from a soil admixture, such as compound peat moss and plant nutrients, disposed in the bowl. The cake generally conforms to the bowl, and is provided with sloping wall adjacent the uppermost terminal edge of the bowl, the wall issuing downwardly at an angle to an entranceway through the centermost portion of the cake.

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### 3,755,966

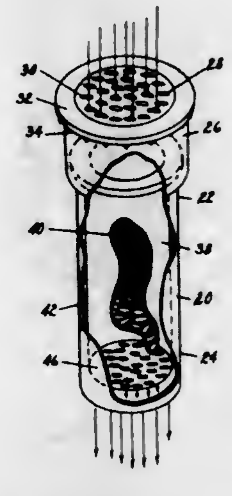
### DEEP ROOT FEEDER AND TREE IRRIGATER

**Wayne D. Smith, Rt. 1, Box 68, Tampa, Fla.**

**Filed May 24, 1972, Ser. No. 256,296**

**Int. Cl. A01g** *29/00*

**U.S. Cl. 47—48.5** **1 Claim**



An elongated cylinderical cannister assembly with many small apertures at the opposite ends filled with gravel and fertilizer pellets, is placed near the tree. This insures that water, air, and nutrition is carried to the outer ends of the roots. The deep root feeder is particularly useful in cities where trees grow through pavement openings.

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### 3,755,967

### HYDRAULICALLY OPERATED WINDOW UNIT

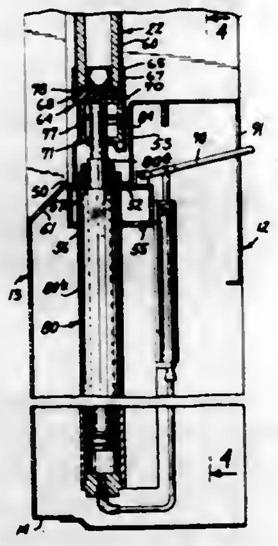
**Jack T. Nourse, Lindstrom, Minn., assignor to Hy-Wind, Inc., St. Paul, Minn.**

**Filed June 3, 1971, Ser. No. 149,541**

**Int. Cl. E05f** *11/00*

**U.S. Cl. 49—360** **7 Claims**

A metal, exterior wall system for high-rise commercial and residential buildings (e.g., high-rise apartments) including a hydraulically operated window unit. The window has a large single hung glass unit (e.g., weighing 20–400 lbs.) which is raised and lowered by a hydraulic unit attached to a specially designed window sill. The wall system can be constructed in relatively large sizes (e.g., spanning from 1 to 4 floors in height) greatly simplifying erection.



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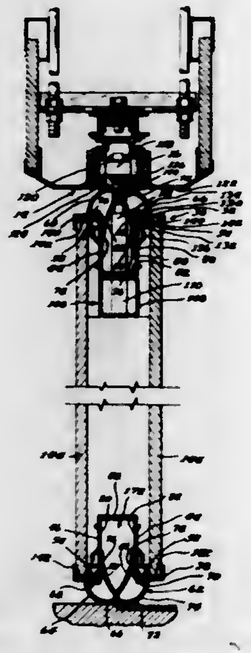
### 3,755,968
## FLOATING CONSTANT CONTACT SEAL FOR OPERABLE PARTITIONS

**Charles E. Williams, Janesville, Wis., assignor to Hough Manufacturing Corporation, Janesville, Wis.**
**Filed Jan. 20, 1972, Ser. No. 219,256**
**Int. Cl. E06b** *7/23*
**U.S. Cl. 49—488** **8 Claims**



A floating seal arrangement for operable panel partitions adapted to serve as the floor and ceiling seals therefor in which the top and bottom frame members of each panel comprise a channel shaped member oriented to have its respective flange portions projecting outwardly of the panel in the plane of same, with each channel member being equipped with a seal strip applied across the space between the respective frame member flange portions providing a floating constant contact type seal, with each strip including a pair of guiding flaps that are in sliding relation with the inside surfaces of the respective frame member flange portions, for guiding adjustment of the seal strips relative to the panel in accommodating surface variations.

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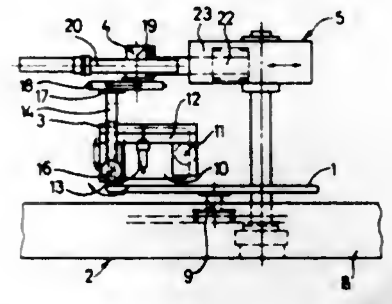
### 3,755,969
## METHOD AND APPARATUS FOR TREATING OF WORKPIECES

**Franz Stoy, Grafenberg, Germany, assignor to Metabowerke K. G. Closs, Rauch & Schnizler, Nurtingen, Germany**
**Filed Apr. 11, 1972, Ser. No. 243,017**
**Claims priority, application Germany, Nov. 29, 1971, P 21 59 020.5**
**Int. Cl. B24b** *1/00, 5/36, 19/00*
**U.S. Cl. 51—32** **15 Claims**



A workpiece having at least two elongated portions connected by a curved portion is advanced in a predetermined path so that one of its elongated portions extends lengthwise of the path and the other extends transversely thereof. As the one portion advances in the path it is treated by a stationary tool which begins to advance together with the workpiece and at the same time turns about an upright axis at the end of the one portion in order to treat the curved portion. After treating the curved portion the tool continues to advance with the workpiece but also is shifted transversely of the path to treat the other elongated portion of the workpiece.

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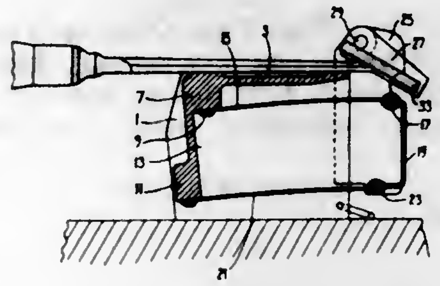
### 3,755,970
## BLADE SHARPENING DEVICES

**William Geoffrey Parr, 20 Knoll Rd., Monmouthshire, Abergavenny, Great Britain**
**Filed Mar. 15, 1972, Ser. No. 234,928**
**Int. Cl. B24b**
**U.S. Cl. 51—58** **6 Claims**



Apparatus for sharpening blades providing guide surfaces against which a suitable blade may be made to describe a sliding, reciprocatory substantially irrotational motion and a movable sharpening stone arranged so that its flat operative face may bear against the cutting edge of the blade at a suitable angle and execute a substantially irrotational reciprocatory motion in contact with the moving blade.

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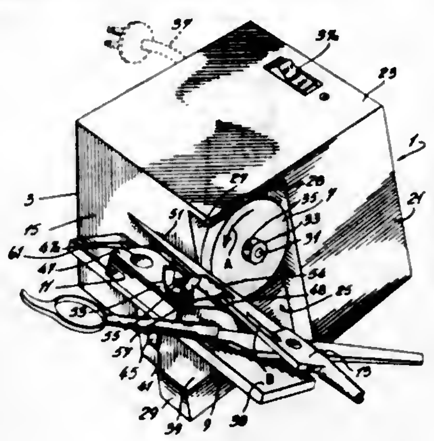
### 3,755,971
## SHEARS AND SCISSORS GRINDER

**Thomas Garcia, 5987 Louis Veuillot St., Montreal 431, Quebec, Canada**
**Filed Oct. 20, 1971, Ser. No. 190,899**
**Int. Cl. B24b** *3/52*
**U.S. Cl. 51—92 BS** **7 Claims**

A grinder including a casing, an electric motor and optionally a transformer housed in the casing, a grinding wheel mounted outside the casing and operatively connected to the electric motor and a platform mounted on the casing to extend

obliquely with respect to the axis of the grinding wheel. The platform is arranged to be used for sharpening shears and scissors by sliding a blade thereof over the upper surface of the platform while pressing the cutting edge of the blade against the grinding wheel in movement.



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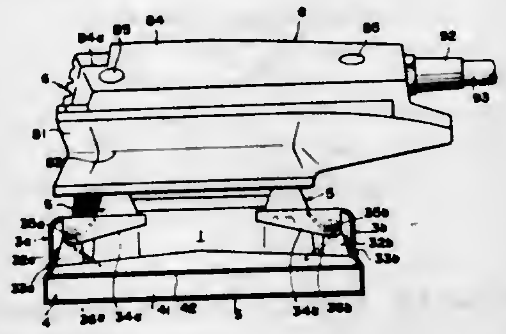
### 3,755,972
## PORTABLE SANDER

**Tadahisa Mogaki, Ota-ku, Tokyo, and Akira Takanaka, Kita-ku, Tokyo, both of Japan, assignors to Nitto Kohki Company Limited, Tokyo, Japan**
**Filed May 13, 1971, Ser. No. 143,139**
**Claims priority, application Japan, May 14, 1970, 45/40653; Jan. 29, 1971, 46/3160**
**Int. Cl. B24b** *23/04*
**U.S. Cl. 51—170 MT** **16 Claims**



A portable sander characterized in that at least one circulating member is circulated in an air-operated circulator at a high speed to obtain a vibration which is directly transmitted to a sanding head and the handle of the sander is resiliently mounted to the air operated circulator, preferably with an air control valve in the handle.

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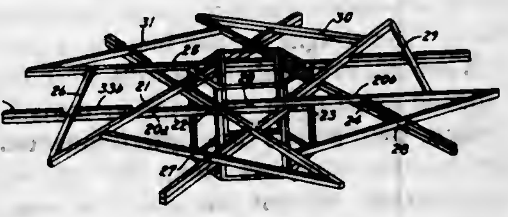
### 3,755,973
## MODULAR BUILDING SYSTEM

**T. Freeman Rader, 447 S. Grant St., Denver, Colo.**
**Filed Sept. 14, 1971, Ser. No. 180,402**
**Int. Cl. E04b** *1/34*
**U.S. Cl. 52—73** **4 Claims**



A building system for the construction of low cost versatile single and multilevel residential and commercial structures using unique modular components and a unique way these components are geometrically integrated together. Basically this system relies upon the use of a central support column from which floors and ceilings are cantilevered outwardly. The central support module (one per floor) is hexagon shaped and contains built in stairs, utility stacks, entrance areas and elevator space. This central support module supports the special beams which are attached to the sides of the module near the top to form cantilevered floors. Depending upon whether the structure is to be single or multileveled, these support modules may be stacked atop one another to whatever height is desired, with one module and one set of beams being required for each floor. The special beams required are in reality two beams overlapped and fastened together at one end so as to have one high portion and one low portion. This feature allows the beams to interweave together around the hexagon shaped support module. Supplemental beams are then added to integrate and strengthen the cantilevered areas. Because of the geometric design and integration of these beams, standard triangle shaped floor and ceiling sections may be added for complete area coverage. The structures may be then left open, or enclosed with modular curtain walls with any desired interior rooms arranged likewise.

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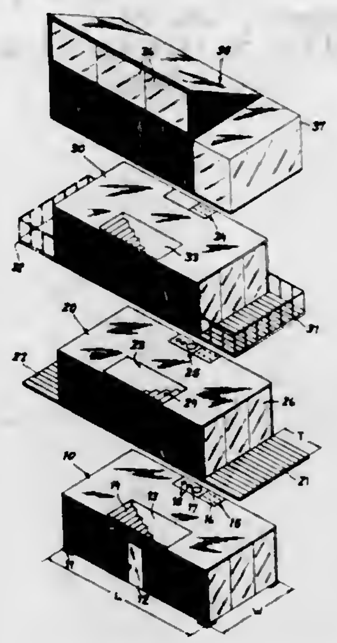
### 3,755,974
## MODULAR HOUSING SYSTEM

**Leopold Berman, New York, N.Y., assignor to Domodula Uno Inc., Brooklyn, N.Y.**
**Filed Oct. 21, 1971, Ser. No. 191,494**
**Int. Cl. E04h** *1/04*
**U.S. Cl. 52—73** **6 Claims**



A modular housing system comprises box-like units of rectangular configuration in stacked relationship, the adjoining units having interfitting utility networks and being provided on common sides with alignable staircase elements and with plumbing devices on the side opposite the staircase elements. Preferably at least some of the units are rectangularly elongated and are formed with decks on one or both ends of the unit. The units each may have a length $L = nW$ where $n$ is an integer (1, 2, 3 . . .) and $W$ is the width of the unit.

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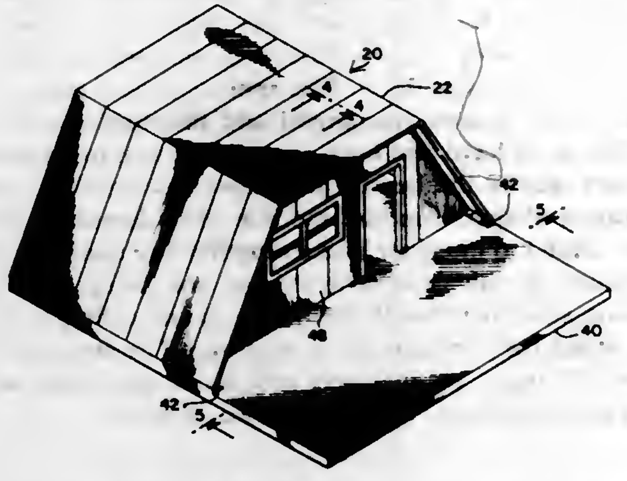
### 3,755,975
## PRE-FABRICATED SHELL STRUCTURE

**Jorge Abel Herzer, 5171 Pine Tree Drive, Miami Beach, Fla., and Joseph R. Julia, 521 West 112th Street, New York, N.Y.**
**Filed May 4, 1970, Ser. No. 34,254**
**Int. Cl. E04b** *1/32*
**U.S. Cl. 52—90** **10 Claims**

A pre-fabricated shell structure made from modular structural roof and wall panels or units, said units being fabricated from chemically treated pressed organic fiberous material.

The panels are folded along transverse and/or longitudinal score lines to form a preferred design. The ends of the roof panels are anchored to a foundation; front and rear wall panels are added and spanned between the roof panels and foundation to complete the shell. The individual panels are fastened to each other by means of friction clips or holding brackets. A fiber reinforced waterproof film is applied to and coats the outer surface of the panels. Weather proofing is completed by the addition of insulating material placed adjacent the interior of the panels.



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**3,755,976**

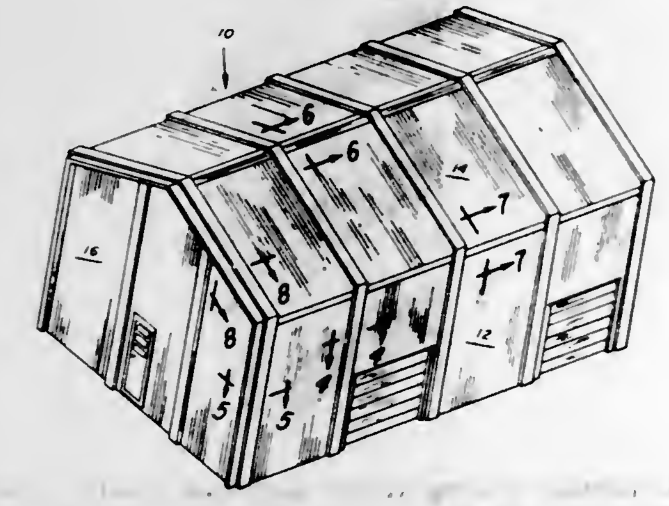
**PRESTRUCTURED BUILDING AND PANELS THEREFOR**

**Alfred W. J. Delhaine, Tulsa, Okla., assignor to Allied Steel Products Corporation, Tulsa, Okla.**

**Filed Apr. 20, 1970, Ser. No. 30,150**

**Int. Cl. E04b** *7/02*

**U.S. Cl. 52—93** **2 Claims**



A prestructured building is assembled from manufactured panels, each of which includes parallel spaced-apart channel members having interposed therebetween and secured thereto sheet material. The panels are interconnected by the adjoining of adjacent channel members to form the walls and roof of the building whereby the channel members become the framework of the building and the sheet material becomes the siding and roofing thereof.

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**3,755,977**

**FRANGIBLE LIGHTING POLE**

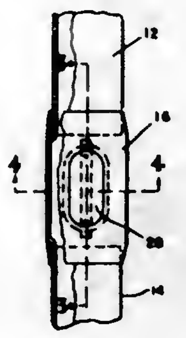
**Terence E. Lewis, Mississauga, Ontario, Canada, assignor to Powerlite Devices Limited, Toronto, Ontario, Canada**

**Filed Oct. 29, 1971, Ser. No. 193,760**

**Int. Cl. F21s** *1/10*

**U.S. Cl. 52—98** **4 Claims**

This invention relates to a pole for mounting a lighting fixture that has a frangible section close to the ground level that is adapted to break upon impact by an automobile as a safety measure. The principal feature of the invention is the provision of a tubular coupling member interconnecting upper and lower sections. The lower section is driven into the ground; the upper section elevates the lighting fixture, and the tubular section is designed to break in response to the lateral impact force of an automobile.



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**3,755,978**

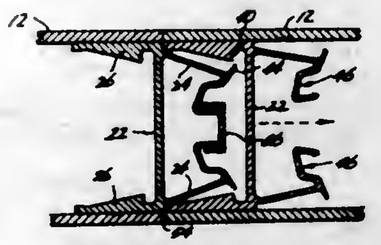
**REMOVABLE MULTI-PANELED WALL CONSTRUCTION**

**Clifford C. Jackson, Seattle, Wash., assignor to Unilith Enterprises, Inc., Seattle, Wash.**

**Filed Sept. 30, 1971, Ser. No. 185,071**

**Int. Cl. E04b** *2/74*

**U.S. Cl. 52—127** **15 Claims**



A double-walled building panel is disclosed which is adapted to be marginally interconnected with one or more other such panels to form a rigid but readily removable wall construction. The panel comprises a pair of flat parallel wall members which are registered opposite one another with a clearance therebetween; and a framing structure of elongated framing members which are interposed in the clearance between the wall members, along the opposite edge portions of the panel. The framing members have similarly shaped bodies in transverse cross-sectional planes thereof, and each of the bodies has spaced, parallel, longitudinally extending, exteriorly oriented surfaces on opposite sides thereof, corresponding edges of which surfaces are disposed in a common longitudinal cross-sectional plane of the body. Each body also has complementary longitudinally extending tongue and groove means thereon, which are oppositely oriented with respect to the aforesaid longitudinal cross-sectional plane and interposed in the space extending between the surfaces. The groove means include a pair of grooves which are oppositely disposed to one another in the body, and transversely oriented to the surfaces. The tongue means include a pair of flexible prongs which project relatively outwardly from the body, and which are spaced apart from one another transversely of the surfaces. When two panels are interconnected with one another, the framing members along the opposite interconnecting edge portions thereof, are similarly oriented to one another in the same, and the prongs of one are interengaged with the grooves of the other, there being means on the bodies of the framing members operative to cause the prongs to flex relatively toward one another, as the tongue means of the one framing member are inserted and withdrawn with respect to the groove means of the other framing member.

**3,755,979**

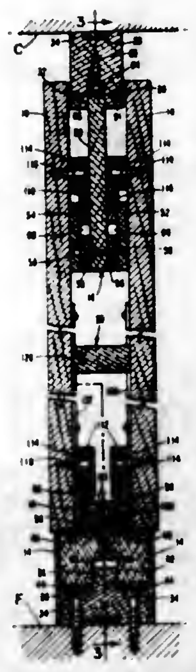
**DEMOUNTABLE PARTITION ASSEMBLY**

**Spiros G. Pantazi, Sherborn, Mass., assignor to The Schwamb Corporation, Arlington, Mass.**

**Filed Jan. 4, 1972, Ser. No. 215,360**

**Int. Cl. E04b** *2/82*

**U.S. Cl. 52—204** **19 Claims**



A demountable partition assembly comprising runners attached to the floor and ceiling, upper and lower stabilizer members mounted respectively on the upper and lower runners, and wall panels demountably supported on the stabilizer members. Adjacent panels are removably connected at their joints, to form the partition, with the sole support for the wall panels being the cooperating assembly of the runners and stabilizer members. The panels are sealed and isolated at their areas of contact with the ceiling runner and the sill leveller associated with the floor runner, and gasketing is provided at the panel joints to reduce sound transmission through the partition. The panels can be quickly mounted on or demounted from the stabilizers without requiring special tools, if partition relocation is desired.

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**3,755,980**

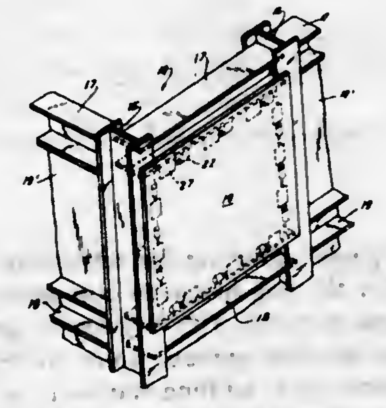
**BRACING FOR STRUCTURAL STEEL BUILDING FRAMES**

**Paul Weidlinger, New York, N.Y., assignor to G. Salvadari, New York; Melvin L. Baron, Riverdale, Bronx and Matthys P. Levy, New York, N.Y., part interest to each**

**Filed Apr. 8, 1971, Ser. No. 132,374**

**Int. Cl. E04b** *1/68, 1/98;* **E04h** *3/00*

**U.S. Cl. 52—235** **7 Claims**



A structural steel building frame including interconnected vertical and horizontal columns and beams is furnished with bracing against wind and seismic forces. The bracing comprises reinforced concrete panels connected to the columns and beams in such a way that only shear loads are transmitted from the frame to the panels and not gravity and compressive loads. A number of different types of connection means are disclosed, each of which resists relative movement between the interconnected panel and beam or column in the longitudinal direction of the beam or column, but allows relative movement in a direction perpendicular to the longitudinal direction of the beam or column.

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**3,755,981**

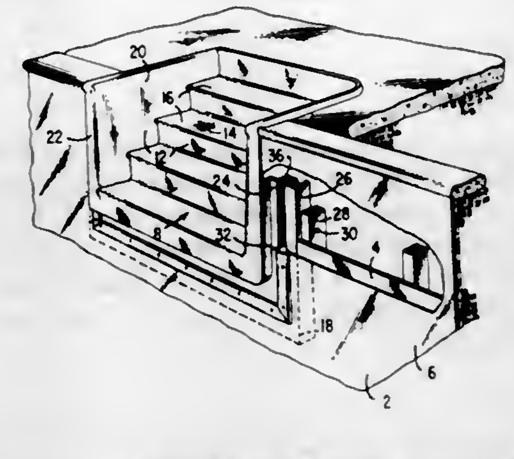
**SWIMMING POOL STAIRS**

**Robert E. West, Yardley, Pa., assignor to Cascade Industries, Incorporated, Edison, N.J.**

**Filed Jan. 24, 1972, Ser. No. 220,237**

**Int. Cl. E04f** *11/00;* **E04h** *3/16*

**U.S. Cl. 52—184** **7 Claims**



A swimming pool having side walls is provided with a liner formed of sheet material extending over the inner surface of the side walls. The pool has a step structure set into an opening in the side wall of the pool and has marginal portions thereof secured to the side wall of the pool. The liner of the pool has edge portions overlapping the marginal portions of the step structure and means are provided for establishing a water-tight seal between the liner and step structure.

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**3,755,982**

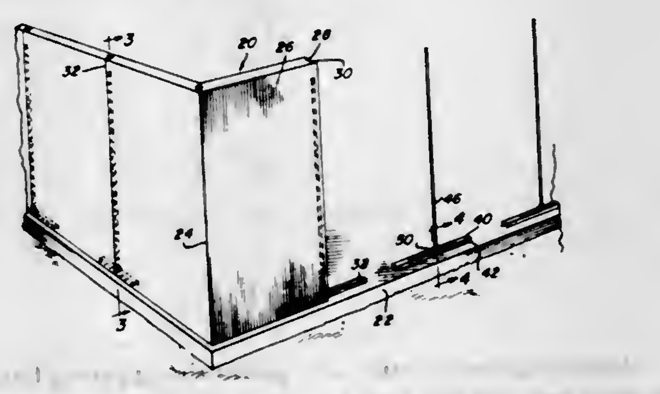
**BUILDING PANELS**

**Carl W. Schmidt, P.O. Box 372, Des Plaines, Ill.**

**Filed July 13, 1971, Ser. No. 162,114**

**Int. Cl. E04b** *2/10, 2/34;* **E04g** *21/00*

**U.S. Cl. 52—295** **10 Claims**



Building panels constructed with insulating characteristics and arranged in edge to edge relation to form a wall and including a key structure for anchoring the panels to a supporting foundation or the like and enabling assembly of adjacent panels by a sliding and pivoting movement with the joint between adjacent panels being filled with a settable and hardenable material thereby providing a seal and positive connection between adjacent panels. The panels may be constructed with various materials, with or without void areas, sectional or the like and the upper edge of the panels may be keyed together to complete the assembly thereof.

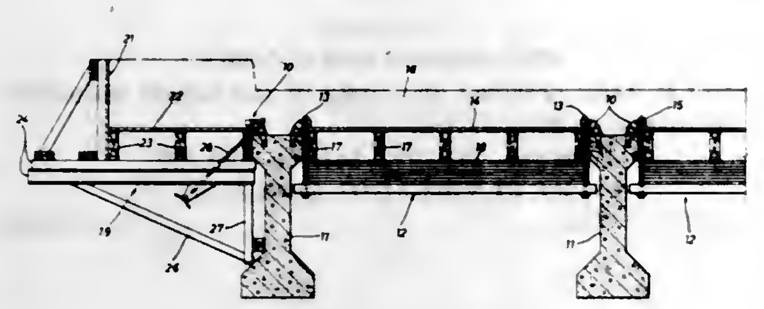
### 3,755,983
### BRIDGE DECK FORM HANGER

**Joe W. Beckham, Lufkin, Tex., assignor to Texas Foundries, Inc., Lufkin, Tex.**

**Division of Ser. No. 851,985, Aug. 21, 1969, Pat. No. 3,626,648. This application Mar. 25, 1971, Ser. No. 128,181**

**Int. Cl. E04b** *1/16*

U.S. Cl. 52—326 **9 Claims**



A bridge deck form hanger for suspending deck forms from concrete bridge girders so that a concrete deck can be poured. The hanger has a lower end portion adapted to be embedded in the top surface of a girder and an upper end portion which extends over the edge of the girder to interconnect with the bridge deck form to secure the form in its proper position with respect to the girders.

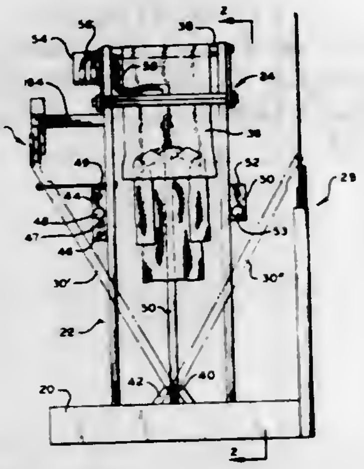
### 3,755,984
### SEMI-AUTOMATIC BAGGING MACHINE

**Charles C. Vanderpool, R.D. 1, Waverly, N.Y.**

**Filed Apr. 10, 1972, Ser. No. 242,445**

**Int. Cl. B65b** *57/00, 25/20, 67/00*

U.S. Cl. 53—52 **14 Claims**



Apparatus for assisting an operator in applying bags, closed at the sides and one end, to items such as garments on hangers which are preferably automatically fed to and removed from the apparatus. The bags are formed from material supplied in continuous, tubular form by transversely sealing the material at a desired location and severing it near the seal, thereby closing the top of one bag and leaving an open end of the continuous material for the bottom of the next bag. The bagging material is manually drawn over a garment on a hanger supported at the upper end of a pole. The operation is more efficient than conventional manual garment bagging by making the top of the pole laterally movable to three distinct positions for loading, bagging and discharging the hanger-held garments.

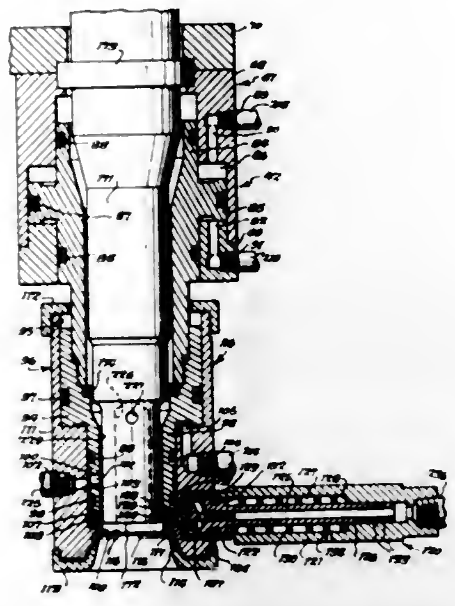
### 3,755,985
### CONTAINER FILLING AND SEALING APPARATUS

**Joseph M. Rait, Buffalo, and James H. Riesenberg, Amherst, both of N.Y., assignors to Pelorex Corp., Buffalo, N.Y.**

**Continuation-in-part of Ser. No. 121,797, March 8, 1971, abandoned. This application Dec. 8, 1971, Ser. No. 205,910**

**Int. Cl. B65b** *31/00*

U.S. Cl. 53—7 **37 Claims**



An apparatus and method for charging an aerosol container with propellant through an open end thereof beneath the container closure member. The propellant filling head includes an ultrasonic welding assembly for sealing the closure member to the container after the propellant filling operation.

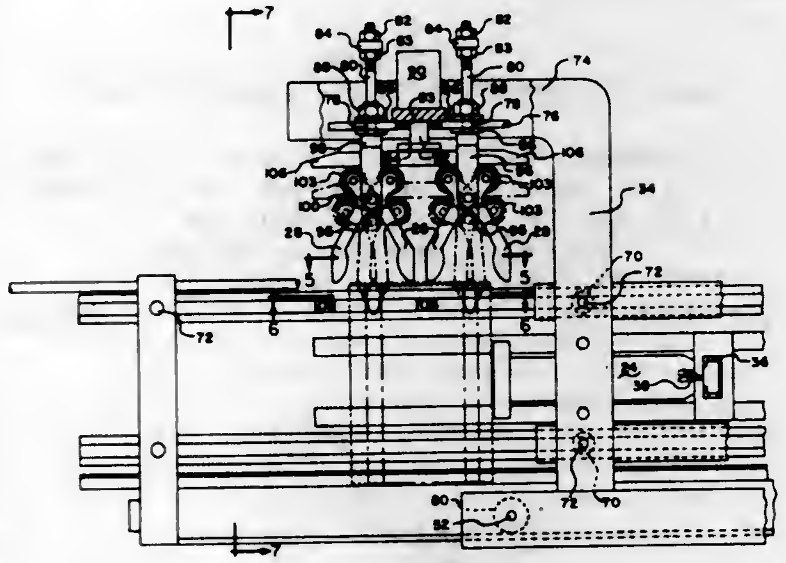
### 3,755,986
### GUSSET REFORMER

**Doyle R. Hudson, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.**

**Filed Sept. 30, 1971, Ser. No. 185,309**

**Int. Cl. B65b** *7/08*

U.S. Cl. 53—378 **6 Claims**



An improved gusset reformer for reforming the open portion of a bag after the bag has been completely filled with a plurality of loose objects. The improved gusset reformer machine reforms the bag gussets while conveying the fully filled bag of objects from a filling station to a sewing station where the upper edges of the bag may be sewn shut. The reforming portion of the machine comprises a movable carriage mounted on a stationary frame with means carried by the carriage for manipulating the gussets of the bag. The movable carriage contains a pusher member which pushes the filled bag along a stationary trough fixedly attached to a stationary frame. Also contained on the machine are means for holding the reformed gussets in a reformed position prior to the sewing operation and after the manipulating means have been removed from the bag.

### 3,755,987
### MACHINE FOR SEALINGLY CLOSING CONTAINERS BY MEANS OF COVERS

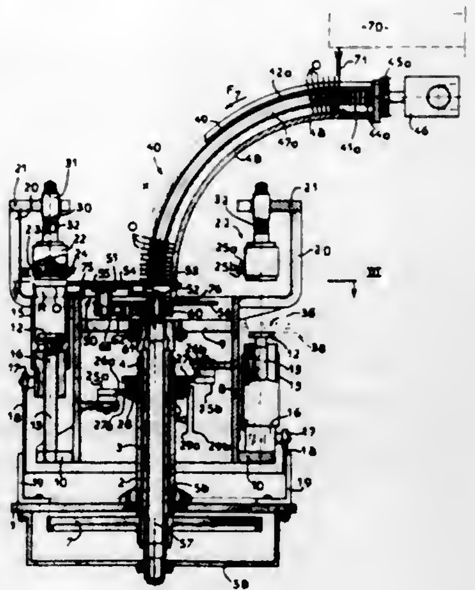
**Edgar Dardaine, Sorel-Moussel, and Jean-Luc Berry, Mesnil sur L'Estree, both of France, assignors to E. P. Remy et Cie, Dreux, France**

**Filed Jan. 24, 1972, Ser. No. 220,202**

**Claims priority, application France, Jan. 28, 1971, 7102839; Jan. 12, 1972, 7200957**

**Int. Cl. B65b** *7/28, 51/14;* **B67b** *3/04*

U.S. Cl. 53—296 **23 Claims**



Machine for sealingly closing containers each provided with an upper outwardly projecting collar, by means of a cap which is applied on the said collar, comprising container-conveying means adapted to drive the containers along a first circular path, cap-conveying means adapted to convey the containers along a second circular path tangent to the first path and arranged above the latter, so that each cap travelling along the second-path portion is located above a container and moves by gravity onto its collar, and fixing means adapted to secure a cap on each container.

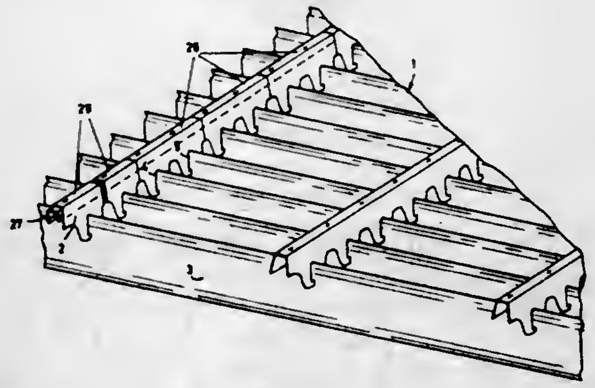
### 3,755,988
### PANEL ASSEMBLY

**Gerrit Van Der Sluys, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Curacao, Netherlands Antilles**

**Continuation of Ser. No. 882,452, Dec. 5, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,839**

**Int. Cl. E06b** *7/08;* **E04f** *10/08*

U.S. Cl. 52—473 **7 Claims**



A panel assembly having carriers and oblong resiliently deformable panels extending from said carriers. Holding means are provided offering a three-point support for each panel, each of said holding means comprising two support members, one of said support members being a snap-locking member. Each panel comprises a profiled portion co-operating with said snap-locking member by snap-action, said panels projecting with a free portion beyond the holding means.

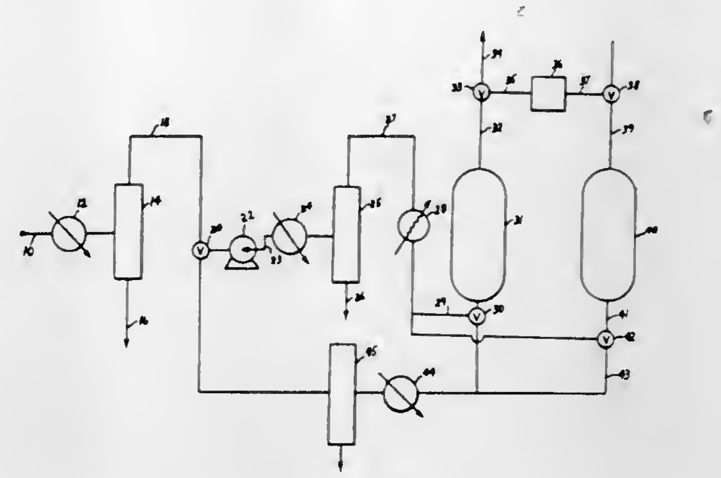
### 3,755,989
### REMOVAL OF MERCURY FROM GAS STREAMS

**Louis Leonard Fornoff, Cedar Grove, N.J.; John Joseph Collins, Katonah, and Charles Matthew Madigan, Bedford Hills, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed June 16, 1972, Ser. No. 263,597**

**Int. Cl. B01d** *53/04*

U.S. Cl. 55—72 **5 Claims**



Mercury vapor is removed from gas streams containing more than 60 percent relative humidity by raising the gas stream temperature to lower the relative humidity to less than 50 percent and thereafter selectively adsorbing the mercury vapor by passage through an activated carbon adsorbent bed under conditions such that water does not condense on the carbon adsorbent.

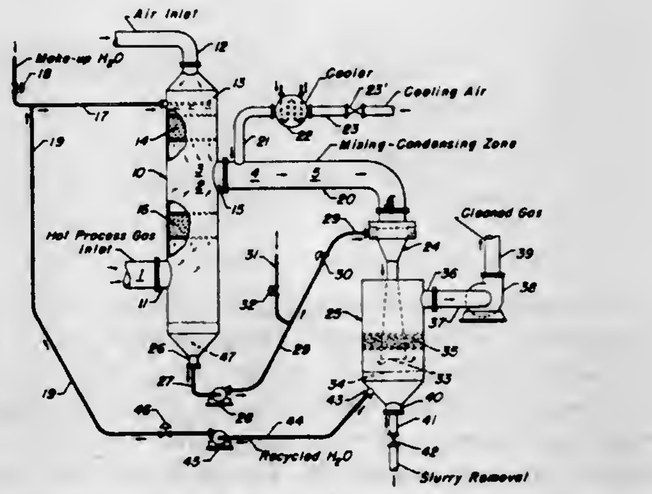
### 3,755,990
### METHOD OF COLLECTING SUB-MICRON PARTICLES FROM A HOT GAS EFFLUENT STREAM

**Leslie C. Hardison, Darien, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation of Ser. No. 23,370, March 27, 1970, abandoned. This application May 8, 1972, Ser. No. 251,512**

**Int. Cl. B01d** *47/06*

U.S. Cl. 55—93 **8 Claims**



A hot gaseous effluent having a high percentage of sub-micron sized particles is mixed with a hot saturated gas stream and then subjected to rapid cooling so as to provide a fog and condensation of water droplets around solid particles in the gas stream. The resulting gas stream with enlarged particles is then passed to wet scrubber means so that particles can be removed and a cleaned gas stream discharged from the system.

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### 3,755,991
### COLLECTOR ELECTRODE FOR ELECTROSTATIC PRECIPITATOR

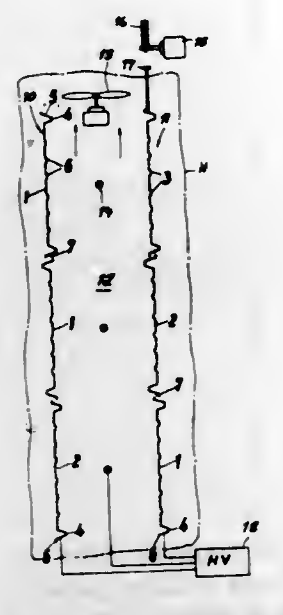
**Walter Steuernagel, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed June 17, 1971, Ser. No. 154,086**

**Claims priority, application Germany, June 20, 1970, G 70 23 234.7**

**Int. Cl. B03c** *3/76*

**U.S. Cl. 55—112** **3 Claims**



A collector electrode for an electrostatic precipitator is provided in strips having spaced apart beads extending transversely to a rapping or jolting bar, the strips being symmetrically about a median transverse plane and having edges profiled with trapezoidal cross-section and legs co-operating with the legs of adjacent or contiguous strips to define labyrinth seals.

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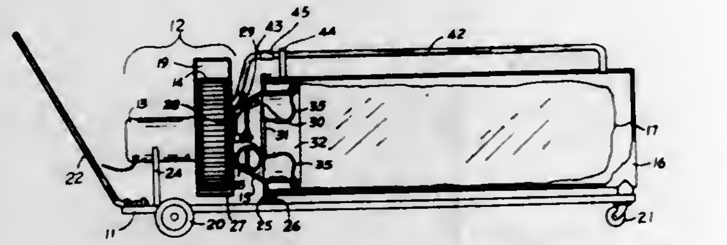
### 3,755,992
### LAWN VACUUM CLEANING AND PACKING APPARATUS

**Laurie L. Ylinen, 2211 26th St., Rock Island, Ill.**

**Filed Mar. 15, 1972, Ser. No. 234,739**

**Int. Cl. B04c** *5/04*

**U.S. Cl. 55—296** **8 Claims**



A frustum-shaped housing has an opening at its smaller end connected to a fan to draw air through the housing, an intake disposed tangentially to the inside slating wall of the frustum to pass air and debris into the housing, and an opening in its larger end connected to a non-porous bag into which the debris is packed. The opening for the fan at the smaller end of the frustum is covered with a screen, and a wiper on the inside surface of the screen is rotated to dislodge from the screen particles that did not flow directly toward the larger end of the frustum. Flails near the larger end of the frustum are rotated to strike the debris and force it outwardly from a circular air stream within the housing into the attached bag.

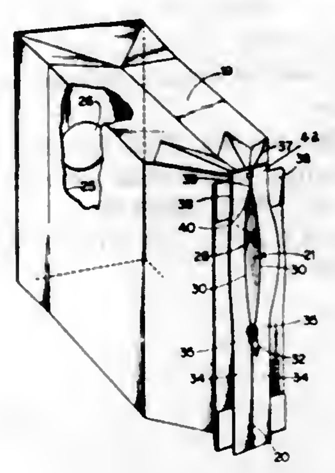
### 3,755,993
### DISPOSABLE, VACUUM CLEANER BAG

**Philip J. Cote, 1643 Mammoth Rd., Dracut, Mass.**

**Continuation of Ser. No. 879,340, Nov. 24, 1969, abandoned. This application July 22, 1971, Ser. No. 165,320**

**Int. Cl. B01d** *46/02*

**U.S. Cl. 55—370** **2 Claims**



A novel and inexpensive, dust-collector bag of disposable, low cost, paper-like material supported within the chamber of the shell of vacuum cleaning apparatus, the bag having one end slidably removable from the shell air inlet port and having a low cost, disposable slide-fastener, preferably of the twin-helix type constructed of plastic, adhesively sealed transversely in an opposite end opening in the bag to provide means to quickly remove the bag from the shell and to enpty out the contents and thereby allow easy and continued reuse of the bag, rather than one use and discard thereof.

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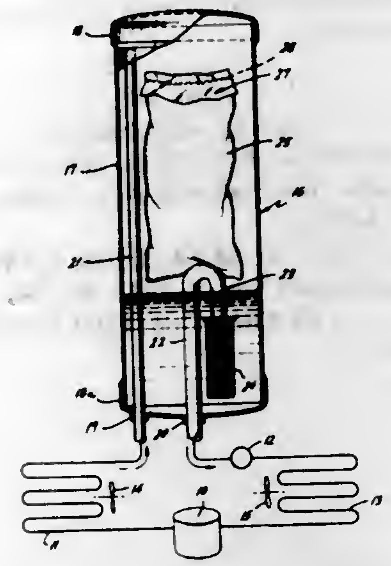
### 3,755,994
### REFRIGERANT DRIER

**Bash S. Bidiwala, Richmond, Ind., assignor to Philco-Ford Corporation, Philadelphia, Pa.**

**Filed Apr. 6, 1972, Ser. No. 241,736**

**Int. Cl. B01d** *53/04*

**U.S. Cl. 55—387** **3 Claims**



A refrigerant receiver-drier comprising a metallic cartridge or cylinder having therein a desiccant-containing bag made of fabric and through which liquid refrigerant may flow. One portion of the bag occupies an end of the tank sealed by the welding of a cap thereon during manufacture of the receiver-drier. The bag and its contents are protected against the heat of such a welding operation by a sheet of metal foil secured to the bag and forming a heat shield.

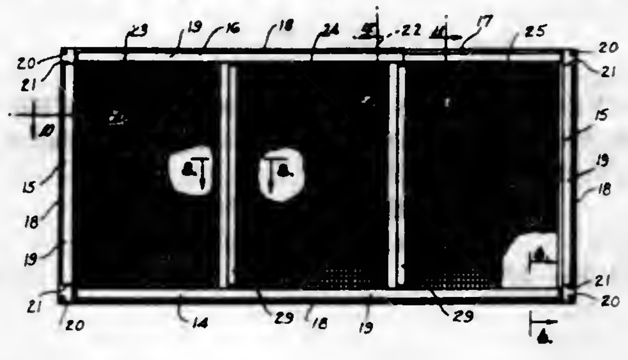
### 3,755,995
### AIR FILTERING SCREEN

**Malcolm Stickel, Rt. No. 2, Sedalia, Mo.**

**Filed June 29, 1971, Ser. No. 157,975**

**Int. Cl. B01d** *27/08*

**U.S. Cl. 55—481** **5 Claims**



A rectangular frame is mounted on a motor vehicle between the grill and cooling system coil, if it has a cooling unit, or between the grill and radiator, if there is no cooling system coil. The frame is made up of upper, lower and side channel members that have the flanges turned inwardly to provide guideways for frames of fine mesh hardware cloth screen sections. The top member of the channel frame has a removable section that provides an opening in the frame through which screen sections are inserted and after insertion, slid sidewise into position adjacent each other within the channel frame. A spring that engages the channel frame to hold the screen section in close engagement is on one of the screen sections. One of the screen sections has a channel for guiding the screen section into proper relationship to the other screen sections and the channel frame.

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### 3,755,996
### STRUCTURE FOR INCREASING THE SEPARATION CAPACITY OF CENTRIFUGAL FORCE SEPARATORS FOR STEAM DRYING

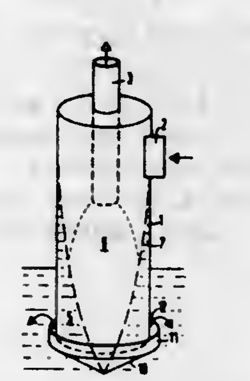
**Heinrich Klein; Rudolf Pieper, both of Erlangen, and Alfred Hoffmann, Forchhiem, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Oct. 12, 1971, Ser. No. 188,101**

**Claims priority, application Germany, Oct. 19, 1970, P 20 51 180.2**

**Int. Cl. B04c** *5/04*

**U.S. Cl. 55—459** **6 Claims**



A structure for increasing the separation capacity of a centrifugal-force separator for separating water from a steam-water mix includes a separator having a cylindrical turbulence chamber, and an inlet in the chamber for receiving the mix therein and for directing the same tangentially along the inner wall of the chamber and imparting to the mix a spin motion for separating the water from the mix and for forming a funnel-like figure of steam. The chamber has an axial outlet in the upper region thereof for passing the steam therefrom and a water outlet in the lower region thereof for passing the water therefrom. The structure has a dish-like plate disposed coaxially with respect to the chamber at the lower region thereof for stabilizing the funnel-like figure.

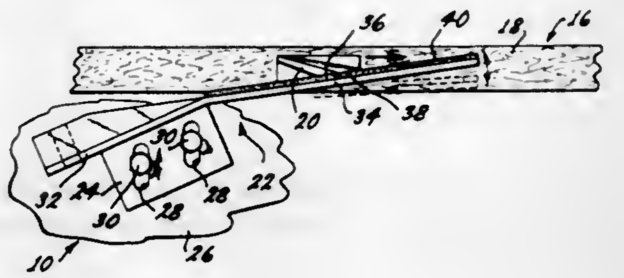
### 3,755,997
### FLEXIBLE ABRASIVE GRINDERS FOR SIDE SHARPENABLE CUTTERS

**John L. Edgerton, Canby, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.**

**Filed Oct. 20, 1972, Ser. No. 299,441**

**Int. Cl. A01d** *55/24*

**U.S. Cl. 56—244** **2 Claims**



An abrasive surface provided on a resilient substrate mounted in the path of a side sharpenable cutter. Upon engagement of the side sharpenable cutter with the abrasive surface, the substrate flexes to permit the cutter to slide over the abrasive surface. The substrate is biased toward the cutter sufficiently to achieve grinding of the metal edge of the cutter.

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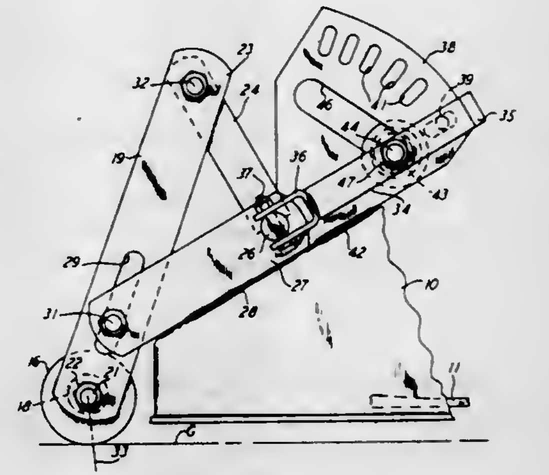
### 3,755,998
### ADJUSTABLE LAWN MOWER ROLLER SUPPORT

**Knud H. Hoffmeyer, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.**

**Filed July 3, 1972, Ser. No. 268,546**

**Int. Cl. A01d** *55/18*

**U.S. Cl. 56—255** **8 Claims**



An adjustable lawn mower roller support having a plurality of spaced-apart rollers rotatably mounted on a shaft supported on the mower from a plurality of links. The links are pivotally connected to additional links which in turn are supported on a rotatable shaft on the lawn mower. A lever is connected to the shaft, and a quadrant secures the selected pivoted positions of the lever and the shaft so that the links and the roller can be vertically adjustably positioned.

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### 3,755,999
### PIVOTED BLADE ASSEMBLIES FOR ROTARY MOWERS

**Dolph Allan Meyer, Turramurra, and Edward Henry Sykes, Greenacre, New South Wales, both of Australia, assignors to Victa Limited, Milperra, New South Wales, Australia**

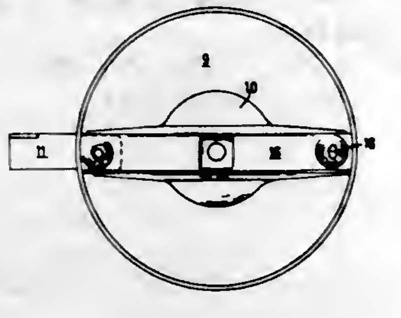
**Filed Sept. 26, 1972, Ser. No. 292,357**

**Claims priority, application Australia, Sept. 28, 1971, 6459**

**Int. Cl. A01d** *55/18*

**U.S. Cl. 56—295** **8 Claims**

A blade holder, for a rotary scythe-type lawnmower, which is constructed as a circular plate formed as an upright truncated cone with a flat top and a flanged base, and wherein a diametral portion is depressed across the cone and has a medial part for mounting of the blade holder to a drive shaft from the lawnmower, and end portions containing mounts for pivotable cutting blades.



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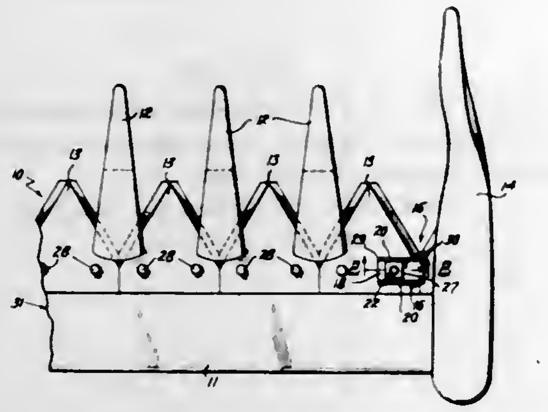
### 3,756,000
## CLEAN TIP SICKLE FIN
**Ralph W. Kerr, Bowman, N. Dak.**

**Filed Sept. 22, 1971, Ser. No. 182,771**

**Int. Cl. A01d** *55/02*

**U.S. Cl. 56—299** **1 Claim**



A clean tip sickle fin for agricultural equipment wherein the fin includes a bottom section or portion having a single opening therein for the projection therethrough of a securing element, the securing element having a fasttener such as a nut thereon, the fin including tapered side walls.

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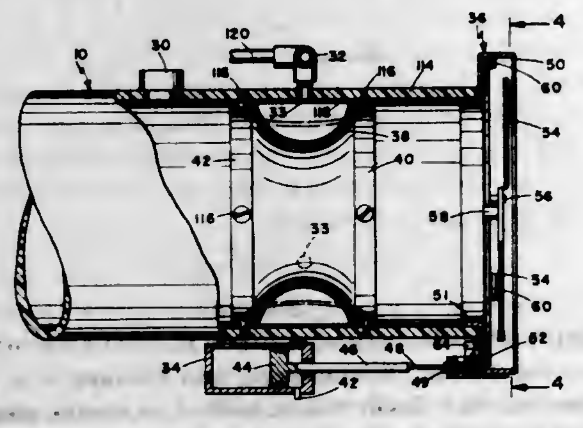
### 3,756,001
## FRUIT HARVESTING APPARATUS
**John C. Macidull, 400 B Tyler St., China Lake, Calif.**

**Filed May 18, 1972, Ser. No. 254,432**

**Int. Cl. A01g** *19/00*

**U.S. Cl. 56—328** **7 Claims**



Apparatus for removing fruit from a tree within the tubular body of the device utilizing vacuum pressure. The fruit is received against a flexible diaphragm adjacent the end of the tubular body portion. The fruit sealing against the diaphragm has the effect of decreasing the pressure within the remainder of the body portion under the influence of the vacuum. This reduction in pressure is sensed by a pressure transducer which activates a cutter mechanism secured to the end of the tubular body. The cutter severs the fruit stem freeing the fruit. The transducer also opens a valve to bleed air from the flexible diaphragm and allow the severed fruit to pass down the body into a storage bin under the influence of the vacuum source.

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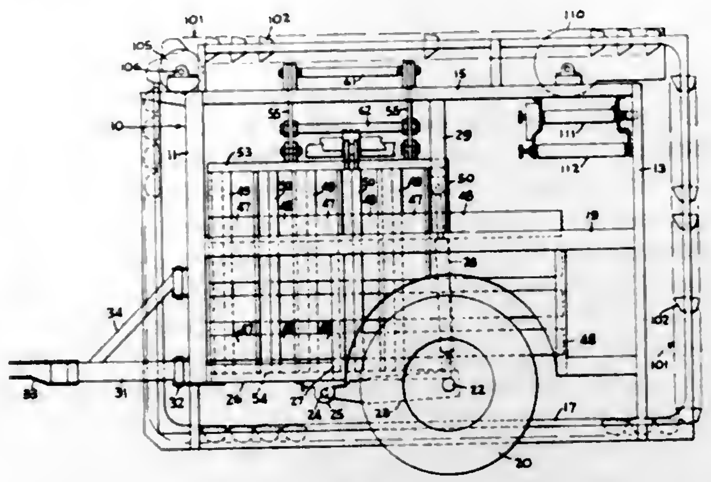
### 3,756,002
## CONVEYOR MEANS FOR HARVESTING MACHINES
**Vito M. Mecca, North Collins, N.Y., assignor to Mecca Bros. Inc., North Collins, N.Y.**

**Filed July 23, 1971, Ser. No. 165,082**

**Int. Cl. A01g** *19/00*

**U.S. Cl. 56—330** **12 Claims**



A conveyor system for harvesting machines comprising a plurality of pivotally supported buckets, of relatively rigid and nonporous material such as metal or plastic, adapted to be moved through an endless path. The path includes spaced-apart horizontal and vertical portions each defined by spaced apart and parallel rail members fixed to the machine frame. Each bucket is supported in a position for carrying crops along portions of the path by means of a rod rotatably connected to the bucket and having bearing means or rollers mounted at each end thereof for engaging the rails. Each bucket is pivoted to a position for discharging crops along other portions of the path by means carried by the bucket which engages a rail in a manner pivoting the bucket about the rod.

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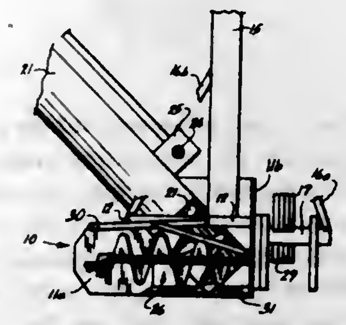
### 3,756,003
## APPARATUS FOR LOADING PARTICULATE MATERIALS SUCH AS FESCUE SEED FROM A FIELD INTO HAULING CARRIERS
**William T. Divine, Archie, Mo., assignor to Frank Orville Buerge, Archie, Mo., a part interest**

**Filed Dec. 8, 1971, Ser. No. 205,915**

**Int. Cl. A01d** *65/04*

**U.S. Cl. 56—344** **3 Claims**



An apparatus for loading particulate materials such as fescue seed has a scraper and a pan support structure which is interconnected with a three point hitch of a tractor. The scraper pan has a lifting auger located therein which is operable to convey the particulate material out of the pan and into an accompanying truck or wagon. A second auger is angularly located with respect to the input of the lifting auger within the confines of the scraper pan to move the particulate material within the scraper pan into the lifting auger input portion.

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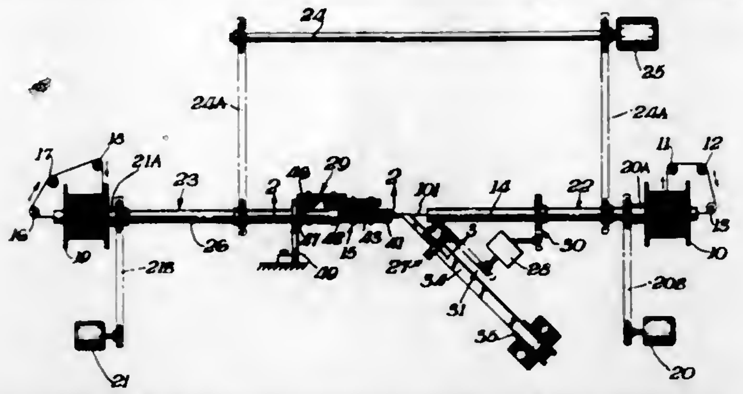
### 3,756,004
## METHOD AND APPARATUS FOR INSULATING ELECTRICAL CONDUCTORS
**Wilbert L. Gore, Newark, Del., assignor to W. L. Gare & Associates, Inc., Newark, Del.**

**Continuation-in-part of Ser. No. 666,007, Sept. 7, 1967, abandoned. This application Sept. 21, 1970, Ser. No. 73,769**

**Int. Cl. H01b** *13/08;* **B65h** *81/00*

**U.S. Cl. 57—11** **6 Claims**



Wire is fed along its longitudinal axis from a supply to a take-up by a power driven capstan. In one embodiment, the capstan, wire supply, and take-up are rotated about the axis of the wire to impart rotation of the wire. Tape is fed through pinch rollers to the
pinch rollers to the advancing and spinning wire and is spirally wrapped around the wire. The tape feed rate is controlled so as to impart constant elongation to the tape by correlating the speed of the tape feed rollers by suitable connecting means with both the rate of rotation and rate of advance of the wire, thereby resulting in uniform insulation thickness on the wire. Alternatively, the tape can be rotated about a non-rotating wire.

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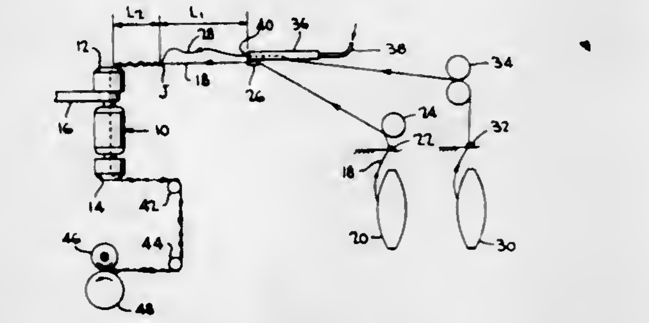
### 3,756,005
## PROCESS AND APPARATUS FOR FORMING NOVELTY EFFECT YARNS
**Pierre Seguin, Chavanoz, France, assignor to Chavanoz S.A., Chavanoz, France**

**Filed Mar. 24, 1972, Ser. No. 237,823**

**Int. Cl. D01h** *7/92, 13/10;* **D02g** *3/34*

**U.S. Cl. 57—34 R** **17 Claims**



A process for producing a novelty effect yarn having stable protuberances along the length thereof including feeding core and effect yarns to a friction false twist assembly along spaced, substantially parallel paths, the effect yarn having an irregular undulation and undergoing a sudden change in direction from the spaced path to a junction point with the core yarn, the junction point being spaced upstream from the friction element of the friction false twist assembly and the distance between the junction point and the friction element varying. Apparatus for implementing the above process including a nozzle for projecting a fluid stream to move the effect yarn along a spaced, substantially parallel path relative to the core yarn.

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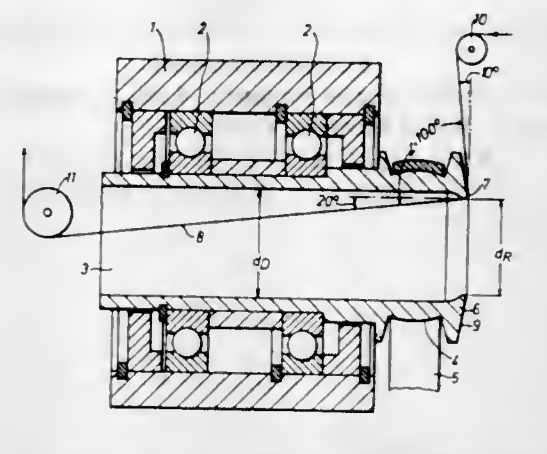
### 3,756,006
## FALSE-TWIST ARRANGEMENT
**Karl-August Heinroth; Herbert Neumann; Rudi Dauscher; Hans-Dieter Jurischka, and Hans Bach, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Feb. 4, 1971, Ser. No. 112,643**

**Claims priority, application Germany, Feb. 19, 1970, P 20 07 508.5**

**Int. Cl. D02g** *1/06;* **D01h** *7/92*

**U.S. Cl. 57—77.4** **9 Claims**



For the production of synthetic, texturised fine yarns or filaments, a false-twist arrangement is used which comprises a rotary tube provided on the entry side with an annular bead having a rounded, highly polished edge, thread guides being so arranged that the filament contacts the rotary tube only at the highly polished edge of the bead and encloses between the supply and discharge direction an angle greater than 90°.

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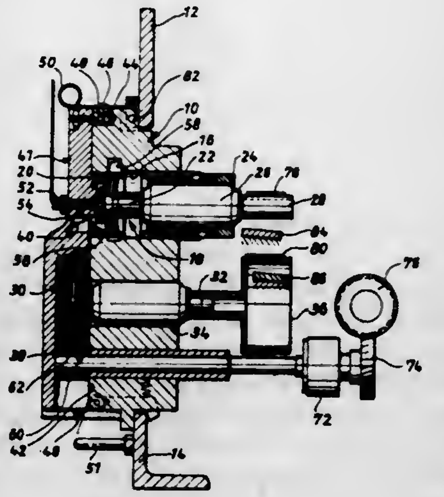
### 3,756,007
## SPINNING DEVICE FOR PRODUCING A FILAMENT FROM A FIBER STRIP
**Gerhard Bartling, Burgstall (Murr), Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany**

**Filed June 15, 1971, Ser. No. 153,195**

**Claims priority, application Germany, June 18, 1970, P 20 29 818.6**

**Int. Cl. D01h** *1/12, 11/00*

**U.S. Cl. 57—58.91** **11 Claims**



This invention relates to a spinning device for spinning a filament yarn from a fiber strip. In general such spinning devices comprise a spinning rotor defining a spinning chamber. A fiber singling-out device ⁺ or needle roller, combined with a fiber strip delivery system, comprising a high speed roller is provided for opening up a fed fiber strip into its individual fibers. The separated individual fibers are fed by an air current, over a fiber feed channel, to the spinning chamber, and the spun filament or yarn is drawn off through a yarn delivery channel.

In one known construction the fiber singling-out device is disposed in the housing holding the rotor behind the rotor and coaxial to same.

In a second known construction the fiber singling-out device is mounted on an independent bearing member, in front of the spinning rotor and with its axis vertical thereto.

+) "Vereinzelungswalze" literally translated means individualizing roller, i.e., a roller for separating a fiber strip into its component fibers. For sake of clarity it will hereinafter be referred to as "fiber singling-out device."

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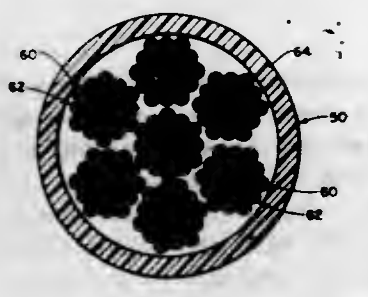
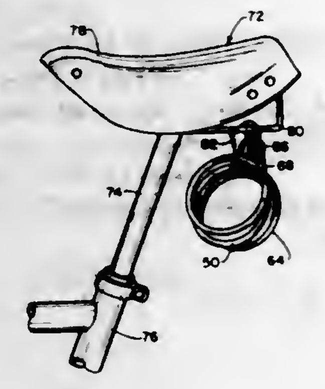
## 3,756,008
## SELF-COILING WIRE CABLE AND METHOD OF FORMING SAME

**Gordon F. Smith, Santa Barbara, Calif., assignor to Helistrand, Inc., Santa Barbara, Calif.**

**Filed Aug. 23, 1972, Ser. No. 283,174**
**Int. Cl. D07b** *1/16*; **B21f** *3/02*; **E05b** *7/00*
**U.S. Cl. 57—139** **29 Claims**





A locking cable which is constructed of a plurality of separate strands with each strand containing a plurality of separate wires, each wire being between 0.005 and 0.012 of an inch in diameter. One side of the cable along its entire longitudinal length is stretched so that the material along that side is caused to exceed its yield point and be permanently deformed. As a result, the cable assumes a natural helical coiled configuration. A plastic cover may be applied to the cable in a close fitting relationship to help prevent the cable from becoming untwisted. The method of making the helical coiled cable comprises preforming and twisting of a plurality of separate wires together in a clockwise direction to form a strand, preforming and twisting a plurality of separate strands together in a counterclockwise direction to form the cable, and stretching one side of the cable along its entire length. An apparatus to perform the method of this invention comprises a pair of roller assemblies through which the cable is conducted with the cable being passed about a pin with an angular displacement exceeding 190°. The cable is passed through the apparatus in an extremely taut manner which causes one side of the cable to be permanently deformed.

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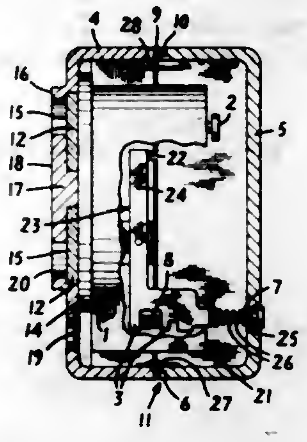
## 3,756,009
## ALARM CLOCK CASE MADE OF TWO SECTIONS OF WHICH ONE IS THE MEANS FOR STOPPING THE ALARM BELL

**Richard F. Sapper, Stuttgart, Germany, assignor to Italora S.p.A., Milano, Italy**

**Filed Apr. 4, 1972, Ser. No. 240,949**
**Claims priority, application Italy, Apr. 9, 1971, 21457 B/71**
**Int. Cl. G04b** *13/00*
**U.S. Cl. 58—21.15** **9 Claims**



An alarm clock comprising a casing composed of front and rear casing sections. The two casing sections are mounted for manual movement toward and away from each other while they are maintained in a substantially parallel relationship. An electric alarm mechanism is completely enclosed in the casing and develops an audible alarm signal when energized in use. The alarm mechanism is connected in a normally open electric circuit that is operative when closed to energize the alarm mechanism. Means are provided that are responsive to the movement of the casing sections towards each other for opening the circuit thereby deenergizing the alarm mechanism.

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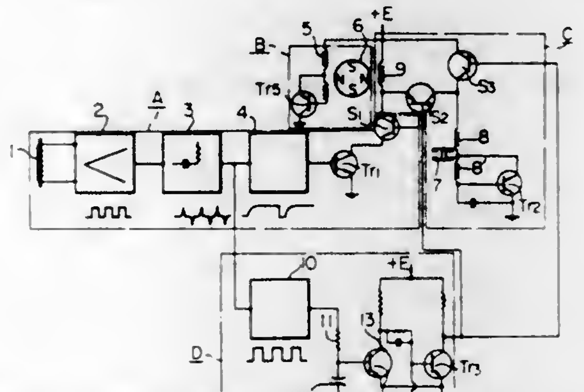
## 3,756,010
## MAGNETIC-INDUCTION CLOCK

**Rokusaburo Kimura; Masanori Kajihara, and Akihide Kotani, all of Osaka, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan**

**Filed Aug. 6, 1971, Ser. No. 169,734**
**Claims priority, application Japan, Aug. 11, 1970, 45/70668**
**Int. Cl. G04b** *1/00*
**U.S. Cl. 58—23 R** **7 Claims**



In the clocks wherein the induction magnetic field of a commercial frequency is detected, and the detected signal is amplified, thereby driving the transistor motor, a magnetic induction type clock of which the transistor motor is driven in normal state by said detected signal but in abnormal state such as in the event of any fluctuation in the external field or power interruption, the transistor motor is driven by a signal supplied from a separately provided standard oscillation source.

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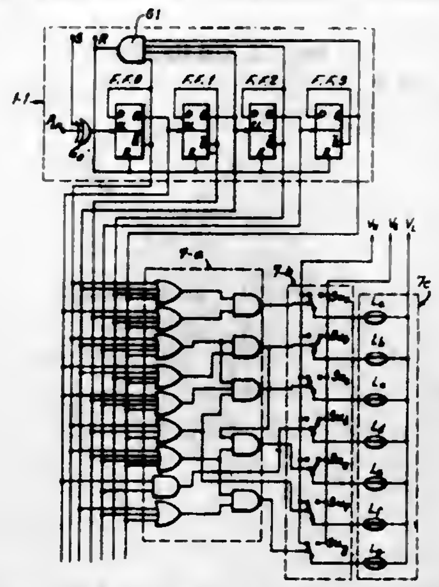
## 3,756,011
## TIME CORRECTING DEVICE FOR ELECTRONIC TIMEPIECES

**Izuhiko Nishimura, and Akio Shimoi, both of Nagano-ken, Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

**Filed Sept. 7, 1972, Ser. No. 287,200**
**Claims priority, application Japan, Sept. 13, 1971, 46/71067; Sept. 13, 1971, 46/71069; Sept. 23, 1971, 46/74449**
**Int. Cl. G04c** *3/00*; **G04b** *27/00*
**U.S. Cl. 58—23** **10 Claims**



An electronic timepiece is provided with a plurality of display elements for the digital display of time driven by time keeping circuitry. A time correcting device coupled to said time keeping circuitry is provided for independently correcting each of said display elements other than the second display elements, said time-correcting device including means for correcting the second display elements by returning same to zero. In another embodiment each of the digits are separately correctable, a carry suppression gate being interposed between the time-keeping circuitry for certain of the display elements actuated by a correction mode signal to permit independent correction of at least minutes and hours. Time correction may be either by the one-step method or the quick feed method.

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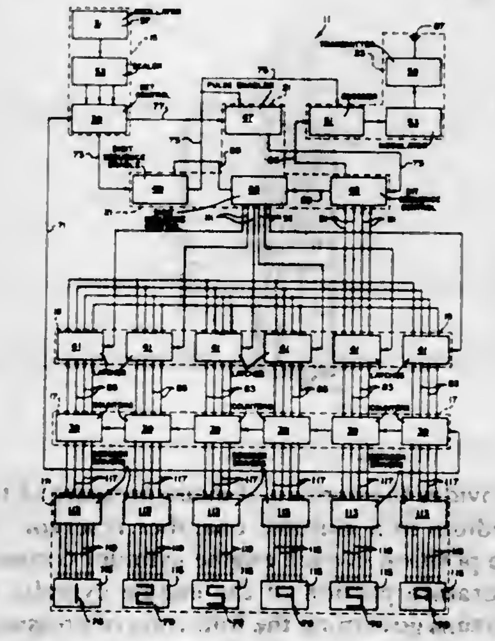
## 3,756,012
## TIME SYSTEM

**Alfred Kiss, Memphis, Tenn., assignor to Ranger Tool Co. Inc., Ellendale, Tenn.**

**Filed July 27, 1972, Ser. No. 275,814**
**Int. Cl. G04c** *13/02*
**U.S. Cl. 58—24 A** **14 Claims**



A time system having a time-generating station for generating coded time signals and for transmitting the signals at a specific radio frequency and a remote time-displaying station for receiving the coded time signals from the time-generating station and for displaying the coded time signals in standard time notation.

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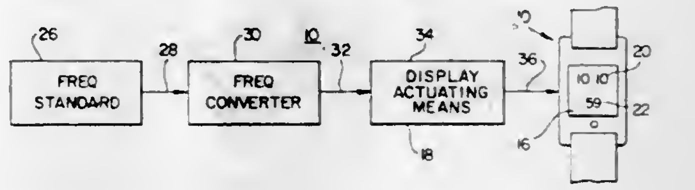
## 3,756,013
## SOLID STATE WATCH

**John M. Bergey, and Richard S. Walton, both of Lancaster, Pa., assignors to HMW Industries Inc., Lancaster, Pa.**

**Division of Ser. No. 35,196, May 6, 1970, Pat. No. 3,672,155. This application Apr. 20, 1972, Ser. No. 245,960**
**Int. Cl. G04b** *19/30, 27/00*
**U.S. Cl. 58—50 R** **13 Claims**



Disclosed is a solid state watch which requires no moving parts for timekeeping and display. The watch comprises a crystal controlled oscillator connected through an intergrated circuit binary frequency divider to an electro-optical display in the form of light emitting diodes. The display is energized only on demand and the level of the light output is controlled in accordance with ambient light conditions. The watch is energized from a rechargeable battery.

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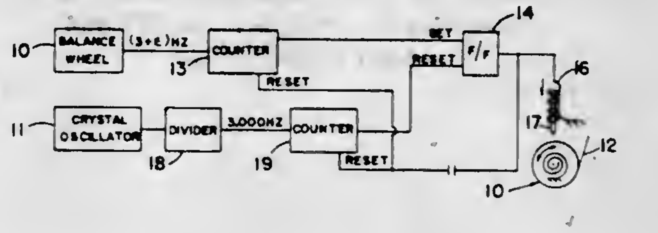
## 3,756,014
## SYNCHRONIZED QUARTZ CRYSTAL WATCH

**Norman C. Zatsky, Briarcliff Manor, and Leo Wiesner, Kew Gardens, both of N.Y., assignors to Timex Corporation, Waterbury, Conn.**

**Filed May 18, 1971, Ser. No. 144,601**
**Int. Cl. G04c** *3/04*; **H03b** *5/32*
**U.S. Cl. 58—28 R** **5 Claims**



A highly accurate watch, comprising a quartz crystal time base and a movement controlled by an oscillator regulated to run slightly fast and being periodically connected to the quartz crystal time base. In one embodiment, a pulse counter totals the number of pulses put out by the watch oscillator during its normal operation and activates means to stop the oscillator when a sufficient number of pulses equal to a fixed time period has been reached. A second counter totals the pulses from the quartz cyrstal time reference and reactivates the watch when the number pulses equals the fixed time period thereby wiping out accumulated time errors. In a second embodiment, the output from a balance wheel oscillator and a divided down time base frequency are fed to a flip - flop. The output square wave increases in width due to the frequency difference between the balance wheel and time base and is integrated by an RC circuit. A Schmitt trigger circuit and monostable multivibrator are coupled to the flip - flop so that the trigger circuit is activated for a fixed short time interval and stops the balance wheel through a solenoid. After elapse of the fixed time interval, the balance wheel starts again.

**3,756,015**

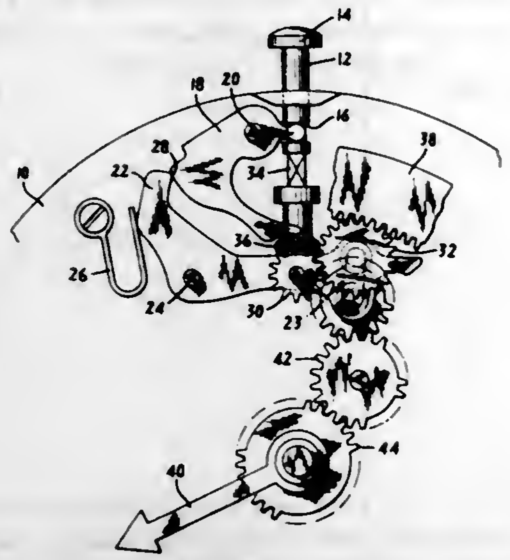
### TIME CORRECTING DEVICE FOR A WATCH HAVING PLURAL TIME-DISPLAYS

**Toshiaki Saito, Suwa-shi, Nagano-ken, and Hisashi Kobayashi, Okaya-shi, Nagano-ken, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

**Filed Jan. 31, 1972, Ser. No. 222,261**

**Int. Cl. G04b** *19/22, 27/02*

**U.S. Cl. 58—42.5** **3 Claims**



A correction device for a watch having a plurality of adjustable time displays utilizes a single control element extending externally of the watch and adapted to be manually operated to adjust the plurality of time displays. Operating means operatively associates each of the adjustable time displays with the control element whereby the latter is operable to adjust each of the time displays. By way of example, the control element may be used to adjust a first time display indicating local time and a second time display indicating the hour in a time zone other than that in which the wearer of the watch is located.

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**3,756,016**

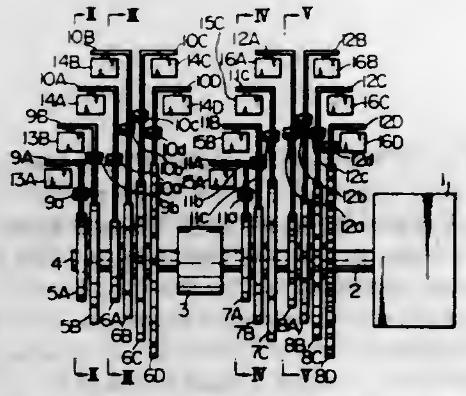
### DEVICE FOR GENERATING TIME PULSES

**Sachio Kimura, Tokyo, and Yoshiaki Aoki, both of Tokyo, Japan, assignors to Kabushikikaisha Copal, Tokyo, Japan**

**Filed May 30, 1972, Ser. No. 257,864**

**Int. Cl. G04b** *19/30*

**U.S. Cl. 58—50 R** **4 Claims**



Device for generating time pulses to be supplied to a binary circuit as binary code signals to digitally indicate the time in terms of hour and minute. The device has an hour shaft rotated intermittently at intervals of an hour so that it rotates one complete revolution during 24 or 12 hours, and a minute shaft rotated by one revolution per 60 minutes. Two sets of cams are fixedly secured to the hour shaft and the minute shaft, respectively, and a switch is operatively coupled to each of the cams so as to be opened and closed as the shafts rotate. The cams are so profiled that the pulses generated by the opening and closing of the respective switches are used as binary code signals supplied to the binary circuit so as to digitally indicate the time in terms of hour and minute.

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**3,756,017**

### WATCH CASE

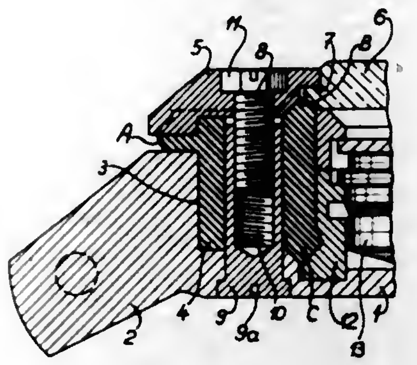
**Gerald Genta, Geneva, Switzerland, assignor to Societe Anonyme de la Manufacture d'Horlogerie Audemars, Piquet & Co., Le Brassus, Switzerland**

**Filed Oct. 30, 1972, Ser. No. 301,738**

**Claims priority, application Switzerland, Dec. 6, 1971, 17724/71**

**Int. Cl. G04b** *37/08*

**U.S. Cl. 58—90 R** **1 Claim**



A fluid-tight watch case comprises a back casing and a bezel including a glass connected by screws, a fluid-tight packing interposed between the back casing, bezel and glass, and a frame for supporting a watch movement. Said screws each have a head countersunk in the bezel and are screwed into a rod having a tapped bore, each rod having means for effecting rotation thereof. Each screw and rod passes through and is embedded in the fluid-tight packing and ensures fluid-tightness between the glass and the bezel, between the back casing and the bezel and between the back casing and the movement frame.

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**3,756,018**

### VARYING THE POWER OUTPUT OF STIRLING CYCLE ENGINES

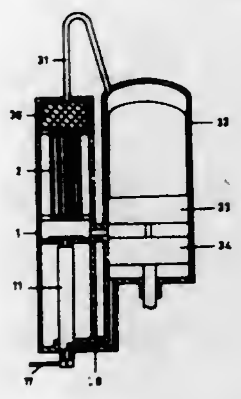
**Sven Anders Samuel Hakansson, Karolingatan 10, 212 34 Malmo, Sweden**

**Filed Oct. 20, 1971, Ser. No. 191,038**

**Claims priority, application Great Britain, Nov. 21, 1970, 55,470/70**

**Int. Cl. F02g** *1/04, 1/06*

**U.S. Cl. 60—24** **5 Claims**



Means provides the varying of mean pressure of the gaseous working medium in a multiple chamber reservoir at a higher temperature position in each engine cylinder connected to the lower temperature portion of the engine cylinder with valve regulating means governing the following of pressures of gas in the various stages and the cooler portion of the engine cylinder.

**3,756,019**

### GAS TURBINE BLADE ARRANGEMENT

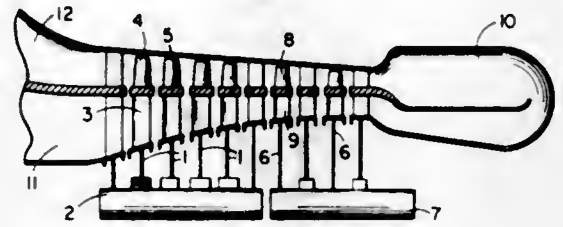
**Heinrich Holzapfel, Steinbrinkstrasse 124, 42 Oberhausen-Sterkrade, Germany, and Jan-Albert Konings, Overbeeklaan, Velp, Netherlands**

**Filed July 2, 1971, Ser. No. 159,449**

**Claims priority, application Germany, July 3, 1970, P 20 32 964.0**

**Int. Cl. F02c** *3/10;* **F01d** *1/04*

**U.S. Cl. 60—39.16 R** **2 Claims**



A gas turbine is formed with a first and a second stage, the first stage contains wheels on which turbine blades are concentrically arranged around compressor blades and the second stage contains wheels on which turbine blades are concentrically arranged around webs. A combustion chamber is arranged to receive air after it has been compressed by the compressor blades in the first stage and has been guided but not further compressed by the webs in the second stage. After the compressed air is heated in the combustion chamber it passes over the turbine blades in the second stage and then over the turbine blades in the first stage. The turbine blades in the first stage are hollow and air is withdrawn from the compressor side in the first stage and passed into the interior of the turbine blades to cool them.

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**3,756,020**

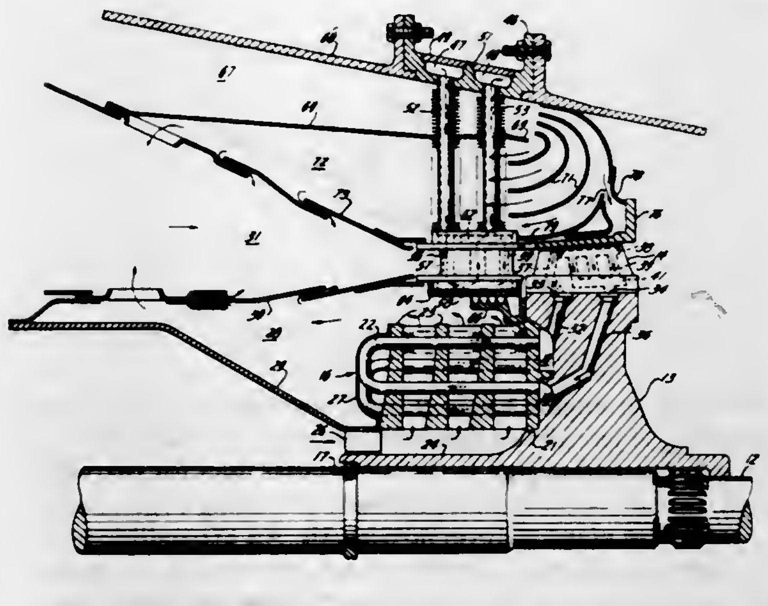
### GAS TURBINE ENGINE AND COOLING SYSTEM THEREFOR

**Seymour Moskowitz, Fort Lee; Hargus Watts, Mahwah, and Arthur R. Stappenbeck, Pequannock, all of N.J., assignors to Curtis-Wright Corporation, Wood-Ridge, N.J.**

**Filed June 26, 1972, Ser. No. 266,331**

**Int. Cl. F02c** *7/12*

**U.S. Cl. 60—39.66** **12 Claims**



The stator vanes and rotor blades of a gas turbine engine are cooled internally by the circulation of a fluid coolant in a closed and sealed system, the heat absorbed from the blades and vanes by the coolant being extracted in a heat exchanger cooled by bleed air from the compressor, and the air thus heated then returning its heat load to the power cycle by being fed into the combustion chamber to take part in the combustion reaction. The engine is designed in such a manner that the turbine rotor with its blades and sealed internal cooling system, and the stator ring with its vanes and sealed internal cooling system, can be disassembled from the engine as units without breaking the sealed cooling system.

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**3,756,021**

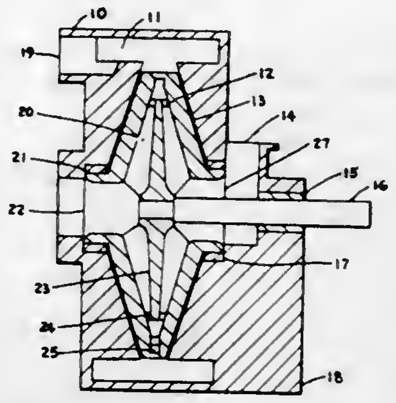
### MIXED FLUID TURBINE

**Michael Eskell, 2932 Sandage Ave., Fort Worth, Tex.**

**Filed Oct. 26, 1971, Ser. No. 192,383**

**Int. Cl. F01d** *1/18, 3/02*

**U.S. Cl. 60—39.02** **10 Claims**



Method and apparatus for generating power in response of a fluid flowing through a set of reaction nozzles mounted on a rotating rotor wheel. Two fluid streams are initially employed, one being the cool fluid, and the other stream being the hot fluid; these two streams are then compressed within said rotor wheel, passed to a mixing area within said wheel, and then discharged through said nozzles. Also, a system using air as the cool fluid, and air heated by burning fuel in said air as the hot fluid, is disclosed.

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**3,756,022**

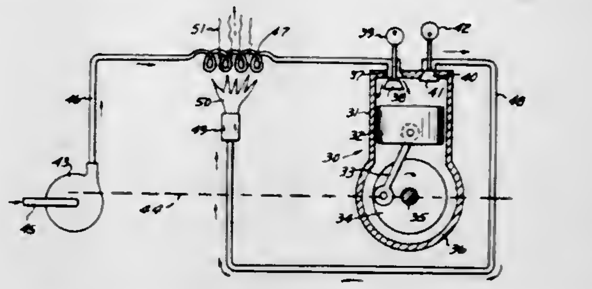
### EXTERNAL COMBUSTION ENGINE

**Jacques O. Pronovost, and Burke A. Brown, both of 34 Farrington Dr., Willowdale, Ontario, Canada**

**Filed June 7, 1971, Ser. No. 152,459**

**Int. Cl. F01k** *27/00*

**U.S. Cl. 60—59 R** **2 Claims**



An external combustion engine whose working mechanism is operated by unburned, compressed, hot gas, which gas is heated, after compression and before entering the engine, by a flame-type combustion heater whose flame is produced by the hot gas exhausted from the engine.

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**3,756,023**

### HEAT RECOVERY STEAM GENERATOR EMPLOYING MEANS FOR PREVENTING ECONOMIZER STEAMING

**Paul A. Berman, Plymouth Meeting, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

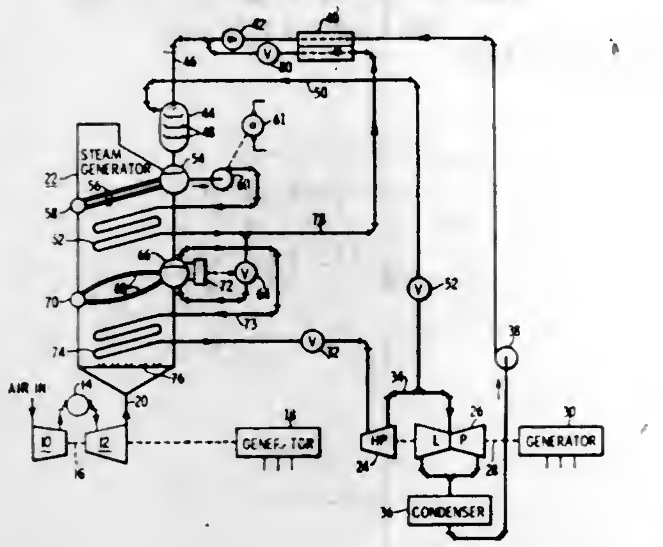
**Continuation of Ser. No. 99,094, Dec. 17, 1970, abandoned.**

**Filed Dec. 1, 1971, Ser. No. 203,790**

**Int. Cl. F22d** *1/28, 7/00*

**U.S. Cl. 60—106** **9 Claims**

A system for preventing the formation of steam in an economizer coil disposed within a heat recovery steam generator used in a combined gas turbine and steam turbine power plant. This is accomplished by recycling a portion of the water at the output of the economizer back into the condensate conduit feeding the steam generator such that a constant water flow will be maintained through the economizer under all operating conditions, preventing a more or less stagnant water condition in the economizer and insuring against the formation of steam therein. The recirculated water, prior to entering the condensate conduit, is preferably passed through a heat exchanger where the heat of the water from the economizer is transferred to the incoming condensate to prevent flashing as the water from the economizer enters the condensate conduit through a valve.



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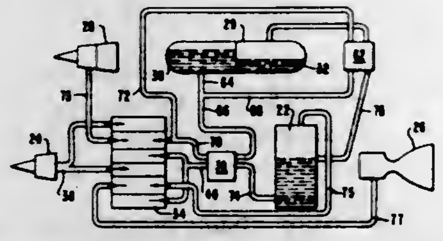
### 3,756,024
### METHOD AND APPARATUS FOR COORDINATING PROPULSION IN A SINGLE STAGE SPACE FLIGHT

**Archibald Gay, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.**
**Filed Feb. 23, 1962, Ser. No. 176,859**
**Int. Cl. B63h** *11/00*
**U.S. Cl. 60—204** **9 Claims**



1. A method of propelling a space plane from the earth surface through the earth atmosphere into space and then return to the earth surface which plane initially carries fuel and utilizes oxidizer later collected from said atmosphere, comprising the steps of, propelling said plane from said earth's surface to a given altitude and velocity in said atmosphere by liquid air cycle engine propulsion, propelling said plane at an increasing altitude and velocity for a given period of time by ramjet propulsion, collecting liquid air in said plane from said atmosphere during said given period of time, separating said liquid air into nitrogen and liquid oxygen, expelling said nitrogen from said vehicle while storing a sufficient quantity of said liquid oxygen in said plane to facilitate space flight using said liquid oxygen and said fuel in said liquid air cycle engine to propel said plane from said atmosphere into space by rocket propulsion, and flying said plane to said earth's surface.

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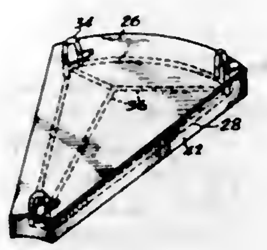
### 3,756,025
### HANDLING MEANS FOR SLOT FORMERS

**Edward E. McCullough, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.**
**Filed July 14, 1971, Ser. No. 162,543**
**Int. Cl. F02c** *3/26*
**U.S. Cl. 60—255** **3 Claims**



In slot formers for solid propellant rocket grains, of the type wherein a disk of propellant is equipped with ribs on one side to provide a radially extending slot between forward and aft components of a solid propellant rocket grain, a rigid reinforcing frame embedded in the propellant disk is provided with loops that extend beyond the surface of the disk to serve as handling means therefore.

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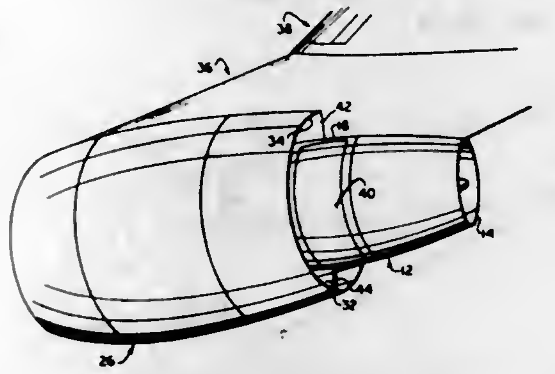
### 3,756,026
### PROPULSION FLOW MODULATING SYSTEM

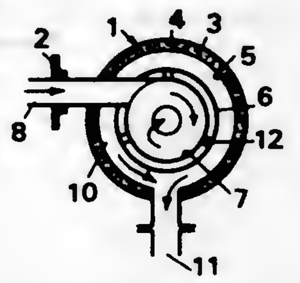
**Richard H. Timms, San Diego, and Leonard Holman, Imperial Beach, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.**
**Filed Apr. 23, 1971, Ser. No. 136,752**
**Int. Cl. F02k** *1/06, 3/04*
**U.S. Cl. 60—226 R** **1 Claim**



Front fan jet engine has core cowl surrounding engine and terminating in jet exhaust nozzle. Elongate streamlined shroud surrounds fan and engine to define annular duct for rearward flow of fan air and terminates forward of trailing edge of cowl in a transverse plane to form nozzle exit. An expandible band of elastomeric material extends around substantially the entire periphery of the cowl at the nozzle exit plane and fore and aft of the plane, the margins being sealed to the cowl wall. The intermediate peripheral portion of the band is expanded radially toward the wall of the shroud to decrease the flow area and modulate the flow when required by the flight regime. In preferred form, the cowl wall under the band is perforated and a plenum chamber under the perforated area supplies pressure fluid to extend the band. Pressure fluid may be from any source, such as engine bleed air, and is supplied to penum chamber by suitable conduit.

### 3,756,027
### EXHAUST EMISSION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

**Kenji Gotoh; Masato Yokota, and Ken-ichi Uchida, all of Sunto-gun, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-City, Aichi Prefecture, Japan**
**Filed June 4, 1971, Ser. No. 150,078**
**Claims priority, application Japan, Aug. 17, 1970, 45/71928**
**Int. Cl. F01n** *3/10, 7/10*
**U.S. Cl. 60—323** **5 Claims**



An exhaust emission control device comprising an inner core for causing unburned and nozious contained in exhaust gas from the internal combustion engine to undergo an oxidation reaction therein to convert to the innoxious gas, inlet tubes connected at one end thereof to said exhaust ports of the internal combustion engine and at the other end thereof to the cylindrical wall of the inner core tangentially with respect thereto so as to indroduce exhaust gas from the exhaust valve into the inner core, and exhaust gas outlet ports from inner core formed at opposite end walls concentrically in inner core and axially spaced apart from each other.

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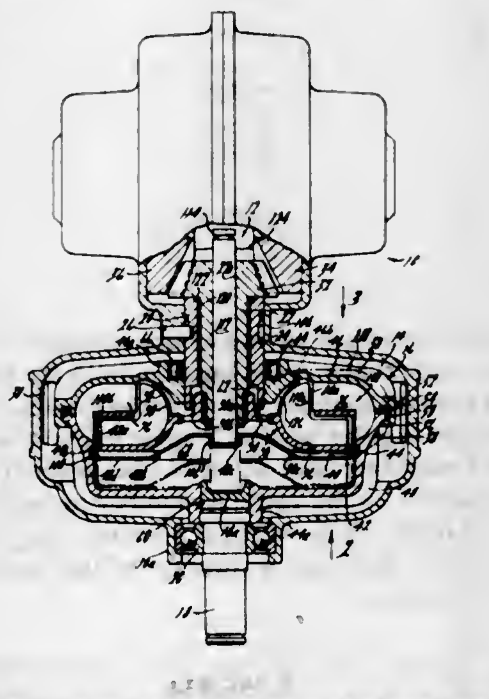
### 3,756,028
### HYDROKINETIC COUPLING

**Warren G. Bopp, Farmington, and William S. Nagel, Cincinnati, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio**
**Filed Apr. 19, 1972, Ser. No. 245,417**
**Int. Cl. F16h** *41/04*
**U.S. Cl. 60—353** **18 Claims**



A hydrokinetic coupling of the toroidal fluid flow type having an impeller member and a turbine member. The impeller member has a radially inwardly facing trough positioned radially outward of the turbine member which has a radially outwardly facing trough. The troughs together form a toroid of substantially elliptical cross section. A plurality of mutually facing stepped blades circumferentially disposed in the impeller and turbine member troughs define a stepped annular gap between the members. The gap is generally Z-shaped and includes two gap portions parallel to the rotational axis of the members radially offset by a third gap portion transverse to the rotational axis. An annular core guide ring is disposed in the transverse gap portion and secured to the impeller blades; this ring cooperates with a cylindrical sleeve, which is selectively movable into one of the offset gaps, to control fluid circulation between the impeller and the turbine.

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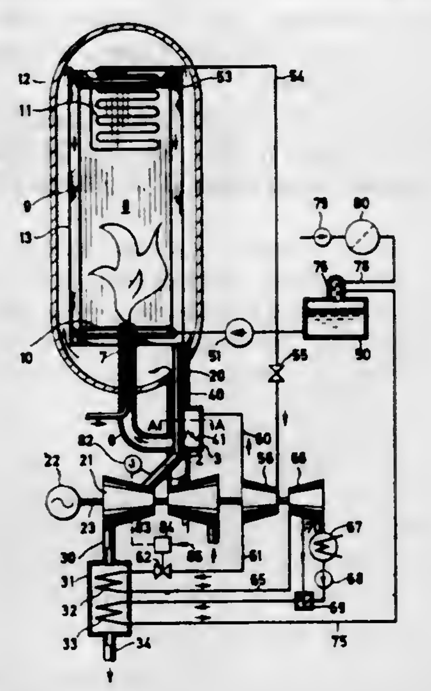
### 3,756,029
### GAS/STEAM TURBINE PLANT AND A METHOD OF OPERATING SAME

**Emile Aguet, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland**
**Filed Aug. 3, 1971, Ser. No. 168,688**
**Claims priority, application Switzerland, Aug. 12, 1970, 12089/70**
**Int. Cl. F01k** *23/06*
**U.S. Cl. 60—39.18 B** **9 Claims**



A second steam turbine is connected to the existing steam turbine to be operated by the exhaust steam of the existing steam turbine. In addition, the exhaust steam from the existing steam turbine is heated by the waste gas of the plant before entering the second turbine.

The air supply is also connected over a throttle to the steam line into the pressure vessel to cool the outside of the combustion chamber walls.

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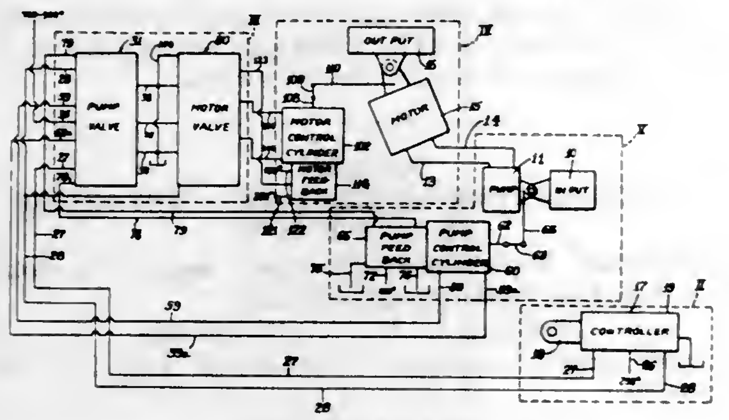
### 3,756,030
### HYDROSTATIC TRANSMISSION CONTROL WITH HYDRAULIC FOLLOW-UP

**Charles A. Ruhl, Wheaton; Edward Meyer, North Riverside, and Probir K. Chatterjea, Des Plaines, all of Ill., assignors to International Harvester Company, Chicago, Ill.**
**Division of Ser. No. 97,899, Dec. 14, 1970, Pat. No. 3,693,503. This application Mar. 2, 1972, Ser. No. 231,770**
**Int. Cl. F16h** *39/46*
**U.S. Cl. 60—487** **2 Claims**

A hydraulic follow-up for use with a hydraulic system placed between a rotating input member and a rotating output member. The hydraulic system is a hydrostatic transmission for driving a tractor, and comprises a hydrostatic pump and a hydrostatic motor driven by the pump. When the hydrostatic pump is angularly shifted with respect to the input member,



the shifting is controlled by the hydraulic follow-up, which also shifts the motor in relation to the output member.

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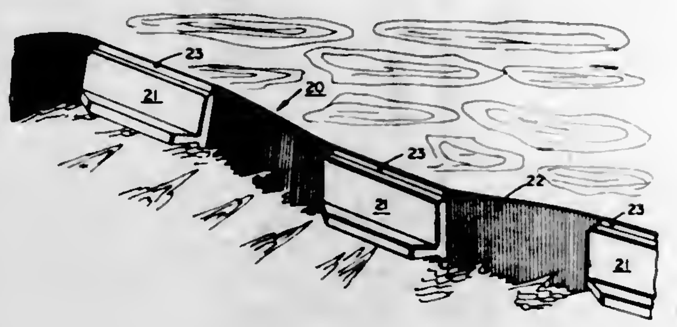
### 3,756,031
## SELF-RIGHTING FLOATING BOOMS

**Millard F. Smith, 2 Harding Ln., Westport, and Anthony V. Anusauckas, Fairfield, both of Conn., assignors to said Smith, by said Anusauckas**

**Continuation-in-part of Ser. No. 815,663, April 14, 1969. This application July 21, 1971, Ser. No. 164,606**

**Int. Cl. E02b** *15/04*; **A44b** *17/00*; **B32b** *17/10*

**U.S. Cl. 61—1 F** **11 Claims**



A unique self-righting and quickly deployable floating boom capable of enduring strong winds and waves comprises a series of polymer floats each incorporating a horizontally extending shelf securely attached at spaced intervals to an integral composite fin of vinyl sheet reinforced by woven polyester fibers incorporating an interwoven core of two characteristically different fibers that provide the vinyl sheet with different vertical and horizontal flexing capabilities. An extension shelf formed on each of the polymer floats provides the boom with additional buoyancy while also serving as a barrier effectively containing oil and other floating materials despite wind, choppy water and strong waves. Furthermore, the extension shelves incorporate fore and aft lifting surfaces which tend to induce "planing" and counteract the forces which tend to draw the floating boom beneath the water surface during fast end-wise deployment. The dual fiber core of the vinyl sheet is manufactured with relatively thin horizontal fibers interwoven with relatively stiff, thick vertical fibers to allow the vinyl sheet to flex easily about vertical flexing axes while strongly resisting horizontal flexing about horizontal flexing axes.

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### 3,756,032
## SLUICEGATE STRUCTURE

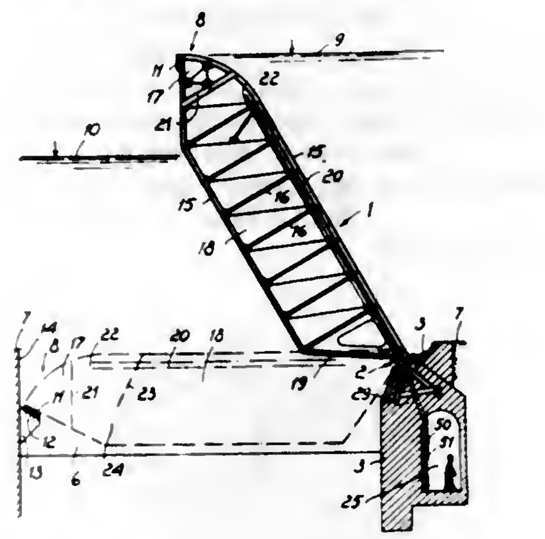
**Ludovico Solinas, Bologna, Italy, assignor to Riva Calzoni S.p.A., Bologna, Italy**

**Filed Mar. 10, 1971, Ser. No. 122,737**

**Int. Cl. E02b** *7/42*

**U.S. Cl. 61—25** **4 Claims**

Sluice gate of the flap type to dam large canals or access openings of internal basins, for example to dam the accesses of lagoons to the open sea and comprises hinged hollow elements



which can be flooded with water to cause sinking into a recess, or floated by means of compressed air thus forming a barrage.

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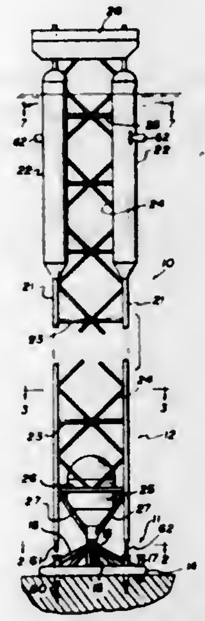
### 3,756,033
## OFFSHORE STRUCTURE WITH ROTATING AND INDEXING MECHANISM FOR PLACING PILES

**Frederick Horace Kouka, Western Springs, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.**

**Filed Nov. 12, 1971, Ser. No. 198,341**

**Int. Cl. E02b** *17/00*; **B63b** *35/44*

**U.S. Cl. 61—46.5** **9 Claims**



An offshore structure having a base resting on a sea floor, a plurality of vertical pile-receiving sleeves in the base, an elongated rigid vertical member joined to the base by a connection which permits angular pivotal displacement and rotation of the vertical member, and at least one vertical pile-guiding means positioned on the vertical member to be axially alignable with a plurality of the vertical pile-receiving sleeves on an individual sleeve basis upon rotation of the vertical member about its vertical axis.

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### 3,756,034
## METHOD AND APPARATUS FOR LAYING PIPELINES

**Joe C. Lochridge, and Leif H. Smith, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.**

**Filed Apr. 4, 1972, Ser. No. 240,378**

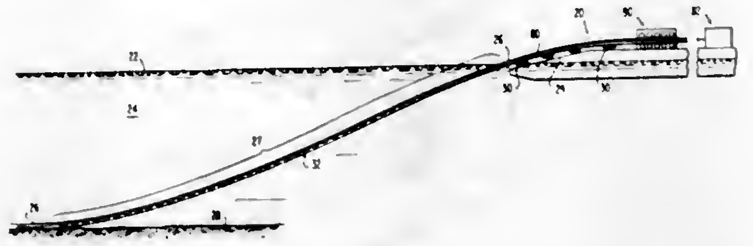
**Int. Cl. F16l** *1/00*; **B63b** *35/04*

**U.S. Cl. 61—72.3** **33 Claims**

A method and apparatus for laying submergible pipelines or other elongate conduit means upon the bed of a body of water utilizing an elongate buoyancy means operably positionable

within the interior of a pipeline for buoyantly supporting the pipeline in a span intermediate a floating vessel and the bed of a body of water.

In one embodiment the elongate buoyancy means comprises a plurality of regularly spaced articulated buoyancy chambers and in another embodiment the elongate means comprises a unitary elongate cylindrical buoyancy chamber. A retaining means is connected to the elongate buoyancy means within the interior of the pipeline during the laying operation to maintain the elongate buoyancy means at approximately a constant elevational position within the interior of the pipeline. In one embodiment the retaining means comprises a



cable extending within the pipeline to an anchor at a fixed station and in other embodiments the retaining means includes an elongate cylindrical weight connected to the elongate buoyancy means or a floodable chamber portion of the elongate buoyancy means or friction means connected to the elongate buoyancy means. Frictional contact between the interior surface of the pipeline and the exterior surface of the elongate buoyancy means may be reduced by the provision of a plurality of rollers about the exterior surface of the elongate buoyancy means. A tensioner on board the floating vessel may be used in conjunction with the elongate buoyancy means within the interior of the pipeline to provide maximum pipeline support.

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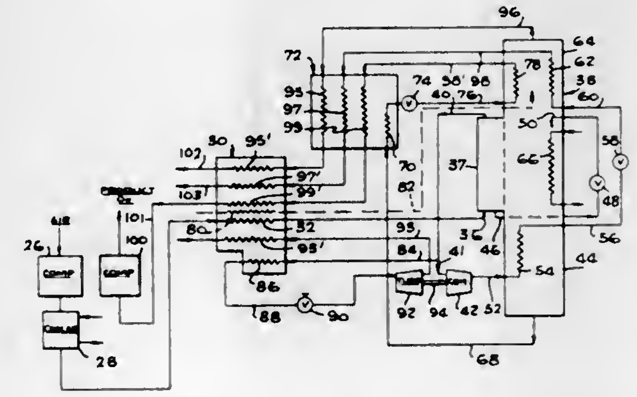
### 3,756,035
## SEPARATION OF THE COMPONENTS OF GAS MIXTURES AND AIR

**James D. Yearout, Rolling Hills, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**

**Continuation of Ser. No. 626,603, March 28, 1967, which is a continuation-in-part of Ser. No. 539,840, April 4, 1966, abandoned. This application Aug. 14, 1970, Ser. No. 63,926**

**Int. Cl. F25j** *3/04, 3/02, 5/00*

**U.S. Cl. 62—22** **8 Claims**



This invention is directed to an efficient system for separating particularly oxygen and nitrogen from air, which involves, according to one embodiment, separating air in an initial separation stage to produce cold nitrogen vapor and an oxygen-rich liquid, feeding the oxygen-rich liquid to a second separation stage or fractionating column in heat exchange relation with the initial separation stage, compressing the cold nitrogen and passing it into heat exchange relation with the lower portion of said fractionating column for addition of heat thereto, cooling the exiting nitrogen and passing such cooled nitrogen in heat exchange relation with the upper portion of said column for removal of heat therefrom, an external refrigerant medium also being employed in the upper portion of said column to provide additional refrigeration, said nitrogen and external refrigerant being passed through said column under conditions to affect a "differential" distillation in the column.

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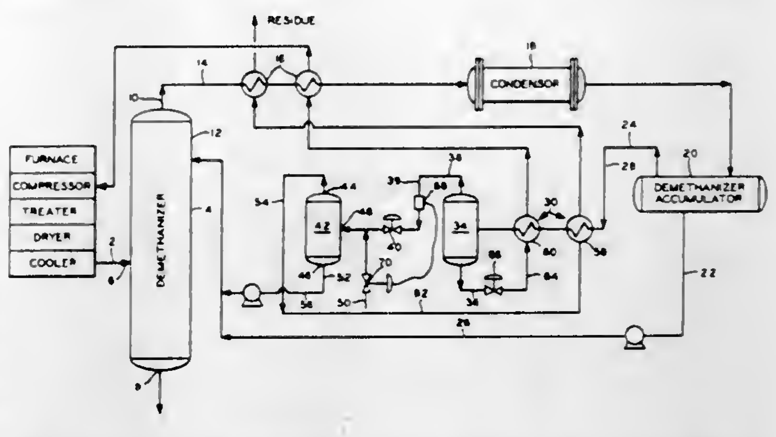
### 3,756,036
## DEMETHANIZING METHOD AND APPARATUS

**Emory L. Ezell, Sweeny, Tex., assignor to Philips Petroleum Company, Bartlesville, Okla.**

**Filed Apr. 20, 1971, Ser. No. 135,637**

**Int. Cl. F25j** *3/02, 3/06, 3/00*

**U.S. Cl. 62—28** **18 Claims**



A method and apparatus for improved recovery of ethylene hydrocarbons in a demethanizing zone by injecting a stream of dry ethane into a gas stream discharging from a demethanizer, separating the resultant mixture into a liquid stream and a gas stream, and recycling the liquid stream as reflux to the demethanizer.

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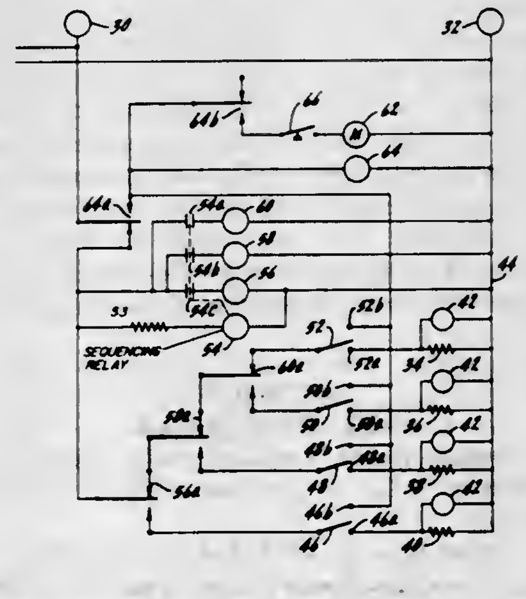
### 3,756,037
## IMMERSION MEANS FOR ELECTRICALLY DEFROSTING REFRIGERATION PLATES

**Frank Raufeisen, Palatine, and William E. Lauterbach, Evanston, both of Ill., assignors to Dole Refrigerating Company, Chicago, Ill.**

**Filed Jan. 21, 1972, Ser. No. 219,691**

**Int. Cl. F25d** *21/06*

**U.S. Cl. 62—156** **9 Claims**



A refrigeration system made up of a plurality of individual refrigeration plates each including an eutectic solution. Within each plate is a conduit for passing a refrigerant through the plate to freeze the eutectic and a heater for use in raising the temperature of the eutectic to defrost the plate. An electric circuit controls the application of refrigerant and operation of the heaters such that the plates are successively defrosted and during the application of heat to any one plate there is no application of refrigerant to any of the other plates. After the conclusion of the heating cycle on any one plate, all of the plates receive a refrigerant to freeze the eutectic solutions.

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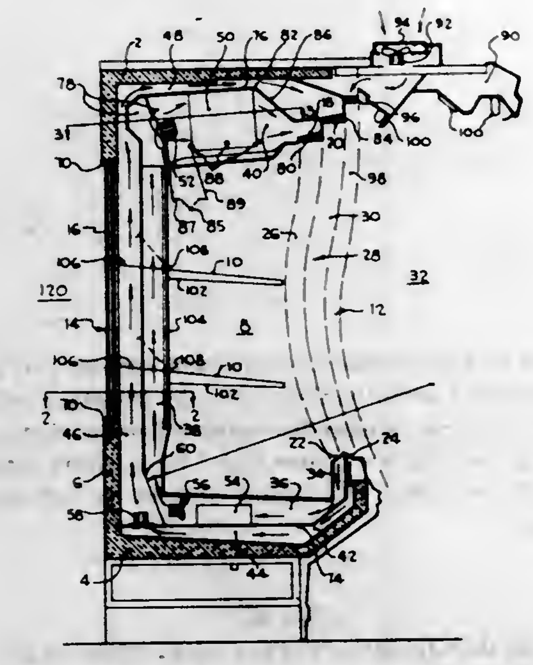
### 3,756,038
### REFRIGERATED DISPLAY EQUIPMENT

**Malcolm D. MacMaster, Yardley; James Heary, Levittown; Herbert R. Morris, Morrisville, all of Pa., and Neal P. Schumacher, Trenton, N.J., assignors to Emhart Corporation, Bloomfield, Conn.**

**Filed Apr. 7, 1972, Ser. No. 242,072**
**Int. Cl. A47f** *3/04*
**U.S. Cl. 62—256** **12 Claims**



Refrigerated display equipment is provided with a refrigerated space having an access opening for customers at the front thereof together with separate air duct means through which air is passed from inner and outer return air inlets to inner and outer air discharge means for establishing an air curtain moving across said front access opening and embodying at least two layers of air at least the inner one of which layers is refrigerated air. The equipment is further provided with an access opening for service personnel at the rear of the refrigerated space and the air duct means through which air is passed from the return air inlets to the air discharge means each include a portion which is located adjacent the access opening at the rear of the refrigerated space.

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### 3,756,039
### AIR CONDITIONER

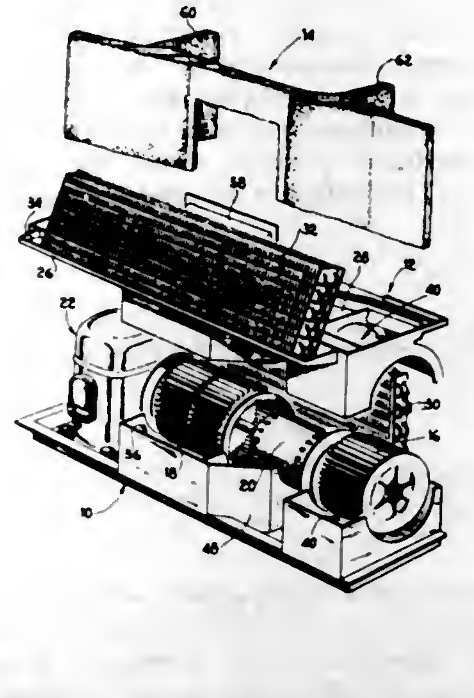
**Valerio Giordano Riello, Legnago, Italy, assignor to Riello Condizionatori S.A.S. di Giordano-Riello & C., Bevilacqua, Verona, Italy**

**Filed June 21, 1971, Ser. No. 154,956**

**Claims priority, application Italy, June 20, 1970, 26327 A/70**

**Int. Cl. F25d** *23/12*
**U.S. Cl. 62—262** **5 Claims**

An air conditioner for house or office rooms, wherein an outer casing comprises and two main structural components, preferably of molded plastics, which are juxtaposed and assembled across a substantially planar horizontal surface, said components comprising openings, partition walls and spaces to define, when assembled, chambers for the electromechanical equipment of the air conditioner, as well as passages for cold and warm circuit air streams.



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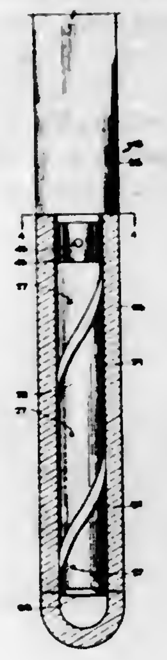
### 3,756,040
### CRYOGENIC REFRIGERANT EVAPORATOR-DIFFUSER

**Lester L. Westling, 37 Hillwood Pl., Oakland, Calif.**

**Filed Apr. 12, 1972, Ser. No. 243,160**
**Int. Cl. F25b** *19/00*
**U.S. Cl. 62—314** **1 Claim**

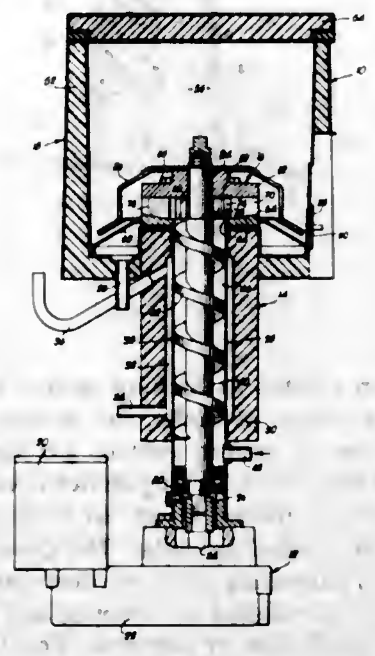


A cryogenic refrigerant evaporator-diffuser system comprising an elongated conduit into which a cryogenic liquid refrigerant is injected. A plurality of orifices are provided at predetermined intervals along the length of the conduit to allow the injected liquid refrigerant to vent into channels formed around the outer surface of the conduit. A continuous outer jacket of rigid, highly porous material surrounds the channels whereby the liquid refrigerant injected into the channels is uniformly exuded at negligible velocities through the pores of the jacket for its full length to substantially uniformly distribute the refrigerating effect to the surrounding space.

### 3,756,041
### ICE MAKING APPARATUS

**Theodore L. Hanson, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.**

**Filed June 25, 1971, Ser. No. 156,810**
**Int. Cl. F25c** *1/14*
**U.S. Cl. 62—354** **2 Claims**



Apparatus is provided for the continuous production of ic in the form of relatively dry, hard and tightly packed pellets, such as required in dispensing carbonated beverages, employing an extruding head having constricted radial passages and a rotating extruding cam in conjunction with a conventional auger type ice maker for converting the relatively wet, soft and loose ice material produced by the latter into the required drier, harder and more tightly packed form.

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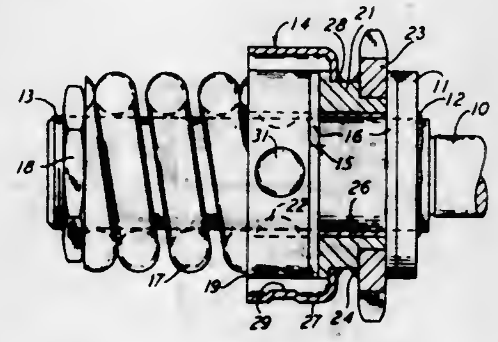
### 3,756,042
### SLIP CLUTCH WITH SIGNAL

**Sherman C. Heth, Sturtevant; Sahag C. Akgulian; Knud H. Hoffmeyer, both of Racine, and Dean A. Meyer, Caledonia, all of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.**

**Filed May 15, 1972, Ser. No. 253,635**
**Int. Cl. F16d** *7/02*; **G08b** *3/02*
**U.S. Cl. 64—30 R** **8 Claims**

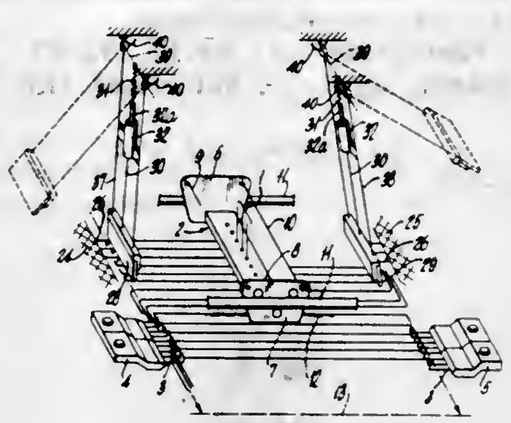


A slip clutch with a signal for revealing when the clutch is slipping, and including a rotatable driving member and a rotatable driven member rotationally engaged with the driving member, and with the two members being rotatable relative to each other. A projection is carried on each of the two members, such that they hit against each other when the clutch is slipping, and one of the members is of a metallic material and cylindrically shaped so that it rings like a bell when its projection is being hit. A sphere is carried by the other member and is under the influence of centrifugal force to extend radially outwardly and hit the other member when the clutch is slipping and thereby create the audible signal.

### 3,756,043
### FLAT WARP KNITTING MACHINES

**Heinz Kemter, Karl-Marx-Stadt, Germany, assignor to Veb Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany**

**Filed Nov. 11, 1971, Ser. No. 197,682**
**Int. Cl. D04b** *23/06*
**U.S. Cl. 66—84 R** **6 Claims**



A flat warp knitting machine comprising two parallel endless chains mounted for continuous revolution in the same direction and at the same speed, a plurality of hooks mounted on the chains in a plane, a weft yarn layer mounted for traversal between the two chains in a plane spaced slightly from a plane in which the chains lie and adapted to engage in a plane at least one weft yarn, and means adjacent each of the chains for pressing each of the weft yarns under a respective hook of one of the chains when the weft yarn layer is adjacent the one chain, the improvement comprising adjacent each of the chains in proximity to the points of reversal of the traverse of the weft yarn layer means for retaining each weft yarn, the retaining means being stationary in the direction of movement of the chains and being mounted in a plane between the plane in which the weft yarn layer engages the weft yarns and the plane in which the chain hooks are mounted, and means adjacent each of the chains for casting off each weft yarn on the retaining means of one of the chains when the weft yarns are being fed to the hooks of the other chain.

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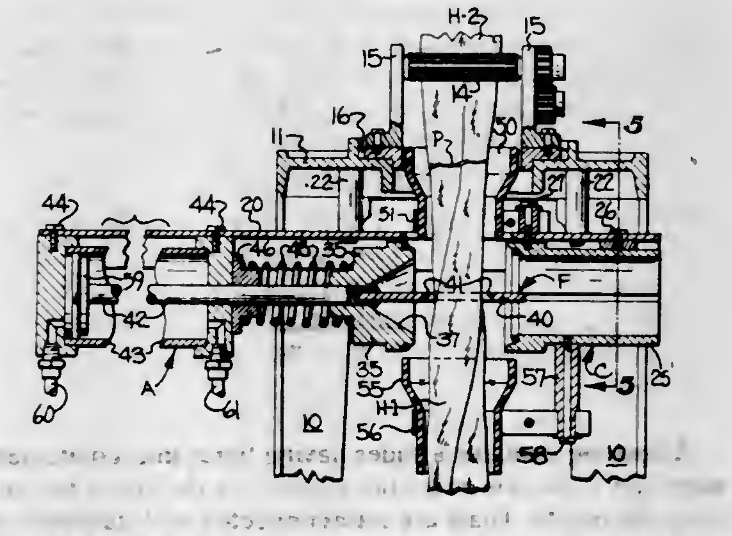
### 3,756,044
### APPARATUS FOR KNITTING AND SEPARATING HOSIERY ARTICLES

**Clyde W. Grizzle, Rt. No. 1, Acworth, Ga.**

**Filed Apr. 15, 1969, Ser. No. 816,192**
**Int. Cl. D04b** *35/00*
**U.S. Cl. 66—147** **7 Claims**



Apparatus for separating articles, such as hosiery, which are successively knit as "string work" and joined together by breaking thread. Clamping means is operable from the pattern means of the knitting machine for clamping spaced apart portions above and below the breaking thread juncture and means is provided for applying a lateral force to the fabric between the clamped portions, the force being sufficient to rupture the breaking threads of the separating courses and to thereby separate the leading hose from the next hose.

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### 3,756,045
### APPARATUS FOR DYEING TEXTILE MATERIAL

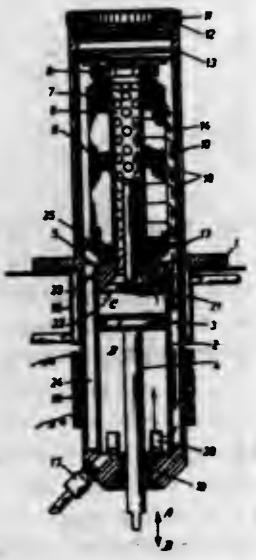
**Norbert Felber, Uitikon/Zurich, Switzerland, assignor to Pretema AG, Birmensdorf, Switzerland**

**Filed Oct. 26, 1971, Ser. No. 192,387**

**Claims priority, application Switzerland, Oct. 26, 1970, 15829/70**

**Int. Cl. B05c** *8/02, 9/14*

**U.S. Cl. 68—189** **4 Claims**



A dyeing apparatus comprising a closed cylindrical container divided by an intermediate bottom into an upper space containing a package of the material to be dyed and a lower space containing a cylinder in which a piston is reciprocable, the inside and outside of the package being connected by passages in the intermediate bottom to chambers above and below the piston, respectively, within the cylinder.

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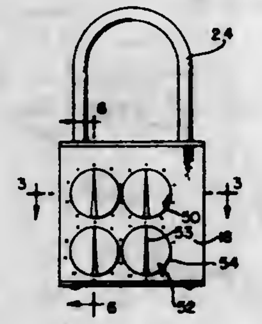
### 3,756,046
### LOCK

**Chi-Sun Jeh, Taipei, China, assignor to Lee Ahroni, Seattle, Wash.**

**Filed Sept. 18, 1972, Ser. No. 290,247**

**Int. Cl. E05b** *37/14*

**U.S. Cl. 70—25** **5 Claims**



A housing contains a slider having bores interconnected by slots and a shackle rotatably secured to the slider for movement therewith. Dials are interconnected with tumblers having locking cams rotatable in the bores and slidable in the slots. The tumblers may be disengaged and rotated relative to the dials for changing the combination. Registry of the locking cams with the slots allows movement of the slider to open the shackle.

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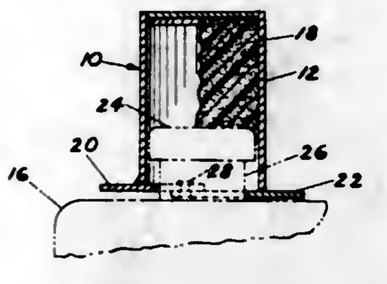
### 3,756,047
### OVER-ALL LOCKING DEVICE FOR CAPS

**Lorence H. Mulberry, 59 S. Wilson, Mount Clemens, Mich.**

**Filed Feb. 25, 1971, Ser. No. 118,823**

**Int. Cl. B65d** *55/14*

**U.S. Cl. 70—164** **1 Claim**



The invention relates to locking device for locking caps upon the filling necks of tanks, the primary use being for securing the caps of motor vehicle gas tanks in place to prevent theft of fuel. It is a locking device consisting of a cylindrical body member, having a cup-like form, terminating in a two-part inwardly extending collar. The device is designed so that the inwardly extending collar portion may bypass the tank cap as the device is installed or removed and yet be locked so as to prevent installation or removal. The two inwardly extending collar members are disposed in overlaying relationship and held together on one end by means of a rivet so as to render one collar member pivotally movable, both having on their opposite ends an aligned aperture to register affording passage of the shackle of a suitable locking mechanism therethrough. With the device in locked position, locking a cap upon the filling neck of a tank, and the shackle of a locking mechanism in said registering apertures, the shackle is holding also the end of a flexible, theftproof ligament connecting the lock mechanism to a part of the vehicle body other than the over-all locking device, substantially as and for the purpose herein set forth.

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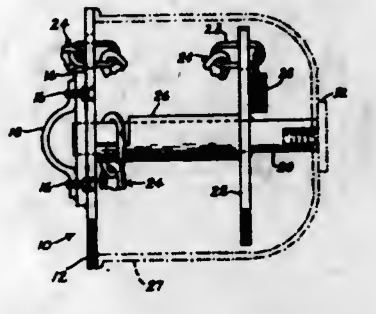
### 3,756,048
### THEFT-PROOF TETHER

**Robert A. Portus, 127 Ferry Rd., Grants Pass, Oreg.**

**Filed Mar. 15, 1972, Ser. No. 234,910**

**Int. Cl. E05b** *71/00*; **B62h** *5/00*

**U.S. Cl. 70—233** **6 Claims**



A theft-proof tether of substantial length is provided for vehicles such as motorcycles or other movable objects. The tether desirably comprises a spool permanently affixed to the protected object, a chain inseparably connected at one end to, and normally wound on, the spool, a padlock secured on the free end of the chain, and a cover cooperative with the spool to form a weather-protective housing for the wound-on chain and the chain connected padlock. The protected object may be tethered to a fixed anchorage located almost as far from the object as the full length of the chain.

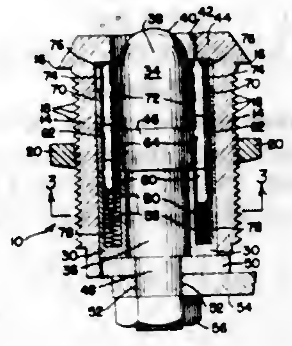
### 3,756,049
### AXIAL PIN TUMBLER LOCK ASSEMBLY AND COMBINATION RESET KEY THEREFOR

**William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.**

**Filed Aug. 19, 1971, Ser. No. 172,991**

**Int. Cl. E05b** *29/00, 25/00*

**U.S. Cl. 70—363** **3 Claims**



An axial tumbler lock assembly having a three-part cylinder arrangement including a fixed rear part, a rotatable front part, and a rotatable intermediate part, the three parts establishing between them two interfacial planes. Three-piece split tumbler arrangements are slidable in aligned bores in the cylinder parts and normally project across both interfacial planes to thus prevent relative turning of either rotatable cylinder part with respect to the fixed cylinder part. A reset key is provided for releasing the front cylinder part from the intermediate cylinder part without releasing the intermediate cylinder part, thus effecting a new alignment of tumbler pieces and a combination change so that a different operating key is required for each combination change of which the lock is capable. The reset key is incapable of effecting unlocking operations.

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### 3,756,050
### METHOD AND APPARATUS FOR CONTROLLING METAL STRIP SHAPE

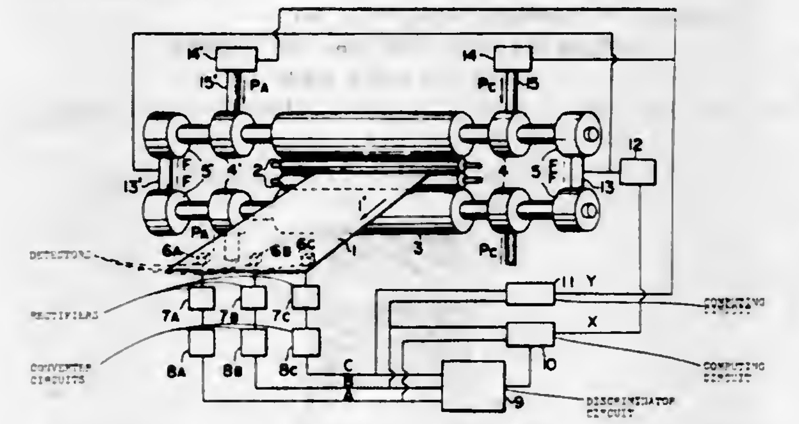
**Moritada Kubo, Tokyo; Kuniji Asano, and Takashi Kusakabe, both of Kawasaki, all of Japan, assignors to Nippon Kokan Kobushiki Kaisha, Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan**

**Continuation-in-part of Ser. No. 838,282, July 1, 1969, abandoned. This application Mar. 6, 1972, Ser. No. 232,115**

**Claims priority, application Japan, July 3, 1968, 43/46108**

**Int. Cl. B21b** *37/12*

**U.S. Cl. 72—9** **13 Claims**



A process and apparatus for rolling a metal strip whereby the waviness of the strip in the direction of the strip thickness is detected at a plurality of locations along the width of the strip, while the strip is under tension, during the rolling operation. The roll crown and/or the rolling load is selectively controlled in response to the detected waviness $\Delta h$ in accordance with the relation $\Delta h = E_m b_{ij} + F$, where *i* and *j* are variables indicating the position of sensors, *m* is a parameter relating to tension of the strip, *b* is the output waviness under no tension and *E* and *F* are constants. The shape variations *b* in the resulting output metal strip, under no tension, which are not actually determined until after a very long period of time, such as during the next manufacturing process, are maintained within predetermined tolerances by said preliminary control during the rolling operation.

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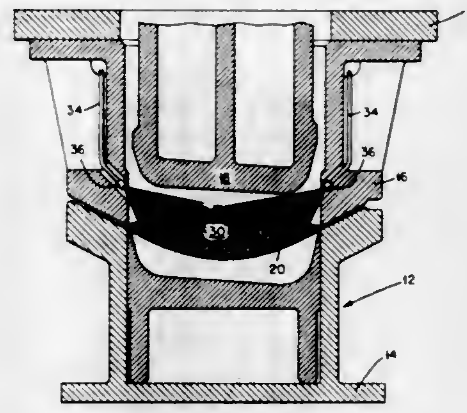
### 3,756,051
### LUBRICATING SYSTEM FOR METAL FORMING DIE

**John A. Rebsamen, Philadelphia, and Thomas A. Nordon, Dreshertown, both of Pa., assignors to The Budd Company, Philadelphia, Pa.**

**Continuation of Ser. No. 32,797, April 29, 1970, abandoned. This application Mar. 22, 1972, Ser. No. 236,767**

**Int. Cl. B21j** *3/00*

**U.S. Cl. 72—23** **5 Claims**



A lubricating system for applying a lubricant spray to a metal blank after the blank has been positioned and held in a forming die.

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### 3,756,052
### METAL WORKING LUBRICANT

**George J. Quaal; Eugene D. Groenhof, both of Midland, and Robert J. Kelly, Bridgeport, all of Mich., assignors to Dow-Corning Corporation, Midland, Mich.**

**Filed Dec. 27, 1971, Ser. No. 212,727**

**Int. Cl. C10m** *1/06*

**U.S. Cl. 72—42** **7 Claims**

Aqueous emulsions of fluid organopolysiloxanes containing at least 25 mol percent of higher alkyl substituents, such as a 50/50 copolymer of $C_8H_{17}SiO_{3/2}$ and $(CH_3)_2SiO$ units, are used as lubricants in metal working processes, such as cutting aluminum.

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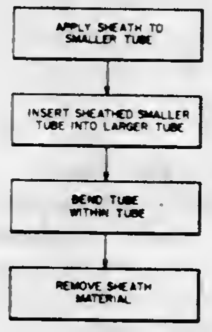
### 3,756,053
### METHOD FOR BENDING TUBES

**Ernest W. Hill, Aurora; Melvin R. Humphrey; Dale E. Maier, both of Evergreen, and James H. Pope, Broomfield, all of Colo., assignors to Teledyne, Inc., Los Angeles, Calif.**

**Filed May 1, 1972, Ser. No. 248,823**

**Int. Cl. B21d** *9/00*

**U.S. Cl. 72—46** **7 Claims**


APPLY SHEATH TO SMALLER TUBE
INSERT SHEATHED SMALLER TUBE INTO LARGER TUBE
BEND TUBE WITHIN TUBE
REMOVE SHEATH MATERIAL

A method of bending a tube within a tube, in which a smaller tube is sheathed with relatively incompressible solid substance. The sheathed smaller tube is then inserted into a larger tube, with the sheath substantially filling the space between the tubes. The tubes are bent together into a desired configuration and the solid substance of the sheath is removed, as by melting. In the preferred method, the sheath is extruded around the smaller tube, which is then inserted into the larger tube.

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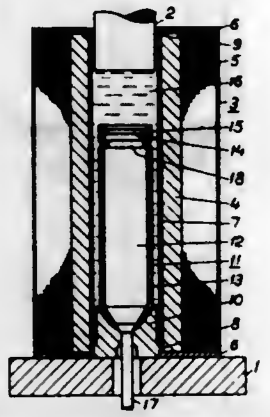
### 3,756,054
### METHOD OF MANUFACTURING RODS OR WIRE OF COMPOUND MATERIAL HAVING NON-CIRCULAR CROSS-SECTION BY HYDROSTATIC EXTRUSION

**Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Atkiebolaget, Vasteras, Sweden**
**Filed Feb. 7, 1972, Ser. No. 224,090**
**Claims priority, application Sweden, Feb. 12, 1971, 1844/71**
**Int. Cl. B21c** *3/10*
**U.S. Cl. 72—60** **6 Claims**



A wire or rod having an aluminum or aluminum alloy core and a copper or copper alloy casing is produced by hydrostatic extrusion of a compound billet through a die having a conical inlet with an outerpart with a cone angle between 70° and 115° and an inner part with a cone angle between 130° and 150°, the diameter of the inner part being substantially equal to the greatest dimension of the die opening.

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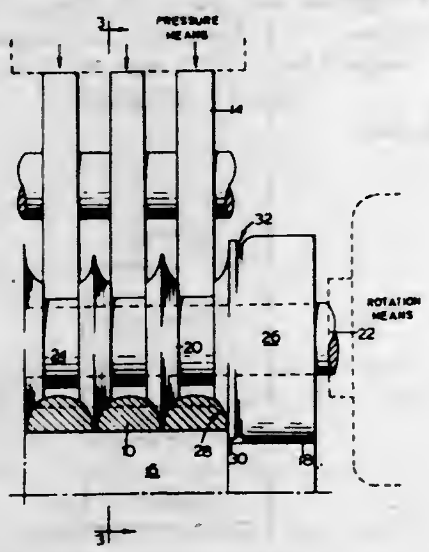
### 3,756,055
### APPARATUS FOR ROLLING WORKPIECES

**Jacob Marcovitch, Braamfontein, South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein**
**Continuation of Ser. No. 2,063, Jan. 12, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,829**
**Claims priority, application South Africa, Dec. 15, 1969, 69/8679**
**Int. Cl. B21b ; B21d** *3/02*
**U.S. Cl. 72—71** **5 Claims**



This invention provides in or for apparatus for parting cylindricoidal workpieces by rolling, a plurality of cutting rollers arranged on coincident axes and stop means which are arranged to contact the ends of a workpiece when the cutting rollers engage the surface of the workpiece to prevent the workpiece spreading axially during the cutting operation. The apparatus preferably further comprises means for rotating the cutting rollers and the workpiece and means for so moving the workpiece and the cutting rollers so that their axes approach at high speeds.

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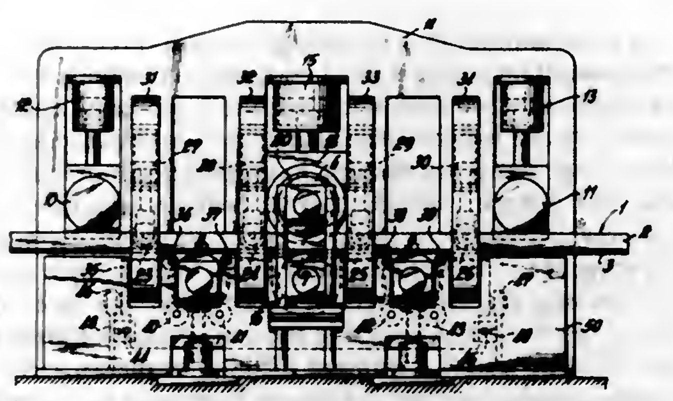
### 3,756,056
### METHOD AND APPARATUS FOR ALIGNING WELDED GIRDERS

**Werner Dobrott, Dortmund-Brackel, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany**
**Filed July 23, 1971, Ser. No. 165,647**
**Claims priority, application Germany, July 24, 1970, P 20 36 707.1**
**Int. Cl. B21d** *1/02*
**U.S. Cl. 72—164** **17 Claims**



An apparatus for compensating for the bending which takes place in a welded beam, particularly a nonsymmetrical welded beam having a web element with a chord element welded thereto. According to the disclosure of the present invention, the beam is caused to bend in a direction toward the chord element side of the web element and, while bent, is rolled between a pair of rollers so that the stress in the region of the weld of the beam, and which is made up of the bending stress plus the rolling stress, exceeds the elastic limit of the material from which the beam is made and thus compensates for the shrinkage in the weld region due to cooling of the weld.

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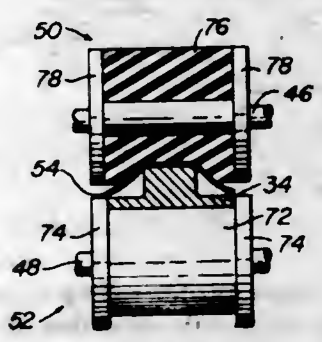
### 3,756,057
### ROLL FORMING

**Barlow W. Brooks, Jr., Louisville; John R. Davis, Shelbyville, and James A. Henry, Finchville, all of Ky., assignors to Roll Forming Corporation, Shelbyville, Ky.**
**Filed May 11, 1970, Ser. No. 36,139**
**Int. Cl. B21d** *5/08*
**U.S. Cl. 72—181** **5 Claims**



Sheet metal is formed over a mandrel as the sheet metal and the mandrel move past successive pressure applying rolls in order to form tapered or other non-uniform sections. Pressure is applied to the sheet metal by the upper rolls of a roll forming machine having sleeves of elastomeric material adapted to conform to the variations in the shapes of the sections.

An elongate mandrel may be successively fed into the roll forming machine or, for continuous operation, the mandrel may be made into sections which are hinged together and which form a closed loop.

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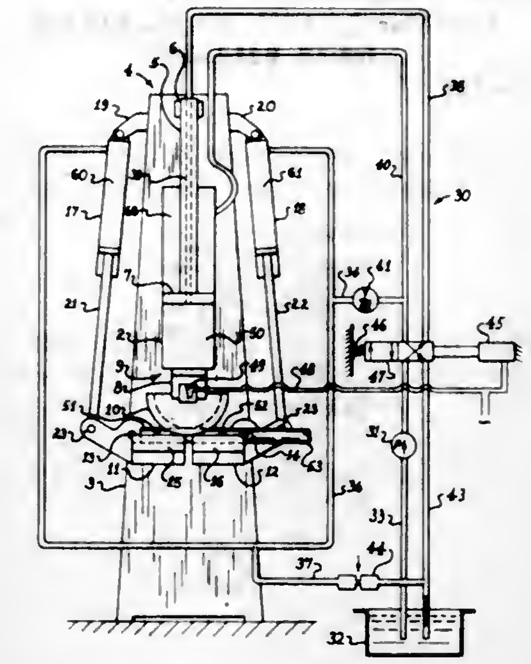
### 3,756,058
### HAND GUARD FOR VERTICAL PRESS TUBE BENDER

**Clark J. Hamkins, Racine, and David V. Schaefer, Burlington, both of Wis., assignors to Tenneco Inc., Racine, Wis.**
**Filed Mar. 17, 1972, Ser. No. 235,713**
**Int. Cl. B21d** *55/00*
**U.S. Cl. 72—389** **7 Claims**



Obstruction sensing barrier members hinder placement of a tube bender operator's hand into injurious contact with the forming punch and wing dies of vertical press tube benders. Upon encountering a predetermined resistance to movement, such as a hand acting as an obstruction to continued movement of a barrier member, the barrier members serve to actuate an electrical switch which initiates selected control functions of the machine. The machine control functions affected by the barrier member actuated switch cause the machine to take a predetermined course of action intended to reduce injury. Cessation of movement of the bender tooling or return of the tooling to a desired position are two desirable courses of action.

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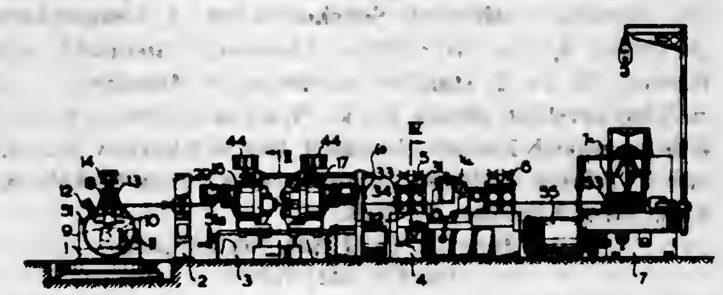
### 3,756,059
### WIRE FINISHING METHOD AND APPARATUS

**Erich Krafft, Solingen; Bodo Missmahl, Erkrath; Hans Pfeiffer, Solingen-Wald; Alfons Goeke, Solingen, and Karl Gustav Weck, Solingen-Wald, all of Germany, assignors to Kieserling & Albrecht, Solingen, Germany**
**Filed Apr. 24, 1972, Ser. No. 247,145**
**Claims priority, application Germany, Apr. 27, 1971, P 21 20 550.5**
**Int. Cl. B21b** *1/00*
**U.S. Cl. 72—203** **15 Claims**



Wire finishing apparatus wherein the leader of a supply of convoluted wire is threaded through a combined straightening and calibrating unit and into the range of feed rolls in a shaving unit. The rolls of the calibrating unit are moved apart during such threading but engage and calibrate the wire when the latter is pulled by the feed rolls so that it passes through the revolving shaving head and the leader reaches and is connected to the drum of a collecting unit. The drum is thereupon started to withdraw the wire at a higher speed whereby an overrunning clutch allows the feed rolls to rotate at the speed which is determined by the motor which rotates the drum. The rolls of the calibrating unit are adjusted to furnish a more pronounced calibrating action when the wire begins to advance at the higher speed.

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### 3,756,060
### METHODS OF ROLLING

**Ali Bindernagel, Dusseldorf-Gerreshein, Germany, assignor to Friedrich Kocks, Dusseldorf-Gerreshein, Germany**
**Filed July 14, 1971, Ser. No. 162,627**
**Claims priority, application Germany, July 17, 1970, P 20 35 481.8**
**Int. Cl. B21b** *39/08, 1/18*
**U.S. Cl. 72—205** **6 Claims**

A method of rolling small sections is provided in which the metal to be rolled is passed through a plurality of successive roll stands having grooved rolls, while tension is applied to the metal in successive stands and is varied between the stands depending upon the relative filling of the grooved rolls in each stand whereby variations in conditions of wear in the roll grooves from one stand to another are offset by the changes in tension between stands. The variations in tension may be provided by varying the roll rotation speed.

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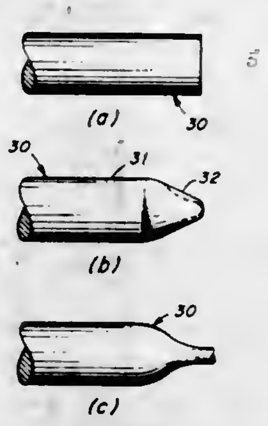
### 3,756,061
### METHOD OF PREFORMING MATERIALS WHICH WORK-HARDEN

**Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, New York, N.Y.**
**Filed Sept. 10, 1968, Ser. No. 758,732**
**Int. Cl. B21e** *5/00*
**U.S. Cl. 72—253** **11 Claims**



Material which work-hardens is preformed to provide the material with a work-hardening profile corresponding to that to be experienced by the material during deformation. With regard to extrusion, extrusion start-up is facilitated and non-uniform extrusion product is minimized, by providing the nose or head end of a billet or rod to be extruded with a physical shape and a work-hardening profile substantially the same as those which the rod or billet will experience in actually passing through an extrusion die under operating equilibrium conditions.

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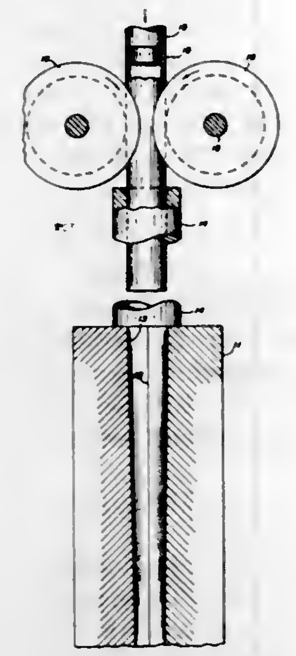
### 3,756,062
### HIGH-VELOCITY SWAGING

**Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.**
**Filed June 21, 1971, Ser. No. 154,812**
**Int. Cl. B21d** *51/10*
**U.S. Cl. 72—352** **11 Claims**

A method of forming metal members by accelerating the metal member to a predetermined high forming velocity, and then contacting the metal member with the forming die which is restrained relative to the metal member to effect forming of the metal member. In particular tubular metal members can be swaged within a forming die having a generally conical central aperture therethrough, with the aperture tapering from a diameter at the die entry which is greater than the outside diameter of the tubular metal member, to a predetermined lesser diameter at the other end of the forming die, whereby the metal member is formed.



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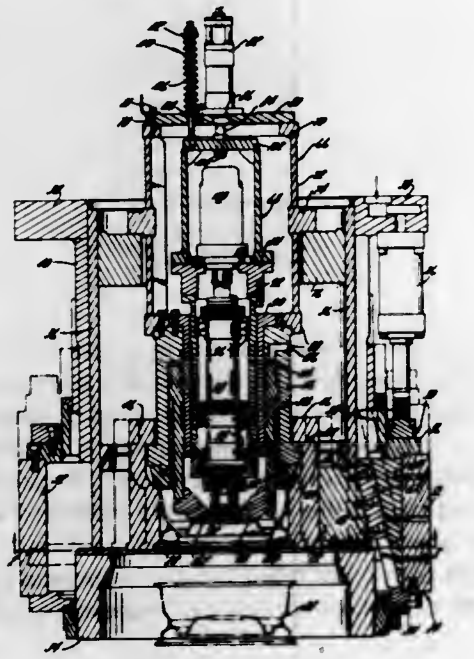
### 3,756,063
### SHRINK FORMING APPARATUS WITH AXIAL RUN-OUT TOOLING

**Albert Roze, Chicago; Vernon R. Fencl, Northbrook, and Hans R. Luedi, Highland Park, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.**

**Filed Apr. 27, 1972, Ser. No. 248,116**

**Int. Cl. B21d** *53/30*

**U.S. Cl. 72—356** **5 Claims**



An apparatus for radial compression forming and axial direction forming of metal articles, of the type such as steel automobile wheels, with auxiliary machining operations being performed in the same work station. The wheel formed from several pressed component pieces including an outer flange and central spider is fitted into the open annularly disposed jaws of a shrink forming head whereupon the compression forming operation is performed by contraction of the jaws in the radial direction. The apparatus includes a concentrically disposed axially driven piston carrying tool means for deforming the web portion of the wheel to correct axial run-out or establish perpendicularity of the web with respect to the flange portion. The axially driven piston and tool means is fluid powered so as to enable sensing contact with the web portion by the tool means and thereafter imparting a predetermined amount of axial movement to deform the wheel web by a corresponding predetermined amount.

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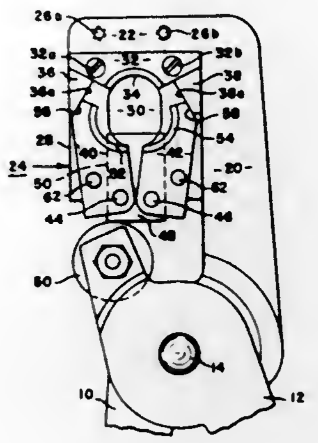
### 3,756,064
### HAND-OPERATED PLIER-LIKE TOOLS

**Hans Erdmann, Maplewood, N.J., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.**

**Filed Mar. 24, 1972, Ser. No. 237,628**

**Int. Cl. B21d** *9/08*

**U.S. Cl. 72—410** **5 Claims**



An improved plier-like tool of the general type disclosed in my prior U.S. Pat. No. 3,276,238 but differing therefrom in that the movable jaw segments are pivotally connected to a reciprocable slide for swinging movement in a common plane toward and away from each other, rather than being mounted for sliding movement only. The slide is adapted to be reciprocated in its slideway by a roller which is mounted at the working end of a plier arm, i.e. the end remote from its handle end, which with closing movement of the plier handles moves in an ascending but substantially flat arcuate path, during the course of which the roller periphery abuts the lower end edge of the slide and actuates same in upward direction, as results in the movable jaw segments being actuated toward one another. Spring means effects retracting movement of the slide and corresponding spreading of the movable jaw segments whenever opening movement of the plier handles is initiated.

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### 3,756,065
### VERTICAL MACHINE FOR WORKING METALS BY IMPULSES

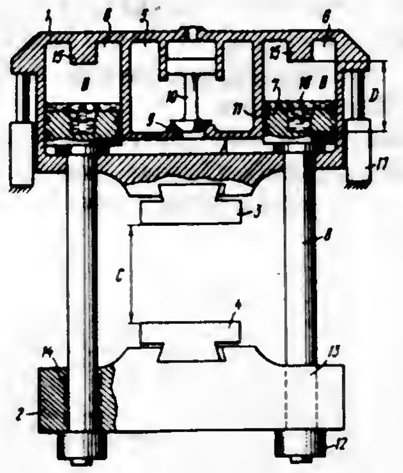
**Vadim Grigorievich Kononenko, Zhiloi dom KHAI- 1, kv. 12; Igor Pavlovich Komnatny, ulitsa Cheljuskintsev, 6, kv.; Sergei Vasilievich Yatsenko, prospekt Moskovsky, 204/1, kv. 36; Serafim Vasilievich Schekochikhin, 1 Lesoparkovsky pereulok, 5, kv. 76; Viktor Alexeevich Stelmakh, ulitsa Kirova, 18, kv. 2; Stanislav Anisimovich Maznichenko, ulitsa Kharkovskikh divizy, 18, kv. 9, all of Kharkov, U.S.S.R.; Kim Ivanovich Zaitsev, deceased, late of Kharkov, U.S.S.R., and by Maiya Zaitseva, administrator, ulitsa Chkalova, 7, kv. 6, all of Kharkov, U.S.S.R.**

**Filed June 28, 1971, Ser. No. 157,255**

**Int. Cl. B21j** *7/24*

**U.S. Cl. 72—453** **2 Claims**

A machine incorporating an upper and a lower ram colliding under the influence of stored energy of an energy carrier, charged into an impulse chamber enclosed in the upper ram. Both rams are interlinked by rods with the lower ram movably mounted on the rods to travel along them. Provided in the machine are the projections ensuring the shock-free stoppage of the rods.



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### 3,756,066
### METHOD AND APPARATUS FOR TESTING TIMEPIECES

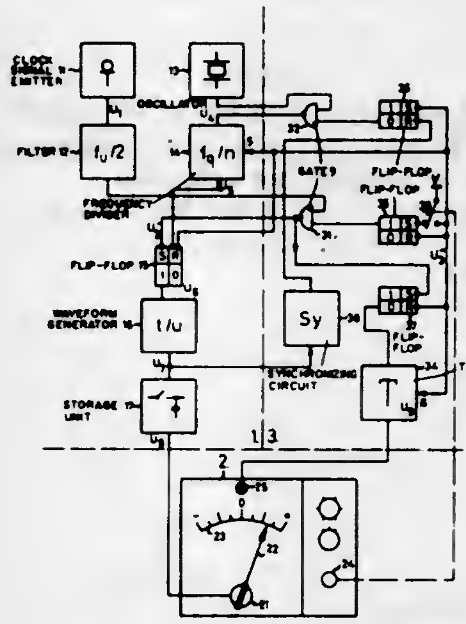
**Fritz Bolliger, Aarwangen, Switzerland, assignor to Greiner Electronic A.G., Langenthal, Switzerland**

**Filed Mar. 3, 1972, Ser. No. 231,672**

**Claims priority, application Switzerland, Apr. 16, 1971, 5536/71**

**Int. Cl. G04b** *17/12*

**U.S. Cl. 73—6** **8 Claims**



Method and apparatus for testing a timepiece to determine its rate (for example, in seconds per day). The testing system is adapted for use with meter means that normally integrate sawtooth voltage pulses the amplitudes of which correspond with the time intervals between corresponding clock and low-frequency standard pulses, respectively, characterized by the provision of starting means for interrupting the supply of the clock and standard pulses, means for resuming the supply of clock pulses after a first pulse interval, timer means activated upon the occurrence of the next clock pulse subsequent to said first time interval, voltage comparison synchronizing means for resuming the supply of said standard pulses at the instant the amplitude of the sawtooth pulse generated by said first clock pulse equals the zero set point of the meter, and indicator means operable by said timer means at the end of a second time interval for presenting a visual indication adjacent the meter scale, whereby the meter indication at that instant is the rate of the timepiece under test.

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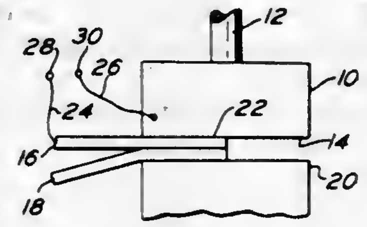
### 3,756,067
### TEMPERATURE MEASUREMENT

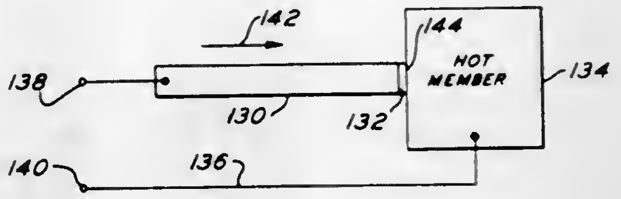
**Robert H. Cushman, Bethayres, Pa., assignor to The Jade Corporation, Huntingdon Valley, Pa.**

**Filed Aug. 19, 1971, Ser. No. 173,057**

**Int. Cl. G01n** *25/72;* **G01k** *7/08*

**U.S. Cl. 73—15 R** **7 Claims**





Methods of measuring the temperature of a surface or of various surfaces of work pieces and of a surface of a heating element or member coming in contact with the work pieces. A method of real time non-destructive testing of bonds during a bonding process is also disclosed. Leads are connected directly to the heating element or a hot member coming in contact with the work piece and to the work pieces to monitor electrical potentials generated along the surfaces which give an indication of the surface temperature. A ram specially adapted for real time measurement of these surface temperatures and for real time testing of bonds formed in a mechanical thermal pulse bonding process is also disclosed.

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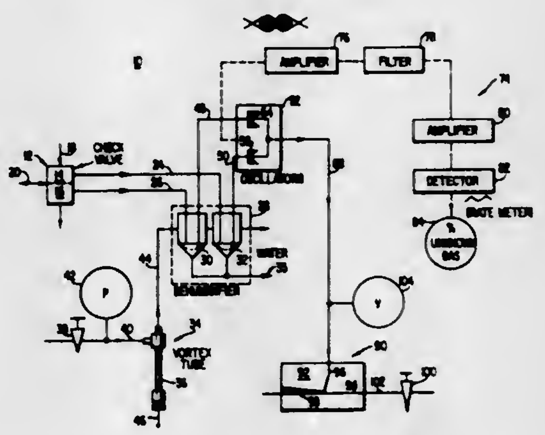
### 3,756,068
### CARBON DIOXIDE CONCENTRATION SENSOR

**Fernando Villarroel, Bowie, and James W. Joyce, Jr., Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 30, 1971, Ser. No. 139,072**

**Int. Cl. G01n** *1/22*

**U.S. Cl. 73—23** **7 Claims**



A flueric gas analyzer is disclosed which permits continuous determination of the percent concentration of a specific gas relative to a carrier gas and which provides an instantaneous indication of the results of the determination. In the device, the mixed gas to be analyzed is passed through two independent, cooled dehumidifiers into two independent flueric oscillators. The frequencies of the two oscillators are fluerically mixed, and the resulting beat frequency is measured and processed to provide an appropriate readout of the desired percent concentration.

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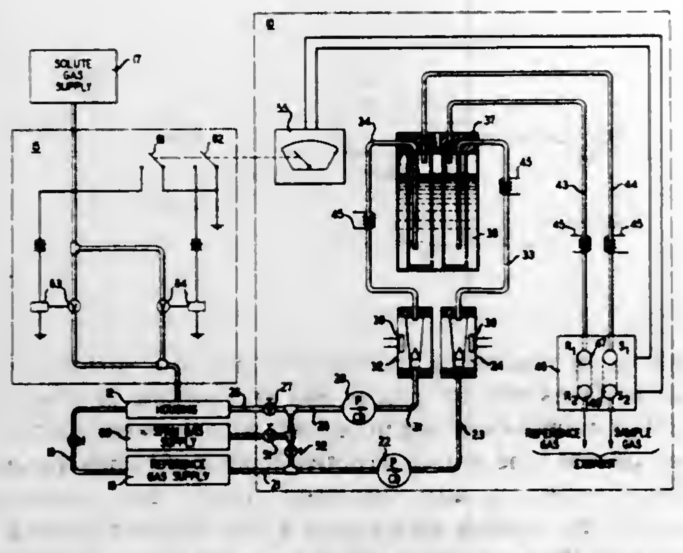
### 3,756,069

### GAS ANALYZER APPARATUS

**John D. Carswell, Jr., Bernardsville, N.J., and George W. Gorman, Decatur, Ga., assignors to Gow-Mac Instrument Company, Incorporated, Madison, N.J., by said Carswell and The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C., by said Gorman**

**Filed Aug. 4, 1971, Ser. No. 168,994**
**Int. Cl. G01n *27/04***

**U.S. Cl. 73—27 R** **9 Claims**



Accuracy of thermal conductivity gas analysis is enhanced by bubbling a sample gas and a reference gas through a common reservoir to saturate the gases at equal temperature and pressure. The saturated gases are maintained at equal pressures and at a temperature exceeding their dew points until the two gases are conveyed past filaments of a thermal conductivity detector cell.

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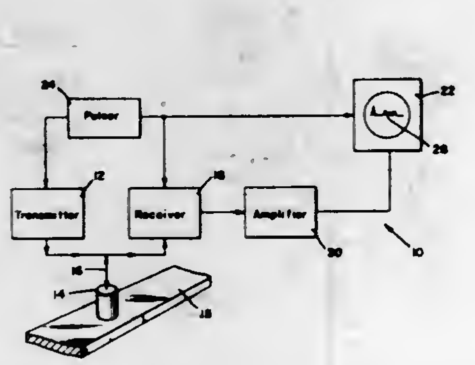
### 3,756,070

### ULTRASONIC INSPECTION DEVICE

**Jerry T. McElroy, Boulder, Colo., assignor to Automation Industries, Inc., Los Angeles, Calif.**

**Filed Oct. 13, 1970, Ser. No. 80,434**
**Int. Cl. G01n *29/04***

**U.S. Cl. 73—67.8 R** **5 Claims**



A nondestructive material tester which is comprised of a search unit of lithium niobate cut normal to the 0° Y axis. The parallel faces normal to the 0°Y axis have electrical energy of ultrasonic frequency applied thereto ans receive ultrasonic energy from a test object.

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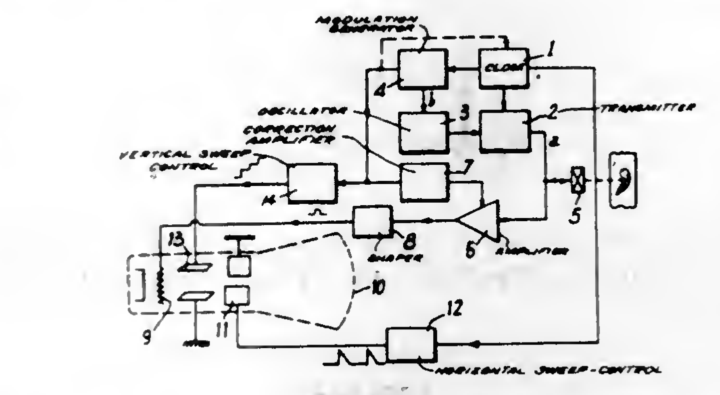
### 3,756,071

### PROCESS AND APPARATUS FOR ANALYZING MATERIALS BY MEANS OF ULTRASONIC PULSES, EMPLOYING THE TRANSFER FUNCTION CHARACTERISTIC OF EACH OBSTACLE

**Jacques Dory, Coupvray, France, assignor to Realisations Ultrasoniques, Meaux, France**

**Filed Mar. 1, 1971, Ser. No. 119,474**
**Claims priority, application France, June 6, 1969, 6918664**
**Int. Cl. G01n *29/04***

**U.S. Cl. 73—67.8** **6 Claims**



For analysing an obstacle which perturbs the propagation of ultrasonic waves in a medium in particular a flaw in a mechanical part, an apparatus is provided, which comprises transmitter and transducer units directing towards the obstacle a beam of ultrasonic pulsed waves comprising a plurality of frequency components and a receiver with cathode-ray tube displaying the relative amplitudes of the respective frequency components in the ultrasonic energy reflected from the obstacle. The apparatus provides accurate information as regards the position shape and dimensions of the obstacle.

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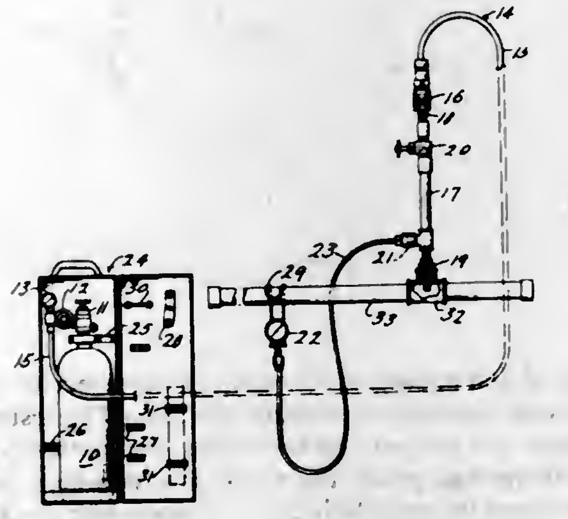
### 3,756,072

### PORTABLE LEAK TEST INSTRUMENT

**James G. MacMurray, Norwalk, Ohio, assignor to Youngstown-Miller Corporation, Norwalk, Ohio**

**Filed Dec. 27, 1971, Ser. No. 212,191**
**Int. Cl. G01m *3/08***

**U.S. Cl. 73—40.5** **3 Claims**



A portable leak test instrument for fluid lines, pressure vessels and other fluid tight systems and enclosures. The instrument has a tank containing a quantity of inert gas under predetermined greater than atmospheric pressure. In order to perform a test, the tank is connected through a pre-set pressure regulator to a first pressure indicating gauge and a line which is adapted to be coupled to the closed system to be tested. The line has a shut-off valve located between the first gauge and the coupling. A second pressure indicating gauge is connected to the line between the shut-off valve and the coupling.

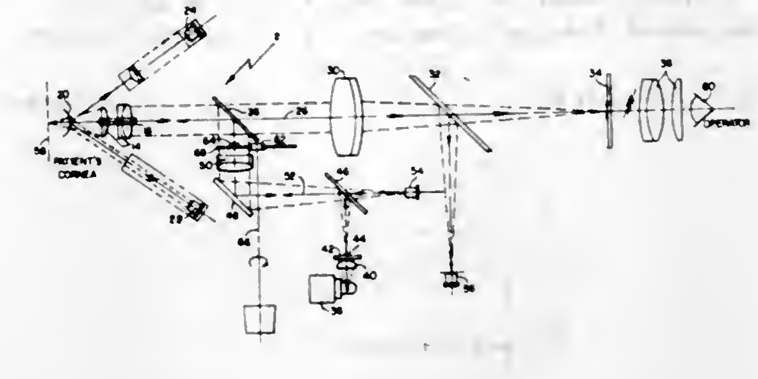
### 3,756,073

### NON-CONTACT TONOMETER

**Robert G. Lavallee, Ashland, and Bernard Grolman, Worcester, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed Nov. 26, 1971, Ser. No. 202,423**
**Int. Cl. A61b *3/16***

**U.S. Cl. 73—80** **4 Claims**



An alignment system for a non-contact tonometer in which the pneumatic and corneal monitoring systems are aligned relative to the cornea such that a target image reflected from the cornea is superimposed on an aiming reticle and on a photocell. When thus aligned, and only then, the apparatus is electrically armed permitting it to discharge its fluid pulse.

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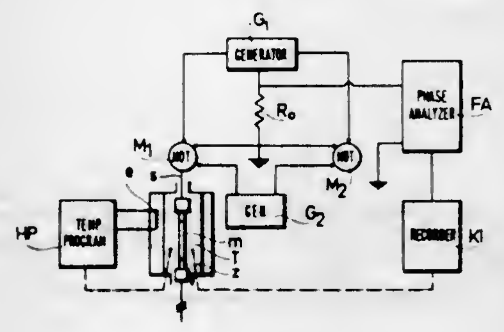
### 3,756,074

### CONTINUOUSLY RECORDING MECHANICAL RELAXATION SPECTROMETER

**Peter Hedvig, and Laszlo Miskolczy, both of Budapest, Hungary, assignors to Muanyagipari Kutato Intezet, Budapest, Hungary**

**Filed Apr. 5, 1971, Ser. No. 128,620**
**Claims priority, application Hungary, Apr. 6, 1970, 440**
**Int. Cl. G01n *3/32***

**U.S. Cl. 73—99** **6 Claims**



The continuously recording mechanical relaxation spectrometer includes two bridge connected selsyn type motors operated by two a.c. voltages of different frequencies, one motor being a reference motor connected in reverse phase to the remaining driving motor. A specimen, the moduli of which are to be measured as a function of temperature or frequency, is subjected to torsional oscillation by the driving motor in a controlled temperature environment. Variations in the load on the driving motor are sensed as voltage variations across a load resistor connected to the bridge connected motor system, and these voltage variations are fed to a phase analyser which provides signals to operate one axis of an X-Y recorder. The remaining axis of the recorder is operated by signals from a temperature sensing unit positioned adjacent the specimen.

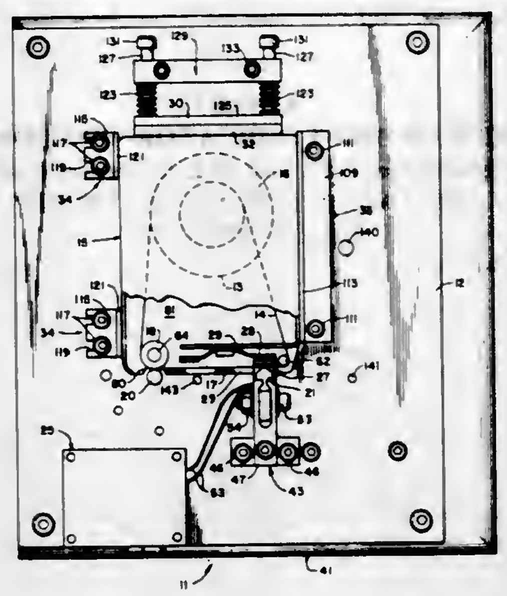
### 3,756,075

### APPARATUS FOR MEASURING TAPE TENSION

**James E. Prader, Roselle, Ill., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Sept. 28, 1971, Ser. No. 184,344**
**Int. Cl. G01l *5/10***

**U.S. Cl. 73—144** **9 Claims**



The force required to unwind an endless magnetic tape from a coil of tape carried on a rotatable spool such as used in a magnetic tape cartridge is measured quickly and accurately while tape is being transported. The apparatus comprises a capstan for cooperation with a pinch member, such as a pinch roller in the cartridge, and a biasing means, such as a spring acting on the cartridge, of a predetermined force to establish the feed couple for transporting the tape at conventional transport speed. A force measuring transducer engages the running tape and measures the tension in the tape which is indicated on means such as a meter.

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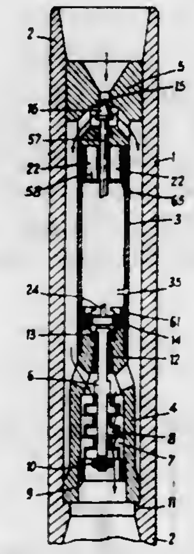
### 3,756,076

### DEVICE WITH INDEPENDENT HYDRAULIC CONTROL TO TRANSMIT MEASUREMENTS TAKEN AT THE BOTTOM OF A WELL

**Claude Quichaud, Pau-Billere, and Jean-Pierre Le Peuvedic, Pau, both of France, assignors to Societe Anonyme dite: Societe Nationale Des Petroles, D'Aquitaine, Courbevoie, France**

**Filed July 14, 1971, Ser. No. 162,558**
**Claims priority, application France, July 16, 1970, 7026213**
**Int. Cl. E21b *47/12***

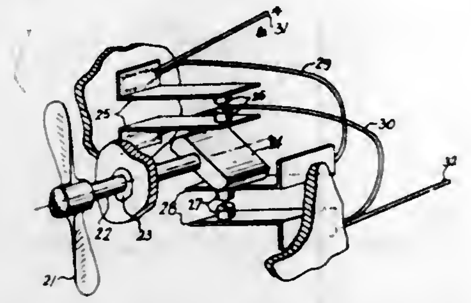
**U.S. Cl. 73—151** **5 Claims**



A hydraulically controlled device to transit measurements taken at the bottom of a well to the surface, by means of pressure impulses created by periodical restrictions on the passage of the drilling fluid, consisting of means to control these restrictions, operated by electrical impulses, a hydraulic fluid circuit to operate the means restricting the passage of the drilling fluid, a turbine driven by the drilling fluid and a hydraulic fluid pump fixed on the same shaft, characterized by the fact that the said pump is placed in a hydraulic fluid circuit containing passages to discharge the fluid on either side of a double-action hydraulic jack, to which said restricting means is mechanically connected, and an accumulator is mounted in said circuit in parallel with said jack.

### 3,756,077
### VEHICULAR DRIFT INDICATOR-SPEEDOMETER

**Slavko Milovancevic, P. O. Box 402, Torrance, Calif.**
**Filed Apr. 1, 1971, Ser. No. 130,078**
**Int. Cl. G01c** *21/10*
**U.S. Cl. 73—187** **5 Claims**



A vehicular drift indicator-speedometer for measuring either vehicular drift or speed, or the rate of flow of a medium. Invention utilizes a transducer in form of an impeller mounted in a circular aperture and having on its axis a cam member used to drive a pair of spring contacts. Said contacts connect and disconnect bias supply to a transistor which conducts accordingly producing square wave pulses. Said pulses are driving circuitry producing a short pulse of constant duration per each drive pulse. Said short pulses of constant duration are then integrated and used to drive an indicating meter.

In all cases a differential pressure developed between ends of said aperture drives a certain amount of medium through it, thus medium drives said impeller and circuitry producing appropriate indication.

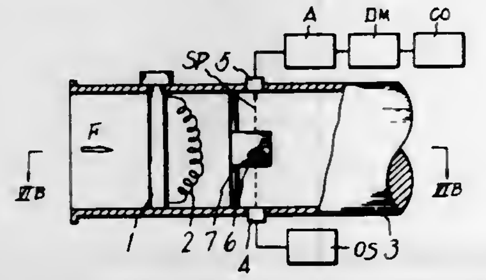
When used as a drift indicator said impeller and switch are mounted in said aperture being perpendicular to the direction of the vehicular travel, and being part of the vehicular body or affixed to it as a separate body.

When used as a speedometer aperture is aligned with the vehicular direction of travel, the rest is same as above.

When used as a flow rate indicator, arrangement is such that medium under consideration is moving through the aperture driving an impeller and producing indication as before.

### 3,756,078
### CURRENT METER OR FLOW METER

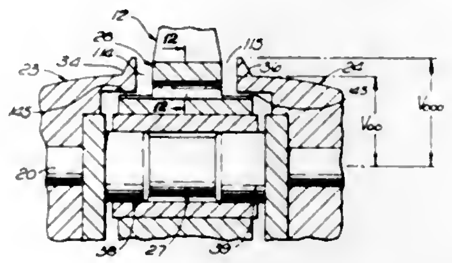
**Hiroo Yamasaki, and Masanori Noguchi, both of Tokyo, Japan, assignors to Kabushikikaisha Yokogama Denki Seisakusho (Yokogawa Electric Works, Ltd.), Tokyo, Japan**
**Filed June 29, 1970, Ser. No. 50,372**
**Int. Cl. G01f** *1/00*; **G01p** *5/00*
**U.S. Cl. 73—194 B** **6 Claims**



A current meter or flow meter having a vortex generating rod immersed in a fluid stream and in which an ultrasonic signal is transmitted through said fluid stream and, detected with the said transmitter and receiver being disposed on the downstream side of said rod. The ultrasonic wave emitted from said transmitter passes through the fluid transversely of the direction of flow of the fluid stream.

### 3,756,079
### TURBINE FLOWMETER

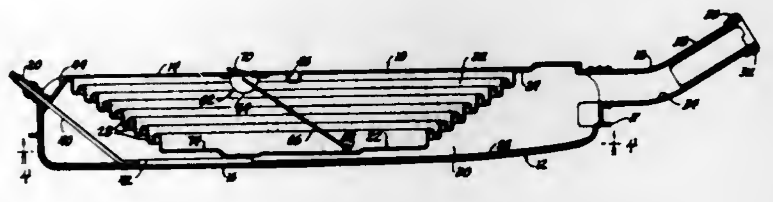
**Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**
**Continuation-in-part of Ser. No. 13,926, Feb. 25, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,470**
**Int. Cl. G01f** *1/12*
**U.S. Cl. 73—231 R** **13 Claims**



A turbine flowmeter having a passageway extending completely through its rotor or shaft. The rotor has an upstream diffuser on one side and a downstream diffuser on its other side. Accuracy and range are increased without an increased pressure drop. When the passageway is located through the rotor, accuracy over a linear range is increased further because fluid in the hole is angularly accelerated. This acceleration places a drag on the rotor which increases the meter linearity at low flow rates. Drag is decreased at high flow rates because the rotor moves close to the upstream diffuser and acts as a restriction on passageway flow. High flow rate accuracy is thus maintained.

### 3,756,080
### FUEL TANK ASSEMBLY

**William L. Pringle, Grosse Pointe Shores, Mich., assignor to William L. Pringle and Associates, Inc., Detroit, Mich.**
**Division of Ser. No. 36,022, May 11, 1970, Pat. No. 3,648,886. This application Dec. 10, 1971, Ser. No. 206,756**
**Int. Cl. G01f** *23/00*
**U.S. Cl. 73—290 R** **1 Claim**



A vehicular fuel tank assembly comprising a steel outer container and a pliable inner member such as a liner or diaphragm having a plurality of circular folds in a substantially horizontal wall portion thereof to permit the center of the wall to collapse telescopically and vertically relative to the bottom of the container as fuel is exhausted from the tank assembly. This telescopic collapse provides volumetric variation in the fuel storage area and further provides variable anti-slosh baffling for the unused fuel. A control valve regulates air flow into and out of the exhausted space between the container and the internal member. Fuel gaging is accomplished by monitoring the displacement of the collapsible internal member portion relative to the container. The container is mounted on the vehicle to permit limited damped longitudinal displacement under abnormally high acceleration load conditions.

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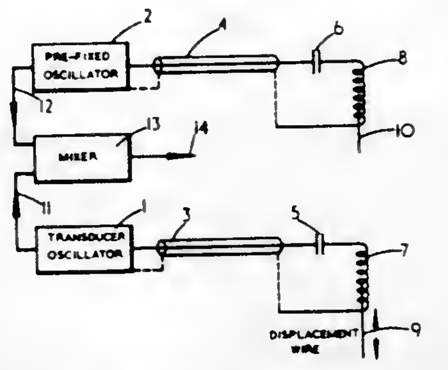
### 3,756,081
### DISPLACEMENT TRANSDUCERS

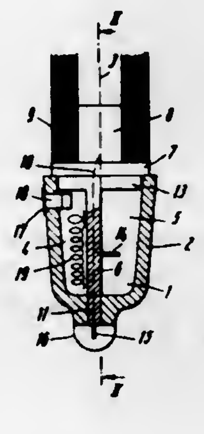
**Robert Eric Young, 12 Whitnash Rd., Leamington Spa, England**
**Filed May 21, 1971, Ser. No. 145,671**
**Claims priority, application Great Britain, May 21, 1970, 24,541/70**
**Int. Cl. G01n** *27/72*; **G01r** *27/26*
**U.S. Cl. 73—336.5** **10 Claims**



A transducer for converting mechanical displacement into an electrical signal comprises a length of resistive wire movable in an inductance coil to change its inductance. Preferably the inductance coil is included in an oscillator circuit the frequency of which is compared with another oscillator to provide a frequency difference signal as a digital representation of the mechanical movement. Simple practical examples of its uses are described.

### 3,756,082
### APPARATUS FOR SAMPLING MOLTEN METAL

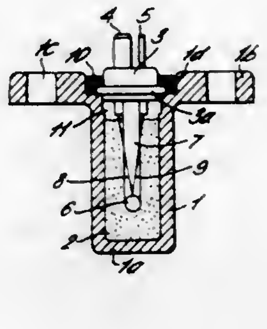
**Friedrich Bardenheuer, Duisburg-Huckingen; Steffen Dohler, Duisburg-Grossenbaum, and Manfred Hollstein, Duisburg-Mundelheim, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**
**Filed May 24, 1972, Ser. No. 256,379**
**Int. Cl. G01k** *13/12*; **G01n** *25/06*
**U.S. Cl. 73—354** **11 Claims**

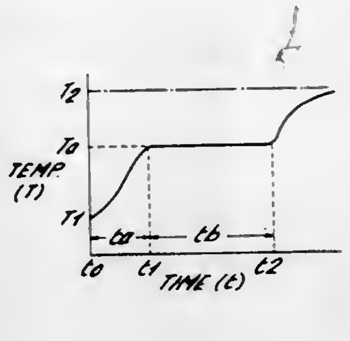


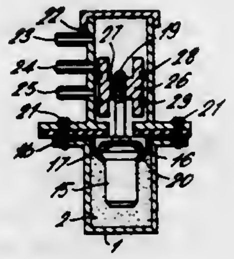
A sampling crucible is disclosed with an asymmetrically placed divider, partitioning the crucible into two communicating chambers, one containing aluminum wire and a port, the other one housing a thermoelement. The divider has a tongue projecting through the bottom of the crucible and carrying a second thermoelement, effective outside of the crucible but covered for protection. The divider is constructed to integrate a lid for the crucible and a socket. Connecting wires for the thermoelements run through the divider, lid and socket.

### 3,756,083
### THERMALLY OPERATED ACTUATOR DEVICE

**Yasuo Tatsutomi; Tokuichi Matsumoto, and Akikazu Sawada, all of Hiroshima, all of Japan, assignors to Toyo Kogyo, Ltd., Hiroshima-ken, Japan**
**Filed Jan. 11, 1971, Ser. No. 105,320**
**Claims priority, application Japan, Jan. 12, 1970, 45/3658; Jan. 12, 1970, 45/3659; Jan. 14, 1970, 45/4016**
**Int. Cl. F03g** *7/06*; **G05d** *23/02*; **H01h** *37/32*
**U.S. Cl. 73—368.3** **21 Claims**





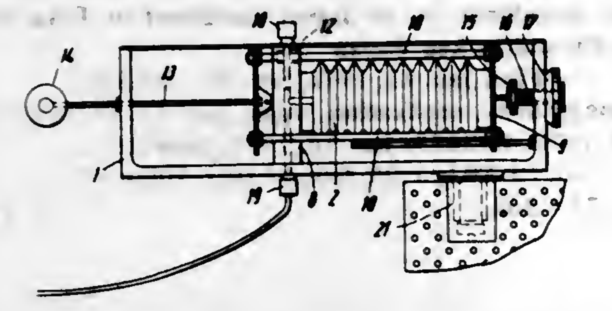


A thermally operated actuator device which is capable of operating an external instrument operatively connected with said actuator device in response to changes in temperature of a medium to which said actuator device is fitted or immersed, in a delayed manner with respect to the time at which such changes in temperature has actually been taken place.

### 3,756,084
### FORCE MEASURING DEVICE FOR SWIMMING IMPLEMENT

**Adolf Stambera, Dinkelsbuhlstrasse 11, Stuttgart 50, Germany**
**Filed Mar. 23, 1971, Ser. No. 127,195**
**Claims priority, application Germany, Mar. 26, 1970, P 20 14 670.7**
**Int. Cl. G01l** *5/02*
**U.S. Cl. 73—379** **7 Claims**

A visual force measuring device for use in conjunction with a swimming implement for holding a swimmer while exercising in the water. The device has a pre-tensioned bellows connected to a fluid conduit and to a rope train, or the like. When the rope train is moved by the swimmer, force registers in the bellows by displacing liquid therein which in turn changes the fluid level in the conduit. A marker set against a measuring rod floats on the fluid surface.



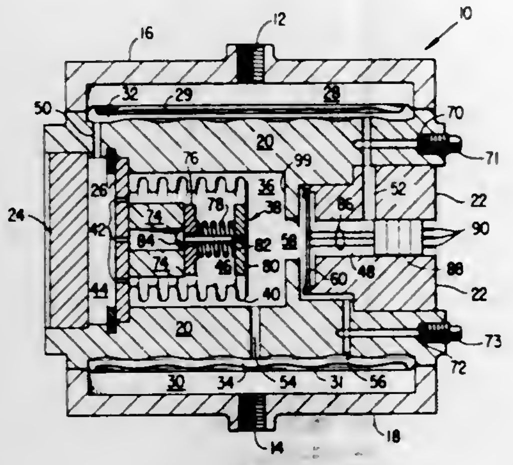
### 3,756,085
### DIFFERENTIAL PRESSURE TRANSMITTER OVERRANGE PROTECTION

**Richard C. Hunter, Willoughby, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio**

**Filed Jan. 3, 1972, Ser. No. 214,677**

**Int. Cl. G01l** *7/08, 9/00*

**U.S. Cl. 73—407 R** **7 Claims**



A fluid-filled differential pressure transmitter using sensing diaphragms and a pressure sensitive transducer as the sensing element. The transducer is protected from overrange pressure damage by an easily deflected bellows. A break-away coupler maintains the bellows substantially rigid during normal pressure ranges and becomes disengaged during an overrange pressure condition to allow the bellows to easily deflect and accommodate the excess fluid displaced by the high pressure sensing diaphragm without excessive increase in the pressure sensed by the transducer.

### 3,756,086
### PROPULSION SYSTEM

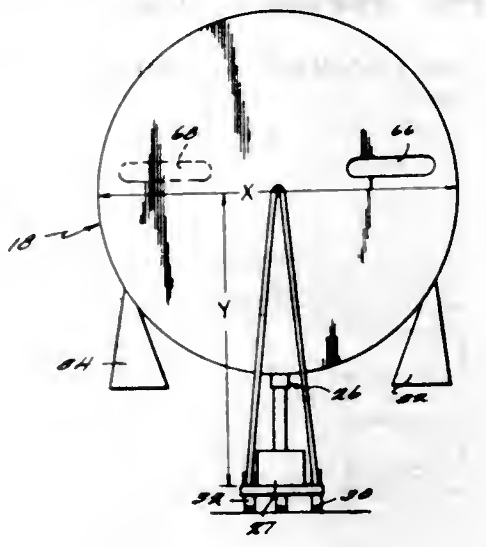
**Roy E. McAlister, 5285 N. Red Rock Dr., Phoenix, Ariz., and Theodore J. McAlister, Jr., Giscome, B.C., Canada**

**Filed July 28, 1970, Ser. No. 58,981**

**Int. Cl. F16h** *27/04*

**U.S. Cl. 74—84** **4 Claims**

Method and apparatus for generating a thrust for use in any environment where thrust is desired as for example for propelling a device whereby the force which moves the device is supplied by the movement inside the device of a mass along a curvilinear path. Since a mass following a curvilinear path necessarily produces a force tending to accelerate the mass toward an instantaneous center of curvature and that force is equal to the mass, expressed in slugs, times the radius, in feet, times the angular velocity squared, in radians/sec., periodic variation of mass, radius or angular velocity of a mass moving in a closed path produces an uncompensated force in a given direction with resultant tendency for movement in that direction. A number of different devices, including devices which utilize the atmosphere being travelled through to interact cyclically with eccentric rotors to produce acceleration and deceleration of the rotor, devices which expel a propulsive fluid after interaction with the rotor to produce cyclic acceleration and deceleration, and devices which produce thrust by cyclic acceleration and deceleration of eccentric rotors through interaction with natural or artifically applied magnetic, electric or thermal gradients, are disclosed.



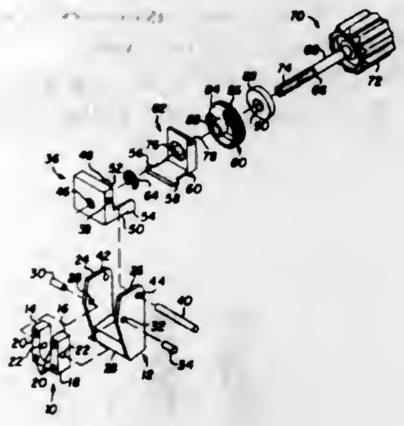
### 3,756,087
### HOLD-DOWN/EXTRACTION APPARATUS

**William C. Riethmeier, Yorba Linda, Calif., assignor to Collins Radio Company, Dallas, Tex.**

**Filed Apr. 12, 1972, Ser. No. 243,173**

**Int. Cl. F16h** *27/02*

**U.S. Cl. 74—89.15** **7 Claims**



A device for assisting insertion of a container into a space and for holding same in said space after insertion with the forces being applied in a first direction having a force component in a hold-down direction while providing extraction forces to said container in a direction substantially perpendicular to said hold-down direction.

### 3,756,088
### ODOMETER RESET MECHANISM

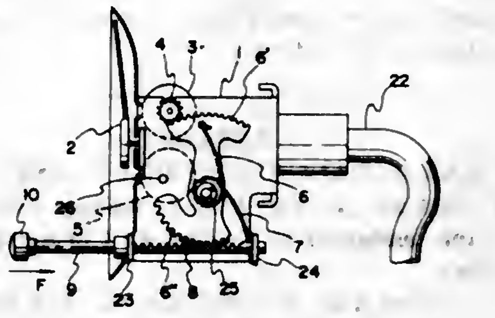
**Shiro Inoue, 26, 2-chome, Kashiwaza, Ageo, Japan**

**Filed Apr. 13, 1972, Ser. No. 243,562**

**Int. Cl. F16h** *29/02*

**U.S. Cl. 74—89.17** **1 Claim**

A pinion attached to a shaft of an odometer engages the upper teeth of a double segment pivoted to one side of a speedometer casing while the lower teeth of the segment engage teeth provided in a horizontally slidable rod. The segment tends to rotate clockwise by the action of a spring. By fully pushing the rod inwardly, the segment rotates against the action of the spring whereby the pinion makes one complete rotation so as to bring similar figure on the several wheels in alignment.



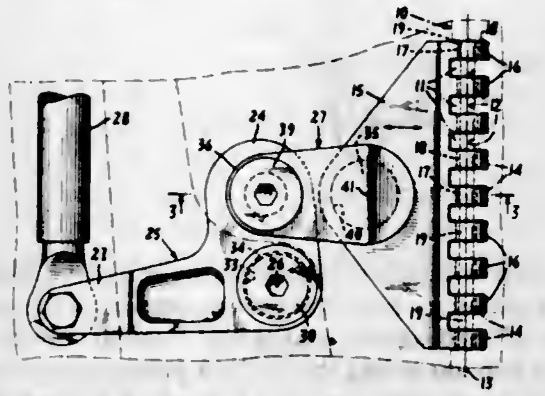
### 3,756,089
### LINKAGE FOR NARROW ENVIRONMENTS

**Henry F. Haladay, 31 Village Way, Smithtown, N.Y.**

**Filed Apr. 15, 1971, Ser. No. 134,199**

**Int. Cl. F16h** *21/04*

**U.S. Cl. 74—96** **21 Claims**



A low profile linkage movable in narrow environments to drive pivotable members. A plate has lugs spaced along one edge, pivotally connected to mating lugs along an edge of the driven pivotable member. A link connects a drive lever to the plate to drive the plate and pivot the pivotable member. The link includes two spaced tabs extending from an integral bolt. The integral bolt and a pair of flanged sleeve bearings extend through a hole in the plate. The tabs receive between them a self-aligning bearing and an end of the drive lever. The plate and link are permitted slight misalignment with the lever which is centrally pivoted for planar pivotal movement. An additional bearing, which may be self-aligning, may connect a drive member to the lever's remaining end.

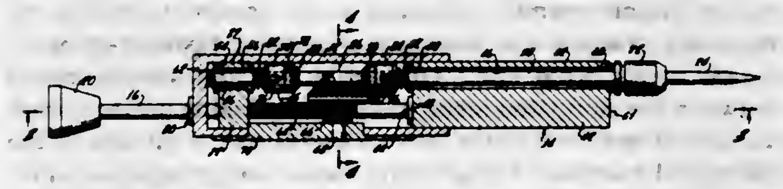
### 3,756,090
### MINI SCREW DRIVER

**Robert A. Mella, Santa Ana, and Donald N. Wood, Tustin, both of Calif., assignors to Robert A. Mella, Santa Ana, Calif.**

**Filed Oct. 4, 1971, Ser. No. 186,253**

**Int. Cl. F16h** *27/02*

**U.S. Cl. 74—130** **16 Claims**



A small hand tool intended to be held in the fingers of one hand in which repetitive pushes on a plunger cause the turning of a substantially parallel drive shaft to which may be releasably attached various tool tips. A novel gear train is provided to (1) allow the drive shaft to be driven in either of two rotational directions, (2) allow the plunger to be returned to its initial position without simultaneously turning the drive shaft in a reverse direction, and (3) impart a large degree of rotary motion to the drive shaft in response to a relatively slight amount of reciprocating motion.

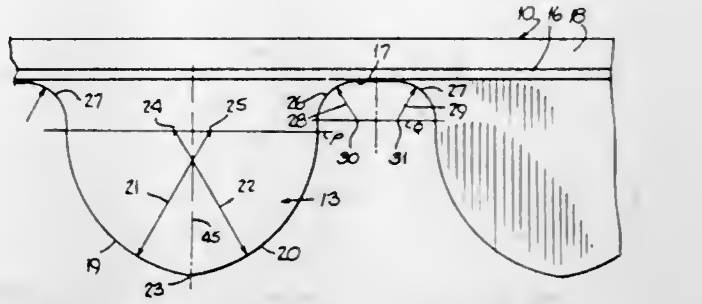
### 3,756,091
### POSITIVE POWER TRANSMISSION SYSTEM

**Henry F. Miller, Clifton, N.J., assignor to Uniroyal, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 778,518, Nov. 25, 1968, abandoned. This application Feb. 19, 1970, Ser. No. 12,870**

**Int. Cl. F16g** *1/28;* **F16h** *55/30, 55/06*

**U.S. Cl. 74—231 C** **42 Claims**



A toothed power transmission belt and pulley system is disclosed wherein the belt has an endless substantially inextensible tensile member with teeth secured thereto, the teeth having a cross-sectional configuration composed of two circular intersecting arcs for meshing with mating, conjugate, curvilinear pulley teeth. The size of teeth, length of radii of curvature, and the angles and point of intersection are determined by a set of design criteria and formulas as recited herein.

### 3,756,092
### SCREW DRIVE

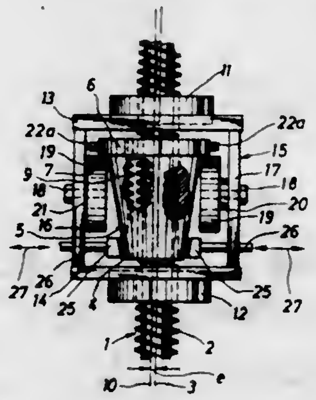
**Robert Gartner, Freiherr vom Stein Str. 8, 6308 Butzbach, Oberhessen, Germany**

**Filed Dec. 2, 1971, Ser. No. 204,166**

**Claims priority, application Germany, Dec. 3, 1970, P 20 59 528.2**

**Int. Cl. F16h** *1/18, 55/22*

**U.S. Cl. 74—424.8 A** **8 Claims**

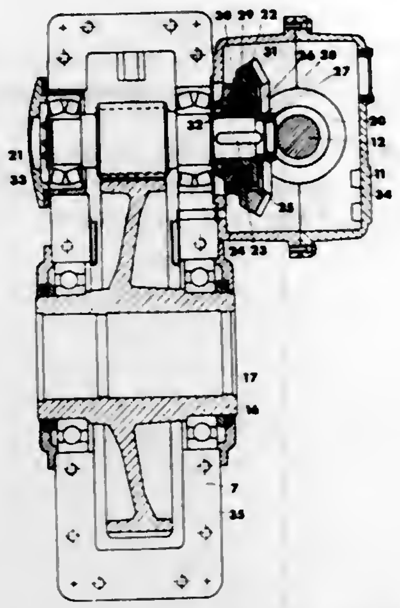


A screw drive with a threaded spindle and with a screw member having an inner thread for threaded engagement with the spindle thread in which the inner thread of said screw member has a greater diameter than the spindle thread and in which the screw member is eccentrically arranged with regard to the longitudinal axis of the spindle and is adapted to rest on bearing means or roller means of a frame guided by the spindle.

**3,756,093**

### PAPER MACHINE DRYING CYLINDER BLOCK

**Martti Kurkinen, Tapiola, Finland, assignor to Kymin Osakeyhtiokymmene Aktiebolag, Kuusankoski, Finland**
**Filed June 19, 1972, Ser. No. 264,234**
**Claims priority, application Finland, June 24, 1971, 1810**
**Int. Cl. F16h** *1/14, 1/20;* **F16d** *7/00*
**U.S. Cl. 74—417** **7 Claims**



The drying cylinders of a paper machine drying cylinder block are provided with a joint driving system in which the pin of almost every drying cylinder is connected to a pin gear type reduction gear having a primary shaft positively connected to a drive shaft which is perpendicular to the cylinder pins and through a cone gear pair at one end of the primary shaft. In order to eliminate blind moments in the cylinder block there is provided an overload clutch in the form of a first flange fixed near the one end of the primary shaft, a second flange attached axially slidable at the one end of the primary shaft to define an annular recess with the first flange for receiving one cone gear of the cone gear pair, and means for pressing the one cone gear between the first and second flanges.

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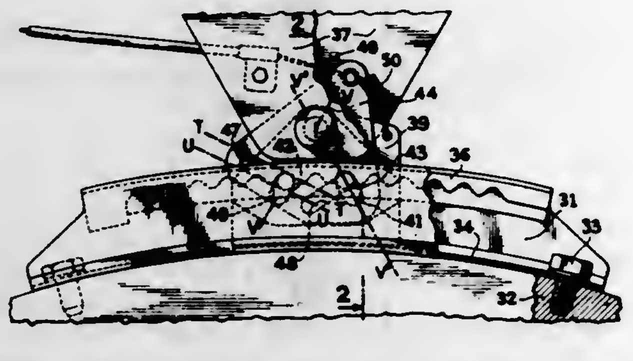
**3,756,094**

### DEVICE FOR INTERLOCKING TWO ELEMENTS WHICH ARE RELATIVELY SLIDABLE

**Gerard Mauron, Versailles, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France**
**Filed Nov. 2, 1971, Ser. No. 194,844**
**Claims priority, application France, Nov. 18, 1970, 7041413**
**Int. Cl. F16m** *13/00*
**U.S. Cl. 74—527** **16 Claims**



Device for interlocking two relatively slidable elements one of which carries a rack having a slideway and the other slide means movable along the slideway. Two locking means on the slide means are movable between a locking position in which they are engaged in recesses of the rack and an unlocking position on which the locking means are withdrawn from the recesses. A cam associated with the locking means is movable on the slide means for withdrawing the locking means or maintaining the locking means engaged with the recesses. Spring means bias the cam to the position for maintaining the locking means in the recesses and a control means brings the cam to the locking means-withdrawing position. The device is substantially symmetrical relative to a plane which is parallel to the longitudinal direction of the slideway and perpendicular to the guide face of the slideway.

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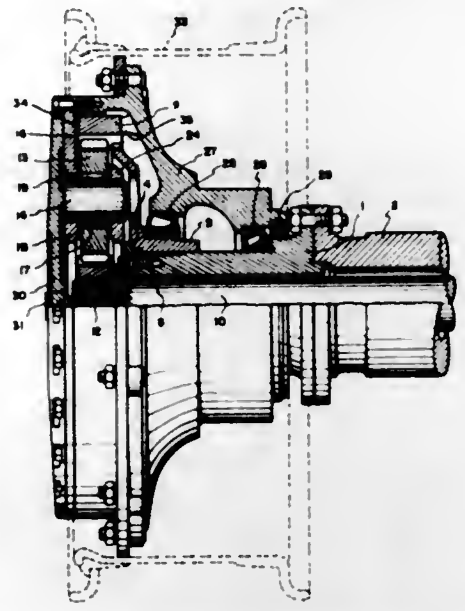
**3,756,095**

### RING GEAR ARRANGEMENT IN A PLANETARY DRIVE

**Frank V. McCay, Jr., and Rolf A. Knopp, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Salt Lake City, Utah**
**Filed Aug. 30, 1971, Ser. No. 175,829**
**Int. Cl. F16h** *1/36, 57/08;* **B60k** *17/04*
**U.S. Cl. 74—801** **5 Claims**



A sun-gear is fixedly mounted on the end of a rotatable shaft to drive a planetary gear train of the type in which an internal ring-gear is fixed against radial and angular movement by a stationary hub encircling the shaft. A planet carrier is fixed for rotation as a unit with a second hub which extends back over the gear train and which rotates upon and around the stationary hub. The ring-gear is axially located between bosses formed as interrupted planar bearing pads extending from the rotating hub and the planet carrier respectively.

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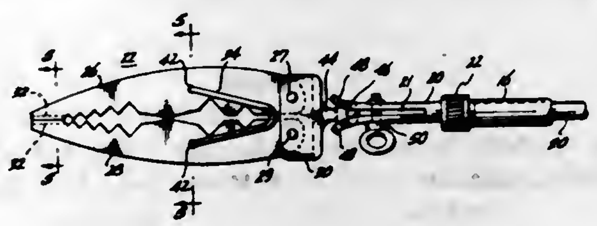
**3,756,096**

### GRIPPING AND STARTING TOOL

**Arthur L. Bolden, 549 77th Ave., Seattle, Wash.**
**Filed June 21, 1972, Ser. No. 264,958**
**Int. Cl. B25b** *9/00*
**U.S. Cl. 81—13** **4 Claims**



A gripping and starting tool, particularly useful for small fastener elements, is disclosed to comprise an elongated manipulatable member adapted at its proximate end to be manually grasped and having multi-choice fastener-gripping means at its distal end. Adjustable ball and socket means between the elongated member and the gripping means permit variable disposition of the latter with respect to the axis of the elongated member. The gripping means comprise a pair of individually pivoted, serrated-face jaws biased by a hairpin spring toward each other in a gripping relationship to an object placed therebetween. This abstract is neither intended to define the invention of this application which, of course, is measured by the appended claims, nor is it intended to be limiting as to the scope of the invention in any way.

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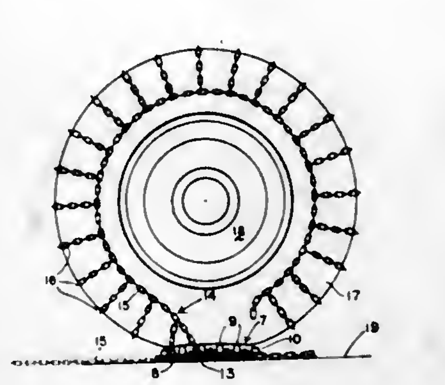
**3,756,097**

### TIRE CHAIN APPLYING DEVICE

**Leslie A. Whitlock, Box 1667, Modesto, Calif.**
**Filed Apr. 29, 1971, Ser. No. 138,615**
**Int. Cl. B60c** *27/06*
**U.S. Cl. 81—15.8** **3 Claims**



An elongated pad having transverse rows of upstanding bosses or studs for supporting a pneumatic tire of a vehicle wheel and accommodating certain of the cross chains of a tire chain between certain of the rows of bosses. The rows of bosses being spaced apart sufficiently so that the cross chains can move lengthwise of the pad for properly adjusting and tightening the tire chain around the tire. The device is formed of a material impervious to fluids and the studs are hollow and open through the underside of the pad to form suction cups, for securing the device to an ice covered surface or to provide chambers capable of being packed with snow to prevent slippage of the device on a snow covered surface.

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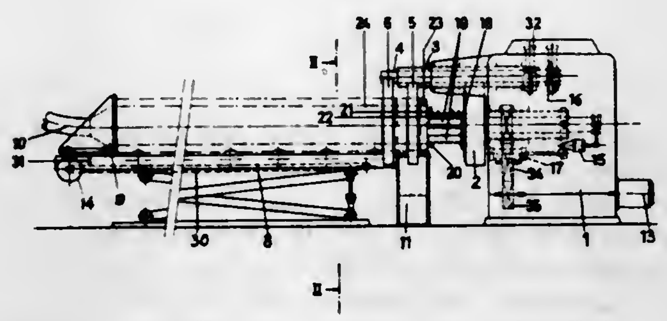
**3,756,098**

### APPARATUS FOR SHAPING TUBES

**Peter Putz, St. Polten, Austria, assignor to V. M. Voith A.G., Passauerstrasse, St. Polten, Austria**
**Filed Apr. 8, 1971, Ser. No. 132,409**
**Int. Cl. B23b** *3/00*
**U.S. Cl. 82—2 R** **11 Claims**



A toolholder is mounted for rotation about an axis by toolholder-driving means. Work-holding means hold a pipe in a predetermined position centered on the axis. While the toolholder carries a cut-off tool and profiling tool means. Positioning means are operable to move the toolholder and work-holding means relative to each other in the direction of the axis to move the toolholder into and out of a pipe held in said predetermined position. Toolholder-feeding means are provided to move the toolholder radially outwardly relative to the axis during a rotation of the toolholder so that the profiling tool means machine a predetermined leading end portion of the pipe to a desired internal shape and the cut-off tool severs the leading end portion from the remainder of the pipe.

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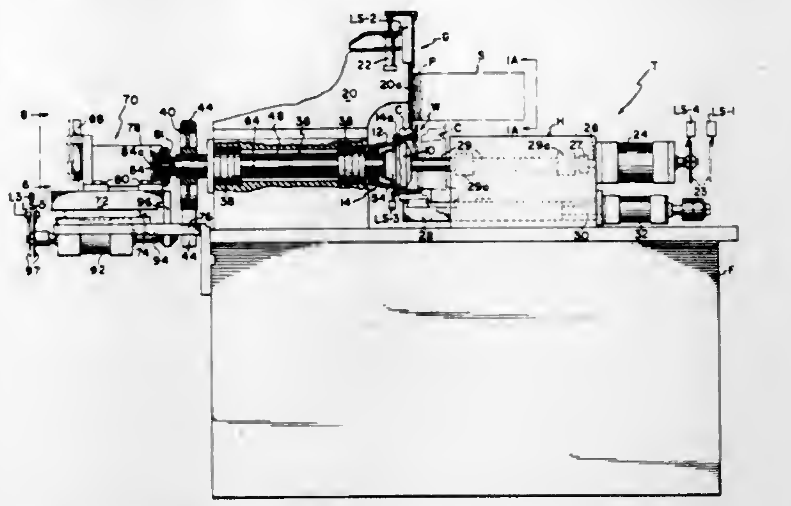
**3,756,099**

### APPARATUS FOR MACHINING A SPLIT ENGINE RING AND SIMILAR WORKPIECES

**Edward F. Sullivan, 4465 Bradshaw St., Saginaw**
**Filed Jan. 3, 1972, Ser. No. 214,738**
**Int. Cl. B23b** *5/26, 13/00, 15/00*
**U.S. Cl. 82—2.7** **17 Claims**



Apparatus for machining ring-shaped workpieces, such as a split engine ring which is positioned at a work station, including: a machining tool movable in a cutting path of travel between a radially inner position and a radially outer position at the work station in a manner to progressively machine the radially inner surface of the workpiece.

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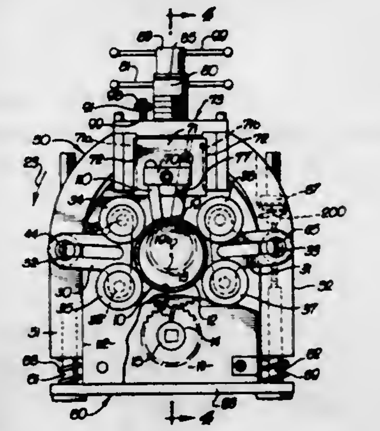
**3,756,100**

### PIPE CUTTING APPARATUS WITH ROCKING ARM ROLLERS

**George Bachmann, 945 Metro Dr., Monterey Park, Calif.**
**Filed Apr. 25, 1972, Ser. No. 247,453**
**Int. Cl. B23b** *5/16*
**U.S. Cl. 82—4 C** **10 Claims**

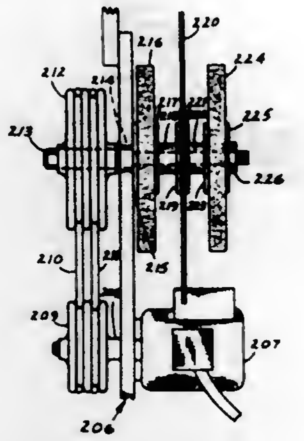


Apparatus to cut pipe having inner and outer surfaces and an axis comprises:

a. drive means engageable with one of said inner and outer surfaces for relatively rotating the apparatus and pipe,
b. thrust exerting means engageable with the other of said inner and outer surfaces for locating the pipe with presentation toward the drive means, said thrust exerting means including first and second rocking arms defining pivot axes spaced about said pipe axis and extending generally parallel thereto, and two rollers carried by each arm and spaced apart about the pipe axis, the arms being capable of rocking about said pivot axes to accommodate roller engagement with pipe of different diameters,
c. cutting structure engageable with the pipe to cut a groove in the pipe and extending about the pipe axis in response to said apparatus rotation relatively about the pipe, and
d. support structure carrying said drive means, thrust exerting means and cutting structure.

### 3,756,101
## WORK SUPPORT APPARATUS WITH PIPE GROOVING TOOL

**Roy P. McKown, 9229 Robin Ln., Indianapolis, Ind.**
**Filed Aug. 23, 1971, Ser. No. 174,021**
**Int. Cl. B23b** *3/36, 3/04*
**U.S. Cl. 82—34 R** **4 Claims**



A work support apparatus for supporting and rotating a pipe while simultaneously allowing grooving operations to be performed on the pipe. The grooving tool has a pair of removable spaced apart grooving wheels with a removable saw disposed therebetween. The work support apparatus has an idler stand, a support assembly and a power stand for supporting and rotating the pipe. The idler stand has two ball bearings rotatably mounted on the ends of two arms for supporting the pipe. One arm is adjustable towards the other arm to facilitate different sized pipe. Two rollers are rotatably mounted atop the support assembly and are movable to support the pipe. A follower wheel and a driver wheel are rotatably mounted atop the power stand to support and drive the pipe. Various other cutting and grinding tools are mountable on the apparatus.

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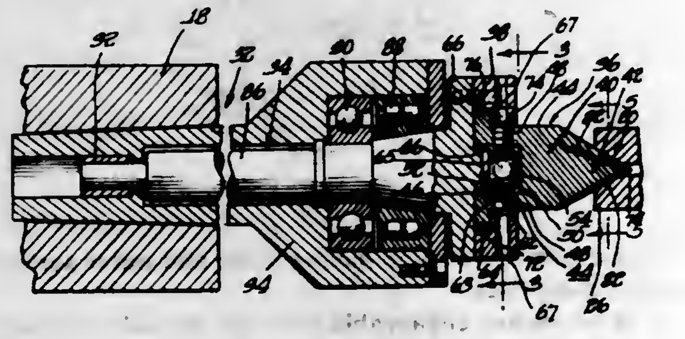
### 3,756,102
## ADJUSTABLE CENTER APPARATUS

**Morris Dick Casey, c/o Casey Tool & Die Co., M-40 South, Dowagiac, Mich.**
**Continuation-in-part of Ser. No. 20,492, March 18, 1970, abandoned. This application Apr. 22, 1971, Ser. No. 136,384**
**Int. Cl. B23b** *33/00, 23/02, 23/04*
**U.S. Cl. 82—40 R** **12 Claims**



Adjustable live or dead center apparatus adapted for use in rotatably supporting a workpiece to be turned during lathe operations and further adapted for accurate correction of lathe center and/or piece part misalignment which is likely to occur with respect to a mounted workpiece having its surfaces eccentric relative to the centers thereof. The center apparatus employs a center arrangement or assembly including a nose portion which is mounted for limited movement transversely of the longitudinal axis of a lathe spindle. A plurality of selectively operable adjustment means are utilized which, when operated, are effective to alter the position of the nose portion of the center arrangement with respect to the longitudinal axis of said spindle.

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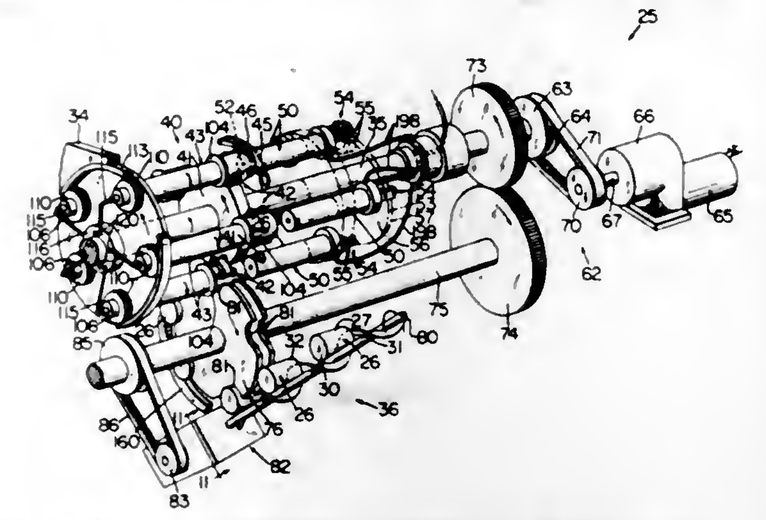
### 3,756,103
## APPARATUS FOR AND METHOD OF TRIMMING CONTAINERS

**Daniel S. Cvacho, and Edward S. Partyka, both of Richmond, Va., assignors to Reynolds Metals Co., Richmond, Va.**
**Continuation of Ser. No. 745,447, July 17, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,579**
**Int. Cl. B23b** *3/04, 1/00*
**U.S. Cl. 82—101 R** **24 Claims**



An apparatus for and method of trimming cylindrical cans at high speed wherein each can is orbited and simultaneously rotated in a continuous nonindexing manner while being simultaneously held against a sickle blade.

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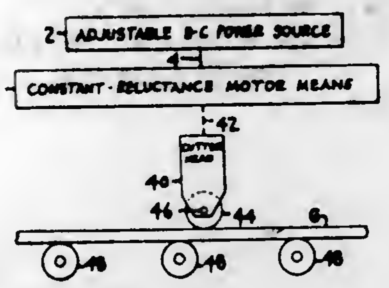
### 3,756,104
## CUTTING OF GLASS

**David A. Bier, Meadowlands, and Edward W. Curtze, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**
**Continuation of Ser. No. 68,305, Aug. 31, 1970, abandoned. This application June 23, 1972, Ser. No. 265,923**
**Int. Cl. B26d** *3/08*
**U.S. Cl. 83—8** **10 Claims**



Cutter heads in a glass-cutting machine are actuated, using a constant-reluctance motor means. Score lines of predetermined depth are obtained, despite small variations in the thickness of the glass, and without use of a pneumatic system that is slow-acting and difficult to maintain. The pressure exerted by the cutter head responds rapidly to changes in the d-c potential supplied to the motor means, making it possible to vary the depth of the score as desired during the making of a pattern cut, which could not be done with the pneumatic or spring-loaded means of the prior art.

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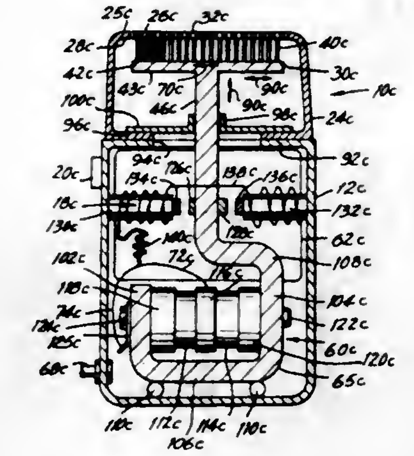
### 3,756,105
## ULTRASONIC ELECTRIC SHAVER

**Lewis Balamuth, New York, and Manuel Karatjas, Glen Oaks, both of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.**
**Filed Oct. 28, 1971, Ser. No. 193,246**
**Int. Cl. B26b** *19/28*
**U.S. Cl. 83—14** **88 Claims**

An electric razor having a guard member with a plurality of apertures for hairs to extend therethrough and a cutter member oscillated relative to the guard member for severing the hairs. The guard member and/or the cutter member are vibrated at an ultrasonic rate to improve the entry of hairs into the operative range of the cutter member, to reduce the force required to oscillate the cutter member relative to the guard member, and to utilize the high accelerations of the ultrasonically vibrated cutter member in shearing the hairs, and the method of shaving accordingly.



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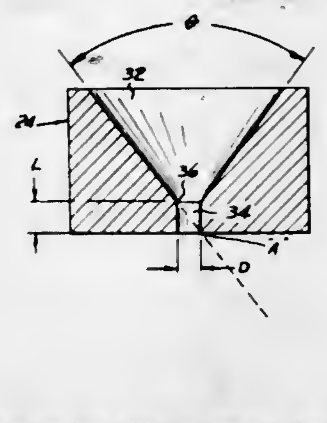
### 3,756,106
## NOZZLE FOR PRODUCING FLUID CUTTING JET

**Ray F. Chadwick , Troy; Michael C. Kurko, Farmington, and Joseph A. Corriveau, Southfield, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.**
**Filed Mar. 1, 1971, Ser. No. 119,758**
**Int. Cl. B26f** *3/00*
**U.S. Cl. 83—177** **7 Claims**



A nozzle for producing high pressure liquid coherent jets for fluid jet cutting is described, the nozzle being constructed of a corundum crystal having an orifice formed therein of a specific disclosed geometry in which a convergent entrance section merges into a straight-sided exit section, and in which the relationship of the angle of convergency and the length and diameter of the exit section is such that an extension of the convergent side will not intersect the exit section wall, and with the length of the exit section being equal to or greater than its diameter.

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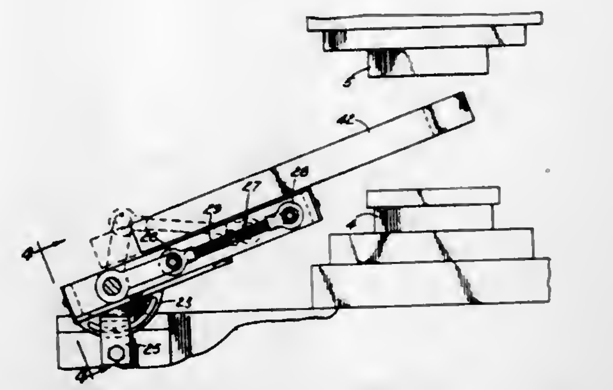
### 3,756,107
## PART COLLECTOR AND MECHANISM THEREFOR

**Francis J. Pax, and John C. Pax, both of Celina, Ohio, assignors to Pax Machine Works, Inc., Celina, Ohio**
**Filed Dec. 27, 1971, Ser. No. 212,148**
**Int. Cl. B26d** *7/18*
**U.S. Cl. 83—165** **4 Claims**

The disclosure herein is of a part collector for punch presses or the like, in which metal is formed and the parts produced thereby are desirably withdrawn from the area of forming so that subsequent parts may be formed therein, without the use of hands by the operator, and specifically by providing part receiving means which move into the area between the part forming means and outwardly therefrom so that it will not interfere with the operation of such means, and yet be in position when the parts are completed to accept the same and carry them away, the foregoing being accomplished by the provision of a suitable chute which is reciprocated inwardly and outwardly from the part forming area by means of connections which are operated in unison or timed relation to the movement of the press forming parts, such movement being adjustable both rotationally and longitudinally to accomodate various sizes of dies and parts formed thereby.



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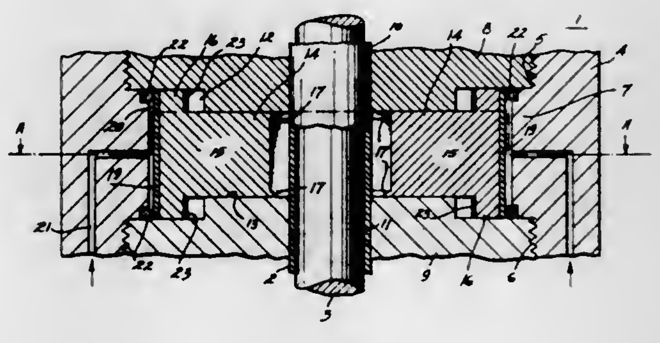
### 3,756,108
## TUBE CUTTER

**Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.**
**Filed Dec. 13, 1971, Ser. No. 207,333**
**Int. Cl. B26d** *3/16*
**U.S. Cl. 83—193** **8 Claims**



A plurality of wedge-shaped cutting members having spaced arcuate cutting edges are urged radially inwardly by fluid pressure to contract about and sever a mandrel-held tube in two longitudinally spaced planes. Each cutting member has spaced side cutting edges adapted to engage the spaced side cutting edges of an adjacent cutting member, thereby to remove flash resulting from the severing operation. The fluid pressure is exerted through a resilient sheathing simultaneously about the entire array of cutting members. Leaf springs urge the entire array radially outwardly to expand the array when fluid pressure is removed from the array of cutting members.

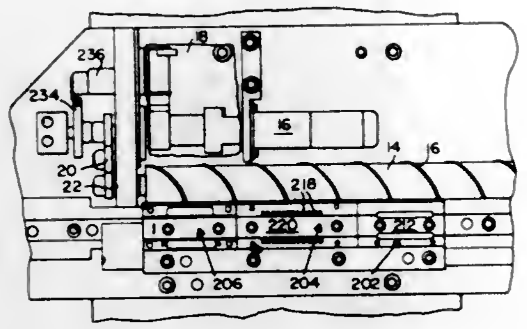
### 3,756,109
### AUTOMATIC FEED APPARATUS FOR ENCAPSULATED SEMICONDUCTOR UNITS

**John K. Krueger, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.**

**Filed July 1, 1971, Ser. No. 158,819**

**Int. Cl. B26d** *7/06*

**U.S. Cl. 83—255** **4 Claims**



A helical screw conveyor is provided for moving strips of concatenate semiconductor units past various work stations. The helical screw conveyor is preferably driven by a one revolution clutch so as to move the strips in a step by step manner.

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### 3,756,110
### TABLE SHEAR WITH GAP-ADJUSTING MEANS

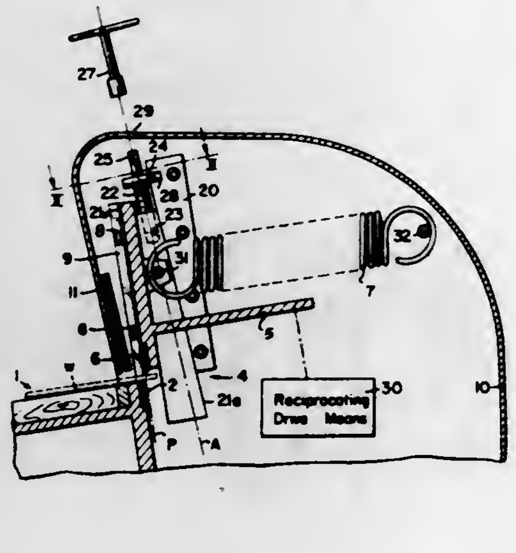
**Paul Von Arx, Gelterkinderstrasse 31, CH 4450 Sissach, Switzerland**

**Filed Feb. 23, 1971, Ser. No. 118,141**

**Claims priority, application Switzerland, Feb. 26, 1970, 2773/70**

**Int. Cl. B23d** *5/08*

**U.S. Cl. 83—522** **1 Claim**



A table shear has a vertically reciprocable blade which cooperates with the edge of a table to cut off the portion of a workpiece that projects over this table edge. The plane in which the blade reciprocates can be shifted adjustably toward and away from the table edge by an apparatus including a fixed guide track on which rides a wedge-shaped body that serves as the blade guide. Displacement of the guide body along the guide track by means of a threaded spindle arrangement moves the blade-reciprocating plane. The spindle is provided with a calibrated disk or dial so that accurate (micrometric) settings, of the order of thousandths or ten-thousandths of a millimeter, can be made.

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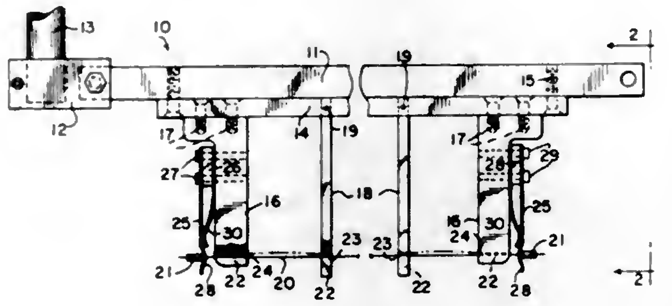
### 3,756,111
### WIRE HOLDING ATTACHMENT FOR EXTRUSION MACHINES

**Edward A. Weidenmiller, 8100 Austin Ave., Lincolnwood, Ill.**

**Filed Dec. 13, 1971, Ser. No. 207,182**

**Int. Cl. B26d** *1/02*

**U.S. Cl. 83—651.1** **4 Claims**



A wire holding attachment for a dough extrusion machine including a dough cutting wire of predetermined length disposed taut between supporting posts where it is resiliently attached by means of wire tensioning springs with a shock absorber disposed between each tensioning spring and its respectively associated supporting post.

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### 3,756,112
### BAGPIPES

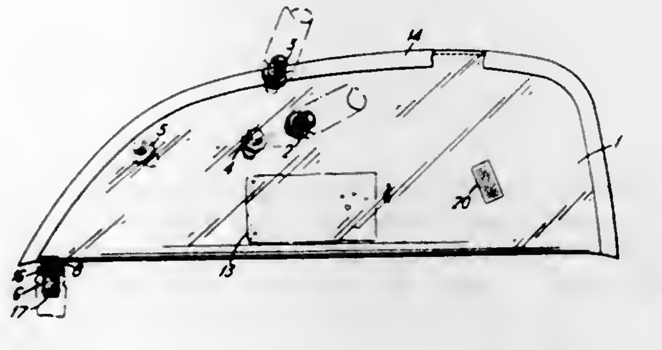
**William John Campbell Adams, 77 Green Ln., West Ewell, Surrey, England**

**Filed Mar. 20, 1972, Ser. No. 235,964**

**Claims priority, application Great Britain, Apr. 7, 1971, 8,964/71**

**Int. Cl. G10d** *7/00*

**U.S. Cl. 84—380** **6 Claims**



A bag for a bagpipe is made by fitting in selected points of a sheet of plastics material stock mountings for pipes, each comprising a flanged tubular body having its flange against one surface of the sheet, its tubular body projecting through an aperture in the sheet, and a clamping member on said body on the opposite side of the sheet, pressing the sheet against said flange in substantially air-tight conditon, and thereafter folding over said sheet and heat-sealing aligned edges to close the bag. The sealed edge of the bag may be strengthened by stitching and/or a folded-over edge strip. Each stock projecting externally of the bag is adapted to have a pipe removably fitted thereon, and held by friction. The stock may have a covering of yieldable material, e.g., adhesive tape.

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### 3,756,113
### WOODEN KEY SHANK ASSEMBLY FOR KEYBOARD MUSICAL INSTRUMENT

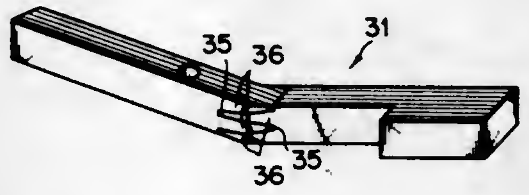
**Ziro Suzuki, Iwata-shi, Shizuoka-ken; Masaji Agata, and Toshimune Okugawa, both of Hamamatsu-shi, all of Japan, assignors to Nippon Gakki Siezo Kabushiki Kaisha, Hamamatsu-shi, Shizwoka-ken, Japan**

**Filed Dec. 20, 1971, Ser. No. 209,931**

**Claims priority, application Japan, Dec. 22, 1970, 45/115381; Dec. 22, 1970, 45/128687**

**Int. Cl. G10c** *3/12*

**U.S. Cl. 84—438** **3 Claims**



A wooden key shank assembly as for a piano including a plurality of elongated key shanks juxtaposed in the order of musical notes. The key shanks each consist of a front half portion depressed by player's fingers in performance and a rear half portion so arranged as to move a piano action mechanism to strike a corresponding string, the lengthwise direction of the rear half portion being deviated from that of the front half portion. The front and rear half portions are connected to one another by a dovetail joint, with their grains extending along the respective lengthwise directions of the two portions. Thus, the assembly, especially the rear portions thereof, increase their mechanical strength.

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### 3,756,114
### KEYBOARD MUSICAL INSTRUMENT, MORE PARTICULARLY FOR USE AS A TOY

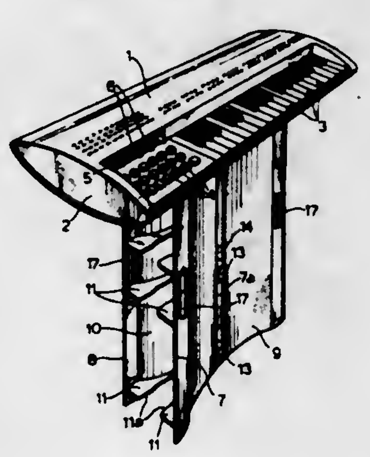
**Paolo Bontempi, via Don Bosco 49, Potenza Picena, Italy**

**Filed Dec. 18, 1972, Ser. No. 315,969**

**Claims priority, application Italy, Dec. 18, 1971, 32592 A/71; June 30, 1972, 26430 A/72**

**Int. Cl. G10g** *5/00*

**U.S. Cl. 84—453** **13 Claims**



A keyboard musical instrument particularly suited, but not exclusively adapted, for use as a childrens' toy, comprising an elongate instrument body on which are formed the keyboard and other controls, and in which are housed all the sound producing devices of the instrument, and two half shells shaped to surround the instrument to form a carrying case, and also to be fitted back to back to form a supporting base for the body when the instrument is in use. The two half shells can be pivotally coupled by a removable hinge plate which also form a clasp to lock the shells into their two relative positions for the two uses thereof.

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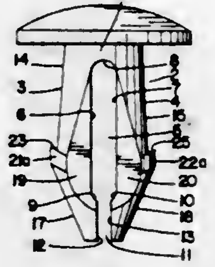
### 3,756,115
### PLASTIC RIVET

**Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio**

**Filed Dec. 3, 1971, Ser. No. 204,427**

**Int. Cl. F16b** *21/08*

**U.S. Cl. 85—5 R** **4 Claims**



A plastic rivet is disclosed having a head and a shank, comprising portions which are separated from each other by a relatively wide slot which extends from near the head of the rivet to near the end of the shank and which facilitates entry of the shank into holes in panels which are to be secured together by the rivet. Such entry is further facilitated by reason of the provision of flattened surfaces on the shank portions which extend perpendicularly to the walls of said slot, and by the conical conformation of the ends of the shank portions. The holding power of the rivet is increased by the provision of angled shoulders or lands at the upper ends of said conical conformations.

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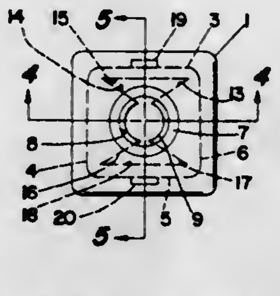
### 3,756,116
### PLASTIC NUT OR GROMMET

**Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio**

**Filed Sept. 27, 1971, Ser. No. 183,891**

**Int. Cl. F16b** *13/04*

**U.S. Cl. 85—80** **5 Claims**



A plastic nut or grommet is provided, of the type which is insertable in an opening in a supporting structure, for the purpose of securing various articles, such as a panel, to the wall structure, or for use as a drawer glide or shelf support. The nut or grommet is of a construction such that a relatively high torque is required on a screw used in conjunction with the nut to secure the nut in the opening, thereby assuring that the nut is firmly and rigidly secured in the opening. Retaining lugs are provided on the nut, which are disposed on relatively thin and flexible portions of the nut, whereby these lugs can flex inwardly, thereby facilitating entry of the shank of the nut in the opening of the support structure.

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### 3,756,117
### SPOOL HOLDER DRIVE MECHANISM

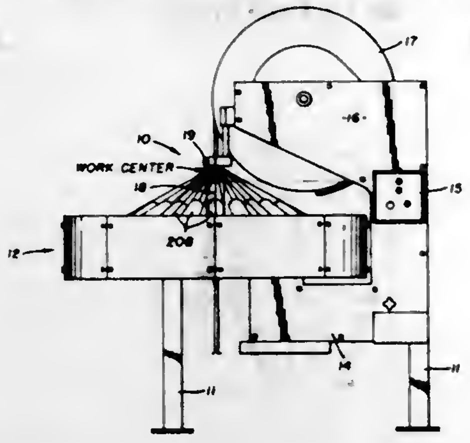
**Simon Arden DeYoung, Ravenna, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio**

**Filed Jan. 3, 1972, Ser. No. 214,656**

**Int. Cl. D04c** *3/12*

**U.S. Cl. 87—29** **4 Claims**

Spool holder drive mechanism for a rotary braiding machine wherein sets of spool holders are moved along circular paths in opposite directions relative to a "work center" toward which tensioned strands from spools on the holders are directed. The drive mechanism includes a stationary sun gear and a rotatable support plate mounted in axial alignment adjacent the "work center" of the strand fabricating machine.



The support plate mounts the base holders for the inner spool holders and carries a guideway for movement of a set of outer spool holders. Rotation of the support plate in relation to the sun gear is transmitted through sets of planet gears to the base holders for the inner spool holders.

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### 3,756,118

### PROPELLANT CHARGE FOR THE FIRING OF PROJECTILES, BOLTS, AND THE LIKE, FROM A FIRING DEVICE, AND APPARATUS FOR THE INTRODUCTION OF THIS PROPELLANT CHARGE

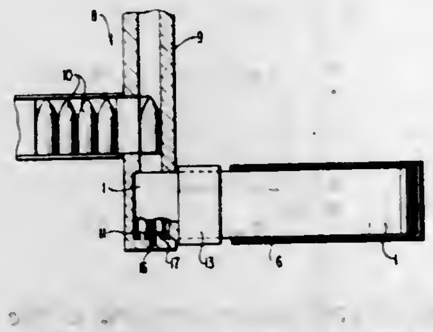
**Heinz Ratz, Troisdorf; Heinz Gawlick, Furth; Gunther Marondel, Erlangen, and Hellmut Bendler, Erlangen-Spardorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Postfach, Troisdorf, Germany**

**Filed Apr. 24, 1970, Ser. No. 31,498**

**Claims priority, application Germany, Apr. 24, 1969, P 19 20 816.3**

**Int. Cl. F41d** ***9/00***

**U.S. Cl. 89—33 R** **16 Claims**



A propellant charge in the form of a powder strip having holes or apertures therein for indicating the length thereof to be used in a firing device having a cartridge chamber with guides on one wall to effect a coiling of the powder strip when inserted thereinto by way of an inlet slit from a magazine via a measuring device.

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### 3,756,119

### MACHINE GUN

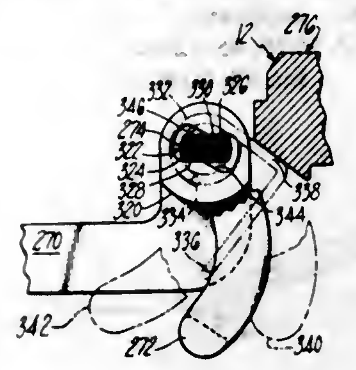
**George F. Curtis, East Longmeadow, and Henry J. Tatro, Jr., Westfield, both of Mass., assignors to Colt Industries Operating Corp., New York, N.Y.**

**Division of Ser. No. 857,479, Sept. 12, 1969, Pat. No. 3,688,641. This application Dec. 14, 1971, Ser. No. 207,942**

**Int. Cl. F41c** ***9/22, 25/00***

**U.S. Cl. 89—33 R** **3 Claims**

The machine gun of this invention features a unitary bolt and bolt drive assembly reciprocably mounted within a receiver along three longitudinally extending bearing supports symmetrically arranged in spaced relation to the receiver; the bolt and bolt drive assembly, together with a recoil buffer constituting an integral operating group removably maintained within the receiver by a single latch mechanism; a bolt carrier of the assembly incorporating actuating means for cartridge belt advance, cartridge extraction and ejection; the bolt carrier housing not only a rotary, front-locking bolt but also a cam follower which fixes a firing pin to the carrier and moves within a contoured slot in the bolt for locking and unlocking it in battery. This machine gun also features a gas recoil system for the bolt and bolt drive assembly having anti-fouling porting means for purging gas from the system under high pressure after firing; an ejector operated by the recoiling bolt and bolt drive assembly independently of its velocity; an automatically engageable, self-aligning barrel and receiver latch construction; and a sight assembly featuring a zero backlash precision screw adjustment means.



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### ERRATUM

For Class 89—33 see:
Patent No. 3,756,118

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### 3,756,120

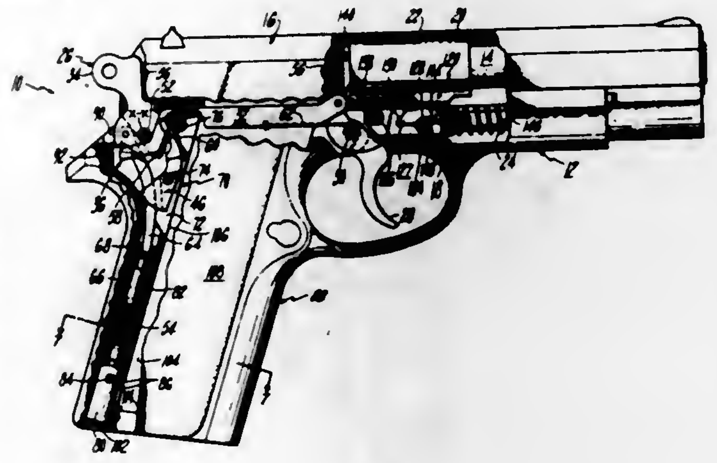
### PISTOL HAVING MOVABLE BARREL

**Robert E. Roy, East Haven, Conn., assignor to Colt Industries Operating Corp., New York, N.Y.**

**Division of Ser. No. 864,609, Oct. 8, 1969. This application Dec. 13, 1971, Ser. No. 207,254**

**Int. Cl. F41c** ***5/06***

**U.S. Cl. 89—163** **5 Claims**



The pistol of this invention incorporates a fire control group of an en block type removably mounted in a receiver and having a housing extremity engaging the receiver at a location remote from a hammer pivot axis, a slide reciprocably mounted on the receiver, and a barrel operated by the slide and having a downwardly projecting lug, the lug being received for limited captured movement in the frame between longitudinally spaced vertically offset limit positions, and a pair of camming pins longitudinally spaced apart in the receiver to extend laterally across the path of movement of the barrel lug and serving both to guide and stop barrel movement relative to the slide in timed relation to its movements.

### 3,756,121

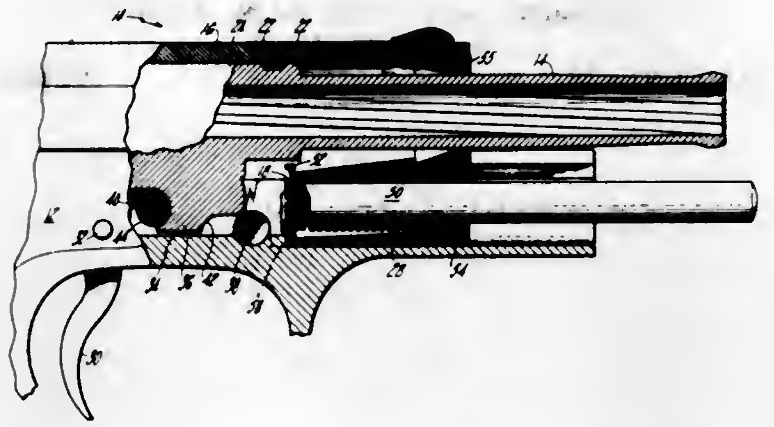
### COMBINATION ACTION SPRING GUIDE AND BUFFER FOR AUTOMATIC PISTOL

**Robert Roy, East Haven, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.**

**Filed Oct. 26, 1971, Ser. No. 192,072**

**Int. Cl. F41d** ***11/12***

**U.S. Cl. 89—196** **3 Claims**



A gas recoil operated automatic pistol having a slide reciprocably mounted on a frame and a single resilient element of tough, form sustaining plastic serving both as a guide for a slide action spring and as a recoil buffer for absorbing slide impact energy which is normally imparted directly onto the frame.

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### 3,756,122

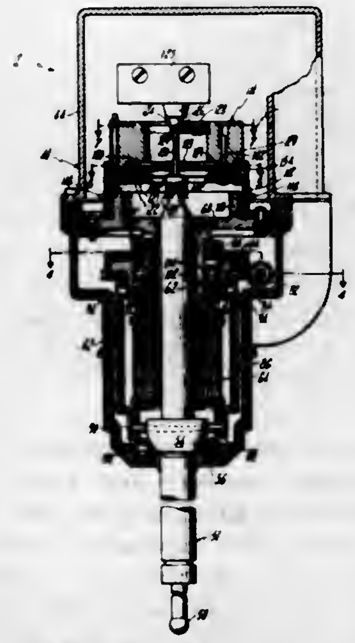
### MACHINE TOOL TRACER

**Paul J. Campbell, c/o The New England Machine and Tool Company, 758 Four Rod Rd., Moodus, Conn.**

**Filed June 4, 1971, Ser. No. 150,063**

**Int. Cl. B23q** ***35/26***

**U.S. Cl. 90—62 A** **18 Claims**



A contour milling machine having profile and depth tracers with tracing styli adapted to be displaced by workpiece templates for controlling the relative position of a machine cutter and a workpiece. A photoelectric signaling device of each tracer comprising a stationary mask and a movable mask operable by the respective tracing stylus is operable to generate an electric signal for controlling the relative position of the workpiece and cutter in accordance with the displacement of the tracing stylus.

### 3,756,123

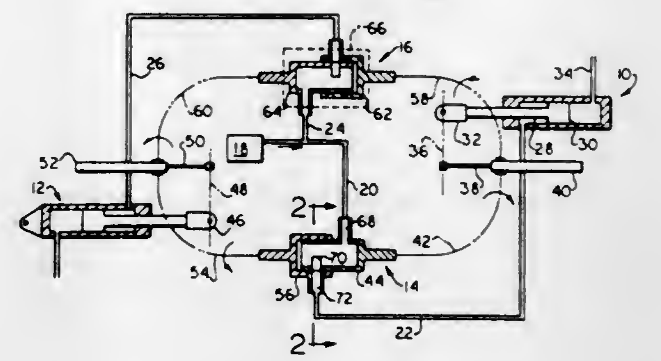
### SYNCHRONIZED HYDRAULIC SERVO MOTOR SYSTEM

**Roger E. Howarth; William M. McGuigan, both of San Diego, Calif., and David A. Murday, Oxhey Watford, Herts County, England, assignors to Rohr Corporation, Chula Vista, Calif.**

**Filed June 1, 1971, Ser. No. 148,740**

**Int. Cl. F01b** ***25/04;*** **F15b** ***11/22***

**U.S. Cl. 91—171** **12 Claims**



Hydraulic system for moving common load or separate loads requires all drive members to move in synchronism. Two or more hydraulic servo motors are each provided with a hydraulically movable drive member. A synchronizing valve is interposed either in the conduit from the pressure fluid supply to each motor or in the conduit from each motor to the fluid reservoir to modulate the flow to its associated motor and includes two valve members which move with and with respect to each other. One valve member of each valve is attached to the drive member of its associated motor and the other valve member is attached to the drive member of the next preceding or succeeding motor so that all of the valves and motors are connected in a mechanical "closed-loop" series. When all motors are in synchronism, the two members of each valve move in the same direction in synchronism and do not affect the fluid flow. If any motor advances ahead of synchronism, the members of its associated valve are caused to move with respect to each other by mechanical linkages to restrict fluid flow and retard the leading motor until it is returned to synchronism. The system may be designed to one-direction operation or two-direction operation. In the one-direction system, a closed loop arrangement is not essential. In a modification, the valve porting may be arranged to restrict flow to the leading motor and also increase flow to the lagging motor to accelerate the return to synchronism. In a further modification, the porting may be shaped to give varying rates of change of flow for each increment of relative movement.

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### 3,756,124

### SERVO MOTORS FOR VEHICLE BRAKE SYSTEMS

**John James Camm, Melbourne, Victoria, Australia, assignor to Girling Limited, Birmingham, England**

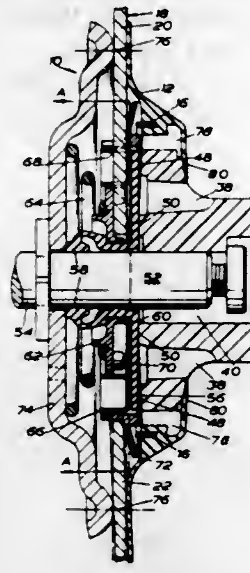
**Filed July 14, 1971, Ser. No. 162,445**

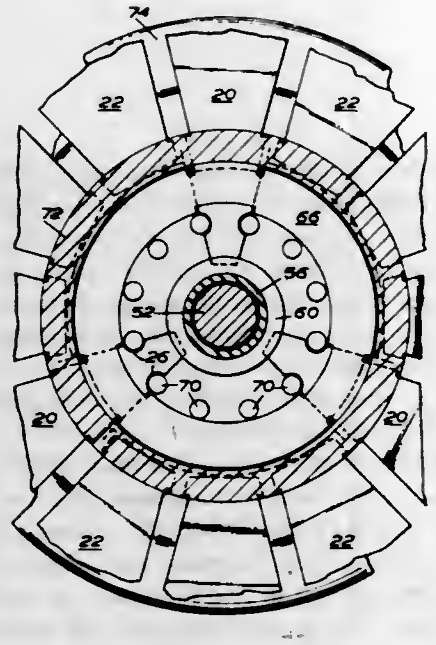
**Claims priority, application Great Britain, July 16, 1970, 34,431/70**

**Int. Cl. F15b** ***9/10***

**U.S. Cl. 91—369 B** **9 Claims**

The invention relates to servo motors for vehicle brake systems, and particularly relates to servo motors of the type having two contiguous fluid-tight compartments separated by a diaphragm supported on a deflecting plate comprising a plurality of circumferentially spaced fingers, and controlled by a pair of concentrically disposed valve seats. A deflecting plate for such a servo motor is disclosed, which comprises a plurality of spaced rigid fingers held in regular circularly spaced relationship of which some, but not all, are adapted to pivot alternatively about the concentric valve seats. By this means excessive hysteresis effects associated with this type of servo motor may be reduced.





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### 3,756,125
### STEERING MECHANISM FOR VEHICLES

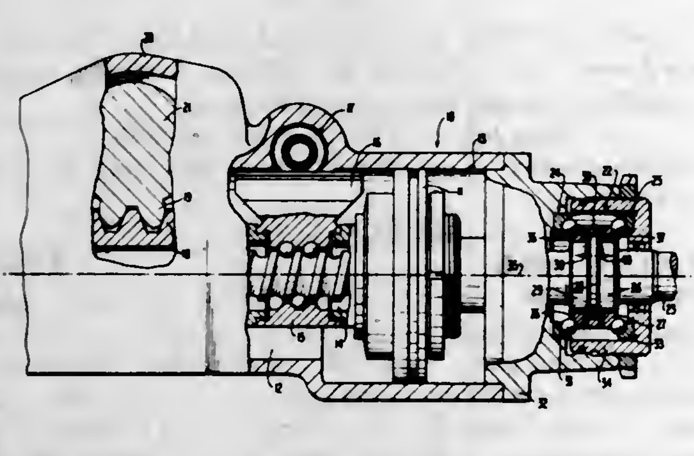
**Hans-Joachim M. Forster; Klaus Katz, both of Stuttgart, and Otto Lattner, Pfreimd, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

**Filed Dec. 3, 1971, Ser. No. 204,604**

**Claims priority, application Germany, Dec. 5, 1970, P 20 60 017.3**

**Int. Cl. F15b** *9/07*

**U.S. Cl. 91—380** **27 Claims**



A steering system for vehicles with a steering worm which is spirally movably connected with the steering nut and is axially fixed in the steering gear housing; axial compression springs, preferably cup springs are thereby interconnected between the steering worm and the steering gear housing.

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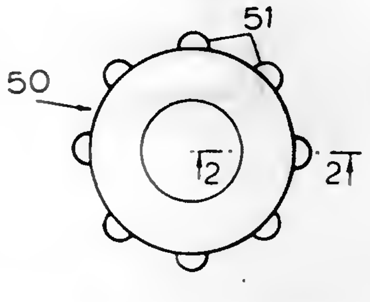
### 3,756,126
### SEALING RING

**Richard Paul Granada, West Covina, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Division of Ser. No. 39,281, May 21, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,431**

**Int. Cl. F01b** *19/00*

**U.S. Cl. 92—38** **8 Claims**



An O-ring like seal for the overpressure valve of a differential pressure unit. The seal may be simply a conventional rubber O-ring with projections molded integrally therewith. The ring may be a geometric toroid defined by revolving a circle about an axis of revolution. The projections point radially away from the axis and are fixed to the toroid at its surface located furthest from the axis.

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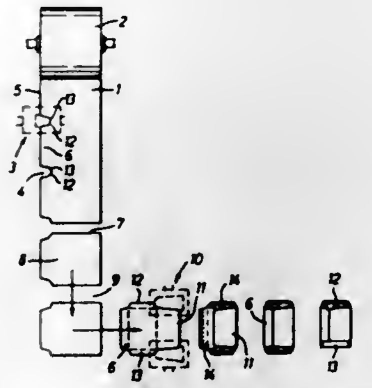
### 3,756,127
### MANUFACTURE OF ENVELOPES

**John William Simpson, Garston, and Arthur John Mayo, St. Albans, both of England, assignors to John Dickinson & Co. Limited, Hemel Hempstead, Hertford, England**

**Filed May 27, 1971, Ser. No. 147,467**

**Int. Cl. B31b** *23/60*

**U.S. Cl. 93—63 M** **1 Claim**



The invention provides a novel method of manufacturing longitudinally-grained envelopes from a web of paper moving in the direction of its longitudinal grain axis which comprises severing the web to form envelope blanks, changing the direction of travel of the blanks by approximately 90°, notching the web or the blanks and finally folding and sealing the shaped blanks to form the completed envelopes.

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### 3,756,128
### SINGLE STAGE CUTTING SYSTEM FOR FIBER CANS

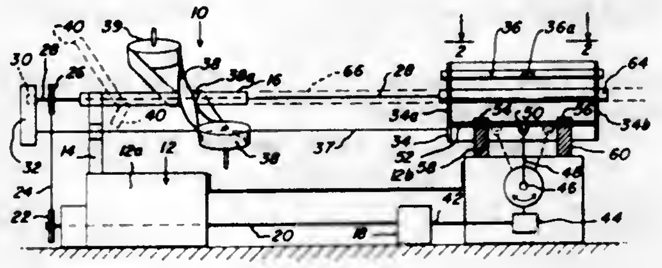
**Lowell Armstrong, Louisville, Ky., and Edward A. Van Waes, Golden Valley, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.**

**Filed Jan. 6, 1972, Ser. No. 215,725**

**Int. Cl. B31c** *3/00*

**U.S. Cl. 93—80** **14 Claims**

A combined forming and cutting apparatus for spiral wound fiber cans is composed of a supporting framework, a winding mandrel on which paperboard strips are wound into a tube and an anvil aligned axially with the mandrel to receive the continuously formed tube as it is withdrawn from the mandrel. A reciprocating carriage positioned in lateral alignment with the anvil has mounted upon it two banks of cutting knives comprising a first bank of knives for cutting the containers apart from one another and the second bank adapted to simultaniously cut partially through the container to form a circumferential collar cut spaced axially from the end cut. The collar cut knife is provided with an axially aligned longitudinally spaced circular can engaging stop for limiting the depth of the cut formed by the collar cut knife.



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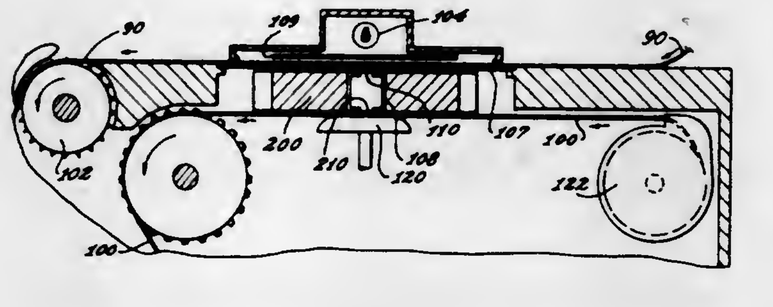
### 3,756,129
### APPARATUS FOR FABRICATING A PRINTED CIRCUIT BOARD PHOTOMASTER

**Leo Fiderer, 5640 Alden Ave., Encino, Calif.**

**Division of Ser. No. 68,175, Aug. 31, 1970. This application Sept. 28, 1972, Ser. No. 293,066**

**Int. Cl. G03b**

**U.S. Cl. 95—1 R** **5 Claims**



A perforated control tape is provided having a pattern of holes related to the pattern of elements of the desired printed circuit pattern. The holes in the tape control the markings on a photosensitive film strip such that the markings on the film produce the lines and shapes of a segment of the desired photomaster for a printed circuit. After development, as many film strips as required to produce the complete photomaster are assembled on a backing to form a composite corresponding to the image of the desired photomaster. A final photomaster for the printed circuit board is then made from the film strips assembled on the backing.

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### 3,756,130
### EXPOSURE TIME CONTROL DEVICE IN A THROUGH THE LENS TYPE SINGLE REFLEX CAMERA

**Yasuhiro Nanba, Toyokawa; Masayoshi Sahara, Sakai, and Kintaro Yada, Ikeda, all of Japan, assignors to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan**

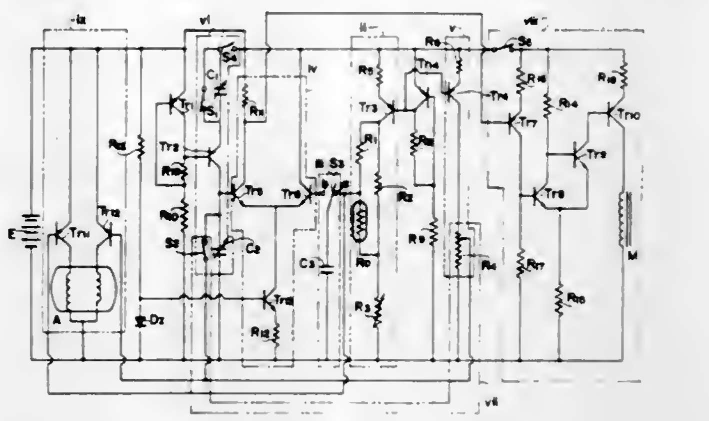
**Filed Apr. 7, 1971, Ser. No. 132,104**

**Claims priority, application Japan, Apr. 7, 1970, 45/29019; Apr. 7, 1970, 45/29020**

**Int. Cl. G03b** *7/08*

**U.S. Cl. 95—10 CT** **10 Claims**

First and second output voltages are generated respectively in accordance with the logarithm of the intensity of light and as a function of a manually set exposure condition. A control signal to initiate shutter closing is generated when a signal which changes in proportion to the logarithm of an elapsed time period initiated by shutter release operation plus the second output voltage is substantially equal to the first output voltage. The control device includes a circuit for comparing the voltages. The device may be modified to generate a third output voltage which changes in response to the change of the signal and then comparing the first output voltage with the second plus the third output voltage.



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### 3,756,131
### EXPOSURE CONTROLLING DEVICE FOR PHOTOGRAPHIC CAMERA

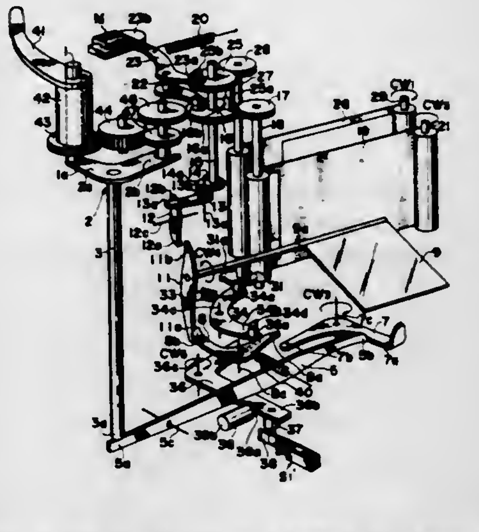
**Yoshio Kuramoto, Toyonaka-shi, Osaka-fu, and Kayoshi Tsujimoto, Higashisumiyoshi-ku, Osaka-shi, Osaka-fu, both of Japan, assignors to Minolta Camera Kabushiki, Osaka-shi, Osaka-fu, Japan**

**Filed June 4, 1971, Ser. No. 149,938**

**Claims priority, application Japan, June 4, 1970, 45/47553**

**Int. Cl. G03b** *7/08, 17/18*

**U.S. Cl. 95—10 CT** **5 Claims**



An exposure control circuit is caused to store a voltage representative of the light intensity of a selected principal object within the object field to be photographed by a manually operated member which disconnects a photosensitive element from a capacitive storage element. Operation of the manual member causes a switch interconnecting the photosensitive element with the capacitive storage element to be opened and a restraining member is provided for maintaining the switch in an opened condition until an exposure has been terminated. A cocking member operated in conjunction with the cocking of the camera causes the switch to be closed in preparation for another photograph.

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### 3,756,132
### ADAPTER CIRCUIT FOR USE WITH AUTO EXPOSURE CAMERA

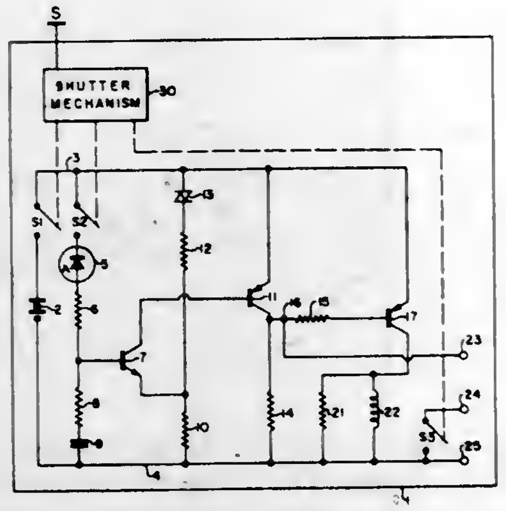
**Francis T. Ogawa, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

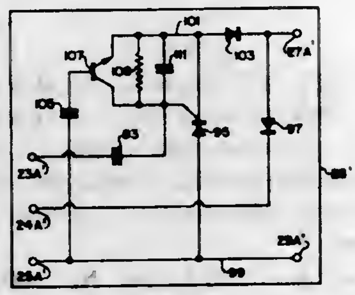
**Filed Aug. 11, 1972, Ser. No. 279,988**

**Int. Cl. G03b** *15/05*

**U.S. Cl. 95—10 CE** **8 Claims**

An adapter circuit including a gating means is coupled to a light integrating automatic exposure control circuit of a camera to effect Flashing and Quenching operations of an associated Electronic Flash unit over a two wire connection therebetween. The adapter circuit precludes the transmission of a quench control signal from the camera to the Flash unit until after a predetermined time delay following a receipt of a Return signal, representative of a firing of the Flash unit, from the Flash Unit.





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## 3,756,133

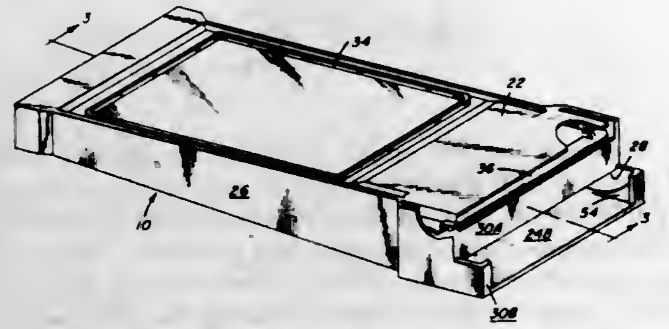
## FILM CARTRIDGE

**Frederick F. Tone, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed July 5, 1972, Ser. No. 268,947**

**Int. Cl. G03b** *19/10*

**U.S. Cl. 95—19** **8 Claims**



An improved cartridge for a plurality of photographic film units of the self-processing type wherein the film units each include an image-recording unit releasably coupled at the leading end to a leading member which comprises elements that can be separated from the finished photographic print and constitute waste that must be disposed of. The cartridge comprises a substantially rectangular container having an exposure aperture in one surface. The cartridge is provided with a trailing and a leading end, the leading end being provided with a film unit dispensing slot for the removal of an exposed image-recording unit from the cartridge. The lower portion of the leading end of the cartridge extends beyond the portion containing the dispensing slot and is arranged to accept and retain the leading member as it is separated from the image-recording unit. The improvement comprises a pair of guide members in the sides of the cartridge extension which guide the leading members into the storage position and significantly simplify and reduce the cost of the cooperating camera construction.

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## 3,756,134

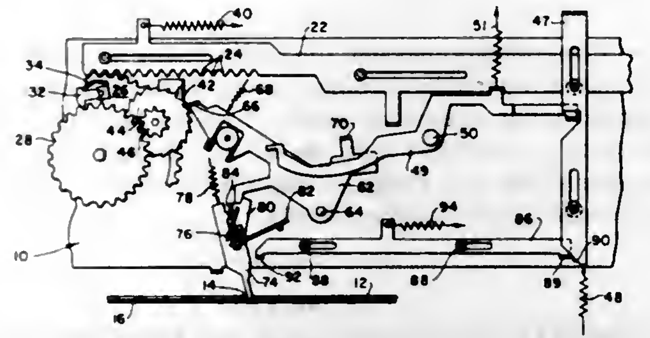
## FILM MOVEMENT PREVENTING MEANS FOR STILL CAMERAS

**Milton R. Goff, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Aug. 21, 1972, Ser. No. 282,630**

**Int. Cl. G03b** *19/04*

**U.S. Cl. 95—31 FM** **4 Claims**



A camera for perforated roll film includes a transport mechanism for advancing film along an exposure plane and a metering mechanism for selectively disabling the transport mechanism. A film sensing pawl is movable by advancing film from an extended position traversing the film through a film perforation to a metering position spaced from the extended position in the direction of film advancement for disabling the transport means when the sensing pawl reaches its metering position. A spring force on the control member urges the sensing pawl from its metering position toward its extended position. Means are provided for moving the sensing pawl away from the trailing edge of a perforation during operation of the camera's exposure mechanism so that the spring force is not transmitted through the sensing pawl to the film.

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## 3,756,135

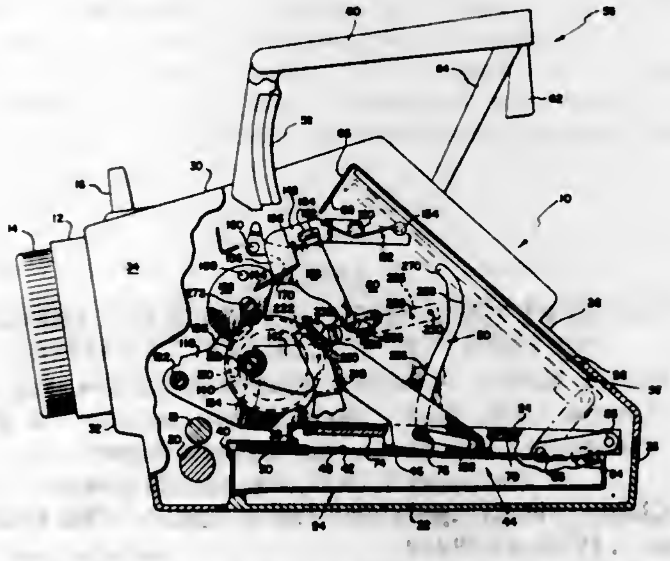
## DUAL DRIVE MECHANISM FOR MOVING A REFLEX MIRROR

**Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Dec. 20, 1971, Ser. No. 209,681**

**Int. Cl. G03b** *19/12*

**U.S. Cl. 95—42** **22 Claims**



A reflex camera incorporates a dual drive mechanism for moving the reflex mirror. The dual drive mechanism includes a spring for driving the reflex mirror from a first position to a second position and returning the mirror at least part way to the first position. Additionally, the dual drive mechanism includes a motor adapted to supplement the spring in returning the reflex mirror to the first position a predetermined time interval after the reflex mirror leaves the second position.

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## 3,756,136

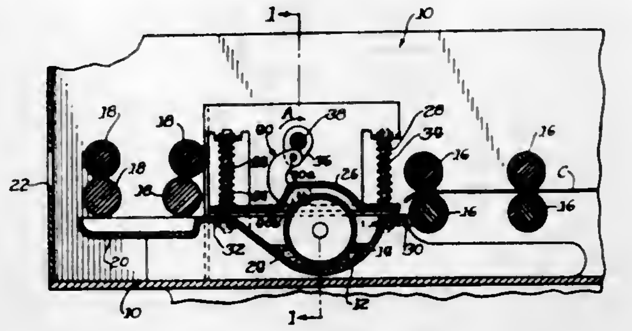
## SEALING MEANS FOR COPYING MACHINE DEVELOPER TROUGH

**Casimir S. Samczyk, Franklin Park, and Paul G. Bielik, North Riverside, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.**

**Filed Mar. 20, 1972, Ser. No. 236,015**

**Int. Cl. G03d** *13/02*

**U.S. Cl. 95—89 R** **19 Claims**



A copying machine which includes a developer trough for containing developer liquid through which copy paper is passed and a cover for sealing the trough to prevent evaporation loss or spillage of the developer liquid. The cover is movably mounted between open and closed positions and is operatively associated with an electrical switch and a trip mechanism whereby a cycle of operation of the copying machine is automatically initiated in response to raising the cover to its open position, and the cover is closed and the copying machine stopped automatically at the end of the cycle of operation. In another form, the copying machine has spring loaded feet operatively connected to the cover to lower the cover and seal the developer trough when the copying machine is lifted off of a supporting surface to prevent spillage during transportation.

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## 3,756,137

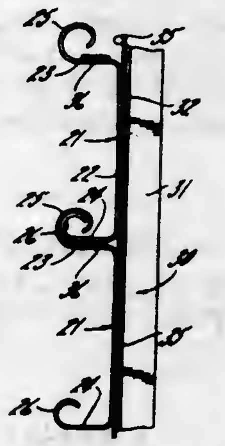
## FIRE, SMOKE AND BLAST DAMPER

**Harry J. Scharres, 10 Gilbert Ave., Clarendon Hills, Ill.**

**Filed Feb. 24, 1972, Ser. No. 228,942**

**Int. Cl. F16k** *13/04*

**U.S. Cl. 98—1** **14 Claims**



A fire, smoke and blast damper for air ducts or passages including a metal curtain which is inwardly rolled upon itself from its lowermost end and is normally secured in such rolled condition by a line having a fusable element that is destructible when subjected to a predetermined temperature. Upon destruction of the fusable element, the curtain is released and rapidly unrolls to bear against a pair of side stop members. Gasket material is provided between the stop members and the edges of the curtain, and between individual slats of the metal curtain, to effectively seal the duct from the further passage of air when the curtain has completely unrolled. In one embodiment, the curtain includes an elongated spring member which is secured to and rolled with the curtain, providing a spring force effective in unrolling the curtain.

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## 3,756,138

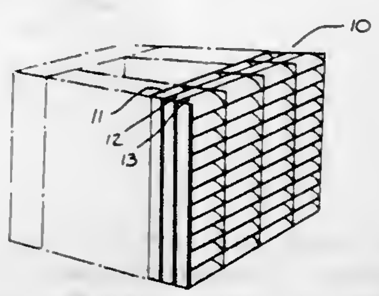
## INTEGRALLY MOLDED PLASTIC LOUVER FRAME AND ASSEMBLY THEREOF

**Theodor M. Box, 1108 Aileen Rd., Brielle, N.J.**

**Filed Feb. 18, 1972, Ser. No. 227,394**

**Int. Cl. F24f** *7/00, 13/08*

**U.S. Cl. 98—40 VM** **7 Claims**



A louver assembly comprised of a plurality of interfitting integrally molded plastic frames, preferably constructed from glass filled polypropylene. The louver frames are integrally molded with flat side members, louvers and intermediate support members. The side members are flat with a flat front portion or extension displaced from the side member but parallel thereto Notches are integrally molded into the flat front portion to cooperate with projecting lips on the rear portion of the side member of adjacent frames to permit locking engagement between adjacent frames in a louver assembly.

The louvers are arcuate louvers having intermediate flat members molded thereto for vertical support. The intermediate flat members are parallel to the side members and contain integrally molded guide means adapted to permit fastening of adjacent frames to each other in a louver assembly.

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## 3,756,139

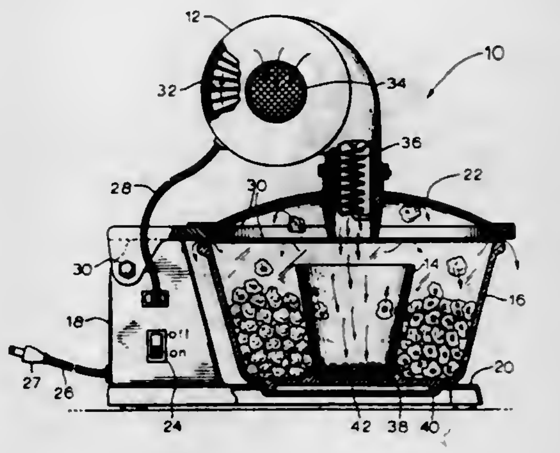
## POPCORN POPPER

**John Wolens, 893 Dean Ave., Highland Park, Ill.**

**Filed Apr. 12, 1972, Ser. No. 243,321**

**Int. Cl. A23l** *1/18*

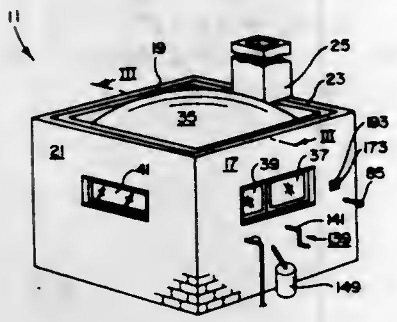
**U.S. Cl. 99—323.5** **6 Claims**



A device for popping corn having a receptacle for receiving popped corn and a popping vessel arranged in the receptacle for receiving kernels of popcorn. A hot air blower charges a stream of hot air downward into the popping vessel and heats kernels of popcorn to a popping temperature. The stream of air drives the popped corn out of the popping vessel and into the receptacle to separate the popped corn from the unpopped kernels of pop corn.

### 3,756,140
### BARBECUE PIT

**John G. Kolivas, 1618 National St., Memphis, Tenn.**
**Continuation-in-part of Ser. No. 870,675, Jan. 15, 1971, abandoned. This application June 12, 1972, Ser. No. 262,021**
**Int. Cl. A47j** *37/07*
**U.S. Cl. 99—339** **10 Claims**



A brick and mortar structure enclosing a pit for rendering and cooking meat. A rotatable circular grill is included which may support the meat above a bed of hot charcoal. A temperature control heater element is positioned above the grill and may be used independently of the charcoal particularly for rendering fat on certain meat prior to cooking it over the charcoal. A plurality of pans are included for receiving the meat during the rendering process so that the hot grease does not drip down into the pit. The pans collectively have an area substantially equal to the area of the grill and are restingly supported thereon. A built in flame extinguisher is provided for extinguishing flames which may flare up as the result of hot great falling onto the burning charcoal.

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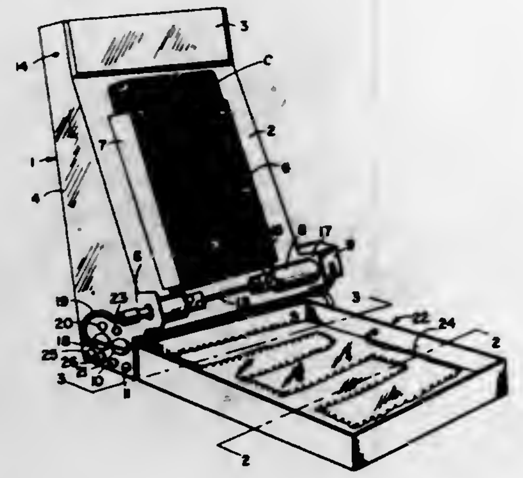
### 3,756,141
### APPARATUS FOR MELTING AND TEMPERING CHOCOLATE

**Lewis D. Rose, 3339 Eagle Blvd., Orlando, Fla.**
**Filed Oct. 28, 1971, Ser. No. 193,513**
**Int. Cl. A23g** *1/18*
**U.S. Cl. 99—348** **2 Claims**



A portable chocolate mill for controllably melting and feeding chocolate from a bar to a receiving pan which is controllably heated so as to maintain the melted chocolate at a tempering temperature and make it readily available for use in a candy making process.

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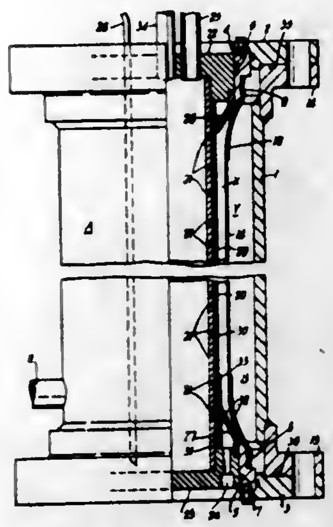
### 3,756,142
### DRYING OF PARTICULATE MATERIALS

**Ralph Derek Gwilliam, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England**
**Continuation of Ser. No. 871,467, Oct. 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 739,442, June 24, 1968, abandoned. This application Apr. 15, 1971, Ser. No. 134,507**
**Claims priority, application Great Britain, June 29, 1967, 30,158/67; Oct. 24, 1968, 50623/68.**
**Int. Cl. B30b** *9/06, 5/02*
**U.S. Cl. 100—37** **29 Claims**



A tube pressure filter, for reducing the liquid content of wet, finely divided solid materials in the form of a slurry, which tube pressure filter includes a chamber of annular cross-section substantially defined by two co-axially disposed tubular bodies displaceable axially relative to one another between operative and inoperative positions and which have means which cooperate to form a seal between the adjacent ends thereof when the pressure filter is in the operative position, the outer tubular body being provided with an inlet for the introduction thereinto of a hydraulic pressure medium and the inner tubular body being provided with a plurality of apertures for the passage therethrough of filtrate, an impermeable elastic sleeve disposed in said chamber of annular cross-section and secured in liquid-tight manner to the outer tubular body so as to divide said chamber into non-communicating first and second compartments of annular cross-section, and means for introducing a wet, finely divided solid material to be pressure filtered under pressure into said second compartment of annular cross-section in a manner such that said wet, finely divided solid material is charged to the bottom of said second compartment substantially uniformly around the inner tubular member so as to scour that part of the filter material supported by the lower portion of the inner tubular member. There is also provided a process for operating the pressure filter.

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## ERRATUM

For Class 100—232 see:
Patent No. 3,756,231

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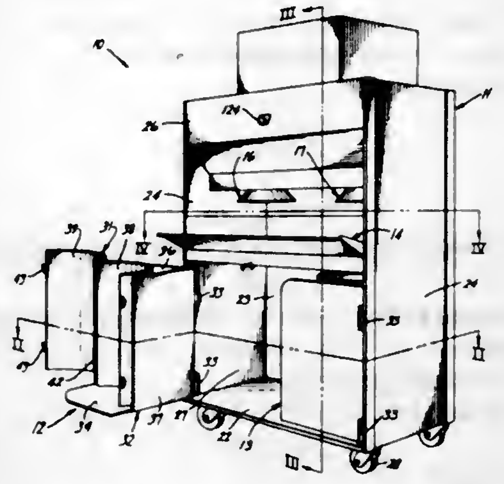
### 3,756,143
### WASTE COMPACTOR WITH PROTECTIVE SHIELD

**Ransom J. Hennells, Plymouth, Mich., assignor to Compactor Company, Inc., Ypsilanti, Mich.**
**Filed July 12, 1971, Ser. No. 161,739**
**Int. Cl. B30b** *15/28*
**U.S. Cl. 100—53** **11 Claims**

A waste compactor comprising a cabinet having an extendible ram assembly mounted adjacent the upper end thereof and a swingable receptacle assembly positionable below the ram assembly. The receptacle assembly includes a platform hingedly mounted on the cabinet for horizontal swinging movement between a filling position wherein the receptacle is positioned directly under the ram, and an emptying position wherein the receptacle is swung outwardly from the cabinet to facilitate unloading of bags filled with compacted waste. The receptacle includes a first portion fixed to the swingable platform and a second portion hingedly connected to the fixed portion. The ram assembly includes a fluid pressure cylinder having a compacting shoe on the lower end thereof. A shield device coacts between the ram assembly and the receptacle for substantially closing the open end of the receptacle to prevent the waste within the receptacle, such as glass, plastic and the like, from being accidentally discharged through the open end of the receptacle during the compacting stroke.



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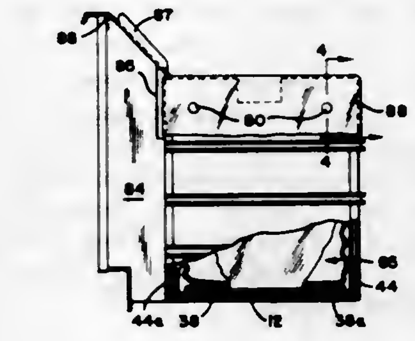
### 3,756,144
### TRASH COMPACTOR AND BAG SYSTEM

**Einar O. Engebretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio**
**Filed Jan. 3, 1972, Ser. No. 214,804**
**Int. Cl. B30b** *15/30*
**U.S. Cl. 100—215** **4 Claims**



A trash compactor includes a container and a ram for compacting waste materials deposited therein, and a reusable liner positioned within the container receives the waste material, and facilitates removal of the waste material after compaction thereof. The liner has interfitting sections each with upstanding sidewalls and a bottom wall with one side wall of each of the sections being shortened to permit their ready assembly and disassembly. A tubular bag of seamless plastic sheet material having one sealed end is placed in the liner. The bag has a cuff portion which folds over the upper end of the liner and the container. Holes in the cuff portion engage buttons on the exterior of the container. The bag is longer than the liner depth to permit the sealed bag end to bunch in the bottom of the liner, and when a bag of compacted trash is removed, the material drops to the sealed end of the bag leaving an excess at the cuff portion for closing the open end of the bag. The holes may then provide a means for engaging a tie to close the bag.

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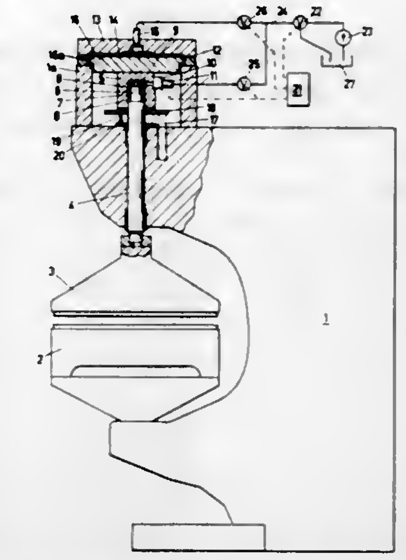
### 3,756,145
### HYDRAULIC PRESS

**Arnold Amacker, Frauenfeld, Switzerland, assignor to Amacker & Schmid AG, Canton Thurgau, Switzerland**
**Filed Oct. 21, 1971, Ser. No. 191,417**
**Claims priority, application Switzerland, Dec. 2, 1970, 17810/70**
**Int. Cl. B30b** *1/32*
**U.S. Cl. 100—269 R** **10 Claims**



For consecutively effecting, in each pressing operation of a hydraulic press, an approach stroke at high speed and under low power, and a pressing stroke at low speed but substantially greater power, the invention uses two hydraulic pressing units, such as cylinder-piston-units, mounted in tandem between a stationary machine frame and a movable pressing member, one of the two pressing units having a substantially greater effective surface area, for example piston area, than the other unit. Manually operable or automatic control means are provided for admitting pressure fluid, in a first phase of each pressing operation, into the pressing unit having the smaller effective surface area to effect the approach stroke, and for then locking this unit and admitting pressure fluid into the pressing unit having the greater effective surface area to effect the pressing stroke. Both a high speed during the approach stroke and a high power during the pressing stroke may thus be achieved with a relatively reduced output from the pressure fluid pumping means.

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## ERRATUM

For Class 100—229 see:
Patent No. 3,756,150

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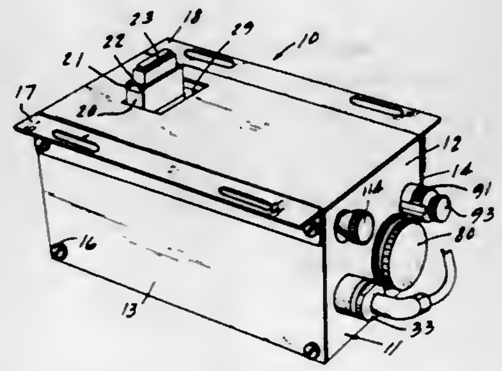
### 3,756,146
### IMPRINTER

**Eugene R. Norwood, Downers Grove, Ill., assignor to Norwood Marking and Equipment Co., Inc., La Grange, Ill.**
**Filed Apr. 20, 1971, Ser. No. 135,593**
**Int. Cl. B41f** *17/00*
**U.S. Cl. 101—44** **10 Claims**



An imprinter stamping machine having a vertical stamping movement and a horizontal inking movement, the stamp being positioned at the end of a pivotable linkage member connected to a horizontal moving drive member through a cam linkage, the cam comprising a horizontally pivoted linkage member having a roller slidably received in a groove in a horizontally moving member attached to the horizontally moving ram. The imprinter has a manual screw and axially movable follower for selective abutment against the horizontally movable member to cycle the device.

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### 3,756,147
### COIL SPRING BIASED PRINTING WHEELS

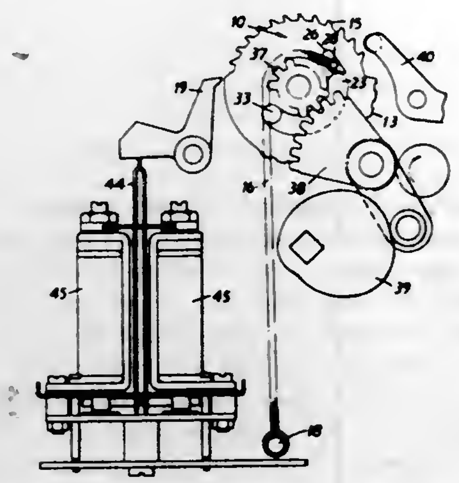
**Henry Gross, and Samuel Gross, both of London, N.W. 18, England, assignors to Gross Cash Registers Limited, London, England**

**Filed July 8, 1971, Ser. No. 160,698**

**Claims priority, application Great Britain, July 18, 1970, 34,928/70; Aug. 21, 1970, 40,285/70**

**Int. Cl. B41j** *23/16*

**U.S. Cl. 101—95** **11 Claims**



The invention provides a printing device including a printing wheel which carries peripheral printing characters and peripheral ratchet teeth whereby it can be stopped at required printing positions. The wheel is of reduced width at and adjacent the ratchet teeth so that the printing characters can be of full width while a spring can be located at the part of reduced width and can extend out of the wheel to an external position of anchorage.

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### 3,756,148
### PRINTING MACHINE WITH A TYPE WHEEL FIXING DEVICE

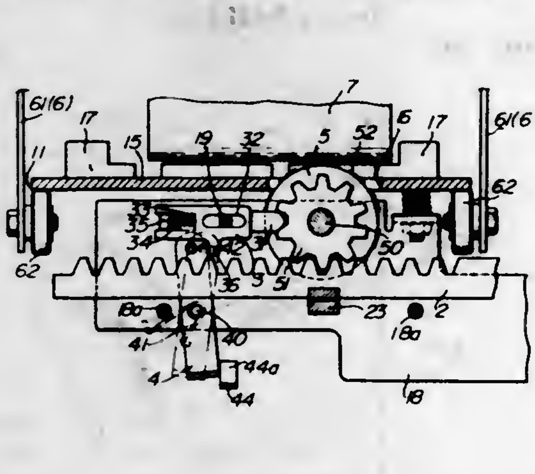
**Tetsuo Nakata, Sagamihara-shi, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan**

**Filed Nov. 26, 1971, Ser. No. 202,517**

**Claims priority, application Japan, Dec. 29, 1970, 45/133081**

**Int. Cl. B41j** *1/60*

**U.S. Cl. 101—99** **9 Claims**



The printing machine includes a plurality of type wheels, each of which has a portion disposed on a printing bed, and has a gear atached thereto, rack bars each engaging the gears and having a setting portion disposed outside of the housing, each of the gears being engaged by a corresponding detent element which is yieldably loaded by a spring, and means for blocking the detent elements with respect to the type wheels during the transverse printing movement of a platen roller carriage, whereby the selected type numerals of the type wheels may be kept accurately aligned without being displaced by the considerable pressing force of the platen roller thereby to obtain accurate and beautiful prints on the printed materials, and also to obtain a correct and smooth selection of the type numerals to be printed.

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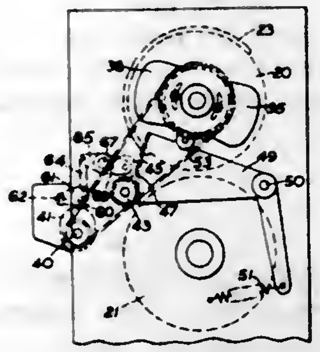
### 3,756,149
### APPARATUS FOR MINIMIZING WASTE IN TREATING A WEB

**Thomas Desmond Bishop, Knowle, Solihull, Warwickshire, England, assignor to The Deritend Engineering Company Limited, Birmingham, England**

**Filed Mar. 15, 1971, Ser. No. 124,414**

**Int. Cl. B41f** *13/04*

**U.S. Cl. 101—228** **2 Claims**



The invention provides apparatus for cutting or printing a series of closely spaced areas along a web of material where the length of each area is less than the periphery of the forme — carrying roll which produces the cut or printed area and where the roll runs continuously at high speed, and avoids the areas becoming spaced by a distance equal to the peripheral dimension minus the area length, by arresting the web and returning it between each two successive cutting or printing operations. The web is accelerated forwardly to a speed matched to that of the roll at the point when printing or cutting commences and decelerated and reversed subsequent to cutting or printing ceasing.

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### 3,756,150
### TRASH COMPACTOR RAM

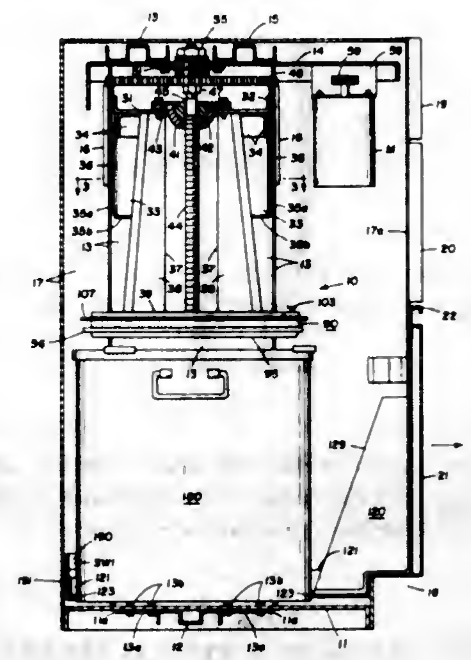
**Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa**

**Filed June 7, 1971, Ser. No. 150,635**

**Int. Cl. B30b**

**U.S. Cl. 100—229 A** **7 Claims**

A trash compactor employs a vertically descending ram operated by a single, centrally disposed motor driven screw swivelly attached to the ram to accommodate tilting of the latter during compacting. The head of the ram is removable and of a scalloped shape for better compaction of cans and bottles. The ram engages trash deposited in a round, bucket-like container supported on springs carried on a slide-out mount from which the container is removable, compaction causing the container to descend against its supporting springs until it seats on the base of the compactor. The container incorporates a liner, a disposable bag and several shield plates to protect the container and the bag. An electrical control circuit is included, together with several safety interlocks, for actuating the ram and automatically reversing it.



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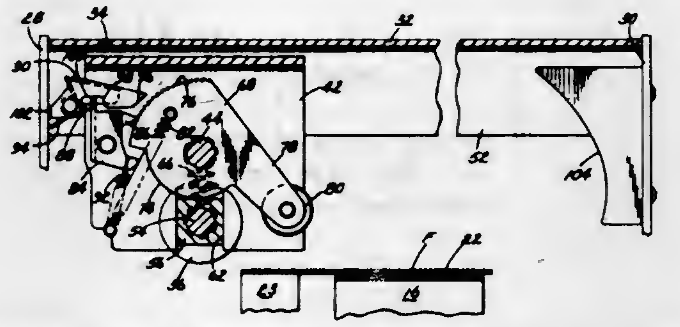
### 3,756,151
### COMPENSATING PLATEN FOR PRINTING MACHINES

**James T. Zofchak, Wickliffe, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Mar. 12, 1971, Ser. No. 123,511**

**Int. Cl. B41f** *3/04*

**U.S. Cl. 101—269** **4 Claims**



A printing machine which has a bed for supporting printing devices and a form to be imprinted, includes a carriage supporting a platen for movement between a raised position spaced from the form, and a lowered position in printing engagement with the form. The carriage is adapted to be moved from a home position across the bed to an actuated position to perform a printing stroke, and back to the home position in readiness for a subsequent printing operation. Means is provided for sensing the thickness of the form to be imprinted, and compensating means is provided for placing the platen at a printing position selected from a plurality of possible positions spaced from the bed as determined by the sensed thickness of the form. The platen is held at the selected printing position during a printing stroke and is restored to its raised position prior to return of the carriage to the home position.

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### 3,756,152
### INK RECOVERY MEANS FOR PRINTING PRESS

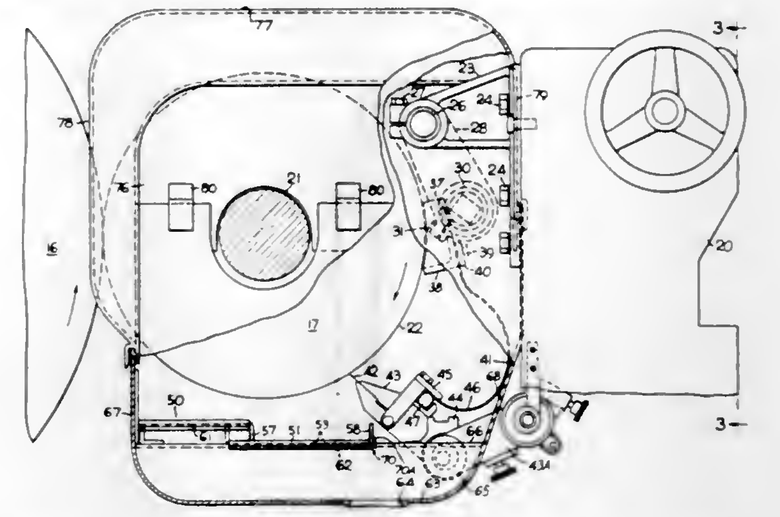
**Norman C. Abler, Menomonee Falls, Wis., assignor to Faustel, Inc., Butler, Wis.**

**Filed May 5, 1972, Ser. No. 250,757**

**Int. Cl. B41f** *31/04, 31/20*

**U.S. Cl. 101—350** **5 Claims**

A printing press comprises an adjustable ink applicator assembly for applying ink to a roll and an adjustable doctor blade assembly, including a doctor blade, located below the ink applicator assembly for removing excess ink from the roll. Excess ink recovery means are provided by an adjustable curtain connected between the two assemblies to catch run off ink. The excess ink recovery means also comprise ink tray means below the roll and ink drain housings at the ends of the roll. The ink tray means comprises a stationary tray and an overlapping movable tray which is adjacent or engageable with the adjustable doctor blade assembly. Each ink drain housing comprises a bottom portion having a drain and four upstanding side walls. The inner side wall supports the trays. Runoff ink enters the housings from the ends of the curtain and from the ink tray means.



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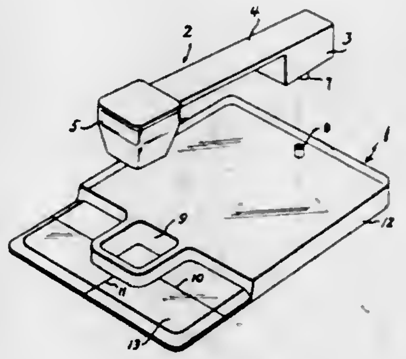
### 3,756,153
### HAND GRAPHIC SYMBOL MARKING DEVICE

**Philip Cohen, 19 Spaulding Ln., Newton, Mass.**

**Filed Apr. 7, 1971, Ser. No. 132,054**

**Int. Cl. B41k** *1/02*

**U.S. Cl. 101—368** **3 Claims**



A device for stamping a graphic symbol on a surface which consists of a transparent base plate. A flat cantilever leaf spring is secured at one of its ends to the base plate and carries a stamping die at its other end. The spring has but one degree of flexibility, in a direction at right angles to the base of the base plate and overlies the base plate. The base plate is provided with an opening through which the stamping die can pass to produce its stamping action and is also provided on its bottom surface with perpendicular guide lines which are directed to intersect at the center of such opening. The base plate is thinner above said guide line than at other of its portions so as to minimize optical distortion of the guide lines as observed through the transparent base.

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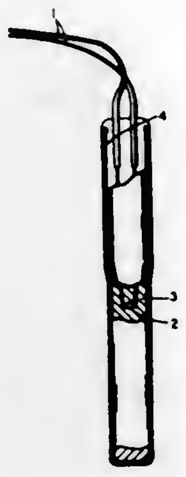
### ERRATUM

For Class 101—426 see:
Patent No. 3,756,165

### 3,756,154
### SAFETY DETONATOR

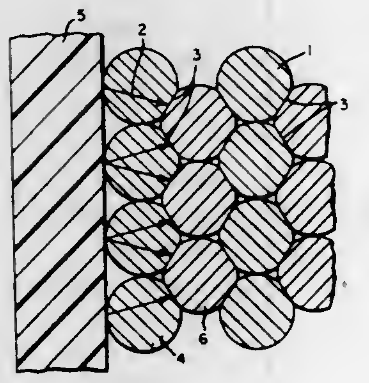
**Richard N. Snyder, 6505 Lignum St., Springfield, Va.**
**Filed July 30, 1971, Ser. No. 167,694**
**Int. Cl. F42b** *3/18*
**U.S. Cl. 102—28 R** **3 Claims**



This invention relates to a detonator oriented towards the prevention of failure due to "arcing" or premature firing caused by ambient RF energy. (i.e., Radio, radar or microwave transmitters and static electricity.)

### 3,756,155
### SHOT GUN SHELLS

**Donald W. Smith, 2525 Blackwood Rd., Wilmington, Del.**
**Filed Dec. 28, 1970, Ser. No. 101,751**
**Int. Cl. F42b** *7/02*
**U.S. Cl. 102—42 R** **7 Claims**

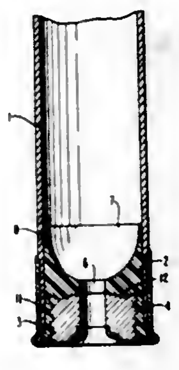


Improved shot patterns are obtained from a shot shell by filling the interstices between the shot with a suitable liquid.

### 3,756,156
### BOTTOM WAD FOR CARTRIDGE CASES, ESPECIALLY SHOT CARTRIDGE CASES

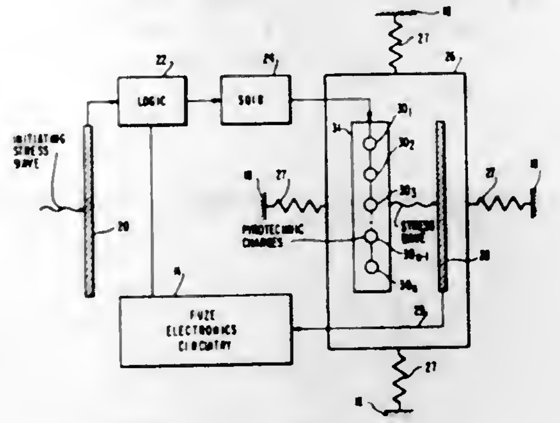
**Ernst Schuster, Amsberg, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**
**Filed Dec. 2, 1970, Ser. No. 94,329**
**Claims priority, application Germany, Dec. 2, 1969, P 19 60 355.5**
**Int. Cl. F42b** *5/30*
**U.S. Cl. 102—43 P** **15 Claims**

A bottom wad for cartridges, especially shot cartridges, comprising a cylindrical portion of a thermoplastic synthetic material such as synthetic resin having a front recess for the accommodation of a powder charge. A cylindrical plug is inserted in a rear recess of the cylindrical portion, and both the cylindrical plug and cylindrical portion have a common central, coaxial bore for the reception of primer.



### 3,756,157
### SOLID STATE POWER SUPPLY ACTIVATED BY A PYROTECHNIC CHAIN

**Forrest E. England, Severna Park, Md., and Joseph H. Gifford, Coral Springs, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed July 30, 1971, Ser. No. 167,576**
**Int. Cl. F42c** *11/02, 15/40, 19/12*
**U.S. Cl. 102—70.2 R** **10 Claims**

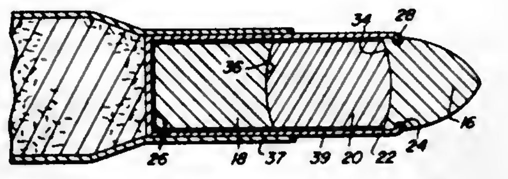


A two stage solid state power supply for apparatus such as a projectile fuze wherein a first piezoelectric device receives an initiating stress or shock wave upon firing the projectile. The first piezoelectric device then generates an electrical signal of a predetermined characteristic which is adapted to trigger a sequentially fired pyrotechnic chain of devices each having a predetermined time delay and which respectively generate second stress or shock waves which are directed to a second piezoelectric device. The second piezoelectric device will continuously generate electrical power for other fuze circuitry associated therewith until the last pyrotechnic device has ceased to generate its respective stress wave.

### 3,756,158
### EXPANDING BULLET

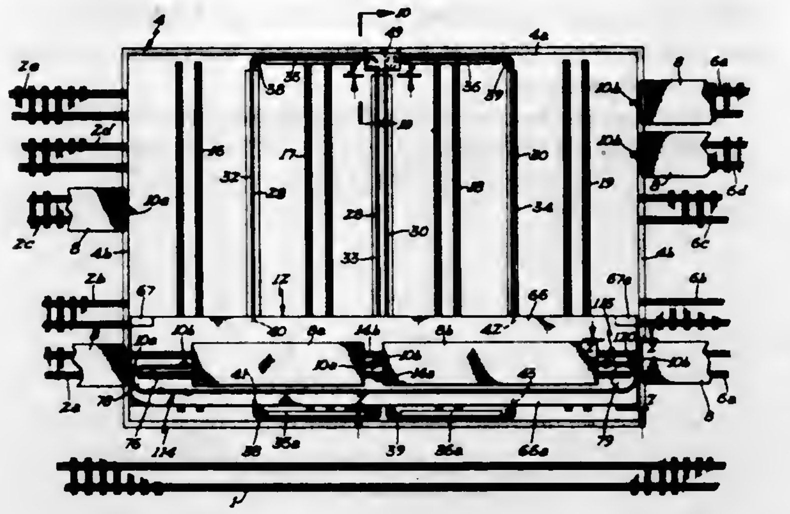
**George M. Anderson, 360 G St., Salt Lake City, Utah**
**Continuation of Ser. No. 798,879, Feb. 13, 1969, abandoned. This application July 21, 1971, Ser. No. 164,825**
**Int. Cl. F42b** *11/12*
**U.S. Cl. 102—91** **12 Claims**

A bullet including a relatively non-deformable forward nosepiece, a tailpiece constructed of non-deformable material spaced rearwardly of the nosepiece, an intermediate piece of deformable material (preferably more dense) disposed between the nose and tailpieces, and a cylindrical jacket telescoped snugly about the intermediate piece and at least the rear and front end portions of the nose and tailpieces. The nose and tailpieces are constructed of a material such as steel, the intermediate piece is constructed of a material such as lead and the jacket is constructed of a material such as copper.



### 3,756,159
### RAILROAD CAR HANDLING AND CLASSIFICATION APPARATUS

**William A. Sternad, 18415 D 30½ Ave. North, Wayzata, Minn.**
**Filed Nov. 15, 1971, Ser. No. 198,717**
**Int. Cl. B61j** *1/10*
**U.S. Cl. 104—48** **10 Claims**

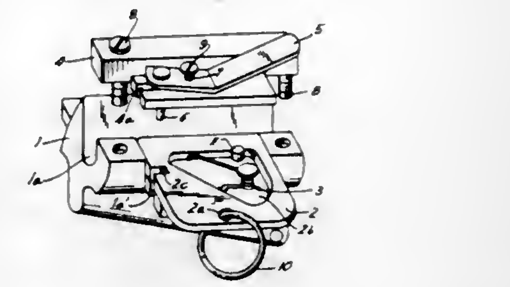


A bridge movable in a pit transversely with respect to a plurality of parallel car receiving and classification tracks in a railroad yard is provided with a railroad track thereon extending parallel to the yard tracks and with a self-contained endless conveyor operable in opposite directions to pull cars onto the bridge and to push cars off of the bridge from and to receiving, classification or assembly tracks on either side of the bridge pit. A pair of oppositely directed coupling elements on the conveyor at such elevations and locations as to be engagable with standard, impact connection couplings on the opposite ends of a railroad car are used sequentially to engage one end of a car and to pull it onto the bridge from one direction and to engage the opposite end of the car and push it off of the bridge onto a classification or assembly track in the opposite direction; or, the car may be shuttled back to the same side of the pit from whence it came after the bridge is moved to a new track location, by simply reversing the direction of the coupling motion.

### 3,756,160
### CABLE-GUIDED MESSENGER

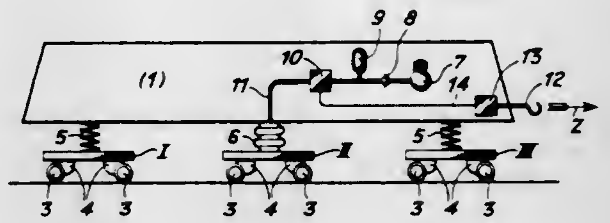
**Joseph Kahl, 3850 Hudson Manor Ter., New York, N.Y.**
**Filed Oct. 26, 1971, Ser. No. 192,500**
**Int. Cl. B61b** *7/10*
**U.S. Cl. 104—113** **11 Claims**

A messenger for use as a cable-guided tripping device has a slightly conical body portion formed with a through-going longitudinally extending radial slot in which a cable may be received. A flange extends from the body portion laterally of the slot and a gate member provided with a cutout is supported on this flange so that it can reciprocably move between two positions in which it respectively extends across and is withdrawn from the slot. A torsion spring is mounted on the flange within the confines of the cutout and bears against the gate member permanently urging it to the position extending across the slot. A latching arrangement automatically latches the gate in the withdrawn position when the gate is moved to the latter, and a manual release lever acts upon the latching arrangement and releases the same when the gate member is to be permitted to return to the position extending across the slot.



### 3,756,161
### DRAFT CONTROLLED RAILWAY CAR SPRING ARRANGEMENT

**Hugo Loosli, Winterthur, Switzerland, assignor to Schweizerische Lokomotiv-und Machinenfabrik, Winterthur, Switzerland**
**Filed Nov. 10, 1971, Ser. No. 197,442**
**Claims priority, application Switzerland, Nov. 16, 1970, 16909/70**
**Int. Cl. B61d** *43/00;* **B61f** *5/00;* **B61g** *9/00*
**U.S. Cl. 105—1 A** **10 Claims**

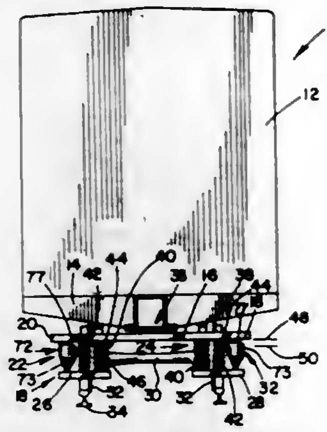


Non-variable-rate springs are provided at some bearing areas while adjustable springs are provided at other bearing areas to uniformly maintain the loadings on the axles at the forward end at substantially equal values under a tractive effort. Control means are connected to the adjustable means to vary the force of the adjustable springs in response to the tractive effort of the power unit.

### 3,756,162
### CAR BODY ROLL DAMPENING SPRING BOLSTER

**Cal W. Wulff, Elmhurst, Ill., assignor to Holland Company, Lombard, Ill.**
**Filed Mar. 5, 1971, Ser. No. 121,258**
**Int. Cl. B61f** *5/06, 5/12, 5/50*
**U.S. Cl. 105—197 D** **5 Claims**

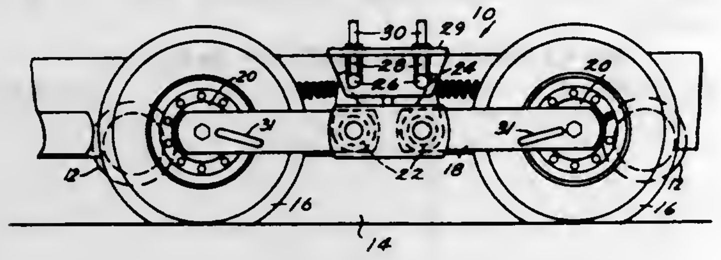
An arrangement for controlling roll in high capacity railroad freight cars when loaded, while providing a soft car protecting ride when the car is empty, in which a dampening type volute spring is incorporated in the truck spring groups that support the respective truck bolsters, with the volute spring having a trap free height that is less than the height range that the bolster rids in when the car is empty, but is greater than the height range that the bolster rides in (including possible roll) when loaded. This permits the absorption potential of the roll controlling volute springs to be independent of the bolster



empty riding height, which makes available for roll control purposes full utilization of the usable absorption potential that can be built into a volute spring of this type.

### 3,756,163
### CONVERTIBLE VEHICLE WITH FLANGE AND RUBBER TIRED WHEELS

**Jack L. Simmons, Doran, Va., assignor to S & S Machinery Company, Inc., Richland, Va.**
**Filed Nov. 12, 1971, Ser. No. 198,191**
**Int. Cl. B61d** *15/00*; **B61f** *9/00*; **B62d** *61/12*
**U.S. Cl. 105—215 C** **9 Claims**

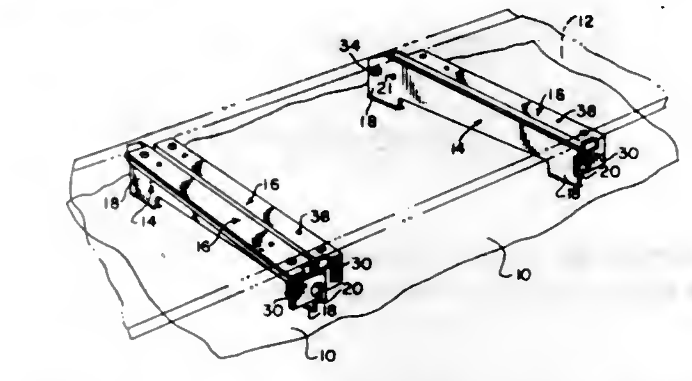


A vehicle including both a flanged wheel suspension system and a rubber wheel suspension system, and including means for converting from flanged wheel operation to rubber tire operation. The means includes a support member to one end of which the rubber tire wheel is rotatably mounted while the other end is pivotally mounted to the vehicle. An arm extends generally perpendicular to the supporting member and is fixedly connected thereto adjacent the pivotal connection of said supporting member to pivot with the support member and this arm is capable of being locked in two positions by cooperating with a pin which engages the sides of the arm. In first locking position the arm engages the rubber tire with the ground while in the second locking position the rubber tire is disposed above ground level whence the vehicle rests upon flanged wheels. A spring connected between the wheel and the vehicle helps to urge the wheel upward from the ground engaging position and a handle is attached to the support member near to the rubber tire for lifting the tire from a ground engaging position.

### 3,756,164
### RUNNING BOARD MOUNTING BRACKET ARRANGEMENT

**Roy W. Miller, Highland, and William R. Shaver, Hammond, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.**
**Filed Dec. 13, 1971, Ser. No. 207,147**
**Int. Cl. B61d** *49/00*
**U.S. Cl. 105—457** **5 Claims**

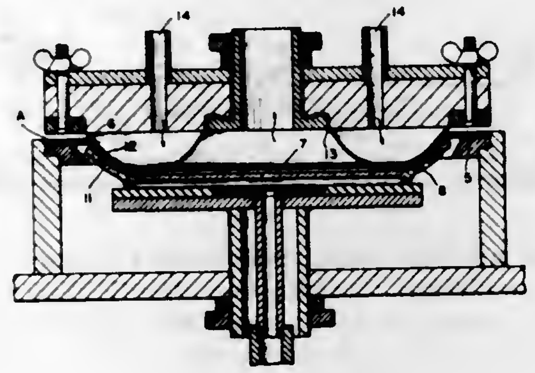
A mounting device for attaching a running board to a roof of a railway vehicle and including bracket portion fixedly secured to the roof and an interlocking saddle portion fixedly secured to the running board. A depending tab portion of the saddle fits over a finger portion of the mounting bracket and is



deflected to provide a biasing or tightening force as alignment and fastening openings on the bracket and on the saddle are brought into alignment for fastening.

### 3,756,165
### METHOD FOR PRINTING ON CERAMIC TABLEWARE

**Jose Vallela, New York, N.Y., assignor to Interpace Corporation, Parsippany, N.J.**
**Continuation-in-part of Ser. No. 43,044, June 3, 1970, abandoned. This application May 22, 1972, Ser. No. 255,738**
**Int. Cl. B41f** *17/28*
**U.S. Cl. 101—426** **35 Claims**



A method for applying oil-based, relatively viscous colorants one at a time to ceramic tableware by silk-screen printing each of the colorants in a relatively thick layer onto a total-release transfer surface (preferably of silicone rubber), allowing at least 1 minute and up to 3 hours for the colorant layer to form a skinlike film and then causing intimate mechanical contact between the film and the tableware and thereafter withdrawing quickly the transfer surface from the film to transfer the colorant film in its entirety intact to the ware. Successive films of colorant may be applied to the ware even over previously-applied films of colorant and without waiting for previously-applied films of colorant to dry.

### 3,756,166
### FOLDING STUDY-TABLE

**Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli s.a.s. di Cesare Castelli & C., Bologna, Italy**
**Filed Mar. 8, 1972, Ser. No. 232,703**
**Claims priority, application Italy, June 23, 1971, 68604 A/71**
**Int. Cl. A47f** *5/12*
**U.S. Cl. 108—6** **9 Claims**

A foldable study table or the like adapted to collapse into a compact form. The study table includes a table-top plate and first and second U-shaped frames pivotally connected to each other along an axis so that one frame is nested within the other frame when the study table is in a collapsed condition. The

table-top plate is pivotally connected to the frames along said axis and same is nested within said frames when the study

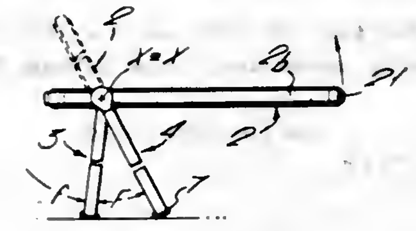
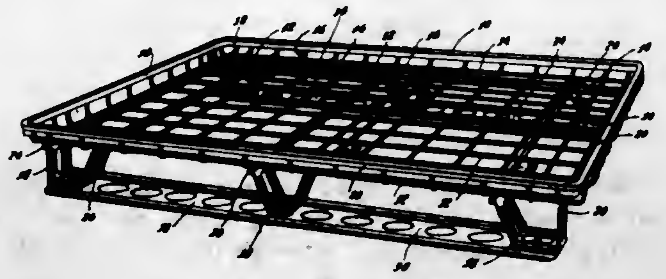


table is in a collapsed or stored condition so as to provide an overall coplaner configuration to said foldable study-table.

### 3,756,167
### WIRE-FORMED PALLET

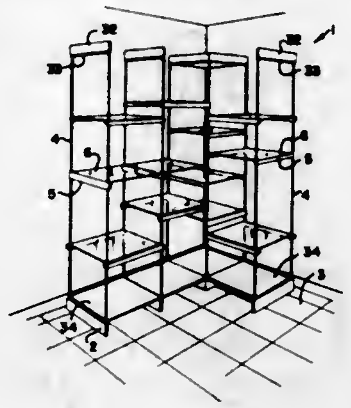
**James D. Wilson, Garden Grove, Calif., assignor to Banner Metals, Inc., Compton, Calif.**
**Filed July 24, 1972, Ser. No. 274,458**
**Int. Cl. B65d** *19/00*
**U.S. Cl. 108—51** **4 Claims**



A heavy duty wire-formed pallet is provided which is light in weight, but yet which is rugged in its construction. The pallet of the invention may be stacked with other like pallets to be stored in a minimum of space when not in use. The pallet is constructed to be capable of supporting heavy loads without sagging or damage. The structure incorporates a pair of side rails formed of metal strips, and which are supported at the ends of appropriate pedestals, to constitute a stable, wide-tread supporting base for the pallet when it is heavily loaded.

### 3,756,168
### MERCHANDISE DISPLAY STRUCTURE

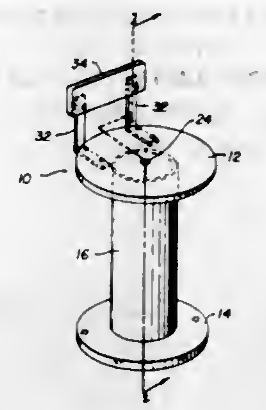
**Jess C. Bushyhead, Kansas City, Mo., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.**
**Filed Apr. 10, 1972, Ser. No. 242,674**
**Int. Cl. A47b** *3/00*
**U.S. Cl. 108—111** **2 Claims**



A merchandise display structure includes a plurality of spaced base members positioned on a supporting surface and having a plurality of spaced recesses in an upper edge thereof to receive a lower end portion of a respective standard therein and top members with recesses for receiving the upper ends of the standards and a plurality of vertically spaced support rails arranged in horizontally aligned pairs extending between adjacent standards and clampingly engaging the standards to support planar members on upper edges of the support rails. The standards have a resilient coating on an exterior surface thereof and the support rails have jaw portions clampingly engaging the resilient coating for support thereon.

### 3,756,169
### FURNITURE CONSTRUCTION

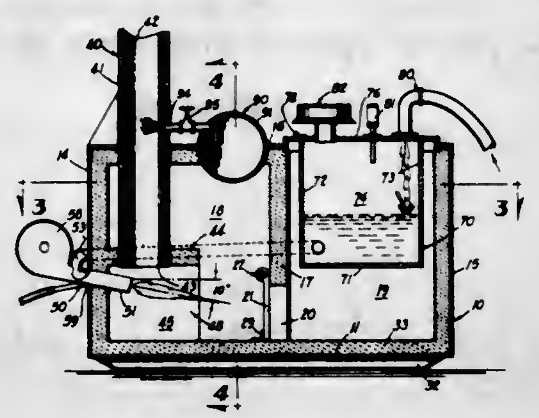
**Philip M. Dybvig, Dallas, Tex., assignor to Philip Specialty Company, Grand Prairie, Tex.**
**Filed Mar. 8, 1971, Ser. No. 121,895**
**Int. Cl. A47b** *13/02*
**U.S. Cl. 108—105** **9 Claims**



Tables and stools of inexpensive and simple yet rugged construction are made from plate members spaced by a hollow post and held in assembled relation by a single draw bolt. The plate members of the disclosed stool are both disc-shaped and a seat back is optionally secured to the upper plate member. The disclosed lower plate member of the table is formed with four horizontally projecting legs. Stiffening ribs and supplementary supports are also provided when the table top is so large as to require additional support. All of the parts of the tables and stools are so designed that various heights and diameters of tables and stools can easily be made.

### 3,756,170
### ANTI-POLLUTION LIQUID WASTE BURNING INCINERATOR

**Jerry M. Lang, Lindale, Tex., assignor to Care, Inc., Tyler, Tex.**
**Filed Apr. 30, 1971, Ser. No. 138,902**
**Int. Cl. F23g** *5/12*
**U.S. Cl. 110—7 R** **8 Claims**



An incinerator capable of effecting maximum combustion of flammable liquid waste material introduced therein with a minimum amount of exhaust. The incinerator requires a pressurized flame means to be directed at a detailed location across a flue entrance opening thereby producing a restrictive air block of the flue opening to increase the pressure within the combustion chamber. The pressurized flame means includes a mixing valve means for receiving and atomizing a supply of liquid waste material to be burned and includes means for directing the atomized liquid waste material past flame ignition means for igniting and burning the atomized liquid waste material. The incinerator includes means operable for preheating the liquid waste material prior to introducing into the mixing valve means. Steam generating means is operatively associated with said combustion chamber for generating a predetermined amount of steam in response to burning the liquid waste material. The steam generating means includes nozzle dispensing means operable for directing an amount of steam into flue means associated with the combustion chamber for filtering the fly ash from the exhaust passing through the flue means.

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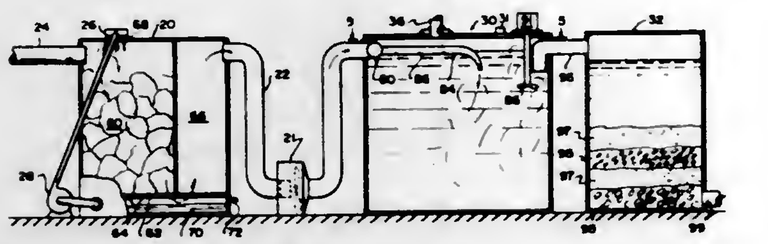
### 3,756,171
### SYSTEM FOR ELIMINATING ENVIRONMENTAL POLLUTION
**Harold E. De Bord, 4235 14th St., Moline, Ill.**
**Filed Feb. 4, 1971, Ser. No. 112,584**
**Int. Cl. B01d** *47/02*
**U.S. Cl. 110—8 R** **1 Claim**



A system for the disposing of rubbish without polluting the environment includes an incinerator for initially burning the rubbish, which incinerator includes a water bath for catching and cooling the noncumbustibles therein. A conveyer belt conveys the noncombustible material from the furnace for refining and reuse. A blower takes a suction on the smoke in the fire box of the incinerator and draws it through a compression box where it is scrubbed with water, filtered and then deposited in a final bath tank. The water in the bath tank is subsequently purified in a filter box, and is then deposited directly into the municipal drain system.

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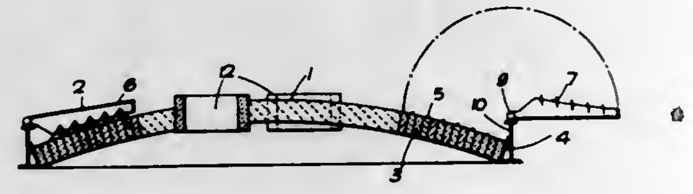
### 3,756,172
### FURNACE ROOF CONSTRUCTION
**Raymond Brereton, and Trevor Wilkinson Lythe, both of Worksop, England, assignors to Steetly (Mfg.) Ltd., Nottinghamshire, England**
**Filed Dec. 17, 1971, Ser. No. 209,315**
**Claims priority, application Great Britain, Dec. 22, 1970, 60,863/70**
**Int. Cl. F23m** *5/02*
**U.S. Cl. 110—99** **7 Claims**



At least one element is hinged to a retaining ring that supports the roof of an electric arc furnace, and is movable from an operative position over the roof to an inoperative position free of the roof. The individual bricks comprising the roof can be held up and/or held down by the hinged element when such is in its operative position, and means are provided for removably fixing the hinged element in its operative position.

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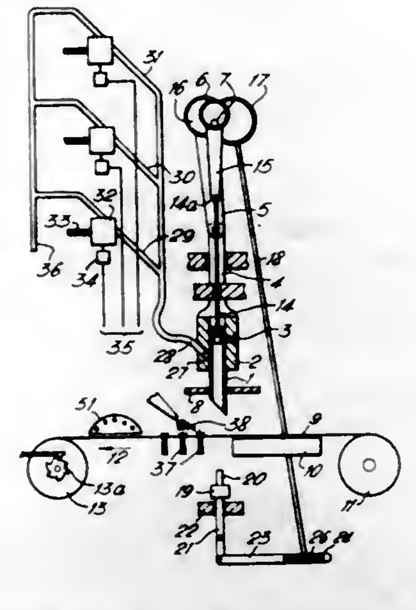
### 3,756,173
### MACHINE FOR MAKING A TUFTED CARPET
**Stanley Shorrock, The Braids, Billinge End Rd., Blackburn, England**
**Filed Dec. 29, 1971, Ser. No. 213,631**
**Claims priority, application Great Britain, Dec. 31, 1970, 62,092/70**
**Int. Cl. D05c** *15/16*
**U.S. Cl. 112—79 FF** **10 Claims**



A machine for making tufted carpets consists of a plurality of hollow needles on a reciprocating needle bar, each needle being supplied at appropriate intervals through a flexible tube with a cut-off tuft of pile yarn, the tufts being inserted in a backing fabric by the needles. The tufts are ejected from the needles by rams or compressed air and held with respect to the backing fabric by stops located on the side of the fabric remote from the needles.

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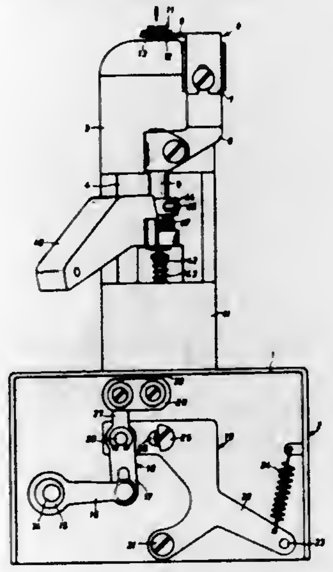
### 3,756,174
### DEVICE FOR SEWING MACHINES FOR CUTTING THE EDGING OF SEWED MATERIALS
**Herbert Wenz, and Fritz Schwarztrauber, both of Kaiserslautern, Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany**
**Filed Nov. 1, 1971, Ser. No. 194,649**
**Claims priority, application Germany, Nov. 5, 1970, G 70 40 909.5**
**Int. Cl. D05b** *37/02*
**U.S. Cl. 112—127** **2 Claims**



The disclosure relates to an improved cutting device for a sewing machine, the cutting device being of the type which is oscillated to cut a strip of material adjacent the seam as the material is being sewed to another material. Manually operated means is provided for rotating the cutting means against the feed direction of the materials being sewed so that the excess material can be separated when a sewing operation is complete. The device is constructed so that oscillation of the cutting device continues during the latter operation, called discharge cutting.

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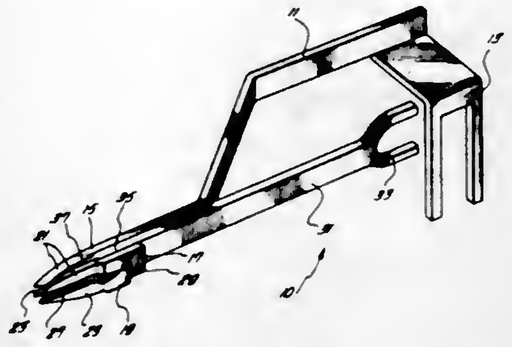
### 3,756,175
### SEAM RIPPER ATTACHMENT FOR AUTOMATIC SEWING MACHINES
**Jack Rogers, 6557 Costello Ave., Van Nuys, Calif.**
**Filed Nov. 24, 1971, Ser. No. 201,935**
**Int. Cl. D05b** *37/06*
**U.S. Cl. 112—128** **2 Claims**



A seam ripper apparatus is disclosed for attachment to conventional automatic sewing machines. The seam ripper apparatus comprises a stationary horizontal leg having a yoke formed at its rearward end for connection to the presser foot screw mounted on the sewing machine presser bar. The forward end of the leg forms a double edge v-shape cutter having the two cutting edges formed on the interior sides of the "v." The opening of the "v" faces the forward direction. The leg also includes a transverse pivot pin extending therethrough for pivotally supporting a movable arm adjacent the leg cutter. A yoke is formed at the rear end of the movable arm for loosely fitting over the needle clamp screw mounted on the sewing machine needle bar. The forward end of the arm forms a double-edged knife which is adapted to oscillate adjacent the v-shaped cutter. The oscillatory movement is caused by the driving motion of the needle clamp screw acting at the arm yoke. The v-shaped cutter and the two edges of the oscillating knife enable the knife to perform a cutting stroke in both directions of movement.

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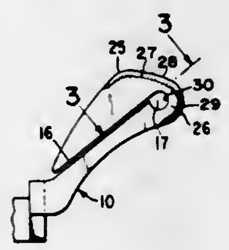
### 3,756,176
### SEWING MACHINE SLOTTED THREAD TAKE-UP LEVER
**Hilmar Wittler, and Paul Senk, both of Karlsruhe-Hagsfeld, Germany, assignors to The Singer Company, New York, N.Y.**
**Filed Nov. 26, 1971, Ser. No. 202,084**
**Int. Cl. D05b** *49/00*
**U.S. Cl. 112—241** **1 Claim**



A sewing machine thread take-up lever having a threading slot tangent to the thread retaining eye, the threading slot opening to the exterior of the upper surface of the take-up lever so that the sewing thread may be readily drawn into the thread retaining eye. The thread take-up lever is characterized by a prominently raised thread sloughing apex formed on the upper surface between the entrance to the threading slot and the free end of the take-up lever the upper surface tapering downwardly from the apex towards the free end of the take-up lever to a thread sloughing edge closely encircling the thread retaining eye. Thread sloughing is aided by fashioning the thread sloughing edges with generous radii.

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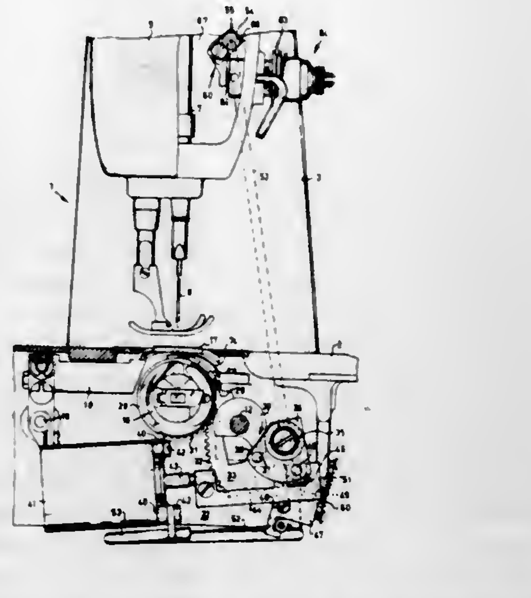
### 3,756,177
### THREAD CUTTING DEVICE FOR DOUBLE STITCH SEWING MACHINES
**Gunter Landwehr, Sennestadt, Germany, assignor to Koch Adler AG, Bilefeld, Germany**
**Filed Dec. 15, 1971, Ser. No. 208,363**
**Claims priority, application Germany, Dec. 17, 1971, P 20 62 201.9**
**Int. Cl. D05b** *65/02*
**U.S. Cl. 112—252** **4 Claims**



A device for simultaneously cutting both the needle thread and the looper thread below a workpiece after the completion of the seam, for use with lockstitch sewing machines. The carrier of an arcuate cutting blade oscillates concentrically about the looper and cooperates with a stationary cutting knife. The driving means and transmitting means for the carrier are arranged on a supporting body provided with lugs. The lugs are inserted and secured in the sewing machine. This device can be additionally installed in existing sewing machines without any special provisions.

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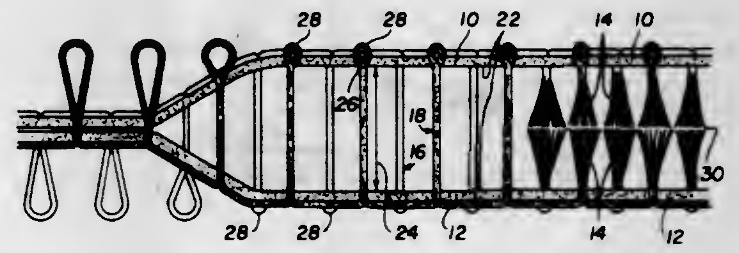
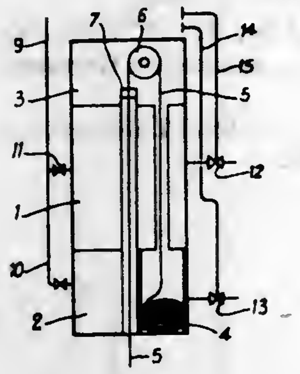
### 3,756,178
### METHOD OF PRODUCING FABRIC
**Gunther Forstmann, 47 Hewes St., Port Jefferson Station, N.Y.**
**Filed Mar. 22, 1972, Ser. No. 236,866**
**Int. Cl. D05c** *15/00*
**U.S. Cl. 112—266** **3 Claims**



The method of producing pile fabric which includes by definition rugs, carpets and the like, by looping the pile in spanning relation between two backings or strata and cutting the loops between such backing, thereby producing loop-free pile fabrics in which all the loops are evenly cut.

### 3,756,179
### IMMERSION PROCESS FOR HEAVY UNDERWATER STRUCTURES WITH PARTICULAR APPLICATIONS FOR UNDERWATER OIL TANKS

**Maurice Laffont, La Celle-St.-Coud, France, assignor to Entreprise de Recherches et d'Activites Petrolieres (ELF), Paris, France**
**Filed July 23, 1971, Ser. No. 165,526**
**Claims priority, application France, July 24, 1970, 7027350**
**Int. Cl. B63b** *35/02*; **B65d** *89/10*
**U.S. Cl. 114—0.5 T** **8 Claims**



This invention relates to an immersion process for structures whereby the structure to be immersed is equipped with at least two groups of floats each comprising at least two individual floats in which, by using elongated floats attached vertically to the structure to be immersed and capable of being ballasted or unballasted by the filling or emptying of a central compartment forming the principal ballast, an operation is carried out alternately on each one of the floats in each group consisting either in the ballasting of the said float followed by unballasting and by the simultaneous release of a given length of the chain or cable connecting the structure to the float, or solely in the release of a given length of the chain or cable, the associated float being empty and its position in relation to the structure being fixed during this operation, and in which this operation is carried out simultaneously or alternately on each group of floats until the structure is immersed in the proper position. Both the safety and the performance of the immersion system are thus improved.

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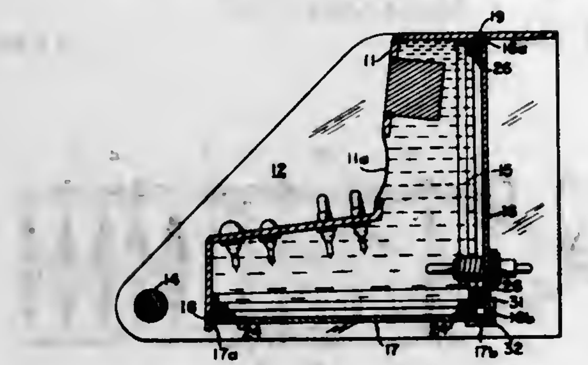
### 3,756,180
### DEEP SUBMERGENCE CONTAINER LID SEAL

**Alvah T. Strickland, and John O. Lindquist, both of Kailua, Hawaii, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Mar. 27, 1972, Ser. No. 238,577**
**Int. Cl. B63c** *11/00*
**U.S. Cl. 114—16 R** **4 Claims**



A console containing instrumentation and switches is filled with a dielectric liquid for pressure compensation and is provided with a spacious opening to allow unrestricted access to its interior. A removable plate, being sufficiently sized to bridge the opening, compresses a gasket carried on the console to ensure sealing of the interior from the surrounding water. Because the gasket has a tubular cross-sectional configuration and a relatively large compliant cross section, it is able to conform to irregular surfaces to maintain the sealed relationship. At least one pressure compensation hole is provided in the gasket in communication with the console's interior to prevent a failure-inducing pressure differential from building up across the gasket.

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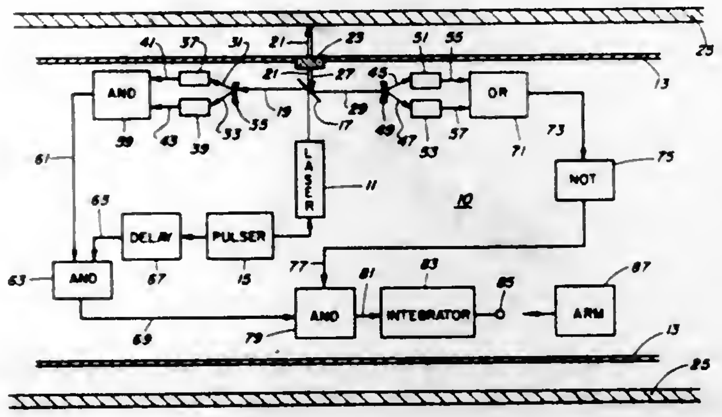
### 3,756,181
### TORPEDO SEPARATION SENSING DEVICE

**Eugene H. Beach, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Mar. 13, 1970, Ser. No. 20,441**
**Int. Cl. F42b** *19/00, 19/36, 19/10*
**U.S. Cl. 114—20 R** **9 Claims**



A torpedo separation sensing device having a laser for providing optical pulses of energy which are transmitted both within the torpedo and out the torpedo. A first plurality of photodetectors provide a first electrical signal responsive to the optical signals transmitted within the torpedo. A second plurality of photodetectors provide a second electrical signal responsive to the reflection of the transmitted optical light out of the torpedo and reflected back inside the torpedo, for example, off the torpedo tube. Logic circuitry is provided to insure that an output signal occurs only upon occurrence of the first electrical signal and absence of the second electrical signal indicating physical separation of the torpedo and the torpedo tube.

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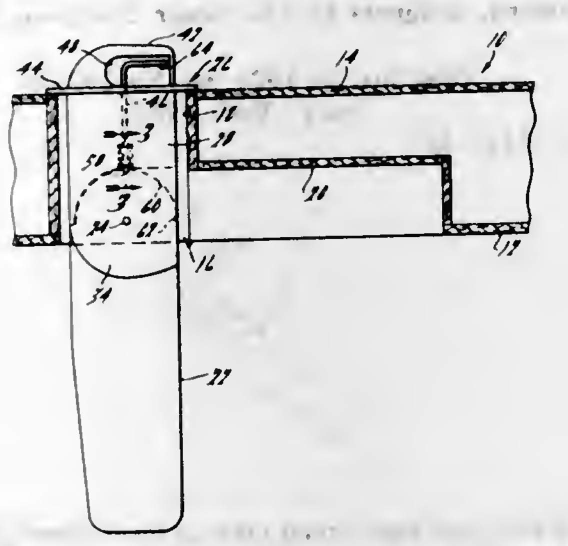
### 3,756,182
### CENTERBOARD FOR SAILBOATS

**Richard L. Hackett, Lincoln Pl., Petoskey, Mich.**
**Filed July 6, 1971, Ser. No. 159,803**
**Int. Cl. B63b** *41/00*
**U.S. Cl. 114—132** **6 Claims**



A centerboard for a sailboat is pivotally mounted on a handle member which normally rests upon the upper end of the centerboard well. The centerboard is movable between the normal vertical position and a generally horizontal position and is retained in such positions by a detent means which allows the centerboard to pivot rearwardly toward its horizontal position upon striking an object in the water. The centerboard is returned to its vertical position by its engagement with a portion of the centerboard well when the handle is lifted vertically out of the well, whereupon the centerboard may be reinserted into the well. The detent means may be manually released to allow the drag on the centerboard to pivot it to an intermediate position and the reengaged to hold the centerboard in such position.

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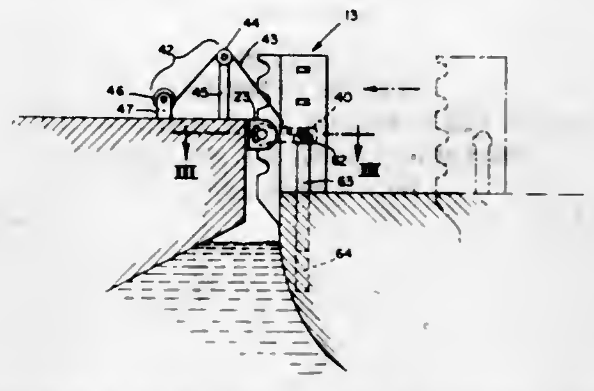
### 3,756,183
### APPARATUS FOR ARTICULATED TOWBOAT BARGE COMBINATION

**Elliott I. Clemence, Jr., Devon, Pa., assignor to Interstate Oil Transport Company, Philadelphia, Pa.**
**Filed Sept. 28, 1971, Ser. No. 184,339**
**Int. Cl. B63b** *21/00*
**U.S. Cl. 114—235 R** **17 Claims**



An apparatus of the coupling type is provided, components of which are adapted for mounting on a towboat, and other components of which are adapted for mounting on a barge, for connection of the respective components for transmitting thrust from the towboat to the barge, while permitting independent pitching of the two vessels about the coupling, and while restraining all other independent movement of the two vessels. The apparatus is adapted for mounting upon the vessels without requiring extensive modifications to the vessels, if any, and comprises one or more shafts or pins, adapted to engage with corresponding concave recesses on mounting blocks carried by the towboat. Generally, a pair of such mating coupling elements are utilized, spaced across that end of the towboat that is adapted to engage a barge. Also, a locking device is provided, for securing the shafts or pins, within the aforementioned recesses, but which is adapted to be quickly disengaged if desired, for separation of the vessels.

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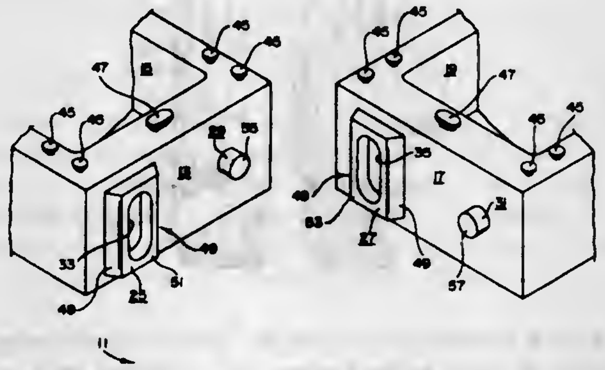
### 3,756,184
### BARGE INTERCONNECTION SYSTEM

**Billy D. Hutto, 3455 Knight Rd., Memphis, Tenn.**
**Filed Jan. 31, 1972, Ser. No. 221,894**
**Int. Cl. B63b** *21/62*
**U.S. Cl. 114—235 R** **6 Claims**



A system for making up tows from a plurality of barges. The system substantially prevents relative lateral movement between adjacent barges and/or relative movement along a line parallel to the path of travel thereof while allowing certain freedom of movement therebetween incident to changes in draft, etc. The system includes fitting the bow and stern of adjacent barges with first and second protruding members. The first protruding member has a vertically extending slot therein, and the second protruding member or pin is suitably sized to be received in the slot of an opposing first member, i.e., the slotted member of the first barge being confronted with the pin member of the second barge and the pin member of the first barge being confronted with the slotted member of the second barge when the two barges are in alignment one behind the other. Also included is flexible coupling structure which has one portion thereof attached to the first barge and the second portion thereof attached to the second barge. The flexible coupling structure is pulled tightly therebetween to prevent the pins from becoming disengaged from the slots while allowing the barges to freely move independently within limits about their respective longitudinal axes and/or along their vertical axes.

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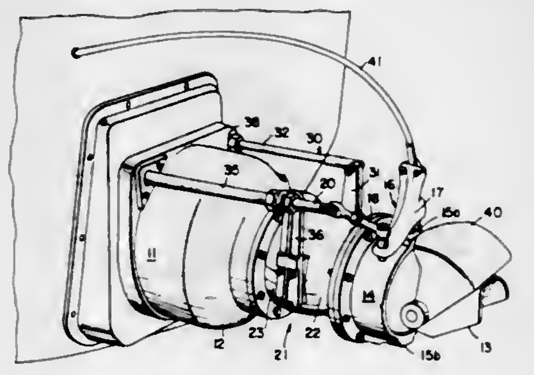
### 3,756,185
### WATER JET BOAT THRUST TRIMMER

**Patrick W. Breslin, Watsonville, Calif., assignor to Custom Speed Marine, Inc., San Jose, Calif.**
**Filed Mar. 8, 1972, Ser. No. 232,831**
**Int. Cl. B63h** *11/00*
**U.S. Cl. 115—12 R** **9 Claims**



In a water jet boat thrust source of the type comprising a water pump for generating a water jet, a steering conduit forming an exit nozzle through which the water is emitted, the steering conduit exit nozzle adjustable left and right in a horizontal plane for steering, and a steering lever arm system coupled to the exit nozzle for adjusting said exit nozzle left and right, the improvement including an adjustable trimming conduit interposed between the water pump and exit nozzle for adjusting the direction of thrust from the water jet in a vertical plane for trimming the boat, a second or trimming lever arm system coupled to the adjustable conduit for adjusting the conduit in a vertical plane upon actuation of the trimming lever arm system, and a friction coupling between the adjustable trimming conduit and the steering lever arm system so that upon adjustment of the trimming conduit in a vertical plane the steering lever arm system and exit nozzle move with the conduit maintaining the steering direction of the exit nozzle substantially constant during trimming. Alternatively, the trimming conduit is coupled downstream from the steering conduit so that the trimming conduit forms the exit nozzle.

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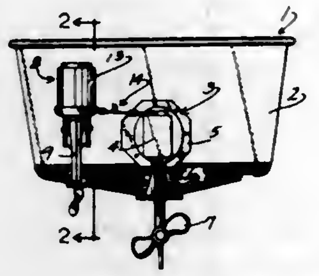
### 3,756,186
### ATTACHMENT FOR CONNECTING A STERN DRIVE UNIT AND AN AUXILIARY OUTBOARD MOTOR

**Homer G. Nordling, 5 Oconto Ct., Madison, Wis.**
**Filed Apr. 30, 1971, Ser. No. 138,944**
**Int. Cl. B63h** *21/26*
**U.S. Cl. 115—18 R** **6 Claims**

A marine steering attachment for connecting an auxiliary propulsion unit, such as an outboard motor, and a main propulsion unit, such as a stern drive. A small outboard motor is mounted on the transom of a boat alongside a stern drive unit and is used as an auxiliary power source for trolling or for operation in shallow water. The outboard motor is connected to the stern drive unit in a manner such that either the outboard motor or the stern drive unit can be tilted with respect to the other, and when the outboard motor is in the lowered or operating position, it is rigidly connected to the stern drive unit so that it will steer with steering control from the main helm station of the boat.



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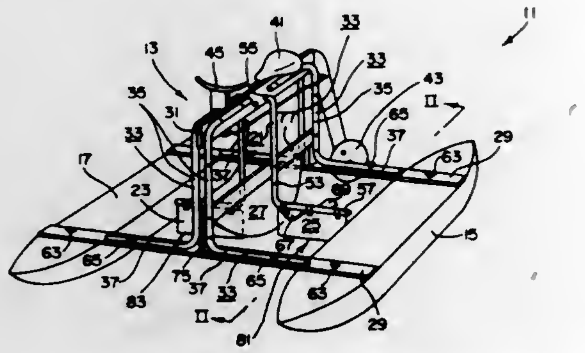
### 3,756,187
### DEVICE FOR WALKING ON WATER
**Loyd J. Livandais, 1325 N. Pkwy., Memphis, Tenn.**
**Filed Dec. 21, 1971, Ser. No. 210,374**
**Int. Cl. B63h** *1/32, 16/02*
**U.S. Cl. 115—28** **3 Claims**



A device for enabling a pedestrian to walk on water including a pair of floats supporting a frame which rigidly connects the floats one to the other in a parallel side-by-side spaced apart relationship. Left and right pendulum arms depend from the frame. At least one paddle is pivotally attached to each pendulum arm to provide propulsion to the floats as the pedestrian actuates the pendulum arms and the paddles by moving his legs in a manner similar to walking. A keel depends from the frame and extends into the water between the paddles to partially define independent channels or slips for the left and right paddles for increasing the propulsion developed by each step taken by the pedestrian, i.e., the slips further being defined by portions of the inboard sides of the floats. Forward and reverse stops are included which are attached to the paddles, enabling the pedestrian to selectively develop forward or reverse propulsion to change the direction of travel of the device.

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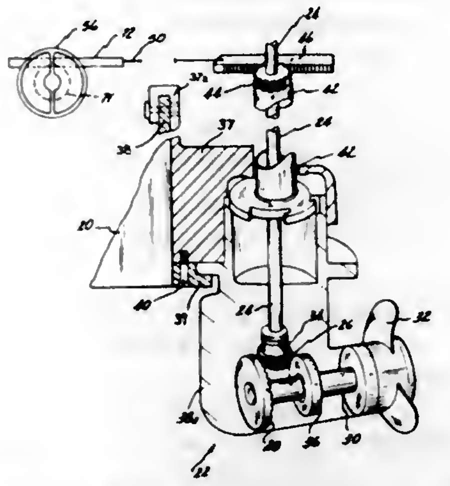
### 3,756,188
### BOAT STEERING AND REVERSING SYSTEM
**Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.**
**Filed Mar. 1, 1972, Ser. No. 230,687**
**Int. Cl. B63h** *25/42*
**U.S. Cl. 115—35** **17 Claims**

A system for controlling the forward and reverse operation of a boat having a propulsion unit which is rotated to provide normal steering of the boat. Included is a mechanism for providing a rapid rotated of the propulsion unit through a turn of approximately one-half circle to redirect the force of propulsion forwardly and thus provide reversal of the boat. The mechanism includes operating elements operatively connected to and controlled at the steering wheel itself for providing the changeover between forward and reverse operation.



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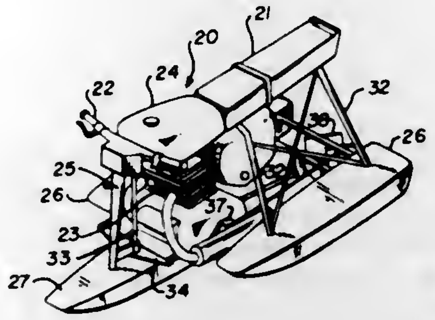
### 3,756,189
### WATER VEHICLE
**Lee G. Yutzler, 522 N. Matlock, Mesa, Ariz.**
**Filed Mar. 2, 1971, Ser. No. 120,114**
**Int. Cl. B63b** *35/00*
**U.S. Cl. 115—70** **6 Claims**



A Water Vehicle having a motorcycle-type body and supported on three pontoons detachably connected to said body, and including rudder steering operable by handlebars wherein a braking mechanism is connected to the steering mechanism to provide braking by moving the rudders in opposite directions.

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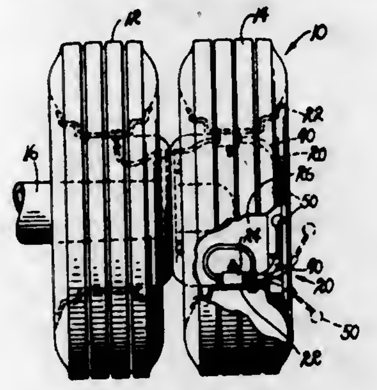
### 3,756,190
### PRESSURE RESPONSIVE DEVICE FOR INDICATING THE MAGNITUDE OF PRESSURE CHANGES
**Harland R. Kendall, 1313 Chatham Dr., Visalia, Calif.**
**Filed Feb. 18, 1972, Ser. No. 227,537**
**Int. Cl. B60c** *23/04*
**U.S. Cl. 116—34 R** **7 Claims**



A pressure responsive device for indicating the magnitude of pressure changes as they occur in a confined body of fluid. The device is characterized by a flexible tubular member communicating with the body of fluid having a wall portion thereof supported against elongation whereby the tubular member is caused to assume an arcuate configuration as the magnitude of the pressure increases, and a substantially linear configuration as the magnitude of the pressure of the body of fluid decreases. The device has particular utility with truck tires and the like for alerting drivers of reduced tire pressures.

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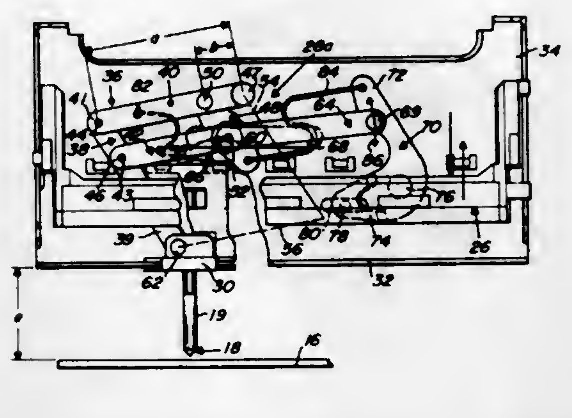
### 3,756,191
### DIAL POINTER DRIVER ASSEMBLY FOR RADIO RECEIVER
**Emery E. Olah, Schaumburg, Ill., assignor to Motorola, Inc., Franklin Park, Ill.**
**Filed Sept. 25, 1972, Ser. No. 292,031**
**Int. Cl. H03j** *1/02*
**U.S. Cl. 116—124.1 R** **11 Claims**



A dial pointer assembly for a manually tunable radio receiver includes a slide member carrying a pointer and mounted for movement along a path parallel to a dial scale. Coupled between the slide member and a movable variable frequency tuning core carriage of the radio receiver is a parallelogram linkage including a plurality of pivotally interconnected arms which serve to define portions of first and second parallelograms; the arms of the second of which are shorter in length than those of the first. A point of interconnection of a pair of arms of the second defined parallelogram is coupled operatively to a driver mechanism including a bell crank connected to the core carriage. Movement of the latter by operation of the manual tuning controls of the radio receiver; i.e., pushbutton or manual control knob, drives the pointer mechanism with respect to the dial scale. The movement of the slide member and pointer mechanism is magnified by the ratio of the length of an arm of the first parallelogram with respect to the length of an arm of the second.

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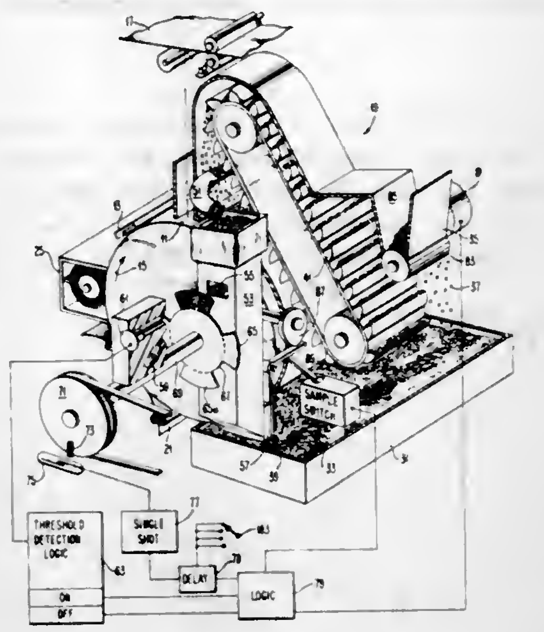
### 3,756,192
### AUTOMATIC TONER CONCENTRATION CONTROL SYSTEM
**Henry C. Locklar; Deh C. Tao, and Loyd E. Tarver, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Dec. 17, 1971, Ser. No. 209,042**
**Int. Cl. B05c** *11/00*
**U.S. Cl. 118—7** **8 Claims**

A toner concentration control system for an electrostatic copier wherein light is alternately reflected from multicomponent developer material containing toner and from a calibrated reflector to a photosensor. An imbalance of toner in the developer material results in a difference in reflected light intensity from the developer and reflector which is converted into an electrical signal having an AC component. A phase sensing circuit detects the position of the peak of the AC signal component with reference to the position of the calibrated reflector and provides a control signal to a toner replenishing device. Developer flow past the photosensor is intermittently halted during concentration sensing to reduce noise effects. A plurality of selectable calibrated reflectors provide different concentration settings. Additional concentration settings are obtained by varying the light spectrum emitted by the light source.



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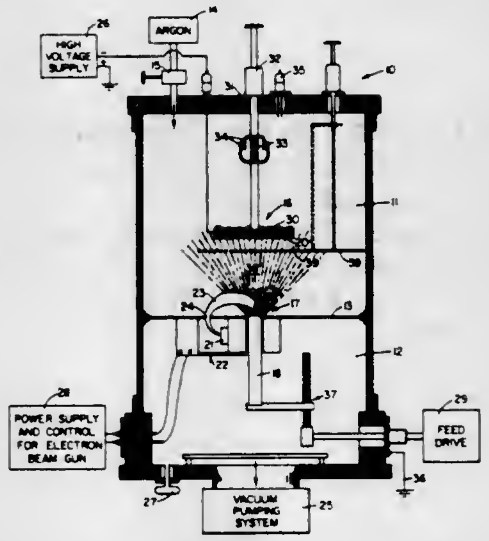
### 3,756,193
### COATING APPARATUS
**Donald C. Carmichael, and Douglas L. Chambers, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio**
**Filed May 1, 1972, Ser. No. 248,815**
**Int. Cl. C23c** *13/12*
**U.S. Cl. 118—49.1** **13 Claims**



Apparatus for providing a tightly adherent coating on a substrate comprising a first chamber, means for providing an ionizable gas such as argon to the first chamber, a cathode comprising the substrate in the first chamber, a second chamber adjacent to the first chamber, a wall between the first chamber and the second chamber, an anode comprising a supply of the coating material, an exposed surface portion of the material (approximately planar and parallel to the wall) being in the first chamber and spaced from the cathode, a source of electrons in the second chamber, means for directing electrons from the source in a beam through an opening in the wall and on to the exposed surface portion of the anode, means for substantially evacuating the second chamber, and means for providing the cathode with a negative electric potential relative to the anode.

The electron directing means comprises an electron beam gun that directs the electron beam initially in a direction approximately parallel to the wall and away from the exposed anode surface portion, bends the beam through approximately one right angle to pass through the opening, and then bends it through approximately two more right angles to strike the exposed anode surface portion in a direction approximately perpendicular to the exposed anode surface portion.

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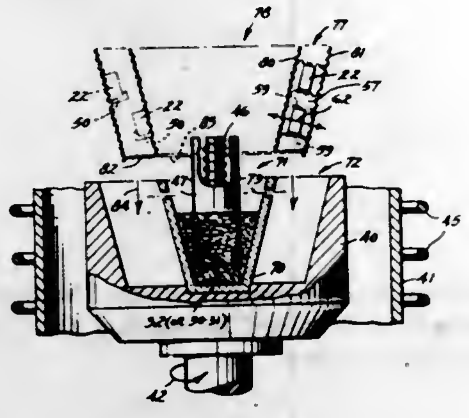
### 3,756,194
### CENTRIFUGAL DRUM FOR GROWING CRYSTAL

**Suei-Yuen Paul Lien, Morrisville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.**

**Division of Ser. No. 40,854, May 27, 1970, Pat. No. 3,713,883. This application Mar. 29, 1972, Ser. No. 239,097**

**Int. Cl. B05c** *11/12*

**U.S. Cl. 118—52** **2 Claims**



A vertically oriented rotatable drum includes a receptacle centrally disposed therein. Positioning means disposed within the annulus defined by the drum and receptacle side walls are adapted to confine a substrate against vertical movement while permitting lateral movement. The direction of such movement is determinable by densities of materials handled and drum speed. Means communicate the receptacle with the annular region whereby fluid material may coat alternate sides of the laterally shifting substrate.

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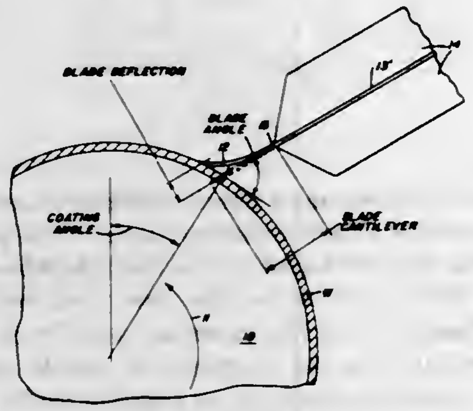
### 3,756,195
### APPARATUS FOR COATING A CONTINUOUS WEB

**Joseph A. Mercier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Division of Ser. No. 55,323, July 16, 1970, Pat. No. 3,627,564. This application Aug. 5, 1971, Ser. No. 169,489**

**Int. Cl. B05c** *3/12, 9/06*

**U.S. Cl. 118—126** **8 Claims**



Two or more low coverage coatings are applied substantially simultaneously to a web travelling at high speed by first trowelling a very thin sub-coat onto the web with a trailing blade coater to prepare the web surface for an over-coating of the same or compatible coating material, and then flowing the over-coat down the top side of the trailing blade and off the trowelling end thereof directly onto the sub-coat. Two or more layers of fluid coating composition can be flowed down the top of the trailing blade and onto the trowelled sub-coat in distinct layer relationship with each other and the sub-coat.

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### 3,756,196
### METHOD OF COATING GLASS SURFACES

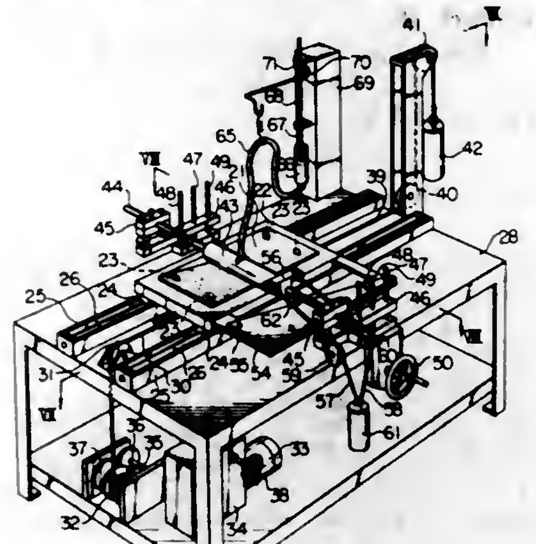
**Shigemasa Furuuchi, Yokohama; Kazuyuki Akeyoshi, Yamato; Yasuharu Okajima, and Yoshio Gotoh, both of Yokohama, all of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan**

**Division of Ser. No. 849,967, Aug. 14, 1969, abandoned. This application July 14, 1971, Ser. No. 162,587**

**Claims priority, application Japan, Aug. 22, 1968, 43/59529**

**Int. Cl. B05c** *1/08, 3/00*

**U.S. Cl. 118—401** **6 Claims**



An apparatus for producing a uniform film of a coating liquid on a surface of a glass article, especially on a surface of a flat sheet or plate glass, in which the coating liquid is maintained in the form of a meniscus between the glass surface and a rod-shaped coating element so that the meniscus moves along the glass surface to produce the desired film thereon. The rod-shaped coating element is disposed at a small distance from the glass surface and is so arranged that the coating element be moved relatively to and in parallel with said surface. The coating liquid is, for example, a solution of metal compounds, and the film so produced is then dried and fired.

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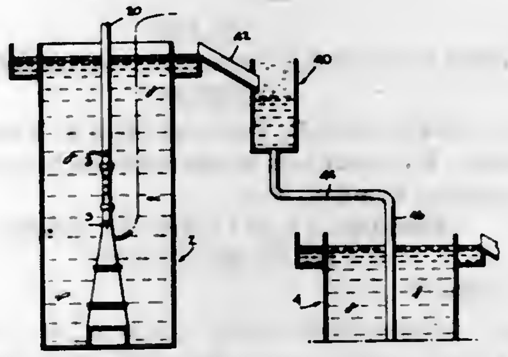
### 3,756,197
### FISH HUSBANDRY SYSTEM

**Keen W. Buss, Boalsburg, Pa., and Richard E. Speece, Austin, Tex., assignors to Marine Protein Corporation, New York, N.Y.**

**Filed Dec. 16, 1971, Ser. No. 208,720**

**Int. Cl. A01k** *61/00*

**U.S. Cl. 119—3** **2 Claims**



A fish husbandry system for the high intensity raising of fish in a generally vertical, water-filled tank. An inflow of water passes through a conduit leading into a downwardly divergent hood, the lower end of which is in fluid communication with the water in the lower end of the tank. Oxygen-containing gas is injected under pressure into the water flowing through the hood and forms bubbles. The bubbles are trapped within the hood by the flow of water for a sufficient period to cause a very high proportion of the oxygen in the injected gas to dissolve in the water. A constricted throat means is interposed between the inlet conduit and the top of the hood. At least a portion of the throat means has an internal diameter less than that of the conduit.

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### 3,756,198
### PULSATOR FOR MILKING MACHINES

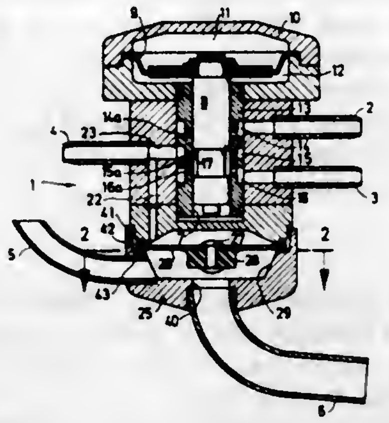
**August Rudle, Stuttgart-Bad Cannstatt am Romerkastell, Germany, assignor to Bizerba-Werke Wilhelm Kraut AG, Balingen/Wurttemberg, Germany**

**Filed Aug. 11, 1971, Ser. No. 170,689**

**Claims priority, application Germany, Aug. 14, 1970, P 20 40 520.3**

**Int. Cl. A01j** *5/04*

**U.S. Cl. 119—14.36** **7 Claims**



A milking machine pulsator of the type wherein milk moves from a teat cup, through a milk collecting chamber in the pulsator, to a storage container under the influence of a vacuum, and a valve opens and closes a connection between the chamber and storage container under the influence of a vacuum-pressure source controlled reciprocating valve, a throttled connection being provided between the milk collecting chamber and the atmosphere so that vacuum and pressure lines for the reciprocating valve can be isolated from the milk conveying lines.

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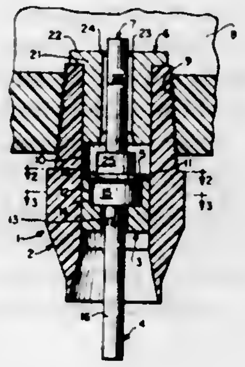
### 3,756,199
### ANIMAL OPERATED WATERING DEVICE

**Reuben B. Clark, IV, Daylesford, Pa., assignor to Fox Products Company, Philadelphia, Pa.**

**Filed Apr. 17, 1972, Ser. No. 244,461**

**Int. Cl. A01k** *7/00*

**U.S. Cl. 119—72.5** **4 Claims**



Animal operated watering device of the "nipple valve" type in which the movable valve element is in the form of a thin flat disc of elastomeric material and the device is so constructed and arranged as to be actuatable by tilting of the valve operating member as well as to upward movement thereof.

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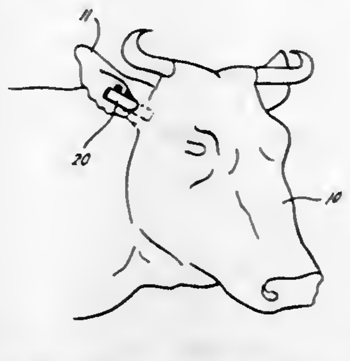
### 3,756,200
### TICK ERADICATOR

**William T. Ohlhausen, 8037 Downe Dr., Ft. Worth, Tex.**

**Filed Aug. 21, 1972, Ser. No. 282,466**

**Int. Cl. A01k** *13/00, 29/00*

**U.S. Cl. 119—156** **1 Claim**



A device for attachment to a cow's ear to repel ticks. Comprises a short length of molded plastic strip material, receivable bodily in the ear, having an insect repellant material incorporated in the composition thereof as its active ingredient, and means for attachment of the strip material to the ear. The strip material in its operative position is attached to a peripheral portion of the ear and extends deep into the pocket thereof.

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### 3,756,201
### INDUSTRIAL BOILERS

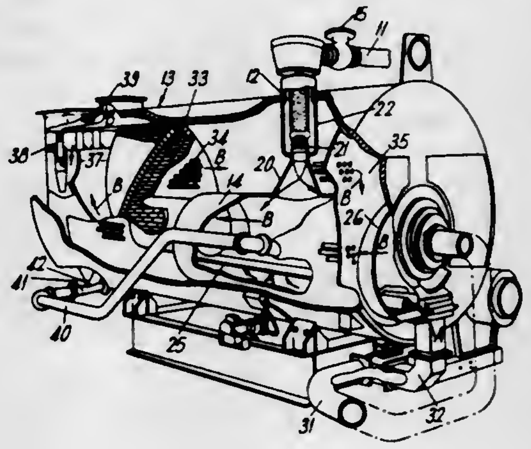
**Robert Spencer Williams, Upper Arley near Bewdley, England, assignor to G. W. B. Boilers Limited, Worcester County, England**

**Filed Sept. 22, 1971, Ser. No. 182,808**

**Claims priority, application Great Britain, Sept. 22, 1970, 44,973/70**

**Int. Cl. F22b** *33/00*

**U.S. Cl. 122—2** **13 Claims**



An industrial boiler including a fluid-fired burner and having means for feeding solid fuel to the combustion chamber, and there being a control means which is operable to control the burner and the feed means so that the burner can operate whilst the feed means is inoperative, and the feed means can operate whilst the burner is inoperative, and the burner can operate whilst the feed means is operative.

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### 3,756,202
### HEAT EXCHANGE TUBE FOR USE IN A BOILER AND BOILER INCORPORATING THE SAME

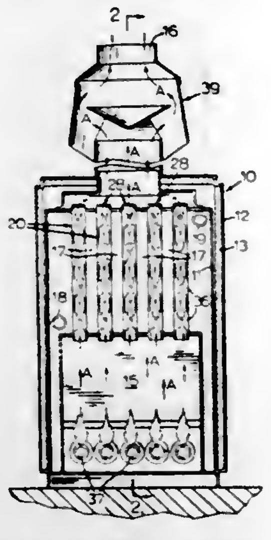
**Clarence Henry Keith, Toronto, Ontario, Canada, assignor to American Standard Inc., New York, N.Y.**

**Filed Nov. 22, 1971, Ser. No. 201,036**

**Int. Cl. F22b** *7/00*

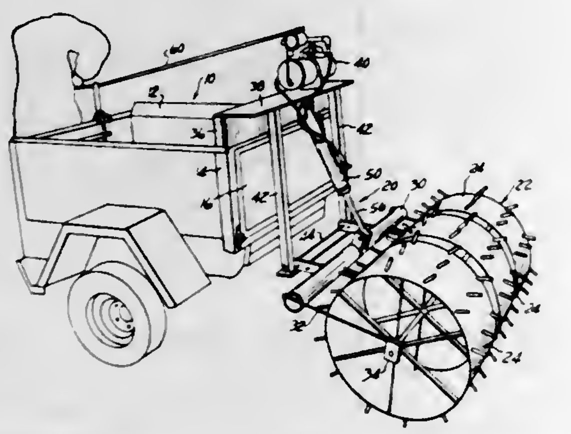
**U.S. Cl. 122—156** **15 Claims**

A gas- or oil-fired boiler incorporating a plurality of heat exchange tubes disposed above the gas or oil burner, the hot flue gases from the burner operatively flowing through the tubes which are in heat exchange relationship with the water to be heated. Each heat exchange tube is formed of two members of L-shape in cross-section, the members which are identical being so interconnected in a fluid-tight manner that the tube is of substantially rectangular cross-section with one of the pairs of opposed side walls of the tube presenting inwardly directed projections in the form of abutting segments through the tube and to cause turbulence in the gases, thereby to improve the heat exchange efficiency of the boiler. The abutting projections also serve to prevent collapse of the tube caused by external water pressure acting thereon, the members constituting the tube being relatively thin sheet metal stampings.



### 3,756,203
### IMPLEMENT AND HITCH THEREFOR

**Arnold A. Dedoes, 2070 W. Eleven Mile Rd., Berkley, Mich.**
**Continuation-in-part of Ser. No. 795,853, Feb. 3, 1967, Pat. No. 3,650,332, and a continuation-in-part of Ser. No. 2,582, Jan. 13, 1970, Pat. No. 2,643,746, and a continuation-in-part of Ser. No. 21,905, March 23, 1970, Pat. No. 3,650,331. This application Feb. 22, 1972, Ser. No. 228,008**
**Int. Cl. A01b** *63/00*
**U.S. Cl. 172—464** **3 Claims**

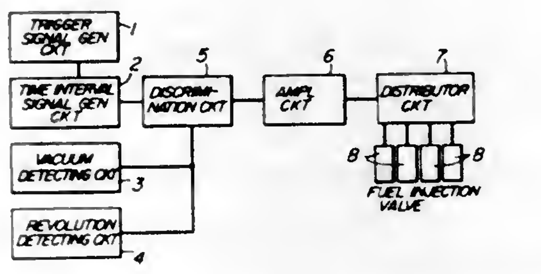


A draw bar and hitch connection for coupling a plurality of substantially identical ground working implements to a utility vehicle and including means for transferring a portion of the weight of the vehicle to the implement.

### 3,756,204
### FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

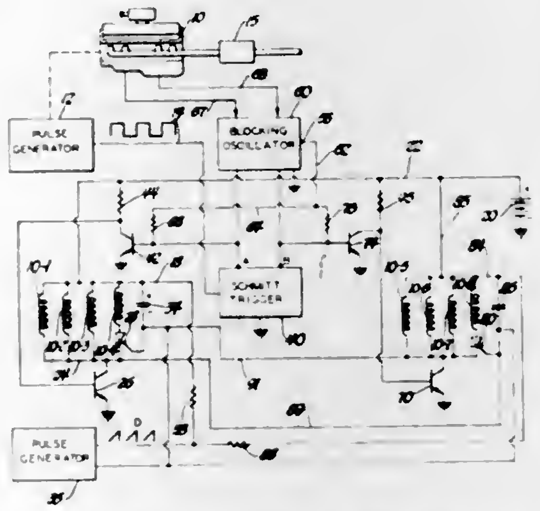
**Seiji Suda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan**
**Filed June 11, 1970, Ser. No. 45,400**
**Claims priority, application Japan, June 16, 1969, 44/46865**
**Int. Cl. F02b** *3/00;* **F02m** *39/00*
**U.S. Cl. 123—32 EA** **20 Claims**

A fuel injection system for internal combustion engines wherein two factors determining the fuel quantity delivered to an internal combustion engine, i.e., the intake manifold vacuum in the engine and the engine rpm are converted into electrical signals having values corresponding to those of the intake manifold vacuum and the engine rpm, and the signals as well as a time interval signal (sawtooth wave) generated at the beginning of fuel injection are applied to the input of a level discrimination circuit such that the solenoid valves are held open up to the time when the sum of the applied signals reaches a discrimination level so as to inject fuel into the internal combustion engine as a function of time, characterized in that the rate of change of the time interval signal is varied according to a predetermined time lapse to thereby correct the fuel supply characteristics.



### 3,756,205
### METHOD OF AND MEANS FOR ENGINE OPERATION WITH CYLINDERS SELECTIVELY UNFUELED

**George E. Frost, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Apr. 26, 1971, Ser. No. 137,480**
**Int. Cl. F02b** *3/00*
**U.S. Cl. 123—32 EA** **4 Claims**

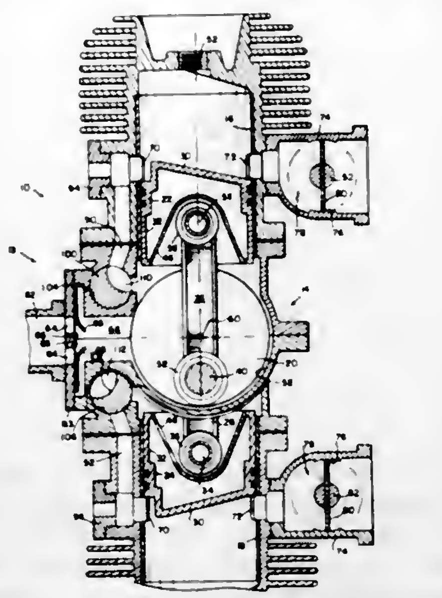


A method and apparatus for controlling the supply of fuel to selected ones of the cylinders of a multi-cylinder internal combustion engine. The apparatus includes solenoid operated valves which are electrically energized to cause fuel to be supplied to the respective cylinders of the engine. Actuating current pulses are normally applied to all valves to discharge the required amount of fuel for each cylinder power stroke. In accordance with the present invention, an electronic system selectively disables certain of the solenoid operated valves to prevent fuel from being injected so as to cause the associated cylinder to pump air only. This unpowered cylinder operation may be used for any desired purpose, such as to pump air or to reduce the number of cylinders using fuel during idling or low power operation.

### 3,756,206
### ENGINE

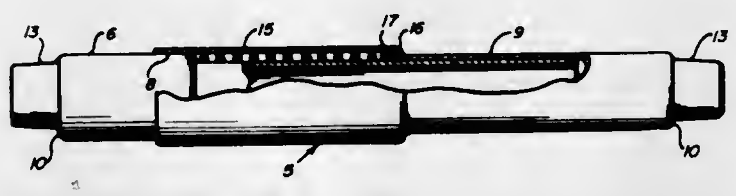
**Dewey E. Gommel, P.O. Box 4627, Greenville, Miss.**
**Filed Jan. 17, 1972, Ser. No. 218,373**
**Int. Cl. F02b** *75/02;* **F02d** *39/02*
**U.S. Cl. 123—75 CC** **1 Claim**

A 4-cycle, internal combustion engine comprising a crankcase and a pair of cylinders, each cylinder being open at one end into communication with the crankcase. Each cylinder is provided with an inlet port, and a crankshaft is disposed in the crankcase to be adjacent the open ends of the cylinders. A piston is reciprocably received in each cylinder to define therewithin a variable-volume combustion chamber, each piston being drivingly connected in a conventional manner to the crankshaft. A system is provided for admitting a gaseous mixture to the crankcase, and there is a passageway leading from the crankcase to each inlet port. valves are provided for respectively opening and closing the passageways, the valves being drivingly connected to and operated by the crankshaft. The valves are arranged and driven such that each passageway is opened only on alternate occasions when both pistons move toward the axis of the crankshaft. Thus, the pumping action of both pistons drives the gaseous mixture through the only open passageway into one of the two cylinders. The inlet port and an exhaust port is provided in the side wall of each cylinder at peripherally spaced apart points remote from the closed end of the cylinder. An auxiliary chamber in open communication with each exhaust port is provided, each said auxiliary chamber being provided with a port at a point remote from the point of communication of the chamber with the cylinder exhaust port. A butterfly valve is provided for dominating each auxiliary chamber port, the butterfly valve being drivingly connected to the crankshaft.



### 3,756,207
### PUSHROD INCLOSURE

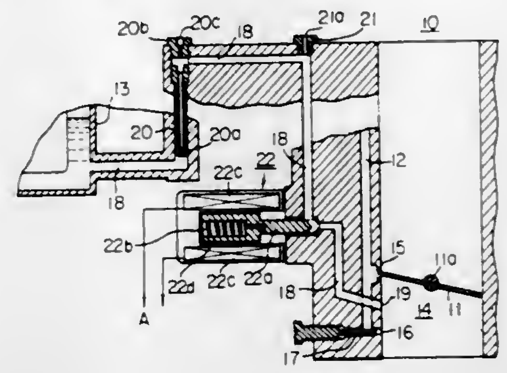
**George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md.**
**Filed May 1, 1972, Ser. No. 249,255**
**Int. Cl. F01m** *9/10*
**U.S. Cl. 123—90.38** **4 Claims**



A pushrod inclosure that extends between the head and block of an internal combustion engine and serves to individually inclose each of the pushrods that operate the valves of the engine by rotation of the cam shaft. The inclosure includes a pair of telescoping members bearing against each other at at least two axially displaced locations with spring means enclosed between the members and between said bearing surfaces to urge the members in opposite directions while compressing a gasket disposed between the members.

### 3,756,208
### APPARATUS FOR REDUCING HYDROCARBON CONTENT OF EXHAUST GASES DURING DECELERATION

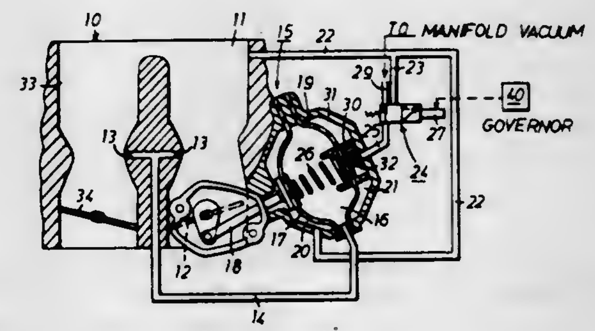
**Yoshio Toda; Mitsutaka Konno, both of Yokohama, and Masao Nakajima, Kawasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan**
**Continuation of Ser. No. 7,005, Jan. 28, 1970, abandoned. This application Feb. 8, 1972, Ser. No. 224,590**
**Claims priority, application Japan, Feb. 5, 1969, 44/8253; Feb. 5, 1969, 44/8254**
**Int. Cl. F02m** *11/00*
**U.S. Cl. 123—97 B** **1 Claim**



An air-pollution preventive system to be used in combination with an automotive internal combustion engine having a carburettor with idle and low-speed circuit, which system comprises a decleration circuit to supply, independently of the idle and low-speed circuit, an air-fuel mixture to the engine in an amount and mixture ratio that are suited for the engine operation during deceleration, the deceleration circuit being closed and opened by valve means which is controlled upon various driving conditions of the motor vehicle particularly upon vehicle speeds, angular positions of the throttle valve (or motions of the accelerator pedal), positions of the clutch pedal, vacuums in the intake manifold of the engine, or combinations of two or more of these variables.

### 3,756,209
### VEHICLE SPEED-LIMITING APPARATUS

**Takashi Hida; Naoji Sakakibara, and Nobuyuki Hashimoto, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan**
**Filed Feb. 18, 1972, Ser. No. 227,380**
**Claims priority, application Japan, Feb. 20, 1971, 46/8110**
**Int. Cl. F02d** *11/08*
**U.S. Cl. 123—103 A** **8 Claims**

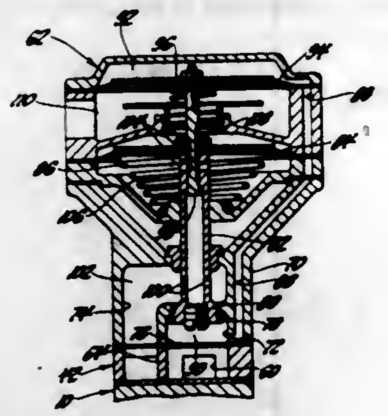


A governing apparatus for a double barrel compound type carburetor including a mechanism to open the primary throttle thereof which comprises a servo device to open the secondary throttle of the carburetor in accordance with venturi vacuum produced at least within the primary induction passage and an external vacuum source communicated therein and to close the secondary throttle by biasing force of a spring installed therein when vehicle speed exceeds a predetermined value, thereby to prevent excessive vehicle speeds.

### 3,756,210
### EXHAUST GAS RECIRCULATION CONTROL VALVE

**Paul B. Kuehl, South Bend, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Apr. 10, 1972, Ser. No. 242,420**
**Int. Cl. F02m** *25/06*
U.S. Cl. 123—119 A 3 Claims



An induction passage vacuum operated valve responsive to exhaust back pressure controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages. The valve assembly is designed whereby both the induction passage vacuum signal and the exhaust back pressure signal are routed internally of the structural members, thus obviating the need for external hose connections.

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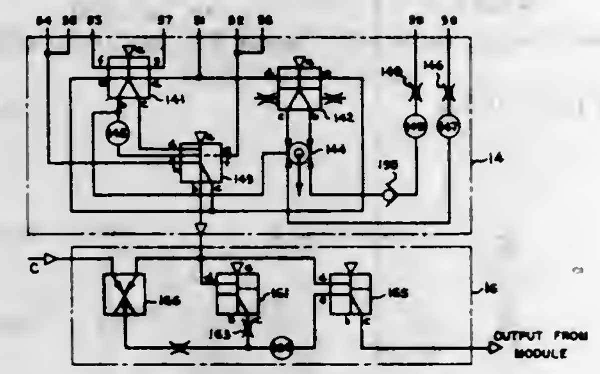
### 3,756,211
### FLUIDIC FUEL INJECTION SYSTEM HAVING PULSE EXTENDER

**Lael B. Taplin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Mar. 30, 1972, Ser. No. 239,677**
**Int. Cl. F02n** *7/00, 37/04;* **F02d** *31/00, 4/08*
U.S. Cl. 123—119 R 7 Claims



A fluidic fuel injection system is illustrated and described having fluidic means to modulate the duration of the normally generated injection pulse. The pulse extender receives the normally generated injection pulse and applied that pulse through gating means to the fuel injection controlling device. The pulse extender also receives a signal indicative of an engine operating parameter such as for instance, an engine temperature, and stores a signal which is a function of the duration of the normally generated injection controlling pulse and the engine variable. Following termination of the normally provided injection controlling pulse, the stored signal is then communicated to the fuel injection controlling devices to provide for prolongation, in a predetermined controlled manner, of delivery of fuel.

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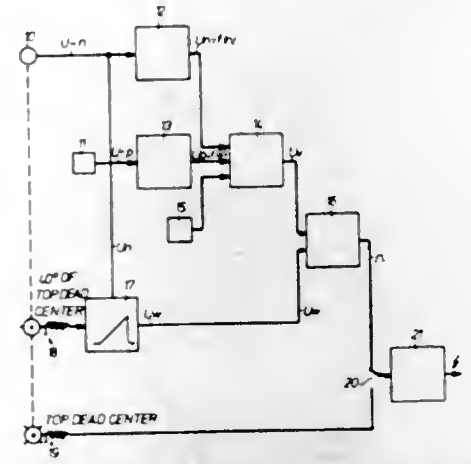
### 3,756,212
### ARRANGEMENTS FOR ELECTRONICALLY DETERMINING AND ADJUSTING THE IGNITION TIME OF AN INTERNAL COMBUSTION ENGINE

**Gunter Schirmer, Leinfelden; Edwin Fauser, Sersheim, and Leo Steinke, Hegnach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Mar. 18, 1971, Ser. No. 125,476**
**Claims priority, application Germany, Mar. 21, 1970, P 20 13 703.5**
**Int. Cl. F02p** *3/02*
U.S. Cl. 123—148 E 13 Claims



The signals of one or more engine operating parameters, such as r.p.m. and throttle valve vacuum are altered by function generators to correspond to the desired relationship between ignition timing and the parameters that are taken into account. These altered signals are added together and conducted to a comparator that receives as a second input a time and r.p.m. dependent signal from a saw tooh generator, the output of the comparator being fed to the ignition device.

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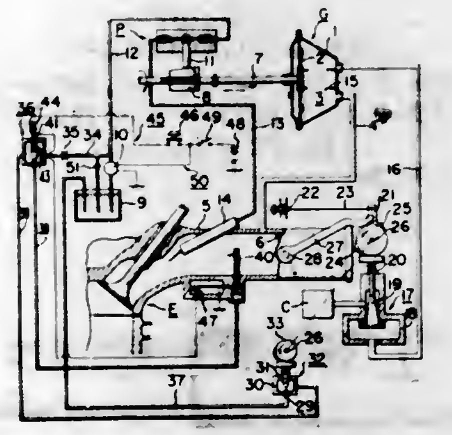
### 3,756,213
### INTERNAL COMBUSTION ENGINE OF THE FUEL INJECTION TYPE

**Kiyoshi Miyaki, Asaka, and Toshihiko Sato, Saitama-ken, both of Japan, assignors to Honda Giken Kogyo Kakushiki Gaisha, Tokyo, Japan**

**Filed Aug. 18, 1971, Ser. No. 172,729**
**Claims priority, application Japan, Aug. 20, 1970, 45/72411**
**Int. Cl. F02n** *17/08*
U.S. Cl. 123—179 L 3 Claims



An internal combustion engine of the fuel injection type having a main fuel injection nozzle for normal running of the engine, a starting fuel injection nozzle for starting or warming up of the engine, means for adjusting the amount of fuel injected with said main nozzle respondingly to negative pressure in the interior of an intake pipe downstream of a throttle valve, means for increasing fastly the amount of fuel injected with said main nozzle independently of said means for adjusting the amount of fuel and allowing to inject supplementary fuel with said starting fuel injection nozzle in low temperature condition of the engine, means for adjusting continuously the amount of the supplementary fuel manually or automatically with the operation of a temperature sensitive member settled on a proper portion of the engine.

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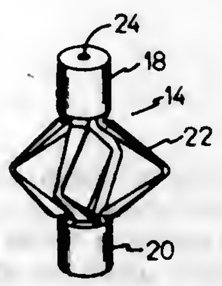
### 3,756,214
### ARCHERY BOW WITH BOW STRING SILENCER

**Jack P. Christen, Onalaska, Wis., assignor to Outers Laboratories, Inc., Onalaska, Wis.**

**Filed Feb. 24, 1972, Ser. No. 229,021**
**Int. Cl. F41b** *5/00*
U.S. Cl. 124—23 7 Claims



Archery bow string silencing having a pair of bow string silencers which are mounted on the bow string at the two primary vibrational nodes on the string. Each bow string silencer is fabricated of a single piece of resilient material which has a pair of normally spaced apart end portions, each end portion having a bow string aperture therethrough, and a plurality of integrally formed arms which are connected between the end portions and flex outwardly as the end portions are moved together. The silencer is of low mass so as not to interfere with proper bow string movement.

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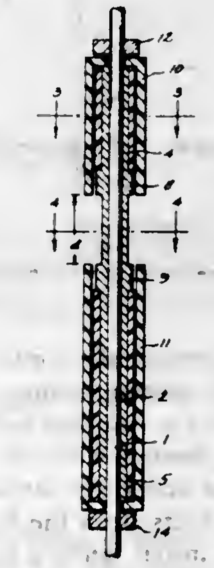
### 3,756,215
### ROTATABLE NOCKING ATTACHMENT

**Richard I. Black, Closter, N.J., assignor to Remington Arms Company, Inc., Bridgeport, Conn.**

**Filed Sept. 7, 1971, Ser. No. 177,960**
**Int. Cl. F41b** *5/00*
U.S. Cl. 124—30 A 7 Claims



A unique nocking device to assist archers in pulling and releasing the bow string of an archery bow. The nocking device has a pair of inner members firmly secured to the bow string, and a pair of outer members rotatable upon the inner members.

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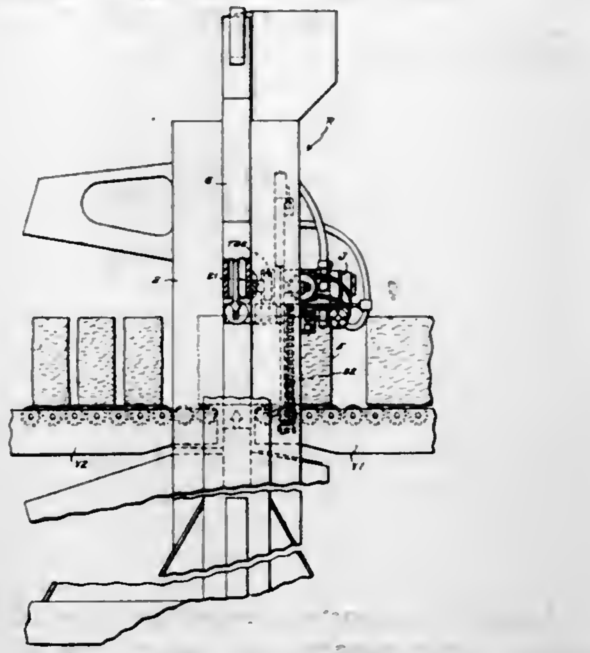
### 3,756,216
### METHOD FOR CUTTING STONE WITH PRESSURE OPERATED MEANS

**Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Weitford, Mass.**

**Filed Apr. 29, 1971, Ser. No. 138,476**
**Int. Cl. B28d** *1/32*
U.S. Cl. 125—23 C 4 Claims



In producing dimension stone, an actuated cutter is progressively directed against a surface of a mineral body to remove material and form a V-shaped indentation which constitutes a rectilinear parting extending inwardly for an appreciable distance along a desired plane of separation. The mineral body is thereafter engaged at points above and below the parting by pressure operated cutting means to form dimension stone pieces. The parting, especially when employed at two opposite sides of the mineral body, controls the cutting action to form the pieces with vertical corners each of whose surfaces intersect the V-shaped indentation to provide arrises which are characterized by sharply defined rectilinearity.

Rectilinear partings at two sides of a mineral body may be formed simultaneously by means of a pair of actuated cutters and cutter supporting structures and the cutters may be moved in reversing paths of travel at opposite sides of a mineral body in opposed synchronized relationship. The actuated cutters and their supporting structures may be combined with the pressure operated cutting means as an integral part thereof or they may be employed independently.

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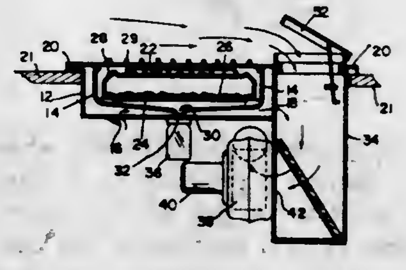
### 3,756,217
### DAMPER FOR VENTILATING AIR FLOW CONTROL FOR INDOOR OPEN-AIR COOKING DEVICE

**Thomas R. Field, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.**

**Filed Nov. 23, 1971, Ser. No. 201,437**
**Int. Cl. F24c** *15/10*
U.S. Cl. 126—37 R 5 Claims



Positionable damper means for directional air flow control over an open cooking surface of a stove or broiler. The damper means is adaptable for positioning to determine air flow velocity and directional entrance into an air exhausting plenum chamber, and is selectively positionable to completely close the entrance to the plenum and thereby prevent back draft of outside air into a room.

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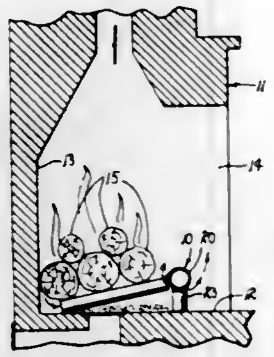
### 3,756,218
### GRATE

**Lee S. Simpson, 440 N. Cornelia, Fresno, Calif.**
**Filed Mar. 15, 1972, Ser. No. 234,801**
**Int. Cl. F23h** *3/02*
**U.S. Cl. 126—121** **1 Claim**



A grate for supporting combustible material during burning having a cross member; legs mounted on the cross member adapted to support the member in elevated, horizontal position; and a plurality of air conduits mounted on the cross member and extended outwardly and downwardly therefrom so as to define a platform for the support of the material which is inclined toward the cross member; each conduit having an entrance remote from the member and an exit adjacent to the member so as to permit air heated by combustion to be drawn upwardly in convection currents through the conduits for discharge against the cross member to cool the grate and to improve combustion by establishing a flow of air about the material.

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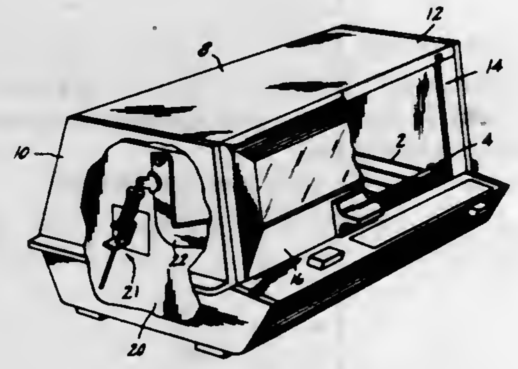
### 3,756,219
### ELECTRIC OVEN TOASTER DOOR MECHANISM

**Paul V. Snyder, Whitehall, and Willard F. Schultz, Bethlehem, both of Pa., assignors to General Electric Company**
**Filed Jan. 19, 1973, Ser. No. 325,104**
**Int. Cl. F24c** *15/04*
**U.S. Cl. 126—191** **10 Claims**



An electric oven toaster construction wherein a unique door holding mechanism is provided for holding a door in its open or closed position. A pair of door arms are pivotally mounted on upper central portions of the oven toaster side walls and an overcenter compression spring assembly is positioned at a generally central portion of one of the side walls between a toaster door arm and the side wall.

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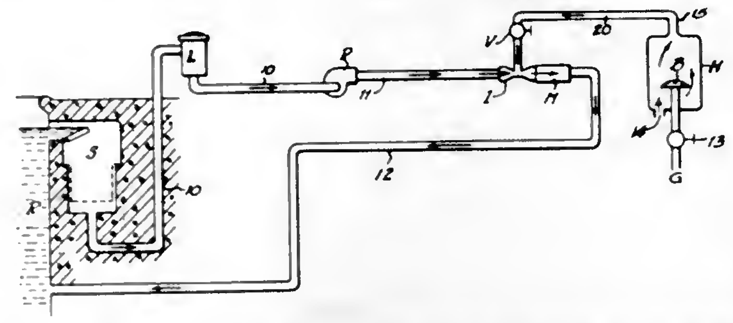
### 3,756,220
### APPARATUS FOR WATER PURIFYING SYSTEM AND HEATER OF INCREASED EFFICIENCY

**Mohammed N. Tehrani; Stratton W. Sundstrum, and Richard A. Honorof, all of 5464 Yarmouth, No. 9, Encino, Calif.**
**Filed Aug. 13, 1971, Ser. No. 171,458**
**Int. Cl. F24h** *1/00*; **E04h** *3/20*
**U.S. Cl. 126—350** **3 Claims**



Controlled injection of combustion products from a gas heater pressurized into a stream of water being circulated in a system such as the purifying circuit of a water reservoir, effects a controlled mild acidifying effect which maintains the water at a selected $P_H$ level for maintaining it in a purified condition, eliminating the need for the acid and reducing the requirement for chlorine additives commonly used in purifying the water of a pool. Application of suction to the heater's combustion chamber above its burner greatly increases heater efficiency.

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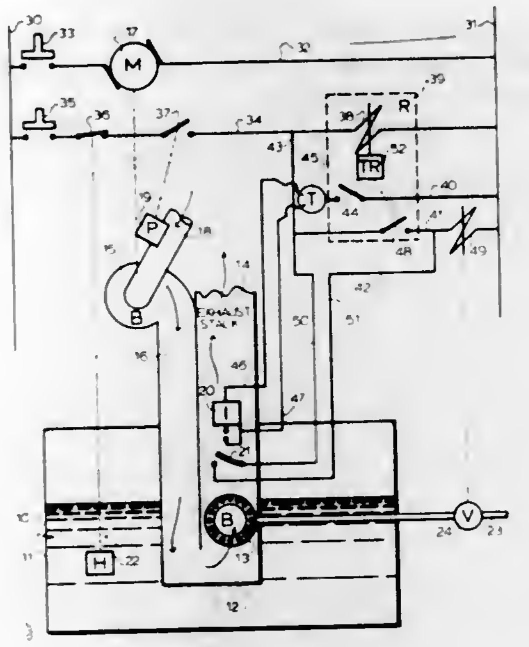
### 3,756,221
### CONTROL APPARATUS FOR GAS BURNERS

**Edward A. Patycola, 22425 Audrey Ave., Warren, Mich.**
**Filed Sept. 14, 1972, Ser. No. 288,898**
**Int. Cl. F24h** *1/24*
**U.S. Cl. 126—360 R** **1 Claim**



An apparatus for automatically controlling the gas burner of an emersion heater by igniting, extinguishing, and re-igniting the flame of a gas burner in response to the temperature of the liquid or mass being heated wherein closing the circuit is rendered subject to the actual operation of a blower exhausting unburned gas products from the heater and wherein the operator controls the initial igniting sequence via a manual switch. Upon the operator closing the manual switch in the control circuit, a relay is energized closing contacts, energizing an igniter and a solenoid gas valve to supply gas and to ignite a flame. A time release head on the relay opens the contacts after a short time period. The operator opens and closes the manual switch until a flame is established leaving the manual switch closed when a flame is established, whereupon a thermocouple in the liquid mass operates the control circuit de-energizing the relay coil allowing it to re-set when the desired temperature is reached and then re-energizing the relay coil to energize the flame igniter and gas valve when heat is to be re-supplied upon the temperature of the mass dropping.

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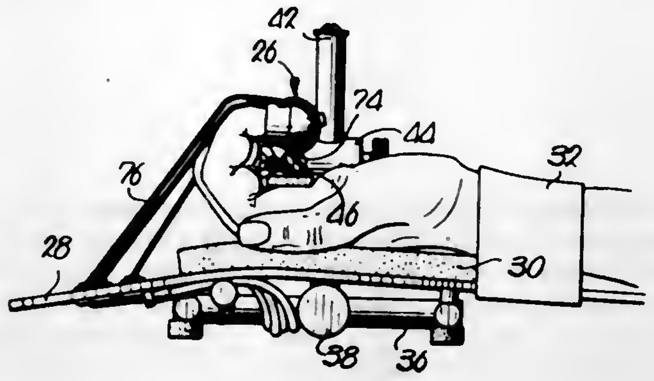
### 3,756,222
### ELECTRICALLY DRIVEN HAND EXERCISER

**Lynn D. Ketchum, Lake Quivera, Kans., assignor to The Kansas University Endowment Association, Lawrence, Kans.**
**Filed Dec. 27, 1971, Ser. No. 212,225**
**Int. Cl. A61h** *1/02*
**U.S. Cl. 128—26** **17 Claims**



A hand splint for exercising the fingers of the hand which splint includes a base for supporting the hand, and a plurality of elements each secured to corresponding fingers and operatively connected with a power source that repetitively shifts the elements in order to exercise the fingers. Power transmitting means, in the form of flexible cords extending from the power source to each of the elements, are coupled to the base in such a manner as to shift the elements along a preselected path between protracted and retracted positions to thereby shift the fingers in a natural motion between an extended position and a position naturally folded toward the palm of the hand.

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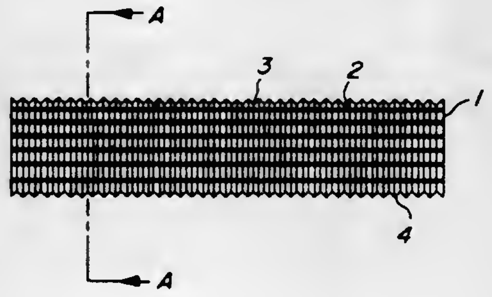
### 3,756,223
### FINGERTIP AND FINGERPAD TOUGHENING AND CALLUSING DEVICE

**Frank J. Carbone, 1014 Columbia St., Utica, N.Y.**
**Filed Mar. 10, 1972, Ser. No. 233,559**
**Int. Cl. A61h** *1/02*
**U.S. Cl. 128—26** **7 Claims**



A fingertip and fingerpad toughening and callusing device is described. The device is a substantially cylindrical element which can be readily positioned in the palm of the hand. Either a portion or all of the surface of the cylindrical element comprises segmented ridges which are pressed and/or rolled upon the fingertip and fingerpad thereby producing a toughening and callusing effect. The device is particularly useful for musicians that play string instruments such as the guitar, mandolin, bass, cello and the like.

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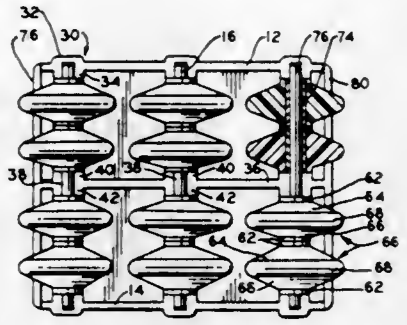
### 3,756,224
### MECHANICAL MUSCLE MASSAGER

**Richard D. Laymon, 1231 Main Ave., Cleveland, Ohio**
**Filed Jan. 17, 1972, Ser. No. 218,221**
**Int. Cl. A61h** *15/00*
**U.S. Cl. 128—57** **6 Claims**



A mechanical muscle massager comprising a molded plastic body having a plurality of rows of roller elements disposed therealong and protruding therefrom for engagement with the area of the human anatomy which is to be massaged. The plastic body includes an integrally molded handle, integrally molded roller element axle retaining means and an integrally molded axle supporting gusset therein. The roller elements themselves are constructed from hard rubber and are rotatably received in a side-by-side relationship on axles which are disposed to extend transversely across the body. The roller elements converge inwardly from the hub portion to a rounded circumferential edge surface so as to prevent the body skin from being pinched between adjacent roller elements.

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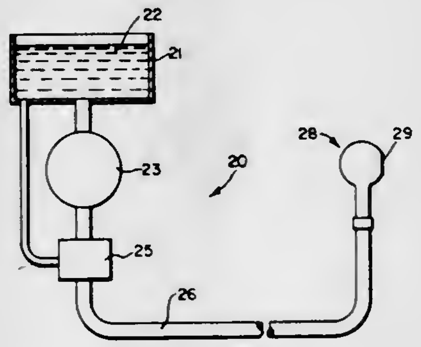
### 3,756,225
### METHOD AND APPARATUS FOR THE PRACTICE OF ORAL HYGIENE USING A PLURALITY OF PULSATED LIQUID JETS

**Michel Antoine Cesar Moret; Manfred Bergman; Pierre Jean Jousson, and Jean Mira, all of Geneva, Switzerland, assignors to Wood Institute for Industrial Research & Distribution, Geneva, Switzerland**
**Continuation of Ser. No. 887,587, Dec. 23, 1969, abandoned.**
**Filed Mar. 9, 1972, Ser. No. 233,312**
**Int. Cl. A61h** *9/00*
**U.S. Cl. 128—66** **27 Claims**



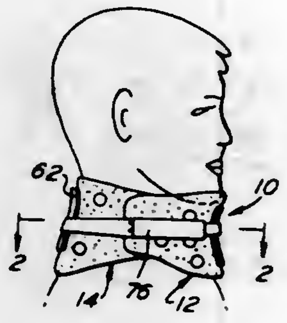
A method and apparatus for providing a heterogenous pulsed jet of liquid for stimulating the gum tissue and cleaning the teeth. A nozzle structure in the disclosed system defines a plurality of openings for projecting the liquid in the desired plural paths. The preferred frequencies, pressure limit, area of openings, and a number of embodiments describing alternative shapes for producing the plural paths of pulsed liquid are disclosed.

### 3,756,226
### CERVICAL COLLAR

**Anthony Calabrese, Philadelphia, Pa., and Frank Gramiglia, Cherry Hill, N.J., assignors to Charles Greiner and Company, Philadelphia, Pa.**

**Filed Dec. 8, 1971, Ser. No. 206,099**
**Int. Cl. A61h** *1/02*

**U.S. Cl. 128—75** **10 Claims**



Orthopedic device of the cervical collar type formed in two halves. Each half is preformed from a soft flexible closed cell polymeric material and adjustably coupled to the other half. Each half has a rigid support member fixedly secured thereto. One of said members is a chin support and the other is a posterior member which is adapted to extend along the spine from the back to the basal portion of the skull.

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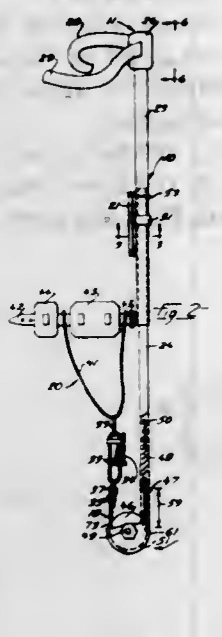
### 3,756,227
### EMERGENCY TRACTION SPLINT

**Joseph A. Sager, 39 Hope St., Chilliwack, British Columbia, Canada**

**Filed Sept. 23, 1971, Ser. No. 183,101**
**Int. Cl. A61f** *5/04*

**U.S. Cl. 128—85** **10 Claims**



Traction splint to maintain alignment of leg with fractured long bone. Splint has telescoping tubes, upper tube having crotch piece to locate end of splint against perineum, and lower tube, slidable within upper tube for splint length adjustment. Harness to fit around ankle of fractured leg is secured to one end of cable, opposite end of cable secured to spring secured to lower tube. Lower tube has pulley at lower end for cable, so as to reverse tension of spring to apply traction to leg. Cable is engaged with pulley so as to prevent slippage and circumferential graduations on pulley read in conjunction with index indicates traction on leg. Stop means limits rotation of pulley above maximum design traction.

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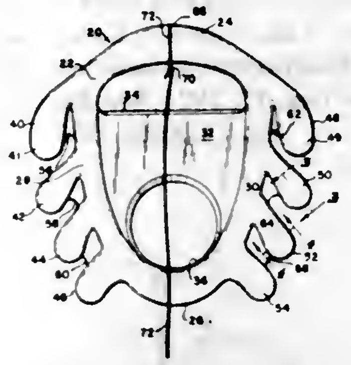
### 3,756,228
### INTRAUTERINE CONTRACEPTIVE DEVICE WITH LARGE APPENDAGES

**Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.**

**Filed June 23, 1971, Ser. No. 155,867**
**Int. Cl. A61f** *5/46*

**U.S. Cl. 128—130** **57 Claims**



An intrauterine contraceptive device made from plastic and having a perimetral ring with or without a central membrane and including wide paddle-shaped retrograde spurs having a tapering cross-section located on each of the outer side portions of the perimetral ring. The spurs preferably have a retrograde inclination and decreasing length from a nose portion of the perimetral ring toward the tail portion, the nose portion being slightly wider than the tail portion providing the IUD with an inverted pear shaped outline when viewed in plan. A marker and extraction string or line is preferably secured at the nose portion but can be secured to the tail portion. Between spurs, thin webs may be utilized to provide increased IUD surface area. The webs may or may not be secured to the spurs and may terminate between or beyond the spurs. Internal of the perimetral ring is preferably a membrane having openings at least adjacent the nose and the tail.

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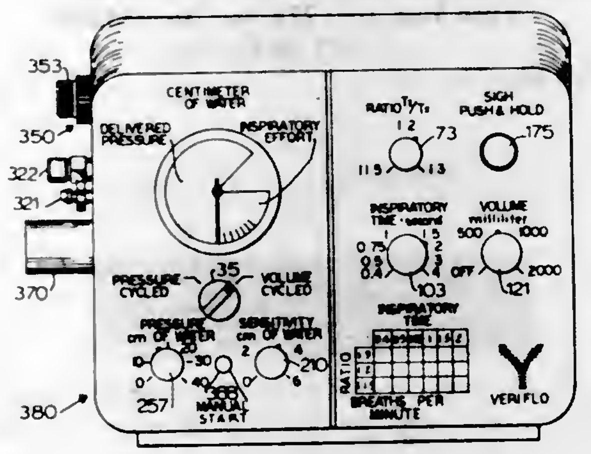
### 3,756,229
### VENTILATOR

**Louis A. Ollivier, Menlo Park, Calif., assignor to Veriflo Corporation, Richmond, Calif.**

**Filed Dec. 14, 1970, Ser. No. 97,933**
**Int. Cl. A61m** *16/00*

**U.S. Cl. 128—145.8** **53 Claims**



A fully pneumatic ventilator capable of both pressure-cycled and volume-cycled operation. A flow controller operates on the basis of a difference between two control pressures, the lesser of which gradually increases during each inspiratory phase of a breathing cycle, to give a flow which starts out at a relatively high rate and is gradually reduced until cut off. In volume-cycled operation, the ventilator employs a cycle generator and a time-volume valve to generate an inspiratory time, a ratio between the expiratory time and the inspiratory time, and to set a volume to be delivered. The time-volume valve enables independent setting of the volume and the inspiratory time. The cycle generator and the time-volume valve supply the flow controller with its control signals, and in turn supplies the patient with the breathing gas. There is a relief valve to avoid exerting too much pressure on the patient's airways, and there is a vacuum relief preventing too great a suction upon them. An override ends an expiratory phase and starts a new inspiratory phase if the patient seeks to initiate inspiration. In the pressure-controlled mode of operation an airway pressure sensor and controller is employed, and the cycle generator and the time portion of the time-volume valve are not used. Various safety features are provided in both modes.

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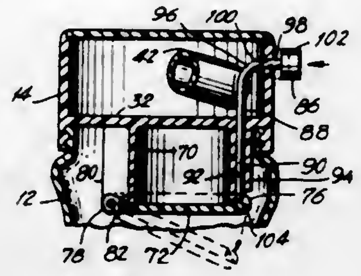
### 3,756,230
### HYGIENIC DOUCHE SYSTEM

**Jerome L. Murray, 652 First Ave., New York, N.Y., and Frances R. Gardiner, 1-09 34 St., Fairlawn, N.J.**

**Filed Nov. 11, 1971, Ser. No. 197,848**
**Int. Cl. A61m** *3/00*

**U.S. Cl. 128—225** **8 Claims**



A hygeinic douche wherein a nozzle adapted for insertion into a vaginal passage and a cooperating fluid holding container are provided. The container includes a separate compartment therein to hold either a tablet or loose powder which is soluble in a fluid such as water and, when dissolved, forms a hygienic douching fluid. The compartment includes a separable lid releasible from outside the container and the tablet or powder includes an ingredient which reacts with water to produce a gas to pressurize the container to eject the hygienic douching fluid through the nozzle. The apparatus is also adaptable to be used with an enema-type nozzle to provide a convenient readily dispensible enema.

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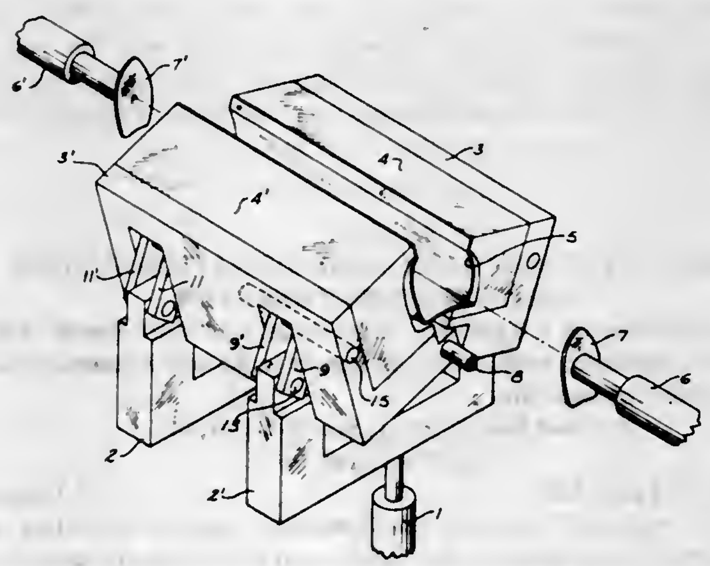
### 3,756,231
### MEAT-FORMING PRESS

**Henry M. Ross, The Lawn, Nokesville, Va.**

**Filed Oct. 18, 1971, Ser. No. 190,090**
**Int. Cl. B30b** *7/04*

**U.S. Cl. 100—232** **6 Claims**



Two pivotally connected clam-shell die supports contain a pair of meat-forming dies which are forced together by the upward movement of a pair of clamp yokes connected to the die supports by toggle links. Opposite ends of the clamped die halves are open to receive fluid pressure actuated rams which complete the compression forming. A die liner separates the lower mating die surfaces from the meat.

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### 3,756,232
### SANITARY NAPKINS DISPOSABLE IN WATER CLOSET BOWL WITH THE USE OF ALKALINE AGENT

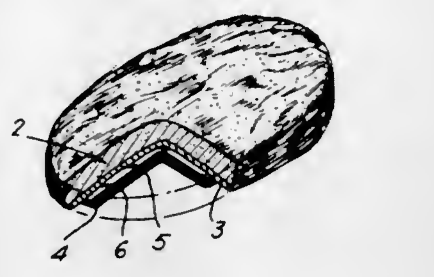
**Koichi Noguchi, 54-6, 1-chome, Yoyogi, and Masao Saburi, both of Tokyo, Japan, assignors to said Noguchi, by said Saburi**

**Filed Nov. 2, 1970, Ser. No. 86,327**

**Claims priority, application Japan, Nov. 12, 1969, 44/90156; Apr. 9, 1970, 45/30618; June 12, 1970, 45/50520**

**Int. Cl. A61f** *13/16*

**U.S. Cl. 128—290 R** **23 Claims**



A water-dispersible sanitary napkin having an absorbent composed of (a) a fibrous pad of short fibers of less than 1 cm of fibrous carboxy methyl cellulose having a degree of etherification of 0.15 – 1.50 and an average degree of polymerization of more than 100 or a mixture of these fibers with up to 70 percent of untreated short fibers and (b) a solid alkaline agent having a pH less than 10 at 0.1 mol concentration or a solid alkali carbonate and a solid acid. The absorbent may also contain up to 30 percent of alkaline carboxy methyl cellulose fibers.

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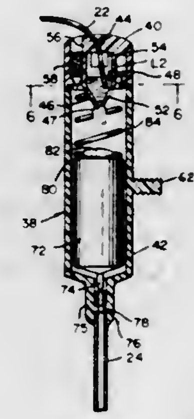
### 3,756,233
### LIQUID ADMINISTRATION APPARATUS

**Michael Goldowsky, 222 Martling Ave., Westchester, N.Y.**

**Continuation-in-part of Ser. No. 85,474, Oct. 30, 1970. This application Mar. 31, 1971, Ser. No. 129,857**

**Int. Cl. A61m** *05/16*

**U.S. Cl. 128—214 C** **8 Claims**



An administration set includes a narrow bore valveless metering tube which leads from a liquid container to a vented drip chamber. From the drip chamber, the liquid discharges through one end of an infusion tube, the opposite end of which is adapted to infuse the reservoir liquid into an independent liquid system, e.g. the circulatory system of a patient. A container access cap having a tubular spout through which the container liquid flows and a vented sump into which the spout leads, maintains the effective elevation of the liquid drawn from the bottle at a substantially constant value. The drip chamber is mounted on a channel for vertical movement with respect to the access cap. One end of the metering tube drains the sump and the other forms the inner wall of a double walled nozzle in the drip chamber. A float is provided as a flow regulator in the chamber to automatically vary a constriction to the liquid access to the infusion tube in response to variations in system back pressure.

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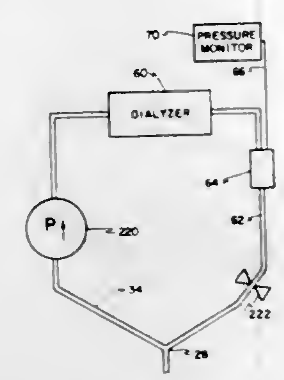
### 3,756,234
### SINGLE NEEDLE DIALYSIS

**Klaus F. Kopp, Salt Lake City, Utah, assignor to Vital Assists, Inc., Salt Lake City, Utah**

**Filed June 4, 1971, Ser. No. 149,905**

**Int. Cl. A61m** *05/00, 01/03*

**U.S. Cl. 128—214 R** **2 Claims**



Method and apparatus for extracorporeally dialyzing the blood of a patient with only a single venipuncture including withdrawing blood from the patient through the venipuncture and forcing the blood along an arterial path to a dialyzer. Blood emerging from the dialyzer is then conducted along a venous path again to the venipuncture. The pressure is monitored in the extracorporeal system to trigger occluding devices which alternately open and close the arterial and venous paths so that undialyzed blood is taken from the patient and dialyzed blood is injected into the patient. The apparatus includes clamps actuated by a pressure monitor to alternately obstruct the arterial and venous paths. A blood pump may be controlled to operate as one of the clamps. In an alternative embodiment, blood is circulated at a comparatively high flow rate throughout the system. A clamp is provided in one of the arterial or venous lines, said clamp being controlled by a pressure monitor. When the clamp is closed, a pressure differential is developed between the extracorporeal system and the patient so that a volume of blood is exchanged between the system and the patient.

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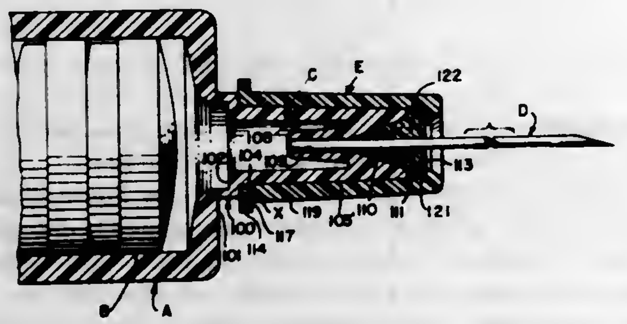
### 3,756,235
### HYPODERMIC SYRINGE BARREL AND NEEDLE STRUCTURE

**George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.**

**Filed Aug. 13, 1971, Ser. No. 171,628**

**Int. Cl. A61m** *5/32*

**U.S. Cl. 128—221** **9 Claims**



A hypodermic syringe barrel and needle structure in which a molded plastic barrel is formed with an integral tubular extension having cannula and bonding material receiving bore surfaces thereon, a separately molded plastic confining cap member having an internal flange at its end is sonically welded or sealed to the extension to form a permanent part thereof, a cannula is disposed within the aperture defined by such flange and with the bore surfaces of the extension and a bonding material composition is set within the bore surfaces and beneath such flange and in intimate bonding engagement with the outer surfaces of the cannula to retain the cannula in fixed position relative to the extension and cap member.

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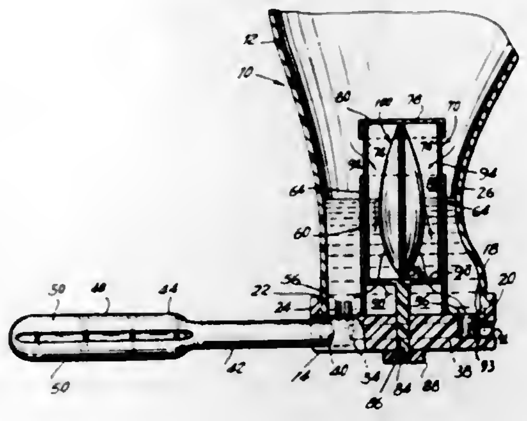
### 3,756,236
### HYGENIC DOUCHE SYSTEM

**Jerome L. Murray, 652 First Ave., New York, N.Y., and Frances R. Gardiner, 43 Park Rd., Sparta, N.J.**

**Continuation-in-part of Ser. No. 197,848, Nov. 11, 1971. This application Mar. 2, 1972, Ser. No. 231,336**

**Int. Cl. A61m** *3/00*

**U.S. Cl. 128—225** **8 Claims**



A hygienic douche apparatus wherein a nozzle adapted for insertion into a vaginal passage and a cooperating fluid holding container are provided. The container includes a separate compartment therein to hold a compound which is soluble in a fluid such as water and, when dissolved, form a hygienic douching fluid. The compound includes an ingredient which reacts with water to evolve a gas to pressurize the container and dispel the hygienic douching fluid through the nozzle. The compartment includes means operable from outside the container to initiate contact between the liquid and the compound. The apparatus is also adaptable to be used with an enema-type nozzle to provide a convenient readily dispensible enema.

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### 3,756,237
### IRRIGATION SOLUTION ADMINISTRATION SYSTEM AND RESERVOIR THEREFOR

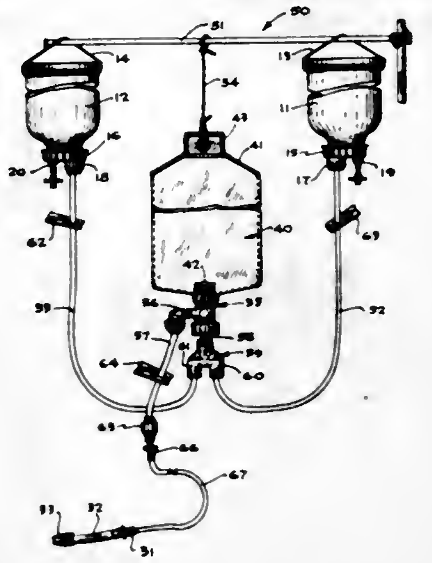
**Richard Marion Chittenden, Grayslake, and Earl David Wilson, Ingleside, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.**

**Filed May 5, 1971, Ser. No. 140,407**

**Int. Cl. A61m** *3/00*

**U.S. Cl. 128—227** **1 Claim**

An irrigating solution administration system including a reservoir positioned for parallel flow of fluid from the solution container and the reservoir to the instrument being used is provided. The reservoir is placed in-line with the tubing connecting the solution container and instrument by means of a “Y” type connector, for example. The reservoir assists in maintaining a constant pressure head, particularly when the reservoir comprises a flexible pouch, and increases the flow rate of fluid to the instrument.



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### 3,756,238
### SELF-LUBRICATING COMPOUND FOR USE IN HYGIENIC AND MEDICAL APPLICATIONS, AND COATED TAMPONS AND SUPPOSITORIES MADE THEREFROM

**David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.**

**Filed Mar. 24, 1971, Ser. No. 127,818**

**Int. Cl. A61f** *13/20*

**U.S. Cl. 128—270** **14 Claims**

A self-lubricating compound especially suitable for hygienic and medical applications, such as for coating tampons and as suppository structures. The compound contains a thermoplastic film-forming water-soluble polymer, a compatible plasticizer for the polymer, and a lubricant. The lubricant is characterized by the ability to form a homogeneous blend, an intimate physical mixture, or a solution with the polymer at elevated temperatures when the blend or solution is in a fluid state while being incompatible therewith at lower temperature when the blend solidifies. In the solidified state of the compound the lubricant may exist as discrete globules dispersed throughout the compound, and the globules which are disposed on and close to the exposed surface of the solidified blend tend to merge whereby a lubricous film is provided on that surface. The compound is thermoplastic and may be cast, thermoformed, hot melt dip-coated, or transfer molded.

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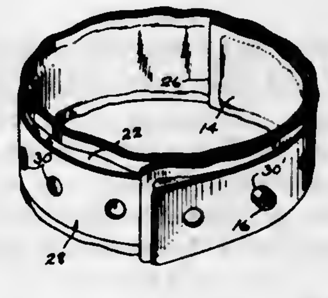
### 3,756,239
### INFLATABLE TOURNIQUET

**J. Walter Smythe, Mentone, Ind., assignor to Orthopedic Equipment Company, Inc., Bourbon, Ind.**

**Filed Apr. 20, 1971, Ser. No. 135,583**

**Int. Cl. A61b** *17/12*

**U.S. Cl. 128—327** **2 Claims**



An inflatable tourniquet including an elongated flexible tube which encircles a limb of a patient and which has an inlet opening therein for the introduction of fluid into the tube to cause its inflation. The inlet opening in the tube is defined by a fitting which protrudes radially outwardly from the limb-encircling tube. A flexible retaining strap having a plurality of longitudinally spaced holes therethrough is provided. The strap extends around the limb, overlapping the limb-encircling tube, and is secured about the tube by having the fitting projecting through selected holes in the strap so that upon inflation of the tube the strap will remain securely wrapped about the limb.

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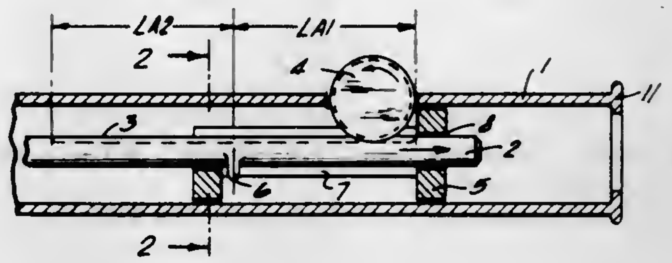
### 3,756,240
### MEDICAL APPARATUS FOR INSERTION OF MEDICATIONS AND/OR HYGIENIC PREPARATIONS INTO BODY OPENINGS AND/OR CAVITIES

**Robert Fuchslocher, Schwanthalerstrasse 21, 8 Munich 15, and Herman R. Worch, Pottensteinerstrasse 16, 85 Nurnberg 33, both of Germany**

**Filed July 22, 1971, Ser. No. 165,147**

**Int. Cl. A61m** *3/00*

**U.S. Cl. 128—236** **11 Claims**



This invention provides a medical apparatus for inserting medications and/or hygienic preparations into body openings and/or cavities without use of an additional hand or fingers. The appparatus comprises: (a) a hollow cylindrical handle having a first longitudinal section positioned toward its front end and a second longitudinal section adjacent to the first section and positioned toward its back end; (b) a replaceable tubular insertion nozzle inserted in the front end of the hollow handle, the nozzle being adapted to have medications placed in its front end, said tubular nozzle having a stop ledge at its rear end and a central opening surrounded by an annular stop ledge and a ram positioned in its rear portion with the front end of the ram in the center opening and adhering to the annular ledge, said ram having a sealing plate on its rear end; (c) a piston slidably mounted in a longitudinal guide within the hollow cylindrical handle in which the guide is longitudinally displaceable, the upper side of the piston being formed as a rack and said piston having a collar arranged to engage with the opposite ends of the guide to limit the movement of the piston relative to the guide; and (d) a knurled wheel rotatably mounted in the hollow handle with a portion thereof extended outside of the hollow handle, the wheel being arranged to engage with the upper side of the piston whereby the counterclockwise rotation of the knurled wheel pushes the piston forward past the first longitudinal section against the sealing plate of the ram to move the ram forward through the center opening and the plate forward in adherence to the annular ledge, thereby pushing out the medication from the front end of the insertion nozzle.

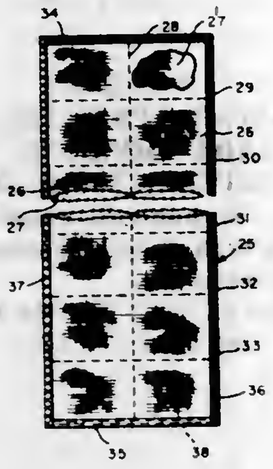
### 3,756,241
### RADIOPAQUE ABDOMINAL PACK

**Donald Patience, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.**

**Filed June 19, 1972, Ser. No. 264,367**

**Int. Cl. A61f** *13/00*

**U.S. Cl. 128—296** **2 Claims**



A radiopaque abdominal pack is formed by interweaving occasional warp or filling yarns, or both, in a multilayered open mesh fabric and sealing at least one of the cut edges of the fabric with a soft, flexible polymeric sealant containing a radiopaque substance such as barium sulfate.

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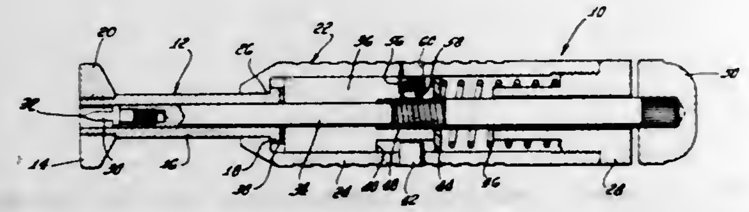
### 3,756,242
### MECHANICAL SCARIFIER

**Ronald G. Cess, Santa Ana, Calif., assignor to Micro Motors, Inc., Santa Ana, Calif.**

**Filed Jan. 4, 1972, Ser. No. 215,327**

**Int. Cl. A61b** *17/32*

**U.S. Cl. 128—333** **4 Claims**



A mechanical scarifier for the controlled abrading of the skin of a patient in allergy testing, for example. The device comprises a guard terminating in an annular end face seatable against a skin surface to be abraded, a rotary blade within the guard and terminating in a scarifying edge adjacent and within the lateral confines of the end face and adapted to abrade the skin surface against which the end face of the guard is seated, means for adjusting the position of the scarifying edge of the blade relative to the end face of the guard in the axial direction, and cam means for rotating the blade about the axis of the end face of the guard in response to axial movement of a housing reciprocable relative to the guard, such rotation of the blade resulting in the desired abrasion of the skin surface.

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### 3,756,243
### FLOW CONTROL SYSTEM FOR PHYSIOLOGICAL DRAINAGE

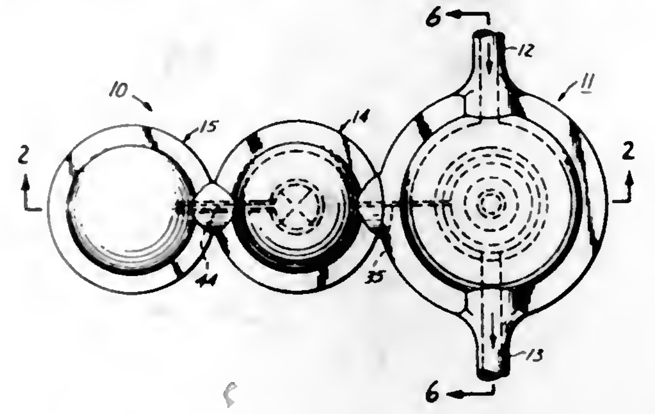
**Rudolf R. Schulte, 5377 Overpass Rd., Santa Barbara, Calif.**

**Filed Sept. 23, 1971, Ser. No. 183,047**

**Int. Cl. A61m** *27/00*

**U.S. Cl. 128—350 V** **27 Claims**

A flow control system for the positive control of drainage of fluid from a region of the body to be drained to a drainage site at another location. It provides means for the controlled positive shut-off of said drainage. The system includes a flow valve having an internal flow cavity with an inlet and an outlet. A partition divides the cavity into a pair of chambers, the inlet and outlet opening into different respective ones of the chambers. A port is formed in the partition, and a fluid actuated valving member is adapted to open and to close the port. A reservoir has a plenum chamber defined by a bounding wall portion which is movable to change the volume of the plenum chamber. A manually actuable control valve which has an open condition and a closed condition interconnects the plenum chamber of the reservoir to motive means for moving the valving member for opening and closing the flow valve.



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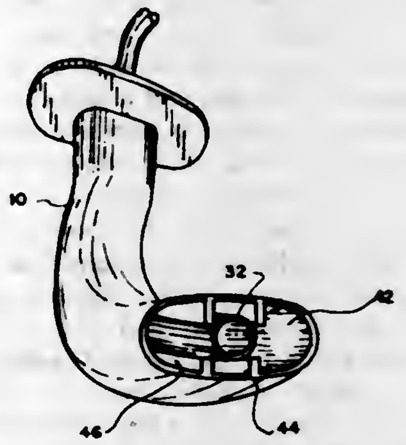
### 3,756,244
### BREATHING AID

**John M. Kinnear, Walnut, and Harold R. Havstad, Lakewood, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.**

**Filed June 10, 1971, Ser. No. 151,780**

**Int. Cl. A61m** *16/00;* **F16l** *55/00, 9/18*

**U.S. Cl. 128—351** **7 Claims**



An improved breathing aid device comprises an elongated arched conduit portion and a hollow neck portion extending from one end of the conduit portion and a flange portion located at the end of the neck portion opposite the conduit portion. The device includes a plurality of parallel ribs extending lengthwise within the interior of the conduit portion providing a plurality of channels for guiding a catheter inserted into the device.

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### 3,756,245
### HEARTBEAT STIMULATING APPARATUS INCLUDING MEANS FOR CALIBRATING ITS POWER SUPPLY

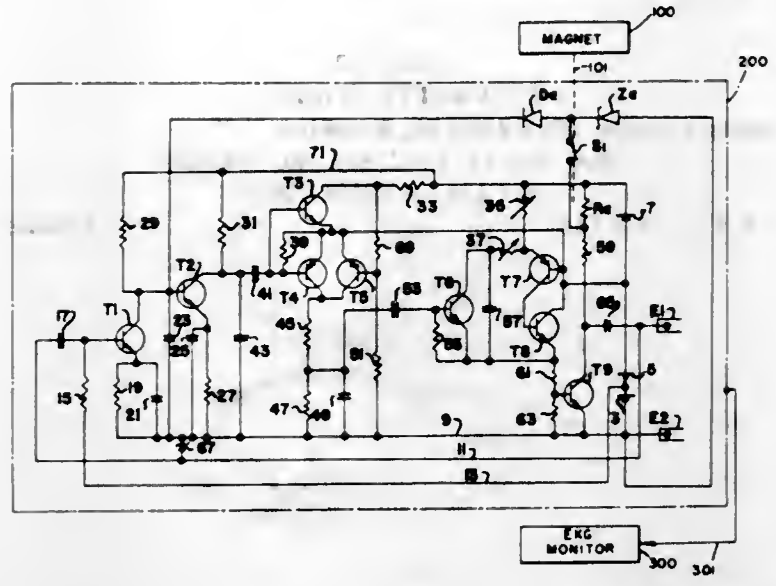
**Sherwood S. Thaler, Lexington, and Richard F. Daynard, Chelmsford, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Division of Ser. No. 162,834, July 15, 1971. This application May 15, 1972, Ser. No. 253,270**

**Int. Cl. A61n** *1/36*

**U.S. Cl. 128—419 P** **2 Claims**

Apparatus for externally calibrating an implanted energy source used for powering an electronic device implanted within a patient. The apparatus includes test circuitry and an externally operated control for engaging the test circuitry with the device. Variations in output of the device when operated in a testmode versus a normal operating mode are externally measured and are used to calibrate the energy source. A typical device which can be used with the present invention is an implantable pacer which is described in an illustrative embodiment of the invention.



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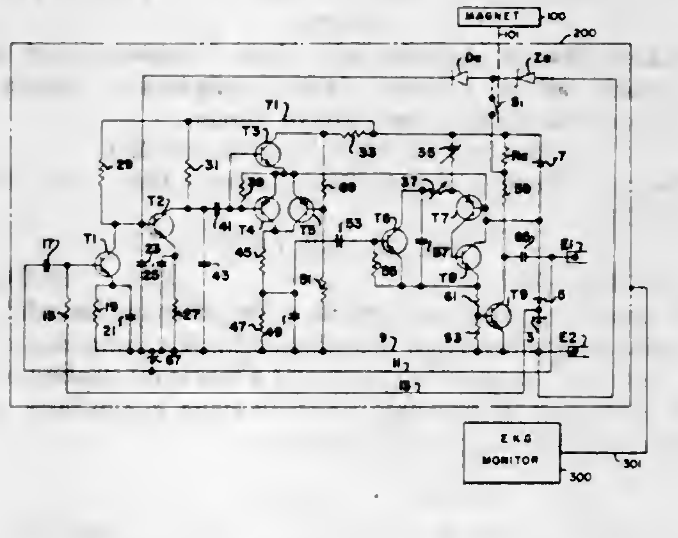
### 3,756,246
### APPARATUS FOR EXTERNALLY DETERMINING ACTUAL OUTPUT OF AN IMPLANTED ENERGY SOURCE

**Sherwood S. Thaler, Lexington, and Richard F. Daynard, Chelmsford, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed July 15, 1971, Ser. No. 162,834**

**Int. Cl. A61b** *5/05*

**U.S. Cl. 128—419 R** **7 Claims**



Apparatus for externally determining actual output of an implanted energy source used for powering an electronic device implanted within a patient. The apparatus includes test circuitry and an externally operated control for engaging the test circuitry with the device. Variations in output of the device when operated in a testmode versus a normal operating mode are externally measured and are used to calculate or measure output of the energy source. A typical device which can be used with the present invention is an implantable pacer which is described in an illustrative embodiment of the invention.

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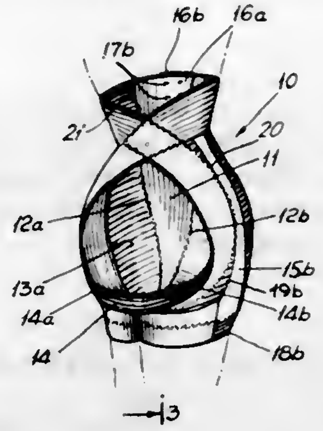
### 3,756,247
### OPEN-ENDED GIRDLE

**Hi Hand, 16456 Sloan Dr., Los Angeles, Calif.**

**Filed June 16, 1972, Ser. No. 263,414**

**Int. Cl. A41c** *1/00*

**U.S. Cl. 128—518** **4 Claims**



A girdle having an opening at the rear thereof through which the buttocks of a wearer will protrude and an elastic band adapted to engage the wearer's body beneath the buttocks to give an uplift thereto, together with a means for adjusting the degree of uplift achieved by the elastic band.

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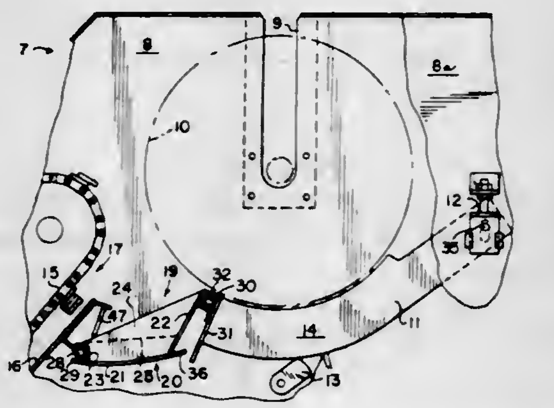
### 3,756,248
### ROCK TRAP FOR COMBINES

**Bernard C. Mathews, P. O. Box 70, Crystal Lake, Ill.**

**Filed Apr. 10, 1972, Ser. No. 242,530**

**Int. Cl. A01f** *12/26*

**U.S. Cl. 130—27 JT** **11 Claims**



A rock trap, located between the feeder and the adjustable concave, is in the form of a transversely slidably mounted tray. The casing has an access door through which the tray can be slid out, the rocks removed, and the tray returned to its operative position. The tongue and groove mounting means permit the tray to be removed, inverted, reversed and returned so that the bottom of the tray serves as a guide plate extending from the feeder to the concave. In either position, one edge of the tray structure is supported from the concave so as to provide a flush entry onto the concave in any one of its adjusted positions.

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### 3,756,249
### SMOKABLE ARTICLE HAVING INTERNAL AIR PASSAGEWAY

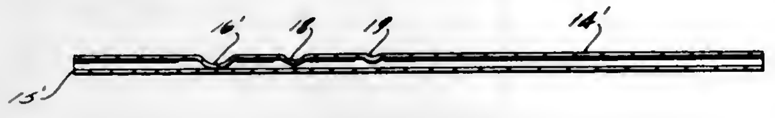
**William A. Selke, Stockbridge, Mass., and Russell J. Kulick, Glasgow, Scotland, assignors to Kimberly-Clark Corporation**

**Filed Sept. 23, 1971, Ser. No. 182,956**

**Int. Cl. A24d** *01/00;* **A24f** *13/04*

**U.S. Cl. 131—9** **7 Claims**

A smokable article, such as a cigarette, in which the wrapper surrounds both a mass of tobacco filler and a longitudinally extending tube, the latter serving as a passageway for air during smoking. The tube preferably extends for the full length of the smokable article, but air flow through it is obstructed during the initial burning of the article. The tube may be provided along its length with two or more partial obstructions to air flow, the air flow permitted by each obstruction being greater the farther it is from the burning end of the article. Preferably, the tube is formed of combustible material, such as reconstituted tobacco.



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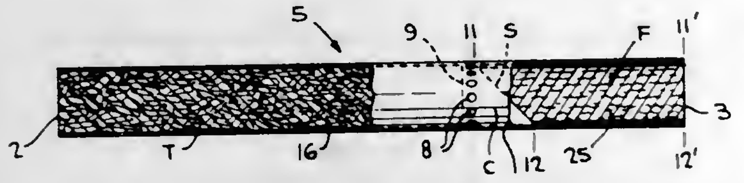
### 3,756,250

### FILTERED CIGARETTES

**David Morgenstern, Tel-Aviv, Israel**
**Filed June 30, 1972, Ser. No. 267,975**
**Int. Cl. A24c** *5/50*
**U.S. Cl. 131—10.3** **2 Claims**



A filtered cigarette in which the inner end of the filter is tapered so that there is a variable drawing resistance along different longitudinal planes of the filter and in which the space between the tobacco and the inner end of the filter provides a chamber in which the tobacco smoke may be cooled; additionally, there is a relatively even draw resistance throughout the entire smoking cycle.

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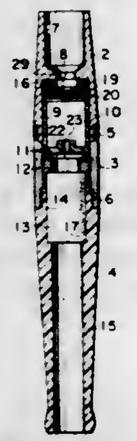
### 3,756,251

### CIGARETTE HOLDER WITH TAR COLLECTING MEANS

**Katsuhisa Terasaki, No. 43 Okimiya-cho, Edogawa-ku, Tokyo 133, Japan**
**Filed Apr. 3, 1972, Ser. No. 240,509**
**Claims priority, application Japan, Jan. 26, 1972, 47/9065**
**Int. Cl. A24f** *13/04*
**U.S. Cl. 131—187** **6 Claims**



A cigarette holder equipped with a tar collecting filter of a cartridge type removably mounted therein, said filter comprises a vessel formed with a smoke inlet passage at one end thereof and a smoke outlet passage at the other end thereof, said smoke inlet passage comprising a first passage portion for leading a smoke stream toward an inner side wall of said vessel substantially perpendicularly thereto so as to have the smoke stream impinge onto said inner side wall and a second passage portion of a substantially same cross sectional area as said first passage portion and communicating with said first passage portion and adapted to lead the smoke stream over said inner side wall toward a body portion of said vessel while exerting an action of transferring tar caught on said inner side wall toward the body portion of said vessel.

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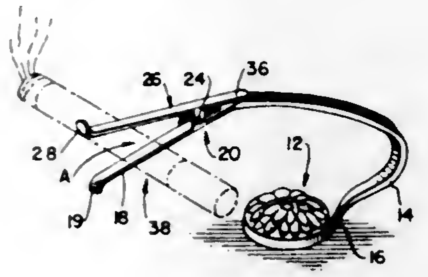
### 3,756,252

### CIGARETTE HOLDER

**Benito Vigorito, 2318 82nd St., Brooklyn, N.Y.**
**Filed May 18, 1972, Ser. No. 254,368**
**Int. Cl. A24f** *19/14, 13/18*
**U.S. Cl. 131—256** **2 Claims**



A cigarette holder having a base retaining a magnet element and an upstanding stem portion which cooperates with a pivotally mounted and spring-urged clamp. At least the stem and clamp being formed of metal to extinguish the cigarette when the burning end approaches the position of engagement with the clamp. The stem has a forward end that is positioned above the base in cantilevered fashion and extends in a generally horizontal direction beyond the confines of the base, terminates in a downwardly directed lip and has a pair of upstanding ears rearward of the lip and extends upwardly at least the distance of the diameter of a cigarette, said clamp has an upturned lip at the forward end thereof and a pair of depending ears mating with the ears on the stem, a pivot pin extending through said ears and a coil spring surrounding the pin and urging the forward end of the clamp into engagement with the forward end of the stem.

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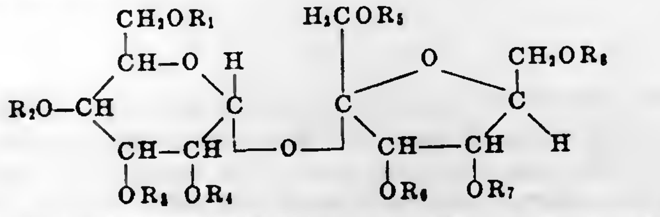
### 3,756,253

### CELLULOSE ACETATE FIBER TOBACCO SMOKE FILTER AND PROCESS OF MANUFACTURING THE SAME

**Masakazu Honda; Atsushi Saito; Sota Miyazawa, and Keiji Kawabe, all of Toyama, Japan, assignors to Mitsubishi Acetate Company Limited, Tokyo, Japan**
**Filed Dec. 17, 1971, Ser. No. 209,434**
**Claims priority, application Japan, Dec. 18, 1970, 45/113215**
**Int. Cl. A24b** *15/02*
**U.S. Cl. 131—267** **10 Claims**

A tobacco smoke filter effective for removing harmful and irritating substances from the tobacco smoke comprises a rod-like cellulose acetate fiber mass and a lubricant applied to the fiber mass and comprising a polyalkylene glycol-fatty acid-succharose ester ether of the formula:

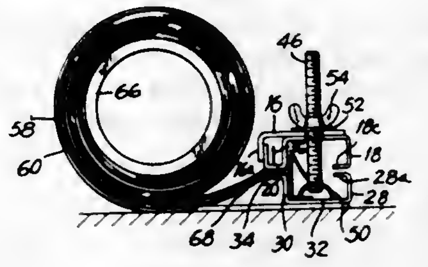


wherein one of $R_1$ to $R_8$ is a polyalkylene glycol ether residue, at least one other is an acyl group having two to 19 carbon atoms and all the remainder are a hydrogen atom, and a polyglycerol-fatty acid ester in which the polyglycerol group has a degree of polymerization of two to three and the fatty acid has 12 to 22 carbon atoms, and, if desired, an edible mineral oil.

### 3,756,254

### PRE-CURLED WIG AND METHOD

**Sture Ostenssen, North Miami, Fla., assignor to Fashion Tress, Inc., Hialeah, Fla.**
**Filed Aug. 25, 1971, Ser. No. 174,703**
**Int. Cl. A41g** *3/00*
**U.S. Cl. 132—5** **4 Claims**



A curling tool is disclosed as including a curling mechanism and apparatus. The apparatus includes a hinged member and an anchor member, hingedly attached to each other so that the hinged member overlies the anchor member when a wig hair and wefting is inserted to the apparatus. The hinged member clamps the hair and wefting in a horizontal plane with the hinged member overlying the anchor member. Means are also included to prevent lateral movement of the hair and wefting. Clamping means extend from the anchor member through a slot in a hinged member to hold the apparatus in the overlying relationship. A reverse curl is thereby emparted to the wig hair to prevent curl separation and to avoid the necessity for teasing after setting the wig.

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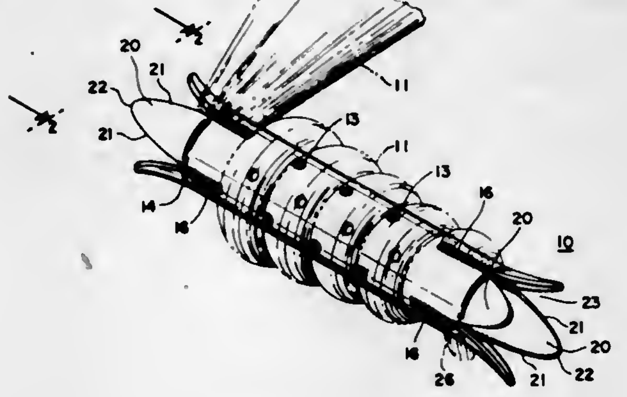
### 3,756,255

### HAIR CURLER

**Nathan L. Solomon, Cedar Ln., Englewood, N.J.**
**Filed Sept. 27, 1971, Ser. No. 170,211**
**Int. Cl. A45d** *2/16*
**U.S. Cl. 132—40** **10 Claims**



A non-electric hair curler is of tubular shape and is formed of a resilient synthetic organic polymeric resin. Four longitudinal slots are arranged in quadrature at each end of the curler, each slot including an inner section with parallel serrated rib reinforced edges and an outer section with outwardly diverging edges. The outer adjacent edges of adjacent slots converge to delineate tapered fingers, the fingers at each end of the curler flaring outwardly and being resilient.

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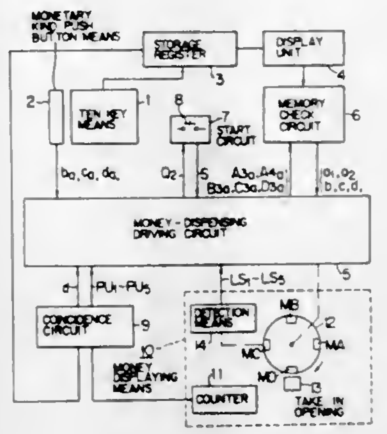
### 3,756,256

### AUTOMATIC MONEY DISPENSING MACHINE

**Yoshihiro Hatanaka; Hideto Shigemori, and Hisashi Kitagami, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Japan**
**Filed Dec. 29, 1971, Ser. No. 213,401**
**Claims priority, application Japan, Dec. 29, 1970, 45/121648; Sept. 30, 1971, 46/75863**
**Int. Cl. G07d** *1/00*
**U.S. Cl. 133—4** **3 Claims**



Disclosed herein is a driving system adapted to dispense money having a function of dispensing money separately according to monetary kinds and another function of dispensing money in a plurality of monetary kinds with a minimum number of sheets thereof (that is, a function of dispensing money with a minimum number os sheets) and which comprises a money dispensing driving circuit, in which said functions are switched over by depressing only a 10-key means or by depressing both the ten-key means and a monetary kind push button. Furthermore disclosed herein is a money selection control device of an automatic money dispensing device, in which money in monetary kinds corresponding to set-inputs applied to a dispensing money storage section is steadily and successively selected and dispensed in accordance with a predetermined order, the driving operation being achieved by depressing a money dispensing start push button only once.

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### 3,756,257

### ACRYLIC COMPOSITION FOR WATER TREATMENT AND PROCESS FOR MAKING SAME

**Herbert L. Rice; Arthur Cizek, and Marvin O. Thaemar, all of Houston, Tex., assignors to Magna Corporation, Santa Fe Springs, Calif.**
**Filed Oct. 4, 1971, Ser. No. 186,474**
**Int. Cl. C23g** *1/02*
**U.S. Cl. 134—3** **10 Claims**

This invention relates to an acrylic composition; a process for obtaining the acrylic composition; to the use of such composition to remove and/or inhibit scale formation in water treatment apparatuses, oil and gas wells, producing formations, and other scale-containing or -attracting surfaces. Said novel composition is formed from about 80 to 90 parts by weight acrylic acid, about 7 to 15 parts by weight thioglycolic acid, and about 1.5 to 5 parts by weight ammonium persulfate.

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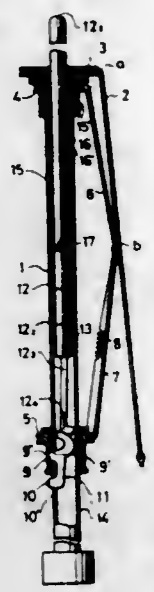
### 3,756,258

### SELF-OPENING AND SELF-CLOSING UMBRELLA

**Shinichiro Yoshihara, Omiya, Japan, assignor to Moon Bat Kabushiki Kaisha, Kyoto-City and Kabushiki Kaisha Takehara Seisakusho, Saitama Prefecture, Japan**
**Filed Jan. 17, 1972, Ser. No. 218,423**
**Claims priority, application Japan, Sept. 8, 1971, 46/69821**
**Int. Cl. A45b** *25/16*
**U.S. Cl. 135—22** **2 Claims**

Self-opening and self-closing umbrella which has a hollow stick, a top hub member secured to the top of the stick to pivotally support a plurality of main ribs, a lower hub member slidably mounted on the stick, an intermediate hub member slidably mounted on the stick between the top hub member and the lower hub member, a plurality of auxiliary ribs each pivotally engaged at one end to the intermediate hub member and at the other end to the intermediate portions of the main ribs, a plurality of stays each pivotally engaged at one end to the intermadiate portions of the main ribs together with the auxiliary ribs and at the other end to the lower hub member, a resilient engaging member having an engaging projection and a laterally-projecting stud integrally formed thereto for engaging the lower hub member upon closing of the umbrella, an operating lever movably inserted into the stick so that the top thereof projects when the umbrella is closed from the intermediate hub member, a coil spring disposed in the stick secured at one end to the intermediate hub member and at the other end to a predetermined portion of an operating lever so that when the top of the operating lever is depressed into the stick, the lower end of the operating lever is removably engaged to the lower end of the stick wherein the length of the coil spring upon opening of the umbrella is equal or longer than that of the umbrella upon closing of the umbrella, and a plurality of springs each secured at one end to the pivotal points of the auxiliary ribs and stays and at the other end to the lower hub member for providing an opening force of the main ribs.



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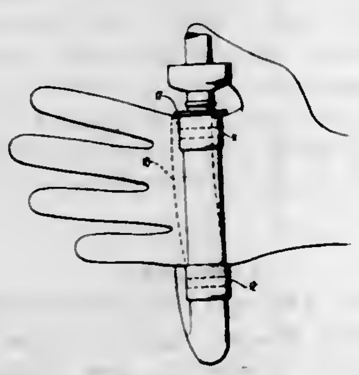
### 3,756,259
### UMBRELLA HANDLE ATTACHMENT

**William H. Beehler, 205 W. Lombard St., Baltimore, Md.**
**Filed Nov. 26, 1971, Ser. No. 202,158**
**Int. Cl. A45b** *1/00*
**U.S. Cl. 135—47** **3 Claims**



The present umbrella handle attachment is designed especially to simplify and improve the postman's work of "fingering" the mail during house to house delivery especially in inclement weather when an open umbrella is needed to protect the mail as well as the postman but without the trouble and care usually required for such accomplishment thereby rendering his fingers free when required to sort and thus finger the mail which otherwise would require the work of three hands instead of two at such times, especially when gloves are required during cold and wet weather. Under such requirements the umbrella handle attachment is both removable and reversible for enlargement as well as like automatic adjustment by the weight of the umbrella through that range.

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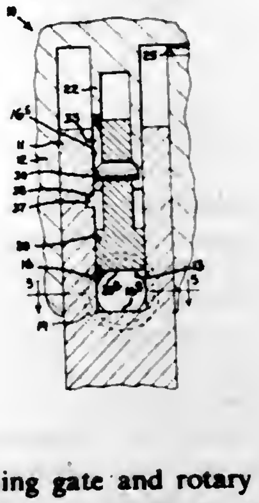
### 3,756,260
### VALVES

**John V. Fredd, 9910 Harwich, Dallas, and Jack. W. Tamplen, Rt. 2, Celina, both of Tex.**
**Filed Feb. 8, 1971, Ser. No. 113,652**
**Int. Cl. F16k** *25/00*
**U.S. Cl. 137—1** **4 Claims**



Valves of the sliding gate and rotary plug types having a body with inlet and outlet ports, an apertured closure assembly controlling flow therethrough including a primary closure member and a secondary closure member, and a soft seal means surrounding at least one of said ports and sealing between the body and the closure assembly, said secondary closure member co-acting with said primary closure to close said aperture means of said closure assembly prior to movement of said aperture means past said seal means to maintain effectiveness of said seal means between the body and closure assembly. Single and multiple port sliding gate valves and cylindrical, tapered, and ball type plug valves provided with such closure assemblies are disclosed.

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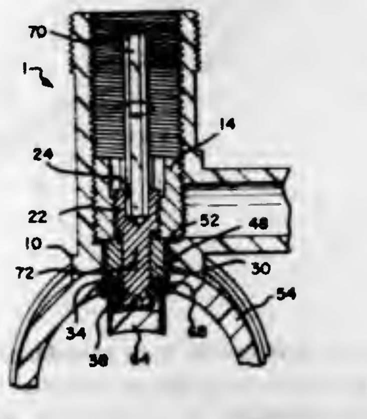
### 3,756,261
### METHOD AND APPARATUS FOR CONNECTING A TAP TO A PIPELINE

**Paul Joseph Minchhoff, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Filed Nov. 16, 1971, Ser. No. 199,120**
**Int. Cl. B23b** *41/08;* **F16e** *41/04*
**U.S. Cl. 137—15** **3 Claims**



According to the invention a fitting having an outlet passageway is initially located on a pipeline to be tapped. The fitting includes a cylindrical cutting blade and an expandable sealing wafer internally of a radially expandable tubular insert. The cutting blade, sealing wafer and insert are threadably advanced internally of the fitting, causing the cutting blade to remove a coupon portion from the pipeline and provide an aperture through the pipeline sidewall. The tubular insert and sealing wafer are partially inserted into the pipeline, with the wafer being expanded to radially expand the tubular insert into sealing engagement within the pipeline sidewall. When the coupon portion, cutter blade and sealing wafer are removed from the pipeline, the pipeline interior will communicate with the fitting through the tubular insert which operatively couples the fitting to the pipeline. Additionally, an interference fit of the tubular insert within the pipeline sidewall and a portion of the fitting which encircles the pipeline aperture assures a positive pressuretight seal encircling the tubular insert.

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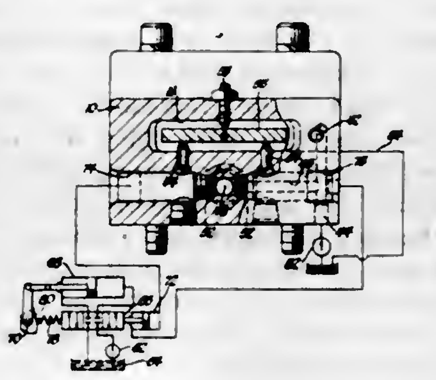
### 3,756,262
### POWER TRANSMISSION

**William J. Morrow, Troy, and James M. Davenport, Sterling Heights, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.**
**Filed Apr. 9, 1971, Ser. No. 132,855**
**Int. Cl. G05d** *1/08*
**U.S. Cl. 137—38** **6 Claims**



A rate gyroscope generates pressure signals in a hydraulic circuit proportional to the rate of turn of the support on which the gyroscope is mounted; for example, a ship having roll stabilization fins. The gyroscope cage is connected to a flapper controlling the escape of fluid from a pair of nozzles, the connection being through a torsionally resilient member which gives a natural frequency of vibration of the flapper many times the highest oscillation rate of the ship or other base for the gyroscope. The gyroscope cage is unrestrained by centering springs or the like, and precession away from a neutral position is resisted solely by the jet reaction forces at the flapper valve. The device is entirely fluid operated, both for rotor spin and for precession read-out.

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### 3,756,263
**Patent Not Issued For This Number**

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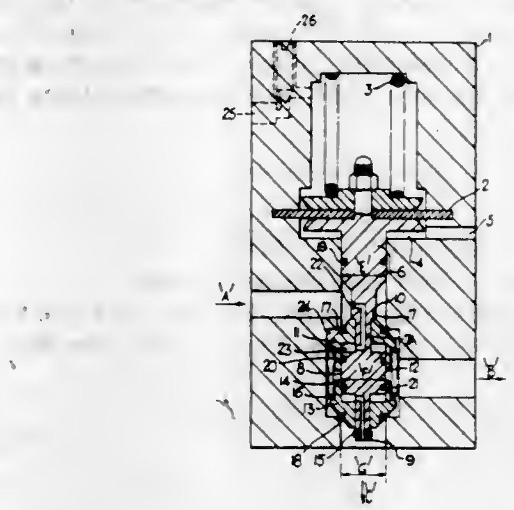
### 3,756,264
### PRESSURE CONTROL DEVICES FOR FLUID FLOW SYSTEMS

**Alan Arthur Fisher, Hounslow, England, assignor to I. V. Pressure Controllers Limited, Middlesex, England**
**Filed July 30, 1971, Ser. No. 167,744**
**Int. Cl. G05d** *16/06*
**U.S. Cl. 137—116.3** **6 Claims**

A pressure reducing and relief valve assembly comprising a pressure balanced valve member movable to control fluid flow from an inlet to an outlet of the assembly, control means responsive to pressure at the outlet side of the assembly to allow or cause the valve member to close at a preselected pressure, and a relief valve operated by said control means so as to normally remain closed but to open when the outlet pressure exceeds said preselected pressure, to allow escape of the excess outlet pressure.



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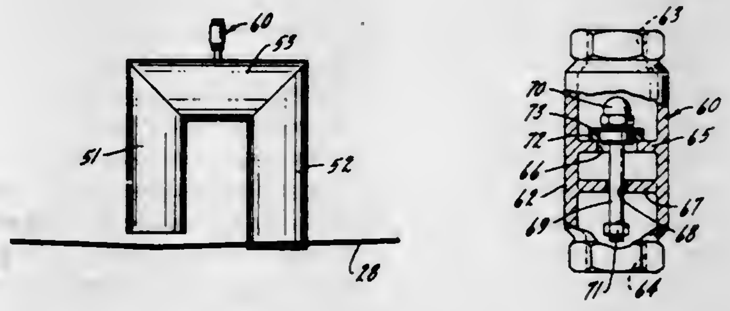
### 3,756,265
### FLOATING ROOF DRAIN

**Robert B. Wagoner, Griffith, Ind., and John S. Kinghorn, Houston, Tex., assignors to Aerojet-General Corporation, Elmont, Calif.**
**Division of Ser. No. 15,112, Feb. 27, 1970. This application Apr. 23, 1971, Ser. No. 137,007**
**Int. Cl. F16l** *43/00*
**U.S. Cl. 137—143** **2 Claims**



A self-actuating drain for a floating roof storage tank, adapted to drain excess liquid from above a sunken floating roof to below the floating roof. The siphon drain comprises a generally inverted U-shaped pipe having first and second upstanding leg portions connected together at the respective upper ends by a connecting portion with the bottom end of the second leg portion extending below the floating roof and the bottom end of the first leg portion being positioned above the floating roof. A check valve means is attached to the connecting portion between the two leg portions to allow air to escape from the inverted U-shaped pipe.

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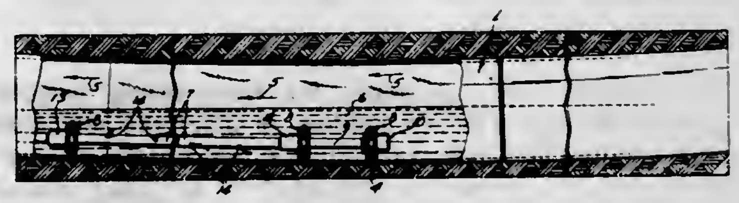
### 3,756,266
### REMOVAL OF LIQUID FROM PIPE CARRYING GAS

**Ernest Artz, West Chester, Pa., assignor to SunOlin Chemical Company, Claymont, Del.**
**Filed Feb. 8, 1972, Ser. No. 224,536**
**Int. Cl. F16t** *1/00*
**U.S. Cl. 137—203** **5 Claims**



Extraneous liquid which accumulates as a body at the low point of a large-diameter pipeline carrying gas under pressure is removed by utilizing the gas pressure to force the liquid out through a small-diameter line which is sealed through the wall of the large line and whose bore communicates with the interior of the large line at such low point. The small line is preferably positioned inside the large line, and means is provided for inserting the small line into an existing large line, from one end thereof.

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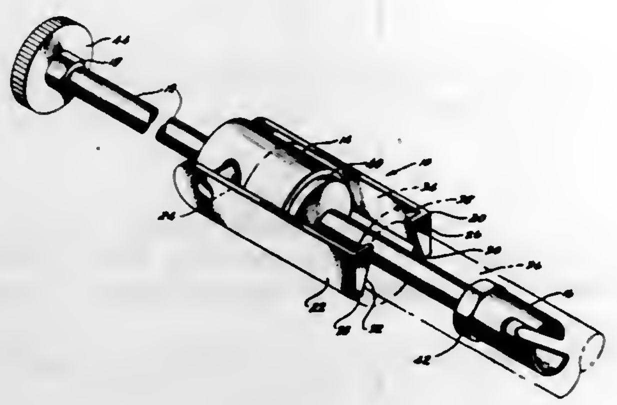
### 3,756,267
### SERVICE TAP TOOL

**Walter C. Hutton, P.O. Box 158, Hesperia, Calif.**
**Continuation-in-part of Ser. No. 84,784, Oct. 28, 1970, Pat. No. 3,646,954. This application Mar. 3, 1972, Ser. No. 231,481**
**Int. Cl. F16k** *43/00*
**U.S. Cl. 137—318** **13 Claims**



A boring bar for making a hot tap in a plastic main and locking arms for securing the device behind the shoulder of a coupling are coordinated so that the boring bar can only move longitudinally when the locking arms are in position behind the coupling and the locking arms cannot be rotated from their locked position unless the boring bar is in a predetermined longitudinal position. The body is adapted to be received in the bore of a coupling and to seal the bore with an O-ring. Air admitted through the body forces the locking arms into tight engagement with the shoulder of the coupling by forcing the body and its carried locking arms longitudinally in a direction away from the shoulder. A hot tap is made by a shell cutter on the boring bar.

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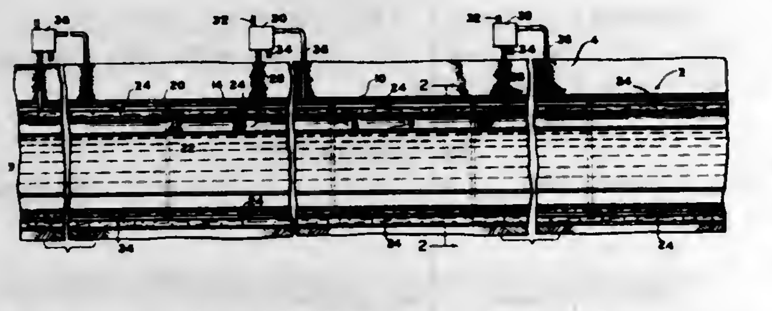
### 3,756,268
### METHOD AND APPARATUS FOR TRANSPORTING PETROLEUM PRODUCTS THROUGH A FROZEN MEDIUM

**Kenneth W. Lefever, Waterford, Va., and Ronald J. Campbell, 4-A Bartlett Dr., Woburn, Mass.**
**Continuation-in-part of Ser. No. 124,065, March 15, 1971. This application Apr. 16, 1971, Ser. No. 134,819**
**Int. Cl. F16l** *53/00*
**U.S. Cl. 137—340** **18 Claims**



A method and apparatus for transmitting petroleum products through a frozen medium, in which the petroleum is pumped at an elevated temperature through an inner conduit, the inner conduit being surrounded by an outer coaxially-disposed annular conduit spaced from the inner conduit and containing a refrigerant medium. The refrigerant medium takes up heat from the petroleum products to protect the frozen medium, and a heat pipe and heat exchanger are connected with the annular conduit to maintain the stability of the refrigerant medium as it takes up heat. The system associated with the refrigerant medium is also useful to effectively transport cryogenic materials.

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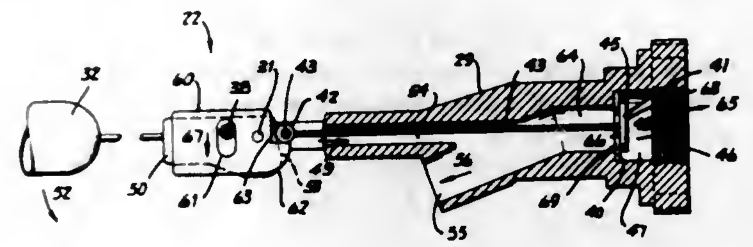
### 3,756,269
### MAXIMUM LIQUID LEVEL CONTROL VALVE

**Harley Brown, R.R. 6, Box 150, Bedford, Ind.**
**Continuation-in-part of Ser. No. 55,430, July 16, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,563**
**Int. Cl. F16k** *33/00*
**U.S. Cl. 137—446** **5 Claims**



A valve for automatically preventing the addition of liquid to a tank beyond a predetermined maximum level. A float is pivotably hinged to a hollow valve body mounted to the tank wall. In one embodiment, a pair of cams are actuated by the float forcing a stem to cause a flap valve to open or close. The first cam closes the flap valve when the liquid reaches a predetermined level thereby preventing additional liquid from entering the tank. The second cam opens the flap valve when the liquid is below a predetermined level. In another embodiment, a lever arm movable by the float is pivotally engageable with links connected to a stem having a valve mounted thereon. A counterweight is attached to the float thereby balancing the float in the liquid..

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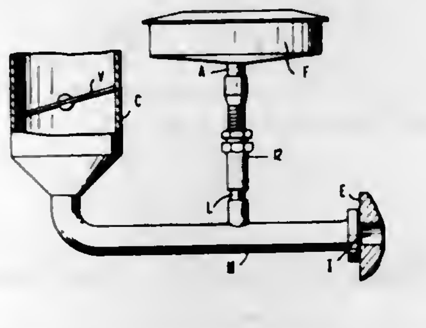
### 3,756,270
### AUXILIARY ANTI POLLUTION AIR INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINES

**Marco A. Fonseca; Enrique T. Gibbon, and Jose J. Gonzalez, all of Mexico City, Mexico, assignors to Monocar HC Internacional S.A., Edo de Mexico, Mexico**
**Continuation-in-part of Ser. No. 7,682, Feb. 2, 1970, abandoned. This application Apr. 25, 1972, Ser. No. 247,375**
**Int. Cl. F02d** *9/00*; **F02m** *23/00*
**U.S. Cl. 137—480** **13 Claims**



A fuel economizer device for diminishing pollution exhaust gases discharged by non-supercharged gasoline powered internal combustion engines, includes two basic members having aligned air passageways therethrough and adjustably connected at their adjoining ends, one of said members having an intake opening in its free end portion and with its passageway including adjacent frusto-conical divergent and convergent portions defining a valve chamber of diamond configuration in longitudinal section, and having a seating surface at the juncture of said passageway with said divergent portion, and the other member having an outlet in its free end portion and connectable to the air/fuel intake system of an engine. A valve body is position in said valve chamber and is suspended between first and second springs which extend in opposite directions into the air passageways. The spring biasing the valve body toward seating has a stiffness exceeding that of the other spring, whereby the valve body normally is seated to close the passageway. Increases of vacuum at the intake system of the engine, due, for example, to unloading of the engine, displaces the valve body from its seat to provide an annular air passage around said valve body of increasing cross-section in accordance with valve body displacement. A smoothly increasing amount of auxiliary air flow is thereby provided to the engine intake in proportion to vacuum at the engine intake. Adjustment of the members relative to each other varies spring pressure to regulate valve body displacement in accordance with particular engine requirements so that the device is adaptable to a wide variety of engines.

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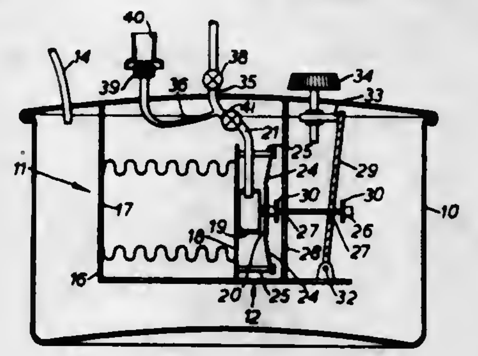
### 3,756,271
### APPARATUS FOR DELIVERING A PREDETERMINED VOLUME OF FLUID AT REGULAR INTERVALS

**Alan Walter Grogono, London, and Maurice Frederick Freeman, Oxford, both of England, assignors to H. G. East Company Limited, Oxford, England**
**Filed July 22, 1971, Ser. No. 165,103**
**Claims priority, application Great Britain, July 23, 1970, 35,667/70**
**Int. Cl. A62b** *7/00*; **A61m** *15/00*
**U.S. Cl. 137—494** **13 Claims**



Fluid delivery apparatus for intermittently delivering a selected volume of fluid in which a resilient device is compressible by pressure of the fluid in a pressure chamber, a valve mounted on the resilient device being opened to deliver the fluid when a predetermined degree of compression has been achieved and being subsequently closed when the falling pressure in the pressure chamber permits a predetermined expansion.

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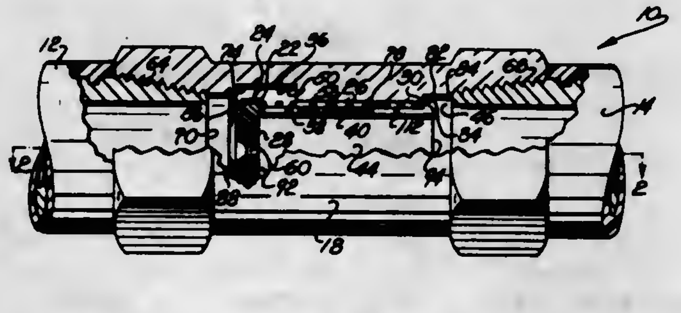
### 3,756,272
### FUSE ASSEMBLY

**Harry H. Hammond, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio**
**Filed Feb. 17, 1972, Ser. No. 227,154**
**Int. Cl. F16k** *31/363*
**U.S. Cl. 137—498** **11 Claims**



An improved fuse assembly is used in association with a fluid conduit to prevent excessive fluid flow through the conduit. The fuse assembly includes a body having an inlet connected with an upstream fluid conduit and an outlet connected with a downstream fluid conduit. If the downstream fluid conduit should rupture or the associated equipment malfunction so that there is a large pressure differential across the fuse assembly, a valve in the fuse assembly will move to a closed position blocking fluid flow through the fuse body. A bleed passage is provided through the valve to enable fluid to flow from the upstream side of the valve to the downstream side at a slow rate when the valve is closed to enable the valve to automatically open when the malfunction which tended to cause the excessive fluid flow has been corrected.

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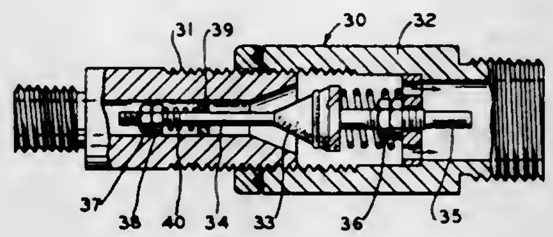
### 3,756,273
### VALVE

**Robert W. Hengesbach, 7886 Munson Rd., Mentor, Ohio**
**Filed Nov. 22, 1971, Ser. No. 200,896**
**Int. Cl. F16k** *15/02*
**U.S. Cl. 137—540** **13 Claims**



The valve plug has an axially tapering peripheral wall with a groove therein. An O-ring is disposed in the groove and extends radially outwardly beyond the peripheral wall. The body has an annular seating wall which tapers in the same direction as the plug. In the closed position, the O-ring is compressed between the seating wall and plug sufficiently to provide a tight seal while constraining the wall of the plug and the seating wall from seating engagement so that precise finish of the walls is unnecessary. The plug is supported for axial movement toward and away from the seating wall and for floating slightly radially so that precise fitting and alignment of the plug and seating wall are unnecessary for effective closure.

The valve is adjustable to change the rate of flow and delivered pressure by exterior manipulation of the body, or by adjustment means within the body.

A resilient coating of TEFLON or silicone is provided on the walls. The plug may be radially expansible by the pressure of fluid at its larger end.

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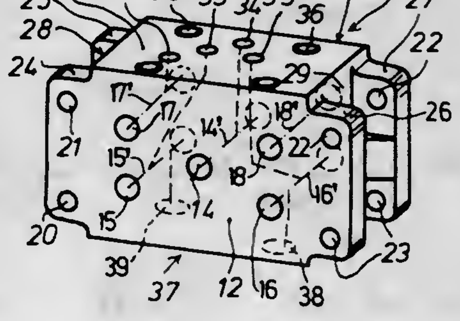
### 3,756,274
### CONNECTION ELEMENT FOR CONSTRUCTION OF A BASE PLATE FOR HYDRAULIC DEVICES

**Hans-Jurgen Wolfgramm, Nellingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**
**Filed Apr. 13, 1972, Ser. No. 243,782**
**Claims priority, application Germany, Apr. 21, 1971, P 21 19 224.5**
**Int. Cl. F15c** *4/00*
**U.S. Cl. 137—561 R** **5 Claims**



A substantially prism-shaped connection element for construction of a base plate for pressure fluid devices such as valves, in which the element is formed with a plurality of channels and bores therethrough so that the valves carried by the base plate may be connected to supply of pressure fluid and to external utilization circuits without the use of piping. The channels and bores in each connecting element are arranged in such a manner that a plurality of connection elements may be connected into a base plate with the channels in the plurality of connecting elements communicating with each other while each of said connection elements may be arranged in a selected one of a plurality of positions to permit a maximum number of different base plates to be assembled from a minimum number of different elements.

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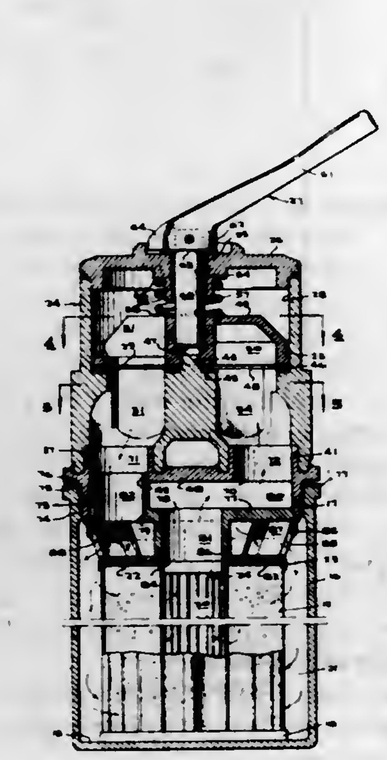
### 3,756,275
### ADAPTER FOR A VALVE AND TANK ASSEMBLY

**Salvatore E. Barrera, Berwick, Pa., assignor to Wilkes Pool Corporation, Berwick, Pa.**

**Filed Jan. 26, 1972, Ser. No. 220,834**

**Int. Cl. F16k** *55/00*

**U.S. Cl. 137—590** **5 Claims**



An adaptor for a valve and container generally including a housing consisting of a mounting section on which a valve may be mounted, threadedly connectable to a threaded opening of a container, a partition section secured to the mounting section to provide an outer housing chamber and a diffuser section secured to the partition section within the container to provide an inner housing chamber, the mounting and diffuser sections having ports communicable with ports of the valve and chambers of the container, respectively, means intercommunicating one of the ports of the mounting section and the inner housing chamber, and means intercommunicating one of the ports of the diffuser section with the outer housing chamber.

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### 3,756,276
### MIXING VALVE FOR COLD AND HOT WATER

**Kunto Ilmari Katva, Funen, Denmark, assignor to Broen Armatur A/S, Funen, Denmark**

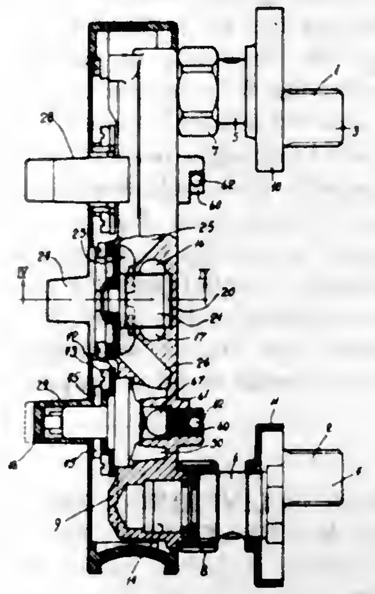
**Filed Nov. 29, 1971, Ser. No. 202,910**

**Claims priority, application Denmark, Nov. 30, 1970, 6098/70**

**Int. Cl. F16k** *19/00*

**U.S. Cl. 137—597** **1 Claim**

In a mixing valve for hot and cold water two separate off-on valves are arranged at the downstream side of a device mixing the hot and the cold water, one of the valves controls a duct through which mixed water is supplied to a shower connection and the other valve controls a duct through which mixed water is supplied to a spout for filling a wash basin or a tub.



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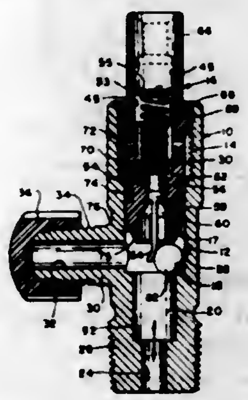
### 3,756,277
### SINGLE CYCLE FILLER AND DISPENSING VALVE

**Harry N. Shaw, Chicago, Ill., assignor to Golconda Corporation, Chicago, Ill.**

**Filed Dec. 1, 1971, Ser. No. 203,745**

**Int. Cl. E03d** *1/36*

**U.S. Cl. 137—614.2** **14 Claims**



An originally open filler valve is converted after a filling operation to a dual valve operation when first closed and includes a shut-off outflow dispensing valve and a shifted ball inflow check valve, the activation of the in-flow check valve occurring with the first closing of the valve to prevent contamination of any products in the container or the container itself when empty. The dual action valve is a permanently assembled unit that reveals tampering and is resettable for a filling operation only after detectable removal from the container.

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### 3,756,278
### CONTROL SLIDE VALVE FOR A HYDRAULIC SERVO MOTOR

**Knut Olav, 6000 Alesund, Norway, assignor to A. M. Liaaen A/S. Alesund, Norway**

**Filed Mar. 14, 1972, Ser. No. 234,562**

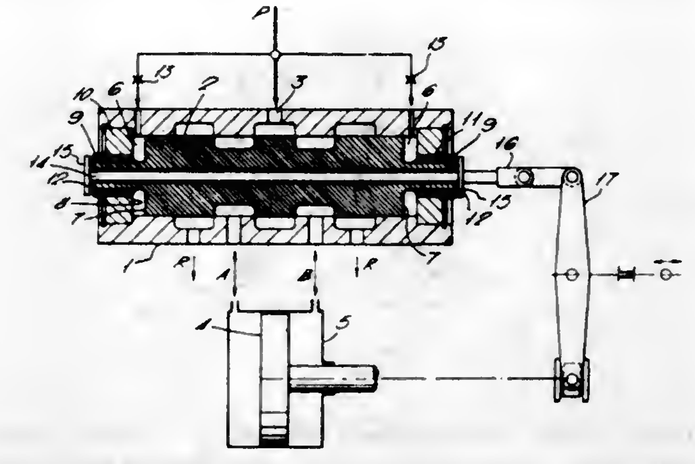
**Claims priority, application Norway, Mar. 16, 1971, 991/71**

**Int. Cl. F16k** *11/07*

**U.S. Cl. 137—625.63** **6 Claims**

A slide valve for the control of a hydraulic servo motor comprising a casing housing a slide member and providing at each end of the slide member a pressure chamber communicating, at one side with a pressure medium source and at the other with open air. The communication between each of the pressure chambers and the open air is effected through passages or bores extending longitudinally of axial extensions

at each end of the slide member and is governed at the free ends of the slide member by members extending axially from a rod member which may be caused from the outside to move axially of the slide member.



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### 3,756,279
### VALVE PLATE BODY FOR AXIAL PISTON DEVICE

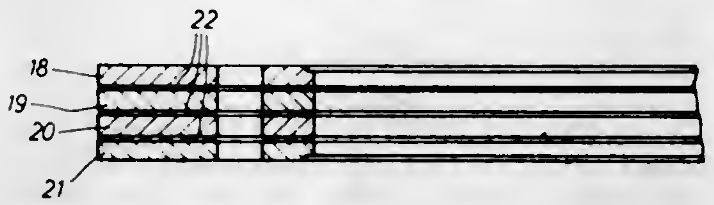
**Dieter Widmaier, Fellbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Dec. 24, 1970, Ser. No. 101,367**

**Claims priority, application Germany, July 11, 1970, P 20 34 501.1**

**Int. Cl. F16k** *11/02*

**U.S. Cl. 137—625.21** **13 Claims**



Valve plate body for axial piston device, comprising at least two superimposed rigid discs, each having valve openings, and one layer of resilient material between each adjacent pair of superimposed rigid discs, said layer of resilient material being thinner than each of said rigid discs and at least surrounding said valve openings.

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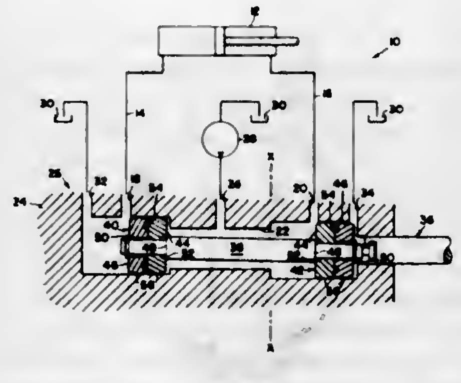
### 3,756,280
### SPOOL VALVE LANDS HAVING SPHERICALLY-CURVED SEALING SURFACES

**Donald James Parquet, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Aug. 19, 1971, Ser. No. 173,098**

**Int. Cl. F16k** *11/60*

**U.S. Cl. 137—625.25** **7 Claims**



A valve spool comprises a stem on which one or more balls or central segments of balls are mounted to form lands having spherical sealing surfaces to accommodate the valve spools to valve bores having portions slightly axially misaligned. Selected balls or ball segments are mounted on the stem for limited radial movement to enhance accommodation to the misaligned bore portions.

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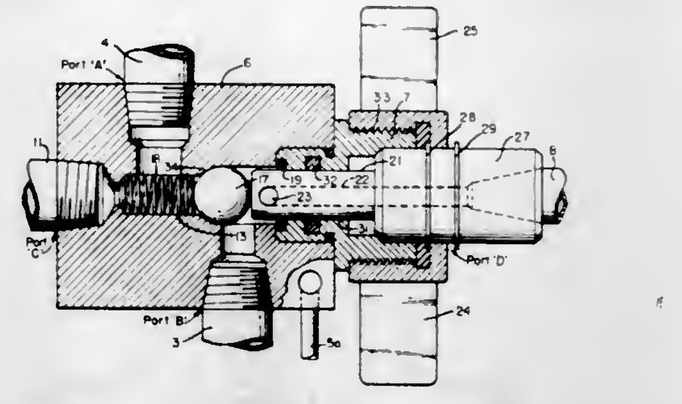
### 3,756,281
### EMERGENCY HAND PUMP CONNECTION FOR HYDRAULICALLY OPERATED VALVES

**William H. Gravert, Port Washington, N.Y., assignor to Marine Moisture Control Company, Inc., Inwood, L.I., N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,108**

**Int. Cl. F16k** *11/02*

**U.S. Cl. 137—625.48** **2 Claims**



The building of large super tankers for the transportation of liquid cargoes has made it necessary to use hydraulically operated valves to handle the cargo. Hydraulic oil, under pressure, needed to power the valves, is run to each valve using small diameter piping. In times of emergency, when the hydraulic tubing is damaged, a portable hand pump, complete with its oil reservoir, is provided. The pump is carried as close to the hydraulically operated valve as possible and suitable connections must be made to direct the hydraulic oil pressure generated in the emergency hand pump to the valve actuator. A fitting or connection is disclosed herein by means of which the hand pump can be connected to the desired hydraulically operated valve, and which automatically shuts off at least the up-stream side of the hydraulic line so that the hand pump now can manually operate the valve independently of the damaged hydraulic pressure system, until repairs can be made.

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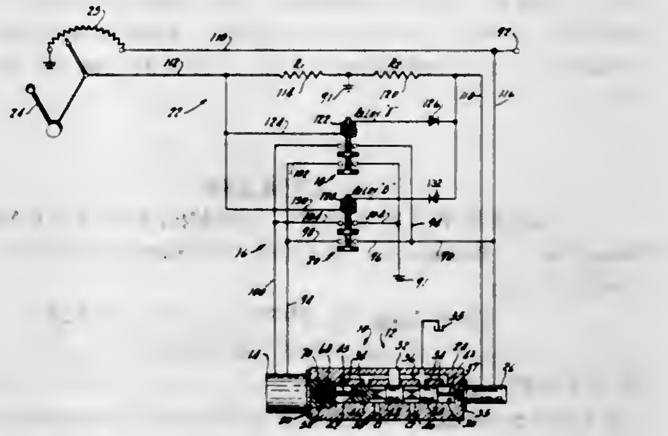
### 3,756,282
### ELECTRIC MOTOR CONTROLLED FLUID VALVE

**Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.**

**Filed May 30, 1972, Ser. No. 257,968**

**Int. Cl. F16k** *11/00*

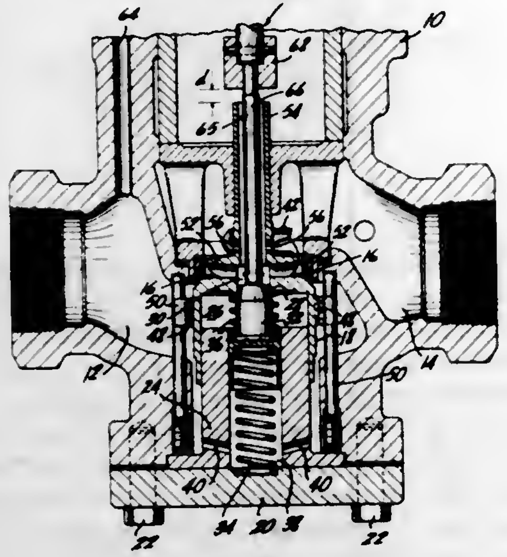
**U.S. Cl. 137—625.64** **15 Claims**



An electric motor controlled hydraulic or pneumatic valve including a valve housing having a main spool positioned to control the flow of fluid from a pressure port to a fluid circuit, the spool including a threaded bore at one end, a high speed low torque reversible electric motor mounted on said housing and being connected to the spool by a threaded rod to provide high torque output to the spool and an electric control circuit including a bridge circuit having a manually controlled variable resistance, a feed back variable resistance mechanically connected to the spool, and a pair of solid state switches or relay circuits connected across the bridge circuit to provide an electric signal to the electric motor in response to movement of the manually controlled variable resistance.

### 3,756,283
### FLUID DYNAMICALLY BALANCED VALVE

**Henry W. Angelery, 19 Gwynne Ct., Closter, N.J.**
**Filed Aug. 30, 1971, Ser. No. 175,943**
**Int. Cl. E03b** *11/00*
**U.S. Cl. 137—630.15** **7 Claims**

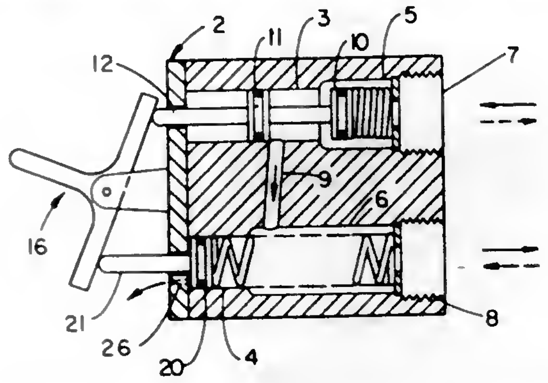


The housing of a reduction valve includes an input chamber, an output chamber, and a main valve seat located therebetween which is engaged, when the valve is closed, by a main piston. The interior of the main piston defines a control chamber into which fluid from the input chamber can flow at a limited but substantial rate. An inner valve seat is formed in the top of the main piston which defines an opening leading from the control chamber to the output chamber. An inner piston is adapted to engage the inner valve seat, thus sealing the control chamber against the output chamber when the valve is closed. A lower chamber into which fluid can flow freely from the input chamber is located beneath the control chamber. A vane structure atop the main piston provides an upward force in response to fluid flow across the main valve seat.

### 3,756,284
### THREE-WAY, SELF-CLOSING VALVE UNIT

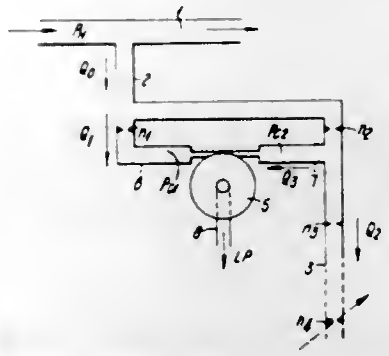
**Theodore R. Breunich, c/o UOP Instruments Division, Greenwich, Conn.**
**Filed Aug. 28, 1970, Ser. No. 67,728**
**Int. Cl. F16k** *11/10*
**U.S. Cl. 137—636** **8 Claims**

A lever operated, three-way valve unit provides for movable piston-like valve members in each of a pair of parallel fluid passageways which are, in turn, connected by an internal transverse passageway. A pivotally mounted valve operating member engages valve stems from the internal valve members such that air flow can be permitted into one passageway and out of the other or, alternatively, there can be an exhaust of air from one of the passageways and from the means connective with such passageway. A preferred unit provides spring biasing to have the valve members retained in normally closed mid-positions, with no air flow into or out from the valve body.



### 3,756,285
### FLUID FLOW CONTROL APPARATUS

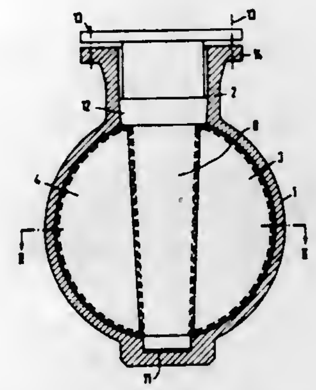
**Christopher Linley Johnson, Burton-on-Trent, and Hugh Francis Cantwell, Littleover, both of England, assignors to The Secretary of State for Defence, London, England**
**Filed Oct. 14, 1971, Ser. No. 189,235**
**Claims priority, application Great Britain, Oct. 22, 1970, 50,185/70**
**Int. Cl. F15c** *1/16*
**U.S. Cl. 137—810** **10 Claims**



A fluid flow apparatus which will permit a varying quantity of fluid to be bled from a main fluid supply without substantially affecting the rate of flow of the main fluid supply.

### 3,756,286
### DEVICE FOR BLOCKING A CONDUIT

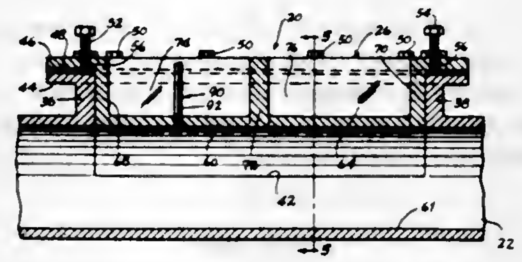
**Kurt Moczall, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany**
**Filed Feb. 12, 1971, Ser. No. 114,962**
**Claims priority, application Germany, Feb. 13, 1970, P 20 065 559.2**
**Int. Cl. F16l** *55/10*
**U.S. Cl. 138—94.3** **5 Claims**



A device for blocking a conduit has two sealing discs disposed in a plane transverse to the longitudinal axis of the conduit. A support bolt conical in shape is wedged between the discs in this plane for positively sealing the discs against the inner surface of the wall of the conduit.

### 3,756,287
### PIPE FITTING ACCESS

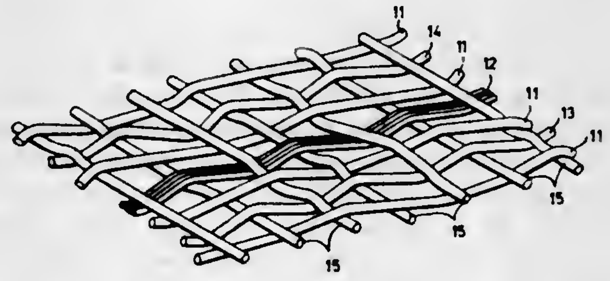
**Robert L. Bishop, Rt. No. 2, Box 130, Ballwin, Mo.**
**Filed Mar. 16, 1972, Ser. No. 235,214**
**Int. Cl. F16l** *55/10*
**U.S. Cl. 138—92** **4 Claims**



A pipe fitting access for pipelines to insert clean-out and repair tools and the like. The access is in the form of a pipe section formed as part of the existing pipe or insertable in the pipe. The access has an integral housing receiving a removable slightly wedge-shaped insert. The insert has a semicylindrical bottom surface merging with the interior of the pipe and providing for a full diameter opening for the insertion of tools. The housing has a flanged rim receiving a mating flange rim of the access with connecting means on the rim. Jack screws are provided to free the insert. The pipe fitting is further provided with a valve sampling tube communicating with the interior of the pipeline for fluid sampling.

### 3,756,288
### WEBBING FOR USE IN SEAT BELTS

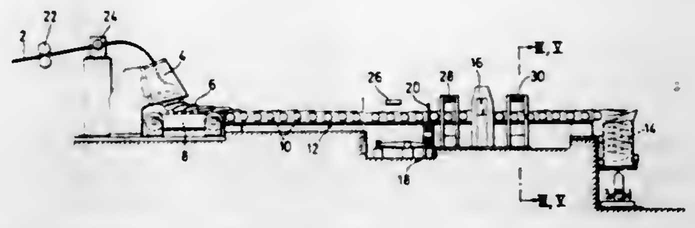
**Kiyokazu Seo; Yoshihiro Hayashi, both of Toyota; Tunekichi Hoshino, and Fumiyoshi Masuda, both of Joetsu, all of Japan, assignors to Toyoto Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken; Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-ken and Hoshino Kogyo Kabushiki Kaisha, Joetsu-shi, Niigata-ken, Japan**
**Filed Mar. 21, 1972, Ser. No. 236,749**
**Int. Cl. D03d** *25/00*
**U.S. Cl. 139—383 R** **11 Claims**



Webbing for use in seat belts and the like having a multiple-step give. The webbing has a first warp of yarn of medium strength high tensility and has a second and third warp of yarn of low strength low tensility, medium strength medium tensility, on high strength low tensility as compared with the strength and tensility of the first warp. The weft is yarn of medium strength and high tensility. All of the warp yarns are sufficiently strong so they are not broken until the initial load applied to the webbing reaches a predetermined value between 200 – 1,000 kg, and the warp yarns also have sufficient strength not to elongate in proportion to an increase in load. Above the predetermined load value, the second and third warp yarns are gradually and repeatedly broken while the shape of the web is maintained by the first warp yarn and the weft until the tensility reaches a predetermined value after the initial load reaches such a value, after which the webbing elongates without an increase in the load applied thereto. The webbing does not return to its initial state with a violent recoil after removal of the load, due to the action of the first and second warps, thereby giving the webbing a multiple-step give with a load-deflection curve substantially in the form of a parallelogram.

### 3,756,289
### APPARATUS AND METHODS FOR CUTTING ROLLED ROD

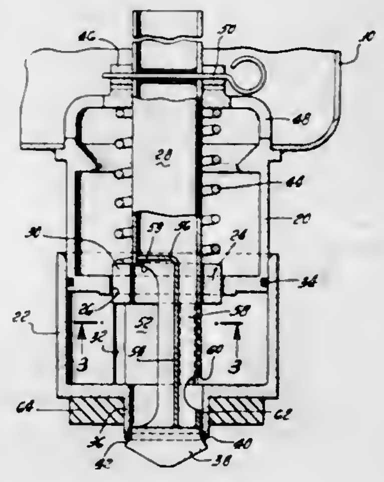
**Kurt Rotert, and Paul Duepper, both of c/o Firma Friedrich Kocks, Freiligrathstrasse 1, Duesseldorf-Oberkassel, Germany**
**Filed Jan. 21, 1972, Ser. No. 219,640**
**Claims priority, application Germany, Jan. 21, 1971, P 21 02 684.6**
**Int. Cl. B26d** *7/00;* **B21f** *11/00*
**U.S. Cl. 140—2** **16 Claims**



An apparatus and process are provided for shearing wire rod which is rolled in a rolling mill, looped and cooled in loops including a conveyor in the cooling section, a stopping means in the cooling section engaging a loop to hold subsequent loops and shearing means spaced beyond the stopping means shearing the wire rod beyond the stopped loop.

### 3,756,290
### VOLUMETRIC FILLER SYSTEM FOR FLEXIBLE RESILIENT BOTTLES

**Keith B. Cleland, Whittier, Calif., and Roy H. Straub, Hacienda Heights, Calif., assignors to Keith B. Cleland, Trustee; by said Straub**
**Filed Dec. 2, 1971, Ser. No. 204,174**
**Int. Cl. B65b** *37/02;* **B76c** *3/34;* **B67d** *5/02*
**U.S. Cl. 141—5** **16 Claims**



Ordinary filler mechanisms do not fill plastic bottles satisfactorily. Plastic bottles by virtue of their flexible and expansible characteristics will accept more fluid than they will contain when unstressed. Thus when a plastic bottle separates from an ordinary filler mechanism, the fluid gushes out upon separation. The present system sucks back a predetermined quantity of fluid from the bottle before the bottle separates so that the proper volume of fluid is contained in the bottle. The present system does this with a simple mechanism.

### 3,756,291

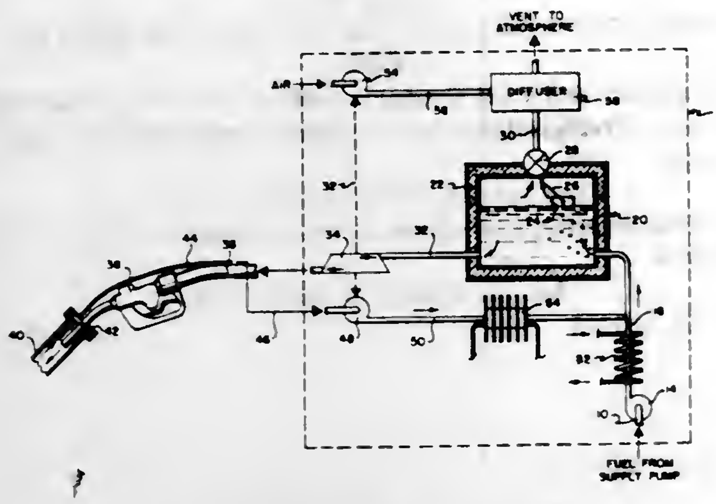
### GASOLINE VAPOR RECOVERY SYSTEM

**Dean C. McGahey, Fishkill, and Eugene W. Vest, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.**

**Filed Oct. 27, 1971, Ser. No. 193,018**

**Int. Cl. B65b *31/00***

**U.S. Cl. 141—45** **8 Claims**



Apparatus for preventing pollution of the atmosphere caused by passage of gasoline fumes thereto. The apparatus is operable in conjunction with a gasoline dispensing pump which connects to the fuel tank of a vehicle. Fumes from the fuel tank are conducted therefrom and introduced to the flow of liquid gasoline as the latter is withdrawn from a storage truck or the like.

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### 3,756,292

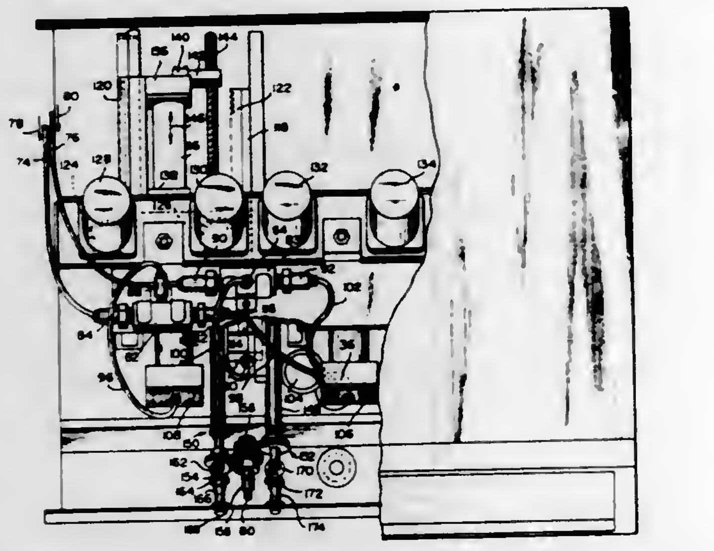
### DISPENSING APPARATUS HAVING PISTON AND CYLINDER DISPENSING ASSEMBLY WITH STROKE ADJUSTING MEANS

**Michael E. Croslin, Forest Hills, and Carl R. Blackman, Westbury, both of N.Y., assignors to Grumman Data Systems Corporation, Bethpage, N.Y.**

**Division of Ser. No. 883,573, Dec. 9, 1969, Pat. No. 3,665,980. This application Jan. 3, 1972, Ser. No. 214,852**

**Int. Cl. B65b *43/56***

**U.S. Cl. 141—160** **20 Claims**



A dispensing apparatus is provided which has various modes of operation including automatic, manual and prime modes. The dispensing apparatus includes coarse and fine metering devices consisting of cylinders with pistons displaceable therein, the displacement of the pistons being controlled by adjustable switches in turn controlling electronic circuits which reverse the direction of movement of the pistons. The metering devices are associated with dispensing nozzles beneath which can be stepped a tray in which are positions for vials or other such receptacles. A sensing switch is provided to detect the presence or absence of receptacles in the aforesaid positions to prevent attempts to dispense fluids into positions in which there are no receptacles. The tray is electronically controlled for automatic or manual modes of operation and a cam control switch is provided which determines whether the tray has been stepped to discrete positions for which dispensing operations might be effected. The apparatus employs a bi-directional, three port valve for enabling the withdrawal of one or more fluids from a source and for dispensing the thusly withdrawn fluids into the aforenoted receptacles. The dispensing apparatus is controlled by a logic circuit involving combinations of flip flops, OR gates and AND gates, and further including decade counters for counting the number of receptacles filled and comparing the count with a selected number in an electronic comparator whereby operation can be terminated after an appropriate number of cycles. The selected quantities for dispensing are indicated on conveniently positioned indexes.

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### 3,756,293

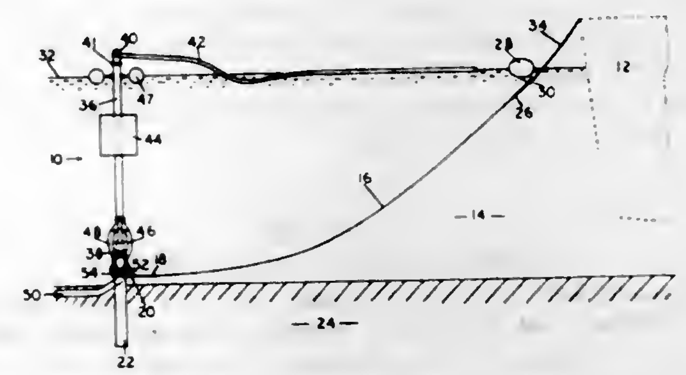
### LOADING TERMINAL FOR TANKERS OR OTHER LARGE SHIPS WITH FLOWABLE CARGO

**Cyrus Adler, New York, N.Y., and Lewis Schneider, Springfield, N.J., assignors to Cyrus Adler, New York, N.Y.**

**Filed Feb. 20, 1970, Ser. No. 12,995**

**Int. Cl. B65b *1/04***

**U.S. Cl. 141—388** **20 Claims**



An offshore mooring terminal for transferring liquid or flowable cargo between a ship and an onshore station. The ship is connected to the mooring terminal by a single mooring line connected at one end to a swiveling anchor located at the sea bottom. A buoyant riser column is attached at its lower end to the anchor by an articulate joint which permits the riser column to pitch and roll with the waves. The upper end of the riser column extends above or near the surface of the sea. The riser column provides a conduit for the fluid and includes a rotary joint at its upper end to receive the floating hoses running to the ship, and a connection to a submarine pipeline at its lower end for carrying the fluid shoreward or to other destinations as may be required. The swiveling anchor device to which the mooring line is secured allows the ship to rotate about the mooring terminal as it swings in the current.

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### 3,756,294

### UNDERWATER LEAKAGE OIL COLLECTOR SYSTEM

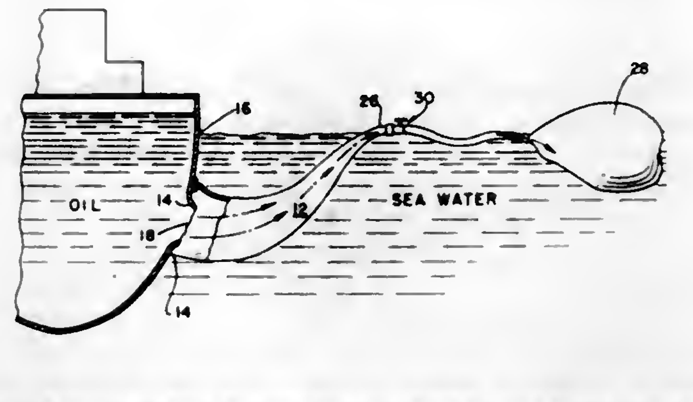
**Don E. Rainey, 3209 N.E. 10th St., Pompano Beach, Fla.**

**Continuation of Ser. No. 124,827, March 16, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,356**

**Int. Cl. B65b *3/04***

**U.S. Cl. 141—392** **6 Claims**

Apparatus for collecting oil at its source of leakage from a container underwater which includes an elongated, flexible and impervious conduit having an inverted channel-shaped mouth composed of cushioned sealing material and flexible magnet means for mating engagement with the surface of the oil container surrounding the sides and upper portion of the source of leakage for entrapping the oil and elevated conveying means at the opposed end of the conduit for directing the entrapped oil to a collector. The bottom portion of the mouth remains open to permit entry of water into the conduit to float the entrapped oil and accelerate its passage upwardly through the conduit.



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### 3,756,295

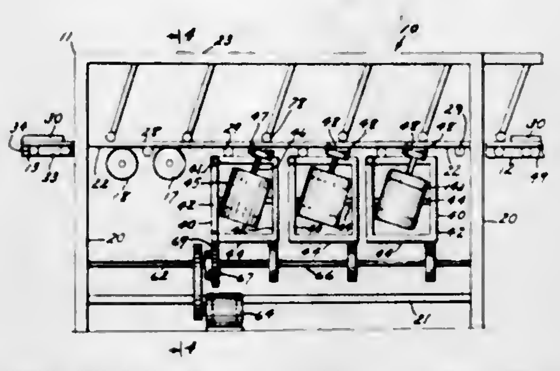
### DEVICE FOR SIMULATING A HAND HEWN SURFACE

**Richard Halop, Glen Cove, N.Y., assignor to Timbercraft Inc., Farmingdale, N.Y.**

**Filed June 5, 1972, Ser. No. 263,349**

**Int. Cl. B27c *5/02*, *9/00***

**U.S. Cl. 144—3 R** **3 Claims**



A device for mechanically creating a "hand hewn" effect on wood planking, such that the treated surface is provided with a plurality of arcuately-shaped, randomly spaced indentations resembling the cuts of an adze. The device includes a frame element forming a generally horizontal supporting plane for serially fed planks. Disposed beneath the plane is a plurality of rotatably driven cutters having radially positioned blades which successively contact the undersurface of the plank as it is advanced at a substantially uniform rate to cut the surface thereof. First means is provided to randomly shift the cutters along an axis perpendicular to that of the path of movement of the planks, and second means is provided to simultaneously randomly move the cutting edges of the blades in a direction perpendicular to the plane of the plank to vary the depth of cut. Means is provided for subsequently sanding the treated surface and for optionally slitting the plank longitudinally.

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### 3,756,296

### DEVICE FOR FEEDING LOGS THROUGH A PROCESSING MACHINE

**Bo Ingemar Ackerfeldt, Ascona, Switzerland, assignor to U.S. Natural Resources, Inc., Portland, Oreg.**

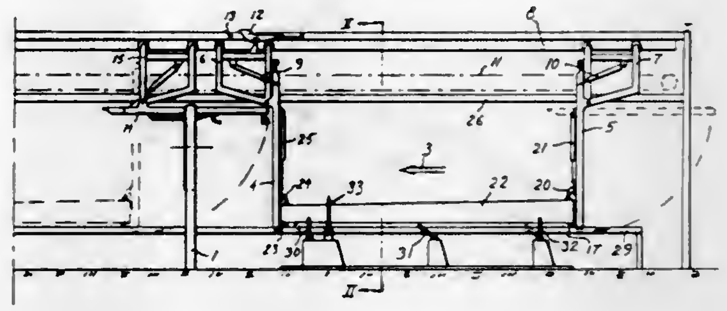
**Filed Oct. 4, 1971, Ser. No. 186,309**

**Claims priority, application Sweden, Oct. 9, 1970, 7013717**

**Int. Cl. B27b *29/08***

**U.S. Cl. 143—125** **13 Claims**

An apparatus for feeding logs, blocks or similar elongate objects through one or several successive saws or other processing machines in a wood-processing mill includes a pair of vertically extending log-holding arms supported by and movable along an overhead trackway extending parallel to the desired feeding line for the logs. The log-holding arms have a log-grasping means at their lower ends adapted to grasp and hold the opposite ends of the log while moving the log along the feeding line. Each log-grasping means comprises a clamping device which clamps an end of the log from above and below. The clamping device includes a lower, horizontally projecting clamping member fixed to its arm and upon which a lower circumferential undersurface portion of the log end rests. The device further includes an upper clamping member moved along the arm by a cylinder into clamping engagement with an upper circumferential surface portion of the end of the log, thereby clamping the log end from above and below securely between the upper and lower clamping members.



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### 3,756,297

### METHOD AND APPARATUS FOR TRIMMING TIMBER

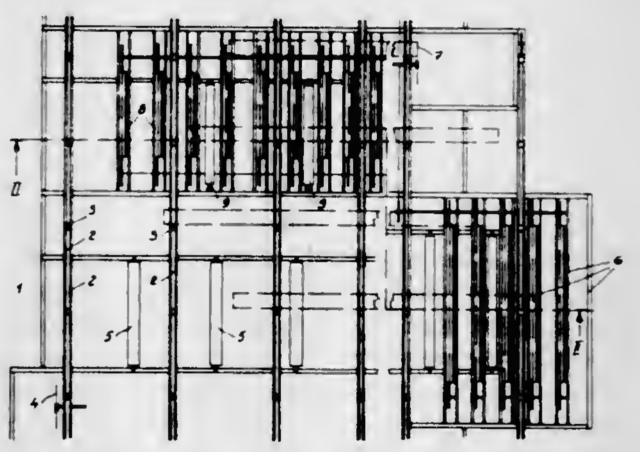
**Olli Heikinheimo, Helsinki, Finland, assignor to Plan-Sell Oy, Helsinki, Finland**

**Filed Apr. 22, 1971, Ser. No. 136,362**

**Claims priority, application Finland, Apr. 28, 1970, 1198/70**

**Int. Cl. B27b *5/04*, *25/04***

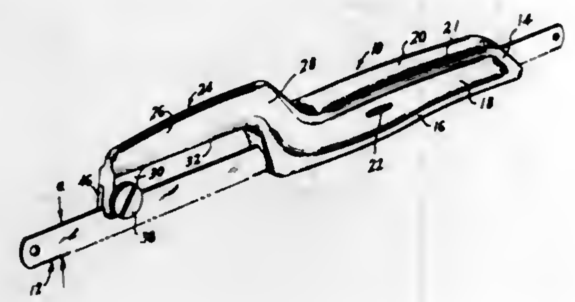
**U.S. Cl. 144—312** **2 Claims**



Pieces of timber are conveyed in their transversal direction, placed longitudinally in a selected position for the cutting of the butt end, and then transferred in the direction of the top end to a selected position for the trimming of the top end. After the cutting of the butt end the piece of timber is moved in the direction of the top end against a selectively chosen stop, which is at such a distance from the cutting line of the top end trimming saw as corresponds to the desired full multiple of the linear measuring unit to be cut off the top end plus the greatest trimming margin, whereafter the piece of timber is moved, before arriving at the top end trimming saw, back in the direction of the butt end against a selectively chosen stop, which is at such a distance from the cutting line of the top end trimming saw as corresponds to the length of the piece of timber given in full linear measuring units minus the said full multiple of the linear measuring unit to be cut off the top end.

### 3,756,298
### HANDSAW

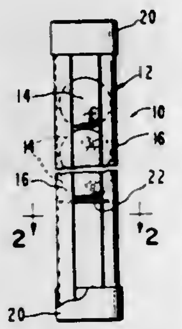
**Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.**
**Filed May 3, 1971, Ser. No. 139,546**
**Int. Cl. B25g** *1/10*; **B27b** *21/02*
**U.S. Cl. 145—108 R** **8 Claims**



A relatively economical and simply constructed handsaw is comprised of a one piece molded holder and a flexible saw blade firmly retained therein. The holder has a handle portion with a longitudinally extending passageway in which a portion of the blade is slidably seated, and a relatively rigid support portion extending from one end thereof and providing support for the blade at a point spaced from the handle portion. The external configuration of the handle portion is complex and is shaped to provide a secure and comfortable grip during use.

### 3,756,299
### BALL CARRIER

**George Simmons, Fiddler's Cove Highway 1, Pescadero, Calif., and George D. Cubberly, P.O. Box 1826, San Mateo, Calif.**
**Filed Nov. 23, 1970, Ser. No. 91,696**
**Int. Cl. B65d**
**U.S. Cl. 150—0.5** **5 Claims**

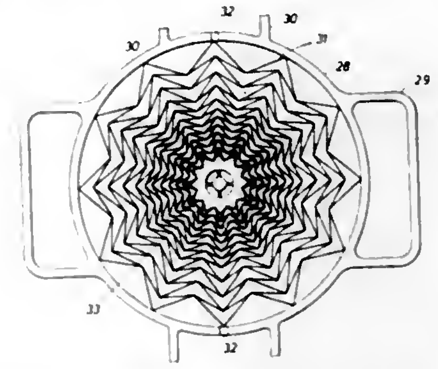


A device for releasably holding a plurality of balls, such as golf balls, in a column. The device includes an elongated, hollow body having yieldable wall means adjacent to an elongated side opening which is normally less than the size of the balls to be carried and through which a ball may pass when the opening is enlarged in size by the yielding action of the wall means.

### 3,756,300
### PLASTIC MESH BAG

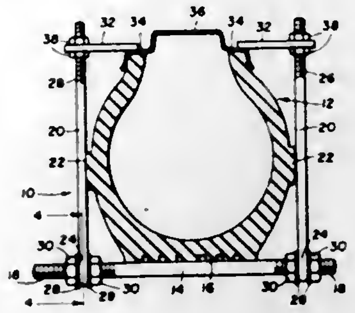
**George S. Nalle, Jr, 108 W. 2nd St., Austin, Tex.**
**Filed Sept. 20, 1971, Ser. No. 181,718**
**Int. Cl. B65d** *1/38*
**U.S. Cl. 150—1.7** **17 Claims**

A seamless plastic mesh bag is made from a melt of thermoplastic by forming an open mesh network of plastic strands terminating in a selvage of thickened cross-section and then stretching the mesh. The selvage forms the upper rim of the finished bag and may include integral handles and latching closures. The stretched open mesh forms the bag body. The stretching may include molecular orientation, and is accomplished by moving a mandrel against the mesh. Suitable apparatus produces bags in a desired variety of sizes and shapes.



### 3,756,301
### TRACTION DEVICE FOR VEHICLE TIRES

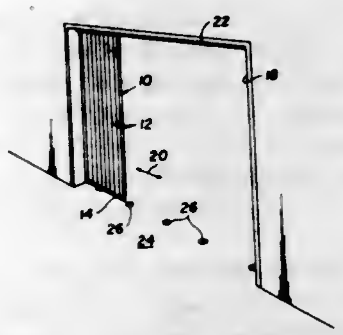
**John C. Belknap, 229 S. Shore Dr., Buffalo, N.Y.**
**Filed Sept. 13, 1971, Ser. No. 179,965**
**Int. Cl. B60c** *27/20*
**U.S. Cl. 152—225** **11 Claims**



A traction device comprising a pair of laterally spaced rods connected to the opposite ends of an elongated shoe element to form a generally U-shaped configuration engagable against the side walls and the peripheral surface of a vehicle tire. Adjustably mounted plates project inwardly from the rods in spaced, substantially parallel relation to the shoe element for clamping engagement behind the rim of the wheel to firmly secure the shoe element against the peripheral surface of the tire. One of the rods may be formed integral with the shoe element while the other is detachably and adjustably secured to the latter.

### 3,756,302
### SIDE COILING DOOR WITHOUT A BOTTOM TRACK

**Bernard J. Sivin, Commack, N.Y., assignor to the Celotex Corporation, Tampa, Fla.**
**Filed May 12, 1972, Ser. No. 252,609**
**Int. Cl. E06b** *9/20*
**U.S. Cl. 160—23** **3 Claims**



A side coiling door supported solely by an overhead track during closing movement, and wherein its bottom edge is confined against buckling or other lateral movement only after the door has attained its closed position by edge-engaging means strategically located along the path of movement of the door.

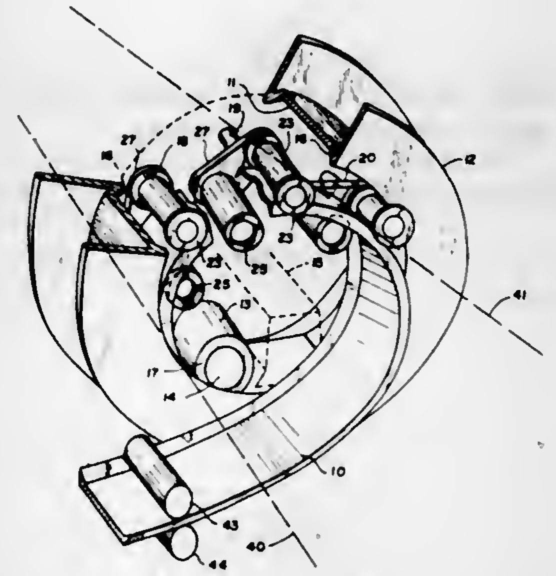
### 3,756,303
### METHOD OF MAKING FOAMED METAL BODIES

**Alex R. Valdo, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.**
**Division of Ser. No. 91,212, Nov. 19, 1970. This application Feb. 16, 1972, Ser. No. 226,567**
**Int. Cl. B22d** *27/20*
**U.S. Cl. 164—79** **1 Claim**

A foamed metal body or structure having large voids or hollows therein and a method of making such structures or bodies. Hollow structural shapes are encapsulated in foamed metal. Any structural shape having a melting point above that of the metal foamed and a configuration containing a void is suspended in a mold and enveloped with foamed metal. The foamed metal is solidified and the structural shape or body is encapsulated therein.

### 3,756,304
### METHOD AND APPARATUS FOR GUIDING CONTINUOUSLY CAST STRIP

**Charles Christian Gerding, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.**
**Filed Apr. 12, 1972, Ser. No. 243,276**
**Int. Cl. B22d** *11/12*
**U.S. Cl. 164—87** **21 Claims**

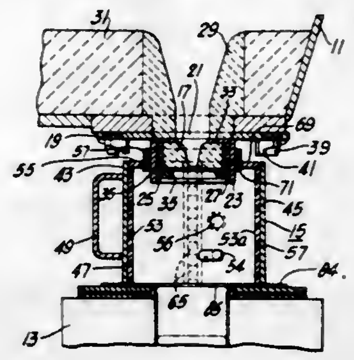


Method and apparatus for guiding metal strip continuously cast on the inside surface of a rotating ring through an open end thereof with minimum twisting comprises a plurality of pairs of guide rolls positioned and adjusted to cause the strip to travel in a spiral path of decreasing curvature on the surface of an imaginary cone, the axis of which passes through the ring.

### 3,756,305
### CONTINUOUS CASTING APPARATUS WITH SHROUD ARRANGEMENT

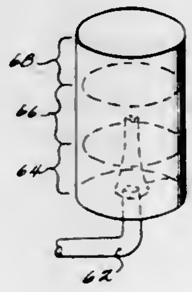
**Theodor H. W. Haussner, Pittsburgh, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.**
**Filed June 24, 1971, Ser. No. 156,332**
**Int. Cl. B22d** *11/10*
**U.S. Cl. 164—281** **8 Claims**

Two one-half cylindrical tubular elements, held in mating relationship by magnets, surround a nozzle plate retainer which is secured to the bottom of a tundish by wedge keys cooperating with slotted studs projecting through openings in the nozzle plate retainer.



### 3,756,306
### CONTINUOUS CASTING APPARATUS WITH TEMPERATURE CONTROL INCLUDING SUCCESSIVE LAYERS OF MATERIAL

**Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz.**
**Continuation-in-part of Ser. No. 868,756, Oct. 23, 1969, abandoned. This application May 23, 1972, Ser. No. 256,165**
**Int. Cl. B22d** *11/12*
**U.S. Cl. 164—283** **13 Claims**

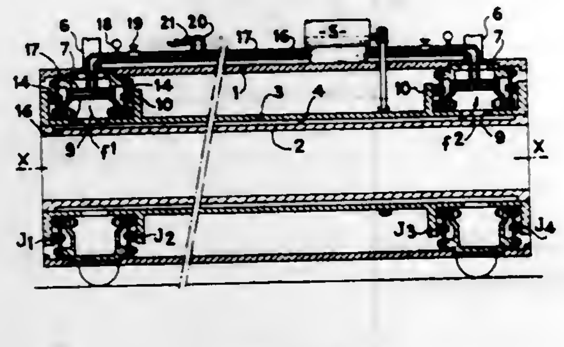


A method and apparatus for continually casting molten metal in solid lengths such as rods, tubes, etc. whereby liquid molten metal such as copper is forced from a reservoir through a nozzle having a cross-sectional area which decreases, as the molten metal flows through the nozzle and solidifies, to account for the volumetric change resulting from the liquid to solid phase transformation of the metal. The nozzle is surrounded by layers of fused compounds which have successively lower melting points to optimize heat flow. The position and profile of the liquid solid interface within the nozzle can be altered as described below by controlling the temperature of the liquid metal entering the nozzle as well as the temperature in the nozzle and controlling the pressure of the liquid metal continuously entering the nozzle.

### 3,756,307
### CENTRIFUGAL CASTING MACHINE WITH FLUID PRESSURE SEALING MEANS

**Robert Numa Paul Negre, Fumel, France, assignor to Pont-A-Mousson S.A., Fumel, France**
**Filed July 5, 1972, Ser. No. 268,954**
**Claims priority, application France, July 15, 1971, 7125844**
**Int. Cl. B22d** *13/02*
**U.S. Cl. 164—297** **6 Claims**

Sealing means for a centrifugal casting machine. The sealing means comprise a flexible diaphragm having inner and outer peripheral portions fixed to the frame of the machine and a sealing ring secured to a first face of the diaphragm in a flexible portion the diaphragm intermediate the two peripheral portions and sealingly applied against a flange on a sleeve which defines an annular cooling liquid space around the mould. A part of said first face communicates with the annular space and a second face of the diaphragm opposed to the first face defines a chamber with a rigid wall fixed to the machine frame. The chamber communicates with a source of fluid under adjustable pressure.



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### 3,756,308

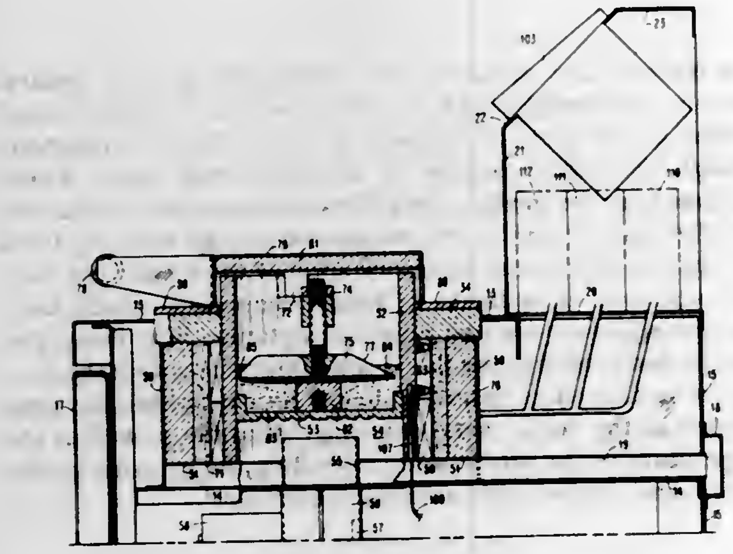
### APPARATUS FOR MANUFACTURING SHEET-CUTTING FEMALE DIES

**Winston L. Shelton, Jeffersontown, and Joseph L. Newman, Louisville, both of Ky., assignors to Quik-Die, Inc., Jeffersontown, Ky.**

**Filed Apr. 14, 1971, Ser. No. 133,853**

**Int. Cl. B22d** *27/04*

**U.S. Cl. 164—338** **3 Claims**



A compact apparatus for use in the manufacture of sheet-cutting female dies includes a cabinet having an assembly of melting and casting pots with associated heating and progressive cooling means governed by an electrical control system. A method for manufacturing the die in a comparatively short time as contrasted with conventional machining methods, is disclosed.

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### 3,756,309

### COMPOSITE FOUNDRY CORE

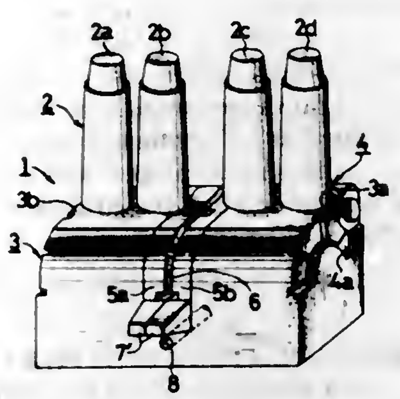
**Keizo Nishiyama, Handa; Takeo Hiraiwa, Aichi-ken, and Kohshi Iwata, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan**

**Filed Sept. 7, 1971, Ser. No. 177,942**

**Claims priority, application Japan, Sept. 7, 1970, 45/78320**

**Int. Cl. B22c** *9/10*

**U.S. Cl. 164—369** **1 Claim**



A foundry core having a main larger part and a smaller auxiliary part is formed with the smaller preformed auxiliary part being integrally molded into the larger part to provide a rigid unitary one piece core.

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### 3,756,310

### REGENERATOR

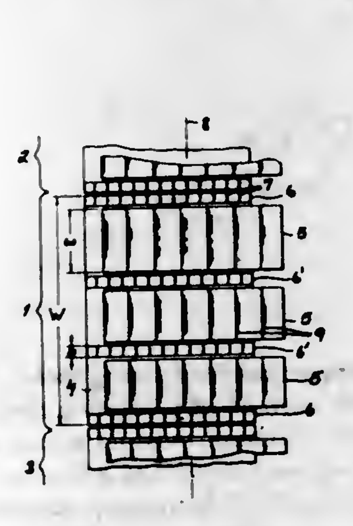
**Rudolf Becker, Munich, Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Germany**

**Filed Feb. 22, 1971, Ser. No. 117,670**

**Claims priority, application Germany, Feb. 20, 1970, P 20 07 956.5**

**Int. Cl. F28d** *17/02*

**U.S. Cl. 165—4** **5 Claims**



A regenerator for effecting heat exchange between two fluids, one of which transfers heat to a mass within the regenerator while the other abstracts heat from this mass. The regenerator is provided with a portion in which a fluid, e.g. water, is condensed. The regenerator has stacked matrices, hurdles, baffles or stages of the heat-absorbing material which comprise corrugated sheets with the corrugations of the several stages being inclined at different angles to the axis of the regenerator. The angle between the longitudinal axis of the regenerator and the direction of the corrugation in the condensation stage is less than that in other stages.

### 3,756,311

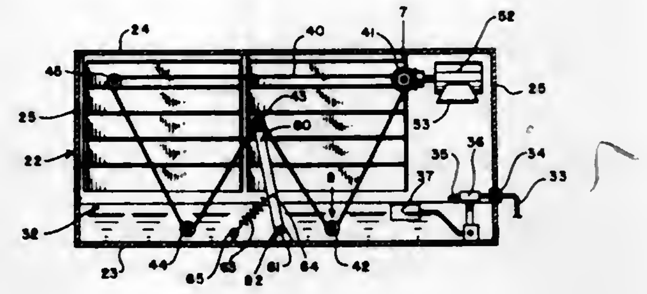
### AIR HUMIDIFYING UNITS FOR ROOM-TYPE AIR CONDITIONERS

**John O. Bitz, 624 Penn Ave., West Reading, Pa.**

**Filed Mar. 26, 1971, Ser. No. 128,403**

**Int. Cl. F24j** *3/14*

**U.S. Cl. 165—21** **5 Claims**



An air-humidifying unit for use with room air conditioners of the window or through-the-wall type having energizable and de-energizable air-cooling means and means for circulating air past the air-cooling means and into the room, the unit being adapted for installation in a new air conditioner during its manufacture or in previously manufactured air conditioners as an attachment thereto. The unit includes a housing mounted opposite to the outgoing air passageway of the air conditioner, the housing enclosing a water tank and an endless water-absorbing belt mounted with lower runs thereof immersed in the water in the tank and upper runs thereof in the path of air issuing from the air passageway. The drive of the belt is under the control of a humidistat.

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### 3,756,312

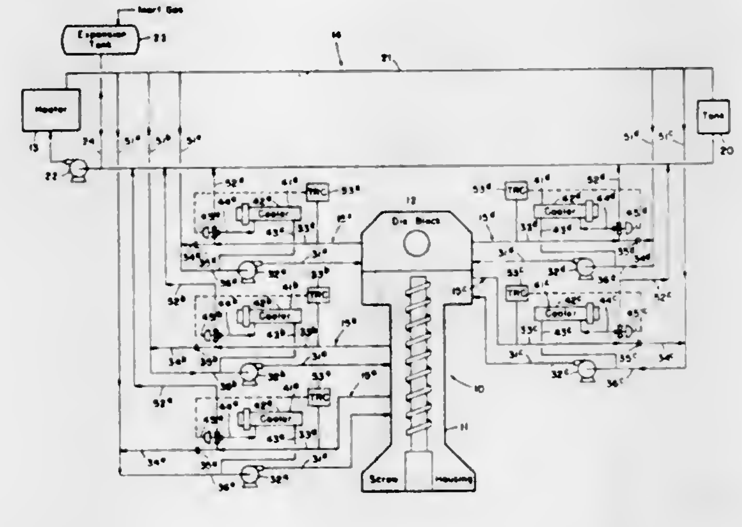
### HEAT TRANSFER SYSTEM FOR A CONTINUOUS LEAD EXTRUDER

**Rajat R. Shah, New York, and Floyd Hasselriis, Astoria, both of N.Y., assignors to American Hydrotherm Corporation, New York, N.Y.**

**Filed Dec. 28, 1970, Ser. No. 101,922**

**Int. Cl. F25b** *29/00*

**U.S. Cl. 165—26** **9 Claims**



A heat transfer system for a continuous lead extruder to provide desired operating temperatures in which heat transfer liquid is circulated in a plurality of heat transfer loops through heat transfer zones of the extruder and the temperature is separately controlled in each loop to provide the desired operating temperature for the extruder. The heat transfer loops include means for cooling the heat transfer liquid during extrusion and means for heating the heat transfer liquid during die changes.

### ERRATUM

For Class 165—39 see:
Patent No. 3,756,903

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### 3,756,313

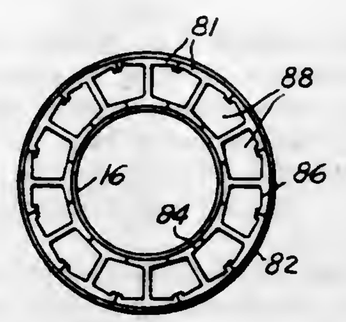
### THERMAL RADIATION SYSTEM FOR SOIL STABILIZER

**Winfield G. Beach, 808 Lakeview Trailer Ct., Fairbanks, Alaska**

**Continuation-in-part of Ser. No. 35,629, May 8, 1970, Pat. No. 3,656,547. This application Apr. 11, 1972, Ser. No. 242,979**

**Int. Cl. F28d** *15/00;* **F28f** *1/20*

**U.S. Cl. 165—106** **10 Claims**



A thermal stabilizer assembly consisting of a vertical tubular convection cell mounted in a body which is to be thermally stabilized, the convection cell being provided with a heat-transmitting fin configuration at its upper portion for heat transmission to the atmosphere. The fin configuration may consist of auxiliary metal tubes clamped to the cell by metal straps. The auxiliary tubes may be arranged in layers. The auxiliary tubes may consist of relatively small auxiliary tubes clamped in relatively large auxiliary tubes, both in heat-conducting contact with the main convection cell. The fin configuration may alternatively consist of flanged vertical bars clamped around the vertical convection cell by metal straps.

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### 3,756,314

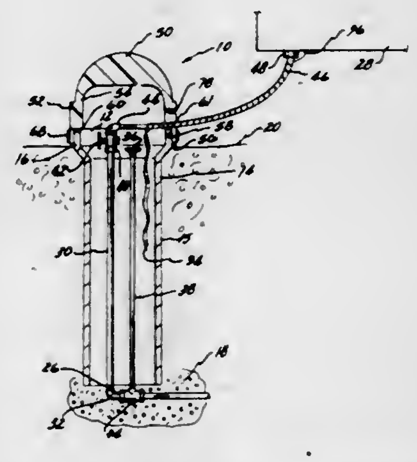
### INSULATED WELL COVER

**Francis E. Valley, H-7 Maude Ln., Mount Morris, Mich.**

**Filed Dec. 2, 1971, Ser. No. 204,268**

**Int. Cl. E21b** *33/03*

**U.S. Cl. 166—65** **4 Claims**



A cover fabricated from an insulating material for enclosing the open upper end of a well defined by a tile or the like and of the type commonly used for housing the water connections for mobile cover and the like so that the interior of the well can be heated and the cover will help to retain the heat in the well to prevent the water in the pipes from freezing. The cover has a top section and an integral side wall depending from the outer periphery of the top section to define a generally dome-shaped configuration. The side wall has an annular recess on the inner periphery thereof opening to the bottom edge of the side wall to receive the upper rim of the tile when the cover is positioned on the open end of the well. The side wall has a plurality of angularly spaced, vertical slots which extend upwardly from the bottom edge a predetermined distance and which permit the side wall to flex inwardly and outwardly. An enlarged aperture formed in the side wall extends upwardly from the bottom edge thereof above the slots a distance sufficient to permit a water line to extend from within the tile. A band member is disposed around the side wall and has outwardly bent ends that receive a threaded fastener which when tightened brings the bent ends toward one another to reduce the diameter of the band and to compress the slotted side wall portion inwardly against the rim of the tile to secure the cover thereto.

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### 3,756,315
### HYDRATED METAL OXIDE DEPOSITION

**George O. Suman, Jr.; Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.**

**Filed Jan. 27, 1972, Ser. No. 221,401**
**Int. Cl. E21b** *33/138, 43/04*
**U.S. Cl. 166—276** **12 Claims**

A treating liquid for depositing a hydrated metal oxide comprises a basic aqueous solution of an oxide of an amphoteric metal and a pH reducing reactant that subsequently lowers the pH of the solution to one at which a hydrated oxide of the amphoteric metal is precipitated. The treating liquid can provide a single step process for consolidating or plugging a sand and/or can comprise a sand consolidating or plugging component of a drilling, fracturing, perforating, oil-displacing, or the like, type of fluid.

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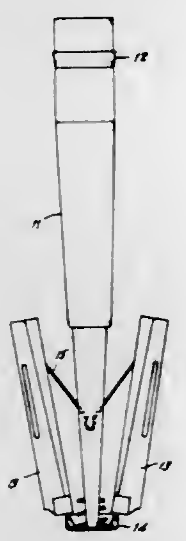
### 3,756,316
### BORE HOLE PLUG

**Frank Van Ruth, 235 Dugan St., Kalgoorlie, Australia**

**Filed Aug. 8, 1972, Ser. No. 278,712**
**Int. Cl. E21b** *33/126*
**U.S. Cl. 166—132** **2 Claims**



A bore hole plug comprising an elongated piston like member tapering inwardly towards one end, means located adjacent the other end of the piston like member to form sealing contact with the inside surface of a tubular member such as a drill stem through which the plug is adapted to pass, a series of wedging members located around the tapered end of said piston like member, retaining means holding the ends of said wedging members adjacent the tapered end of the plug, close thereto and spring means adapted to urge the end of said wedging members remote from the tapered end of the piston like member outwardly away from the said piston like member.

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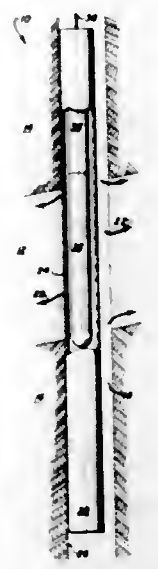
### 3,756,317
### METHOD FOR CRYOGENICALLY FREEING DRILLING PIPE

**Guy P. Hall, 401 Norton St., Weatherford, Tex.**

**Filed Feb. 9, 1972, Ser. No. 224,847**
**Int. Cl. E21b** *31/02*
**U.S. Cl. 166—254** **6 Claims**



A method of freeing drilling pipe in a well bore which has become stuck or seized through a differential pressure condition within the bore wherein a torque is maintained on the drill pipe, the zone of differential pressure determined within rough limits, a cryogenic tool or carrier is positioned so as to correspond generally to the zone, the tool then being actuated and forming a thin, temporary ice or frozen sheath between the bore hole and drill pipe thus losing a substantial portion of the bore hole permeability and consequent differential pressure, the torque and/or heat applied to the drill pipe breaking the "sheath" and continuing rotation of the pipe.

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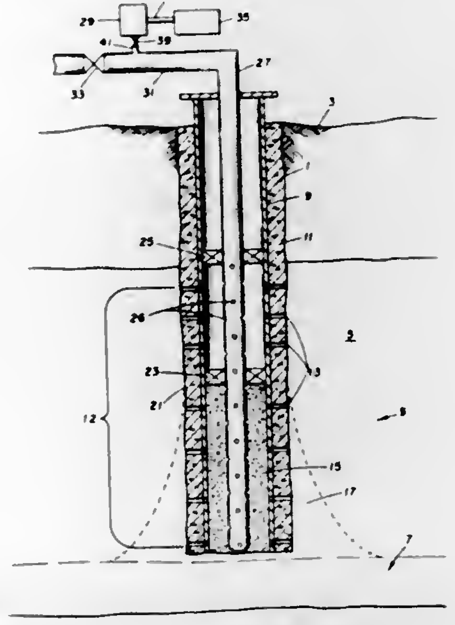
### 3,756,318
### WELL COMPLETION IN FRIABLE SANDS

**Nathan Stein, and Lloyd G. Jones, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed June 30, 1971, Ser. No. 158,332**
**Int. Cl. E21b** *43/04*
**U.S. Cl. 166—278** **12 Claims**



This specification discloses a well completion system for use in unconsolidated formations and a process for producing fluids from wells penetrating such formations. A well is provided that extends into the unconsolidated formation and has an open production interval that communicates with the formation. A sand retainer is installed adjacent a lower portion of the open production interval. The sand retainer extends from the lower extremity of the open production interval upward to an intermediate location of the open production interval. Fluids are produced from the well at a rate such that sand arches are formed and the formation is stabilized, thus permitting a high rate of production of hydrocarbons with a minimum production of sand from that portion of the unconsolidated formation above the sand retainer. Concomitantly therewith fluids are produced from the formation through the sand retainer, which sand retainer controls the flow of sand from the portion of the formation adjacent the sand retainer.

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### 3,756,319
### METHOD FOR STIMULATING THE PRODUCTION OF OIL FROM A PRODUCING WELL

**Leroy W. Holm, Fullerton, and Julius P. Gallus, Anaheim, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.**

**Filed Feb. 28, 1972, Ser. No. 230,054**
**Int. Cl. E21b** *43/25*
**U.S. Cl. 166—304** **17 Claims**

A method for stimulating the production of oil from a well completed in a permeable, oil-bearing formation comprising the steps of (1) contacting the well with a substantially anhydrous soluble oil under conditions that the soluble oil does not enter the formation in any substantial amount, (2) removing the previously placed soluble oil from the well, (3) next injecting a small quantity of soluble oil through the well and into the formation, (4) displacing the soluble oil into the formation with an overflush of oil, and (5) recovering oil from the well. The soluble oil is preferably especially compounded to exhibit a high solvency for the specific organic deposits found in the well. If desired, the well can be treated with acid prior to commencing the recovery operation to remove inorganic deposits and to increase the permeability of the formation. Also, the formation immediately surrounding the well can be treated with scale inhibiting agents, or with polymerizable resins to consolidate unconsolidated or loosely consolidated sands prior to returning the well to production.

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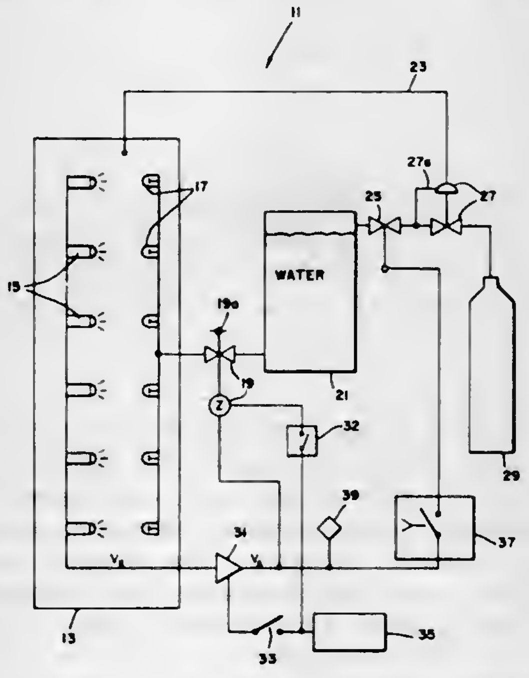
### 3,756,320
### FIRE DETECTION AND SUPPRESSION SYSTEM FOR USE IN A DECOMPRESSION CHAMBER

**Kenneth C. McMahon, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 20, 1972, Ser. No. 273,563**
**Int. Cl. A62c** *3/00, 35/18*
**U.S. Cl. 169—2 R** **10 Claims**



A fire detection and suppression system for recompression and decompression chambers comprising a plurality of optical detectors, a plurality of fog nozzles connected to a water storage tank which is under gas pressure of an inert gas, such as helium. The presence of fire in a recompression and/or decompression chamber actuates the optical sensors or detectors of the system which in turn emit water under gas pressure into the recompression and/or decompression chamber.

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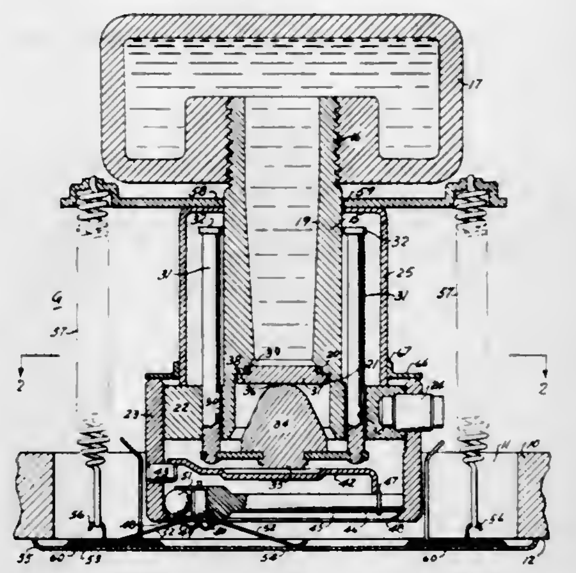
### 3,756,321
### FLUSH TYPE SPRINKLER

**Fred A. Gloeckler, Huntington Valley, Pa., assignor to Star Sprinkler Corporation of Florida, Philadelphia, Pa. Continuation-in-part of Ser. No. 150,474, June 7, 1971,. This application Apr. 5, 1972, Ser. No. 241,212**
**Int. Cl. A62c** *37/08*
**U.S. Cl. 169—40** **5 Claims**



A sprinkler is provided mounted flush in a ceiling and has an overlapping outer escutcheon plate releasably held in place by resilient upwardly extending members connected to the escutcheon plate by heat responsive elements. The escutcheon plate is normally secured in covering relation to the sprinkler which has a strut containing a heat responsive element with a different selected heat release temperature. Heat sensing fins in contact with the escutcheon plate are movable downwardly below the ceiling line to an exposed position upon release of the plate and thereby increase the sensitivity of the strut heat responsive element. Provisions are made for positioning of the sprinkler in the ceiling to insure proper liquid discharge and to protect the structure against ceiling tiles disrupting the distribution.

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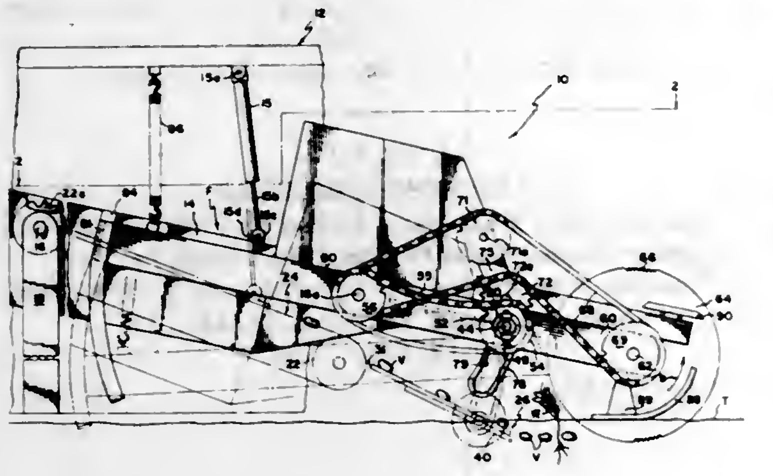
### 3,756,322
### UNDERGROUND VEGETABLE HARVESTER

**Joseph Kopasz, Twining, Mich., assignor to Joseph Kopasz, Jr., Flint; Genevieve Wilkie, Warren; Erwin Kopasz, Twining and Province of St. Joseph Capuchin Order, Inc., Detroit, Mich., part interest to each**

**Filed Aug. 25, 1972, Ser. No. 283,976**
**Int. Cl. A01d** *17/00*
**U.S. Cl. 171—5** **10 Claims**

Apparatus for unearthing underground vegetables, such as potatoes and the like, comprising a supporting frame movable in a forward path of travel, a pair of transversely extending, rearwardly converging, vegetable digging and lifting blades on the frame movable through the soil for forcing the vegetables upwardly as the frame moves forwardly, a pair of transversely extending weed cutting knives reciprocally movable on the vegetable digging and lifting blades for severing weeds in the path of the digging and lifting blades and preventing the accumulation of dirt on the digging and lifting blades, and a pair of laterally spaced, power driven colter blades for cutting the earth forwardly and outwardly of the cutter knives and the digging and lifting blades.



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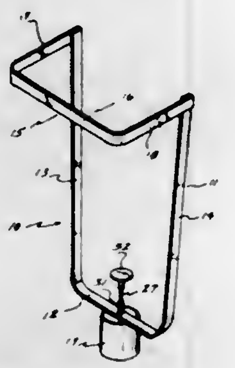
### 3,756,323
### PLUG CUTTER

**Ivan K. Mays, 311 Briarwood Trl., Austin, Tex.**
**Filed Oct. 26, 1971, Ser. No. 192,005**
**Int. Cl. A01b** *45/02*
**U.S. Cl. 172—22** **3 Claims**



A manually operated cutting device for removing cylindrical plugs of turf employing a tubular cutting member adapted for insertion into the turf, a disc movably mounted within said cutting member, means coacting with said disc to provide plugs of uniform size, and foot-operated means remotely connected to said disc to eject said plugs.

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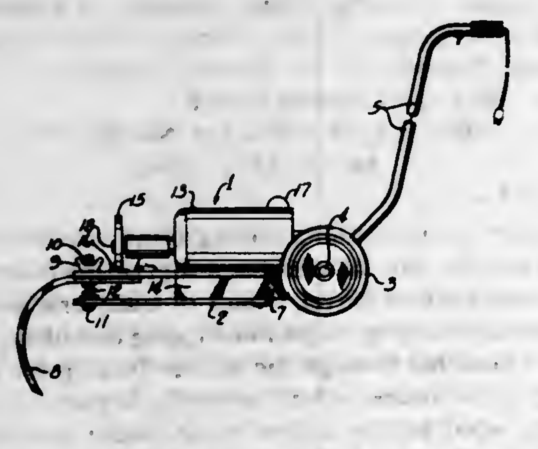
### 3,756,324
### MOTORIZED CULTIVATOR

**Howard Bills, R.F.D. No. 1, Box 268, Imperial, Pa.**
**Filed Dec. 18, 1970, Ser. No. 99,452**
**Int. Cl. A01b** *35/00*
**U.S. Cl. 172—40** **3 Claims**



A motorized hand-operated cultivator which is drawn towards the operator. A vertically reciprocatory member is provided with a set of horizontally spaced tines which extend outwardly through reverse curvature from the cultivator for penetration into the subsoil as the carriage is drawn towards the operator. The reciprocation of stroke of the tines is variable in both length and frequency as well as its depth of penetration.

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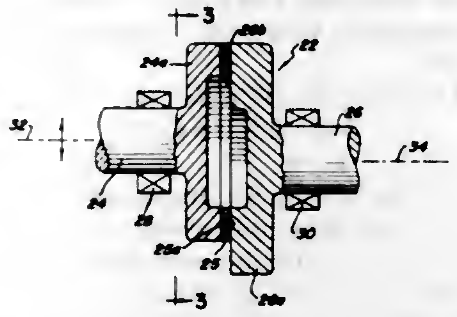
### 3,756,325
### SLIP CLUTCH

**Roland R. Rucinski, Hanover Park, Ill., assignor to Bell & Howell, Chicago, Ill.**
**Filed Nov. 1, 1971, Ser. No. 194,356**
**Int. Cl. F16d** *13/00*
**U.S. Cl. 192—70.14** **3 Claims**



A slip clutch mechanism which includes a rotatable input shaft having a friction clutching surface extending generally transversely thereof, and a rotatable output shaft having a complementary friction clutching surface extending generally transversely thereof facing and in constant engagement with the friction surface on the input shaft. The shafts are mounted for rotation about offset axes whereby the engaging friction surfaces are in constant motion relative to one another not only when the torque limit of the clutch has been reached but during the torque transmitting condition of the clutch. Accordingly, the torque transmitting capability of the clutch is independent of the static coefficient of friction between the clutch surfaces and is a function only of the dynamic coefficient of friction.

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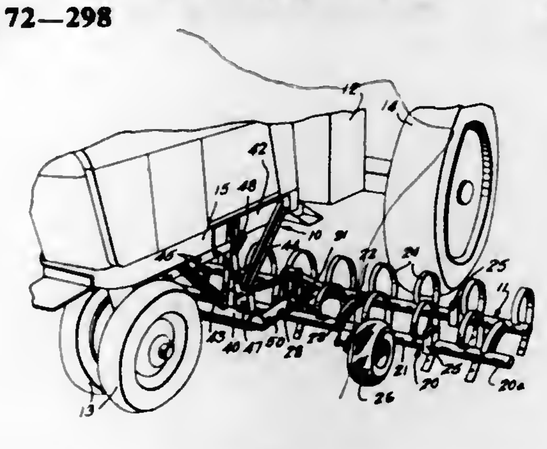
### 3,756,326
### MOUNTING DEVICE

**Russell D. Yordy, Rt. 2, Morton, Ill.**
**Filed Dec. 1, 1970, Ser. No. 94,078**
**Int. Cl. A01b** *59/044*
**U.S. Cl. 172—298** **8 Claims**



A mounting device for mounting an implement particularly a spring tooth harrow on a frame of a tractor between the front and rear wheels with the teeth of the harrow extending transversely beneath the tractor frame comprising a frame structure attached to the sides of the tractor frame and supporting a tubular member therebeneath to rotatably support a primary hitch member which is connected to a frame of the harrow. Secondary hitch members which are adjustable in length pivotally connected to the frame structure and to the frame of the harrow in vertical spaced relationship to the primary hitch member for maintaining the implement in a proper orientation when in either a transporting position or working position. In one embodiment of the invention, the tubular member is provided with mounting pads for pivotally mounting an implement such as a snow plow to transfer the pushing force of the tractor to the plow.

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### ERRATUM

For Class 172—464 see:
Patent No. 3,756,203

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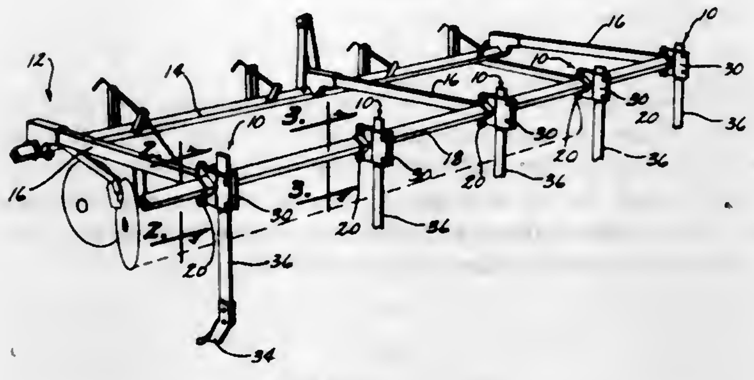
### 3,756,327
### TOOL BAR CLAMP

**Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing Inc., Lexington, Nebr.**
**Filed Jan. 24, 1972, Ser. No. 220,333**
**Int. Cl. A01b** *15/00*
**U.S. Cl. 172—697** **5 Claims**



An implement tool bar has working tools connected to it and the tool bar is connected to the implement frame by a tool bar clamp including a pair of saddle members embracing the tool bar with a pair of spaced apart clamping plates rigidly connected at adjacent inner ends to one of the saddle members while a pair of bolts extend from the other saddle member on opposite sides of the tool bar to between the pair of clamping plates for rigid engagement therewith. A vertically disposed tool shank is clamped between the outer ends of the clamping plates which diverge outwardly from a spacing substantially equal to the thickness of the shank. Upon the outer ends of the clamping plates being drawn together uniform pressure is applied along the opposite sides of the shank to rigidly hold it in place.

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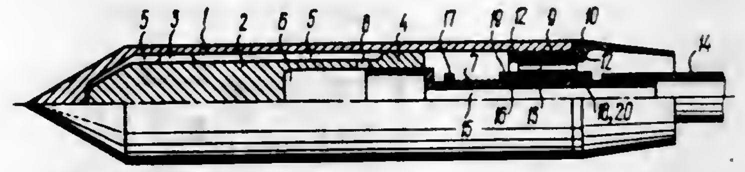
### 3,756,328
### PNEUMATICALLY OPERATED IMPACT-ACTION SELF-PROPELLED MECHANISM

**Boris Vasilievich Sudnishnikov, Krasny Prospekt, 56, kv. 59; Alexander Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 68; Konstantin Konstantinovich Tupitsin, ulitsa Krylova, 3, kv. 37; Vladimir Vasilievich Klimashko, ulitsa Novogodnyaya, 44, kv. 23, all of Novosibirsk; Viktor Eliseevich Solomko, ulitsa Komsomolskaya, 105, Odessa; Alexandr Nironovich Reinsburg, ulitsa Mendeleeva, 5/7, kv. 12, Odessa, and Moisei Lvovich Yampolsky, ulitsa Sholom Aleikhema, 76, kv. 31, Odessa, all of U.S.S.R.**
**Continuation-in-part of Ser. No. 72,723, Sept. 15, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,601**
**Int. Cl. E21b** *11/00*
**U.S. Cl. 173—91** **8 Claims**

A pneumatically operated impaction mechanism for forming holes in the ground or the like in which a housing has a pointed working end and receives a reciprocable impact member to successively impose impact-force on the housing through a compressed air medium; and an air supply sleeve insulated from the housing by a shock-damping bush threadingly engaged with an internal wall of the housing; and means for reversing the direction impact is imposed on the housing for facilitating removal of the housing from a formed hole or when it becomes lodged in a rock, for example.



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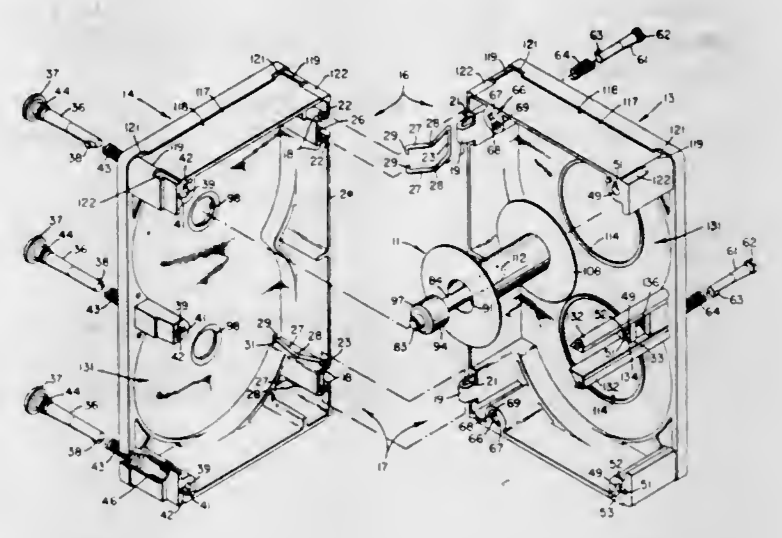
### 3,756,329
### REEL-DEMOUNTABLE CASSETTE AND REELS FOR MAGNETIC TAPE

**Dale P. Dolby, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.**
**Filed Apr. 7, 1972, Ser. No. 241,920**
**Int. Cl. G11b** *23/04*
**U.S. Cl. 179—100.2 Z** **13 Claims**



A video tape cassette is arranged to break open in the middle, to release the reels, the two cassette halves pivoting on hinges the leaves of which are cast in durable plastic integrally with the cassette halves and are pinned together at the knuckles by means of a springy clip, making a tight-fitting hinge fastening. The cassette halves are held together remote from the hinges by key-type fasteners; and key-type inserts are also used for function lockout buttons. The reels have a simplified springloaded construction whereby both ends are urged into braking engagement with the cassette sides when the cassette is closed, to prevent unreeling of the tape.

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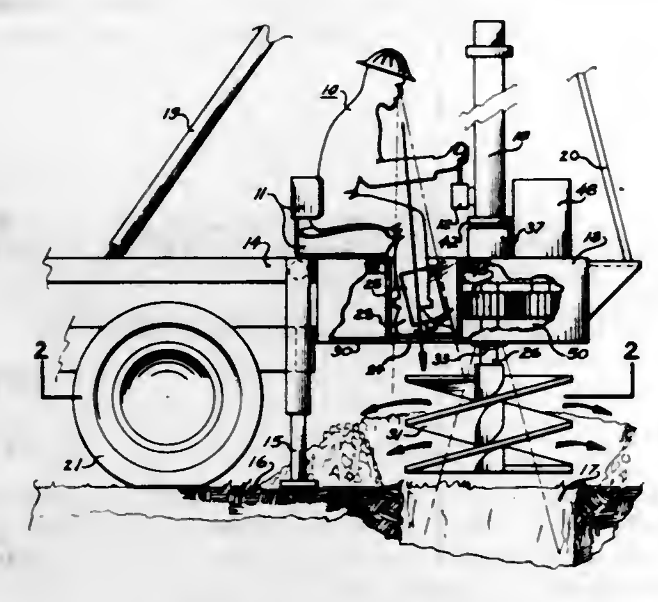
### 3,756,330
### OPERATOR SAFETY ORIENTED EARTH AUGER

**Wayne B. Russell, Jr., 3895 Lugo Ave., Lynwood, Calif.**
**Filed Aug. 27, 1971, Ser. No. 175,562**
**Int. Cl. E21b** *3/02, 19/08*
**U.S. Cl. 175—203** **13 Claims**

An apparatus describing a heavy duty earth drilling rig having unique provision for superior visual control by operator from a vantage point above the cutting tool, thus obviating man-presence in lateral proximity to a hazardous work area, while increasing operating efficiency and convenience.



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### 3,756,331
### EARTH DRILLING APPARATUS

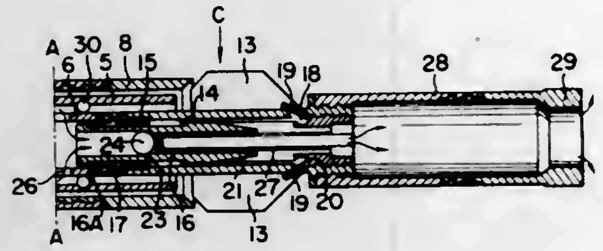
**Yasushi Okuyama, Suginami-ku, Tokyo; Sho Takano, Setagaya-ku, Tokyo, and Ryokuya Suzuki, Niihama, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan**

**Continuation of Ser. No. 41,192, May 28, 1970, abandoned. This application July 29, 1971, Ser. No. 167,441**

**Claims priority, application Japan, June 4, 1969, 44/43204; June 10, 1969, 44/45097; June 16, 1969, 44/46802; June 19, 1969, 44/47929**

**Int. Cl. E21b** *9/26*

**U.S. Cl. 175—258** **2 Claims**



A drilling system wherein, even if the drilling direction is not only a downward direction but also any direction, a core can be collected and, even in the case of reaming a part of the bore in the course and also of replacing the bit, the bit can be replaced without recovering the drill stem inserted in the bore.

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### 3,756,332
### DISC TYPE CENTER CUTTER FOR A BORING MACHINE

**Clayton H. Crane, Mercer Island, Wash., assignor to The Robbins Company, Seattle, Wash.**

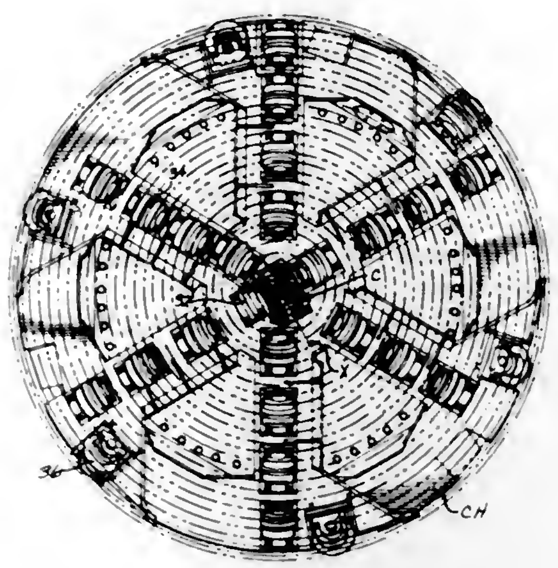
**Filed Nov. 1, 1971, Ser. No. 194,217**

**Int. Cl. E21b** *9/08, 9/12*

**U.S. Cl. 175—364** **11 Claims**

A fixed shaft is mounted on the cutterhead to extend across the rotary axis of the cutterhead. A plurality of independently freely rotating disc cutter wheels are mounted on said shaft at different radial spacings from the cutterhead axis. The cutterhead carries additional disc cutters spaced radially outwardly from the center cutter assembly. All disc cutters include circumferential cutting edges which cut concentric kerfs in the rock at the tunnel face and sloping breaker surfaces on opposite sides of the cutting edge for crushing and dislodging the rock between the kerfs. The centermost disc cutter of the center cutter assembly includes a radially inwardly facing breaker surface which crushes and dislodges the material within the kerf cut by said centermost disc cutter.

The disc cutter wheels have parallel radial side faces. The wheels are mounted for rotation by plain bearings or bushings which carry the radial loads. Washer-like plain radial bearings are provided outwardly of each of the side faces to carry the thrust loads. A seal ring presenting a radial face of hard material against the radial side face of the cutter wheel surrounds each thrust bearing. A ring of elastomeric material serves to cushion the seal member and urge it positively into contact with the side face of the cutter wheel.



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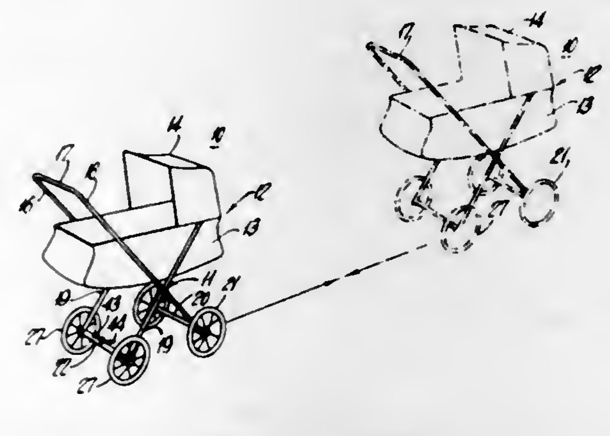
### 3,756,333
### DOLL CARRIAGE

**Herbert Rubin, New York, N.Y., assignor to New York Toy Corporation, New York, N.Y.**

**Filed Jan. 26, 1971, Ser. No. 109,869**

**Int. Cl. B62b** *9/00*

**U.S. Cl. 180—1 E** **1 Claim**



A toy baby carriage which is alternatively free wheeling or of the spring loading roll back type includes a body member frame supported on front and rear pairs of wheels. The rear wheels are secured to a shaft projecting through a transverse tubular member affixed to the body frame and housing a helical windup spring which encircles the shaft and has one end secured to the shaft and the other provided with a stop arm. A foot actuated lever is positioned in the tubular member and is provided with an abutment which is selectively moved through an opening in the tubular member into the path of the spring stop arm to restrict the rotation of the corresponding spring end and permit the loading of the spring. In the alternative the tubular member is rotatably supported by the carriage frame, the opposite end of the windup spring being attached to the tubular member and foot actuated means are provided for releasably locking the tubular member against rotation.

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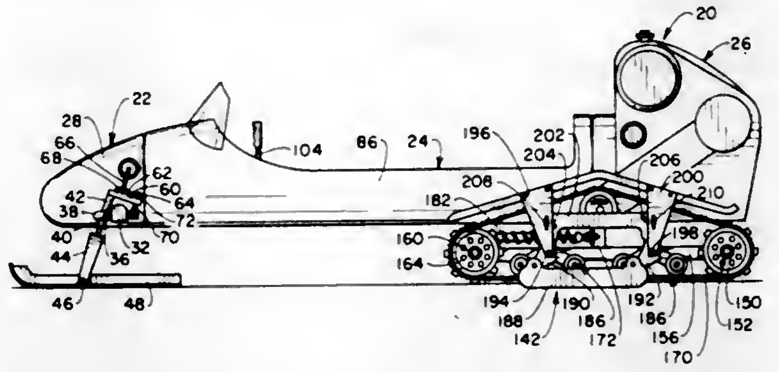
### 3,756,334
### SELF-PROPELLLED SNOW VEHICLE

**Verril E. Williams, 4923 Escobedo Dr., Woodland Hills, Calif.**

**Filed Oct. 8, 1971, Ser. No. 187,765**

**Int. Cl. B62m** *27/02*

**U.S. Cl. 180—5 R** **6 Claims**



A snow vehicle which employs an endless track assembly to propel the vehicle upon snow, the endless track assembly being driven by a motor which is contained within a motor housing, the front or nose section of the vehicle supports a pair of spaced apart skis, a passenger compartment located intermediate the nose section and the motor housing, the passenger compartment being pivotable with respect to the motor housing and the nose section.

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### 3,756,335
### AUTOMOTIVE VEHICLE EQUIPPED WITH AN ALTERNATING-CURRENT DRIVE

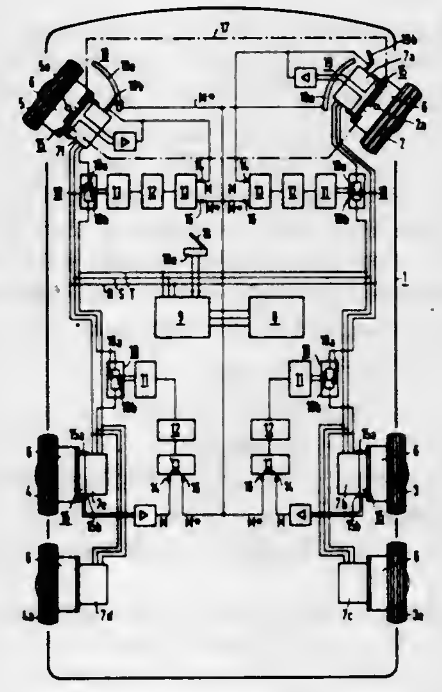
**Max Eisele, Erlangen, and Gunter Wilhelm, Wiesenthau, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Mar. 5, 1971, Ser. No. 121,356**

**Claims priority, application Germany, Mar. 6, 1970, P 20 10 594.6**

**Int. Cl. B62d** *11/04*

**U.S. Cl. 180—6.28** **8 Claims**



An automotive vehicle equipped with wheels connected to induction motors through transmissions is provided with a speed control apparatus connected to the induction motors for adjusting the speed of rotation or RPM of the wheels. The speed control apparatus has a voltage supply and a converter connected to this supply and to at least some of the motors to supply the latter with a voltage changeable in magnitude and frequency. At least one voltage control member is connected between at least one of the motors and the converter. A control device actuable when the vehicle travels along a curved path is connected to the voltage control member for adjusting the RPM of the one motor as required to permit the vehicle to negotiate the curve.

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### 3,756,336
### LAWN MOWER

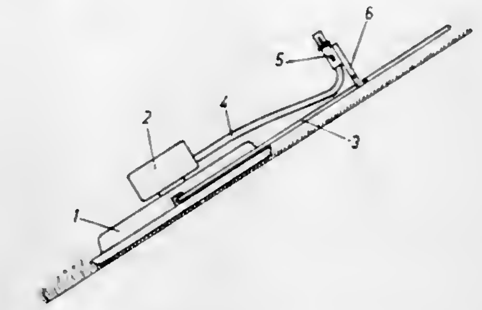
**Dennis Byron Mattingley, Chorleywood, Herts, England, assignor to Flymo Societe Anonyme, Geneva, Switzerland**

**Filed July 6, 1971, Ser. No. 159,729**

**Claims priority, application Great Britain, July 7, 1970, 32,766/70**

**Int. Cl. B62d** *51/04*

**U.S. Cl. 180—19 R** **3 Claims**



A lawn mower with an internal combustion engine has a remote air intake flexible base and nozzle with a bracket attaching the nozzle to the mower handle so that it can attain two selectible positions, namely parallel with the handle or perpendicular with the handle.

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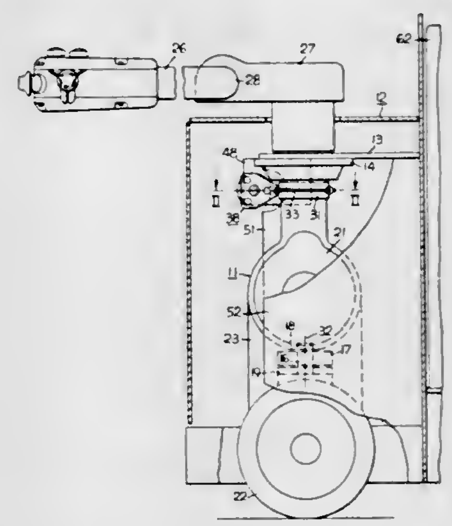
### 3,756,337
### POWER STEERING AND CONTROL THEREFOR

**Robert J. Schroeder, Flossmoor, and Samuel T. Comfort, Homewood, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed Apr. 5, 1972, Ser. No. 241,218**

**Int. Cl. B62d** *5/06, 51/04*

**U.S. Cl. 180—19 S** **4 Claims**



A power steering system for a walkie lift truck wherein the operator may selectively activate an electric motor driven pump to provide power steering of the walkie lift truck. The manual controls for the power steering include a pair of push button switches on the control handle whereby depressing one push button switch provides power assist to steer in one direction and depressing the other push button switch provides power assist for steering in the other direction. The hydraulic actuator for the power steering is a through rod double acting hydraulic jack having opposite ends of the rod secured to the frame of the walkie truck and the shiftable cylinder connected to the steerable power unit by a wraparound cable. A unique pressure operated control valve is provided which has a centered float position wherein the opposite sides of the double acting steering jack are connected to one another thereby facilitating easy manual steering of the truck when power steering is not required.

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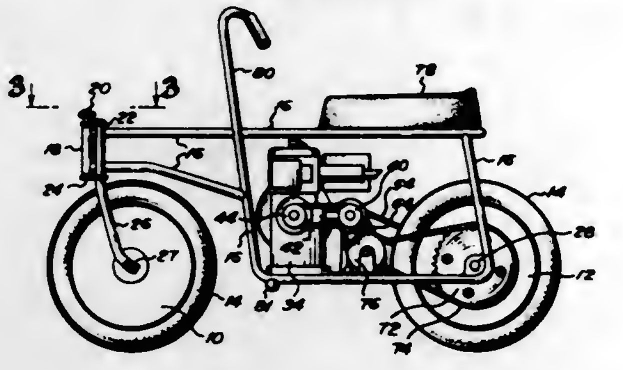
### 3,756,338
### GYRO-CONTROLLED MOTORCYCLE

**Harold M. Goodridge, 12832 Occidental Ave. South, Seattle, Wash.**

**Filed Dec. 14, 1971, Ser. No. 207,763**

**Int. Cl. B62d** *37/06*

**U.S. Cl. 180—30** **10 Claims**



A motorcycle, to be steered and ridden, is disclosed. with a steering wheel and a driven wheel, preferably the steering wheel is a caster wheel. A spinning gyrowheel is provided for steering and stabilizing effects and is preferably coaxial with the driven wheel. Also, the driven wheel is hollow and encloses the spinning gyrowheel. A motor drives both the driven wheel and the spinning gyrowheel, but independently of each other. The power coupling between the motor and the spinning gyrowheel includes an overriding clutch and the power coupling to the driven wheel includes a torque converter.

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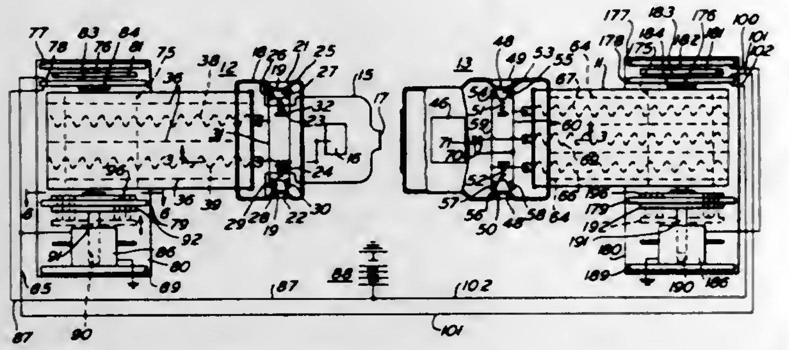
### 3,756,339
### SAFETY BELT CONTROL APPARATUS

**Floyd S. Cornelison, Jr., and Robert L. Turner, both of 244 S. 9th St., Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 233,090, March 9, 1972, abandoned. This application Mar. 13, 1972, Ser. No. 234,116**

**Int. Cl. B60r** *21/10*

**U.S. Cl. 180—82 C** **9 Claims**



Safety seat belt control apparatus is disclosed in which ends of the belt sections are carried on spring impelled retracting drums, the drums being normally locked against movement but provided with releasing solenoids. The solenoids are controlled by pushbuttons carried by each of the buckle portions on the free ends of the belt sections. An additional switch is provided for completing a circuit when the buckle portions are engaged so that upon movement of any of the pushbuttons the drums are freed so that the length of the connected belt sections can be adjusted as desired and the buckle portions moved as desired, the belt then being locked upon release of the pushbutton. Manual engagement of the buckle portions can be effected with one hand by reason of the control of the available length of each belt section.

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### 3,756,340
### POWER-ASSISTED RACK-AND-PINION STEERING MECHANISM FOR MOTOR VEHICLES

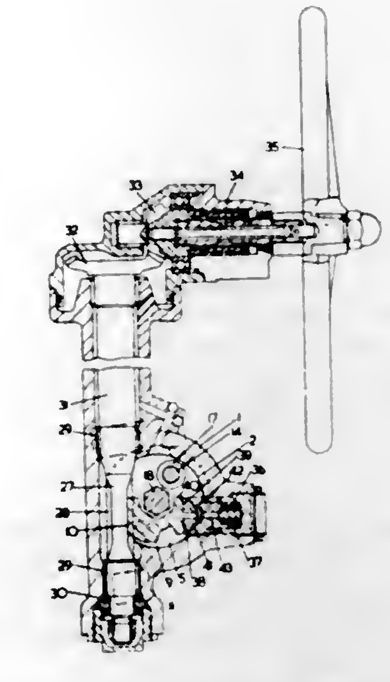
**Barry John Millard, Reading, England, assignor to Adwest Engineering Limited, Reading, England**

**Filed May 3, 1972, Ser. No. 249,780**

**Claims priority, application Great Britain, Mar. 21, 1972, 13,222/72**

**Int. Cl. B62d** *3/12, 5/06*

**U.S. Cl. 180—79.2 R** **12 Claims**



A power-assisted rack-and-pinion steering mechanism for a motor vehicle, the mechanism comprising a housing, a pinion rotatably mounted in the housing and adapted for connection to the steering control of a motor vehicle for rotation thereby, a rack assembly reciprocable within the housing and adapted for connection to the steerable road wheels of a motor vehicle to impart steering thereto, the rack assembly comprising two pistons spaced from one another and a toothed rack pivotally mounted eccentrically of said pistons, the rack assembly being free to rotate about the axis of the pistons to engage the teeth of the toothed rack with the pinion and the toothed rack being free to pivot about an axis parallel with the axis of the pistons to ensure proper meshing of the teeth of the toothed rack with the teeth of the pinion, and means urging the toothed rack into engagement with the pinion.

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### 3,756,341
### VEHICLE ANTI-THEFT SYSTEM

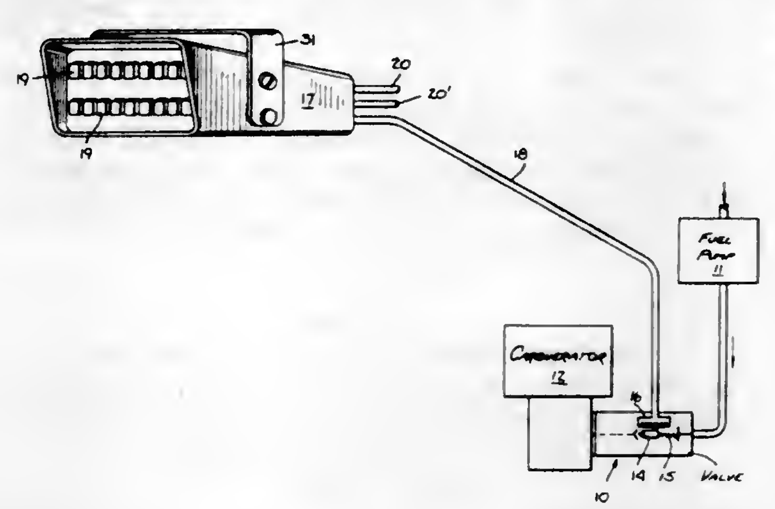
**William Tonkowich, Franklin Lakes, and John A. Medvitz, Garfield, both of N.J., assignors to Safetech, Inc., Fairfield, N.J.**

**Filed July 22, 1971, Ser. No. 165,265**

**Int. Cl. B60r** *25/04*

**U.S. Cl. 180—114** **7 Claims**

The invention is a control device which prevents the operation of a motor vehicle by unauthorized persons. The system includes a fuel control valve which directly connects the fuel line to the carburetor or fuel injector. This valve is an electrically operated tamper-proof valve which remains closed except when it receives an electric control signal from a tamper-proof electric control box. The valve opening signal is fed from the control box when a particular code such as a 4, 5, 6 or 7 digit code is entered into the box by depressing several selected control buttons of a number of available control buttons. The control box itself has a tamper-proof metal outer casing which prevents unauthorized access to the electrical system but which includes a separate code operated electrical device for permitting the control box to be opened for maintenance or repair by authorized personnel.



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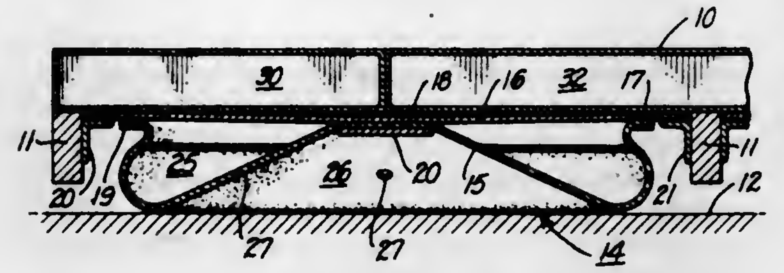
### 3,756,342
### REPLACEABLE AIR CUSHION DEVICE

**Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.**

**Filed Sept. 15, 1971, Ser. No. 180,666**

**Int. Cl. B60v** *1/02*

**U.S. Cl. 180—124** **4 Claims**



An air cushion load carrying device having one or more air bearings and providing for removal and replacement of an air bearing while the load carrying structure continues to support the load. A load carrying member with a slide in and slide out construction for individual air bearings. A load carrying member with an air distribution chamber and receptacles for one or more air bearings and air flow paths between the chamber and the bearings with a pressure seal construction providing ready insertion and removal of bearings.

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### 3,756,343
### AIR CUSHION SEAL

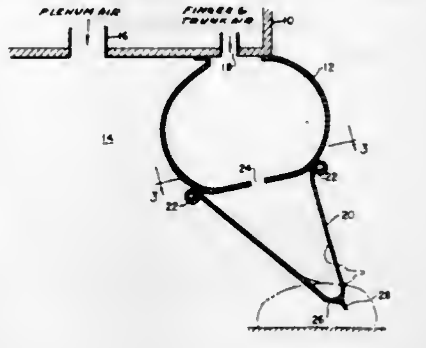
**Douglas D. Joyce, Jr., Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.**

**Filed Sept. 2, 1971, Ser. No. 177,354**

**Int. Cl. B60v** *1/16*

**U.S. Cl. 180—127** **7 Claims**

There is disclosed herein an improved seal device for air-cushion vehicles, surface effect ships, or the like; consisting of a plurality of discrete, vertically elongate, closed, bucket-shaped cell members which are disposed serially in side-by-side free-sliding relation, and which are formed of flexible fabric and are inflated to pressures greater than the associated air-cushion pressure. At their upper ends the cells are firmly affixed to the vehicle structure so as to extend therebelow in cantilever mounted relation, and in side view are of acute angle form terminating in apex configurations at their bottom ends. Thus the cells are individually deformable, but are pneumatically resilient; and due to their higher pressured condition automatically spring back and return to their normal configurations after being deflected when passing over obstacles or waves with more positive control of the transiently confined air cushion than within the capabilities of prior air-cushion sealing devices. The cell members are preferably mounted relative to the "hard" frame or hull structure of the vehicle so as to splay outwardly from the vertical view perimeters thereof; thereby enhancing the non-scooping and non-snagging performance of the system, while also increasing the air-cushion area relative to the "hard" structure. Thus, the invention operates more efficiently and with a greatly reduced drag effect (attendant frictional contacts with the surface over which the vehicle is travelling) due to the shape of the cell members as well as to their angle of contact with the reaction surface.



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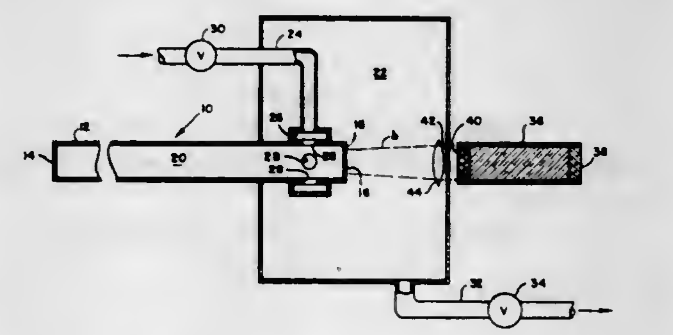
### 3,756,344
### LASER-DRIVEN SHOCK TUBE

**John W. Daiber; Ronald G. Rehm, both of Williamsville, and Herbert M. Thompson, Depew, all of N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.**

**Filed Dec. 22, 1971, Ser. No. 210,659**

**Int. Cl. G01k** *11/22*

**U.S. Cl. 181—.5 NP** **6 Claims**



A laser driven shock tube wherein a laser is focused in the vicinity of a supersonic free expansion jet orifice at one end of a shock tube whereby a hot plasma is generated which drives a shock wave through the orifice and into the tube.

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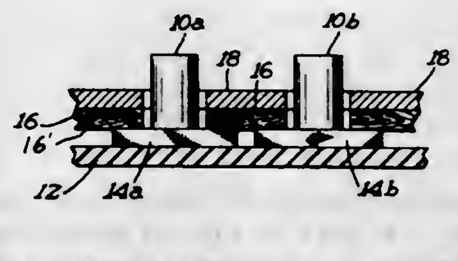
### 3,756,345
### UNDERWATER ACOUSTIC DEVICE

**Paul M. D'Amico, St. Paul, and Roland W. Higgs, Orchard Lake, both of Mich., assignors to Honeywell Inc., Minneapolis, Minn.**

**Filed Feb. 10, 1972, Ser. No. 225,149**

**Int. Cl. G01v** *11/00;* **G10k** *11/04*

**U.S. Cl. 181—33 G** **5 Claims**



A pressure insensitive underwater acoustic element useful as an acoustic reflector or an acoustic decoupler uses a body of balsa wood which is isostatically precompressed to between about 2,500 pounds per square inch and about 20,000 pounds per square inch.

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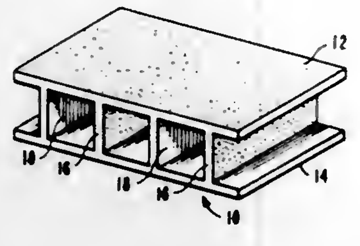
### 3,756,346
### ACOUSTICAL PANEL

**Leon Parker, Burbank, Calif., assignor to Hitco, Irvine, Calif.**
**Filed July 3, 1972, Ser. No. 268,475**
**Int. Cl. E04b** *1/99*
**U.S. Cl. 181—33 G** **13 Claims**



An acoustical panel, as disclosed, comprises a woven fabric having internal ribs integrally woven with opposite planar faces so as to form compartments which trap and dissipate sound wave energy passed by at least one of the faces. At least one of the faces, and in some cases selected ones of the internal ribs, are provided with a controlled porosity by being woven of combination yarns, each of which comprises a low-twist core yarn and at least one other low-twist yarn wound around the core yarn. The yarns which are wound around the core yarns prevent the core yarns from flattening excessively during weaving and subsequent resin impregnation and thereby prevent the resin from filling the voids between yarns. In one arrangement each combination yarn is comprised of a core yarn of fiberglass or other appropriate material having a smaller yarn of nylon or other appropriate material served thereon. In an alternative arrangement each combination yarn comprises a plurality of yarns braided onto the outside of a larger core yarn.

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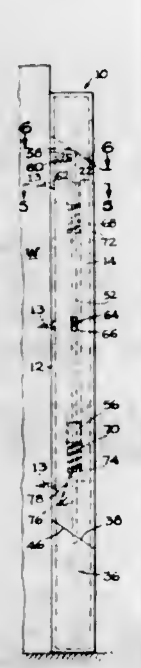
### 3,756,347
### EMERGENCY ESCAPE LADDER

**Dominic Messera, and Louis R. Messera, both of 28 Spring St., Oyster Bay, N.Y.**
**Filed June 23, 1972, Ser. No. 265,765**
**Int. Cl. E06c** *9/12*
**U.S. Cl. 182—95** **9 Claims**



A self-contained emergency escape ladder assembly selectively adjustable to and from a folded, enclosed and concealed position of storage and an extended position of use comprising first and second vertically extending subassemblies, each of which includes a ladder post fixedly secured to a half-shell enclosure, said ladder posts being interconnected by a plurality of spaced-apart hinged rungs whereby said second vertically extending subassembly may be adjusted to and from said positions as desired. The first vertically extending subassembly being adapted to be fixedly secured to a building wall. The said ladder assembly further comprising means for securely locking said first and second vertically extending portions together in said storage position and additionally means for unlocking said locking means and urging said portions away from each other whereby the combined effect of gravity may assist the unfolding of said ladder assembly for use.

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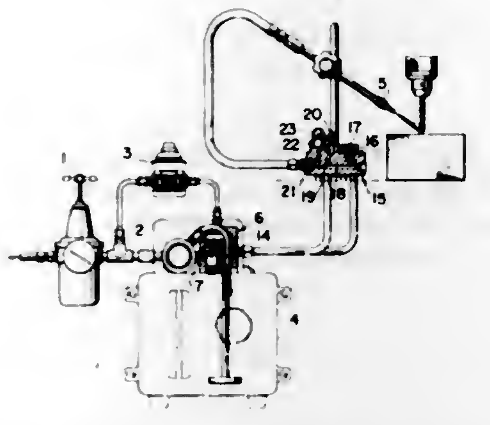
### 3,756,348
### MACHINE TOOL LUBRICATING DEVICE

**Tomomitsu Iizumi, Katsushika-ku, Tokyo, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan**
**Filed Oct. 5, 1971, Ser. No. 186,613**
**Int. Cl. F16n** *7/34*
**U.S. Cl. 184—55 A** **1 Claim**



A lubricating device in which passages for compressed air and cutting fluid to be fed under pressure are connected to a double pipe nozzle through a pilot valve and a mixing valve, with a control pilot pressure being applied through a mechanical valve to a diaphragm located at said pilot valve, and with a gauge tube and a transparent gauge window being provided in the cutting fluid passage of said mixing valve.

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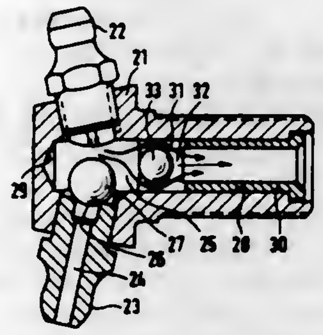
### 3,756,349
### VALVE FOR LUBRICATING AND VENTING MACHINE PARTS SUBJECT TO WEAR

**Emil Kluh, Essen-Steele, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany**
**Filed Nov. 10, 1971, Ser. No. 197,296**
**Claims priority, application Germany, Nov. 9, 1973, P 20 55 066.7**
**Int. Cl. F16n** *37/00*
**U.S. Cl. 184—105 B** **5 Claims**



There is disclosed a valve for lubricating and venting machine parts subject to wear, in particular a splined shaft connection, by a pressurized lubricant, wherein a valve is provided having a grease nipple disposed at the valve body and has a first passage, and a second passage is provided connecting the valve chamber with the ambient atmosphere, the outlet opening of the valve being arranged between the openings of the passages into the valve chamber, and a valve ball is provided which is freely movable in the valve chamber and capable of entering into sealing engagement with either one of the seats surrounding the opening of each of the passages in response to pressure admission on said ball.

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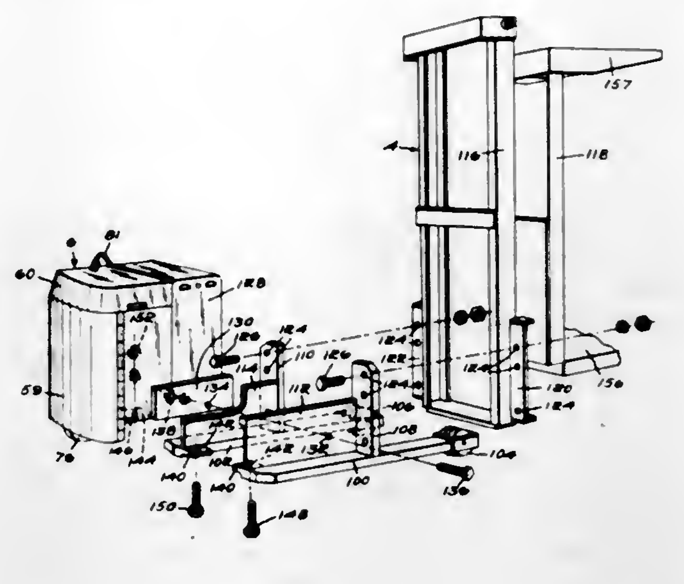
### 3,756,350
### MATERIALS HANDLING TRUCK

**Peter F. Gandolfo, Wellesley, and Lornts B. Nilsen, West Gloucester, both of Mass., assignors to Hyster Company, Portland, Oreg.**
**Filed Mar. 1, 1971, Ser. No. 119,470**
**Int. Cl. B66b** *9/20*
**U.S. Cl. 187—9** **5 Claims**



A materials handling truck consisting of base, mast and power modules. The three modules, all of which have common dimensions at the points of connection, are detachably bolted together. Selected modules can be combined to produce a variety of truck models of various sizes and capacities.

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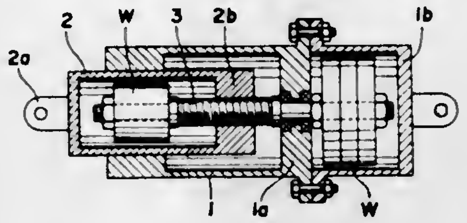
### 3,756,351
### WEIGHT SCREW ROD TYPE DAMPER

**Shoji Sasaki, Kawasaki-shi, Kanagawa-ken, Japan, assignor to Sanwa Tetsuki Kougiyou Kabushiki Kaisha, Tokyo, Japan**
**Filed Dec. 7, 1971, Ser. No. 205,508**
**Claims priority, application Japan, July 15, 1971, 46/52134**
**Int. Cl. B60t** *7/10*
**U.S. Cl. 188—1 B** **1 Claim**



A weight screw rod type damper in which a cylindrical main case is provided with a closure and a fixing part at one end, and a cylindrical auxiliary case provided with fixing part at one end, and a small diameter threaded hole at the other end is inserted into the main case to be free to move axially inward and outward. A screw rod engaged rotatably in the closure of the main case near the fixing part, threadably engages the small diameter hole of the auxiliary case near the middle part of the rod and rotatable clockwise and is counterclockwise with the relative movement of the auxiliary case outward and inward of the main case and a cylindrical weight is fixed directly or through an accelerating device to the screw rod or an extension thereof.

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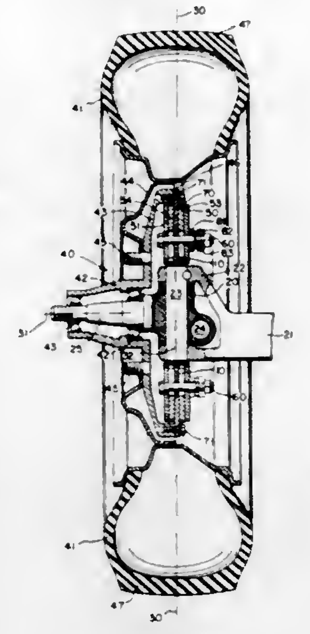
### 3,756,352
### DISC BRAKE AND MOUNTING ARRANGEMENT

**Era E. Urban, R. R. No. 1, Bluffton, Ohio**
**Filed Dec. 29, 1970, Ser. No. 102,483**
**Int. Cl. B60t** *1/06*
**U.S. Cl. 188—18 A** **4 Claims**



A disc brake for a wheel rotatably mounted on an axle in which the fixed and moveable brake elements are in alignment with the vertical centerline of the wheel tread. The brake comprises a non-rotating anchor member fixedly secureable to the axle at a point in alignment with the vertical centerline of the tread of a wheel mounted on the axle and a brake disc fixedly secureable to the wheel for rotation therewith in alignment with the center-line of the tread. A pair of brake shoe members positioned on opposite sides of the brake disc are mounted on the anchor member such that they do not rotate relative thereto, but are permitted a limited amount of axial movement to engage with, and disengage from the brake disc. The brake also includes a member, such as a hydraulically operated cam member, for applying a pressure load to move the brake shoe members into engagement with the brake disc. Due to the in-line arrangement of the tire, brake disc and anchor member, braking forces are applied at a point on the axle in the vertical centerline of the tire. In the event of failure of a brake on one of two wheels supported by a single axle, the in-line arrangement eliminates the tendency for sideways movement that would otherwise occur. The brake can be mounted in this "in-line" manner on a wheel which pivots for steering in which case the anchor member will be in line with the king pin and will turn with the wheel.

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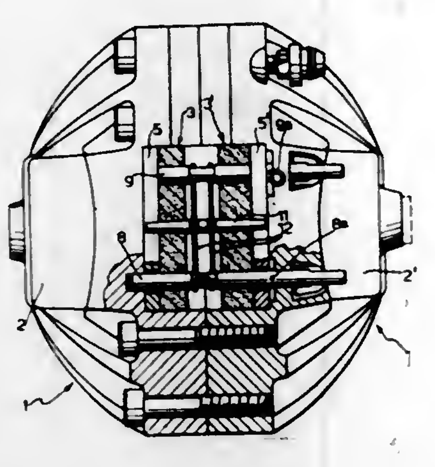
### 3,756,353
### SUPPORT DEVICE OF DISC BRAKE SHOES

**Sergio Bombassei, Paladina, and Alberto Bombassei, Bergamo, both of Italy, assignors to Societa'S. n. c. OMDS Officine Meccaniche di Sombreno, di Bombassei E Breda, Berrgamo, Italy**
**Filed Sept. 20, 1971, Ser. No. 181,903**
**Claims priority, application Italy, Nov. 28, 1970, 70983 A/70**
**Int. Cl. F16d** *55/00*
**U.S. Cl. 188—72.3** **5 Claims**

A device for supporting the pads of a disc brake of the type having a pair of jaws between which extends the brake disc. The brake pads comprise plates having brake pads of frictional material on at least part of one face. The jaws carry two transverse pins on which the brake pads are mounted by means of holes in the plates which are rather larger than the pins so that the plates can pivot about a fulcrum defined adjacent the face of the plate remote from the face bearing the pad by the region of contact between the pins and a flat face on the inside of the holes. An intermediate pin which contacts the plate at a contact zone adjacent the face of the plate carrying the brake pad liner is biassed toward the mounting support pins so that the two plates are biased to rotate away from each other to disengage the pads from the brake disc when the brakes are not operated thereby ensuring that the brake disengages when the braking pressure is released.



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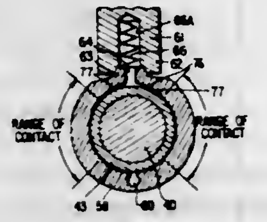
### 3,756,354
### DIAMETER BRAKE AND LOCKING DEVICE FOR A ROTATABLE SHAFT

**Wilber R. Clark, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.**

**Filed Apr. 8, 1971, Ser. No. 132,517**

**Int. Cl. F16d** *49/00*

**U.S. Cl. 188—77 R** **11 Claims**



A rotatable shaft (40) of a machine tool is clamped by an apparatus which stops rotation and locks the shaft (40) against movement. This apparatus may be applied to lock the shaft (40) of a rotary-type truing mechanism or dresser (10) which includes a diamond-impregnated roller (11) for dressing a grinding wheel (12). The hydraulic brake assembly (57) is comprised of a circular split-brake collar (58) having angularly disposed or tapered end portions (63) which are confined by a locking plunger (61) having complementarily angled end portions (62). The plunger (61) is advanced by hydraulic fluid which compresses the brake collar (58) around the shaft (40) to form a friction brake to stop and lock the rotation of the shaft (40). A light truing pass may then be made across the face of the grinding wheel (12) to perform a fine finishing operation. Thereafter, the plunger (61) is retracted by spring forces when the fluid pressure is released, and the brake collar (58 ) is opened to allow rotation of the shaft (40) to be resumed.

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### 3,756,355
### ELECTRIC BRAKE CONSTRUCTION

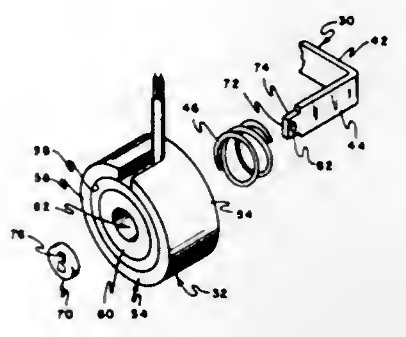
**Carl R. Kreider, Goshen, Ind., assignor to Dexter Axle Company, Inc., Elkhart, Ind.**

**Filed May 25, 1972, Ser. No. 256,937**

**Int. Cl. B60t** *13/74*; **H02k** *7/102*

**U.S. Cl. 188—138** **19 Claims**

The electro-magnet which is attracted to and which frictionally engages the armature to actuate the brake includes a central opening to permit mounting and retention of the electro-magnet on a tab projecting toward the armature from one end of the brake actuating lever. A generally donut-shaped retaining ring locks the electro-magnet to the tab and provides a universally pivotal mount for the magnet at a point close to the plane at which the magnet engages the armature face, for transfer of force from magnet to lever arm at such point. The retaining ring includes a nipple projecting from the inner surface of the ring opening to mate with an indent formed in a corresponding surface of the tab. The ring is stiffly resiliently expandable to permit the ring to be positioned over the tab, but expansion of the ring for removal is prevented when it is seated in the central opening of the electro-magnet, both by the stiffness of the resilient ring and by the walls of the opening, which confine the ring and act as a barrier.



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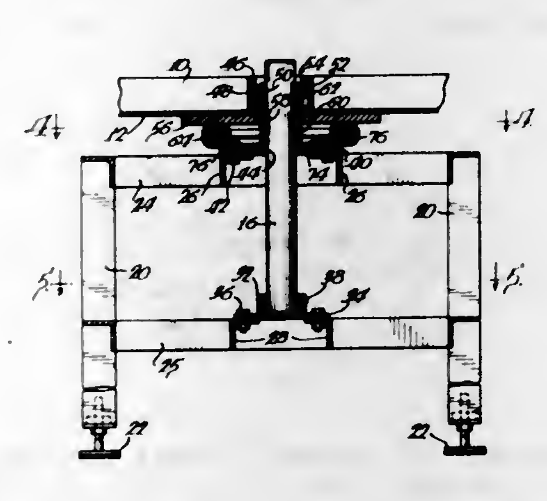
### 3,756,356
### BRAKE FOR MANUALLY OPERATED ROTARY FILE

**Samuel Aston Loyd, Jr., Waynesboro, Va., assignor to Acme Visible Records, Inc., Crozet, Va.**

**Filed Dec. 14, 1971, Ser. No. 207,892**

**Int. Cl. F16d** *65/34*

**U.S. Cl. 188—164** **5 Claims**



A circular file is rotatably mounted on a base that includes an annular electromagnet secured against rotation but movable toward and away from the base of the file. The magnet may be electrically energized via one or more switches positioned at various locations around the file in order to cause the electromagnet to frictionally engage and stop rotation of the file at any desired position.

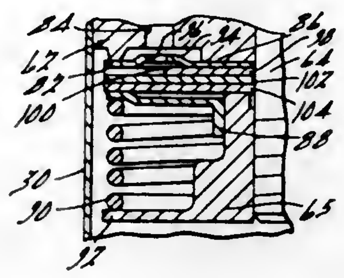
### 3,756,357
### SHOCK ABSORBER AND VALVE ASSEMBLY

**Kurt Graff, Geyen/Koln, Bundersrepublik Deutschland, Germany, and Jan Mathijs Antoon Winjnhoven, Truiden, Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium**

**Filed Dec. 30, 1971, Ser. No. 213,960**

**Int. Cl. F16f** *9/348*

**U.S. Cl. 188—282** **11 Claims**



A hydraulic direct-acting telescopic shock absorber having an improved valve mechanism incorporating a plurality of valve disks each having flow control orifices which function to reduce the hydraulic "swish" noise produced during operation of the shock absorber.

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### ERRATUM

For Class 188—352 see:
Patent No. 3,756,367

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### 3,756,358
### INTERRELATED CONTROLS FOR GEARING, CLUTCH, BRAKES AND ENGINE

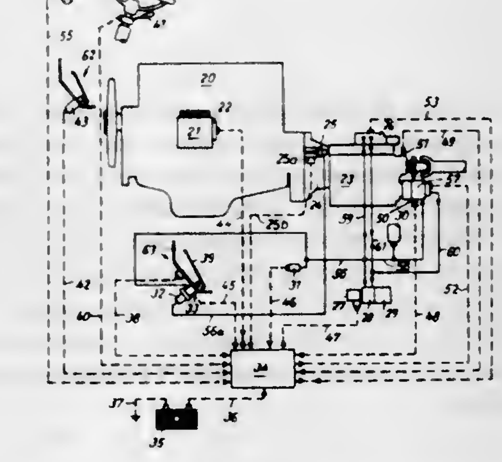
**Helmut Espenschied, Ludwigsburg-Pflugf; Volker Kadelbach, Heutingsheim; Georg Rothfuss, Ditzingen; Hans Scheyhing, Hofingen; Bernard Mattes, Ludwigsburg; Rainer Burkel; Ernst Erben, both of Schwieberdingen; Karl-Otto Hupfeld, Moglingen, and Herbert Weyer, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed July 14, 1971, Ser. No. 162,339**

**Claims priority, application Germany, July 24, 1970, P 20 36 732.2**

**Int. Cl. B60k** *29/00, 21/00*

**U.S. Cl. 192—0.09** **63 Claims**



An automatic gear change system for automatically actuating gear shift devices of a stepped change speed gear box of a motor-vehicle provided with a clutch means comprises a central control device; means for monitoring input and output speeds of the stepped change-speed gear box during synchronous running of input and output transmission shafts to be coupled to each other; and synchronizing aids for expediting synchronous running of the two transmission shafts. The control device includes a synchronizing circuit arrangement producing digital control signals during super-synchronous, sub-synchronous and substantially synchronous running of the two transmission shafts, and further includes switching logic means comprising digitally operating switching and gating circuits which actuate the synchronizing aids, gear shift devices and the clutch means. The synchronizing circuit arrangement advantageously uses two Schmitt triggers having different response and fallout thresholds.

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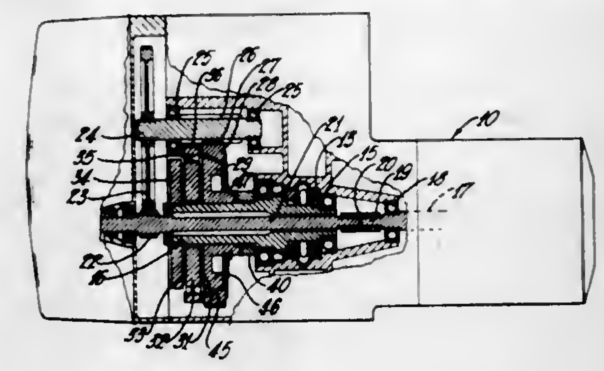
### 3,756,359
### SLIP COUPLING AND WESTON BRAKE FOR HOISTS

**Kang Suez, and Glenn S. Smith, both of Forrest City, Ark., assignors to Eaton Corporation, Cleveland, Ohio**

**Filed June 23, 1971, Ser. No. 155,979**

**Int. Cl. F16d** *13/30, 67/02*

**U.S. Cl. 192—16** **7 Claims**



In a hoist, a Weston type brake mechanism is formed with a friction disk integral with the load shaft, and the driving element of the Weston brake mechanism as well as the ratcheted locking disk of the brake are mounted for rotation in the axis of the load shaft and are effective through the integral friction disk to control the load shaft directly so as to control the load at all times. The driving element of the Weston brake mechanism is made of two parts, one of which is a gear in frictional relationship to the other part, and held assembled thereto by means entirely contained between the two parts so that they function effectively as one. Any failure in the frictional relationship will not affect the functioning of the Weston brake mechanism to control the load.

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### 3,756,360
### CLUTCH ASSEMBLIES

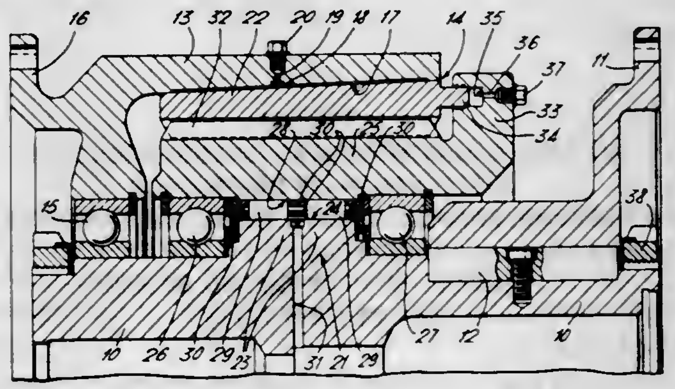
**George William Horacy Harrison, Huddersfield, England, assignor to David Brown Gear Industries Limited, Huddersfield, England**

**Filed Mar. 27, 1972, Ser. No. 238,415**

**Claims priority, application Great Britain, Apr. 23, 1971, 11,196/71**

**Int. Cl. F16d** *47/04*

**U.S. Cl. 192—48.3** **6 Claims**



A clutch assembly for connection between a prime mover and a power transmission mechanism comprises a sprag clutch with a cone clutch co-axially surrounding it on its input side. The co-axial arrangement avoids out-of-balance forces which would cause vibration. The cone clutch is normally engaged by reason of a hydraulically-induced interference fit between its co-acting surfaces, but if it is temporarily necessary to run the prime mover without transmitting any torque through the clutch assembly the cone clutch can be coupled by removable hoses to a supply of hydraulic fluid under pressure which disengages said clutch and is subsequently used to re-engage it.

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## ERRATUM

For Class 192—70 see:
Patent No. 3,756,325

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### 3,756,361
### CLUTCH-RELEASE LINKAGE AUTOMATIC AXIALLY-ACTING SLACK ADJUSTER

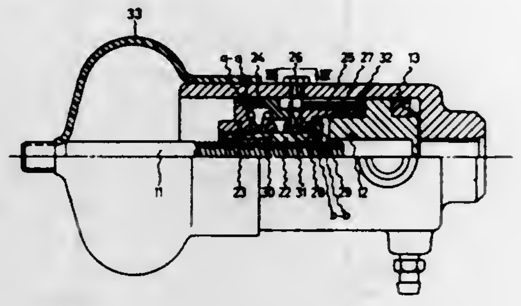
**Ronnie Persson, Rantzovgatan 2 a, 212 21 Malmo, and Nils Borje Lennart Sander, Orsholmagangen 6, 217 42 Malmo, both of Sweden**

**Filed Mar. 23, 1972, Ser. No. 237,260**

**Claims priority, application Great Britain, Apr. 7, 1971, 8,939/71**

**Int. Cl. F16d** *13/75*

**U.S. Cl. 192—111 A** **5 Claims**



An automatic slack adjuster for a clutch mechanism comprises an axially acting telescopically displaceable force transmission mechanism in the clutch actuating linkage having a screw threaded spindle with a self locking pitch for a nut thereon which has opposing clutch surfaces engaging a sleeve member movable in a housing surrounding the spindle. The nut is rotated with the sleeve and clutch survaces to adjust the linkage after a predetermined travel distance by means of a pin extending from the housing to engage a cam slot in the sleeve, which is moved axially within the housing as a clutch engaging force is applied.

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### 3,756,362
### VENDING MACHINE HAVING SEQUENTIAL ACTUATION OF DISPERSER

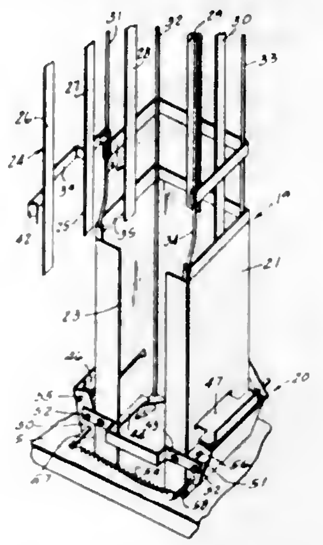
**John H. Pearce, Shawnee Mission, Kans., assignor to The Cornelius Company, Anoka, Minn.**

**Filed Nov. 9, 1970, Ser. No. 87,822**

**Int. Cl. G07f** *11/48*

**U.S. Cl. 194—10** **11 Claims**

A vending machine includes a cabinet having a series of article vending mechanisms mounted on shelves, at least one of which is hinged about a vertical axis, each article bending mechanism including a vertical guideway for retaining a stack of filled tapered cups in inverted position, and an escapement mechanism at the lower end of said guideway having two pair of retractable support ledges which alternatively are reciprocated by a solenoid, which may be under the control of a stepping relay, to engage the inverted top sides of successive filled cups.



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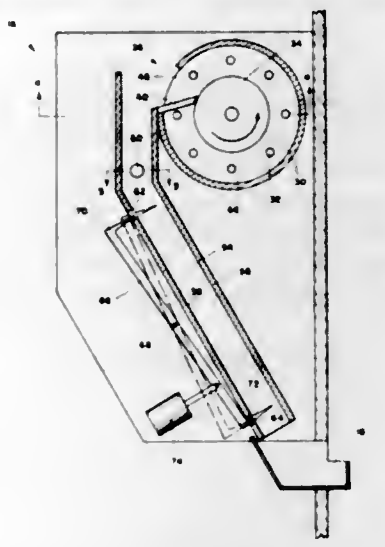
### 3,756,363
### CHANGE DISPENSING APPARATUS

**Frank A. Novak, Seven Hills; Kenneth T. Schreiber, Bedford, and Anthony H. Dolejs, Bedford Heights, all of Ohio, assignors to Ardac/USA Incorporated, Chesterland, Ohio**

**Filed Sept. 15, 1971, Ser. No. 180,816**

**Int. Cl. G07f** *7/04*

**U.S. Cl. 194—4 C** **11 Claims**



Apparatus for accepting a piece of paper currency, performing a validating operation on the currency, and, if the currency is valid, dispensing an equal value of coins. The coin dispensing portion of the apparatus includes a hopper which receives randomly oriented coins, an inclined rotating wheel for taking coins individually from the hopper to a discharge chute, a stop arrangement for holding the desired number of coins in the chute until the dispensing is called for, and a sensor for detecting when the coin chute is filled to stop the rotating feed disc.

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### 3,756,364
### SOLID STATE CONTROL CIRCUIT FOR USE IN VENDING MACHINES

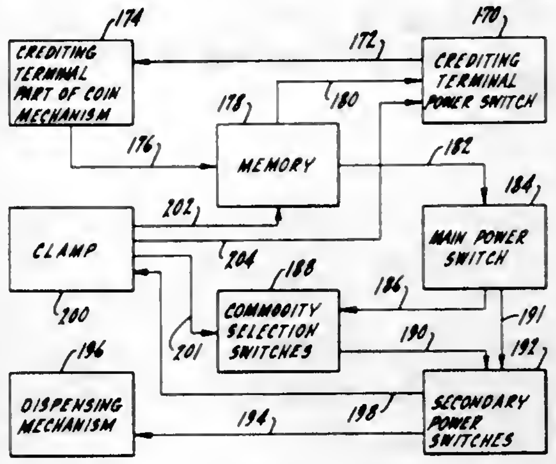
**Karl H. Bockholt, Walworth Twp., Walworth County, Wis., assignor to Oak Electro/netics Corp., Crystal Lake, Ill.**

**Filed Feb. 23, 1972, Ser. No. 228,633**

**Int. Cl. G07f** *11/00*

**U.S. Cl. 194—10** **19 Claims**

A solid state control circuit for a vending machine which is effective to apply an operating potential to a plurality of commodity selection switches upon an appropriate coin deposit in the coin mechanism. The operation of one of the commodity selection switches causes a product to be dispensed and at the same time causes elements of the control circuit to prevent the further dispensing of any additional products. After a product has been dispensed, an internal timing mechanism within the control circuit places it again in a condition to receive a coin deposit.



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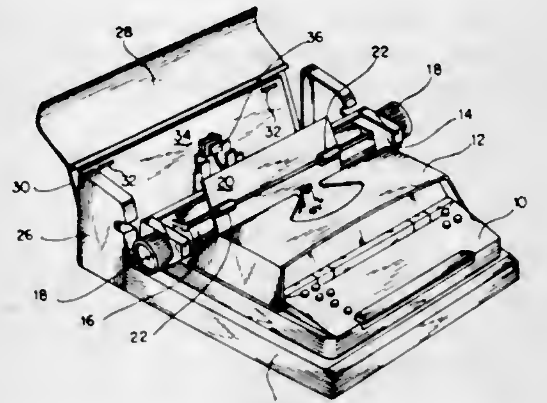
### 3,756,365
### MAGNETIC RECORDING AND EDITING TYPEWRITER

**Michael J. Markakis, Palo Alto, Calif., assignor to SCM Corporation, New York, N.Y.**

**Filed Oct. 8, 1971, Ser. No. 187,669**

**Int. Cl. B41j** *5/40*

**U.S. Cl. 197—1 R** **7 Claims**



A machine is disclosed for simultaneously making typewritten and magnetic records, for editing magnetic records, and for automatically making typewritten record copies of edited or unedited magnetic records.

The editing typewriter comprises typewriter elements consisting of a platen and printing type spaced from the platen. Means are provided for stepping one of the typewriter elements with respect to the other to effect character spacing within a line of type. The editing typewriter also includes magnetic recorder support elements consisting of a magnetic record support and a magnetic head support mounted adjacent the magnetic record support for relative movement in a predetermined direction with respect to the magnetic record support. A magnetic recording head is mounted to the magnetic head support. A magnetic reproducing head is also mounted to the magnetic head support spaced from the magnetic recording head in the aforementioned predetermined direction. Structural means "pantographically" link one of the typewriter elements with one of the magnetic recorder support elements whereby the magnetic recording head and the magnetic reproducing head may be stepped in the predetermined direction with respect to the magnetic record support for magnetically recording and reproducing a line of magnetically encoded information on a magnetic record supported on the magnetic record support when one of the typewriter elements is stepped with respect to the other.

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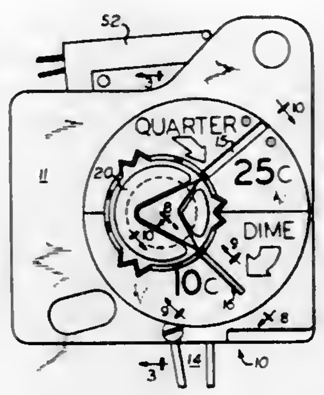
### 3,756,366
### ROTARY COIN METER

**Harry Greenwald, Whitestone, N.Y., assignor to Walter Kidde & Company, Inc., Clifton, N.J.**

**Filed Dec. 9, 1971, Ser. No. 206,446**

**Int. Cl. G07f** *5/00*

**U.S. Cl. 194—84** **2 Claims**



A coin meter having a rotary coin carrier that accepts and deposits coins of different denominations, one at a time, and is coupled to a time-setting member that establishes the operating cycle duration of a controlled device according to the value of the coins deposited. Initiation and termination of the operating cycle is effected by switches controlled by a timer cooperating with the time-setting member.

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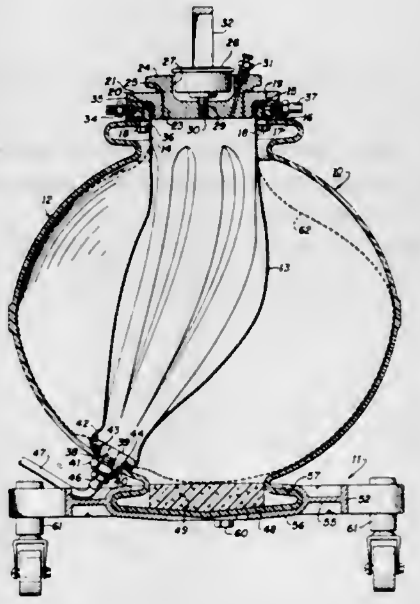
### 3,756,367
### HYDRAULIC BRAKE SYSTEM BLEEDER

**Wallace F. Mitchell, Arlington Heights, and Charles C. Valentincic, Wadsworth, both of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.**

**Filed Jan. 10, 1972, Ser. No. 216,483**

**Int. Cl. B60t** *11/30*

**U.S. Cl. 188—352** **6 Claims**



A portable brake bleeder utilizes a unitary, spherical housing in which a flexible, resilient bladder for containing hydraulic fluid is mounted. The bleeder is pressurized by supplying compressed air to the space in the housing surrounding the bladder.

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## ERRATUM

For Class 197—1 see:
Patent No. 3,756,365

### 3,756,368
### METHOD AND APPARATUS FOR HANDLING ARTICLES

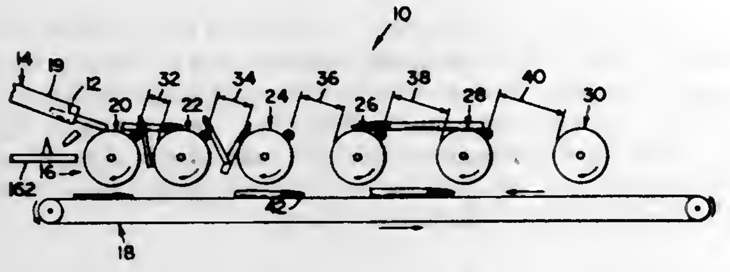
**Ralph C. Lent, Lafayette, Calif., assignor to Del Monte Corporation, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 7,615, Feb. 2, 1970, Pat. No. 3,682,301. This application June 7, 1971, Ser. No. 150,442**

**Int. Cl. B65g** *47/24*

**U.S. Cl. 198—33 AD** **8 Claims**

Method and apparatus for handling and orienting elongated articles (e.g., asparagus) having a center of gravity displaced from the geometric center in a direction away from the lighter and toward the heavier end thereof. Employs the principle of tilting articles about their centers of gravity, together with moving surfaces upon which the articles are supported. The articles are caused to tilt with their heavier ends foremost and drop through one or more gaps formed between moving surfaces. Conveyor means collects the articles and delivers them with the desired lengthwise orientation for further processing.



In certain embodiments the conveyor means may collect the articles within a given length range. Also in one embodiment the means provided for receiving oriented articles discharging from the orienting apparatus functions to retain the desired orientation in the discharge zone and to convey the articles away from the discharge zone for further processing. An article feeding device incorporates a V-shaped trough feeding a plurality of V-shaped lanes down an incline for controlled feeding of multiple lanes of the orientor apparatus.

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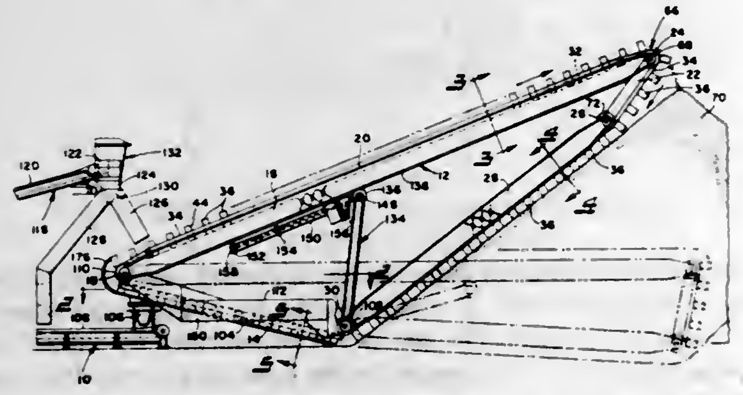
### 3,756,369
### APPARATUS FOR STACKING AND RECLAIMING BULK MATERIAL

**Roger Leon Hulette, Berea, and Robert J. Stupp, Westlake, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio**

**Filed Oct. 21, 1971, Ser. No. 191,511**

**Int. Cl. B65g** *65/28*

**U.S. Cl. 198—36** **14 Claims**



There is provided an apparatus useful for handling bulk material and characterized by a four-link boom movable in a vertical plane and constructed and adapted both to reclaim and to stack bulk material. It also includes an endless conveyor belt having outwardly projecting flights secured thereto at spaced intervals for continuous coursing along the outer periphery defined by the four links.

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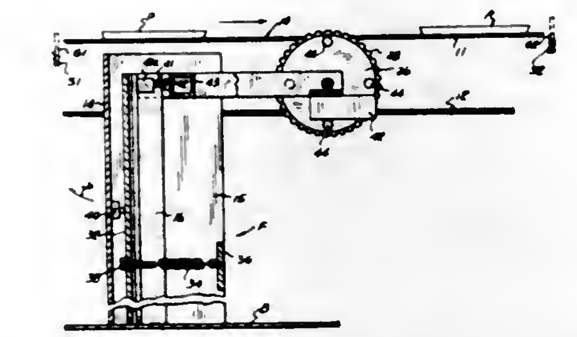
### 3,756,370
### MOTION SENSING APPARATUS FOR FOOD HANDLING OR THE LIKE

**Charles E. Ingram, Freeland, Mich., assignor to Baker Perkins Inc., SaGInaw, Mich.**

**Filed Apr. 16, 1971, Ser. No. 134,612**

**Int. Cl. B65g** *43/08, 43/00*

**U.S. Cl. 198—37** **6 Claims**



Apparatus for use in a bakery, for example, wherein a conveyor system for conveying products, such as panned dough moves in a forward path of travel. A control system is provided which includes a control having a plurality of operating positions or conditions for controlling or affecting the products or the system to produce a desired result, and there is a sensor for sensing the presence of a product on the conveyor, a sensor for indicating if the passage of the products on the conveyor is interrupted, and apparatus connected to the sensors for operating the control system when a product on the conveyor is not moving forwardly.

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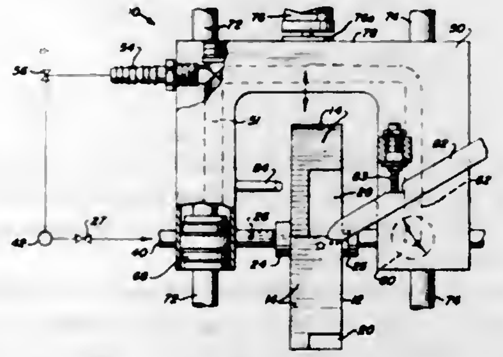
### 3,756,371
### APPARATUS FOR COUNTING AND SEPARATING NESTED ARTICLES OF MANUFACTURE

**Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.**

**Filed Apr. 7, 1972, Ser. No. 242,109**

**Int. Cl. B65g** *43/08*

**U.S. Cl. 198—40** **5 Claims**



Disclosed is apparatus for counting and separating nested articles moving along a predetermined path. It includes a shaft which rotates and is adapted to be moved laterally along its longitudinal axis between a counting position and a separating position. A counting wheel is secured to the shaft and it has teeth about the rim. All the teeth have about equal height, but some are of longer breadth than others. With the shaft in the counting position, individual teeth engage individual article lips to count the moving articles. This rotates the wheel and shaft. Means monitor the rotation of the wheel and shaft and, when a given number of articles have been counted and when an adjacent "short" tooth and "long" tooth each engage article lips, these means move the shaft to the separating position. This disengages the "short" tooth from the article lip but maintains engagement between the "long" tooth and other article lips. Thus a predetermined number of articles have passed the wheel and have been counted. Means then separate the counted articles from the remainder of the nested articles while the shaft and wheel are in the separating position.

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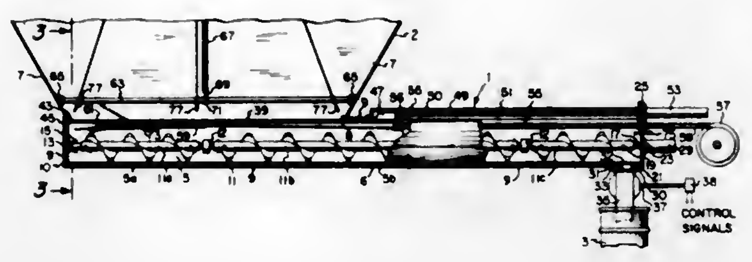
### 3,756,372
### APPARATUS FOR REMOVAL OF STORED MATERIAL FROM STORAGE CONTAINERS

**Johann Mertens, Santa Cruz, Calif., assignor to Nuclear Waste Systems Company, Campbell, Calif.**

**Filed Feb. 24, 1971, Ser. No. 118,422**

**Int. Cl. B65g** *47/16;* **G01f** *11/20*

**U.S. Cl. 198—64** **11 Claims**



Apparatus for use in conjunction with large storage and settling containers containing stored material. The apparatus aids in removing said material from the container with a remotely controlled operation. The apparatus includes a housing supporting a receiver trough opening to receive material from an opening of the container. An auger conveyor is supported within the trough for removing material from the trough. A sliding bulkhead is supported by the housing for opening and closing access between the trough and container. A bulkhead retrieval mechanism controls the bulkhead. The auger moves the material from the receiving trough to a receiving drum located near a discharge valve opening to the trough. The trough and auger include individual sections which may be assembled and disassembled for purposes of maintenance and repair without removal of the housing and the material from the container.

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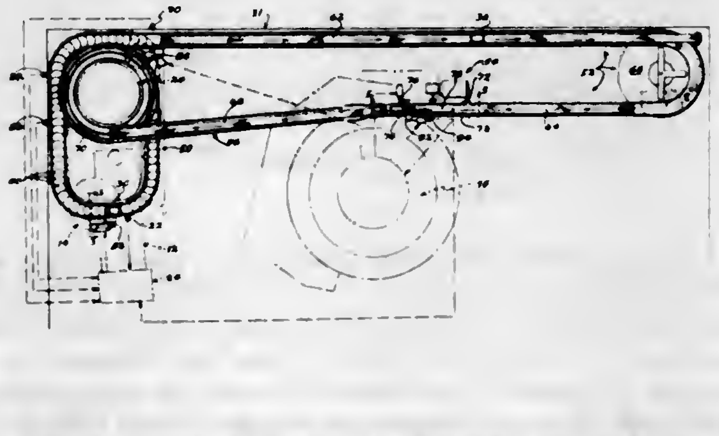
### 3,756,373
### BUFFER CONVEYOR

**Charles R. Pettis, Jr., and Victor Del Rosso, both of Ithaca, N.Y., assignors to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.**

**Filed Aug. 22, 1972, Ser. No. 282,858**

**Int. Cl. B65g** *37/00*

**U.S. Cl. 198—75** **7 Claims**



A buffer conveyor system is employed to interface a package filler machine having a substantially constant demand or fixed input requirement with a commodity batch weigher/checkweigher having a variable output potentially in excess of the fixed input, but subject to rejects. The system includes novelly designed commodity transport buckets, which are transported by conveyors along a closed loop path through the batch weigher/checkweigher, a filled bucket buffer or holding station and the package filler under the control of fail safe escapements or indexing devices. Release of filled buckets from the buffer station is determined by demand of the package filler, whereas output of the batch weigher/checkweigher is determined by the number of filled buckets present in the buffer station.

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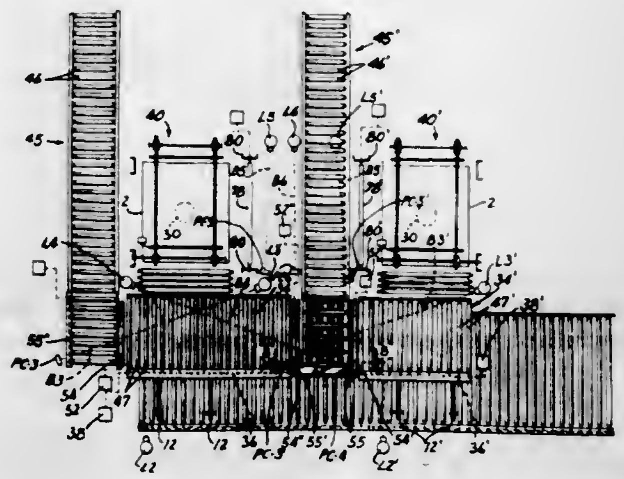
### 3,756,374
### APPARATUS FOR DEPALLETIZING ARTICLES

**Harold S. Burt, Mendota, and Vasco O. Carvalho, Skokie, both of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.**

**Division of Ser. No. 171,554, Aug. 13, 1971. This application July 27, 1972, Ser. No. 275,480**

**Int. Cl. B65g** *37/00*

**U.S. Cl. 198—78** **6 Claims**



Two depalletizing stations, preferably sharing a common empty pallet stacking station and a common inlet conveyor to be rendered operable by the automatic sequential feeding of loaded pallets to the inlets thereof from the common inlet conveyor. Alternatively, one of the depalletizing stations can be shut down when desired.

The depalletizing stations most advantageously discharge articles upon respective article-receiving conveyors each of which is capable of discharging articles at either one of the same two discharge points when operating separately.

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### 3,756,375
### MATERIAL HANDLING APPARATUS

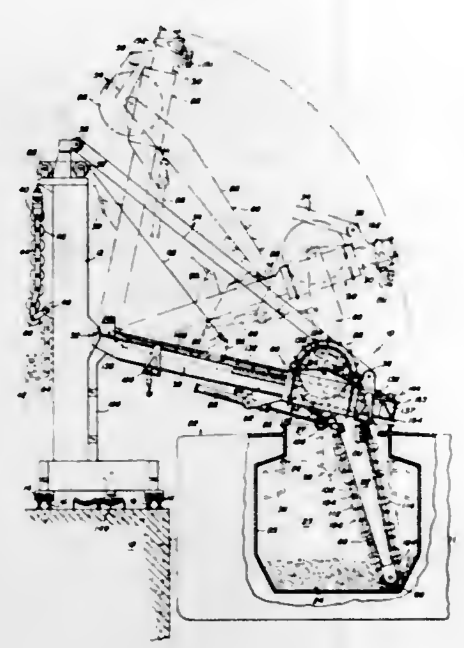
**Aubrey C. Briggs, Carnegie, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.**

**Filed Oct. 13, 1971, Ser. No. 188,863**

**Int. Cl. B65g** *63/00*

**U.S. Cl. 198—88** **10 Claims**

Material handling apparatus having particular application to continuous unloading of bulk cargo from ships is disclosed. Basically, the apparatus includes a vertical mast with a laterally extending boom pivotally supported at one end to the mast. A power operated trolley is supported by the boom and is arranged, as with cooperating wheels and rails, to move longitudinally along the boom. A bucket elevator ladder frame is pivotally mounted at its upper end portion to the trolley. The ladder frame supports upper and lower sprockets, the upper sprocket preferably having larger diameters than the lower ones. An endless chain means forming a closed loop is supported by the sprockets. Spaced buckets are fixed to the chain means. A conveyor is carried by the boom and is arranged to receive material discharged from the buckets as they move around the upper sprockets, and to convey the material toward the mast. Hoist means supported by the mast are provided for lifting and lowering the boom. Counterweights are supported by the mast and are connected to the boom for counterbalancing the weight of the boom.



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**3,756,376**

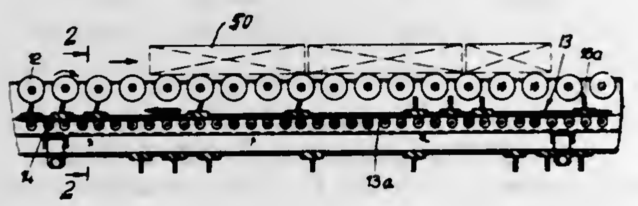
### GRAVITY-TYPE ROLLER CONVEYOR WITH ROLLER DRIVING AND ROLLER BRAKE DEVICES

**Kurt S. Kurger, Offenbach/M., and Norbert F. Axmann, Seligenstadt, both of Germany, assignors to Stohr Forderanlagen Salzer & Co. GmbH, Offenbach am Main, Germany**

**Filed Aug. 5, 1970, Ser. No. 61,301**

**Int. Cl. B65g** *13/02*

**U.S. Cl. 198—127 R** **23 Claims**



A gravity-type roller conveyor includes at least a section thereof in which the rollers are driven by driving members or drivers carried on an endless conveyor belt. The drivers which contact the individual rollers are dimensioned so that their longitudinal width of their outer ends which engage the rollers is less than the spacing between the center lines of the rollers. The conveyor also advantageously includes a braking mechanism in the form of a distance plate or engagement member which is shifted into engagement with a plurality of adjacent rollers along the length of the roller conveyor under the control of an electrical actuating circuit which is energized by a control roller which is located ahead of and/or after the braking device.

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**3,756,377**

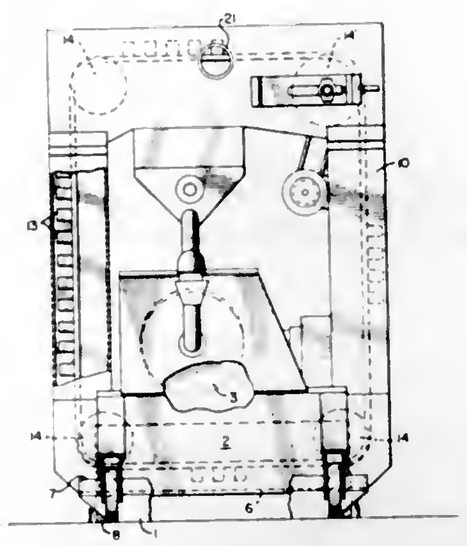
### CONTINUOUS BELT ELEVATOR

**James R. Goff, Mishawaka, Ind., assignor to Robert T. Nelson, Oklahoma City, Okla.**

**Division of Ser. No. 112,543, Feb. 4, 1971, Pat. No. 3,691,689. This application Dec. 28, 1971, Ser. No. 213,064**

**Int. Cl. B24c** *7/00, 9/00*

**U.S. Cl. 198—140** **1 Claim**



A novel, mobile, continuously operable abrasive surface cleaning apparatus utilizing a rotating brush for abrasive recovery is disclosed. Also, a novel continuous belt elevator or conveyor for recirculating the recovered abrasive is disclosed.

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**3,756,378**

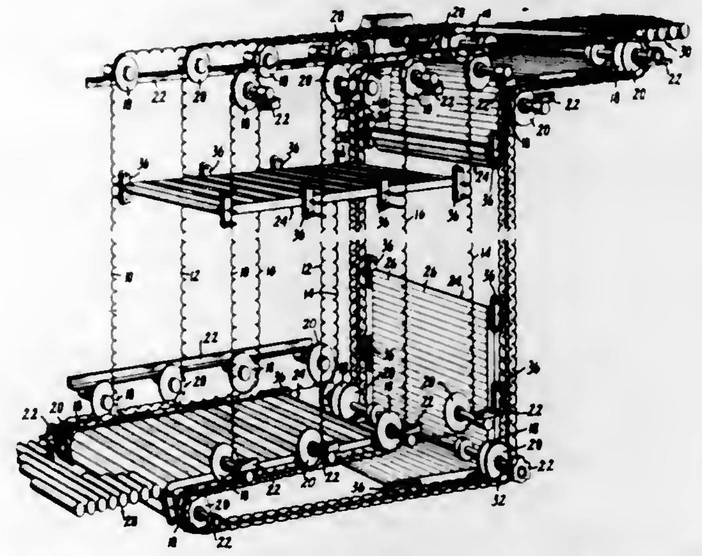
### CARGO TRANSPORTING CONVEYOR APPARATUS

**Guenther L. Kuehl, Peekskill, and Alfonso DePietro, Valhalla, both of N.Y., assignors to Guenther Systems, Inc., Buchanan, N.Y.**

**Filed June 1, 1971, Ser. No. 148,865**

**Int. Cl. B65g** *17/00*

**U.S. Cl. 198—154** **10 Claims**



A cargo carrying structure is adapted to move along a path defined by a frame while supported by a plurality of chains. A plurality of sprocket sets, each including an inner and an outer sprocket, are supported by the frame and engaged by the chains. A plurality of rods which connect the outer chains to the cargo carrying structure are arranged to pass between the teeth of the inner sprockets. The rods are connected to intermediate connecting members which carry rollers engaged by roller guides. At least one of the chains is formed by a multiplicity of links that span a predetermined number of sprocket teeth and a lesser number of adjusting links that span a different number of sprocket teeth. The adjusting links are positioned in the chain so that the rods pass through the unfilled spaces between the teeth of the inner sprockets.

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**3,756,379**

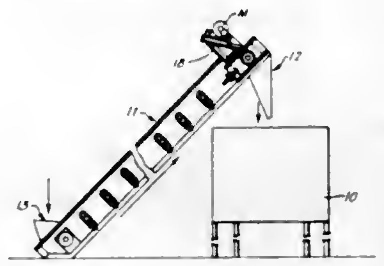
### INCLINED DRAG CONVEYOR FOR HOT ASPHALT MIX AND THE LIKE

**Lamson Rheinfrank, Jr., Kansas City, Mo., assignor to Standard Havens, Inc., Glasgow, Mo.**

**Continuation of Ser. No. 846,344, July 31, 1969, Pat. No. 3,647,047. This application Aug. 19, 1971, Ser. No. 173,085**

**Int. Cl. B65g** *19/06*

**U.S. Cl. 198—174** **3 Claims**



The lower flight of the slatted drag chain of the conveyor is yieldably biased toward the floor plate. The biasing force is obtained through the medium of idler wheels interposed between the flights and supported for floating movement between adjustable limit stops away from and back toward the floor plate.

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**3,756,380**

### CONVEYORS

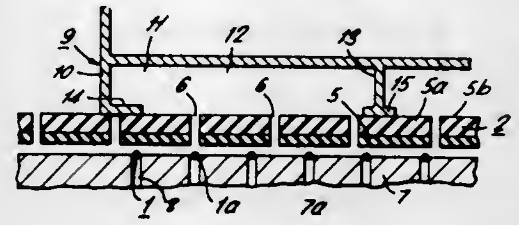
**Ronald Tunstall Ackroyd, Upton-by-Chester, and Charles Alan Mann, Annes, both of England, assignors to United Kingdom Atomic Energy Authority, London, England**

**Filed Jan. 7, 1972, Ser. No. 216,174**

**Claims priority, application Great Britain, May 8, 1969, 23,625/69**

**Int. Cl. B65g** *15/00*

**U.S. Cl. 198—184** **11 Claims**



A conveyor having an air cushion supported endless belt wherein the belt is pervious to enable air to pass through and provide secondary air cushions for supporting conveyed articles on the belt. There is wall boundary means for containing the secondary air cushions. The air supply to the conveyor belt is by way of load responsive valves which open in the presence of a conveyed article. Dual air pressures enable articles to be hovered and manouvered above the belt whilst the conveyor is in operation.

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**3,756,381**

### BARN CLEANER PADDLE WIPER

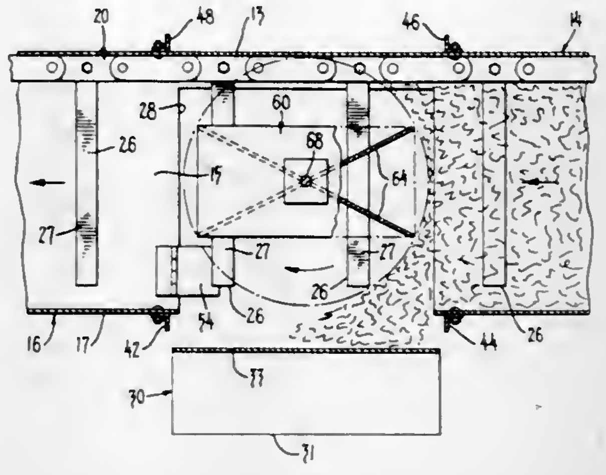
**Gail E. Janssen, Kaukauna, and John L. Hoh, Appleton, both of Wis., assignors to Badger Northland Inc., Kaukauna, Wis.**

**Filed Nov. 1, 1971, Ser. No. 194,759**

**Int. Cl. B65g** *17/18, 45/00*

**U.S. Cl. 198—185** **5 Claims**

A paddle wiper mechanism for a barn cleaner in which the barn cleaner comprises a conveyor adapted to move refuse material from a ground surface outwardly and upwardly to a storage area at an elevated position. The barn cleaner conveyor and elevator is composed of an endless chain to which are connected a plurality of transverse bar members defining material moving paddles. Intermediate the ground position and the elevated discharge position of the barn cleaner elevator, a selectively openable drop chute is provided and a wiper mechanism is provided at the intermediate crop chute to be positioned in place across the stacking elevator and to be automatically rotated to wipe material from the transverse bar members of the elevator as they pass across the drop chute opening to thereby selectively drop material through the intermediate chute opening at a location intermediate the ground position and the elevated discharge position of the stacking elevator.



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**3,756,382**

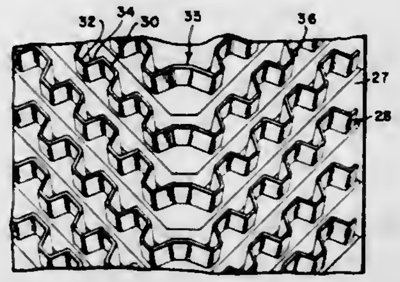
### CONVEYOR SYSTEM

**John S. Adey, Jr., New Vernon; John T. Collins, Chatham, and Peter M. Cino, New Providence, all of N.J., assignors to The Bucket Elevator Company, Chatham, N.J.**

**Filed July 30, 1971, Ser. No. 167,598**

**Int. Cl. B65g** *15/42*

**U.S. Cl. 198—198** **11 Claims**



A conveyor system is disclosed having a conveyor belt with corrugated chevron or V-shaped cleats extending across the belt wherein the cleats provide pockets for retaining flowable materials during upward movement of the belt at a substantial angle to the horizontal. The apex of each cleat extends between the ends of the next cleat so as to provide continuous transverse overlapping of the cleats. The corrugations in the cleats permit the cleats to extend longitudinally of themselves so that they remain upright as they pass around the rollers upon which the belt is mounted. The cleats also have the very advantageous feature of permitting stable support of the conveyor belt during its return run by transverse rollers.

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**3,756,383**

### STORAGE CASE FOR MAGNETIC TAPE CASSETTES, THEIR BOXES AND THE LIKE

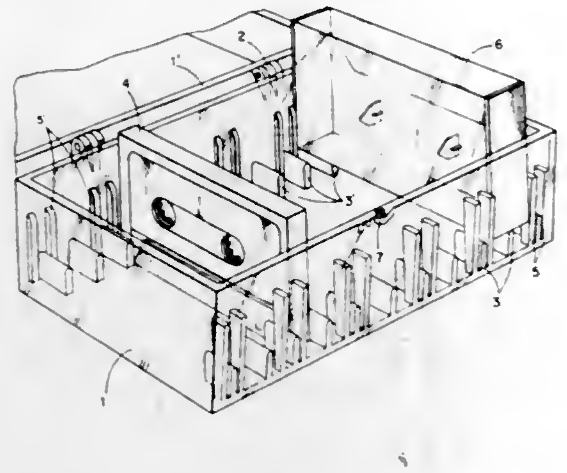
**Karl D. Kryter, P.O. Box 1149, Los Altos, Calif.**

**Filed Apr. 12, 1972, Ser. No. 243,382**

**Int. Cl. B65d** *5/50, 85/67*

**U.S. Cl. 206—1 R** **7 Claims**

This disclosure deals with novel tape cassette and tape cassette box storage cases wherein sets of particularly positioned and spaced short horizontal and vertical ribs are provided at the front and rear faces of at least the bottom box portion of the case to enable transverse parallel storage of cassettes between the horizontal ribs and similar storage of the boxes



therefor between the vertical ribs but with the latter elevated upon the horizontal ribs.

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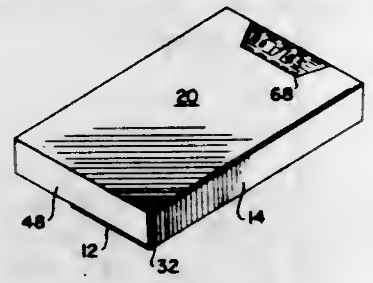
### 3,756,384
### VIEWING WINDOW IN CARTON WITH PILL PACKAGE INSERTER

**Orison W. Stone, Valley Cottage, N.Y., assignor to R. A. Jones Company, Inc., Covington, Ky.**

**Filed Aug. 12, 1971, Ser. No. 171,124**

**Int. Cl. B65d** *83/04*

**U.S. Cl. 206—42** **3 Claims**



In the preferred embodiment, a paperboard carton is formed from a blank including a leading flap with a tapered tongue, a trailing flap with a groove removed therefrom, a bottom member with a tab upstruck therefrom, a plurality of fold lines, four sidewalls connected to the bottom member along the fold lines, sidewall overlapping and top support segments for increasing the structural rigidity of the carton, and a plurality of thermoformed plastic blisters supported by a rigid insert with one pill retained by each blister. The insert is secured to a tab extending upwardly from the bottom member so that the pills are in a face-up orientation within the erected carton. Identifying indicia imprinted on the insert, such as a batch number that indicates the batch from which the pills were formulated, is visible from the exterior of the carton through the viewing window formed by upstriking or die cutting the tab from the bottom member.

In an alternative embodiment, arcuate slots are die cut in the corners of the bottom member so as to form triangularly shaped tab members extending upwardly above the bottom member. The ends of the rigid insert are slipped through the slots and into engagement with the underside of the tas so that the insert is retained in fixed position by a friction fit defined between the tabs and the bottom member. Identifying indicia imprinted on the insert is visible from the exterior of the carton through the viewing windows formed by upstriking the corners from the bottom member. Both embodiments of the carton can be resealed, after removal of the desired number of pills from the insert, by slipping the leading flap into the groove in the trailing flap.

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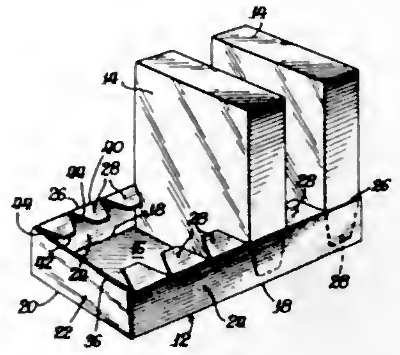
### 3,756,385
### DISPLAY TRAY

**Fred C. Steinbock, Chicago, Ill., assignor to The Kendall Company, Walpole, Mass.**

**Filed Apr. 23, 1971, Ser. No. 136,933**

**Int. Cl. B65d** *5/50*

**U.S. Cl. 206—44 R** **8 Claims**



A tray for displaying a plurality of elongated cartons. The tray has a rectangular bottom and pairs of spaced end and side panels extending upwardly from the bottom. A plurality of opposed and inwardly directed retaining tabs are springingly connected to an upper edge of the side panels, with the opposed tabs being aligned in pairs. Each of the tab pairs fold downwardly into the tray to receive a carton, and spring upwardly responsive to removal of the carton. The upwardly sprung tabs frictionally engage the side of the cartons remaining in the tray adjacent the removed carton to retain the remaining cartons in an upright position.

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### 3,756,386
### MULTI-CHAMBER CONTAINER

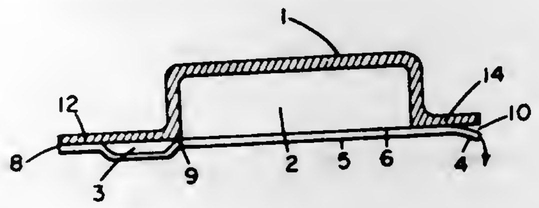
**Volker Marckardt, Adalbert-Stifter-Weg 10, 3550 Marburg, Germany**

**Filed Nov. 23, 1970, Ser. No. 92,008**

**Claims priority, application Germany, Nov. 29, 1969, G 69 46 391.8**

**Int. Cl. B65d** *25/08, 81/32*

**U.S. Cl. 206—47 A** **7 Claims**



A multi-chamber container for separately accommodating reacting materials which, when mixed, are ready for use as dental preparations. The container has an open-ended thin walled body which is covered by a tear foil and which forms in conjunction with a marginal extension of the main container body, one or more secondary chambers, from which liquid or paste mixtures can be pressed into the main chamber by destroying a separating diaphragm or seam.

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### 3,756,387
### AMMUNITION PACKAGING

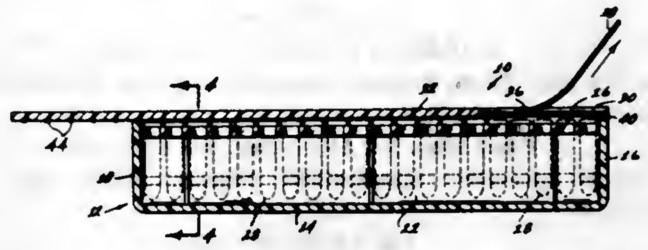
**Arlen L. Chaney, Lewiston, Idaho, assignor to Omark Industries, Inc., Portland, Oreg.**

**Continuation of Ser. No. 759,878, Sept. 16, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,437**

**Int. Cl. F42b** *39/00;* **B65d** *25/54, 43/12*

**U.S. Cl. 206—3** **4 Claims**

A rectangular container having transparent bottom, side and end walls including a removable tray supported by the walls of the container in which a number of cartridges are suspended by rows and columns. A transparent lid snaps into place over the container and is slidably removable to expose for removal successive rows of the cartridges. A card label



having identification and advertising matter printed thereon fits under the transparent lid and a tab on the end of the card label protrudes from the container so that the package can be hung for storage and display.

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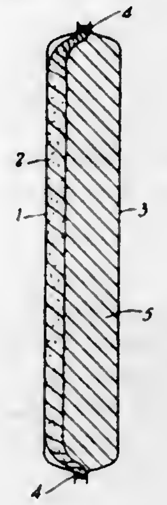
### 3,756,388
### RESINOUS CARTRIDGES FOR SECURING FIXING ELEMENTS

**John Michael Murphy, Derbyshire, England, assignor to Explosives and Chemical Products Limited, London, England**

**Filed Jan. 25, 1971, Ser. No. 109,471**

**Int. Cl. B65d** *81/32*

**U.S. Cl. 206—47 A** **12 Claims**



For use in the production of resinous cartridges for securing fixing elements, a hardener component comprising a carrier material having disposed thereon and/or therein a hardener composition containing a hardener for the thermosetting resin present in the resinous cartridge.

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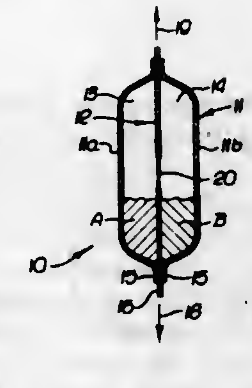
### 3,756,389
### MULTIPLE COMPARTMENT PACKAGE WITH FRANGIBLE INTERNAL BARRIER MEANS

**Francis George Firth, 130 Penn St., El Segundo, Calif.**

**Filed Aug. 24, 1971, Ser. No. 174,316**

**Int. Cl. B65d** *25/08, 81/32*

**U.S. Cl. 206—47 A** **7 Claims**



A flexible package for storing multiple fluent materials in separate compartments and for ultimate mixing in the package, comprises:

a. an envelope and barrier means forming the compartments at opposite sides of the barrier means,

b. the barrier means comprising at least one frangible sheet extending within the envelope in position to be ruptured between the compartments in response to manual tension application thereto.

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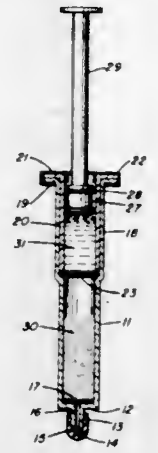
### 3,756,390
### TWO-COMPARTMENT ASPIRATING DISPOSABLE HYPODERMIC SYRINGE PACKAGE

**Anthony Abbey, Milltown, and Robert Clayton Squire, Dover, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Mar. 7, 1972, Ser. No. 232,440**

**Int. Cl. B65d** *25/08, 81/32*

**U.S. Cl. 206—47 A** **4 Claims**



A two compartment aspirating disposable hypodermic syringe package consists of a rupturable partically pre-slit diaphragm having a fluorohalocarbon polymer film as a primary moisture-proof barrier across and dividing the syringe barrel into a compartment containing a dry component and a compartment containing a liquid component which components are to be mixed at time of use. A slidable piston in the barrel, on application of pressure, ruptures the diaphragm, permits mixing of the two components, clearing of air, aspiration and injection of the contents as the piston passes over the ruptured remains of the diaphragm.

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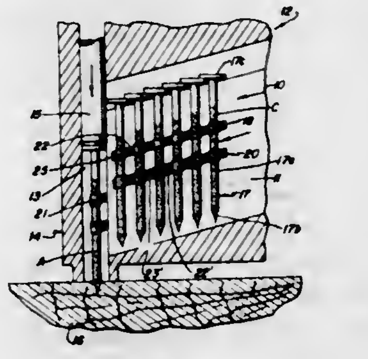
### 3,756,391
### FASTENER ASSEMBLAGE

**Robert H. Keck, Cary; Werner K. Diehl, Arlington Heights; Robert P. Kovich, Hanover Park, and James K. Goode, Jr., Cary, all of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.**

**Filed Nov. 26, 1971, Ser. No. 202,075**

**Int. Cl. B65d** *73/02*

**U.S. Cl. 206—56 DF** **3 Claims**



An assemblage of collated fasteners is provided for use in a powered fastener-driving tool. The fasteners are provided with elongated shanks arranged in spaced substantially parallel relation. A plurality of elongated flexible strips engage the fastener shanks and retain same in predetermined spaced relation. Each strip includes sleeve portions encompassing the shanks of the fasteners, and thin web portions interconnecting adjoining sleeve portions. Each web portion has formed therein, an elongated relatively thick reinforcing rib spanning the distance between adjoining sleeve portions. The ribs of one strip are less resistant to forces applied transversely to the accommodated shanks causing same to move closer together than the remaining strip of reinforcing ribs. The ribs cooperate with the sleeve and web portions to provide controlled fracturing across the web portions connecting the endmost fastener and next-in-line fastener, when the endmost fastener is driven by the tool into a workpiece.

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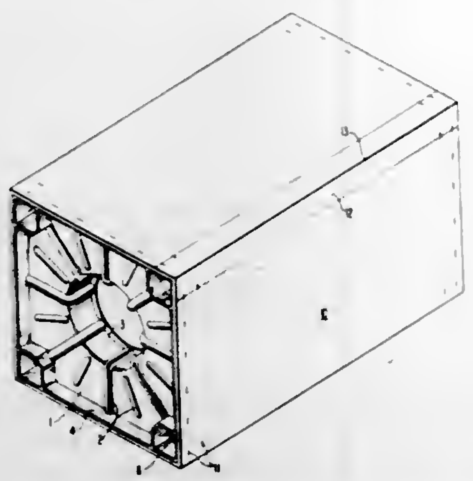
### 3,756,392
### END WALL FOR CONTAINERS

**Hermann Oehlmann, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany**
**Filed May 28, 1969, Ser. No. 828,554**
**Claims priority, application Germany, May 30, 1968, K 61383**
**Int. Cl. B65d** *85/66*
**U.S. Cl. 206—59 E** **7 Claims**



This invention relates to an end wall for a container which comprises a polygonal plate having a central cylindrical aperture therein, and belt means surrounding the plate and including, at the corners of the plate, projections thereon which engage with corresponding recesses in the plate.

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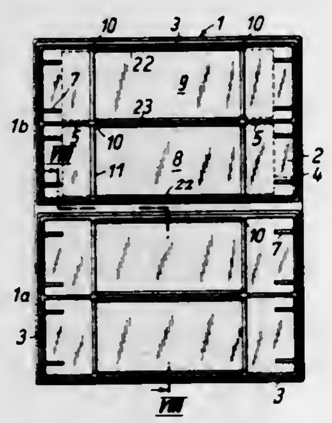
### 3,756,393
### CONTAINER FOR OBJECT SLIDES

**Bernhard Markwitz, Brodersweg 9-10, and Horst Pomp, Gojenbergsweg 93, both of Hamburg, Germany**
**Filed Dec. 14, 1970, Ser. No. 97,819**
**Claims priority, application Germany, Dec. 20, 1969, P 19 63 926.0; June 23, 1970, P 20 30 810.5**
**Int. Cl. B65d** *85/48, 1/36, 69/00*
**U.S. Cl. 206—62 R** **5 Claims**



A container for the reception of at least one object slide for microscope use is provided with a reception recess. In the recess, support projections for the support of a large object slide face and stop projections for the abutment of the edges of the object slide are provided. The container is made up of two body members made of plastic and having different or similar configuration. A container for a plurality of object slides is provided with a predetermined breaking line for the division of the container into smaller units.

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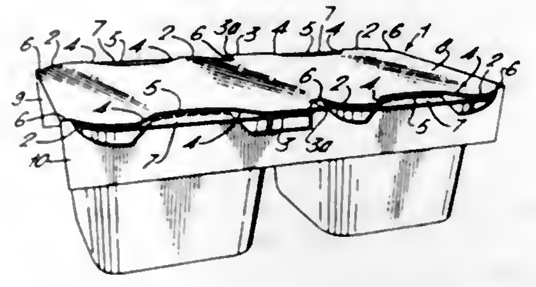
### 3,756,394
### CARRIER FOR CONTAINERS

**Jean Huault, Paris, France, assignor to Lever Brothers Company, New York, N.Y.**
**Filed Mar. 22, 1971, Ser. No. 126,757**
**Claims priority, application France, Mar. 26, 1970, 7011013**
**Int. Cl. B65d** *5/02*
**U.S. Cl. 206—65 C** **2 Claims**



A carrier for combining two or more containers having generally square tops with outwardly extending rims at the top. The carrier blank has a top panel and two side panels downwardly foldable along fold lines spaced apart a distance less than the corresponding dimension of the tops of the containers. The fold lines are interrupted by slits which follow the contours of the tops of the containers adjacent the fold lines and extend inwardly across the top panel at mid-regions to form tongues which snap below the undersides of the rims of the containers in the erected condition.

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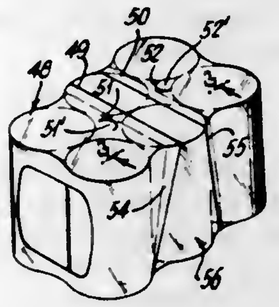
### 3,756,395
### SHRINK PACK AND METHOD AND APPARATUS FOR MAKING THE SAME

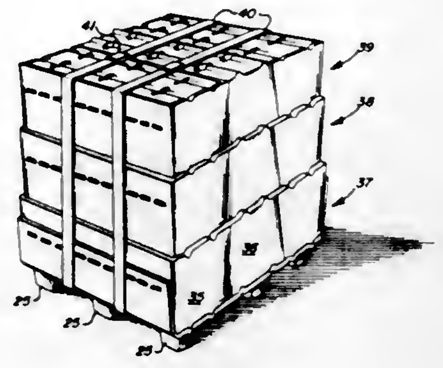
**Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J.**
**Filed Jan. 17, 1972, Ser. No. 218,441**
**Int. Cl. B65d** *25/28, 85/62*
**U.S. Cl. 206—65 S** **14 Claims**



The invention contemplates use of heat-shrinkable plastic film for the packaging for clusters of containers, such as cylindrical beverage cans of a given size. One or more local reinforcing laminations, such as filaments beads or pleats are formed in the film prior to wrapping the containers, the location of such laminations being such as to form a tough handle region, for ready portability of the packaged cluster. The preformed nature of the lamination is to withstand such local film tensions as develop in the course of heat-shrinking to consolidate the packaged cluster. Various forms of lamination, and methods and means of making the same, are shown and described.

### 3,756,396
### INTERLOCKED PALLET AND CONTAINER SYSTEM

**Oliver B. Kilroy, 5 Calle Corta St., Tucson, Ariz. 85012**
**Continuation-in-part of Ser. No. 220,329, Jan. 24, 1972. This application June 5, 1972, Ser. No. 259,566**
**Int. Cl. B05d** *71/00*
**U.S. Cl. 206—65** **7 Claims**



This specification discloses an interlocked pallet and container system comprising a rectangular pallet having legs and a plurality of containers on said pallet in a stack which are interlocked together and to the pallet. A flap is hingedly connected to each of a pair of opposed side edges of the pallet and is formed with a series of projections which are received in openings in container walls of the outer rows of containers which engage the flaps. Straps are passed beneath the pallet and over the flaps and stacked containers to secure the interlocked condition.

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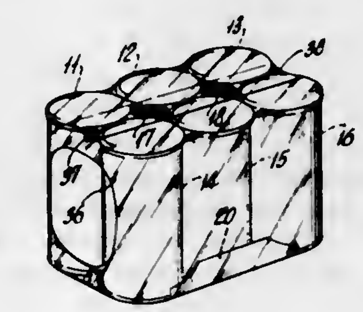
### 3,756,397
### SHRINK PACK CONSTRUCTION AND METHOD

**Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J.**
**Continuation of Ser. No. 29,127, April 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 859,904, Sept. 22, 1969. This application June 5, 1972, Ser. No. 259,759**
**Int. Cl. B65d** *71/00, 85/62*
**U.S. Cl. 206—65 S** **26 Claims**



The invention contemplates employment of a single wrap of a single sheet of continuous shrinkable and bondable plastic material to constitute virtually the entire package for a cluster of plural like containers, such as bottles, beer cans or the like. The sheet material is so selected, sized and oriented with respect to the cluster that timed placement in a shrinking and bonding atmosphere is sufficient to consolidate the package. In orienting the sheet, the sheet circumferentially envelops the cluster, with the ends of the sheet overlapped at the alignment of one of the longitudinal ends of the clustered containers, and a small marginal projection of sheet material is provided beyond the transverse limits of the cluster. In the shrinking and bonding atmosphere, the overlapped ends are bonded, and shrinkage of the projecting margins develops end bands or flanges to retain containers against end loss. Two forms are disclosed, each utilizing a panel of card or paper board.

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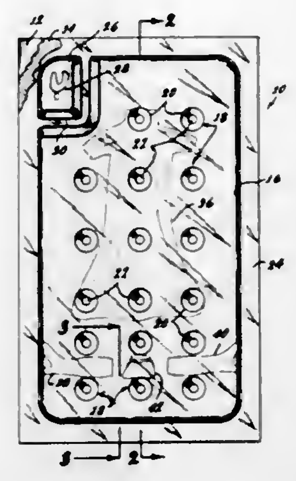
### 3,756,398
### PACKAGE HAVING DIMPLED BLISTER

**James R. Green, Buena Park; Ralph C. Parris, Long Beach, and Arnold J. Fine, Redondo Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.**
**Filed Oct. 13, 1971, Ser. No. 188,787**
**Int. Cl. B65d** *73/00*
**U.S. Cl. 206—78 B** **5 Claims**



Blister card receives soft, pliable article in unattached condition and blister cover is sealed to card with integral protuberances extending from cover into engagement with article pressing article against card to retain article in position on card. Other protuberances may be heat sealed to card for caging small, loose articles between protuberances.

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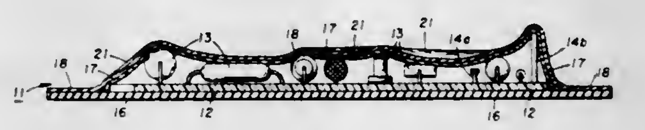
### 3,756,399
### SKIN PACKAGE FOR AN ARTICLE AND METHOD OF FORMING THE PACKAGE

**Richard A. Cosier, and Alan K. McDonnell, both of Woodridge, Ill., assignors to Western Electric Company, Incorporated, New York, N.Y..**
**Filed Aug. 30, 1971, Ser. No. 176,168**
**Int. Cl. B65d** *73/00, 85/62*
**U.S. Cl. 206—80 A** **13 Claims**



An article having irregular protrusions on one side, such as a printed circuit board having electrical components mounted thereon, is packaged by positioning it on a backing member with the protrusions facing outward from the backing member, and then placing a relatively cool inner sheet of thermoplastic film over the one side of the article. Next, a heated outer sheet of thermoplastic film is moved downward over the inner sheet and vacuum is applied to the opposite side of the backing member to draw the two sheets into tight-fitting relationship with respect to the article and to draw the heated outer sheet into engagement with portions of the backing member, whereby the heated outer sheet bonds to the cool inner sheet and to the backing member. In the completed package the inner sheet extends at least into engagement with the backing member around the periphery of the article, and the two bonded sheets form reinforcing "tents" or ribs between certain of the article protrusions, and between these protrusions and the periphery of the article.

### 3,756,400

### METHOD AND APPARATUS FOR SIFTING OUT FINE PARTICLES BY UTILIZING SUPERSONIC VIBRATION

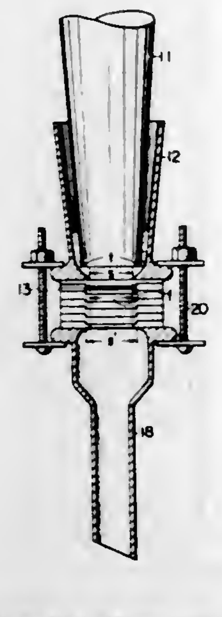
**Ohiko Kammori, and Isamu Taguchi, Kawasaki City, Kanagawa Prefecture, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan**

**Continuation-in-part of Ser. No. 815,983, April 14, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,242**

**Claims priority, application Japan, Apr. 15, 1968, 43/27940; Aug. 5, 1968, 43/55398; Oct. 3, 1968, 43/71728; Nov. 27, 1968, 43/86849; Dec. 30, 1968, 43/96597; Oct. 27, 1968, 43/84089.**

**Int. Cl. B03b** *1/00*

**U.S. Cl. 209—1** **6 Claims**



Method and apparatus for sifting out fine particles according to their original sizes, into which apparently larger-sized particles formed by the cohesion of such fine particles have been split by applying supersonic vibration in the solution, such sifting-out being carried out by applying supersonic vibration also to a set of the sieves of one or more mesh sizes.

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### 3,756,401

### MAGNETIC SYSTEM FOR SEPARATION OF IRON FROM REFUSE

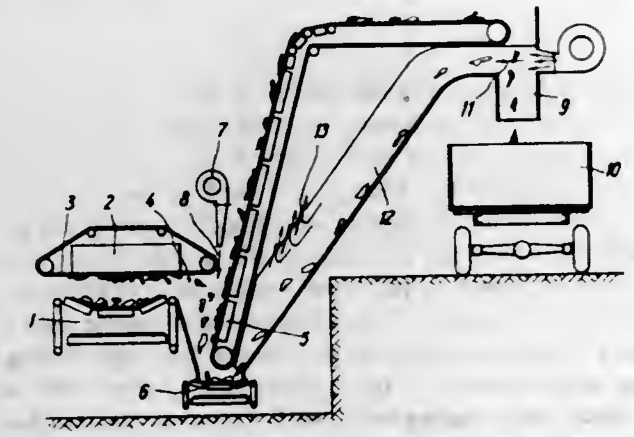
**Kurt Rosner, Munster, Westphalia, Germany, assignor to Hazemag Hartzerkleinerungs-Und Zement-Maschinenbau-Gesellschaft m.b.H.**

**Filed Sept. 29, 1970, Ser. No. 76,362**

**Claims priority, application Germany, Nov. 17, 1969, P 19 57 636.4**

**Int. Cl. B03c** *1/30*

**U.S. Cl. 209—39** **5 Claims**



A plurality of spaced conveyors containing stationary magnets are sequentially arranged to remove ferromagnetic particles from a mixture of said particle and refuse that are initially transported to a position below the first conveyor containing a magnet in its lower run. A blower directs air blasts along the path of transport to assist in the separation.

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### 3,756,402

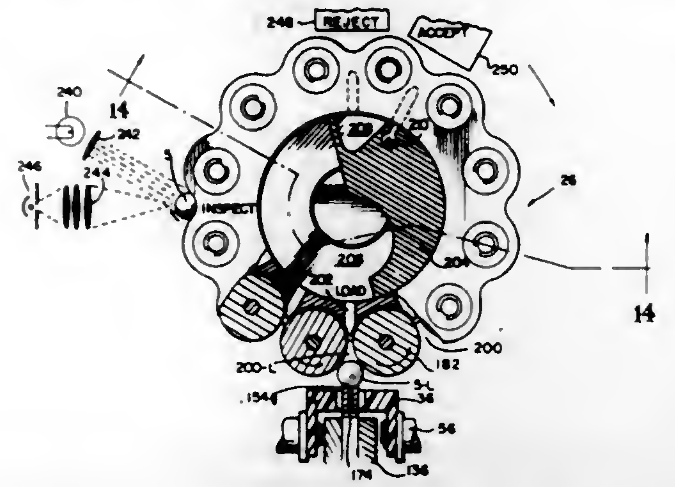
### CAPSULE INSPECTION APPARATUS AND METHOD

**William D. Wagers, Jr.; Willard J. Vandenberg, both of Indianapolis; Robert L. Bollman, Mooresville; Robert E. Ramsey, Indianapolis; Daniel G. Swisher, Indianapolis, and John E. Taylor, Jr., Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Jan. 11, 1971, Ser. No. 105,262**

**Int. Cl. B07c** *1/04, 5/342*

**U.S. Cl. 209—73** **43 Claims**



Apparatus for handling medicinal capsules at high rates, e.g. 900 per minute, to present them in succession, in uniform orientaton, at an inspection position and there spin them on their axes to expose their entire surfaces for inspection as by optical means. Bulk capsules are loaded from a hopper into the cavities of a chain conveyor running up an incline. A pair of spaced rolls define a feed slot from the hopper to the conveyor along the line of cavity travel. The rolls rotate outward to move misaligned capsules away, induced air flow urges aligned capsules through the slot and into the cavities, and an agitator bar dislodges capsules from double-filled cavities.

To rectify body-forward capsules to cap-forward position, each cavity has a bottom slot between side ribs which will pass the body but retain the cap of the capsule. As the cavity moves off the end of a capsule-supporting rail, a forward capsule body is swung downward by gravity and induced airflow through the slot to tilt the capsule to an upright position. A brush then tilts the upright capsule forward, and a camming belt moves it to a cap-forward position in its cavity.

Pick-up transfer fingers in the upper conveyor sprocket wheel are advanced through the cavities to lift the capsules therefrom on suction seats and transfer them to an inspection head at a loading station. The inspection head has a ring of parallel rolls, each pair of which forms a groove in which a capsule is retained by air flow. The head indexes to carry capsules from the loading station to an inspection station where rotation of the rolls spins each capsule on its axis to expose its entire surface for optical inspection. The capsules are discharged at a reject or accept station, depending on the inspection result.

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### 3,756,403

### SILVERWARE SORTING AND POLARIZING MACHINE

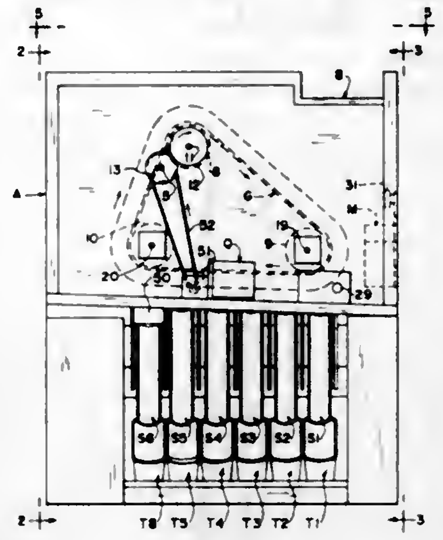
**Tore H. Noren, and George J. Federighi, both of 1350 Donner Ave., San Francisco, Calif.**

**Filed Aug. 2, 1971, Ser. No. 167,948**

**Int. Cl. B07b** *13/04*

**U.S. Cl. 209—73** **14 Claims**

A silverware sorting and polarizing machine in which novel means is provided for receiving bunched or disarrayed silverware that has been washed and dried, this means delivering the silverware by gravity to a separating and spacing means that will separate the silverware into individual and spaced apart items and arrange them in parallel relation. Then the machine will move the spaced apart items over a sorting means that will separate the silverware according to length and finally polarizing means will receive the sorted silverware and will act on the individual items to make the handles of each item point in the same direction, the sorted and polarized items finally being delivered into separate receptacles, one for each different kind of item, such as spoons, forks, knives, etc., and where each receptacle will receive only similar items and have the handles of these items all extend in the same direction.



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### 3,756,404

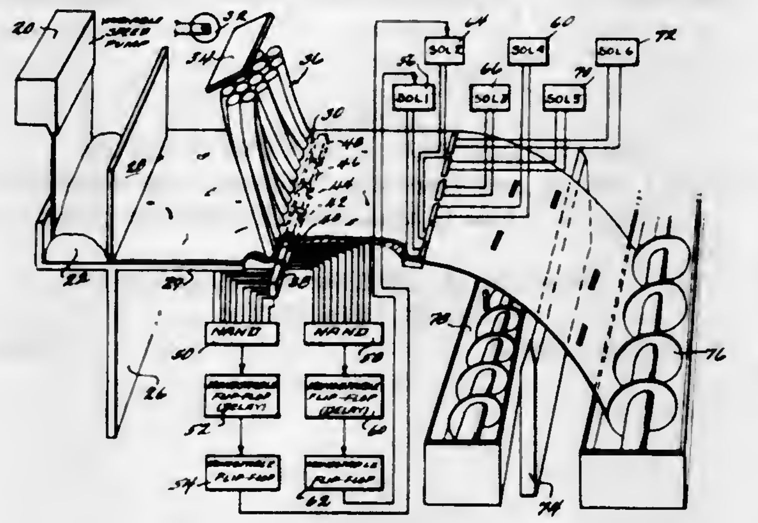
### SLURRY DEFECT SORTER

**Charles A. King, Vienna; Herbert D. Young, Haymarket, and John F. Walton, McLean, all of Va., assignors to General Kinetics Incorporated, Reston, Va.**

**Filed July 29, 1971, Ser. No. 167,261**

**Int. Cl. B07c** *5/342*

**U.S. Cl. 209—74 R** **11 Claims**



A method and apparatus for detecting and removing from a moving fluid, such as a slurry of applesauce or the like, defects having a different optical transmittance from other portions of the fluid whereby a region across the width of a thin sheet of the moving fluid is illuminated and a plurality of groups of photo-responsive elements are disposed for receiving the light passing through the fluid. Each element responds to the detection of a defect by producing a signal which is delayed and applied to an air solenoid which is associated with the group including that element and which produces a short blast of air for deflecting a small portion of the fluid, including the defect. The trajectory of the fluid sheet as it passes the solenoids and falls is such that undeflected portions pass to one side of a barrier and are received in and conveyed away by one screw conveyor and deflected portions pass to the other side of the barrier and are received in and conveyed away by another screw conveyor. Each element is preferably connected to a monostable or one shot multivibrator by a trigger gate which is connected to a variable voltage source for adjusting for all of the gates together the amplitude of the signal required to trigger each of the gates.

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### 3,756,405

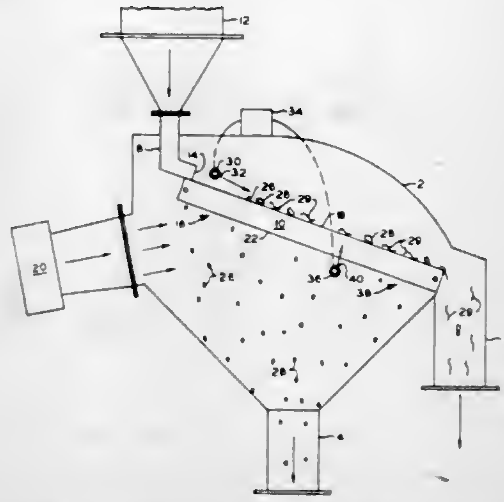
### SEPARATING APPARATUS AND METHOD

**Edward E. Fenska, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Mar. 7, 1972, Ser. No. 232,449**

**Int. Cl. B07b** *1/12*

**U.S. Cl. 209—99** **9 Claims**



In a separating apparatus having a downwardly extending grid and means for delivering material to be separated onto an upper end portion of the grid, said grid being formed of elements spaced one from the other a distance sufficient for separating balled filaments and elongated filaments from pellets, conduits extend across the grid and have a plurality of openings directed along the upper surface of the grid and through the grid for passing pressurized fluid streams therealong and therethrough.

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### 3,756,406

### GRAIN CLEANER

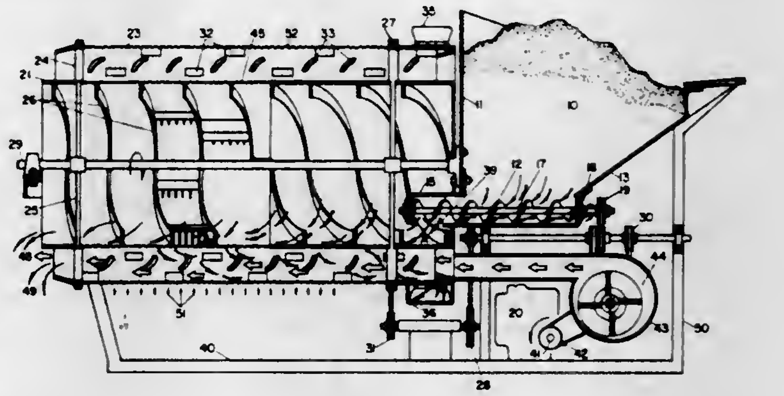
**Amir U. Khan, Manila, Philippines, assignor to The United States of America as represented by the Secretary of Agriculture**

**Filed July 14, 1971, Ser. No. 162,572**

**Claims priority, application Philippines, July 14, 1970, 11647**

**Int. Cl. B07b** *1/24*

**U.S. Cl. 209—291** **5 Claims**



The grain cleaner comprises a pair of rotating concentric, coaxial screens. Grain is delivered to the inner screen which has a mesh large enough to pass the grain and light impurities, such as chaff, but too small to pass large, heavy impurities such as straw. Baffles move the retained straw toward an exit at one end of the inner cyclinder for collection and disposal. A current of air blowing in the space between the two cylinders separates the grain from the chaff and dust and carries the latter to an exit. Baffles in the outer cylinder move the cleaned grain in a direction opposite to the flow of air for discharge and collection.

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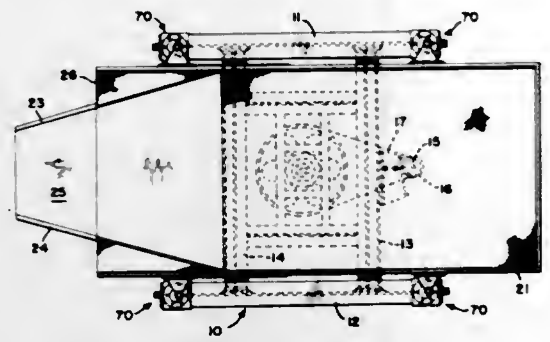
### 3,756,407
### VIBRATORY SCREENING WITH A PERIPHERAL SUPPORT BASE

**Elmer Christensen, Kirkland, Wash., assignor to The Black Clawson Company, Hamilton, Ohio**

**Filed Aug. 31, 1970, Ser. No. 68,357**

**Int. Cl. B07b** *1/38*

**U.S. Cl. 209—332** **5 Claims**



A chip screen for separating over and undersized wood segments from the desired size chips incorporates a screen plate assembly which is mounted on a supporting base by means of corner bearings attached to the periphery rather than the bottom of the assembly, thereby lowering the center of gravity of the unit and providing a more stable unit. An eccentrically mounted stub shaft engages a socket on the bottom of the screen plate assembly to impart a circular translational movement to the screen plate assembly. The socket is made oversized and a resilient insert interposed between opposing surfaces of the socket and stub shaft so that the shaft may be centered with respect to the corner bearings without radial constraint and undue tensile and compressive stresses thereby avoided. A pair of counterweights are attached to the drive shaft and positioned longitudinally and circumferentially thereof such that the centrifugal forces generated by the counterweights and the screen plate assembly produce a dynamically balanced system of forces on the machine as a whole.

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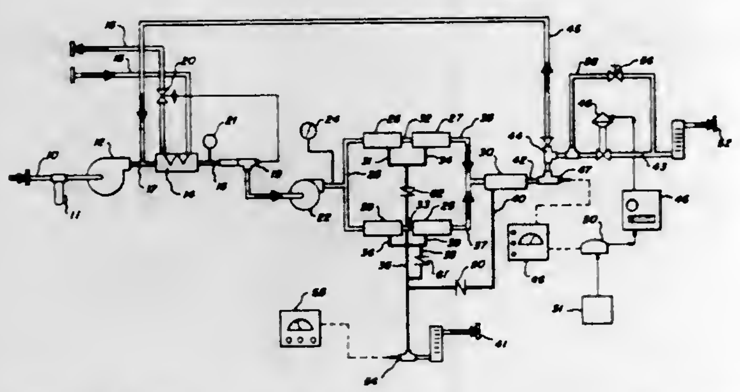
### 3,756,408
### SEPARATION SYSTEM

**Donald Dean Spatz, and Arnold A. Nieland, both of Minnetonka, Minn., assignors to Osmonics, Inc., Minneapolis, Minn.**

**Filed June 15, 1972, Ser. No. 263,186**

**Int. Cl. B01d** *31/00*

**U.S. Cl. 210—96** **7 Claims**



An improved separation system for reclaiming pollutant material from a waste or rinse solution including a solvent separating means and a concentrate valve and valve control means for controlling the removal of concentrate from the system and maintaining the concentration of the concentrate solution relatively constant despite a varying feed concentration.

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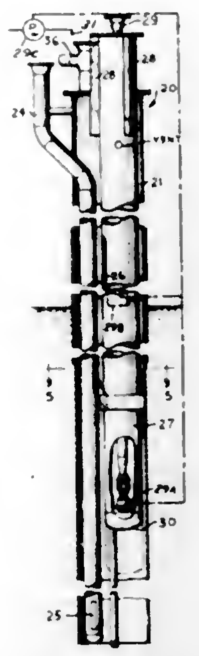
### 3,756,409
### WATER DISPOSAL CAISSON AND METHOD OF USING SAME

**Charles J. Carmichael, Harvey, and Albert G. Franklin, New Orleans, both of La.**

**Filed Aug. 6, 1971, Ser. No. 169,677**

**Int. Cl. B01d** *21/24*

**U.S. Cl. 210—104** **6 Claims**



The present disclosure is directed to a waste water disposal caisson for removing the oil from the waste water prior to discharging the waste water from an offshore oil drilling platform and comprises a main caisson having an oil collecting tube within the caisson which tube has an oil spillover opening proximate its top, a waste water introduction tube for introducing the waste water below the oil-water interface within the caisson and a pumping control means for pumping the oil from the oil collecting tube as it approaches the tubes capacity.

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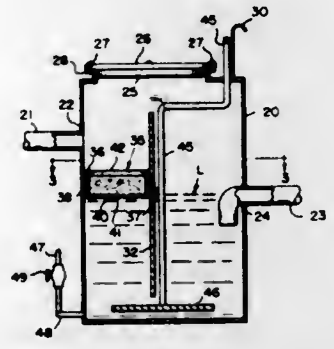
### 3,756,410
### SEWAGE DISPOSAL EFFLUENT PURIFIER

**Dwight L. Moody, and Vincent R. Treglione, both of Meadville, Pa., assignors to Moody Aquamatic Systems, Inc., Meadville, Pa.**

**Filed Nov. 8, 1971, Ser. No. 196,550**

**Int. Cl. B01d** *33/00*

**U.S. Cl. 210—139** **9 Claims**



Liquid sewage, which preferably has been subjected to a primary sewage treatment phase to minimize its turbidity, is fed to a contact tank where it passes through a porous filter that removes any remaining solids, and then has ozone gas bubbled through it to oxidize impurities in the liquid and to remove objectionable odors. An ozone gas diffuser is mounted in the tank beneath the filter so that any excess ozone gas will pass upwardly through the filter to keep it purified. A plurality of ozone generators are used to supply the ozone gas continuously to the tank; and a stepper switch automatically and successively energizes the generators one by one in a continuous cycle.

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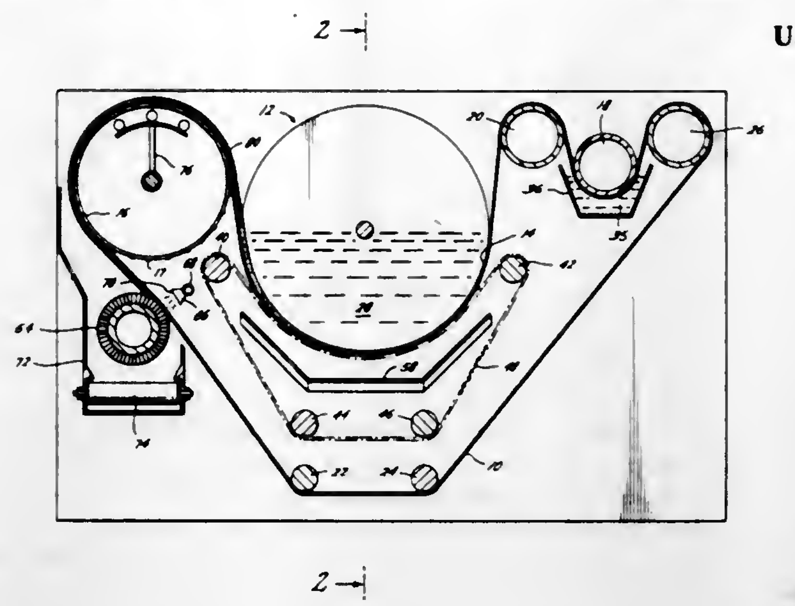
### 3,756,411
### CONTINUOUS BELT-TYPE GRAVITY FILTRATION APPARATUS

**Aloysius C. Kracklauer, Conroe, Tex., assignor to Sparkler Manufacturing Company, Conroe, Tex.**

**Filed July 14, 1971, Ser. No. 162,604**

**Int. Cl. B01d** *35/18, 33/04*

**U.S. Cl. 210—179** **6 Claims**



A continuous belt-type gravity filtration system is provided which includes in the embodiments disclosed a series of cylindrical rollers around which a continuous belt in the form of a filter media is driven. The rollers provided include one wherein the filter belt is precoated, another which comprises a filter vessel and wherein filtration takes place depositing a filter cake on the filter belt, and another which comprises a heating drum to dry the filter cake. A system is provided for removing dry filter cake from the filter belt, and another system is provided to seal the filter belt as it contacts the filter vessel.

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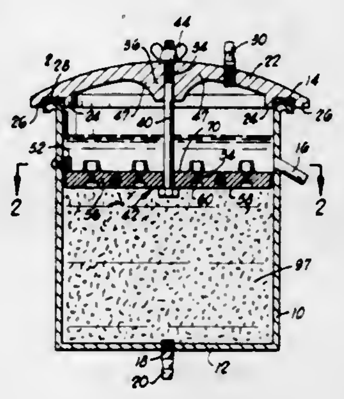
### 3,756,412
### REMOVING CONTAMINANTS FROM A FLUID STREAM

**George E. Barrow, 1609 Field Dr., Enid, Okla.**

**Filed Dec. 2, 1971, Ser. No. 204,181**

**Int. Cl. B01d** *35/18*

**U.S. Cl. 210—180** **9 Claims**



A closed vessel having a vapor outlet at the top thereof and a liquid inlet at the bottom. Within the closed vessel is a heating plate having a plurality of specially configured fluid passageways extending therethrough with the plate partitioning the closed vessel into an upper chamber and a lower chamber. The apertures through the plate have non-uniform cross-sectional areas and open into upwardly extending bosses formed on the top of the plate. A plurality of cooperating lugs are provided on the plate and the internal wall of the vessel for indexing the position of the plate within the vessel to align points of contact between electrical connections carried by the wall of the vessel and by the plate.

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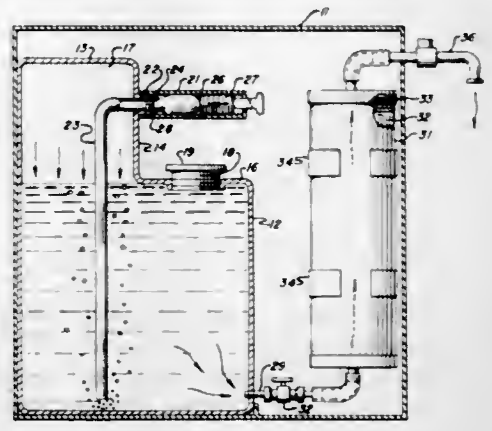
### 3,756,413
### METHOD AND APPARATUS FOR MAKING POTABLE WATER

**William Joseph Gartner, Bartlett, Ill., assignor to Gartner Research & Development Co., Bartlett, Ill.**

**Filed Apr. 13, 1972, Ser. No. 243,645**

**Int. Cl. B01d** *27/02*

**U.S. Cl. 210—205** **9 Claims**



Impure water is made suitable for drinking in an apparatus comprising a pressurizable holding tank attached to a purification cartridge containing an impurities adsorbent and a fine filter. A gas-containing cartridge is pierced to provide a bactericidal gas for killing pathogenic microorganisms and for pressurizing the holding tank to force the water through the purification cartridge.

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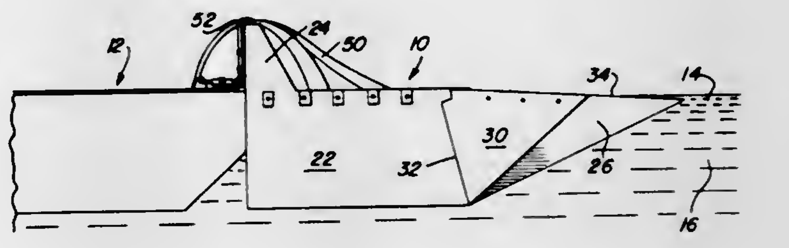
### 3,756,414
### OIL SKIMMER MODULE

**Angelo J. Crisafulli, c/o The Crisafulli Pump Co., Inc., Box 1051, Glendive, Mont.**

**Filed May 11, 1971, Ser. No. 142,282**

**Int. Cl. E02b** *15/04*

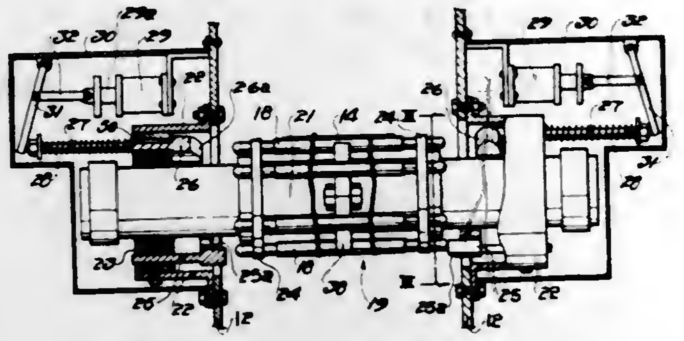
**U.S. Cl. 210—242** **4 Claims**



A skimmer for removal of a layer of oil or other floating pollutant from the surface of a body of water constructed in the form of a module employed with a desired number of similar modules for connection with a floating barge or other vessel for collecting and skimming off the oil when the barge or other vessel moves forwardly and discharging the collected oil or pollutant into storage tanks or the like incorporated into the barge or other vessel. Each oil skimmer module includes an open front receptacle having a horizontally disposed inclined front edge defining a weir that is capable of being raised or lowered for varying the depth of the weir in relation to the surface of the body of water. Each module also includes a pump for removing water and pollutants collected in the receptacle and discharging them into a suitable storage area such as settling tanks or the like on the barge or other vessel.

### 3,756,415
### DEVIATION-CORRECTING MEANS FOR A FILTER MEDIUM

**Akitoshi Iwatani, Marugame, Japan, assignor to Ishigaka Kiko Co., Ltd., Tokyo, Japan**
**Filed Oct. 20, 1971, Ser. No. 190,955**
**Claims priority, application Japan, Apr. 12, 1971, 46/23247**
**Int. Cl. B01d** *33/14*
**U.S. Cl. 210—401** **2 Claims**



A deviation-correcting means for a filter medium in a filtering machine employing an endless and travelling-type filter medium, wherein plural numbers of filter medium-supporting rolls are provided around a rotating shaft, said rolls become in contact with the filter medium one after another with the rotation of said rotating shaft and are displaced selectively into a direction of correcting the deviation of the filter medium and said supporting rolls are further supported slidably on the way thereof by at least one supporting device in the form of a collar, which is fixedly mounted on the rotating shaft, whereby the rolls are prevented from being bent by gravity or the tension of the filter medium so as to avoid the causing of wrinkles in the filter medium.

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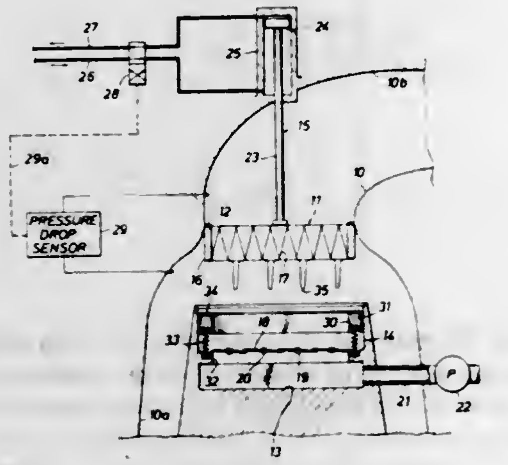
### 3,756,416
### APPARATUS HAVING A FILTER PANEL DISPOSED ACROSS A FLUID PASSAGEWAY

**Charles D. Wood, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.**
**Filed June 9, 1971, Ser. No. 151,387**
**Int. Cl. B01d** *46/10*
**U.S. Cl. 210—408** **22 Claims**



Apparatus in which a filter panel may be moved from a position across a fluid passageway for accumulating particulate material thereon to a position across an opening connecting a chamber with the passageway intermediate its ends. When the filter panel is positioned across the opening, particulate material is removed therefrom and collected in the chamber for diversion to a place of disposal remote from the passageway.

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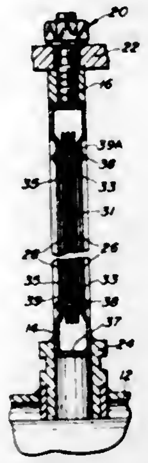
### 3,756,417
### FILTER LEAF CONSTRUCTION AND METHOD OF MAKING SAME

**Arthur E. MacQuilkin, Downers Grove, and Hans Jensen, Hinsdale, both of Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.**
**Filed Dec. 4, 1970, Ser. No. 95,199**
**Int. Cl. B01d** *25/02*
**U.S. Cl. 210—486** **9 Claims**



A filter leaf for use in a pressure filter tank includes a pair of cake-supporting perforate sheets respectively overlying the opposite faces of a perforate core, a circumferential channel-shaped rim surrounding the sheets and the core, and a pair of flexible gaskets respectively disposed between the rim and the sheets to seal them to the rim. In one embodiment, a single gasket overlies the periphery of each perforate sheet and includes a rounded end portion extending radially inwardly beyond the rim on the exterior of the perforate sheet, whereby the pressure in the tank exerted on the rounded end portion causes it to deform and thus provide an even tighter seal between the sheet and the rim.

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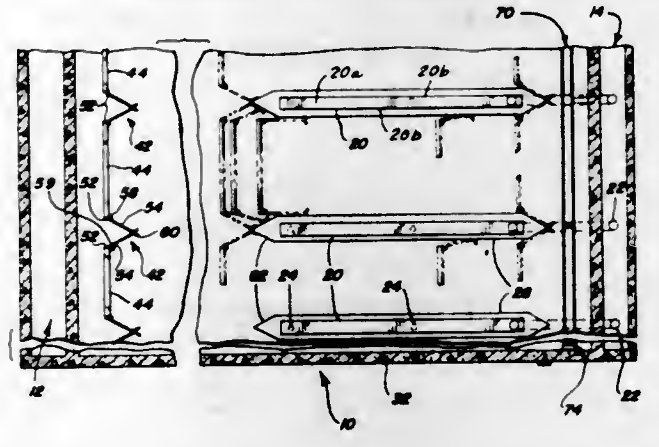
### 3,756,418
### SKIMMING APPARATUS FOR CLARIFICATION TANK

**Howard L. Pentz; Chandrakant Parkhani, both of Lansdale, and Frank Majeron, Philadelphia, all of Pa., assignors to FMC Corporation, San Jose, Calif.**
**Filed Jan. 12, 1972, Ser. No. 217,377**
**Int. Cl. B01d** *21/00*
**U.S. Cl. 210—525** **9 Claims**



A skimming apparatus for a liquid clarification tank that has an inlet for supplying liquid with suspended matter and an outlet for receiving clarified liquid and in which the outlet consists of longitudinally extending transversely spaced weir boxes that receive clarified liquid. The skimming apparatus is supported on a traveling bridge that is reciprocated between extreme positions along a path parallel to the weir boxes and extends transversely of the path of travel. The skimming apparatus consists of first and second portions that are respectively aligned with the weir boxes and the areas between the weir boxes. The first portions of the skimming apparatus are deflectable from a first position to a second position when the bridge traverses the area of the tank occupied by the weir boxes. The skimming apparatus is pivoted between operative and inoperative positions on the bridge and the first portions consist of elements pivoted to adjacent ends of the second portions that are rigid plates. The elements are biased to a first position and have camming members on the free ends for engaging tapered ends on scum baffles surrounding the weir boxes to move the elements from the first position when the bridge traverses the area of the weir boxes.

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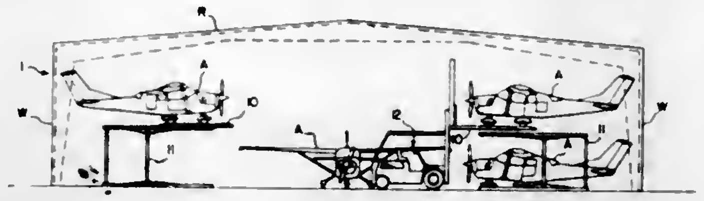
### 3,756,419
### MEANS FOR STORING AIRCRAFT

**Charles W. Dean, 2942 Palm Ave., Fort Myers, Fla.**
**Filed Aug. 27, 1971, Ser. No. 175,514**
**Int. Cl. B64f** *1/00*
**U.S. Cl. 211—13** **17 Claims**



A means for storing aircraft comprising support frame means and lifting frame means or pallet means for supporting and storing an aircraft on said frame means. Said frame means is capable of accommodating one aircraft therein, as well as supporting another aircraft thereon in vertically spaced relationship to said one aircraft. A plurality of support frame means and pallet means may be provided for supporting a plurality of aircraft in spaced, stacked relationship.

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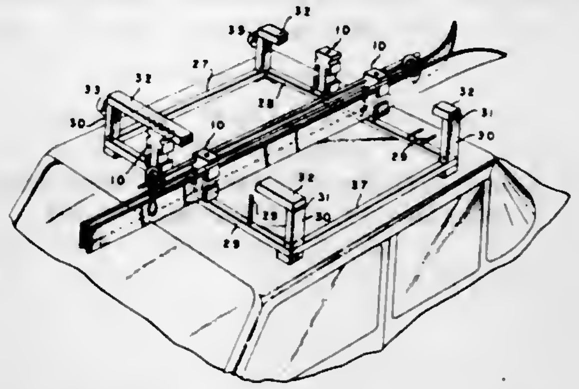
### 3,756,420
### SKI AND POLE CARRIER

**Lawrence E. Brown, 15 Orchard St., Rensselaer, N.Y.**
**Filed Jan. 31, 1972, Ser. No. 221,971**
**Int. Cl. A47f** *7/00;* **E05b** *73/00*
**U.S. Cl. 211—60 SK** **1 Claim**



An oblong body of semi-rigid elastic material has a pair of opposite side faces, each having recessed therein a socket complemental in cross section to a ski but slightly less in cross section area than the cross section area of a ski when seated in the socket. The body face containing the ski socket is recessed also to provide a pole socket complemental to the shank of a ski pole when seated in the socket but of slightly less cross section area than the cross section area of the pole shank. Longitudinally spaced resilient tongues integral with the body project laterally from each side face of the body and define the sockets. The outer ends of the tongues have tip portions that extend part way over their adjacent sockets, terminating in aligned, spaced relation to provide a lateral opening for each socket, through which a ski shank or pole shank may be inserted edgewise in or removed from its socket. Each body constitutes a rack for holding a pair of skis and a pair of poles in such individually spaced apart relation that no part of any ski or pole may contact any part of the other ski or pole. The racks may be detachably mounted in a carrier frame for transportation by automobile or back pack.

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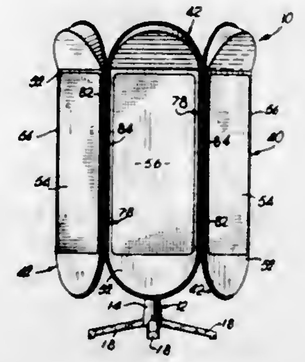
### 3,756,421
### DISPLAY SYSTEM

**Don E. Wilkins, Kansas City, Mo., assignor to Marcon Marketing Concepts, Inc., North Kansas City, Mo.**
**Filed Nov. 26, 1971, Ser. No. 202,524**
**Int. Cl. A47f** *5/02*
**U.S. Cl. 211—163** **10 Claims**



A rotatable merchandise display provided with releasable interchangeable panels that may be arranged in a multiple of body configurations. The manner in which the display is assembled determines whether the body presents a triangular, hexagonal, square-shaped or other polygonal configuration. The variety of configurations thus attainable permits the display to be adapted to whatever space is available as well as to be adapted to the type of merchandise to be displayed.

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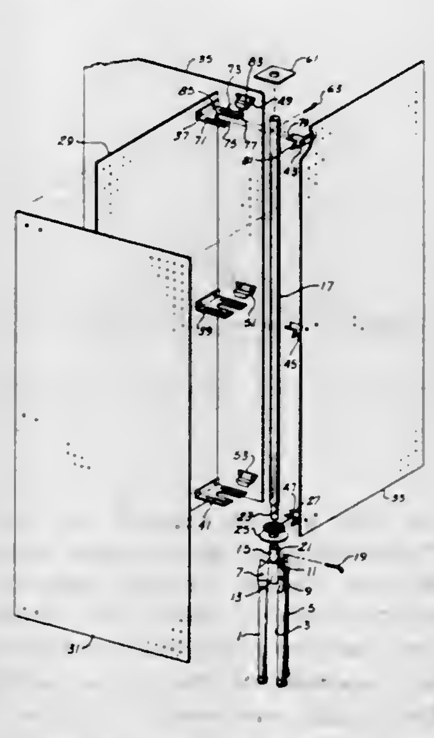
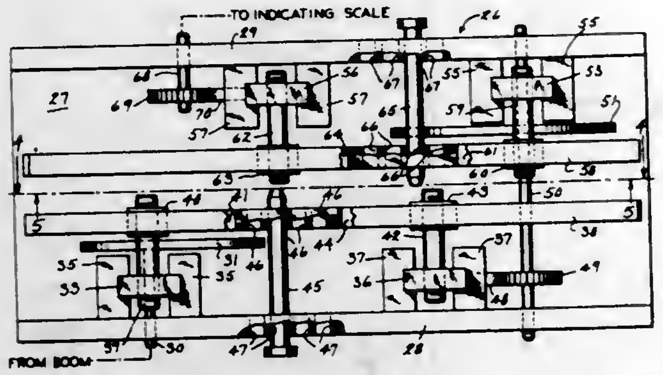
### 3,756,422
### ROTATABLE DISPLAY STAND

**Bert S. Ostring, 20531 Greenwood Dr., Olympia Fields, and Nick Chura, 1061 Forest Hills, Calumet City, both of Ill.**
**Filed Mar. 31, 1972, Ser. No. 239,964**
**Int. Cl. A47f** *5/02, 5/10*
**U.S. Cl. 211—163** **3 Claims**



A rotatable display stand comprising four perforated panels having brackets on the rear faces thereof adapted to interlock around an upright support member and rotate therearound on a supporting ball-bearing collar member. The stand is assembled from a knocked-down condition without the use of tools.

### 3,756,423
## OVERLOAD WARNING APPARATUS
**Ram N. Rathi, South Milwaukee, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.**
**Filed Dec. 21, 1971, Ser. No. 210,426**
**Int. Cl. B66c** *13/48*
**U.S. Cl. 212—39 R** **5 Claims**



An overload warning apparatus for cranes having a vertically angularly movable boom includes a boom radius cam coupled to the boom to be moved w1th changes in the angular elevaton of the boom, an allowable load cam, and adjustable linkages connecting the two cams and connecting the allowable load cam to a pointer. One linkage can be manually adjusted to reflet different actual boom lengths, and another linkage can be manually adjusted to reflect different hoist tackle ratios, so that the pointer will give an indication of the maximum allowable or safe load on the hoist cable. A second pointer is responsive to a load cell which measures the actual load on the hoist cable. Coincidence of the pointers indicates that the maximum allowable or safe load on the hoist cable has been reached.

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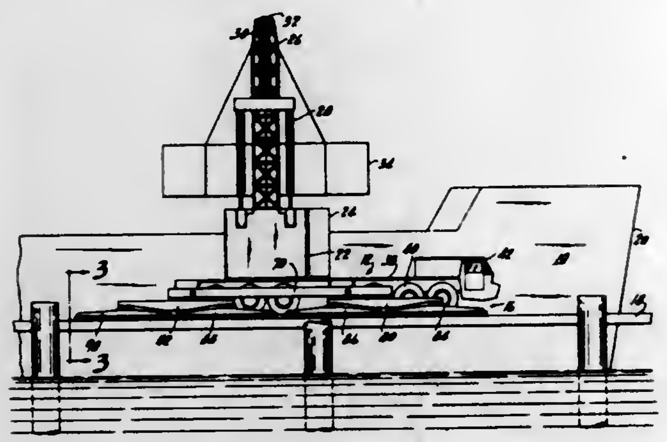
### 3,756,424
## MOBILE CRANE OUTRIGGER ASSEMBLY
**Robert C. Rosenberg, Milwaukee, Wis., and Arick S. Malkiel, New York, N.Y., assignors to Harnischfeger Corporation, Milwaukee, Wis.**
**Filed Dec. 27, 1971, Ser. No. 212,332**
**Int. Cl. B66c** *23/80*
**U.S. Cl. 212—145** **6 Claims**



A mobile crane for use, for example, on structurally weak ship loading docks comprises an outrigger assembly attached to the mobile crane chassis for supporting the crane. The outrigger assembly has two sections, one on each side of the chassis, and each section comprises two outrigger beams, a transfer beam component attached to the outrigger beams, a pair of equalizer beam components connected beneath and near the ends of the transfer beam component at predetermined vertical reaction points, and a pair of float components (outrigger pads) connected beneath and near the ends of each equalizer beam component. A resilient bearing assembly with an integral mechanical connection for tension reactions provides an articulated connection between each component and comprises a resilient member that transmits vertical forces between components so that they are evenly distributed.

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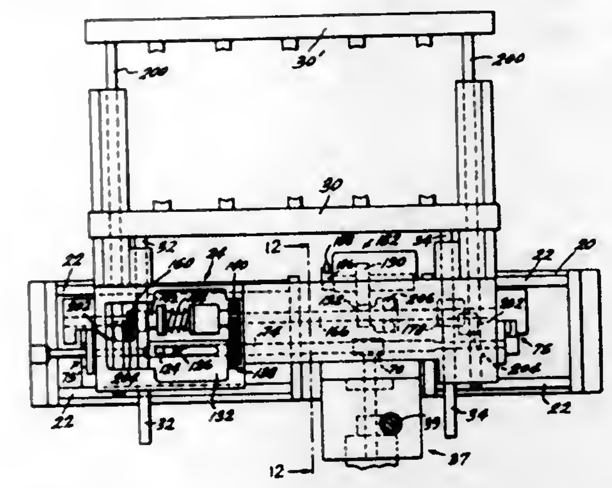
### 3,756,425
## TRANSFER DEVICE
**Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich.**
**Filed Mar. 8, 1971, Ser. No. 121,905**
**Int. Cl. B65g** *25/02*
**U.S. Cl. 214—1 BB** **14 Claims**



A transfer device for progressively indexing workpieces between stations in a die mounted in a press. The transfer device, or transfer mechanism, is positioned along side the press bed. A work-gripping fingerbar is supported for transverse movement on a carriage which is slidably movable lengthwise of the press. The fingerbar moves in a rectangularly-shaped path derived from the combined shifting of the fingerbar on the carriage and shifting of the carriage lengthwise of the press. An axially shiftable rod extends lengthwise through the carriage and is axially reciprocated to produce the described motion of the fingerbar. The fingerbar is transversely shifted by a cam follower on the rod which engages a helical cam groove in a sleeve journalled within the carriage to rotate the sleeve as the rod is shifted relative to the carriage. Means which operatively connect the sleeve to the fingerbar for shifting the latter includes a yieldable coupling. A positive safety retract mechanism is also operatively connected to the fingerbar and is operative independently of the rod. The safety retract mechanism is positioned to be operated by the descending press ram should the usual drive arrangement fail to retract the fingerbar from between the closing halves of the die. The safety retract mechanism rotates a shaft which breaks the yieldable coupling to retract the fingerbar.

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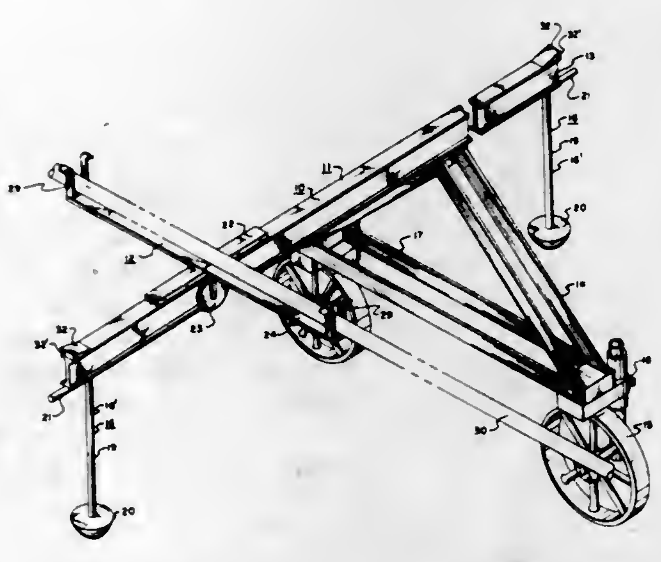
### 3,756,426
## PIPE MOVER
**Roger G. Young, P. O. Box 430, Mountain Home, Idaho**
**Filed Dec. 23, 1971, Ser. No. 211,264**
**Int. Cl. B65g** *35/00*
**U.S. Cl. 214—1 P** **3 Claims**



The pipe mover of this invention comprises a chassis and a carriage. The chassis includes a horizontally disposed I-beam, a pair of struts fastened downwardly, transversely, centrally on the I-beam, a pair of wheels fastened to the lowermost terminal ends of the struts, and a pair of balancing means disposed downwardly from each of the terminal ends of the I-beam. The carriage is operable to ride on the I-beam. The carriage includes a frame operable to ride rectilinearly on the uppermost terminal side of the I-beam, wheels disposed rectilinearly on each side of the I-beam and being operable to ride on the uppermost terminal side of the lower horizontal portion of the I-beam, a carriage plate fastened transversely on the carriage frame, and a pair of upstandingly disposed, U-shaped yokes fastened on the uppermost terminal side at each of the terminal ends of the carriage plate.

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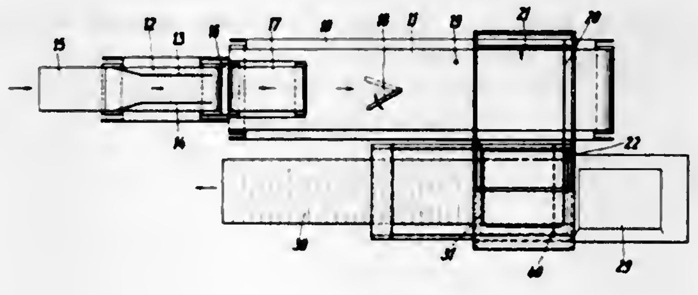
### 3,756,427
## APPARATUS FOR LOADING SACKS ONTO PALLETS
**Gerhard Arnemann, Vossbarg 41, Pinneberg, Germany**
**Filed Apr. 22, 1971, Ser. No. 136,382**
**Claims priority, application Germany, Apr. 24, 1970, P 20 19 953.5**
**Int. Cl. B65g** *57/24*
**U.S. Cl. 214—6 DK** **1 Claim**



An apparatus for loading sacks onto pallets, comprising conveyor means, sack positioning and flattening devices, sack transfer devices, a lifting platform for pallets and a packing plate for forming sack layers thereon, transferring the formed sack layers onto a pallet, applying an antiskid agent between the sack layers and shaping the sack layers deposited on a pallet whereby the upper surface of the packing plate is provided with friction reducing and/or bearing area reducing means.

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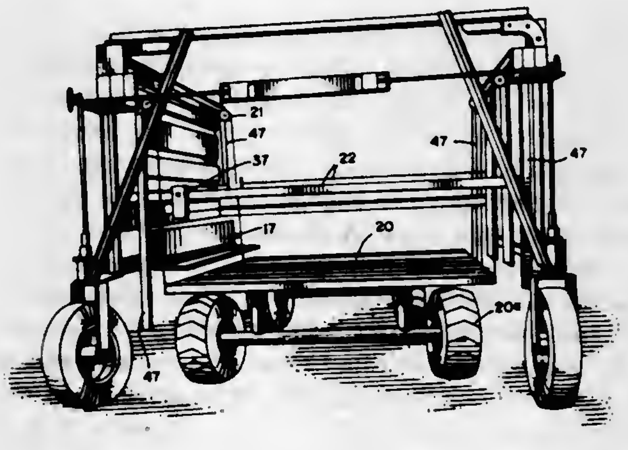
### 3,756,428
## APPARATUS FOR HANDLING BALES
**Hollis N. White, Rt. 1, Maryville, Mo.**
**Filed Oct. 29, 1971, Ser. No. 193,796**
**Int. Cl. B65g** *57/32, 57/112*
**U.S. Cl. 214—6 B** **6 Claims**



Apparatus for handling bales of hay which incorporates a novel chute for positioning bales on a pallet or wagon.

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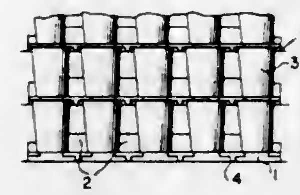
### 3,756,429
## PLASTIC PALLET
**Hans Fleischer, Wiesbaden-Biebrich; Klaus Dickhauser, Hahn/Taunus, and Wilhelm Bingemann, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany**
**Filed Dec. 7, 1971, Ser. No. 205,640**
**Claims priority, application Germany, Dec. 9, 1970, P 20 60 563.4**
**Int. Cl. B65g** *1/14*
**U.S. Cl. 214—10.5 R** **14 Claims**



This invention relates to a tray-like pallet made of stiff plastic material and suitable for use in the setting up of a stack of identical containers each having a top with an outline capable of providing support and different in area from the outline of the bottom thereof, the said pallet having on one face a plurality of non-interconnected projection means between a number of which the base of each container of a series of containers forming a single tier of the stack can be sufficiently confined to produce a stable stack, and having on the other face a plurality of projection means between a number of which the top of each container of a series of containers forming a lower tier of the stack also can be sufficiently confined to produce a stable stack, the pallet being in addition so formed that a plurality thereof are stackable when not in use.

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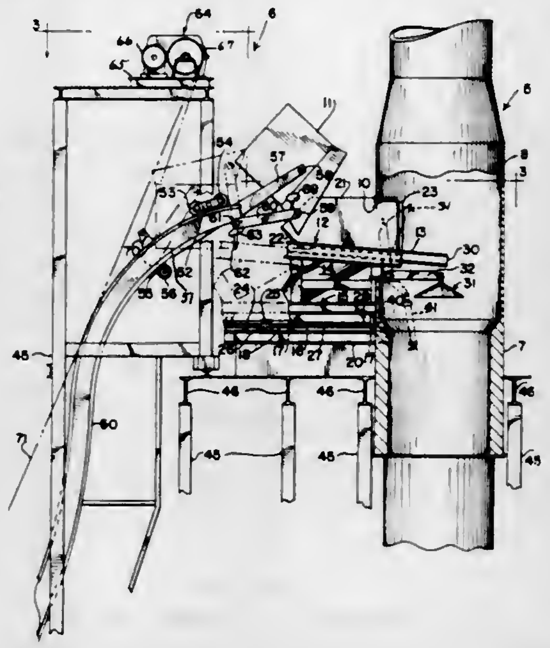
### 3,756,430
## CUPOLA INSTALLATION HAVING VIBRATORY FEEDER
**William A. Vandril, Chicago Heights, Ill., assignor to Whiting Corporation, Harvey, Ill.**
**Filed Mar. 1, 1971, Ser. No. 119,704**
**Int. Cl. B66c** *17/08*
**U.S. Cl. 214—19** **6 Claims**



The side charging opening in the stack of a cupola is made only large enough to receive the discharge end of a vibratory feeder but is much too small to admit therethrough into the stack the charging bucket used to transport charging material up to the charging opening. The vibratory feeder is retractably mounted so that the inner discharge end may be disposed well within the stack, preferably to slightly beyond the center thereof, and may be withdrawn so as to be essentially on the outside of the stack. By substantially reducing the size of the charging opening so as to accomodate only the discharge end of the feeder there is a proportionate reduction in the amount of air that enters the cupola stack and adds to the volume of flue gas that requires cleaning in order to achieve adequate pollution control. Preferably, a charge spreader that may be in the form of a cone or other desired configuration is suspended within the stack in approximately the center thereof and at a level even with or slightly below the bottom of the charging opening. In a preferred construction a spreader cone is suspended by a water cooled arm which is rotatably mounted so that the spreader cone and arm may be both swung out of the main flow path of hot and abrasive gases during burn-down or at other times as desired. Excellent distribution of the charge is obtained as the result of vibrating the conveyor platform of the vibratory feeder to uniformly feed the charge from the discharge end thereof while simultaneously oscillating or reciprocating the conveyor platform with the discharge end thereof moving diametrically within the cupola stack. The charge spreader enhances this excellent distribution.

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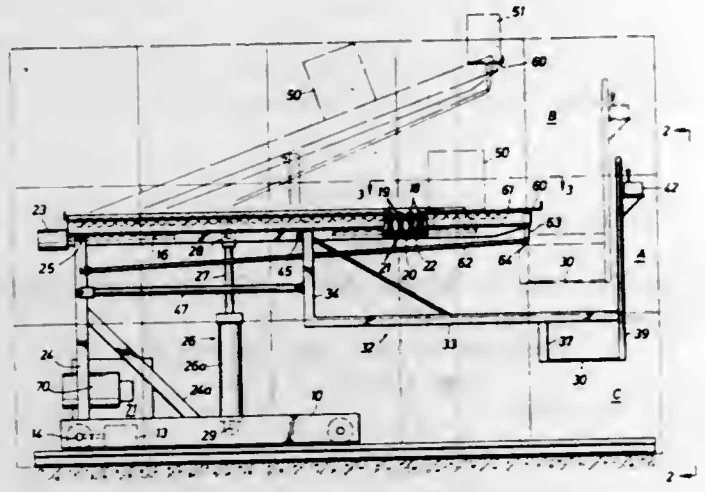
### 3,756,431
## ARTICLE HANDLING DEVICE
**John S. Evans, Jr., Houston, Tex., and John D. Paulsen, Naperville, Ill., assignors to Mark Products, Inc., Houston, Tex.**
**Filed June 4, 1971, Ser. No. 150,050**
**Int. Cl. B65g** *1/06*
**U.S. Cl. 214—83.1** **5 Claims**



The device disclosed includes a self-propelled truck for moving along a row of tiered storage bins. A roller-type conveyor has one end pivotally mounted on the truck with the other end free to move vertically. A platform is mounted for movement with the free end of the conveyor to support an operator in position to move articles from the storage bins to the conveyor.

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## ERRATUM

For Class 214—15 see:
Patent No. 3,756,446

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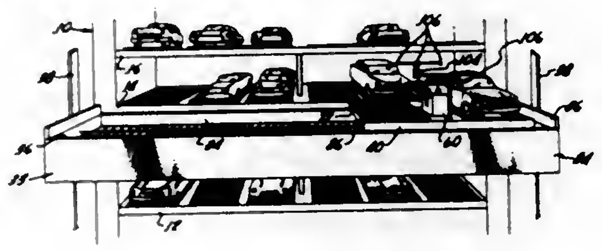
### 3,756,432
## MECHANIZED PARKING SYSTEM
**Dale Eugene McCreary, 9261 Bixby, Garden Grove, Calif.**
**Continuation-in-part of Ser. No. 28,629, April 15, 1970, abandoned. This application Aug. 5, 1971, Ser. No. 169,310**
**Int. Cl. E04h** *6/06*
**U.S. Cl. 214—16.1 CF** **8 Claims**

In a multi-story building a platform elevator extends across a series of side by side parking stalls located on both sides of the elevator. A vehicle transporter is mounted on rails on the elevator to be moved and aligned with the parking stalls. Motor driven belts define a pair of vehicle receiving spaces on the transporter to be aligned with similar roller driven belts defining space in the parking stalls. The belt drive means on the transporter is connected through a clutch to drive the aligned belts in a parking stall. In another embodiment the drive means is connected by a pivoted frame carrying gears supporting a drive chain.



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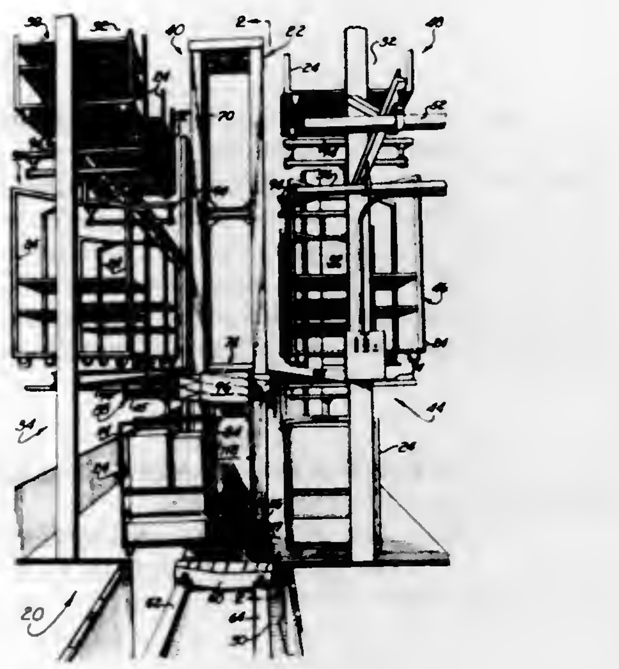
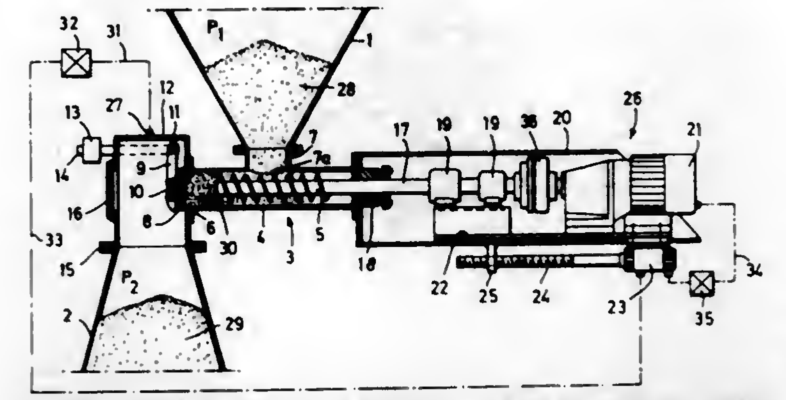
### 3,756,433
## MATERIAL HANDLING SYSTEM
**Kenneth A. Richins, Salt Lake City, Utah, assignor to Eaton Corporation, Bountiful, Utah**
**Filed Apr. 6, 1971, Ser. No. 131,627**
**Int. Cl. B65g** *1/06*
**U.S. Cl. 214—16.4 A** **16 Claims**



An improved material handling system includes a vehicle, such as a stacker crane, which is movable along an aisle between conveyor tracks and a plurality of storage tracks. When a transfer rail on the stacker crane has been vertically and horizontally aligned with a selected storage track, the transfer rail is extended to engage and form a continuation of the selected storage track. A shuttle assembly on the stacker crane is then extended to engage a material carrier on the storage track. Upon subsequent retraction of the shuttle assembly, the material carrier is moved along the storage track onto the transfer rail on the crane. The transfer rail is then retracted and the crane transports the material carrier along the aisle to a conveyor track which is engaged by again extending the transfer rail. The shuttle assembly is then extended to move the material carrier from the transfer rail on the crane onto the conveyor track. of course, a material carrier could be moved from the conveyor track to a selected storage track by reversing the foregoing process.

### 3,756,434
## APPARATUS FOR CONVEYING BULK MATERIAL BETWEEN AREAS UNDER DIFFERENT GAS PRESSURES
**Lothar Teske, Porz-Westhoven, Germany, assignor to Maschinenbau Louise GmbH, Westhoven, Germany**
**Filed July 16, 1971, Ser. No. 163,163**
**Claims priority, application Great Britain, May 12, 1971, 14,572/71**
**Int. Cl. B65g** *65/30;* **B67d** *5/08*
**U.S. Cl. 214—17 B** **8 Claims**



Bulk material conveying apparatus includes a tubular element connected between hoppers under different gas pressures. A rotary helical conveying worm extends through a portion of the tubular element to feed bulk material from one of the hoppers through the tubular element to the other hopper, the conveying worm compressing the bulk material to form a plug in the tubular element downstream from the end of the conveying worm to prevent flow of gas between the two hoppers. Gas pressure sensing means is provided for detecting any changes in pressure in one of the hoppers to control adjustment of the conveying worm in an axial direction in the tubular element whereby the size of the plug can be increased or decreased as necessary to maintain a predetermined pressure in the hopper.

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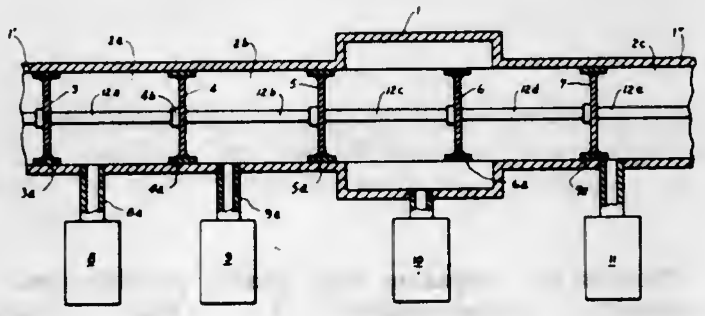
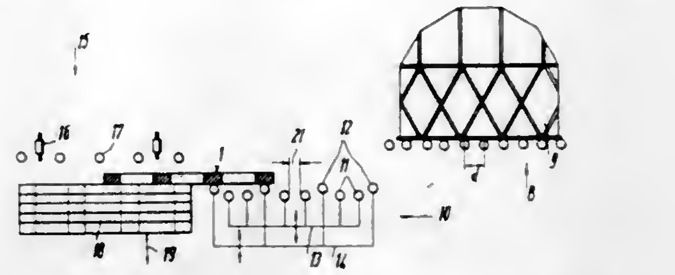
### 3,756,435
## PRESSURE LOCK SYSTEM FOR A CHAMBER
**Karl-Heinz Steigerwald, Starnberg, Germany, assignor to Steigerwald Strahltechnik Gmbh, Munchen, Germany**
**Filed June 10, 1971, Ser. No. 151,757**
**Claims priority, application Germany, June 11, 1970, P 20 28 862.4**
**Int. Cl. B65g** *65/30*
**U.S. Cl. 214—17 B** **11 Claims**



A pressure lock system for introducing workpieces successively into and out of a high vacuum work chamber, comprising inlet and outlet lock channels communicating with said chamber through which a series of workpiece support elements comprising piston-like sealing elements connected in spaced relation by intermediate elements are moved as a chain, either continuously or intermittently. If desired, any workpiece supporting element within the chamber may be detached from the chain and moved in various directions within the chamber while work is performed on the workpiece.

### 3,756,436
## CONVEYOR TRACK FOR PALLETS
**Gerhard Lingg, Leimen, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**
**Filed July 17, 1972, Ser. No. 272,446**
**Int. Cl. B65g** *57/00*
**U.S. Cl. 214—41** **6 Claims**



A track system for air freight is disclosed, having a short track of narrowly-spaced rollers and a long, principal track of widely-spaced rollers at a lower level. A transition station has rollers of both types of roller spacings, the rollers being organized in two sets, and respectively alignable with the two tracks. Auxiliary carriers of perforated construction are used in the wide-spaced track, and the narrow-spaced rollers in the station can reach through the perforations for lowering the load onto an auxiliary carrier which is supported by widely-spaced rollers; the load-bearing carrier is then rolled onto that track.

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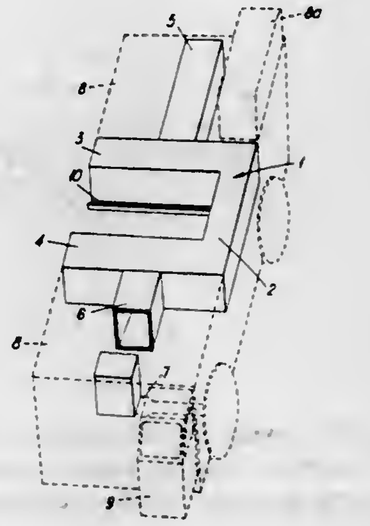
### 3,756,437
## SIDE LOADER VEHICLES
**George Neville Bowman-Shaw, Toddington, Bedfordshire, England, assignor to Lancer Boss Limited, Leighton Buzzard, Bedfordshire, England**
**Filed Sept. 13, 1971, Ser. No. 179,946**
**Claims priority, application Great Britain, Sept. 17, 1970, 44,525/70**
**Int. Cl. B60p** *1/44*
**U.S. Cl. 214—75 G** **6 Claims**



A side loader vehicle chassis comprises a box-like frame of generally U-shaped configuration in plan having a portion forming one longitudinal side portion midlength of the vehicle and two spaced portions coplanar with and normal to the side portion to bound a mast recess, and at least one extension extending generally longitudinally of the vehicle from the outer portions recess bounding portion for supporting the frame on front and rear road wheel suspensions and to support the vehicle decks, tracks for the mast extending along the recess bounding frame portions.

### 3,756,438

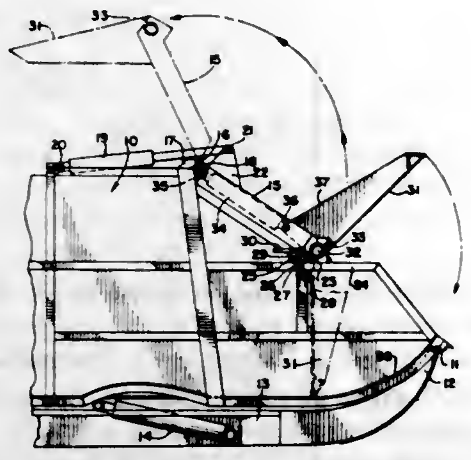
### POWER-OPERATED TAIL GATE AND PACKER PLATE FOR REFUSE DUMP TRUCKS

**Douglas C. Steltz, Waukesha, Wis., assignor to Portec, Inc., Oak Brook, Ill.**

**Filed Oct. 28, 1971, Ser. No. 193,333**

**Int. Cl. B65f *3/00***

**U.S. Cl. 214—83.3** **3 Claims**



A refuse dump truck body is equipped with a tail gate which is hinged to the top of the body and raised and lowered by a power cylinder at the top of the body. The tail gate is swingable on its hinge axis. Latching means secure the lower end of the tail gate releasably to the dump body so that the tail gate normally covers the upper portion of the rear dump body opening. A refuse packer plate is hinged to the lower end of the tail gate and operated by power cylinders on the tail gate and is adapted to enter the lower portion of the dump body rear refuse receiving and discharge opening.

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### 3,756,439

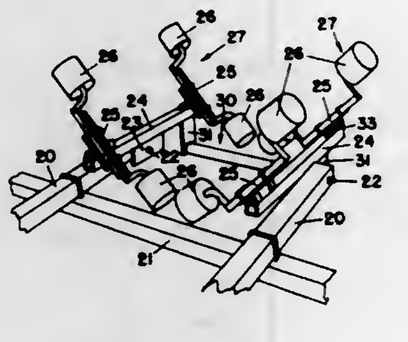
### BOAT TRAILER SUPPORT

**Lawrence N. Johnson, Box 251 A, Rt. 1, Spokane, Wash.**

**Filed Oct. 19, 1971, Ser. No. 190,520**

**Int. Cl. B60p *1/52***

**U.S. Cl. 214—84** **4 Claims**



In a boat trailer having pivotally supported pairs of hull support means, a torsion member interconnecting the said pairs and yieldably urging them toward parallelism.

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### 3,756,440

### DEVICE FOR ATTACHING LOADING RAMP TO PICKUP TRUCK TAILGATE

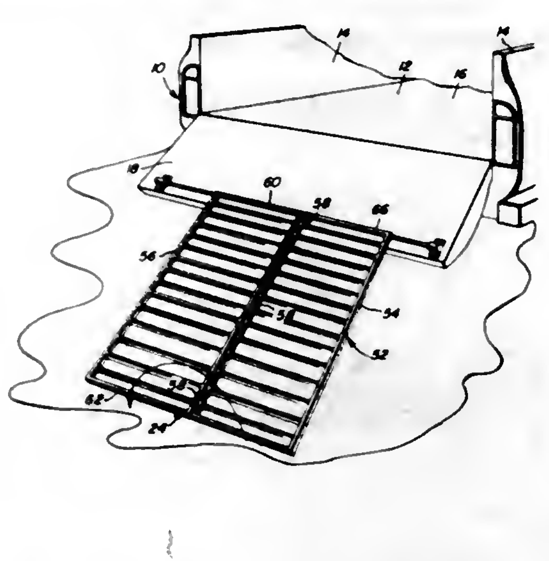
**Gerald G. Raap, Rt. 4, Crestwood Hill, and Donald F. Kutz, Rt. 1, S. Lake Darling, both of Alexandria, Minn.**

**Filed Apr. 25, 1972, Ser. No. 247,412**

**Int. Cl. B65g *67/02***

**U.S. Cl. 214—85** **10 Claims**

A mounting assembly for use in supporting a loading ramp from truck tailgate in an operative rearwardly and downardly inclined position when the tailgate is in an open position and for swinging of the tailgate to a stored position overlying the inner surface of and supported from the tailgate when the latter is in its raised closed position.



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### 3,756,441

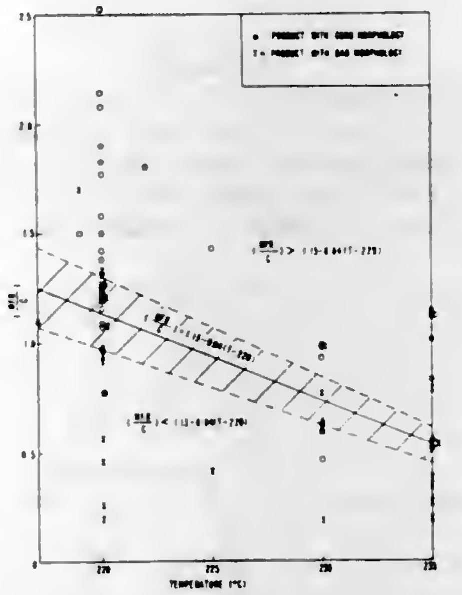
### FLASH SPINNING PROCESS

**Ronald D. Anderson, Stuarts Draft, Va., and Rudolph Woodell, Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Aug. 14, 1972, Ser. No. 280,202**

**Int. Cl. D01f *7/00***

**U.S. Cl. 264—205** **10 Claims**



Process for preparing high quality plexifilaments from isotactic polypropylene by flash extruding trichlorofluoromethane solutions at temperatures from 200° to 240°C. and pressures in excess of 900 psig, provided further that

$$(MFR/c) \qquad 1.13-0.04\,(T-220)$$

where

MFR is the melt flow rate of the isotactic polypropylene at the instant of extrusion, with 2     MFR     30,

*c* is the concentration of the isotactic polypropylene in the solution, expressed in weight percent, and

T is the temperature of the solution in °C.

### 3,756,442

### TILTABLE-CONTAINER VEHICLE

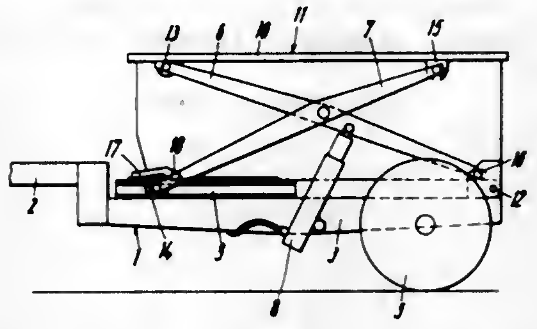
**Ernst Wagenblast, Singen, and Heinz Hohlwegler, Gottmadingen, both of Germany, assignors to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany**

**Filed Nov. 19, 1971, Ser. No. 200,457**

**Claims priority, application Germany, Nov. 23, 1970, P 20 57 560.4**

**Int. Cl. B65g *65/04***

**U.S. Cl. 214—314** **10 Claims**



An agricultural vehicle comprising a bifurcated chassis, each limb of which is formed with a beam pivotally mounted at the free end of the respective chassis limb and carries a respective scissor linkage consisting of a pair of intersecting links hinged at an intermediate portion. A hydraulic jack between each scissor linkage and the respective limb sections to raise and lower the scissor linkage upon which a container can be mounted. The forward end of each beam is provided with a catch arrangement for locking the scissor linkages at different elevations of the container solely by operation of jacks. The lower end of the longitudinally displaceable link rides in the rail formed by a beam supporting the linkage and carries an articulated control lever selectively engaging detect and operating pins to work the catch.

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### 3,756,443

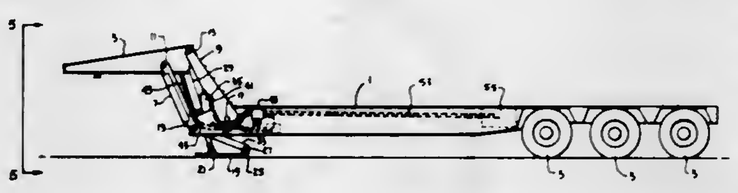
### FOLDING GOOSENECK TRAILER

**Richard A. Verschage, Cedar Rapids, Iowa; Donald L. Kearby; Carl H. Wilson, both of Kewanee, Ill., and Thomas R. Hazel, Milwaukie, Oreg., assignors to Hyster Company, Portland, Oreg.**

**Filed June 2, 1972, Ser. No. 259,223**

**Int. Cl. B60p *1/04***

**U.S. Cl. 214—506** **8 Claims**



An industrial trailer having a collapsible gooseneck is disclosed. A loadbed of the trailer is raised or lowered by main hydraulic cylinders. Secondary hydraulic cylinders operate the gooseneck.

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### 3,756,444

### TAMPERPROOF CLOSURE

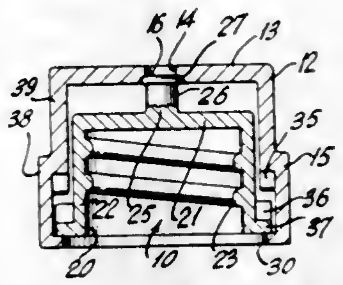
**James A. McIntosh, Upper Montclair, N.J., assignor to Mack-Wayne Plastics Company, Wayne, N.J.**

**Filed Apr. 24, 1972, Ser. No. 246,968**

**Int. Cl. B65d *55/02***

**U.S. Cl. 215—9** **10 Claims**

A tamperproof closure adapted to be fitted on a container by a rotary motion of the closure, for example by means of threads, includes an inner cap having internal means for engaging the container, and an outer cap surrounding the inner cap. The outer cap has an aperture aligned with a projection extending from the end wall of the inner cap, so that the end walls of the caps are normally separated, but may be pushed together by forcing the projection through the aperture. When the caps are forced together suitable engaging means on the caps permit the caps to be rotated together. The projection is shaped to inhibit its withdrawal from the aperture once the caps have been forced together.



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### 3,756,445

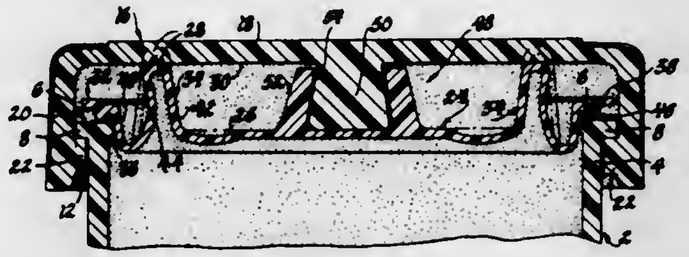
### SAFETY CLOSURE ASSEMBLY

**Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada, Limited, Windsor, Ontario, Canada**

**Division of Ser. No. 855,503, Sept. 5, 1969, Pat. No. 3,608,764. This application July 12, 1971, Ser. No. 161,815**

**Int. Cl. B65d *41/06***

**U.S. Cl. 215—9** **10 Claims**



A one-piece safety closure sealing member adapted to be interposed between a safety cap and container of the type wherein the cap is applied to and removed from the container by an axial motion followed successively by a rotative motion of the cap relative to the container. The sealing member includes a base portion for overlying the opening of the mouth of the container, an annular container rim engaging sealing portion, an annular cap engaging portion for engaging the end wall of the cap, and a resilient annular biasing member projecting axially from the periphery of the base portion for biasing the sealing portion and cap engaging portion to axially spaced positions. The distance between the sealing portion and the cap engaging portion in the unstressed condition of the annular biasing member is greater than the fixed axial distance between the safety cap end wall and the container rim so that the cap is biased into locked engagement with the container by the biasing member.

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### 3,756,446

### DEVICE FOR TRANSLOADING FLOATING CONTAINERS

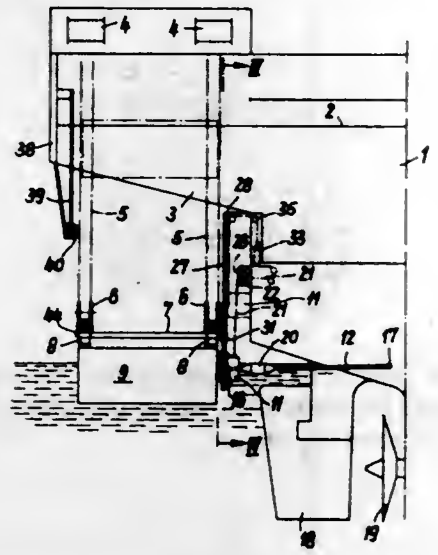
**Karl Macrander, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed May 24, 1972, Ser. No. 256,418**

**Int. Cl. B65g *67/58***

**U.S. Cl. 214—15 R** **10 Claims**

A transloading device, especially for ships, in which the device includes a vertically moveable support frame engageable with a floating container from above while a floating body is provided for engaging the side of a container to be lifted. Vertical tracks on the ship at one side of the support frame have carriages engaging the support frame from beneath while tracks on the other side of the support frame and at a higher level than the first mentioned tracks have carriages that engage the support frame from above. The engagement of the carriages with the support frame prevents swinging movement thereof while it is being moved vertically.



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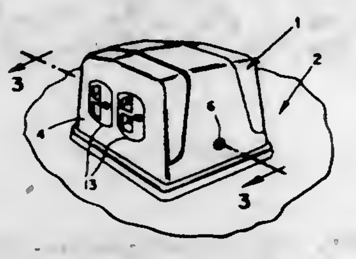
### 3,756,447
### FLOOR FITTING

Robert W. Hadfield, Belpre, Ohio, assignor to Textron, Inc., Providence, R.I.

Filed Feb. 7, 1972, Ser. No. 224,009
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.3 1 Claim



A floor fitting including a housing made of clear polycarbonate plastic and having a painted interior surface, the clear plastic providing a colored appearance for the fitting and also protecting the colored surface from damage as by scuffing, etc.

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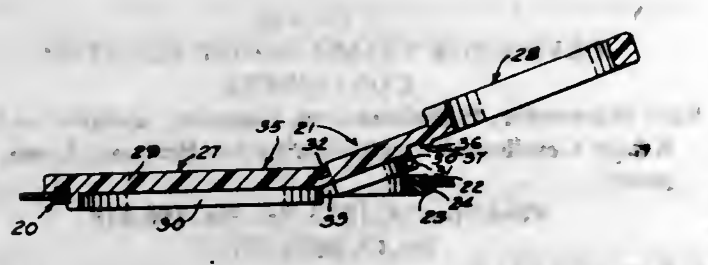
### 3,756,448
### EASY OPENING STRUCTURE

Jens L. Moller, Westmont, and William A. Devane, Worth, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 17, 1971, Ser. No. 111,394
Int. Cl. B65d *17/20*
U.S. Cl. 220—53 5 Claims



An easy opening container including a plastic closure having a pull tab releasably bonded to an end closure for sealing a pour opening. The pull tab includes a lateral flexible section extending across the tab. The flexible section provides a hinge line about which the tab swings to permit venting of gases within the container.

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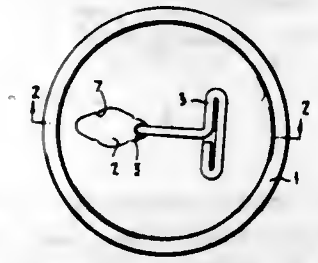
### 3,756,449
### EASY-OPENING CLOSURES

Alan George Dalli, Warrandyte, Victoria; Michael Debenham, Frankston, Victoria, and Ralph Edward Shackleford, Doncaster East, Victoria, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed Nov. 24, 1970, Ser. No. 92,472
Claims priority, application Australia, Nov. 25, 1969, 64,291/69
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 11 Claims



The disclosure of this specification relates to an easy-opening closure for a can end wherein the closure is defined by a portion of the end which is completely sheared from the end except at a plurality of positions defining retaining means. The material defining the retaining means is cold worked to be in tension, the material being deformed beyond its elastic limit so that removal of the closure is more readily achieved by applying a force to a pull tab connected to the closure. If the can is required to be hermetically sealed, a sealant is applied to at least the completely sheared regions of the can end.

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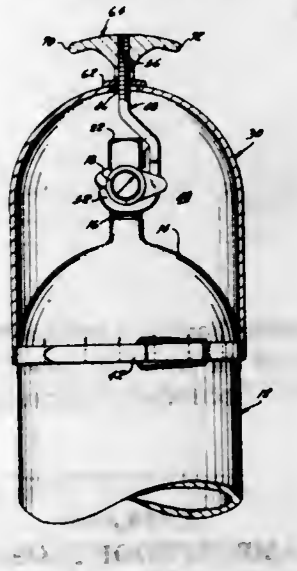
### 3,756,450
### HOOD FOR PRESSURIZED CONTAINER

Ralph Crose, Jr., 28th St. Ocean Side, Marathon, Fla.

Filed Apr. 7, 1972, Ser. No. 241,968
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 P 6 Claims

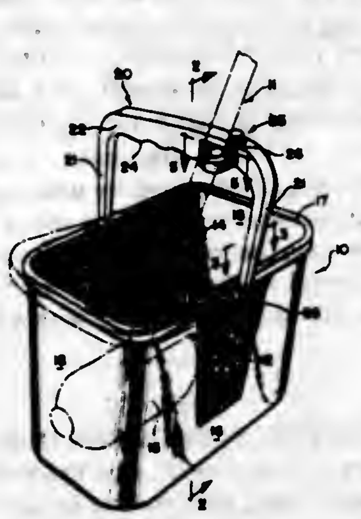


For use to protectively cover the valve outlet on the top of a pressurized cylinder, such as is often used by scuba divers, which has a generally hemispherical top and a valve extending upwardly from it. The device is a hood sized to receive the upper end of the tank and the valve to protectively house the latter. The hood has means to connect to the tank at the lower end and to the valve, there being a hooked member for hooked-up engagement with the valve with a portion extending through the top of the hood and a lock nut to hold the same in place.

### 3,756,451
### MOP BUCKET

Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.

Filed June 19, 1972, Ser. No. 264,297
Int. Cl. B65d *25/28*; A47j *47/18*
U.S. Cl. 220—96 12 Claims



A mop bucket is shown having a generally rectangular cross sectional configuration with a U-shaped retractable handle. The handle is so mounted that it may be secured in the vertical position. At an off-center location on the handle portion a mop handle holder is provided which engages the mop handle and holds the mop upright at a slight angle in the bucket when not in use to facilitate carrying, and positioning the mop handle so that it will not interfere with adjacent paraphernalia.

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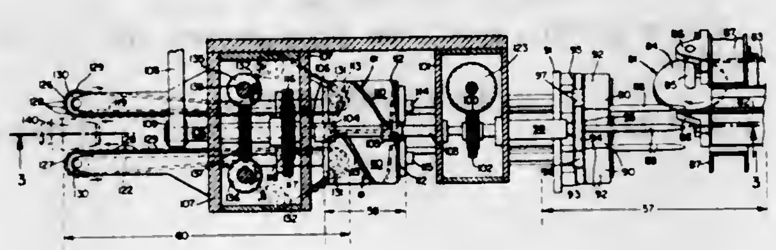
### 3,756,452
### METHOD AND APPARATUS FOR SEPARATING AND FEEDING CONTAINERS

Eric S. Buhayar; James E. Hazard, both of Swarthmore, Pa.; John J. Jangus, Broomall; Fred W. Werner, Media; Robert W. Wheeler, Milmont Park, all of Pa., and Robert C. Crowe, Cherry Hill, N.J., assignors to Scott Paper Company, Delaware, Pa.

Division of Ser. No. 644,955, June 9, 1967, Pat. No. 3,438,275.
This application Mar. 4, 1970, Ser. No. 19,133
Int. Cl. B65g *59/10*
U.S. Cl. 221—1 12 Claims



A method and apparatus is disclosed for individually separating and feeding containers from axially aligned or nested relationship in a stack to a moving turret assembly. The feeding apparatus may employ several successive container conveying sections, two of which operate to separate containers from a line or stack and feed them to a remote position, and one of which controls and varies the angular orientation of the axis of each object as the object approaches the turret assembly, whereby placement of the objects on mandrels of the turret assembly may be accomplished while the turret assembly moves continuously at high speeds.

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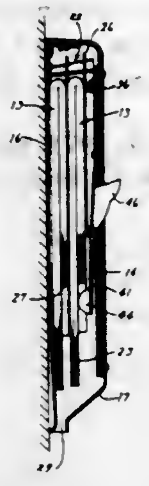
### 3,756,453
### DISPENSER

William H. Griffioen, Kalamazoo, and Janice T. Dietrich, Portage, both of Mich., assignors to Sanitor Manufacturing Company, Kalamazoo, Mich.

Filed Jan. 17, 1972, Ser. No. 218,435
Int. Cl. B65h *3/02*
U.S. Cl. 221—41 8 Claims



A dispenser for permitting the individual dispensing of paper blanks, such as toilet seat covers. The dispenser includes a cabinet in which a pad of paper blanks is suspended, and a manually actuatable ejector mechanism is mounted on the cabinet for engaging one of the blanks at a time to permit dispensing of same. The blanks are disposed in a stack secured to a mounting member. The mounting member is provided with a pair of openings for permitting it to be supported on a pair of hangers provided within the cabinet. The hangers are asymmetric relative to the vertical centerline of the cabinet, and the openings in the mounting member are also asymmetric, whereby the pad of blanks can be supported within the cabinet only in a proper orientation for permitting dispensing of the blanks.

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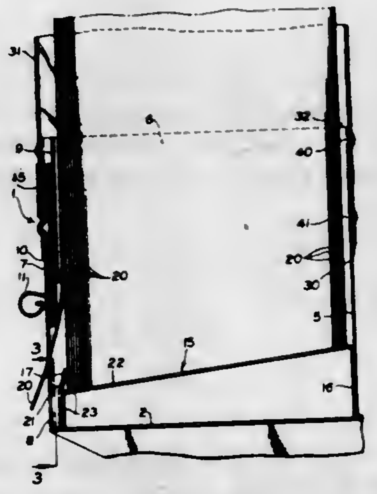
### 3,756,454
### FILTER DISPENSER

Robert J. Matthews, P.O. Box 9101, Canton, Ohio

Filed June 1, 1972, Ser. No. 258,725
Int. Cl. A47k *10/24*
U.S. Cl. 221—46 6 Claims



A plurality of narrow, elongated, bag milk filters or similar envelopes or other flat articles stand on end in an open-topped dispenser, having been placed there from a flexible bag container without prior removal of the filters from the container. The filters are sold in this bag container. The top of the container is opened and fitted down over the open top of the dispenser. At the base of the front wall of the dispenser is an opening with an openable and closable cover. In the dispenser, there is a false bottom which slants gradually downwardly toward this opening. At the front of the false bottom is a substantially vertical short dam with an opening in its middle. This opening coincides with a finger opening in the front wall and floor of the false bottom. By inserting a finger through these openings in the dam and false bottom, an operator can easily lift the bottom of the foremost filter over the dam with his finger and bring it out through the opening in the front of the dispenser.

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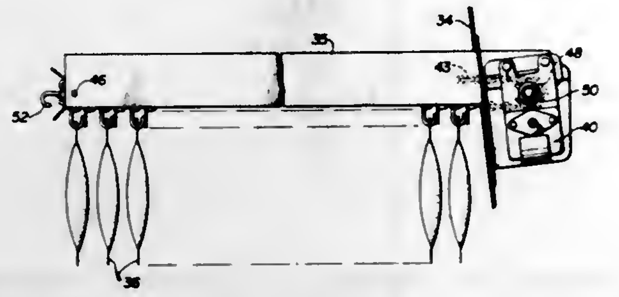
### 3,756,455
### MERCHANDISE DISPENSING MODULE HAVING COOPERATING HOOK AND TAB ARTICLE SUPPORT

**William A. Patrick, Mayflower, Ark., assignor to Polyvend, Inc., Conway, Ark.**

**Filed Feb. 22, 1971, Ser. No. 117,562**
**Int. Cl. B65g** *35/00*
**U.S. Cl. 221—85** **3 Claims**



A replaceable vending machine merchandise dispensing module having endless chain -mounted merchandise supporting hooks wherein chain sag is prevented to insure proper dispensing of the merchandise, the chain is guided to the sprockets to prevent its dislodgment therefrom, and the hooks are provided with closure tabs to prevent dislodgment of the merchandise therefrom.

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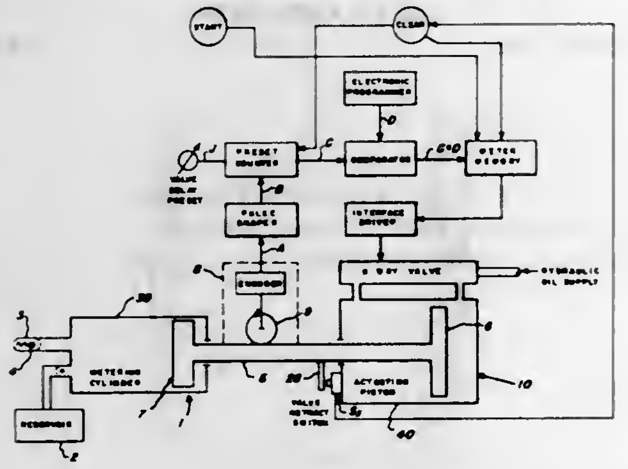
### 3,756,456
### APPARATUS AND METHOD FOR A METERING SYSTEM

**Donald K. Georgi, Minneapolis, Minn., assignor to Graco Inc., Minneapolis, Minn.**

**Filed May 22, 1972, Ser. No. 255,478**
**Int. Cl. B67b** *7/00*
**U.S. Cl. 222—1** **28 Claims**



An apparatus and method for a fluid metering system that employs a high resolution position sensor and electronics to very accurately control the amount of fluid dispensed. This sensor may be an optical sensor which translates the movement of a positive displacement pump into electrical signal pulses that are serially fed into a counter which converts them to parallel binary or binary-coded decimal form. The optical sensor uses a light-sensitive transducer to convert light rays to electrical pulses, a light source, and two graticule frames therebetween. One graticule frame moves relative to the other graticule. Each of the graticules has a large number of equally-spaced light-transmitting areas. Preset counts in the counter compensate for time lags in the system operation such as the lag due to the movement of the dispensing valve and the solenoid valve in an actuating piston. These preset counts are added to the serial counts from the sensor, and then an electrical signal from the counter is sent to a comparator which compares the sum with a programmable number. This programmable number directly relates to the amount of fluid it is desired to dispense. When it and the sum from the counter are equal, the comparator sends a second signal to actuate the solenoid valve which results in the fluid flow being stopped. The programmable number may be manually inputted or may be determined by any measurable characteristic of an object, like its weight, or any fixed relationship relating to the object, for example, a percentage of its weight. In a modification to the basic system, provision is also made to control the position of the object fluid is being dispensed into relative to the dispenser. Positioning is obtained by utilizing a control circuit and an hydraulic-linear actuator to move the object. This latter operation may be positionally controlled by a signal directly proportional to the object's weight, for example, the weight of a fowl that is being injected with a fluid additive.

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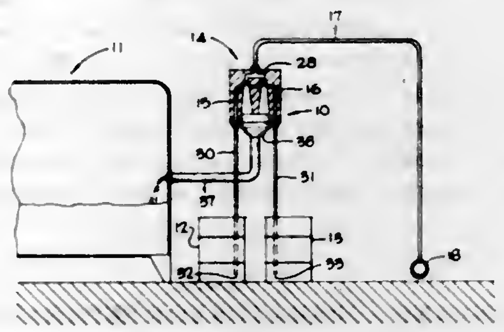
### 3,756,457
### DUAL ADDITIVE FEEDER FOR DISHWASHING

**Lambert Holmes, Creve Coeur, and Franklin M. McDougall, St. Louis, both of Mo., assignors to Economical Laboratory, Inc., St. Paul, Minn.**

**Filed Dec. 11, 1970, Ser. No. 97,127**
**Int. Cl. B67b** *7/00*
**U.S. Cl. 222—1** **6 Claims**



This dual feeder includes a venturi device communicating with a pair of aspirator tubes to draw liquid additives from a pair of independent containers. Depletion of the additive in one container below the intake level of the aspirator tube results in automatic cut-off of the additive in the other container.

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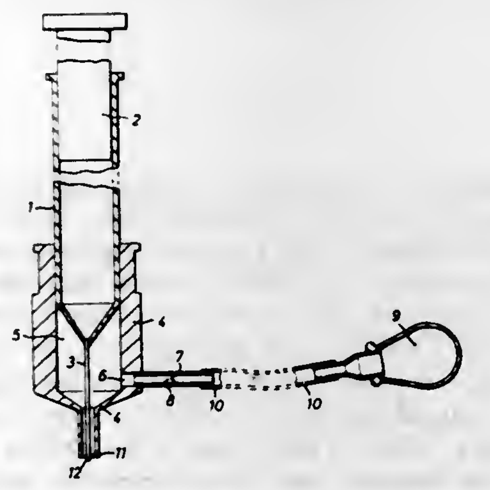
### 3,756,458
### BURETTES AND PIPETTES

**Matzas Alfonso Fill, 85 Brangwyn Dr., Patcham, Sussex, Brighton, England**

**Filed Jan. 28, 1970, Ser. No. 6,440**
**Claims priority, application Great Britain, Feb. 3, 1969, 5655/69**
**Int. Cl. B65d** *83/00*
**U.S. Cl. 222—1** **11 Claims**



Method and device for dispensing a predetermined amount of liquid which includes a storage means for holding liquid therein, a nozzle for dispensing the liquid from the storage means, and means for producing a symmetrical puff of gas about the nozzle side wall to remove droplets from the outlet of the nozzle.

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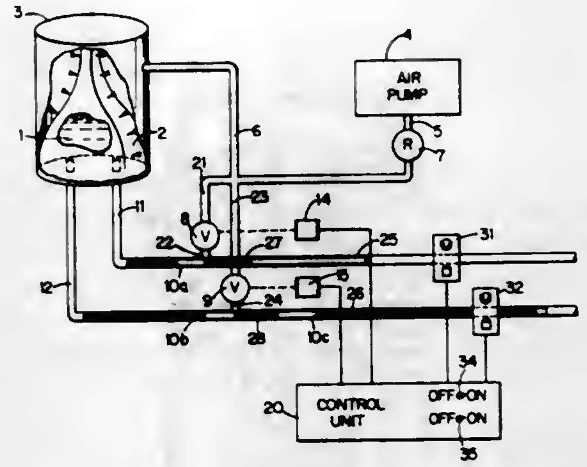
### 3,756,459
### METHOD AND APPARATUS FOR METERING FLUID UTILIZING PRESSURE DIFFERENTIALS

**John D. Bannister, and Andres Ferrari, both of Dover, Mass., assignors to Damon Corporation, Needham Heights, Mass.**

**Filed Jan. 12, 1971, Ser. No. 105,804**
**Int. Cl. G01n** *33/16*
**U.S. Cl. 222—1** **18 Claims**



A method and apparatus for metering a second fluid contained in a pressure collapsible container having an outlet conduit. Means are provided for pressurizing a first fluid at substantially equal pressure on the outside surface of the container and in the conduit to prevent flow of second fluid in the conduit. Flow of second fluid is effected by reducing the pressure of the first fluid in the conduit.

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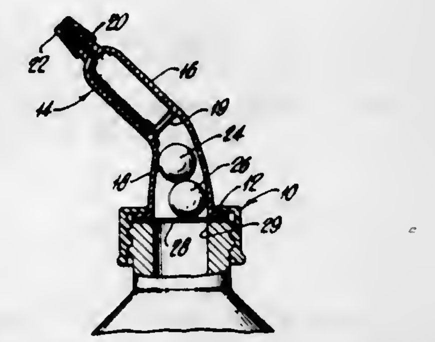
### 3,756,460
### METERED LIQUID DISPENSING DEVICE

**John A. Hill, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Sept. 25, 1972, Ser. No. 292,236**
**Int. Cl. B63d** *37/00*
**U.S. Cl. 222—1** **10 Claims**



A metered liquid dispensing device having a flexible hollow body with a narrowed unit volume chamber and a larger chamber which is connected to a fluid reservoir. A pair of spheres, one acting as a piston element and the other as a drive member are disposed in the body, with the piston element in abutting relation with the beginning of the narrowed section and the drive member directly behind and abutting the piston element. By finger manipulation of the flexible body, the drive member pushes the piston element through the unit volume chamber which element forces the fluid therein through a discharge member in the body.

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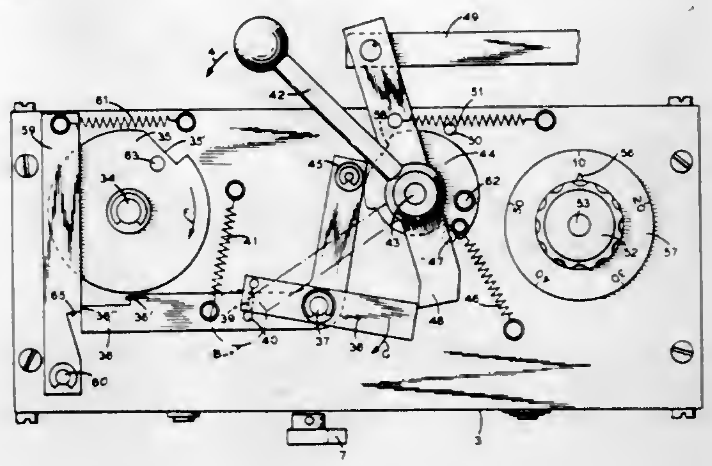
### 3,756,461
### DEVICE FOR PREDETERMINING THE QUANTITIES OF LIQUID DELIVERED BY A LIQUID METER

**Raymond Duwez, Levallois-Perret, France, assignor to Compagnie Des Compteurs, Paris, France**

**Filed June 2, 1971, Ser. No. 149,270**
**Claims priority, application France, June 5, 1970, 7020721**
**Int. Cl. G01f** *11/30*
**U.S. Cl. 222—20** **15 Claims**



One described embodiment of a device for predetermining the quantities of liquid delivered by a meter, said meter having a valve to control the delivery and means for measuring the quantity of liquid delivered, comprises a rotatable cam and a transmission having a variable transmission ratio adapted to be driven by said quantity measuring means for rotating said cam. A valve closure controlling lever having a portion engageable with said cam is arranged for closing said valve in at least one angular position of said cam upon completion of a constant angular displacement by said cam from a stop position. A selector is provided for choosing a desired transmission ratio and thus selecting a predetermined quantity of liquid to be delivered while the cam rotates through said constant angular displacement. The lever is temporarily inhibited from on the valve upon opening of said valve to rotate said cam from said at least one angular position through said constant displacement thus permitting the start of a new delivery of the same predetermined quantity by just opening the valve.

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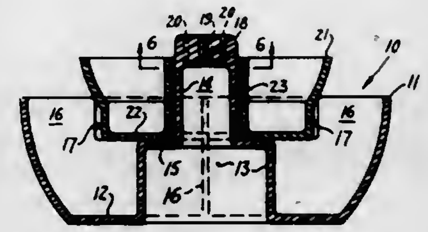
### 3,756,462
### NUT BOWL

**Harvey D. Cain, 126 Moffatt Way, Sacramento, Calif.**

**Filed Mar. 3, 1972, Ser. No. 231,541**
**Int. Cl. B65d** *21/02;* **A47g** *19/00*
**U.S. Cl. 220—23.83** **5 Claims**



A nut bowl having a central upstanding circular portion with a shell bowl having a central bore engageable over the upstanding portion to support the shell bowl centrally and above the nut bowl. The nut bowl is partitioned with radial partitions to separate varying kinds of nuts. The shell bowl is removable from the nut bowl to empty the shells therefrom without disturbing the nuts in the nut bowl.

### 3,756,463
### DISPENSING CONTROL AND/OR MONITORING APPARATUS

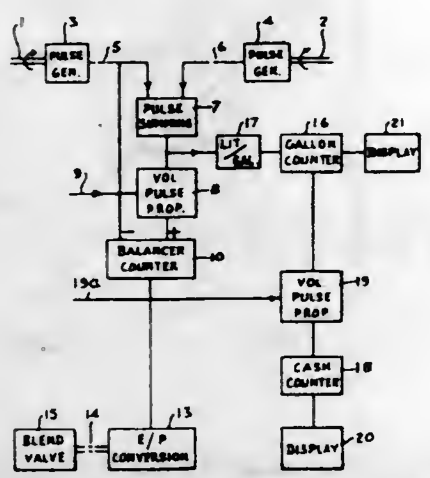
**Timothy J. Gravina, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England**

**Filed Feb. 4, 1971, Ser. No. 111,603**

**Claims priority, application Great Britain, Feb. 4, 1970, 5,342/70**

**Int. Cl. B67d** *5/56*

**U.S. Cl. 222—26** **16 Claims**



Product dispensing and blending control apparatus especially for automobile self-service filling station forecourts includes at each delivery pump unit high and low octane volume pulse generators the outputs of which are applied over fire proof cables to an electronic remote volume pulse proportioning system and a count up and a count down counter the output of which controls the delivered blend to a set value.

Another feature either independently or in combination with the blend control is the pricing control which again is operated by pulse proportioning means dependent upon decode counter outputs and a ratio code.

The proposal is especially advantageous in that it enables all but the minimum of apparatus to be located away from the delivery pump units and is therefore amenable to modular electronic construction using the most up to date integrated circuits.

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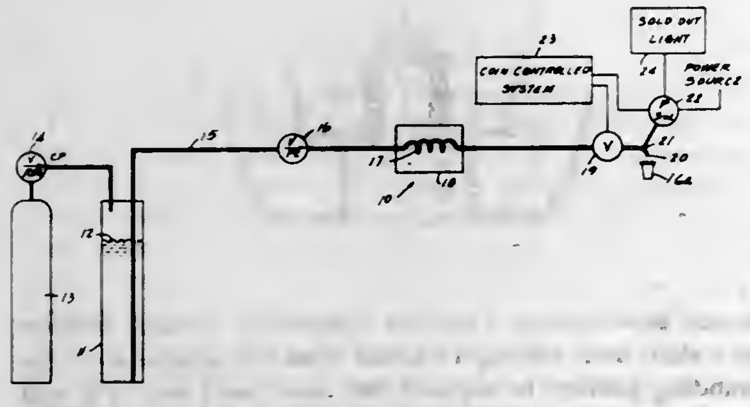
### 3,756,464
### METHOD AND APPARATUS FOR AUTOMATICALLY TERMINATING DISPENSING OF BEVERAGE WHEN SUPPLY IS EMPTY

**Norman L. Fuqua, South Hill, Va., assignor to The Cornelius Company, Anoka, Minn.**

**Filed Feb. 28, 1972, Ser. No. 229,651**

**Int. Cl. B67d** *1/12*

**U.S. Cl. 222—57** **12 Claims**



A beverage dispensing system includes a supply of beverage or beverage ingredient which is subjected to gas pressure and which is conducted through a dispensing line through various components that cause a pressure drop and thence to a dispensing valve. When the supply of beverage is exhausted, pressurized gas in place of beverage passes through the line and raises the pressure upstream of the dispensing valve and also downstream of the dispensing valve where a subseqauent flow restrictor is provided. The increase in pressure is sensed by a pressure switch that disables the dispensing valve and activates "sold-out" indicating means.

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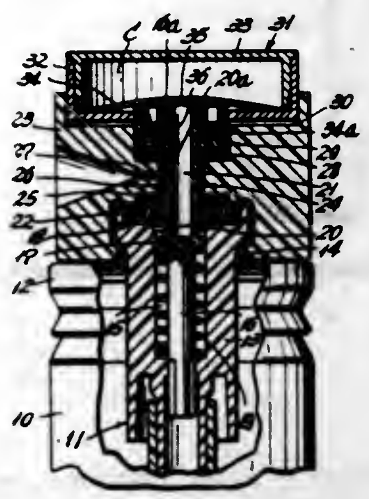
### 3,756,465
### AUTOMATIC PERIODIC DISPENSER

**Philip Meshberg, 15 Stoneleigh Rd., Fairfield, Conn.**

**Filed Jan. 6, 1971, Ser. No. 104,212**

**Int. Cl. B67d** *5/12*

**U.S. Cl. 222—61** **2 Claims**



A device for automatically periodically dispensing predetermined quantities of aerosol material under pressure from a container therefor without the use of a clockwork or external cam operator by means of a valve stem operating diaphragm for controlling the valve stem of a metering valve.

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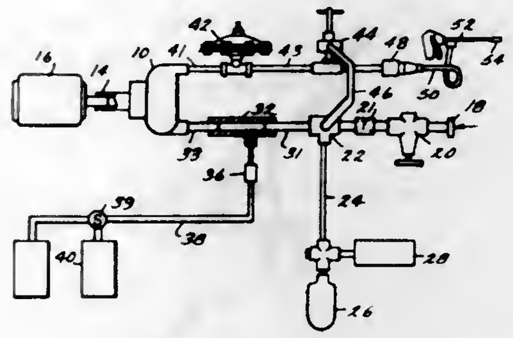
### 3,756,466
### PRESSURE WASH CONTROL SYSTEM

**Robert L. Haase, Quakertown, Pa., assignor to Aero Wash Systems, Inc., Quakertown, Pa.**

**Filed Nov. 19, 1970, Ser. No. 91,134**

**Int. Cl. B05b** *9/00*

**U.S. Cl. 222—63** **4 Claims**



A pressure washer comprising a power driven pump having a fluid receiving inlet connected to a low pressure fluid directing means and a fluid discharge outlet connected to high pressure fluid discharge means. The low pressure fluid discharge means comprises conduit means and has a regulator mounted thereto which serves to regulate fluid pressure passing through the conduit means. Control means and a chemical injector means are also mounted to the conduit means. The high pressure fluid discharge means comprises a second conduit means; a bypass valve fixture mounted to the second conduit means and a bypass conduit secured to the bypass valve fixture with its other end secured to the first conduit means to allow fluid from the second conduit means to flow into the first conduit means for recirculation when the fluid is at a predetermined pressure. Discharge means is connected to the second conduit means to allow for a washer spray discharge.

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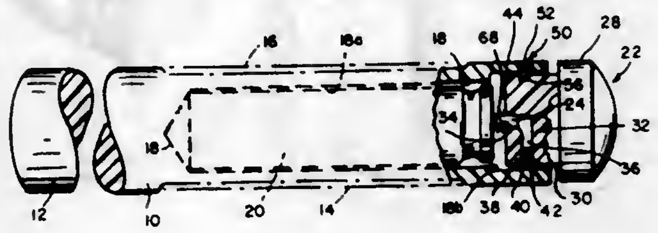
### 3,756,467
### NIGHT STICK

**John E. Anketell, 62 Ash St., Winchendon, Mass.**

**Filed Dec. 13, 1971, Ser. No. 207,332**

**Int. Cl. F41b** *15/02*

**U.S. Cl. 222—78** **15 Claims**



A club embodying a chamber at one end within which there is mounted a pressurized cartridge provided with a discharge tube, a cap mounted in the chamber for rotational and axial movement, said cap being movable to an inoperative position to prevent discharge, to a ready position to enable discharge and to a position to enable removal for replacement of the pressurized cartridge.

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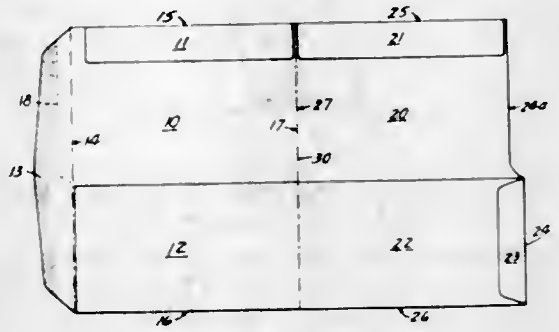
### 3,756,468
### MAILABLE POCKET FILE FOLDER

**David Holmes, Marietta, Ga., assignor to Curtis 1000 Inc., Smyrna, Ga.**

**Filed Oct. 12, 1971, Ser. No. 188,331**

**Int. Cl. B65d** *27/14*

**U.S. Cl. 229—80** **6 Claims**



Conventional pocket folders are modified by providing a sealing flap along an outer edge, thereby permitting them to be mailed without requiring a separate envelope. Further modifications facilitate labeling the folder for use in a filing system.

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### 3,756,469
### CONVERTIBLE HOPPER VEHICLE

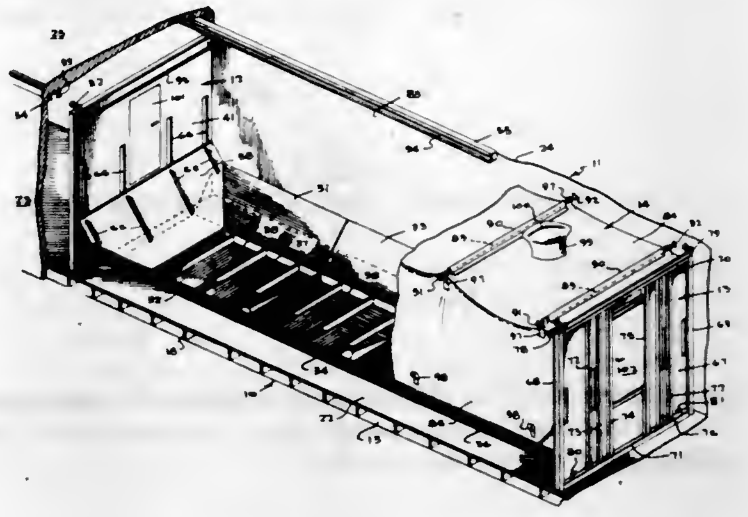
**Edwin E. Clark, Allentown, and Albert J. Florig, Norristown, both of Pa., assignors to Bulk Liner Corporation, Allentown, Pa., by said Clarke**

**Filed Nov. 10, 1970, Ser. No. 88,391**

**Int. Cl. B61d** *3/06, 7/32, 17/18*

**U.S. Cl. 222—105** **22 Claims**

A carrier unit adapted to be converted into a bulk material carrier generally including a container having a floor, the floor having at least one floor section movable to a selected position providing a surface inclined toward an opening in the floor formed by the removal and positioning of the floor section into the selected position, a pair of wall units disposed within the container, movable between storage positions and operative positions on opposite sides of the floor section to cooperate with the floor section in the selected position and portions of the interior walls of the container to define a compartment, and a flexible liner for holding bulk material, mountable in the compartment, the flexible enclosure having an inlet for charging bulk material thereinto and at least one outlet cooperable with the floor opening for communicating the interior of the flexible liner with the exterior of the container.



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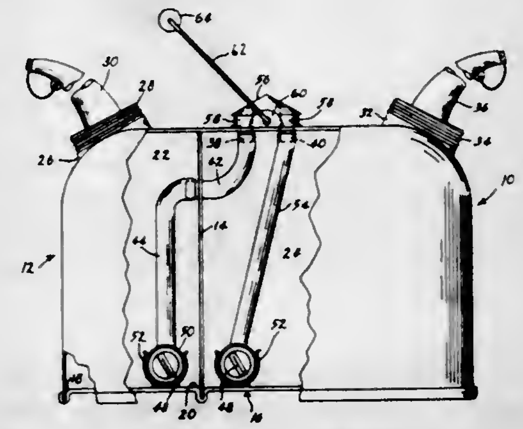
### 3,756,470
### COMPARTMENTIZED SUPPLY CONTAINER

**William A. Bagwell, 926 N.E. "D" St., and Lonnie G. Plumlee, 1711 S.W. "I" St., both of Grants Pass, Oreg.**

**Filed Mar. 15, 1972, Ser. No. 234,911**

**Int. Cl. B67d** *3/00*

**U.S. Cl. 222—129** **5 Claims**



A compartmentized supply container for a plurality of segregated liquids is provided, each compartment having its own pouring spout, and each having its own normally closed means for admitting air as required during pouring. In each instance the air admission line includes a conduit that runs from top to bottom of the container with check valve means at the bottom of the line which prevents admission of liquid to the line at all times but admits air during pouring as required.

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### 3,756,471
### DISPENSER CONTAINER HAVING A TEAR-OUT SIGHT GAUGE

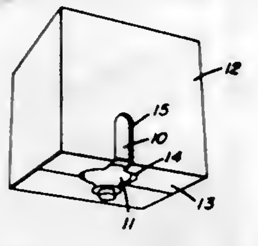
**Craig A. Wissman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Aug. 19, 1971, Ser. No. 173,208**

**Int. Cl. B67d** *5/28*

**U.S. Cl. 222—156** **4 Claims**

A container of the class wherein fluent materials such as chemicals are packaged in transparent or translucent plastic bags encased in a relatively rigid rectangular paperboard container for shipping and dispensing purposes. For dispensing purposes the container is inverted and a retractable spout on the plastic bag is pulled through an opening provided in the flap-closed end, or top, of the paperboard container. To permit the fill level of the contents to be followed the side wall of the container is provided with a tear-out sight gauge. In the preferred embodiment this tear-out sight gauge is combined with a tear-out opening in the top of the container through which the spout of the plastic bag is pulled for dispensing purposes so that the container can be opened and provided with a sight gauge in one tearing operation.



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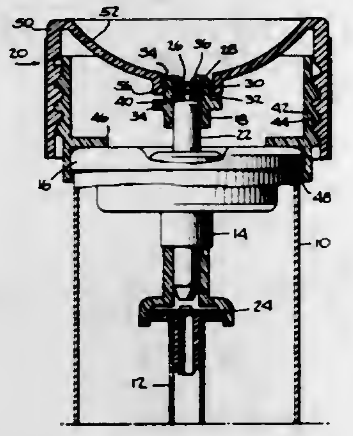
### 3,756,472
### MICRO-EMITTER

**Kenneth D. Vos, Racine, Wis., assignor to S. C. Hohnson & Son, Inc., Racine, Wis.**
**Filed Oct. 18, 1971, Ser. No. 190,154**
**Int. Cl. B65d** *83/14*
**U.S. Cl. 222—189** **15 Claims**



A micro-emitter for pressure packages comprises an apertured member disposed across the nozzle opening through which a fluid product in the pressure package is expelled. The apertured member has at least one aperture which is from 0.5 to 15 μ in diameter. In one instance, propellant pressure is used to force the fluid through the aperture and break it into small drops. In a second instance a high velocity stream of vapor is used to assist the break up of the liquid either before the apertured member or after the fluid is forced through the apertures.

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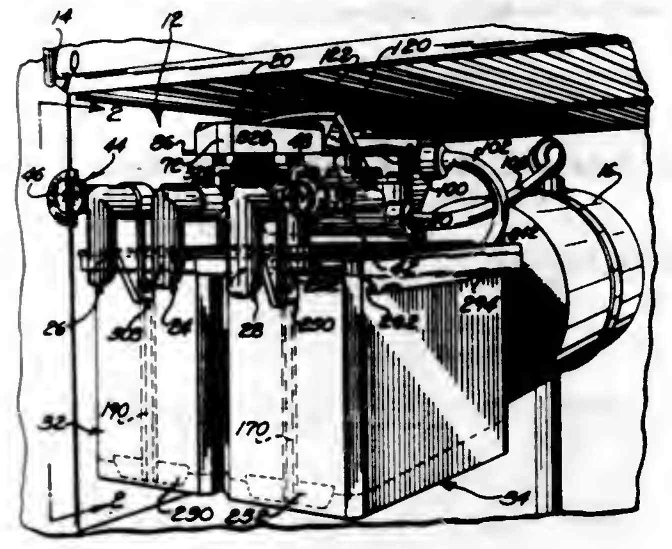
### 3,756,473
### DISPENSER ASSEMBLY

**William R. Donahue, Jr., Batavia, Ill., assignor to Eaton Corporation, Cuyahoga County, Ohio**
**Filed Dec. 20, 1971, Ser. No. 210,008**
**Int. Cl. B67d** *5/56*
**U.S. Cl. 222—129.2** **17 Claims**

An improved dispenser assembly includes a single control lever or three independent levers which are selectively operated to dispense either cold water or a mixture of water and a selected one of a plurality of drink concentrates. A pair of control knobs are provided for independently varying the ratio of the two drink concentrates to water in the dispensed mixture. To enable the mixture of concentrate and water to be varied, a bypass passage is provided around the throat of a venturi to a mixing zone or chamber where the concentrate and water are mixed. The concentrates are supplied to the mixing zone from a pair of removable containers. The removable containers, venturis, dispensing nozzles and by-pass controls can be readily removed to facilitate cleaning.



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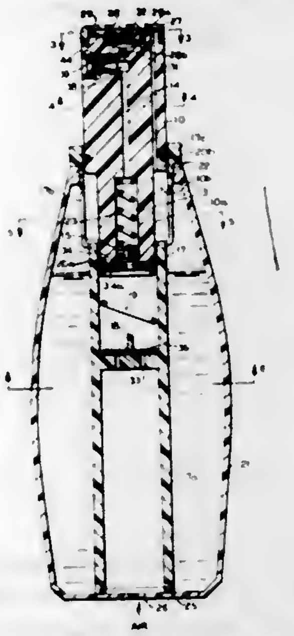
### 3,756,474
### COMPRESSED AIR FLUID PRODUCT DISPENSER WITH METERING CHAMBER

**Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.**
**Filed Dec. 28, 1971, Ser. No. 212,996**
**Int. Cl. B67d** *5/54*
**U.S. Cl. 222—193** **7 Claims**



A compressed air fluid product dispenser has a valve assembly having a valve body with at least a portion thereof in the form of a piston, the valve assembly having a compressed air flow path therethrough. A valve member is movable in the valve body for obturating the compressed air flow path. Aspirating means are provided at one end of the compressed air flow path, the other end of the compressed air flow path opening out of the valve body remote from the aspirating means. The valve body has a metering chamber therein in communication with the aspirating means. A product containing means is provided which forms part of said fluid product dispenser, and a product flow path extends through the valve body from the metering chamber to the product containing means. A closed end cylinder is fitted around at least the piston-shaped portion of the valve body in air tight sliding engagement with the closed end over the end of the compressed air flow path, the cylinder and valve body being movable toward each other in a compression stroke to compress air within the cylinder, either the valve member or the piston having means thereon engagable with the other at the end of the compression stroke for moving the valve member to open the compressed air path only after the air is compressed in the cylinder.

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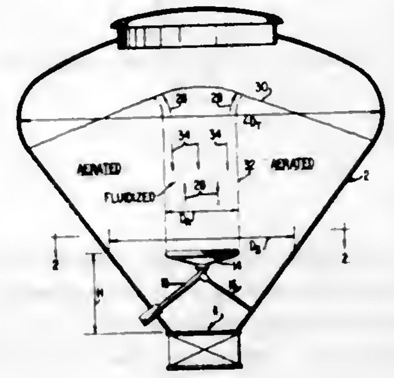
### 3,756,475
### METHOD OF IMPROVING FLOW OF PARTICULATE MATERIAL

**Robert B. Emery, 1408 Wisteria, Duncan, Okla.**
**Filed Mar. 25, 1971, Ser. No. 128,100**
**Int. Cl. B65g** *3/12*
**U.S. Cl. 222—195** **9 Claims**



A method of improving the flow of particulate material from a bin or tank having a discharge opening adjacent the bottom. The discharge opening is shielded from the mass of material in the bin by a shroud which is spaced from the sloping walls of the bin. The upper surface of the shroud is an aerating surface and gas is conducted upwardly from the aerating surface with sufficient velocity to fluidize a column of the particulate material from the shroud upwardly through the material mass, thereby alleviating any tendency for transverse arching of the material between the walls. In addition, at least a portion of the material adjacent the sloping bin walls is aerated to overcome a tendency of the material to bridge circumferentially. As a result, the material flows through the discharge opening at a uniform rate when the pressure head is constant.

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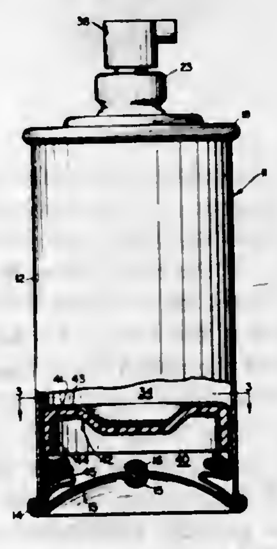
### 3,756,476
### PRESSURIZED DISPENSER HAVING DIAPHRAGM ENCLOSED SKIRTED PISTON

**Angelo T. Bonduris, Cockeysville, Md., assignor to Colgate-Palmolive Company, New York, N.Y.**
**Filed May 16, 1972, Ser. No. 253,791**
**Int. Cl. B65d** *83/14*
**U.S. Cl. 222—386.5** **3 Claims**



An aerosol-type dispenser wherein the interior of the container is separated into isolated relatively fluid tight product and propellant compartments by a flexible wall below which is a separate relatively stiff shape retaining piston. The flexible wall has its periphery anchored fluid tight within the lower interior of the container. Propellant is introduced to act on the underside of the piston which acts through the flexible wall as a positive follower for displacing the product.

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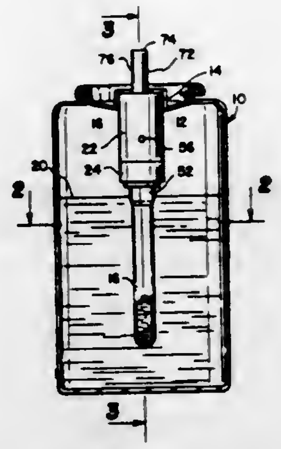
### 3,756,477
### FLUID DISPENSING VALVE MEANS WITH CHECK VALVE

**Samuel B. Prussin, Los Angeles, and Jimmie L. Mason, Hacienda Heights, both of Calif., assignors to Dart Industries Inc., Los Angeles, Calif.**
**Continuation-in-part of Ser. No. 775,079, Nov. 12, 1968, abandoned. This application Feb. 12, 1971, Ser. No. 115,064**
**Int. Cl. B65d** *83/00*
**U.S. Cl. 222—402.22** **8 Claims**



An aerosol fluids dispensing valve having a primary valve mechanism adapted to dispense fluids from a container, and gravity responsive valve means cooperable with said first mentioned valve means, and adapted to prevent the flow of fluids from a container in which said first mentioned valve means is located, when the container is disposed in a position such that undesirable dispensation of fluids from the container may occur.

This invention relates to an aerosol fluids dispensing valve means, and, more particularly, to an aerosol fluids dispensing valve having a primary valve mechanism and a gravity responsive check valve mechanism operable in series to prevent fluids from being dispensed from a container when the container is in an undesirable position, and when the operator of the dispensing valve of the invention fails to dispose the aerosol container in a proper attitude for efficient dispensation of fluids from the container.

The gravity responsive check valve mechanism is carried by a part which operates in a direction which is at least partially vertical to the direction of operation of the check valve so that the check valve will not open during operation of the carrying part.

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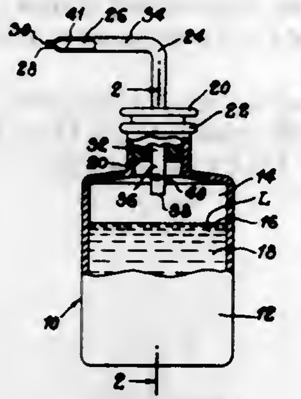
### 3,756,478
### EYE DROP DISPENSER WITH LIQUID METERING DEVICE

**David L. Podell, 1100 Park Ave., New York, N.Y., and Howard I. Podell, 6 Dawes Pl., Larchmont, N.Y.**
**Filed Feb. 3, 1971, Ser. No. 112,147**
**Int. Cl. B65d** *47/18*
**U.S. Cl. 222—420** **37 Claims**

A liquid dispensing device for use in connection with a dispenser of the squeeze-bottle type for dispensing a measured quantity of eye drops and administering the drops directly to the eye through an angled tube enabling the squeeze-bottle to be held in an upright position during application of the drops while the head is held in an essentially normal upright position. A limited amount of liquid is dispensed by virtue of a metering device which includes a delivery tube with an internal passage having a diameter small enough to retain a limited quantity of liquid adjacent the terminal end of the internal passage when the squeeze-bottle is in the upright position, and a vent in the tube adjacent the terminal end for permitting the limited quantity of liquid to enter the internal passage when the squeeze-bottle is inverted.



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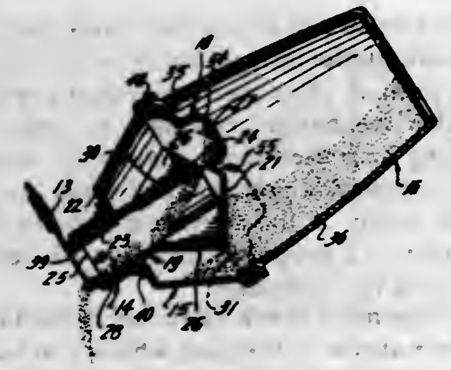
**3,756,479**

### COFFEE DISPENSER

**Jack V. Croyle, Woonsocket, and James B. Swett, Barrington, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.**

**Filed Jan. 3, 1972, Ser. No. 214,722**
**Int. Cl. G01f** *11/26*
**U.S. Cl. 222—437** **5 Claims**



A metering dispenser which will automatically measure a quantity of powdered or granular material and which will permit an immediately effective adjustment in metering volume to be made. The dispenser includes a container, a cup within the container sized to permit passage of material therearound and into the top of the container when such is inverted. The cup is open along its top side so that it collects and retains the material in the top thereof when the container is returned to its upright position and that material begins its descent responsive to the reversion. When the container is again inverted, the material in the cup flows from the cup through a tube and out of the container. Rotation of the tube causes a varying proportion of the cup to be covered by the tube, thus permitting the volume of material passing through the tube to vary responsive to such rotation.

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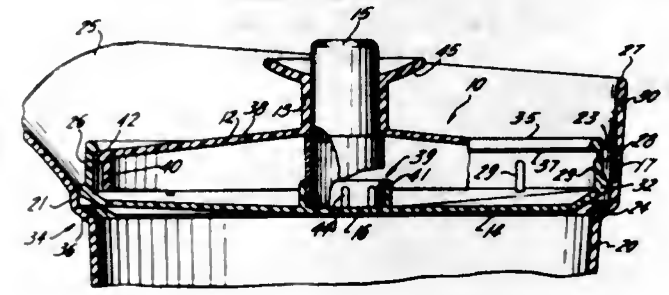
**3,756,480**

### THREE-PART PRESS TYPE SEAL

**James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.**

**Filed Mar. 9, 1971, Ser. No. 122,437**
**Int. Cl. B65d** *47/14;* **B67d** *3/00*
**U.S. Cl. 222—484** **5 Claims**



A multi-part and distortable seal construction employing a biased center wall and sealing wall arrangement which, upon the application and release of pressure to a center-positioned plunger, distends and contracts the sealing wall portion thereof.

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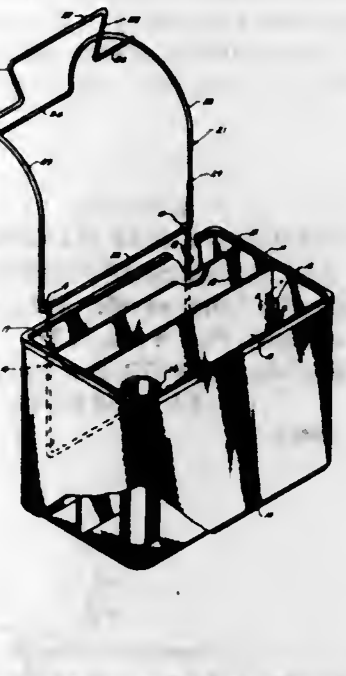
**3,756,481**

### CARRYING CASE

**Roger W. Schaefer, Arcadia, Calif., assignor to Safariland Leather Products, Monrovia, Calif.**

**Filed Mar. 1, 1972, Ser. No. 230,653**
**Int. Cl. B60r** *7/00*
**U.S. Cl. 224—42.42 A** **8 Claims**



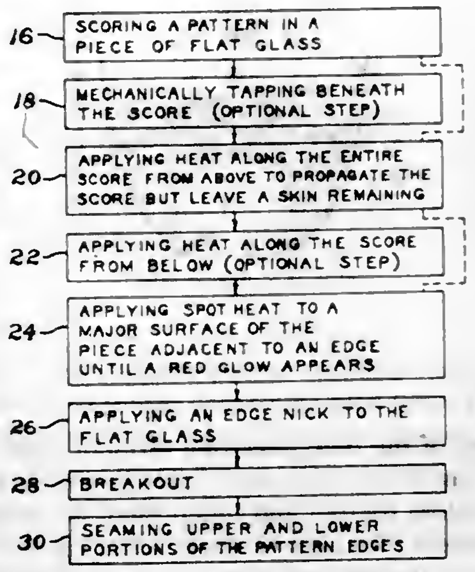
A carrying case particularly useful for police officers or the like is provided in practice of this invention. The case has a hollow partitioned box-like body open at its top for carrying articles. At the back of the body there is a support frame including arched members that fit over the back of an automobile seat for supporting the body. A transverse bar between the tops of the arched members has a raised keystone-shaped central handle which doubles as a hat or helmet support. At the right side of the case is an upright tube for receiving a flashlight so as to be remote from the driver of a car. The body is made of the self-supporting material that is sufficiently elastically flexible to prevent substantial injury if struck by a person in an automobile collision. The support frame is hinged to the body so as to be upright for use in an automobile or for carrying or to lie adjacent the top of the box for more compact storage.

**3,756,482**

### METHOD OF REMOVING TRIM FROM PATTERNS

**Robert P. De Torre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. Nos. 57,574, July 23, 1970, abandoned, and Ser. No. 68,735, Sept. 1, 1970, abandoned, and Ser. No. 105,486, Jan. 11, 1971. This application Apr. 28, 1972, Ser. No. 248,468**
**Int. Cl. B26f** *3/06*
**U.S. Cl. 225—2** **27 Claims**


16
SCORING A PATTERN IN A PIECE OF FLAT GLASS
18
MECHANICALLY TAPPING BENEATH THE SCORE (OPTIONAL STEP)
20
APPLYING HEAT ALONG THE ENTIRE SCORE FROM ABOVE TO PROPAGATE THE SCORE BUT LEAVE A SKIN REMAINING
22
APPLYING HEAT ALONG THE SCORE FROM BELOW (OPTIONAL STEP)
24
APPLYING SPOT HEAT TO A MAJOR SURFACE OF THE PIECE ADJACENT TO AN EDGE UNTIL A RED GLOW APPEARS
26
APPLYING AN EDGE NICK TO THE FLAT GLASS
28
BREAKOUT
30
SEAMING UPPER AND LOWER PORTIONS OF THE PATTERN EDGES

A pattern is scored in a major surface of a piece of flat glass, and the score is propagated into a fracture that extends at least almost entirely to an opposite major surface of the piece. Heat is applied at a location adjacent to an edge of the piece until a red glow is visible at the glass surface. At that time, an edge nick is applied to the glass adjacent to the red glow to complete a vent from the edge nick to the fracture defining the pattern. This is repeated several times to free the pattern from its trim without damaging the edge of the pattern.

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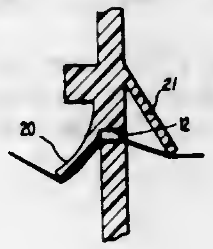
**3,756,483**

### WET TOWEL DISPENSER

**Gordon A. Schraeder, 5936 Cheshire Dr., Bethesda, Md.**

**Filed Mar. 23, 1971, Ser. No. 127,157**
**Int. Cl. B26f** *3/02*
**U.S. Cl. 225—52** **3 Claims**



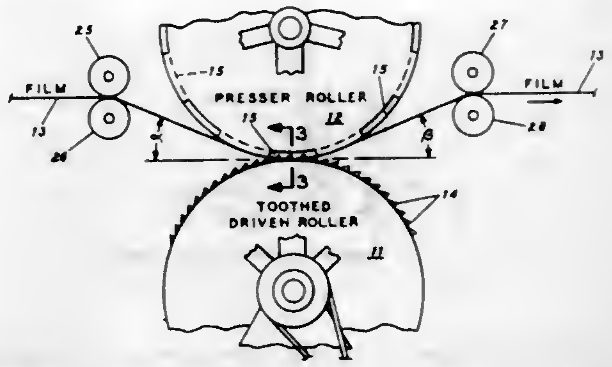
A disposable apparatus for dispensing factory premoistened and pretreated wet paper towels. Paper rolls, premoistened and pretreated, variably sized and treated depending on a variety of consumers' and fabricators' intended uses are humidity sealed in inexpensive and disposable plastic cases which can be easily wall mounted on a once placed compatible mounting or be portable. Wetted paper is drawn through a tensile-loaded plastic flap(s) designed to preserve humid and sterile conditions within the case. The exit slit is provided adjacent thereto with a protruding elongated edge which cuts the paper by consumer's manual action to the desired length. The utility of the invention is the variety of inexpensive applications that the wetted and treated paper may serve, principally: toilet tissue, facial and body cleansing, washing of many other objects such as windows, dishes and surgical instruments.

**3,756,484**

### APPARATUS FOR PREPARING FIBROUS WEB

**Lloyd M. Guenther, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Continuation of Ser. No. 5,394, Jan. 2, 1970, abandoned, which is a division of Ser. No. 726,438, May 3, 1968, Pat. No. 3,496,529, which is a continuation of Ser. No. 540,149, March 31, 1966, abandoned. This application Oct. 18, 1971, Ser. No. 190,323**
**Int. Cl. B26f** *1/20, 3/02*
**U.S. Cl. 225—97** **3 Claims**



Process for preparing fibrous web from uniaxially oriented polymer film in which the film is fed under slight tension between the rotating surfaces of a toothed roller having parallel, helical rows of teeth and a presser roller having helical grooves which are complementary to the teeth rows and mate with the teeth rows, rotating the toothed roller and presser roller in opposite directions substantially synchronously at peripheral speeds about 1.5 to 20 times greater than the film speed, forcing the teeth through the film and into the grooves and withdrawing the fibrillated film from between the toothed and presser rollers.

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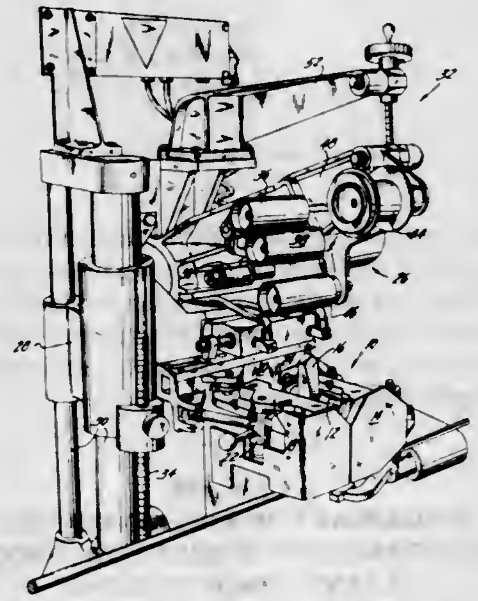
**3,756,485**

### BANDING MACHINE

**William A. Abrecht, Hawthorn, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.**

**Filed Feb. 24, 1972, Ser. No. 228,919**
**Int. Cl. B65h** *25/04*
**U.S. Cl. 226—44** **4 Claims**



A banding machine for opening a substantially continuous ribbon of flattened flexible tubular material such as cellulose and severing that opened material to the desired length. Such apparatus includes a roll supported floating mandrel which is actively positioned for internal engagement with the material by a pair of driven feed rollers and a further intermediate feeding mechanism functionally interconnected therewith to effect withdrawal of the tubular material from a source of supply.

### 3,756,486
### TEXTILE PROCESSING MACHINES

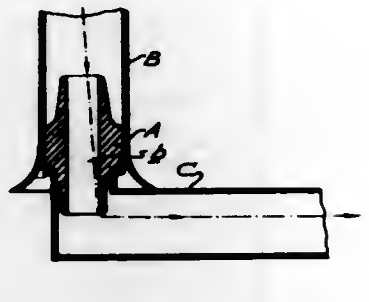
**Frederick Hugh Howorth, Chorley, and Donald Stockley Pilton, Bolton, both of England, assignors to James Howorth & Company Limited, Bolton, England**

**Filed Oct. 21, 1971, Ser. No. 191,401**

**Claims priority, application Great Britain, Oct. 29, 1970, 51,594/70; Nov. 13, 1970, 54,046/70; Nov. 26, 1970, 56,542/70**

**Int. Cl. B65h** *17/32*

**U.S. Cl. 226—97** **4 Claims**



Suction apparatus for textile yarn processing machines for reducing the drag on running yarns passing through a tube in which a collet is mounted in the bore of the tube at each end and at points of change of direction of the tube to centralize the air stream therethrough and maintain the yarn out of contact with the bore.

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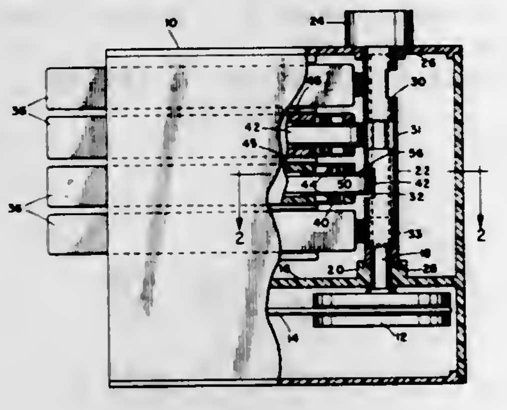
### 3,756,487
### MULTIPLE SELECTIVE SINGLE TAPE CARTRIDGE DRIVE FROM A CONSTANT DRIVE MECHANISM

**Louis L. Pechl, San Diego, Calif., assignor to Precision Design Corp., San Diego, Calif.**

**Filed Aug. 14, 1972, Ser. No. 280,560**

**Int. Cl. B65h** *17/42*

**U.S. Cl. 226—110** **5 Claims**



A constant drive mechanism for driving multiple single tape cartridges, having a slotted sleeve fitting over a constant drive capstan spindle and positioned between the pressure rollers of each of the tape cartridges, that when rotated allows selective ones of the pressure rollers of the tape cartridges to contact the capstan spindle and be selectively driven.

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### 3,756,488
### MAGAZINE FOR ZIGZAG-FOLDED PHOTOCONDUCTIVE BELT FOR INDIRECT ELECTROPHOTOGRAPHY

**Hubertus J. Van Megen, Arcen, and Willem P. H. A. Janssen, Blerick, both of Netherlands, assignors to Oce-van der Grinten N. V., Venlo, Netherlands**

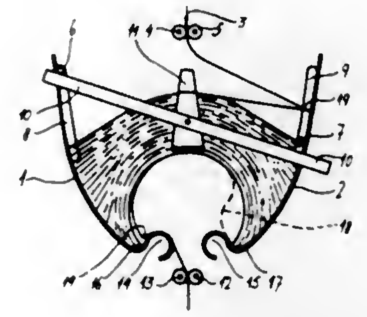
**Filed Feb. 16, 1972, Ser. No. 226,870**

**Claims priority, application Netherlands, Feb. 18, 1971, 7102167**

**Int. Cl. B65h** *17/42*

**U.S. Cl. 226—119** **10 Claims**

A magazine is provided for receiving, storing a stack of and delivering successive sections of a long endless belt of flexible photoconductive sheet material which is pre-folded in zigzag manner for use in indirect electrophotographic copying processes. Oppositely disposed upright guide walls which, in downward direction, converge inwardly to a delivery opening between their lower ends define a storage space holding a large number of the zigzag-folded belt sections stacked one upon another in upwardly bowed postures with their respective folds disposed on opposite portions of the guide walls, so that a length of the belt extending through a processing path from the ends of the stack may easily be drawn continuously from the bottom thereof and redeposited in zigzag folds onto the top thereof. Successive folds entering the top of the magazine are alternately disposed on and pressed down along the opposite guide walls. Threshold members at the delivery opening and/or resilient members bearing elastically against opposite sides of the stack aid in maintaining the folded belt sections in the required upwardly bowed postures.



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### ERRATUM

For Class 226—67 see:
Patent No. 3,756,491

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### 3,756,489
### FURNACE FOR THE BRAZING IN CONTINUE OF PARTS MADE OF ALUMINIUM MAINLY OF HEAT EXCHANGERS MOVED IN A CONTINUE MOTION

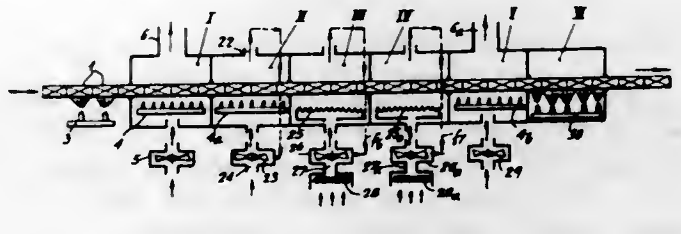
**Andre Chartet, Hauts De Seine, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, Hauts de Seine, France**

**Filed Aug. 4, 1972, Ser. No. 278,086**

**Claims priority, application France, Aug. 9, 1971, 7129092**

**Int. Cl. B23k** *1/04*

**U.S. Cl. 228—43** **13 Claims**



A furnace for the continuous brazing of aluminum work parts comprising a set of at least 4 adjacent communicating treatment chambers through which the parts to be brazed are successively passed, the chambers being provided with heating means, blowers and vents for circulating hot gas therethrough so as to maintain in the chambers successively higher temperatures and pressures to achieve proper brazing which takes place in the fourth chamber. Additional chambers may be provided for curing and cooling purposes.

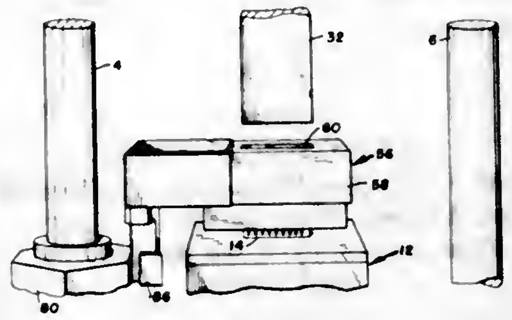
### 3,756,490
### APPARATUS FOR SEALING PACKAGES

**Daniel D. Zimmerman, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.**

**Filed Sept. 15, 1971, Ser. No. 180,774**

**Int. Cl. B23k** *1/00, 5/22*

**U.S. Cl. 228—46** **16 Claims**



A method and apparatus for sealing packages, e.g., microelectronics packages containing heat sensitive elements, by applying heat to melt solder on the peripheries thereof. At the same time heat is being applied to a package heat sinks are simultaneously engaged with the top and bottom portions thereof to carry off excess heat and thus protect the heat sensitive elements from damage.

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### ERRATUM

For Class 229—80 see:
Patent No. 3,756,468

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### 3,756,491
### DEVICE FOR INTERMITTENTLY DRIVING A FILM

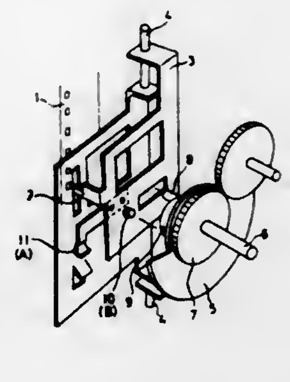
**Inao Moriyama, Sagamihara; Tomoshi Takigawa, Tokyo, and Hiroya Shibuya, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha**

**Filed Aug. 5, 1971, Ser. No. 169,402**

**Claims priority, application Japan, Aug. 7, 1970, 45/78562 (utility model); Aug. 7, 1970, 45/78564 (utility model)**

**Int. Cl. G03b** *1/22*

**U.S. Cl. 226—67** **8 Claims**



In a device for intermittently driving a film having means for intermittently driving the film while a driving claw is in engagement with a perforation of the film, and means for restoring the claw from a position of completion of the driving to a position of start of the film driving, and for permitting the film to be maintained at a static state while the driving claw is disengaged with the perforation, improvements comprising an auxiliary means for restricting the driving claw, positioned in a position to restrict an impulsive action of the driving claw at least when the driving claw is engaged or disengaged with the perforation of the film in order to prevent the impulsive action of the driving claw.

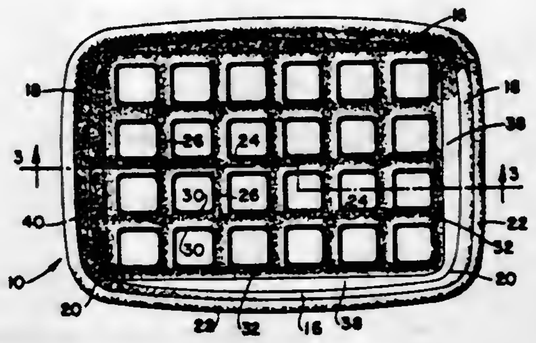
### 3,756,492
### HIGH STRENGTH OPEN BOTTOM PACKAGING TRAY

**Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 185,197, Sept. 30, 1971, which is a continuation-in-part of Ser. No. 111,578, Feb. 1, 1971. This application May 24, 1972, Ser. No. 256,453**

**Int. Cl. B65d** *1/00, 65/00*

**U.S. Cl. 229—2.5** **8 Claims**



A tray of molded wood pulp or the like is provided for the packaging of food, such as produce, preferably in conjunction with an overwrapped transparent film. The tray bottom is formed of a plurality of upright U or V shaped ribs joining or intersecting in two directions and defining open windows therebetween, the height of each V shaped rib being on the order of several times the thickness of remainder of the tray, and the total volume of the inverted V shaped ribs being about equal to the volume of a bottom of a solid bottom tray of the same size.

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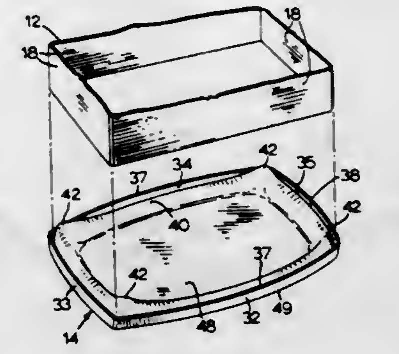
### 3,756,493
### CONTAINER

**Gordon W. Holmes, 1475 Larchview, Mississauga, Ontario, Canada**

**Filed July 7, 1972, Ser. No. 269,757**

**Int. Cl. B65d** *3/10, 5/00*

**U.S. Cl. 229—5.5** **11 Claims**



This invention provides a container which includes a sleeve member defined by a plurality of articulable panels with parallel edges, and an end-cap adapted to cap one end of the sleeve member. The end-cap has a rim which encompasses the outer edge of the panel ends, and is substantially polygonal so that it is similar to the cross-section of the sleeve member. Inwardly of each corner of the end-cap is a sloping corner-guide which defines with the rim a recess for receiving the respective corner between two panels. The corner-guides all extend beyond the rim and are the first to contact the sleeve member. Thus the panel corners of the sleeve member are guided into alignment with the recesses and improper mating is avoided.

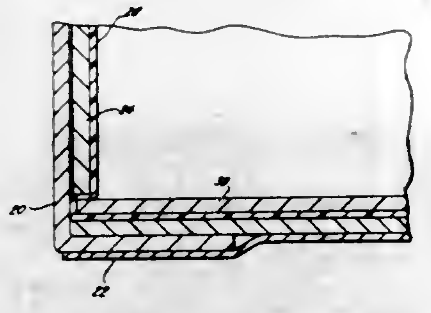
### 3,756,494
### DRUM WITH PLASTIC LINER

**Herbert W. Becker, Jr., East Brunswick, and Harry R. Gardner, Rahway, both of N.J., assignors to Greif Bros. Corporation, Lindenhurst, N.Y.**

**Filed Dec. 20, 1971, Ser. No. 209,637**

**Int. Cl. B65d** *25/00*

**U.S. Cl. 229—14 B** **4 Claims**



A lined fiber drum is constructed of essentially regular components which are arranged in a novel manner. According to a preferred embodiment, these regular parts generally employed for constructing an all fiber drum are assembled together with a plastic bag and an additional bottom disc. This disc is inserted interiorly and at the base of the bag, and both are inserted into the drum body shell and located at the intended bottom end thereof. The drum inner shell is inserted into the body shell exteriorly of the side of the plastic bag and the shells are then secured to one another in the usual fashion. Thereafter, the regular bottom disc is placed over the base of the bag and interiorly of the bottom end of the outer shell and the base of the drum is formed in a conventional manner. Thus, the bag is fixed in place and will not lift out of the drum; and the drum may therefore be conveniently arranged for customer filling. After filling, the customer seals off the bag and pushes the excess of the bag into the drum. A conventional cover is then mounted on the top of the drum.

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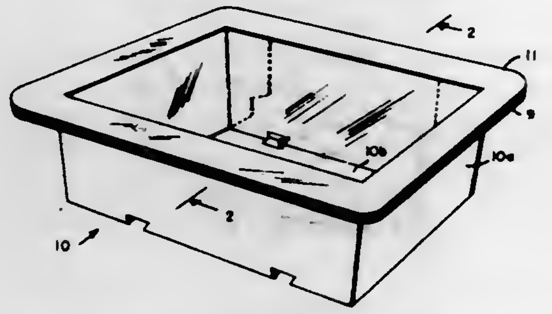
### 3,756,495
### BOILABLE BAKEABLE PACKAGE

**Robert P. Bemiss, Hillsborough, Calif., assignor to Robalex, Inc., as Trustee, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 83,704, Oct. 26, 1970, and a continuation-in-part of Ser. No. 154,784, June 21, 1971, and a continuation-in-part of Ser. No. 192,720, Oct. 14, 1971. This application Mar. 2, 1972, Ser. No. 231,204**

**Int. Cl. B65d** *5/56*

**U.S. Cl. 229—14 BL** **12 Claims**



A laminated or multi-wall carton or tray is provided which has a self-supporting outer layer or wall portion of paperboard which is a laminated structure, and includes a paperboard with a plastic or foil layer adhered or laminated thereto. The laminated layer of material may be on one or both sides of the paperboard adhered to the surface, preferably before the tray or carton is die cut and formed into a tray or carton. This laminated structure or paperboard outer wall of the carton or tray is an independent self-supporting unit during the manufacture of the laminated tray or carton though it is not sufficiently strong to form a carton or tray by itself. A plastic liner is thermo-vacuumformed into the paperboard tray or carton in contact with the lamination on the paperboard therein to provide a boilable bakeable liquid-tight leakproof lining for the tray. The strengthened carton structure in outer paperboard supporting structure coated with a plastic or foil film heat resistant at baking temperatures and an inner plastic film or liner for contact with the food if food is the product being packaged.

A laminated or multilayer wall tray or carton is provided with a corner construction to resist leaking of vacuumized containers for example, and to form a simple stop for use in nesting of the cartons.

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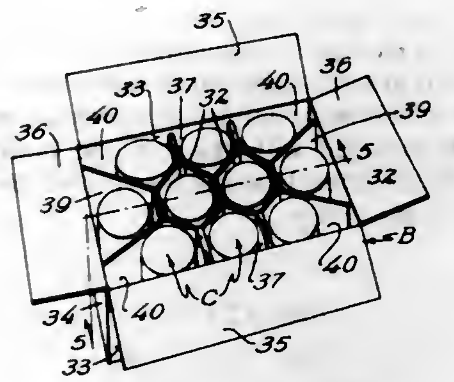
### 3,756,496
### CUSHIONING DIVIDER

**Dennis Oostdik, Milwaukee, Wis., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.**

**Filed June 12, 1972, Ser. No. 261,709**

**Int. Cl. B65d**

**U.S. Cl. 229—15** **8 Claims**



A divider is formed by alternately slotting the edges and the center portion of the rectangular blank of corrugated paperboard or the like along parallel lines, and providing fold lines in alignment with slots.

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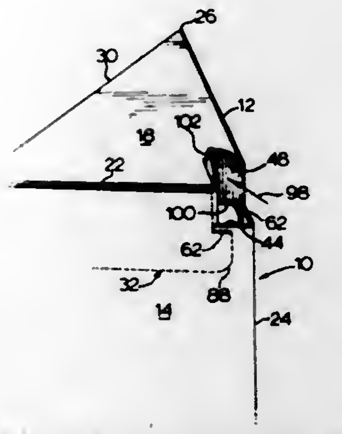
### 3,756,497
### MAILING TUBE

**James Edward Stewart, 31 Ravensbourne Ave., Islington, Ontario, Canada**

**Filed Dec. 13, 1971, Ser. No. 207,041**

**Int. Cl. B65d** *5/10, 3/04*

**U.S. Cl. 229—22** **7 Claims**



A foldable shipping container or mailing tube has a substantially triangular cross-section. At least one of the end panels of the container is hingeably connected to one of the side panels thereof, and is insertable into the open end of the assembled container with a pair of side flaps having indents formed therein which cooperate with an over-center acting locking tab formed in the other two side panels of the container and which locks the end panel into place by cooperative interference with the edges of the indents formed in the side flaps of the end panel.

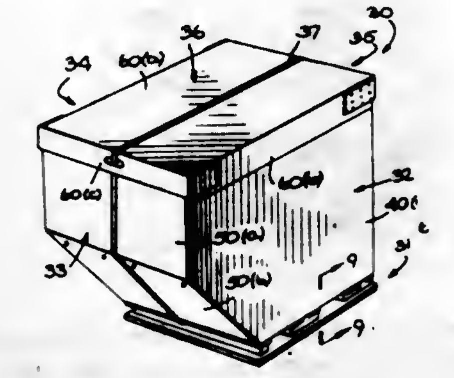
### 3,756,498
### PALLETIZED SHIPPING CONTAINERS

**Herbert Richard Anderson, West Islip, N.Y., assignor to Tri-Wall Containers, Inc., Plainview, N.Y.**

**Filed May 19, 1972, Ser. No. 255,078**

**Int. Cl. B65d** *13/00*

**U.S. Cl. 229—23 C** **17 Claims**



A palletized shipping container formed from corrugated paperboard comprising a rectangular pallet forming the base of the container, a vertically extending end wall panel and a pair of vertically extending sidewall panels. Each of the two sidewall panels has a closure panel attached thereto along a vertically extending fold line disposed along the edge portion of the sidewall panel opposite the end wall panel. The closure panels, which can be pivoted about the fold line, are adapted to overlie at least a portion of one another when they are each in a closed position with the bottom edge portions thereof disposed adjacent to the pallet. A cap member covers the opening in the top of the container and engages the upper portions of the outer surface thereof, thus locking the closure panels in the closed position and sealing the container.

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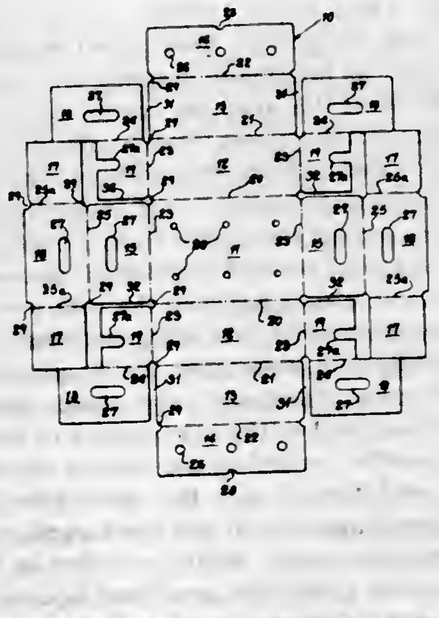
### 3,756,499
### BOX WITH FIVE PANEL ENDS

**Buddy E. Giebel, and William H. Nation, both of Monroe, Mich., assignors to Union Camp Corporation, Wayne, N.J.**

**Filed Mar. 9, 1972, Ser. No. 233,260**

**Int. Cl. B65d** *5/22*

**U.S. Cl. 229—34 R** **5 Claims**



A four-sided box having ends with five panels to provide added strength, which box is formed from a one piece blank of generally rectangular shape.

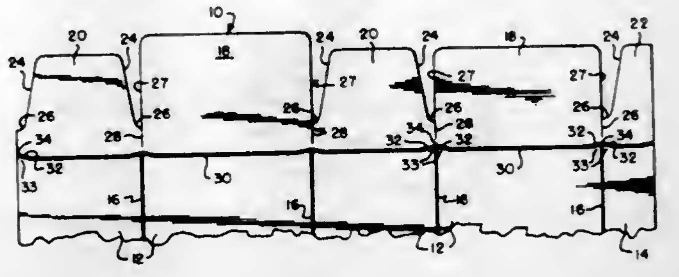
### 3,756,500
### CORNER CONSTRUCTION FOR MEMBRANE SEALED CARTONS

**Chauncey Young, St. Louis, and William H. Watson, Affton, both of Mo., assignors to Rexham Corporation, New York, N.Y.**

**Filed Jan. 5, 1972, Ser. No. 215,608**

**Int. Cl. B65d** *5/02*

**U.S. Cl. 229—37 R** **8 Claims**



An arrangement is provided for an improved leak-proof corner structure for sealed cartons, having a separate membrane material, heat sealed or otherwise adhesively secured to the outfolded end flaps of the erected carton, prior to the infolding thereof, and having in combination with the usual "tufted" corners, raised contact areas or lands at each corner for enhancing the engagement with the sealing membrane.

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### 3,756,501
### BOX TOP CLOSURE

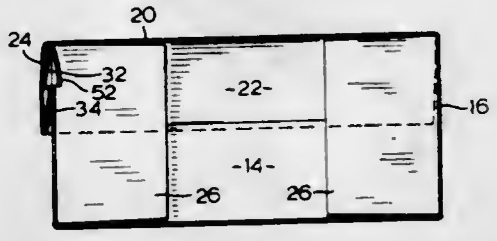
**William Russell Skillen, and Thomas Kenneth Dews, both of London, Ontario, Canada, assignors to Somerville Industries Limited, London, Ontario, Canada**

**Filed Dec. 14, 1971, Ser. No. 207,831**

**Claims priority, application Canada, Feb. 22, 1971, 105869**

**Int. Cl. B65d** *43/16*

**U.S. Cl. 229—44 R** **7 Claims**

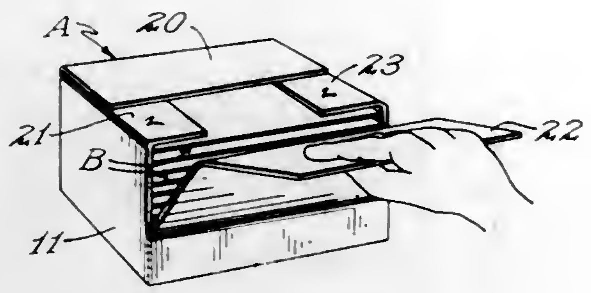


A reclosable paperboard carton having a container portion and a lid portion. The container portion has a front wall which has a lip panel at its upper end folded outwardly upon itself to provide a downwardly directed locking ledge on the outer surface of the front wall. The lid has a front wall with a lip panel at the lower edge thereof folded inwardly to provide an upwardly directed locking ledge. At least one of the lip panels is secured to its front wall at spaced intervals. The portions of the lip between the adhesively secured portions are outwardly biased by the resilient character of the paperboard so as to be spaced from its front wall. Preferably both of the lip panels have an outwardly biased portion and the outwardly biased portions are arranged in alignment with one another to engage one another when the carton is closed. The front wall of the container portion may also have a cut extending parallel to the downwardly directed locking ledge so as to permit the portions of the upper edge of the container portion adjacent to the outwardly biased locking ledge to twist during opening and closing of the carton.

### 3,756,502
### DISPENSING CONTAINER

**Elmer G. Swanson, and Walter R. Hughes, both of Salinas, Calif., assignors to Hoerner Waldorf Corporation, Saint Paul, Minn.**

**Filed Aug. 25, 1971, Ser. No. 174,621**
**Int. Cl. B65d** *5/54*
**U.S. Cl. 229—51 D** **4 Claims**



A regular style container is provided with a front wall connected to the side walls and bottom closure flap by weakened lines of separation. By grasping the top closure flap connected to the front wall, the front container panel may be torn away to expose the container contents.

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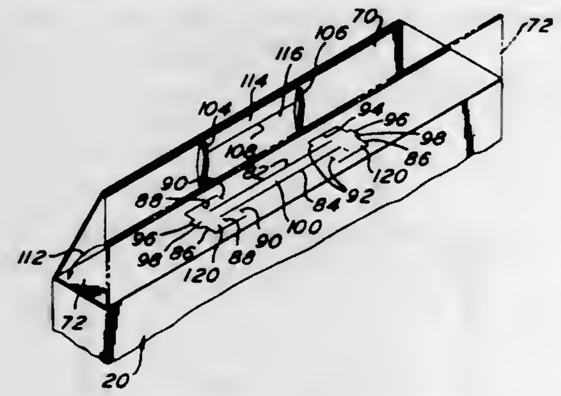
### 3,756,503
### CARRIER BAG WITH INTEGRALLY FORMED HANDLE

**Richard E. Paige, New York, N.Y., assignor to APL Corporation, Great Neck, N.Y.**

**Filed Apr. 28, 1971, Ser. No. 138,057**
**Int. Cl. B65d** *5/46, 25/28*
**U.S. Cl. 229—52 B** **5 Claims**



A container of the carrier bag type is provided which has an integrally formed handle in the stiffened panels which are overlapped to close the mouth of the container. The handle is formed from a pair of parallel elongated slits and a pair of U-shaped slits surrounding the ends of said parallel slits in a first of the panels. A pair of openings connected by a slit is provided in the other of the panels. The openings extend transversely and are at least as long as the web of the U-shaped slit. A plurality of score lines are formed in the first panel which extend outwardly from the ends of each of the slits to the legs of the U-shaped slits and inwardly from the ends of the U-shaped slits to the elongated slit. The fold lines and the U-shaped slit enable the strip between the elongated slits to be pulled out of the plane of the first panel to form a handle member. The portion between the U-shaped slit forms a projecting platform for the handle member. The handle member is inserted through the slit in the other panel with the platform extending through the openings in the panel to provide a handle for the container and enables closing of the mouth of the container with the overlapped panels being held together by the platforms at the ends of the handle member.

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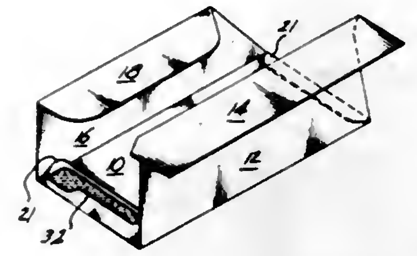
### 3,756,504
### LOCKING ENVELOPE

**Robert F. Bock, 817½ 5th Ave. North, Seattle, Wash.**

**Filed Mar. 29, 1971, Ser. No. 128,760**
**Int. Cl. B65d** *27/22*
**U.S. Cl. 229—76** **4 Claims**



An easily opened, non-adhesively closed, locking-envelope employs on the usual closure flap a tuck-flap that is inserted between a back panel and an overlying lock flap to be held sandwich fashion to maintain the envelope closed.

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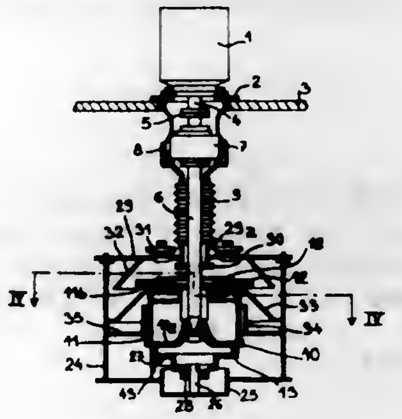
### 3,756,505
### CENTRIFUGAL EXTRACTORS WITH MEANS FOR MOVING THE MATERIALS

**Jean-Paul Miachon, Lyon, France, assignor to Robatel S.L.P.I. Zone Industrielle, Genas (Rhone), France**

**Filed May 25, 1971, Ser. No. 146,700**
**Claims priority, application France, June 1, 1970, 7019918**
**Int. Cl. B04b** *1/00*
**U.S. Cl. 233—3** **5 Claims**



A centrifugal extractor or contactor comprises a substantially square tank divided by superposed annular partitions into a lower space, an intermediate space, and an upper space. The rotating bowl of the machine carries on its underside a suction chamber which communicates with the bowl through perforations provided in the bottom thereof. This chamber has a lower central opening equipped with inwardly projecting rotary vanes which project the liquids from the tank into the suction chamber. An axial vertical rod extends upwardly from the bottom of the tank, passes between the rotary vanes and carries above same outwardly extending stationary vanes which re-direct upwardly and outwardly the liquid stream issuing from the rotary vanes. The liquid to be treated and the treating liquid are both supplied to the lower space of the tank. They are mixed by paddles carried by the suction chamber, sucked by the vanes and forced into the bowl wherein they are separated by centrifugal action and discharged into the upper and the intermediate space. Wells provided in two opposed corners of the tank direct the separated liquids respectively into the lower space of the next tank and of the preceding tank in a succession of extractors operating in the counter-current mode.

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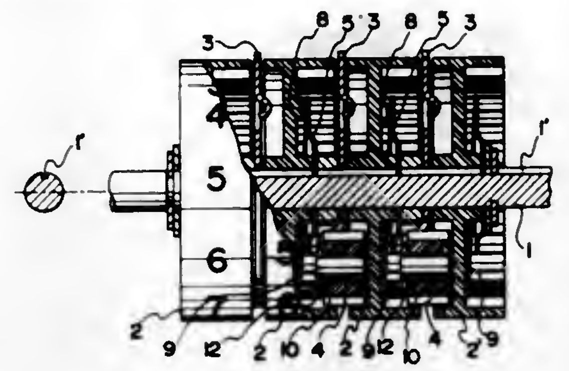
### 3,756,506
### ODOMETER

**Shiro Inoue, 26-2-2 chome, Kashiwaza, Saitama Prefecture, Ageo City, Japan (362)**

**Filed Apr. 13, 1972, Ser. No. 243,580**
**Int. Cl. G06c** *15/42;* **G01c** *22/00*
**U.S. Cl. 235—95 R** **1 Claim**



This invention relates to an odometer in which a resilient reset plate movable with the shaft is provided between each pair of figure wheels besides a transfer pinion carrier plate, the tip of said reset plate is adapted to engage with the projection formed on the side of the figure wheel adjacent the figure wheel of lower denomination and said transfer pinion is pivoted on the peripheral depression of the carrier plate and is held from undesirable rotation by a spring engaging the teeth of said pinion.

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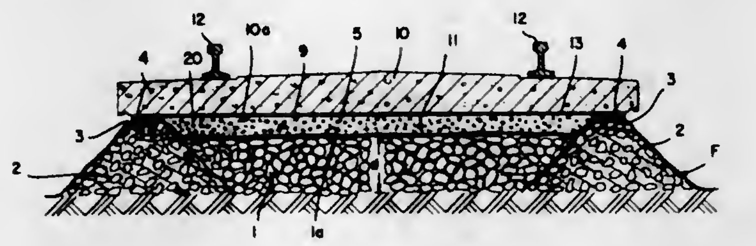
### 3,756,507
### RAILROAD TRACK BED

**Siegfried Hanig, Peine, and Karl Mienes, Aachen, both of Germany, assignors to Stahlwerke Peine-Salzgitten AG, Peine, Germany**

**Filed Aug. 4, 1971, Ser. No. 169,042**
**Claims priority, application Germany, Aug. 6, 1970, P 20 39 033.4**
**Int. Cl. E01b** *1/00*
**U.S. Cl. 238—2** **10 Claims**



A railroad track bed consists of a roadbed sealingly supporting a multiplicity of longitudinally interconnected concrete slabs and defining a space between the lateral supports and the slabs which is filled with a cellular resin or elastomer. The filling consists in whole or in part of preformed foamed synthetic resin bodies, preferably locked together in a continuous resin (foam) matrix.

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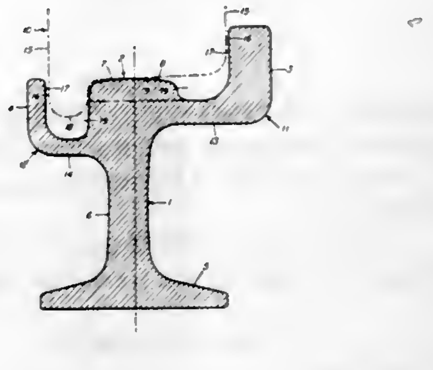
### 3,756,508
### COMBINED RUNNING AND GUARD RAIL

**Sidney H. Bingham, 109 E. 35th St., New York, N.Y.**

**Filed Jan. 31, 1972, Ser. No. 222,165**
**Int. Cl. E01b** *5/18*
**U.S. Cl. 238—17** **4 Claims**

A combined running and guard rail for high speed rail ground transportation having a center running rail and inner and outer guard rails on opposite sides of the running rail and vertically overlapping and normally spaced from ends of a flanged wheel on the running rail. By limiting lateral movement of the adjoining wheel in either direction, the guard rails and those of the counterpart rail at the opposite side of the track cooperate to prevent the flange of either of a pair of axle-connected wheels from riding up on the adjoining running rail under excessive lateral forces developed at high speeds. Grooves in the combined rail between the running and guard rails limit contact of the wheel to the running rail in normal operation over the range of permissive wear of the running rail.



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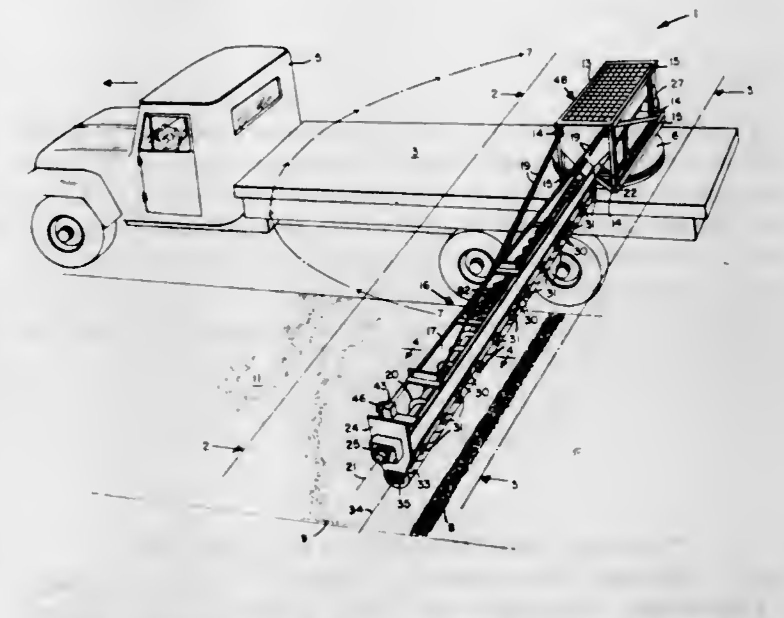
### 3,756,509
### GRANULATE SPREADER APPARATUS

**Raymond C. Hamnes, 475 Oakos Ave., Sunnyvale, Calif.**

**Filed June 12, 1972, Ser. No. 261,901**
**Int. Cl. E01c** *19/20*
**U.S. Cl. 239—675** **21 Claims**



Spreader apparatus for uniformly spreading granulate matter, e.g., sand or gravel, over a given extended surface. The apparatus includes a base support; a bulk hopper engaged to the base support for carrying a bulk supply of granulate matter to be distributed over said given surface; an elongated housing engaged to the bulk hopper and projecting laterally from the hopper above said given surface, the housing forming an elongated trough for receiving a supply of granulate matter; passage means about one end of said trough and extending intermediate the interior of the bulk hopper and said trough to permit granulate matter to flow from the bulk hopper to said trough; an elongated conveyor screw supported within the trough and extending end-to-end of said trough, the screw being rotatable within the trough about a common longitudinal axis, the screw including a plurality of laterally spaced tapered flights for conveying granulate matter received through the passage means to within said trough; an elongated rotational roller means supported by said elongated housing beneath said conveyor screw and above said given surface, the axis of rotation of the roller being parallel with said common longitudinal axis; control gate means engaged to the elongated housing and positioned intermediate the conveyor screw and the roller for controlling the rate of feed of particulate matter from said elongated trough to the surface of the elongated roller; and drive means for driving said conveyor screw rotationally about said common longitudinal axis and for driving said roller means rotationally about its axis.

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### 3,756,510

### MEANS FOR HEATING WINDSHIELD WASHER FLUID

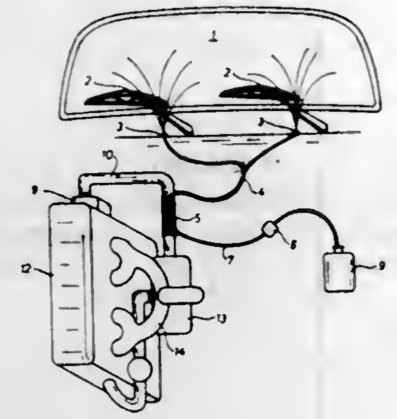
**Ludwig Nitterl, Ingolstadt, and Karsten Ehlers, Semmelweisring 3, Wolfsburg, both of Germany, assignors to said Nitterl, by said Ehlers**

**Filed Mar. 15, 1972, Ser. No. 234,882**

**Claims priority, application Germany, Mar. 16, 1971, P 21 12 473.2**

**Int. Cl. B05b** *1/24*

**U.S. Cl. 239—129** **9 Claims**



A washing device for windows of motor vehicles, in which the washing fluid coming from a container is heated in a heat exchanger located in a duct connecting the cooling jacket of an internal combustion engine with a special heat exchanger which surrounds the wall of the intake manifold of the internal combustion engine to prevent vapor lock. The washer fluid is conducted to the window spray jets after passage through the first mentioned heat exchanger.

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### 3,756,511

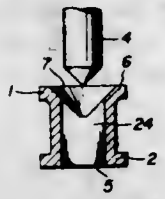
### NOZZLE AND TORCH FOR PLASMA JET

**Saito Shinroku, Suginami-ku, Tokyo; Yukihiko Okada, Higashicho, Musashino-shi, Tokyo, and Naoki Negishi, Setagaya-ku, Tokyo, all of Japan, assignors to Kogyo Kaihatsu Kenyusho, Tokyo, Japan**

**Continuation-in-part of Ser. No. 771,496, Oct. 29, 1968, abandoned. This application Feb. 2, 1971, Ser. No. 111,867**

**Int. Cl. H01j** *17/26*

**U.S. Cl. 239—132.3** **14 Claims**



A plasma jet nozzle is characterized by a plasma jet flame opening mainly in the form of a slit which produces a stable and powerful jet flame in the form of sheet-film or sector, and a long and slender cylindrical plasma jet torch with a slit nozzle fixed at the end is characterized by its use for boring deep into reinforced concrete.

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### 3,756,512

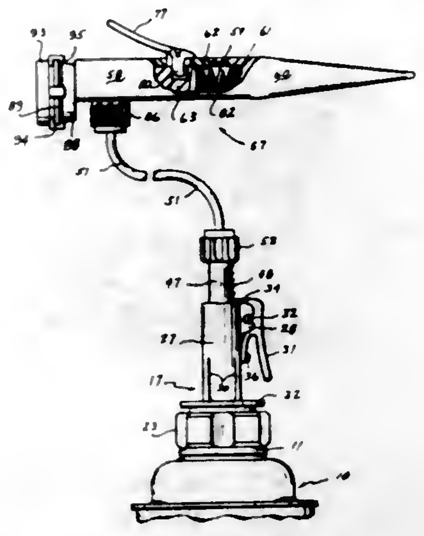
### DISPENSER FOR PRESSURIZED CONTAINER

**Gilford E. Dyal, 124 W. Malone, San Antonio, Tex.**

**Filed Dec. 28, 1971, Ser. No. 213,043**

**Int. Cl. B05b** *11/00*

**U.S. Cl. 239—337** **10 Claims**



A finger operated dispenser for use with a pressurized container including an annular shoulder, an adapter detachably secured to said annular shoulder, an elongated tube connected to said adapter and said dispenser whereby the user may control the discharge of material from said container at a remote location.

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### 3,756,513

### LIQUID SPRAYING DEVICES PRESSURIZED FROM WATER SUPPLY

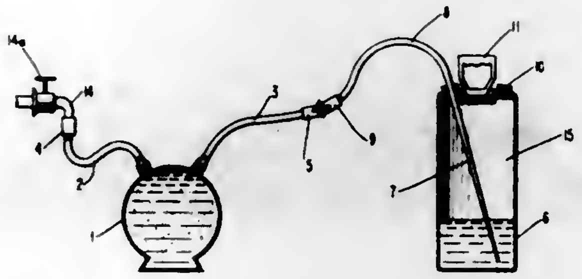
**Claude Denninger, Chazay D'Azergues, France, assignor to PEPRO Societe Pour le Developement et la Vente de Specialites Chimiques, Lyon, France**

**Filed Dec. 20, 1971, Ser. No. 209,927**

**Claims priority, application France, Dec. 22, 1970, 7047621**

**Int. Cl. B05b** *9/00*

**U.S. Cl. 239—337** **5 Claims**



Apparatus for spraying plants and the like comprises a spray tank provided with a nozzle and an intermediate tank which can be connected to a supply of water under pressure. The spray tank is pressurized by connecting it to the empty intermediate tank which is connected to the water supply. The water under pressure from the supply first displaces air from the intermediate tank to the spray tank and then partially fills the spray tank in which the material to be sprayed has been introduced, so as to compress the air that was originally in the spray tank and the air displaced from the intermediate tank, thereby providing sufficient pressure throughout the spraying time.

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### 3,756,514

### TYPING ERROR CORRECTION SYSTEM

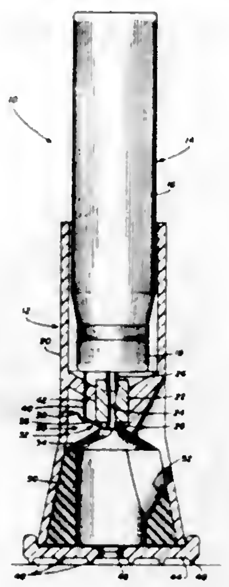
**William E. Brown, 413 Fall Creek Dr., Richardson, Tex.**

**Continuation of Ser. No. 54,368, July 13, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,975**

**Int. Cl. B05b** *7/32;* **F23d** *13/04*

**U.S. Cl. 239—337** **20 Claims**

In a typing error correction system, typing error correction fluid is sprayed from an aerosol spray assembly through an aperture in a mask and onto a typing error. The mask comprises a portion of a spray discharge assembly that receives and supports the aerosol spray assembly. A discharge head mounted in the spray discharge assembly actuates the aerosol spray assembly upon movement of the aerosol spray assembly into the spray discharge assembly, and includes a normally sealed spray discharge passageway which is opened to permit discharge of the spray. A reticular foam collar mounted in the spray discharge assembly absorbs spurious spray, and a viewing port formed through the spray discharge assembly facilitates alignment of the aperture in the mask with a typing error.



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### 3,756,515

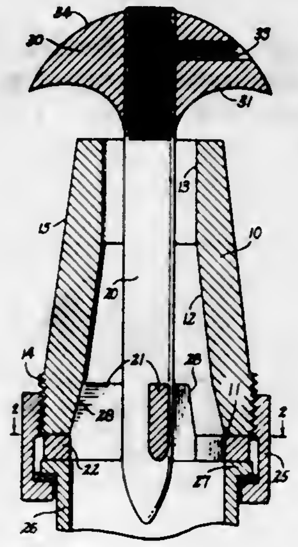
### DEFLECTOR SUPPORT FOR SPRAY NOZZLE

**Orlan M. Arnold, Norwalk, Conn., assignor to Peabody Engineering Corporation, New York, N.Y.**

**Filed May 25, 1972, Ser. No. 256,678**

**Int. Cl. B05b** *1/26*

**U.S. Cl. 239—524** **4 Claims**



A spray nozzle having an internal bore for spray liquid and a transverse deflector plate disposed in the path of the liquid jet from the nozzle. The deflector plate is mounted on a rod extending axially through the bore of the nozzle and rigidly mounted by a spider having radial legs and a peripheral ring from which the legs extend both radially and axially. The outer edges of the legs closely fit the inner bore of the nozzle for centering the rod and the clamping of the ring secures the rod in place.

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### 3,756,516

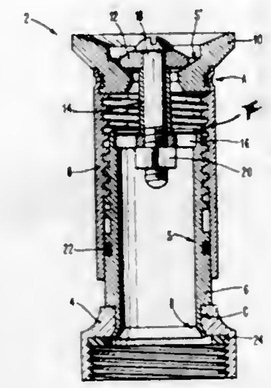
### NOZZLE WITH REPLACEABLE PARTS

**Otto A. Trnka, Rt. 3, Box 217, Saugerties, N.Y.**

**Filed Sept. 15, 1971, Ser. No. 180,645**

**Int. Cl. B05b** *1/32, 1/00*

**U.S. Cl. 239—539** **1 Claim**



A nozzle, for passing liquids, whose internal portions that are in contact with the liquids are made of extruded metal so as to present a smooth surface to the flow of liquid therethrough and reduce the turbulence factor.

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### 3,756,517

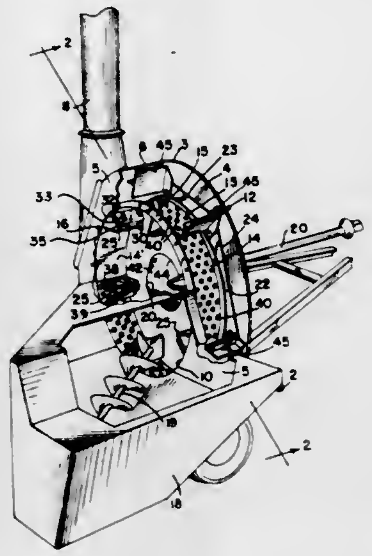
### FORAGE BLOWER WITH RECUTTER

**Manfried L. Hoch, Lockport, and Peter Sammarco, Bellwood, both of Ill., assignors to International Harvester Company, Chicago, Ill.**

**Filed July 1, 1971, Ser. No. 158,717**

**Int. Cl. B02c** *18/00*

**U.S. Cl. 241—56** **2 Claims**



A forage blower having a recutter coaxial with an impeller mounted within a common housing. Material is entered axially into a cylindrical foraminous cage of the recutter and is sheared by blades of a chopper rotatable within the cage. The cut material is thrown circumferentially and radially out of the cage into the impeller paddles which sweep the recut material into an outlet.

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### 3,756,518

### APPARATUS FOR PROCESSING RESIN

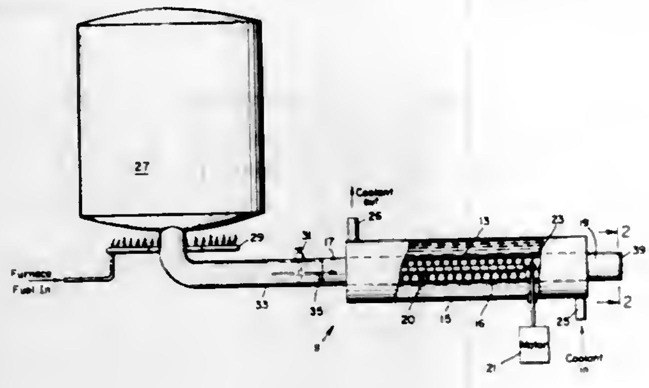
**Wesley T. Bailey, 700 Cloyden Rd., Palos Verdes Estates, Calif.**

**Filed Mar. 8, 1971, Ser. No. 122,036**

**Int. Cl. B29b** *1/03;* **B29f** *3/02, 3/08*

**U.S. Cl. 241—65** **9 Claims**

Apparatus including an elongated mill structure having a cooling jacket wherein a resin is fed from a resin kettle directly to the mill structure in a molten state, wherein it is forced down the structure and along the structure's cool periphery to lower the temperature of the resin to its brittle temperature, and wherein the hardened resin is broken into particles of desired shape and size as a finished product.



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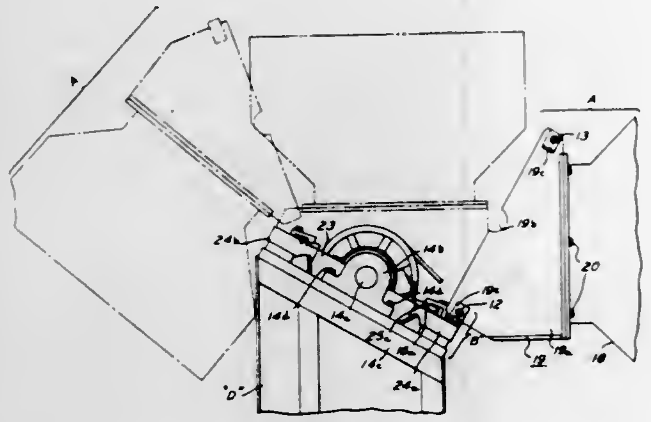
## 3,756,519
## NOVEL GRANULATING APPARATUS OF MODULATOR CONSTRUCTION

**Donald R. Reynolds, Cheshire; James L. Young, East Haven, and Robert N. Jones, Wallingford, all of Conn., assignors to Entoleter, Inc., New Haven, Conn.**

**Filed Aug. 18, 1971, Ser. No. 172,713**

**Int. Cl. B02c** *18/06, 13/13, 18/44*

**U.S. Cl. 241—73** **16 Claims**



A granulating machine of substantially modular construction. The hopper-input module includes baffles to prevent flyback of the material being granulated. This module is mounted pivotally at two opposite ends to a cutting module permitting it to pivot downward or upward away from the cutting module for easy access to the cutting rotor for maintenance or cleaning, for example. The cutting module includes a rotor of essentially tubular construction on which rotor-knives are mounted. The rotor itself is mounted on a base or frame to which multi-edged, stationary bed-knives are mounted without using bolts or screws. The multi-edged knives are capable of reorientation as the cutting edges become successively dulled. There is also a screen-mount module pivotally secured to the cutting module which includes a bend-free screen held in a cradle and clamped at two opposite ends by pressure elements bearing on it. The pivoting screen cradle permits access to the screen from above and to the under side of the rotor from below. Other features are described below.

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## 3,756,520
## GLASS PULVERIZER

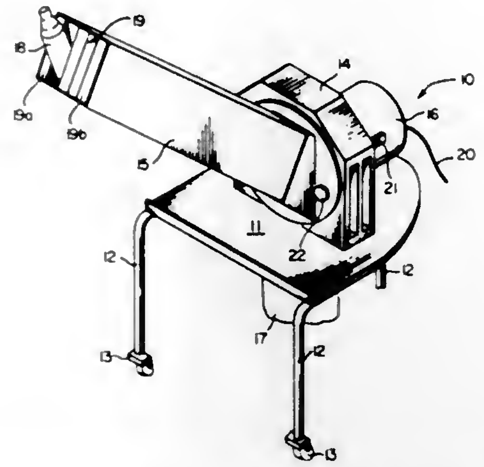
**Michael Edwin Hughes, Waterlooville, County of Hampshire, Purbrook, England, assignor to Commercial Holdings (U.S.) Limited, Carmel, Calif.**

**Filed Nov. 9, 1970, Ser. No. 87,777**

**Claims priority, application Great Britain, Feb. 25, 1970, 8,954/70**

**Int. Cl. B02c** *13/06*

**U.S. Cl. 241—99** **2 Claims**



A glass pulverization apparatus including a cylindrical pulverization chamber having a pair of case hardened steel impeller blades located therein for pulverizing glass articles or the like. The peripheral speed and the unit torque of the impeller blades along with a gap maintained between the end of the respective impeller blades and the surface of the cylindrical pulverization chamber ensures rapid pulverization of glass articles or the like. An escape aperture, which is offset from a vertical line normal to the horizontal axis of the drive shaft that rotates the impeller blades, provides for a secondary means of determining the end size of the pulverized glass. A receiving chute is positioned at a 45° angle to the cylindrical pulverization chamber to facilitate the rapid pulverization of the glass articles or the like.

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## 3,756,521
## WINDING DEVICE FOR RECORDING AND/OR PLAYBACK APPARATUS

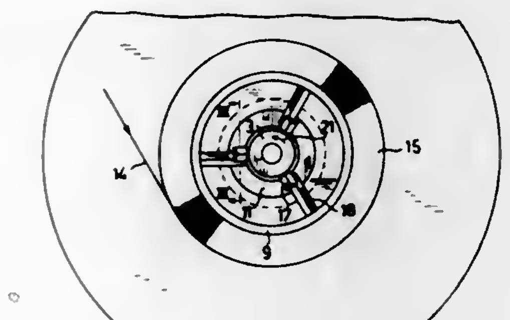
**Franz Werner, Vienna, Austria, assignor to U.S. Corporation, New York, N.Y.**

**Filed Apr. 26, 1971, Ser. No. 137,532**

**Claims priority, application Austria, Apr. 27, 1970, 3820**

**Int. Cl. G11b** *23/10, 15/32*

**U.S. Cl. 242—200** **10 Claims**



A winding device for tape transducing apparatus, comprising a reel hub, having radially, outwardly extending projections, and a reel core provided with a central bore having radially, inwardly extending projections. The projections of said hub and bore cooperate with one another by means of driving surfaces which are inclined in the winding direction with respect to a plane extending at right angles to the axis of the hub and bore respectively.

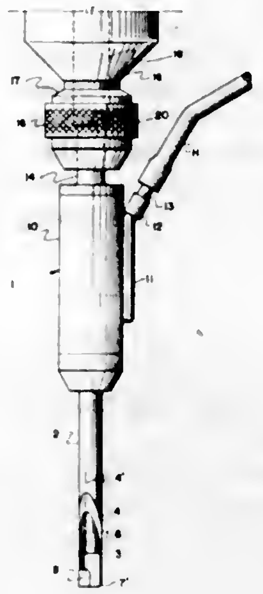
## 3,756,522
## WIRE WRAP TOOL FOR HAND GUN APPLICATION

**Daniel W. Ackerman, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.**

**Filed Nov. 3, 1971, Ser. No. 195,252**

**Int. Cl. H01b** *13/00*

**U.S. Cl. 242—7.17** **2 Claims**



A wire wrap tool capable of being received by a hand held wire wrap gun having an elongated cylindrical bit with an aperture in the end thereof for receiving a terminal stud and a wrapping sleeve which telescopes on the bit to lock a length of wire thereon, the telescoping of the bit and sleeve being accomplished on the hand tool by either a pneumatic, mechanical or similar type mechanism. The operator of the hand tool merely places the wire against a lip in the sleeve and, upon command, causes the mechanism to retract the sleeve and draw the wire into the wrapping tool whereupon it is ready for use.

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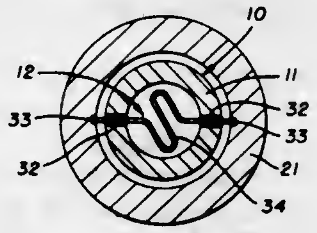
## 3,756,523
## SPOOL COP HOLDING MECHANISM

**Simon Arden De Young, Tallmadge, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio**

**Filed Feb. 2, 1972, Ser. No. 222,807**

**Int. Cl. B65h** *54/54, 75/30*

**U.S. Cl. 242—46.6** **5 Claims**



A spool cop holding mechanism having a spindle mounted on a strand fabricating machine. The spindle is a elongated tube having opposed longitudinal medial slots therethrough. An elongated S-shaped cop engaging element having a resilient medial portion, at least part of which is within the spindle tube, with longitudinally extending edges normally biased radially away from the tube and outwardly of the slots, by the medial portion, engages and holds a cop during movement of said spindle.

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## 3,756,524
## ELECTRONIC MONITORING APPARATUS AND MONITORING METHOD FOR TEXTILE MATERIALS

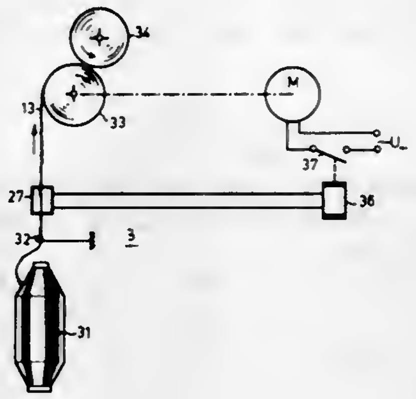
**Ernst Felix, Uster, Switzerland, assignor to Zellweger A.G., Uster, Switzerland**

**Filed Dec. 14, 1970, Ser. No. 97,661**

**Claims priority, application Switzerland, Mar. 24, 1970, 4393/70**

**Int. Cl. B65h** *63/00*

**U.S. Cl. 242—36** **18 Claims**



An electronic monitoring system employing electrical circuitry for controlling the movement of textile materials, which circuitry embodies a temperature sensing device past which moves the textile material. The movement of the textile material past the temperature sensing device brings about changes in temperature of the temperature sensing device owing to the thus generated movement of the atmosphere surrounding the temperature sensing device and/or owing to contact of the textile material with the temperature sensing device. The changes in temperature of the temperature sensing device cause a change of the output signal of the circuitry which can be used to evaluate the presence or movement of the textile material. The method of the invention for monitoring the movement of textile material comprises moving a yarn past a temperature sensing device, bringing about changes in temperature of the temperature sensing device owing to such movement of the yarn, which changes in temperature cause a variation in the output signal of the electrical circuitry associated with the temperature sensing device which can then be used for evaluating the presence or movement of the textile material.

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## 3,756,525
## ENDLESS TAPE CARTRIDGE

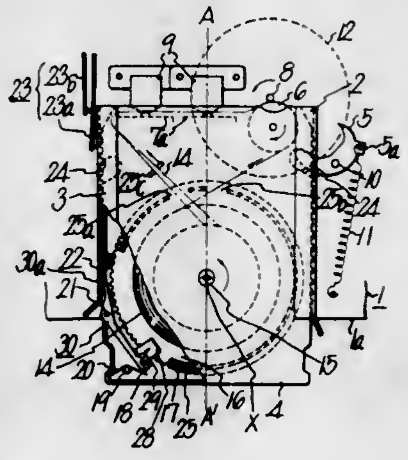
**Teiji Aoki, 23-10 Daita 2, Setagaya-ku, Tokyo, Japan**

**Filed Oct. 27, 1971, Ser. No. 192,987**

**Claims priority, application Japan, Oct. 30, 1970, 45/107268; Sept. 17, 1971, 46/84527**

**Int. Cl. B65h** *17/48*

**U.S. Cl. 242—55.19 A** **6 Claims**



An endless tape cartridge having a disc with a magnetic tape wound thereon, and a clamp device for clamping the disc when the cartridge is not used. The clamp device comprises an arm pivotally mounted on the cartridge at the opposite side from a reference line for inserting the cartridge in a tape player, a shoe attached to one end of the arm for engagement with the disc, a bias spring for biasing the arm to engage the shoe with the disc when the cartridge is not used, and a projection member formed on the arm for disengaging the shoe from the disc by a cartridge guide when the cartridge is used, the projection member being biased by the bias spring to project out from the cartridge when the cartridge is not used, the cartridge being pressed further to the reference line when the projection member of the arm is pushed into the cartridge.

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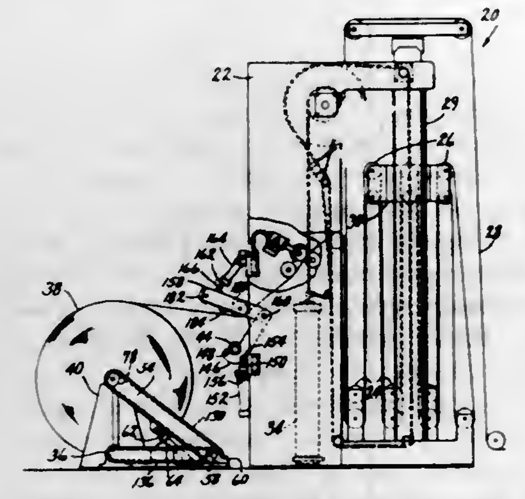
### 3,756,526
### WEB WINDING

**Kirk W. Bassett, Paxton, and Richard A. Butler, Jr., Brookline, both of Mass., assignors to Butler Automatic, Inc., Canton, Mass.**

**Filed Aug. 14, 1970, Ser. No. 70,613**
**Int. Cl. B65h** *19/28, 19/20*

**U.S. Cl. 242—56 R** **7 Claims**



There is disclosed in the specification a winding apparatus having a normal winding station including standards for supporting an arbor for a roll of web being wound. The arbor is driven through a rotary coupling mounted in one of a pair of opposed movable arms arranged first to engage the arbor at a temporary winding station to initiate the winding operation and then to transfer the web roll to the normal winding station where the remainder of the web winding operation is completed.

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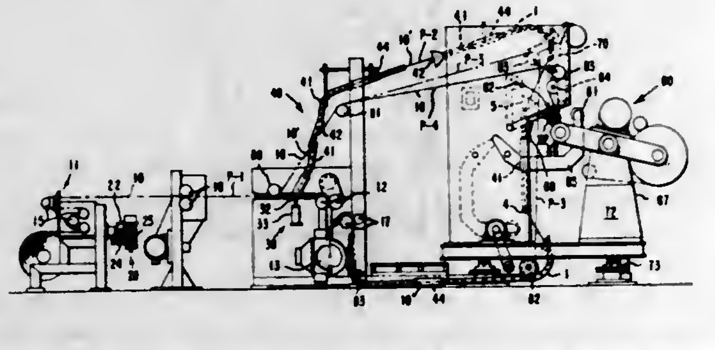
### 3,756,527
### METHOD OF AND APPARATUS FOR THREADING A WEB OF PLASTIC FILM ONTO A WINDUP ROLL AND WINDING IT THEREON

**Richard Howard Collins, Wilmington, and Richard Joseph Galli, Newark, both of Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.**

**Filed Oct. 29, 1970, Ser. No. 84,984**
**Int. Cl. B65h** *35/02*

**U.S. Cl. 242—56.2** **16 Claims**



A web handling method, including a method of threading a web of plastic film onto a windup roll and winding it thereon, including the steps of moving the web continuously from a supply source along a first path by first moving means; slitting the web with web slitters as it moves in the first path to form a leader strip; cutting the leader strip and diverting it into a second moving means including at least one pneumatic strip transport tube positioned adjacent the first path; moving the strip in a second path through the tube by the second moving means; pulling the strip from the tube through a slot therein and into a third path defined by process rolls by third moving means; moving the strip in the third path by the third moving means and into operative relationship with a windup roll; expanding the strip to form the web; moving the web in the third path by the third moving means and into operative relationship with the windup roll; cutting the web and transferring it to the windup roll; and, winding the web onto the windup roll.

Apparatus is provided for performing the above described method.

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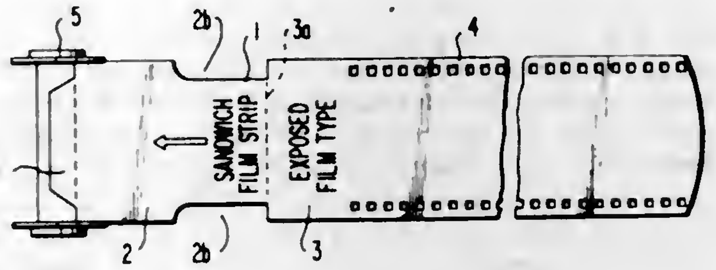
### 3,756,528
### ROLL FILM FOR DOUBLE MAGAZINE

**Hiroshi Ohmura, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa**

**Filed Sept. 7, 1971, Ser. No. 178,147**
**Claims priority, application Japan, Sept. 8, 1970, 45/78681**
**Int. Cl. B65h** *75/28*

**U.S. Cl. 242—74** **2 Claims**



A roll film assembly for a double magazine having spool holders of identical construction includes a folded paper connecting strip having a first adhesive covered portion adjacent the fold line for fixing the paper strip to one of the spools and a second adhesive covered portion at the edge of the folded paper for sandwiching an unexposed film therebetween. Aligned perforations within each layer of the folded paper strip intermediate of the first and second adhesive covered portions permit the exposed film to be separated from the supply spool and further permit the leading end of a new roll of unexposed film to be inserted between the reminent portions of the layers of the folded paper strip for facilitating the attachment of new film thereto with this section of the magazine then acting as the take-up spool for the film roll.

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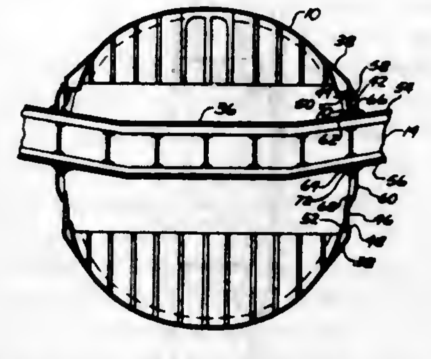
### 3,756,529
### FUSELAGE SEAL

**John G. Backlund, Los Angeles, and Raymond P. Gibbs, Jr., Garden Grove, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.**

**Filed May 1, 1972, Ser. No. 249,017**
**Int. Cl. B64c** *9/02*

**U.S. Cl. 244—87** **5 Claims**

A seal for the fuselage cutout portion for a movable horizontal stabilizer on an aircraft includes a fixed fairing member attached to the outer fuselage around the cutout portion with a pair of pivotally mounted doors hinged to the upper and lower surfaces of the fixed fairing on respective edges of the cutout portion to reduce the size of the openings on both sides of the stabilizer. Cam members are fixed to the upper and lower stabilizer surfaces for pivoting the doors inwardly upon pivotal movement of the stabilizer. Upper and lower smaller movable fairing members are attached to the stabilizer and lie adjacent the outer surface of the doors and may slide over the doors and fixed fairing for completely sealing the cutout opening during varying attitudes of the stabilizer.



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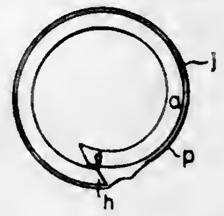
### 3,756,530
### PAPER TUBE BOBBIN FOR TREATMENT OF YARN IN CHEESE FORM

**Miyaji Ito, Takatsuki-shi, Osaka; Masao Umezawa, Ibaragi-shi, Osaka; Tadashi Furukawa, Suita-shi, Osaka, and Hiroo Hirako, Ibaragi-shi, Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Feb. 4, 1970, Ser. No. 8,605**
**Int. Cl. B65h** *75/10*

**U.S. Cl. 242—118.2** **4 Claims**



A paper bobbin of a cylindrical or tubular form covered with a thin paper. This bobbin has grooves or one slit running along the length of the tube. This paper bobbin can be used for heat-treatment of yarn in cheese form. It collapses and contracts in its periphery length when a cheese is heated. The pressure caused by thermal shrinking of wound yarn causes the paper tube to collapse with ease. The collapsed shape of the paper tube in a cheese is round or heart-like.

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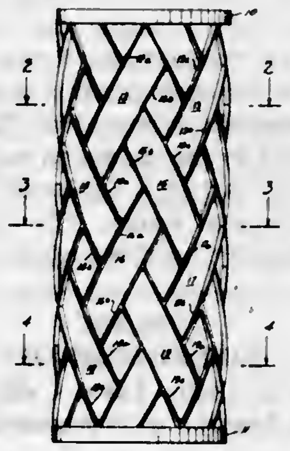
### 3,756,531
### COLLAPSIBLE DYE TUBE

**Ralph M. Draper, Elmira, N.Y., assignor to Albany International Corp., Albany, N.Y.**

**Filed Aug. 19, 1971, Ser. No. 172,966**
**Int. Cl. B65h** *75/22, 75/10*

**U.S. Cl. 242—118.11** **3 Claims**



A tube for the treatment of yarn formed of a moldable material in a molding process such as by injection molding and which is resiliently compressible in both the axial and radial directions although it may take a permanent set under certain bath conditions, and which provides a suitable peripheral cylindrical surface for yarn wound thereon.

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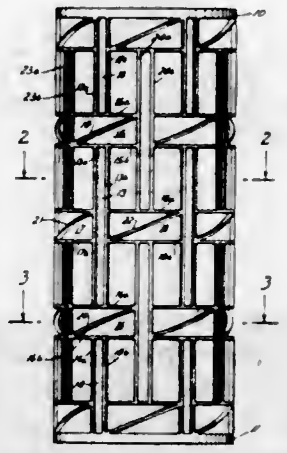
### 3,756,532
### COLLAPSIBLE DYE TUBE

**Ralph M. Draper, Elmira, N.Y., assignor to Albany International Corp., Albany, N.Y.**

**Filed Aug. 18, 1971, Ser. No. 172,634**
**Int. Cl. B65h** *75/22, 75/10*

**U.S. Cl. 242—118.11** **8 Claims**



A tube for the treatment of yarn formed of a moldable material in a molding process such as by injection molding and which is resiliently compressible in both the axial and radial directions although it may take a permanent set under certain bath conditions, and which provides a suitable peripheral cylindrical surface for yarn wound thereon.

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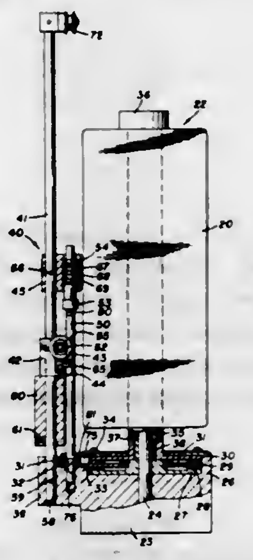
### 3,756,533
### STRAND TENSION-CONTROLLING AND SPOOL RELEASE ACTUATOR MECHANISM

**Simon Arden De Young, Ravenna, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio**

**Filed Oct. 27, 1971, Ser. No. 193,128**
**Int. Cl. B65h** *59/04*

**U.S. Cl. 242—156.2** **6 Claims**



Mechanism for controlling the tension of a strand from a spool of strand material on a strand fabricating machine having a "work center" toward which a tensioned strand is incrementally released. The spool is carried by a spool holder having a base housing a spool release mechanism. The mechanism of the invention provides an actuator means for releasing the spool for rotation when the strand tension reaches a desired value.

### 3,756,534
### FILM CARTRIDGE

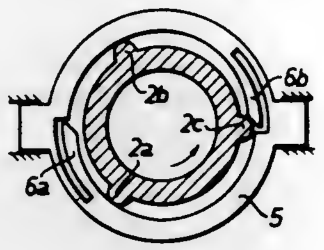
**Heinz Keiner, Oberndorf; Helmut Richter, Braunfels; Wilhelm Schafer, Wetzlar, and Willi Goldberg, Steindorf, all of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany**

**Filed Aug. 31, 1970, Ser. No. 68,308**

**Claims priority, application Germany, Sept. 13, 1969, P 19 46 536.2**

**Int. Cl. G03b** *1/04*; **G11b** *15/32*

**U.S. Cl. 242—194** **2 Claims**



The take-up spindle of a super-8 format film cartridge is maintained in position by friction means. Rewinding of the spindle is accomplished by overcoming the resistance of the friction means. The take-up spindle has cams on its surface and the friction means includes a friction ring mounted in the cartridge and surrounding the take-up spindle having two resilient tongues.

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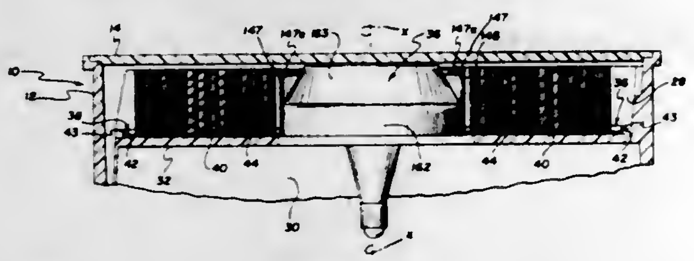
### 3,756,535
### ANTI-FRICTION DISK FOR STRIP MATERIAL CARTRIDGE

**Stephen H. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Nov. 17, 1971, Ser. No. 199,681**

**Int. Cl. B65h** *75/18*; **G03b** *1/04*; **G11b** *15/32*

**U.S. Cl. 242—197** **5 Claims**



An anti-friction disk for a motion picture film cartridge includes an elongated, cylindrical central hub portion with a metal ring at the outer edge. The metal ring adds rigidity to the cylindrical hub portion so that the hub serves more effectively to keep a film roll in a generally round configuration, thereby avoiding crushing of the film supply or cinching of the film roll on the supply post.

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### 3,756,536
### PNEUMATIC CARRIER RECEIVE AND SEND CHAMBER

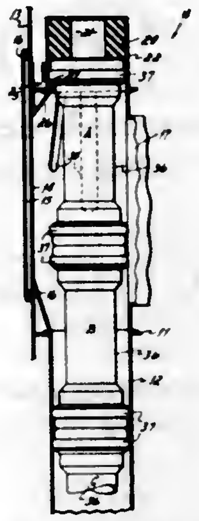
**Adam Weissmuller, Kinnelon, and Joel Rudder, Rockaway, both of N.J., assignors to The Mosler Safe Company, Hamilton, Ohio**

**Filed Mar. 17, 1972, Ser. No. 235,615**

**Int. Cl. B65g** *51/32*

**U.S. Cl. 243—19** **9 Claims**

A combination receive and send chamber in a pneumatic conveyor apparatus is connected to one end of a pneumatic tube for receiving pneumatic carriers transmitted by the tube. The chamber has an access opening, a stop and latch elements positioned to engage and hold a carrier conveyed to said chamber. The access opening, the stop and the latch are all adapted and positioned to positively latch a received carrier and yet remain in a non-interfering position with respect to carriers transmitted from the chamber.



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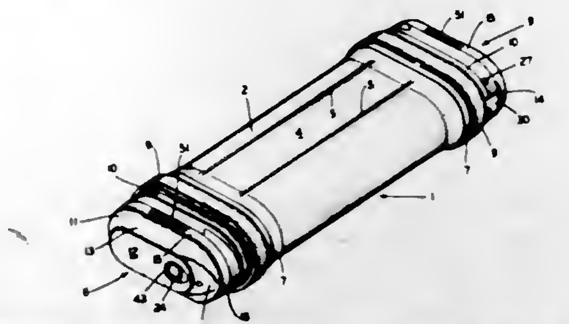
### 3,756,537
### PNEUMATIC TUBE CARRIER CLOSURE CONSTRUCTION

**Howard W. Freese, Manlius, N.Y., assignor to Diebold Incorporated, Canton, Ohio**

**Filed Dec. 10, 1971, Ser. No. 206,676**

**Int. Cl. B65g** *51/06*

**U.S. Cl. 243—35** **1 Claim**



A closure construction for an open end of an elongated tubular material-conveying pneumatic tube system carrier, generally oval in cross-section, and particularly adapted for conveying all kinds of objects, articles or materials. A spring loaded carrier head forms the closure and is slidably mounted for linear movement on a hinge member which is pivotally mounted on the carrier body. The head and body have latch components which are interengaged when the head is in closed position. The head is biased slidably toward and is held in a position unengageable with the body latch component when the latch components are disengaged, visually indicating that the closure is unlatched, and structurally preventing the carrier with an unlatched head from being inserted into a pneumatic tube. The unlatched head may be pivotally moved to an open position fully exposing the full open end of the body for access to the compartment formed by the body. The head in unlatched or full open position interferes with carrier insertion into a pneumatic tube system. The head in latched position is unaffected by forces, which may be centrifugal in nature, to which the carrier is subjected during movement through a pneumatic tube system. The closure may include lock means for locking the head in latched position.

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### 3,756,538
### GUIDED MISSILE

**William B. McLean, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy**

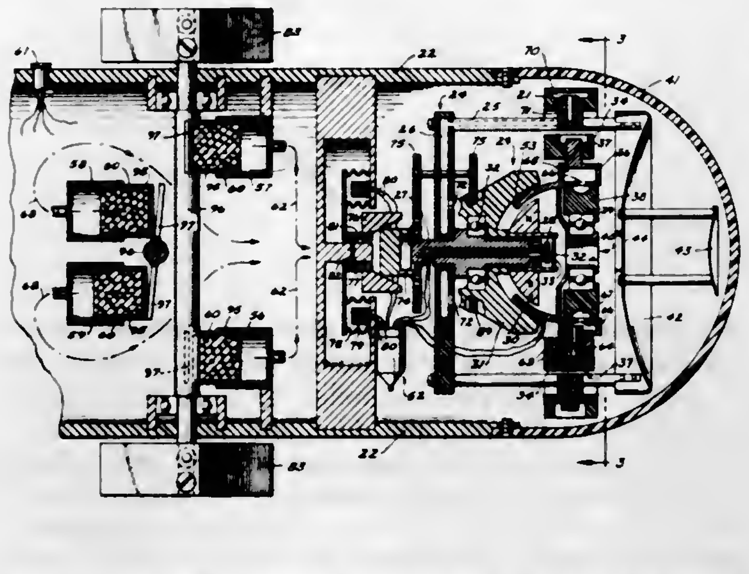
**Filed May 24, 1957, Ser. No. 661,549**

**Int. Cl. F41g** *7/00*; **F42b** *19/00*

**U.S. Cl. 244—3.16** **9 Claims**

1. A guidance and control system for a guided missile, comprising in combination with a missile, movable control vanes

for steering the missile, a sight-line gyroscope having means mounted thereon to sight and operable to track a target from which radiation is emanating, caging means for said sight-line gyroscope, a course-line gyroscope having means thereon responsive to movement of the sight-line gyroscope for precessing the course-line gyroscope in the same direction as and at a higher rate than said sight-line gyroscope and operable to maintain an automatically adjustable collision course with the target, and means responsive to movements of said course-line gyroscope operable to rotate said movable control vanes for steering the missile on a collision course with the target; said sight means on the sight-line gyroscope consisting of a detector cell sensitive to radiation from a target, means for reflecting radiation from a target to said detector cell, and chopping means rotatable with the rotor of said sight-line gyroscope for chopping the radiation reflected to said detector cell to cause pulsating signals to be produced by said detector cell when the reflected radiation from the target deviates from passing through the exact center of said chopping means; the rotor of said sight-line gyroscope having a permanent magnet mounted thereon with its poles positioned in correlated relationship with the position of said chopping means for causing the pulsating signals produced in the detector cell to be in a correlated phase relationship with the rotor of the sight line gyroscope; means for gyrating said sight-line gyroscope and sight means in a spiral, and means operable to uncage said sight-line gyroscope when said sight means sights the target; means for spinning the rotors of said gyroscopes in opposite directions; said means which is responsive to the movement of said sight-line gyroscope being a solenoid precessing coil affixed to said course-line gyroscope and disposed in the field of said permanent magnet, means for transmitting said pulsating signals to said precessing coil to effect a precessing torque between said precessing coil and said permanent magnet causing both gyroscopes to precess in the same direction at proportional rates when the spin axis of the sight-line gyroscope deviates from pointing directly at the target.



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### 3,756,539
### STABILIZATION FINS FOR PROJECTILES

**Fredric Arno Donner, Helsinki, and Tapio Kronholm, Tammerfors, both of Finland, assignors to Oy Tampella Ab, Tampere, Finland**

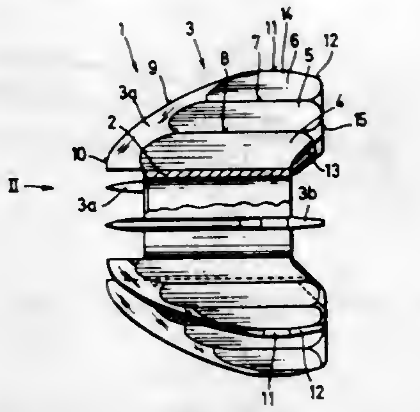
**Filed June 28, 1971, Ser. No. 157,129**

**Claims priority, application Germany, July 11, 1970, P 20 34 569.1**

**Int. Cl. F42b** *15/16*; **B64c** *5/06*

**U.S. Cl. 244—3.24** **12 Claims**

A stabilization fin for use with projectiles which demonstrates improved aerodynamic stability as a result of unique cross-section and profile. The fin assembly is defined by multiple fins extending radially from a carrier tube. Each fin has a precisely tapered outer profile while the sides incorporate longitudinal depressions. A series of these depressions extend radially along the side of each fin and each depression originates at a point to the rear of the leading edge of the fin profile and terminates at a point ahead of the trailing edge.



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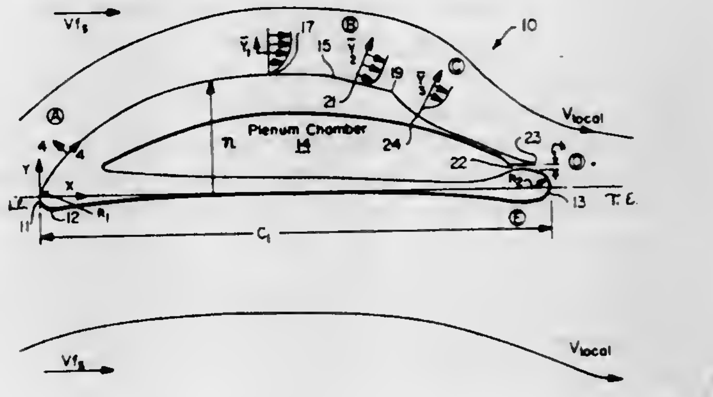
### 3,756,540
### MINIMUM DRAG CIRCULATION PROFILE

**Robert M. Williams, Chantilly, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 6, 1971, Ser. No. 169,711**

**Int. Cl. B64c** *3/14*

**U.S. Cl. 244—35 R** **8 Claims**



An airfoil chord is divided into five sections, each section producing a specialized flow over its respective surface. A first section extending from the leading edge to approximately the midpoint of the chord has a convex shape and produces laminar flow. The second section adjacent the first has a straight line surface with a negative slope which produces a transition from laminar flow to a turbulent flow. The turbulent flow region is followed by a region of minimum skin friction which has a concave surface. The chord trailing edge is a coanda profile. A tangential jet slot is placed at the trailing edge to blow over and around the coanda profile preventing flow separation and moving the stagnation region aft on the wing. The under surface is cambered to reduce the flow velocity.

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### 3,756,541
### AIRCRAFT

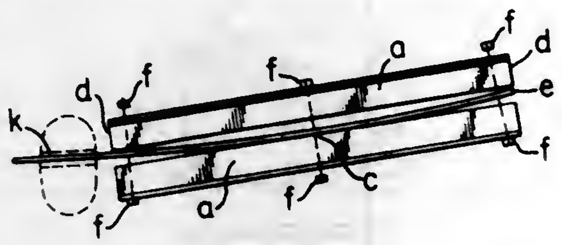
**Paolo Orazi, S. Florona 1, Brescia, Italy**

**Filed Jan. 25, 1971, Ser. No. 109,104**

**Int. Cl. B64c** *27/46*

**U.S. Cl. 244—39** **5 Claims**

The fuselage carries a rotatable tubular spar. Ribs fixed transversely of the spar support wing sheets. Slots in the wing sheets enable the ribs to pass through the wing sheets. Stops on the ends of the ribs limit the radial movement of the wing



sheets. The slots and stops permit the tubular spar to flex during rotation.

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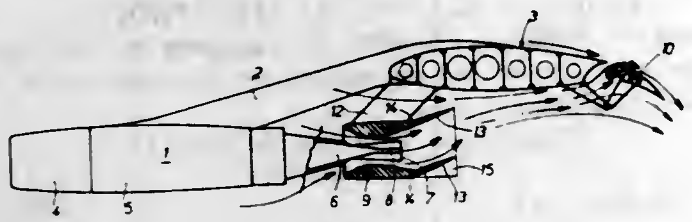
### 3,756,542
### AIRCRAFT HAVING AN AUXILIARY LIFT DEVICE

**Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France**
**Filed May 3, 1971, Ser. No. 139,550**
**Claims priority, application France, May 4, 1970, 7016228**
**Int. Cl. B64c** *3/38*
**U.S. Cl. 244—42 CC** **17 Claims**



An aircraft has at the trailing edge of its wing a lift-augmenter flap towards which there can be directed, in the maximum lift configuration, a fluid stream elongated in the wing span direction and produced by a flat fish-tail jet nozzle disposed below the wing undersurface forwards of and near the lift-augmenter flap, so as to increase the lift by deflection of the elongated fluid stream with a correct flow adhesion of the fluid over the upper surface of the flap. The fish-tail nozzle is subdivided into elementary nozzles producing as many elementary streams of motive gases which contribute to jet propulsion; these elementary nozzles are in the form of slots extending parallel to one another, in the wing span direction and/or right-angles thereto.

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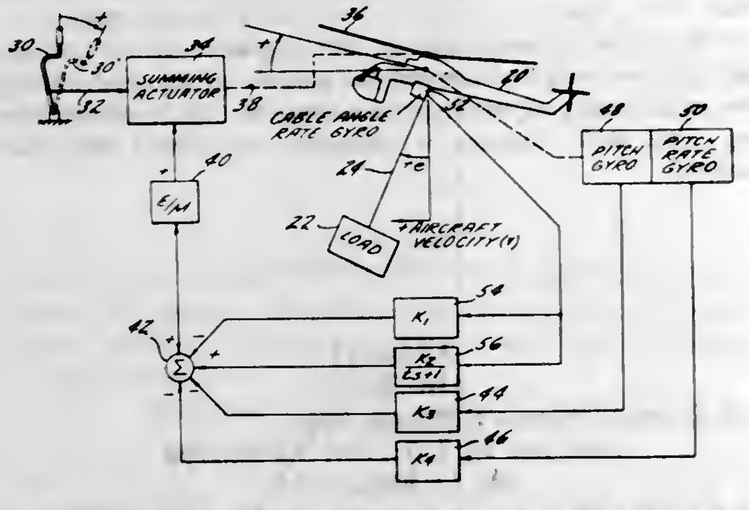
### 3,756,543
### LOAD STABILITY SYSTEM

**Donald W. Fowler, West Haven, and Sean J. O'Connor, Monroe, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**
**Filed Aug. 5, 1971, Ser. No. 169,197**
**Int. Cl. B64c** *11/44, 27/70*
**U.S. Cl. 244—77 D** **6 Claims**



A heavy lift helicopter supporting a load suspended on a long cable is automatically controlled to minimize pendular motion of the load beneath the helicopter. The inner control loop of an automatic flight control system of a helicopter has an additional input which is the summation of a function of the rate of change of the angle between the cable and vertical, and the lag filtered rate of change of the angle, in both the lateral (roll) and longitudinal (pitch) directions of the aircraft. The sense of the rate of lag rate inputs is such as to cause the helicopter to move so as to counteract pendular motion of the load and support cable.

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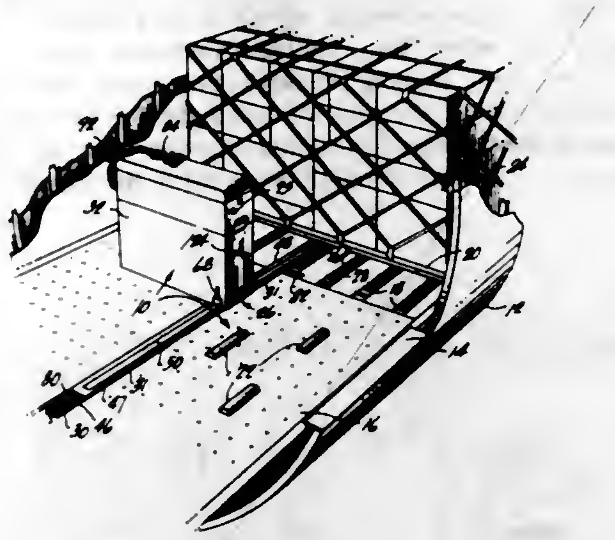
### 3,756,544
### AIRCRAFT POWER LOADING SYSTEM

**Howard E. Bader, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**
**Filed Nov. 22, 1971, Ser. No. 200,935**
**Int. Cl. B64c** *1/22*
**U.S. Cl. 244—137 R** **6 Claims**



A powered system for moving pallets and containers from a cargo door of an aircraft to a stowed position in an aircraft. The system includes powered rollers to move the pallets or containers laterally from the door into the aircraft and a power unit for moving the containers or pallet longitudinally in the aircraft along a track attached to the aircraft floor or deck. A coupling dolly on which the pallet or container is loaded is operatively associated with the power unit for movement thereby along the track. The dolly includes means to engage the track and means to secure the pallet or container to the dolly of the power unit for movement thereby.

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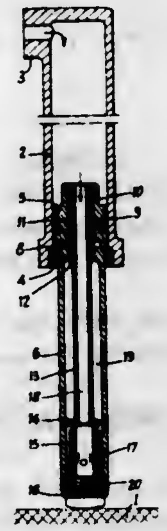
### 3,756,545
### AIRCRAFT LOAD EJECTOR

**Pierre Fernand Coutin, Paris, France, assignor to R. Alkan & Cie, Paris, France**
**Filed Oct. 6, 1971, Ser. No. 186,952**
**Claims priority, application France, Nov. 17, 1970, 7041162**
**Int. Cl. B64d** *1/02, 37/12*
**U.S. Cl. 244—137 R** **6 Claims**



In this retractable jettisoning device the ejection piston, whether single or telescopic, mounted in a cylinder of conventional type, is hollow and its inner cavity comprises a tubular distributor close at its outer end but provided adjacent this end with lateral ports adapted to co-act with an inner surface of the piston end for causing its inner space and the rear end of the piston to communicate with the atmosphere when this tubular distributor emerges from the ejection piston at the end of an expansion stroke of the ejection piston whereas the same movement of the tubular distributor uncovers lateral ports formed at the rear end of the piston to cause the fluid pressure in the chamber formed between the piston and the tubular distributor to act against the lower end of the fluid-tight portion of the piston in its cylinder, in order to move the piston upwards.

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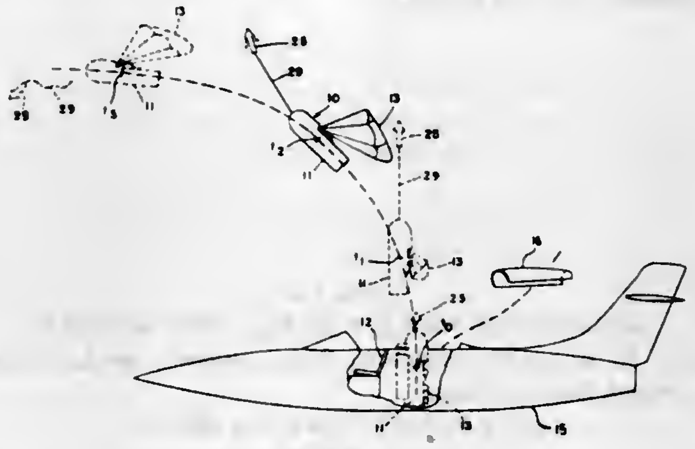
### 3,756,546
### AIRCREW ESCAPE SYSTEM

**Ralph C. Carson, Jr., Langhorne, and James A. Lyons, Jr., Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Nov. 23, 1971, Ser. No. 201,330**
**Int. Cl. B64d** *25/12*
**U.S. Cl. 244—138 R** **9 Claims**



An aircrew escape system comprising a capsule adapted to contain a crewmember, having attached thereto a deployable parawing controllable by the crewmember, and a deployable tractor rocket connected to the top of the capsule by a length of tow rope. Contained within the capsule is a control unit by which the crewmember, once in position, initiates the burn of the tractor rocket, initiating separation of the capsule from the aircraft and through which the crewmember can control the jettisoning of the tractor rocket and the ignition of an air-breathing powerplant mounted on the capsule. The parawing, in its deployed state, is aligned at an angle of attack relative the longitudinal axis of the capsule by preselected lengths of supporting shrouds having control shrouds attached to the trailing edge thereof terminating at a control stick in the capsule. Accordingly, when the capsule is accelerated by the tractor rocket to a velocity where the lift force of the parawing substantially balances the weight of the capsule the tractor rocket is released, the powerplant is started and the capsule is in position for controlled horizontal flight.

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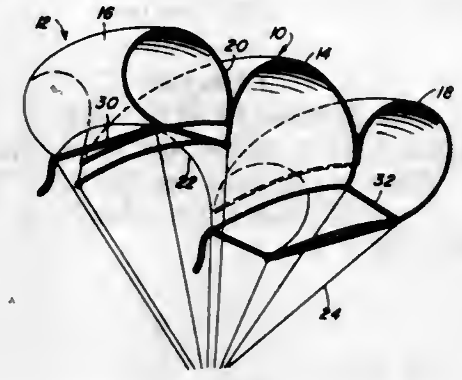
### 3,756,547
### MANUALLY RELEASED REFINING CONTROL

**Stephen L. Snyder, 331 Cherry Hill Blvd., Cherry Hill, N.J., and Robert A. Mathews, Jr., 3015 Lincoln Rd., McHenry, Ill.**
**Filed Apr. 13, 1971, Ser. No. 133,664**
**Int. Cl. B64d** *17/08*
**U.S. Cl. 244—152** **16 Claims**

Staged inflation of a parachute is accomplished under manual control of the jumper. A pair of snubber loops anchored to the parachute canopy are threaded through guide rings peripherally spaced about the canopy to initially restrict



inflation. A releasable lock pin prevents withdrawal of the loops from the guide rings under canopy inflating pressure.

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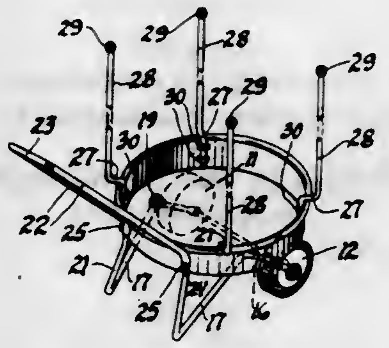
### 3,756,548
### TRASH BAG CART WITH ADJUSTABLE BAG HOLDER

**Salvatore P. Santarelli, 20910 Eastlawn, Apt. 65, St. Clair Shores, Mich.; John Colombini, deceased, late of Birmingham, Mich., and by Peter Sergolia, executor, 15010 Seymour, Detroit, Mich.**
**Filed Oct. 21, 1971, Ser. No. 191,527**
**Int. Cl. B65b** *67/12*
**U.S. Cl. 248—98** **1 Claim**



A trash bag cart having a circular pan with side walls. The pan is rollably supported and is provided with a pair of ground engaging legs and a handle for pushing the cart. A plurality of rods is adjustably mounted on the walls of the pan so that they may be reversed in their positions for holding the upper ends of various size plastic trash bags, and the like, in an open position for inserting trash into the bag. The bottom of the trash bag is supported by the bottom wall of the pan.

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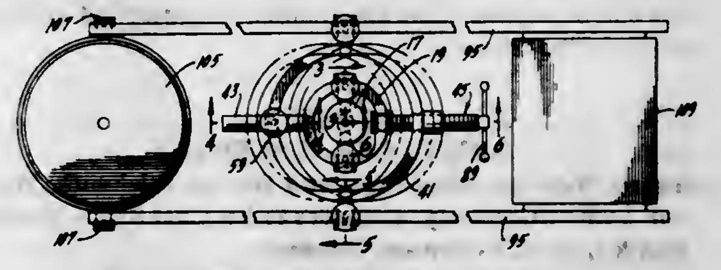
### 3,756,549
### COUNTERBALANCED STAND FOR CAMERA

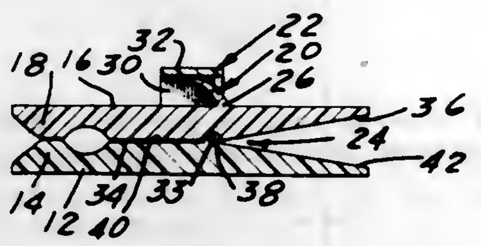
**Kai Lange, Copenhagen, Denmark, assignor to Nuclear Data (Ireland) Limited, Cork, Ireland**
**Filed Jan. 14, 1972, Ser. No. 217,869**
**Int. Cl. A47g** *29/00*
**U.S. Cl. 248—123** **4 Claims**



A counterbalanced stand for a gamma camera. An elongated frame carries a gamma camera at one end and a counterbalance weight at the opposite end. The frame is mounted on a stanchion for universal movement relative thereto. In one form of the invention, the frame carries a socket which receives a socket support mounted on the stanchion. In another form, gimbals are mounted on the stanchion and are rotatable about the axis thereof. The outer ring of the gimbals and the frame are movable in a direction longitudinally of the frame to maintain the center of gravity of the assembly in a desired position relative to the stanchion.

### 3,756,550
### SPRING CLIP DEVICE

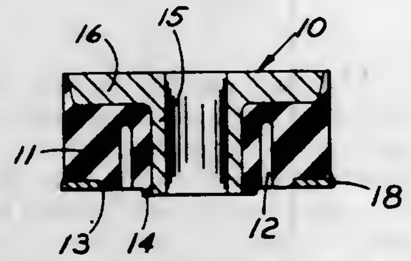
**Gerhard Kollitz, 1144 N. Euclid, Apt. 1, Anaheim, Calif.**
**Filed Aug. 4, 1972, Ser. No. 278,170**
**Int. Cl. F16b** *47/00*; **A44b** *21/00*
**U.S. Cl. 248—206 A** **8 Claims**



A spring clip device having a main body and a spring-biased, pivotal body member held in a close relationship with each other by a spring means which is forcibly engaged against a bail integrally formed to the main body, the forward end of both bodies being in biased contact with each other, the opposite, free ends thereof being spaced apart to provide for a pivotal movement of the bodies about a fulcrum point located substantially below the spring means.

### 3,756,551
### ANTI-VIBRATION SUPPORT

**Lester A. Bishop, Fairview, Pa., assignor to Lord Corporation, Erie, Pa.**
**Filed Oct. 27, 1971, Ser. No. 192,962**
**Int. Cl. B60g** *11/18*
**U.S. Cl. 248—358 R** **7 Claims**

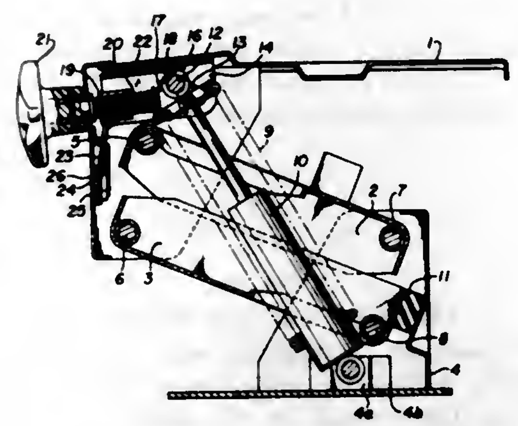


Spaced supported and supporting members having axially aligned apertures are isolated by a pair of resilient mountings. The resilient mounting are substantially identical and are disposed on opposite sides of one of the members in alignment with the apertures therein. Conventional nut and bolt means are used to interconnect the mountings and supported and supporting members with the mountings acting in compression in multi-directions to provide vibration isolation. Due to the unique design of the mountings, there are no localized areas of stress and strain concentration arising adjacent the apertures, the mountings are easy to install and the spring rates can be substantially independently controlled axially and radially of the mountings.

### 3,756,552
### VEHICLE SEAT SUPPORT

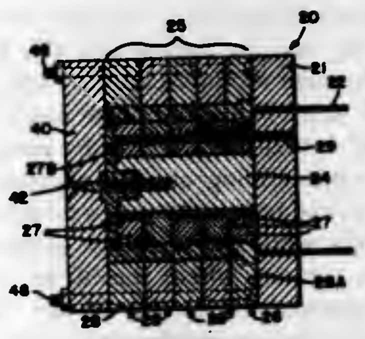
**Gerhard Wilhelms, Kreiensen, and Werner Stichnoth, Westerhof, both of Germany, assignors to Fa. Carl Bruns Werkzeufabrik GmbH, Kreiensen, Germany**
**Filed Mar. 6, 1972, Ser. No. 232,109**
**Claims priority, application Germany, Nov. 16, 1971, P 21 56 786.2**
**Int. Cl. B60n** *1/02*; **F16m** *13/00*
**U.S. Cl. 248—399** **6 Claims**

A seat support incorporates a parallelogram linkage pivotally connected between the seat and a base support member for pivotal movement in a fore and aft direction, a compression spring positioned between the seat and the base, and an adjustment spindle rotatably mounted in the seat for adjusting the bias on the spring for regulating the effective stiffness of the seat support.



### 3,756,553
### SEGMENTED MOLD FOR BLOWER WHEELS

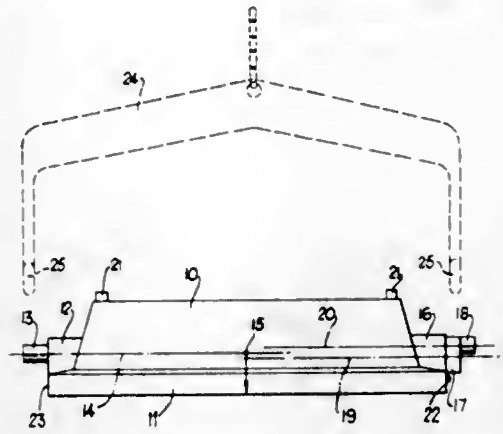
**James R. Ranz, Wilmington, Ohio, assignor to Lau Incorporated, Dayton, Ohio**
**Filed July 9, 1971, Ser. No. 161,101**
**Int. Cl. B28b** *7/16*
**U.S. Cl. 249—142** **6 Claims**



A segmented mold particularly adapted for the high-pressure injection molding of bladed blower wheels of varying blade lengths. The mold includes a base part, one or more intermediate blade-forming sections, and an end part. The length of the blower wheel is varied by selecting one or more intermediate sections. The blade cavities are formed in the intermediate sections, preferably by EDM machining.

### 3,756,554
### INGOT MOULD HEAD BOXES

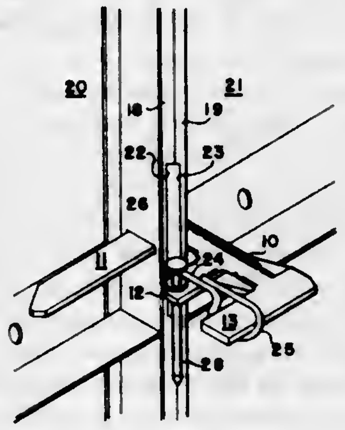
**Richard Andrew Lacjak, Bedford Heights, Ohio, assignor to Foseco International Limited, Birmingham, England**
**Filed May 26, 1972, Ser. No. 257,251**
**Claims priority, application Great Britain, June 24, 1971, 29,686/71**
**Int. Cl. B22d** *7/10*; **B66c** *1/10*
**U.S. Cl. 249—202** **5 Claims**



Head boxes for ingot moulds have lifting lugs carefully positioned to make handling simpler.

### 3,756,555
### GANG LOOP WALL TIE HOLDING BOLT

**Max Doubleday; Robert G. Hoffman, and Richard de Caneva, all of Long Island City, N.Y., assignors to Harsco Corporation, Harrisburg, Pa.**
**Filed Apr. 4, 1972, Ser. No. 240,946**
**Int. Cl. E04g** *17/06*
**U.S. Cl. 249—207** **2 Claims**

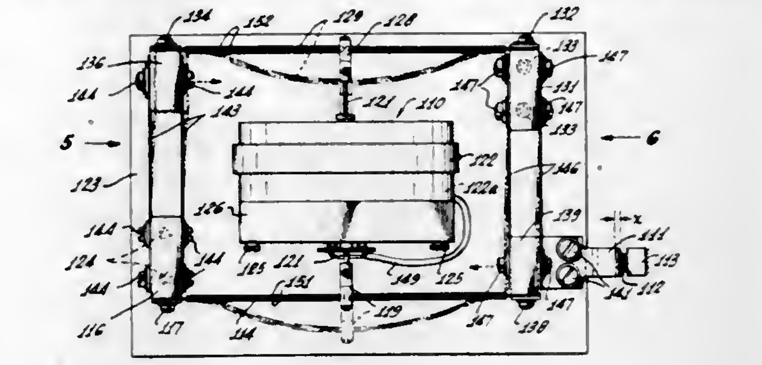


A gang loop wall tie holding bolt holding tie rods of multiple panel units in gang form sections for pouring concrete has a body portion from which extend laterally in the same direction a finger to extend through adjacent frame members of adjacent panel units. Spaced from this finger is a shorter medial extension having a hole therethrough and spaced from the medial extension at the other end of the body portion is a tie rod receiving stud offset from the plane of the finger and medial extension. The body portion may be reinforced by forming a longitudinally extending partial corrugation therein, ending short of the ends of the body portion and having an extension directed toward the medial extension.

### 3,756,556
### FLUID FLOW CONTROL APPARATUS

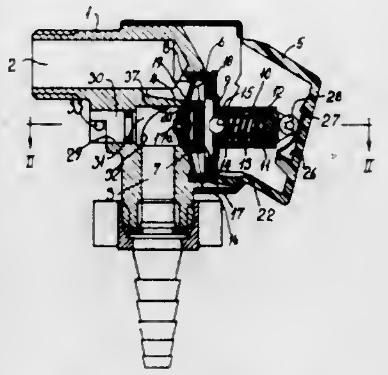
**Heinz W. Georgi, La Jolla, Calif., assignor to Ivac Corporation, San Diego, Calif.**
**Filed July 1, 1971, Ser. No. 158,897**
**Int. Cl. F16l** *55/14*
**U.S. Cl. 251—7** **35 Claims**

An electromechanical device for parenteral administration of medical fluids, wherein a normally clamped-off intravenous feeding tube is repetitively opened at a frequency which establishes a desired fluid flow rate through the feeding tube. A plurality of ribbon springs define a combination suspension and toggle mechanism for an electromechanical actuator shaft which is reciprocated to drive an IV tube pincher via flexing of one of the ribbon springs to which the tube pincher is attached.



### 3,756,557
### PUSH BUTTON VALVE

**Kunto Ilmari Katva, Funen, Denmark, assignor to Broen Armatur A/S, Assens, Funen, Denmark**
**Filed Nov. 29, 1971, Ser. No. 202,916**
**Claims priority, application Denmark, Nov. 30, 1972, 6097/72**
**Int. Cl. F16k** *31/385*
**U.S. Cl. 251—45** **4 Claims**

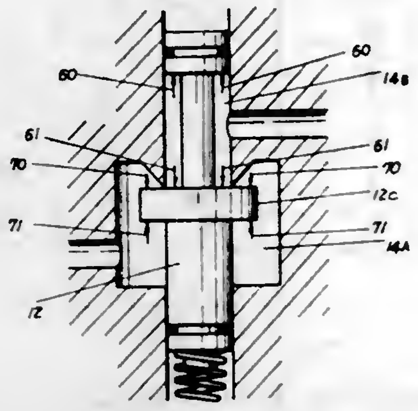


An off-on valve operated by a pivotable handle, the valve member of which consists of a main diaphragm and an auxiliary diaphragm wherein the movement of the central portion of the main diaphragm through the seat of the valve is prevented by a socket securing the auxiliary diaphragm to the main diaphragm, a compressible stem is arranged between the auxiliary diaphragm and the handle and is moved by means of a cam on the handle for manoeuvring the valve body, the handle being kept in two stable end positions by means of the reaction force of the stem acting upon the cam of the handle.

### 3,756,558
### FLUID CONTROL VALVE

**Seiichi Okui, 543 Takumyagara-cho, Ikuno-ku, Osaka, Japan**
**Filed Nov. 11, 1971, Ser. No. 197,648**
**Int. Cl. F16k** *1/12*
**U.S. Cl. 251—282** **1 Claim**

This valve control valve comprises a valve body having a central bore therein provided with an intermediate enlarged part and an annular seat, said enlarged part being substantially a first chamber communicated with an inlet in the valve, a valve plug slidably inserted in the bore and having upper and lower cylindrical sliding members, an intermediate brim and a neck portion between the upper sliding member and the brim to define a second chamber there around which is communicated with an out-let of the valve, said brim being positioned in the first chamber and adapted to cooperate with the valve seat to regulate the valve orifice therebetween, and the construction being so arranged that upward and downward fluid pressures within the first chamber to the brim of the plug are



balanced and upward and downward fluid pressures in the second chamber to the plug being also balanced thereby moving the plug lightly and easily.

**3,756,559**

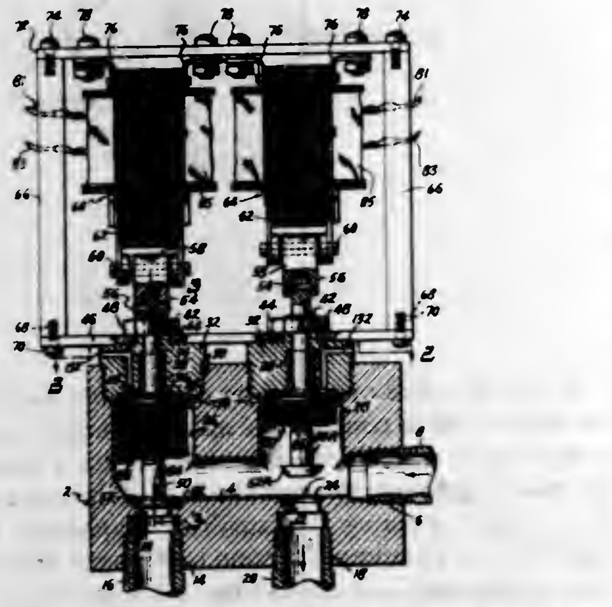
### SOLENOID-OPERATED VALVE

**Weldon C. Boggs, Tampa, Fla., assignor to Food Research & Equipment Company, Tampa, Fla.**

**Filed Sept. 23, 1970, Ser. No. 74,648**

**Int. Cl. F16k** *41/04*

**U.S. Cl. 251—335** **10 Claims**



A solenoid-operated valve having a valve stem sealed by a flexible metallic bellows, the stem having a shoulder and the bellows having a stem flange with a cylindrical collar fitting closely on the stem and sealed against and circumferentially fused or welded to the stem of the shoulder. The stem flange has concentric undulations outwardly of the collar to impart flexibility thereto. The bellows also has a base flange with concentric undulations and a cylindrical offset between the outer undulation and a flat marginal flange. This flange is clamped against an abutment formed in the valve body, and an O-ring is disposed in a recess in the valve body and is compressed between said flange and the cylindrical offset. The bellows further comprises a number of intermediate convolutions, each consisting of a pair of annular diaphragms having their inner and outer marginal peripheries fused or welded together, and also provided with undulations to impart flexibility. The valve stem carries a partially spherical head at its lower end, which engages a sharp-edged seat in the valve body. The valve body may include more than one valve, with the valve stems thereof independently operated by different solenoids.

**3,756,560**

### VALVE HOUSING AND METHOD OF MAKING THE SAME

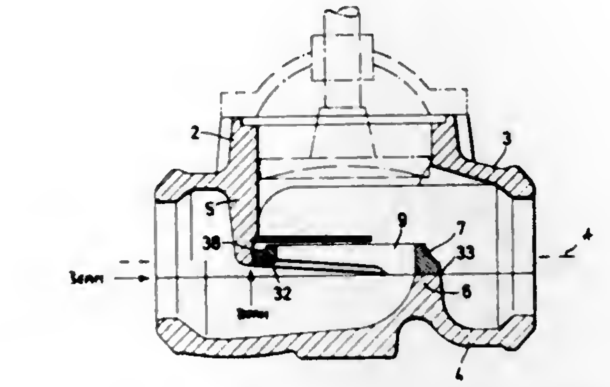
**Walter Siepmann, Haus Mohnetal, Germany, assignor to Eugon Vogt, Belecke/Mohne, Germany**

**Filed Aug. 6, 1971, Ser. No. 169,646**

**Claims priority, application Germany, Sept. 3, 1970, P 20 43 694.6**

**Int. Cl. F16k** *27/00*

U.S. Cl. 251—367 **6 Claims**



A valve housing has an upper and a lower elongated shell each having opposite end portions and a wider intermediate portion with the intermediate portion of the upper shell also being provided with an opening. Lateral edge faces are provided on the respective shells extending longitudinally thereof and abutting and welded to one another in a plane of separation. A first transverse rib of the the lower shell is arcuately curved intermediate one of the end portions and the opening and has an upwardly directed surface located in the plane of separation. A second transverse rib interiorly of the upper shell is arcuately curved from the first rib towards the opposite end portion and around the opening and has a downwardly directed face which merges with the respective lateral edge faces of the upper shell. A support ring is embraced by and welded to the ribs and has an other downwardly directed face partly overlying and welded to the upwardly directed surface with both of these faces having general planes inclined upwardly from the region of the upper surface and the plane of separation to a level above the latter. The transverse width of the edge faces is at least substantially uniform over the elongation of the shells and the respective inner margins of the edge faces are exposed and offset with reference to the support ring below the general planes of the faces so as to facilitate free access and passage of a welding beam to said edge faces and to the interface defined by the upwardly directed surface of the first rib and the other downwardly directed face of the support ring.

**3,756,561**

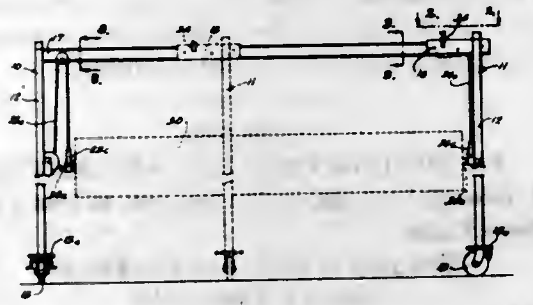
### CARPET LIFT AND LOADING ASSEMBLY

**Thomas G. Rendelman, 337 S. Stevenson, Olathe, Kans.**

**Filed Mar. 27, 1972, Ser. No. 238,445**

**Int. Cl. B60p** *1/14, 11/22*

**U.S. Cl. 254—4 R** **7 Claims**



A carpet lifting and loading assembly comprises a track supported by two sections. One section is movable on the track relative to the other. A cable lifting means is mounted on the fixed section and track of the assembly. Means are mounted on the movable section that cooperates with the cable lifting means to prevent the movable section from moving to a position on the track that would render the assembly unstable when a load is attached and supported by the cable lifting means.

**3,756,562**

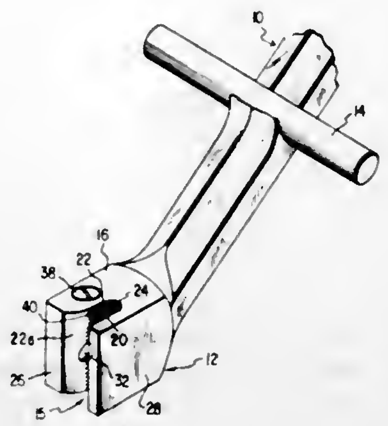
### CONCRETE FORM ASSEMBLY TOOL

**Donnie L. Ward, P.O. Box 164, Black Springs, Nev.**

**Filed July 27, 1971, Ser. No. 166,477**

**Int. Cl. E04g** *19/00*

**U.S. Cl. 254—29 R** **3 Claims**



A concrete form assembly tool is provided with a locking portion which locks onto a snap tie used to hold a form together. A handle member with a cross bar attached thereto exgends from the locking portion. The cross bar presses against the form members to hold the form together while permitting the operator, with his other hand, to place a "hairpin" upon the end of the snap tie, the "hairpin" acting to hold the form together without the need of the tool.

**3,756,563**

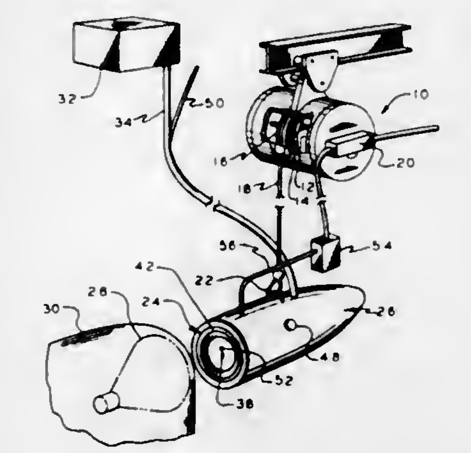
### APPARATUS FOR HANDLING OBJECTS

**Charles W. Stone, Garden City, Mich., assignor to D. W. Zimmerman Mfg. Inc., Madison Heights, Mich.**

**Filed Dec. 1, 1971, Ser. No. 203,646**

**Int. Cl. B66d** *1/44*

**U.S. Cl. 254—168** **11 Claims**



Apparatus for handling objects is provided with controls to automatically regulate fluid pressure in a fluid-operated hoist under certain conditions. The apparatus includes a fluid-operated hoist, fluid-operated, object-engaging means, and responsive means sensitive to the pressure of the fluid of the object-engaging means to change the pressure of the fluid supplied to the hoist. In a preferred embodiment, the object-engaging means is embodied in a headlight aiming instrument which adjusts the headlights of automobiles on an assembly line. The aiming instrument includes a vacuum cup constituting the object-engaging means, which is affixed to the lens of the headlight. The instrument then adjusts the aim of the headlight to a predetermined position automatically. Since the weight of the instrument itself is accommodated in the adjustment, the hoist is controlled to balance the weight of the instrument until the vacuum cup is engaged with the headlight. At that time, the responsive means will lower the pressure in the hoist to just balance the cable and the connector which attaches the cable to the instrument. This leaves the full weight of the instrument itself unbalanced, as if no hoist were present. As soon as the vacuum is released, through the responsive means the pressure in the hoist is raised to balance the weight of the instrument in addition to the cable and connector. The invention can also be applied to fixtures having fluid-operated object-engaging means. When an object is engaged by the engaging means, the pressure in the hoist can be automatically raised to equal or exceed the weight of the object, in addition to the fixture, the engaging means, and the cable, to raise the object or enable an operator to raise it. All of the pressure changes are accomplished without any manipulation by the operator being required.

**3,756,564**

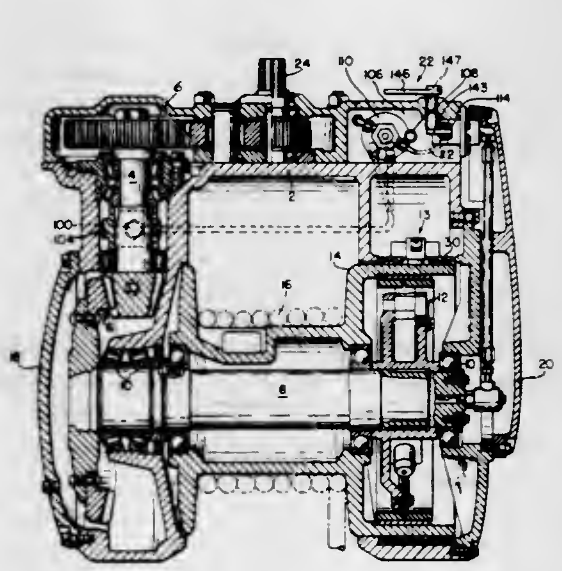
### POWER CONTROL WINCH

**John B. W. Murray, Whiterock; Sommerville G. Christison, Delta, and William Bonar, Vancouver, B.C., all of Canada, assignors to Gearmatic Co., Ltd., Surrey, British Columbia, Canada**

**Filed Oct. 5, 1970, Ser. No. 77,977**

**Int. Cl. B66d** *1/00*

**U.S. Cl. 254—187 R** **7 Claims**



A winch having an integral control system wherein the clutch and brake mechanism are hydraulically actuated and the hydraulic actuating system is positioned in the winch housing. The system includes the oil supply, the control valve, the hydraulic pump and an accumulator. The pump is self-compensating and is mounted to be continually actuated by a shaft in the drive train to the winch drum. To reduce the volume of hydraulic fluid normally required in a hydraulic system and to improve the reliability, the valve is a unique no-leak type with the inlet through a bore in the valve spool and an outlet located along only one side of the spool and the valve is used in conjunction with an accumulator which allows release of the brake after shut down of the drive train. The brake mechanism comprises multi-wrap brake bands which are spring-actuated and hydraulically released, the multi-wrap enables relatively high braking force produced by a minimal spring actuating force.

### 3,756,565
### PULLEY BLOCK WITH BRAKE

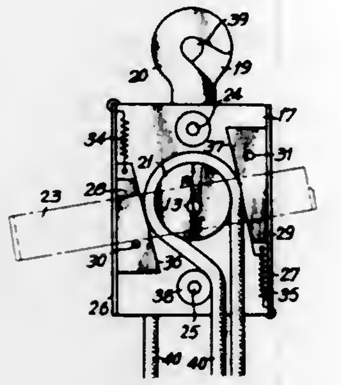
**Hideo Sakai, Tokyo, Japan, assignor to Tomy Kabushiki Kaisha, Tokyo-to, Japan**

**Filed Oct. 22, 1971, Ser. No. 191,592**

**Claims priority, application Japan, Nov. 24, 1970, 45/115790 (utility model)**

**Int. Cl. B66d** *1/36*

**U.S. Cl. 254—192** **10 Claims**



A pulley block having a brake structure which, if necessary, can be manually released. A supporting structure carries a pin on which a pulley is rotatable. The pulley has an outer periphery at least one portion of which is at a greater radial distance from the pin than other portions of the outer periphery of the pulley. An elongated flexible member such as a rope or cable is guided around the pulley to participate in the hoisting of a load. A wedge structure is carried by the supporting structure to cooperate with the pulley, and in particular the latter one portion of its outer periphery, for automatically gripping the flexible member when the load is released. and a manually operable structure is available to be used, if necessary, for releasing the flexible member from wedging engagement between the pulley and the wedge structure.

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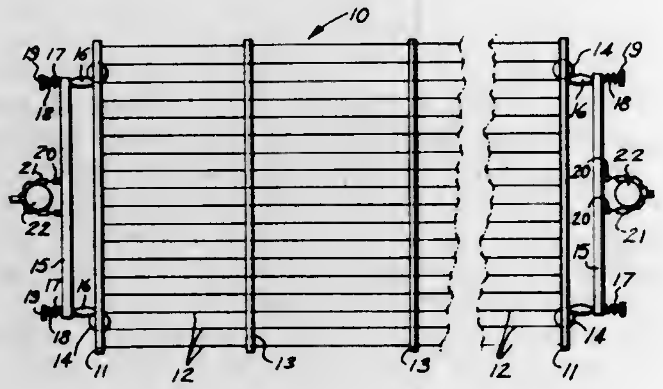
### 3,756,566
### PORTABLE ELECTRIC CATTLE GUARD

**Albert Bangs, 7408 N.E. 133 Ave., Vancouver, Wash.**

**Filed July 31, 1972, Ser. No. 276,840**

**Int. Cl. A01k** *3/00*

**U.S. Cl. 256—10** **4 Claims**



An electric guard device for placement between gate posts. This device consists primarily of wire stretched between tubing and includes insulators, collapsable feet, chain means for fastening the device to the fence posts, and a power unit for supplying current to the wire.

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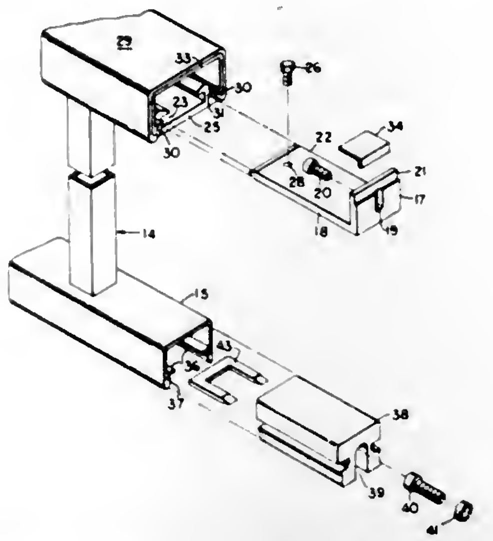
### 3,756,567
### LONGITUDINALLY ADJUSTABLE INTERLOCKING RAILING CONSTRUCTION

**Robert Hamilton Murdock, Kensington, Calif., assignor to Railtec Corporation, Emeryville, Calif.**

**Filed Apr. 10, 1972, Ser. No. 242,315**

**Int. Cl. E04h** *17/14*

**U.S. Cl. 256—21** **13 Claims**



An interlocking construction for metal railings which is adjustable for variations in designed spacing between vertical walls. The construction includes a top rail which comprises a locking bar supported at both ends by angle clips bolted to the walls, a top rail which snaps onto grooves in the locking bar, and expansion filters inside both ends of the top rail which extend to the walls and are held in place by the spring tension of the top rail. The construction also includes an adjustable bottom rail with adjustable supporting deck brackets, and vertical, spaced, tubular members extending between the top and the bottom rail.

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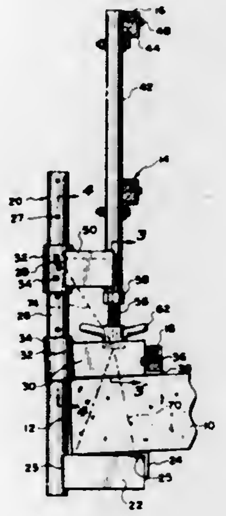
### 3,756,568
### REMOVABLE GUARD RAIL STANCHION

**Richard Charles Mocny, Prospect Heights, and Francis B. Mueller, Downers Grove, both of Ill., assignors to Waco Scaffold & Shoring Co., Division of Bliss & Laughlin Industries, Inc., Schiller Park, Ill.**

**Filed Apr. 20, 1972, Ser. No. 245,992**

**Int. Cl. E04h** *17/14*

**U.S. Cl. 256—59** **15 Claims**



An economical removable guard rail stanchion having a high safety factor and being adjustable to the thickness of a floor with a loose telescoping relationship in fixed half increments and a screw jack to engage one surface of the floor at spaced points and the opposite surface at a point on a vertical line of projection passing adjacent to the midpoint between the spaced points and including a post disposed on the vertical line of projection to support guard rails including a toe board.

### 3,756,569
### APPARATUS FOR MIXING AND HOMOGENISING BULK MATERIAL AND METHOD OF OPERATING THE APPARATUS

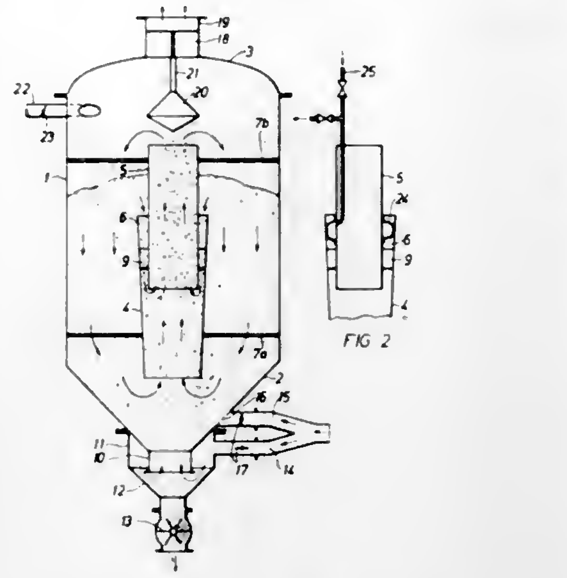
**Arnon Wohlfarth, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Continuation-in-part of Ser. No. 49,883, June 25, 1970, abandoned. This application June 21, 1971, Ser. No. 155,362**

**Claims priority, application Germany, July 23, 1969, P 19 37 374.1**

**Int. Cl. B01f** *5/12*

**U.S. Cl. 259—4** **10 Claims**



A container with a conical base for the pneumatic mixing of material in powder or granulated form, and with a gas supply means at the bottom has at least one riser pipe arranged therein, said pipe ends in the upper region of the container and is formed with openings or gaps. At least one opening or gap is formed as an annular passage, which divides the riser pipe into a lower section and an upper section. The upper end of the lower section surrounds and is spaced from the lower end of the upper section, whereby said gap is defined.

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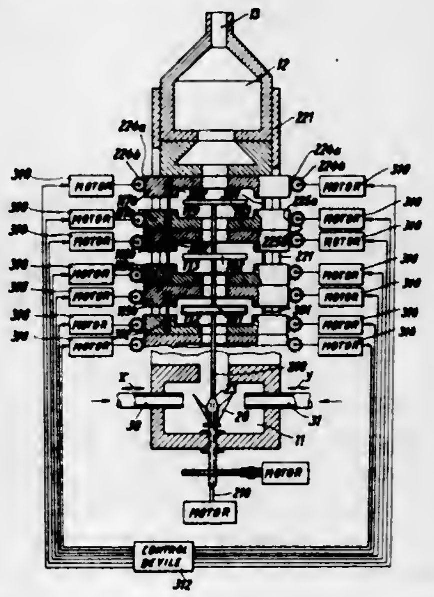
### 3,756,570
### APPARATUS FOR CONTINUOUS DISPERSION AND HOMOGENIZATION OF PREDOMINANTLY VISCOUS SUBSTANCES

**Willy Buhner, Schwachhauser Heerstrasse 114, 28 Bremen, Germany**

**Continuation-in-part of Ser. No. 856,433, Sept. 9, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,894**

**Int. Cl. B01f** *13/10, 7/26*

**U.S. Cl. 259—6** **25 Claims**



The disclosed apparatus continuously disperses and homogenizes predominantly viscous substances and produces finished products, such as lacquers, in large or in small quantities. In the apparatus, feed pipes charge a lower rotor chamber with the starting materials. A rotor in the rotor chamber drives the materials upwardly into a mixing chamber formed by stacked annular bodies. Each annular body is composed of two body portions spaced from each other. Circular disks rotate in the spaces between the annular body portions to operate on the materials. The materials reach an upper plenum chamber where they are discharged through discharge pipes. The two body portions of each annular body are axially displaceable relative to each other. Suitable gears and motors displace the body portions relative to each other. Surrounding cylinder walls enclose the annular bodies. The gears project through the cylinder walls.

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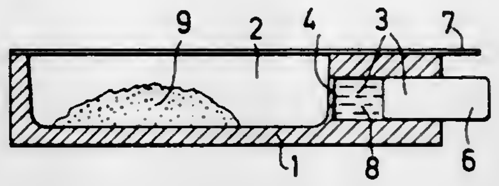
### 3,756,571
### MIXING CAPSULE IN PARTICULAR FOR DENTAL PREPARATION

**Raanar O. Winberg, Silvakragatan 87, 252 57 Helsingborg, Sweden**

**Filed Oct. 29, 1971, Ser. No. 193,750**

**Int. Cl. B01f** *5/00*

**U.S. Cl. 259—60** **6 Claims**



A mixing capsule for dental preparations where one of the components to be mixed is stored in an elongated mixing chamber and the other component or components are stored in separate compartments prior to mixing. The capsule comprises means for injecting the contents of the separate compartment or compartments in the mixing chamber to form a self-curing compound. The invention provides sealing means, which upon removal from the mixing capsule provide access to the mixing chamber along substantially the entire length thereof.

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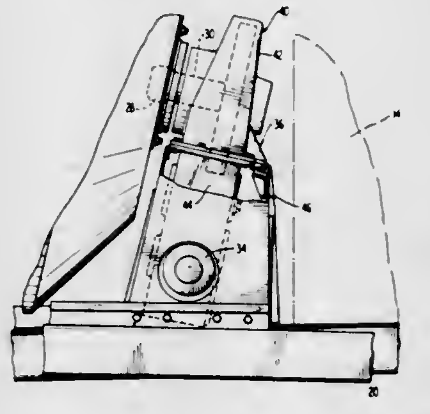
### 3,756,572
### TRUCK MIXER FORWARD SUPPORT AND DRIVE MEANS

**William H. Buelow, Brookfield, and William J. Mohrbacker, Milwaukee, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.**

**Filed June 20, 1972, Ser. No. 264,637**

**Int. Cl. B28c** *5/18, 5/26*

**U.S. Cl. 259—177 A** **8 Claims**



A truck mounted concrete mixer has a hydraulic drive through a gear reduction unit at the forward end of the mixing drum. A support column attached to the truck frame supports the gear reduction unit in a manner to minimize transmittal of truck frame deflections under operating condition to the gears in the gear reduction unit. Specifically, the front of the gear reduction unit is connected to the support column at a point in front of the drum support shaft while the rear of the gear reduction unit is rigidly connected to the support column on a line transverse to the axis of the drum and below the point of support of the forward end of the drum.

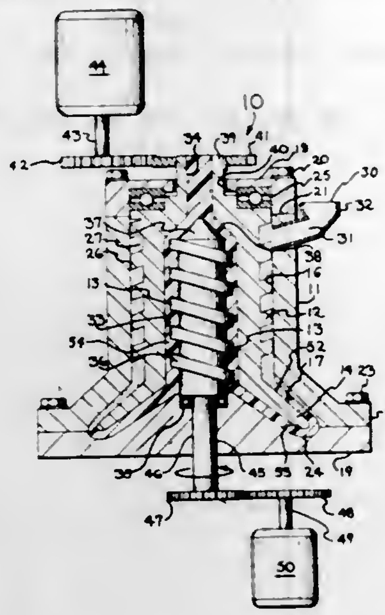
### 3,756,573
### ELASTIC MELT EXTRUDER AND METHOD OF OPERATION

**Harold P. Sponseller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Nov. 19, 1971, Ser. No. 200,482**

**Int. Cl. B01f** *7/08*

**U.S. Cl. 259—192** **4 Claims**



An apparatus for the extrusion of plastic materials characterized by a short chamber combination screw and disk mechanism whereby the plastic material is rapidly changed from a granular to a completely masticated state. The incoming plastic material is received by a receiver screw mechanism that forces it over the surface of a disk plate where it is delivered to a centrally positioned screw for intermittent delivery through an extrusion orifice. The centrally located screw is axially aligned and coterminous with the outer screw mechanism, each screw being independently controlled.

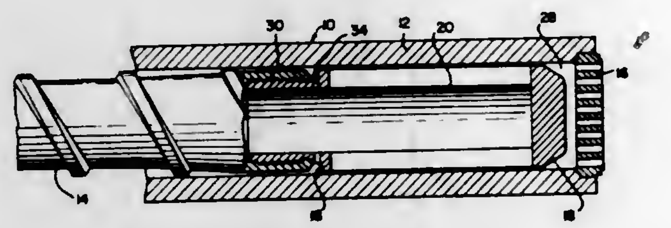
### 3,756,574
### THERMOPLASTIC MATERIAL MIXING

**Bruce H. Maddock, Fanwood, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed June 17, 1971, Ser. No. 154,013**

**Int. Cl. B29f** *3/00*

**U.S. Cl. 259—193** **5 Claims**



Apparatus is disclosed for; heating thermoplastic material to a flowable condition; longitudinally advancing the heated material under pressure toward the discharge end of the apparatus with a rotating extrusion screw having a mixer head at the downstream end thereof; passing the partially fluxed and mixed melt into the interior of the mixer head; passing a plurality of individual streams of said partially fluxed and mixed melt through high shear zones between said mixer head and the barrel of said extrusion apparatus; and passing said plurality of streams through swirling mixing zones in a plurality of substantially longitudinal passages to a region of merger of said streams.

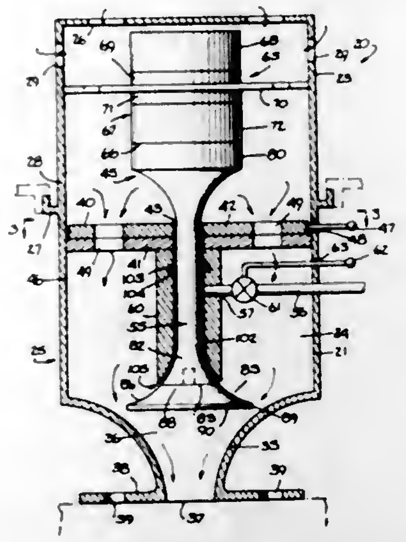
### 3,756,575
### APPARATUS FOR PRODUCING A FUEL-AIR MIXTURE BY SONIC ENERGY

**Eric C. Cottell, Bayville Long, N.Y., assignor to Resources Research & Development Corporation, El Paso, Colo.**

**Continuation-in-part of Ser. No. 109,109, Jan. 25, 1971, abandoned. This application July 19, 1971, Ser. No. 163,603**

**Int. Cl. F02m** *27/08*

**U.S. Cl. 261—1** **11 Claims**



An apparatus for supplying positively controlled amounts of an atomized and vaporized liquid fuel and air for combustion in an internal combustion engine, said apparatus comprising an energizable sonic probe, having a vibratory fuel atomizing surface at one end, and a conduit including a variable volume chamber and a main metering valve for distributing controlled amounts of fuel to a means for directing a thin film of fuel across the atomizing surface. The sonic vibrational energy of the sonic probe performs work on the film as it migrates across the atomizing surface, causing the fuel to atomize and vaporize. The atomizing surface is exposed to a flow of air moving towards the engine, and the atomized fuel is effectively mixed with the air to form a highly suitable fuel-air mixture for efficient combustion in the engine. A throttle valve controls the flow of air through the passageway. The main fuel metering valve and a means for varying the volume of the variable volume chamber positively control the amount of fuel supplied in relation to the amount of air supplied through the throttle valve. In a preferred embodiment, a bypass fuel valve responsive to intake manifold pressure prevents stalling at idle throttle setting and enriches the mixture under load conditions.

### 3,756,576
### APPARATUS FOR CHARGING A LIQUID WITH GAS

**Franco Tremolada, Via Consale Marcello, 10, Milan, Italy**

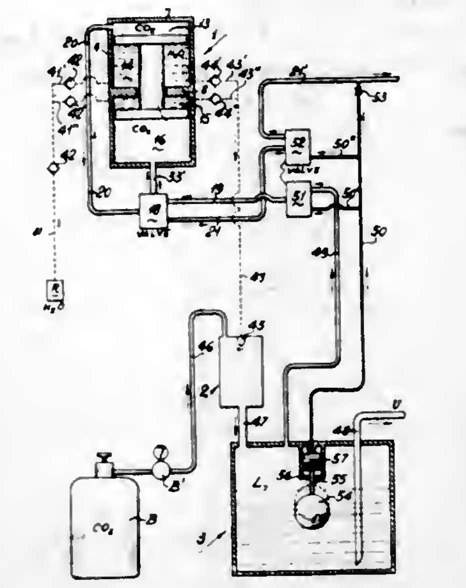
**Filed Feb. 23, 1971, Ser. No. 118,162**

**Claims priority, application Italy, Feb. 26, 1970, 21165 A/70**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—35** **13 Claims**

In producing carbonated water, $CO_2$ gas from a storage tank is introduced into a charging chamber together with a water spray delivered by a double-acting pump. The charged water is collected in a reservoir from which a portion of the evolving gas is directed to the pump for reciprocating same; on its way to the pump, this gas flow passes through a pair of control valves held open by gas pressure from another reservoir outlet as long as the liquid in that reservoir remains below a predetermined level. When this level is reached, a float cuts off the gas pressure so that the control valves close to arrest the pump. Reciprocation of the pump piston is controlled by a switching valve which is temporarily locked in a terminal phase of each piston stroke to stress a spring in a lost-motion coupling between the piston and the valve body, the subsequent release of the locking detent enabling the instant reversal of the switching valve by snap action.



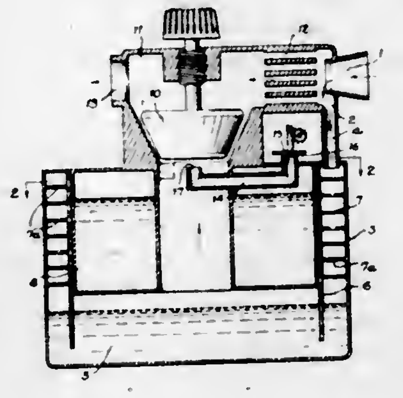
### 3,756,577
### VAPORIZER VENTILATING LINE

**Hans Georg Breiling, Friedrichstr. 34b, Lubeck, Germany**

**Continuation of Ser. No. 69,928, Sept. 4, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,972**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—63** **3 Claims**



In an anesthesia vaporizer, the ventilating line has its outlet orifice positioned lower than the vaporizer control valve and the branch point between the air inlet into the vaporizer and the by-pass line to the mixing chamber. This prevents unduly enriched gas from reaching a patient during the beginning use of the vaporizer. Preferably the inlet to the ventilating line is within the container and below the control valve.

### 3,756,578
### FLUID TREATMENT AND DISTRIBUTION SYSTEM

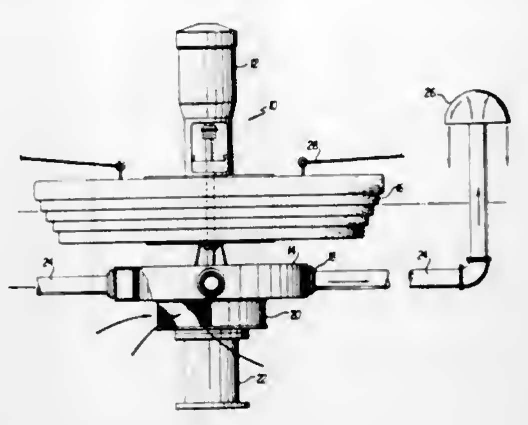
**William L. McGurk, Muskogee, Okla., assignor to Therator Pumper, Inc., Muskogee, Okla.**

**Filed Jan. 27, 1972, Ser. No. 221,320**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—91** **7 Claims**

A fluid aeration-agitation system featuring a pumping system and a pressure manifold operatively mounted upon a float which is either stationary or mounted for rotation, the manifold being operatively connected to a plurality of pipes each leading to a hollow discharge directing subsurface convection current or to a discharge head being hemispherical in configuration.



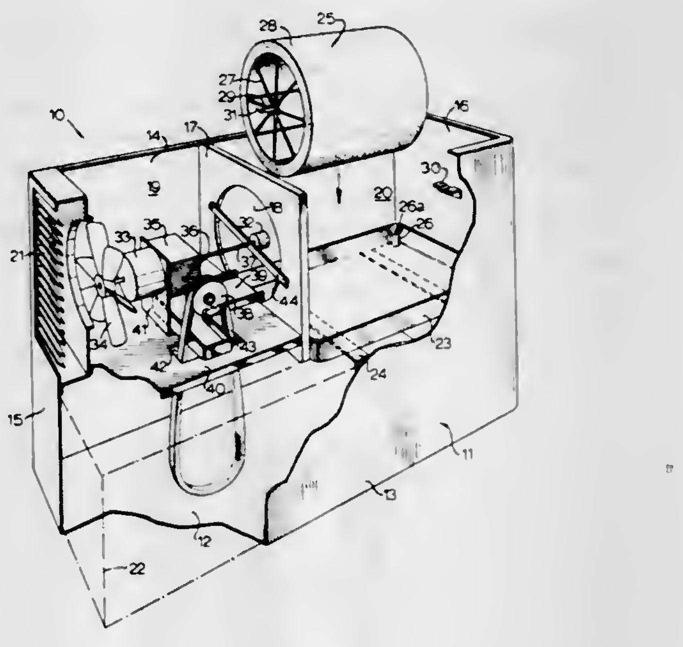
### 3,756,579
### HUMIDIFIER

**Cassius D. Remick, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada**

**Filed July 15, 1971, Ser. No. 162,930**

**Int. Cl. F24f** *3/14*

**U.S. Cl. 261—92** **8 Claims**



A humidifier having a housing in which are located primary and secondary reservoirs, the latter being readily removable from the housing. Means are provided for transferring water from the primary to the secondary reservoir, and the drum or belt is arranged to move through water in the secondary reservoir.

### 3,756,580
### GAS WASHING APPARATUS

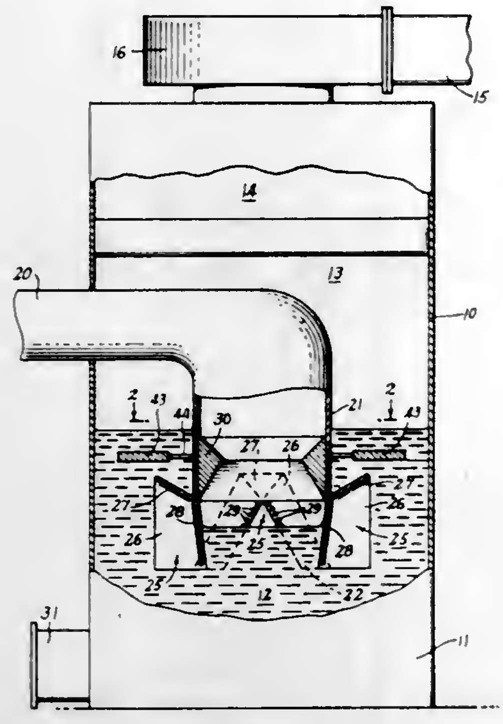
**John Dunn, Mountvale, N.J., assignor to Peabody Engineering Corporation, New York, N.Y.**

**Filed Jan. 31, 1972, Ser. No. 222,045**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—123** **12 Claims**

A gas washing apparatus including an inlet duct with its discharge end submerged in a liquid and having peripheral openings below the level of such liquid but adapted to be exposed by the depression of the liquid level within said duct due to the gas pressure therein. Flared vanes extend outwardly from said openings into the liquid to form a venturi effect. The discharged gases bubble upwardly through the liquid and are



passed through a drying apparatus for the removal of entrained liquid droplets.

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### 3,756,581
### FIRING SETTERS FOR TILES AND OTHER CERAMIC ARTICLES

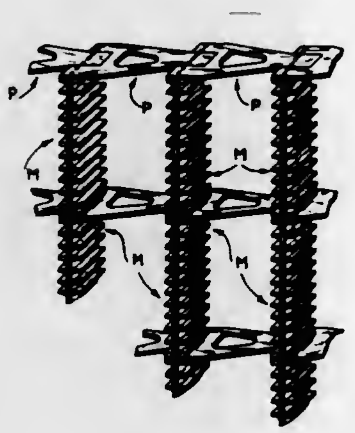
**Emanuele Albertini, Milan, Italy, assignor to Societa' Ceramica Italiana Richard-Ginori S.p.A., Milan, Italy**

**Division of Ser. No. 4,224, Jan. 20, 1970. This application Jan. 25, 1972, Ser. No. 220,595**

**Claims priority, application Italy, Feb. 20, 1969, 13099 A/69**

**Int. Cl. F27d** *5/00*

**U.S. Cl. 432—2** **3 Claims**



Cell-shaped assemblies of firing setters for individually and spacably supporting a plurality of tiles and other ceramic ware during the firing of the glaze in a firing kiln comprise upright wall components made of refractory material with laterally extending projections for supporting the tiles. Further, transverse or horizontal components, also formed of ceramic material, with complementary configurations for interengaging transverse components in a co-planar manner, are provided and interlink the top and bottom ends of the upright components with the edge portions of the transverse components affording an essentially loose interfitting engagement of the components to provide an assembly made of a plurality of superimposed and side-by-side located cells.

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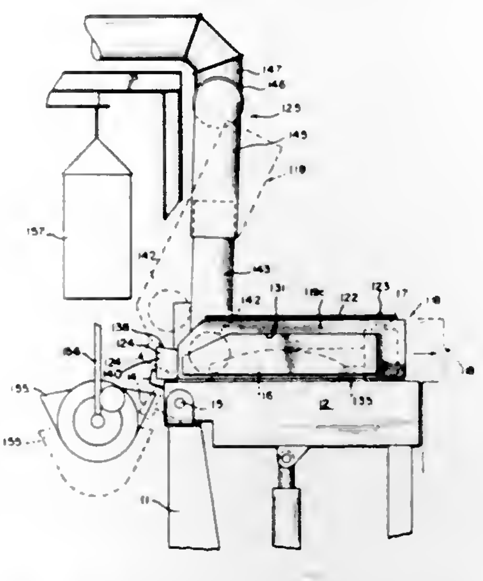
### 3,756,582
### EXHAUST AND CHARGING HOOD FOR TILTING FURNACE

**Robert C. Overmyer, Indianapolis, Ind., and John R. Scheel, Ocqueoc, Mich., assignors to Hawley Manufacturing Corporation, Indianapolis, Ind.**

**Continuation-in-part of Ser. No. 61,287, Aug. 5, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,682**

**Int. Cl. C21c** *5/38*

**U.S. Cl. 266—15** **26 Claims**



A fumes controlling hood for a melting furnace, the hood being constructed and arranged to envelop the conventional upwardly opening charging mouth of the furnace, the lid therefor and the lid-actuating post and being provided in its ceiling with a port registering with the furnace mouth and with a cover for the port mounted to swing about an axis coincident with the axis of movement of the lid, and a driver movable with the lid and establishing a driving connection with the cover so that the cover is moved with the lid to open the port when the furnace mouth is opened. The hood may be mounted on the furnace for shifting movement toward and away from its pouring spout. In those instances in which the furnace lid is raised before it is swung to open the mouth, the driver movable with the lid may establish such driving connection only as a result of such lid elevation. The conventional charging bucket may be modified by the provision of a removable closure for its open top and by the addition of a perimetral skirt which, when the valved bottom portion of the bucket has been entered through the hood port to rest on the furnace top in registry with the furnace mouth, will cover and substantially enclose the hood port. An exhaust system is provided to maintain a subatmospheric pressure within the hood; and when the furnace is of the tilting variety with a pouring spout, the exhaust system will include swivel connections and telescoping ducts permitting the hood to shift on the furnace and to tilt with the furnace in its shifted position. The hood may include a section movable about a vertical axis to provide greater access to the mouth of the furnace.

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### 3,756,583
### MOLTEN METAL VESSEL SUSPENSION SYSTEM

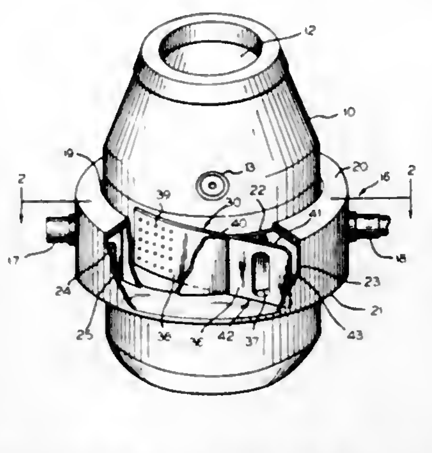
**Rashed N. Nagati, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.**

**Filed Dec. 13, 1971, Ser. No. 207,394**

**Int. Cl. C21c** *5/50*

**U.S. Cl. 266—36 P** **13 Claims**

A vessel for molten metal such as a steel converter vessel is suspended within a tiltable hollow ring with a plurality of diaphragms or cantilever beams which each have one end anchored inside of the ring and another end inside of the space surrounded by the ring. The said other ends make a tangential connection with the vessel which is within the ring. The anchored ends of the beams within the ring have openings for permitting circulation of cooling water through the ring. The beams are planar and stand edgewise with respect to the axis of the vessel and ring and the beam edges do not extend in an axial direction beyond the upper and lower faces of the ring.



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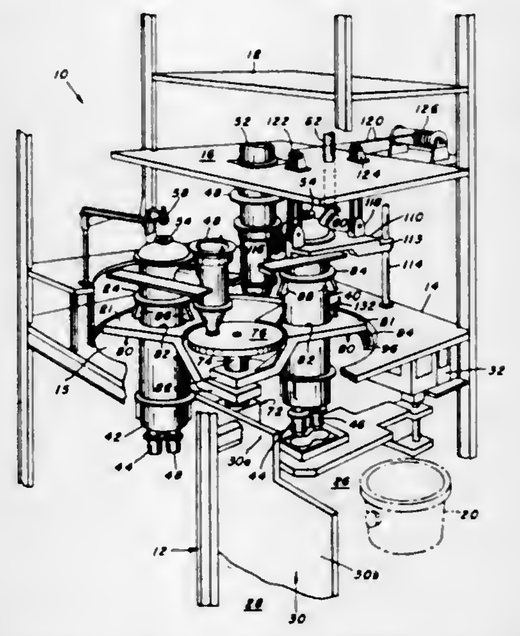
### 3,756,584
### VACUUM DEGASSING APPARATUS

**Ernst A. Mevissen, Robinson Twp., Allegheny, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.**

**Filed June 5, 1972, Ser. No. 262,925**

**Int. Cl. C21c** *7/10*

**U.S. Cl. 266—13** **13 Claims**



This disclosure relates to vacuum degassing and particularly to apparatus which uses multiple degassing vessels whereby, when one vessel is in position for degassing molten metal, the other vessel or vessels are in position for relining or preheating. The vessels are supported above ground level by a rotatable support means which carries the vessels in a circular path between the degassing zone where a vessel may be selectively lowered into and raised out of a ladle of molten metal, then to a maintenance, repair, and reheat zone where a vessel may be relined and/or preheated.

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### 3,756,585
### SPIRAL SPRING COUNTERBALANCE UNIT

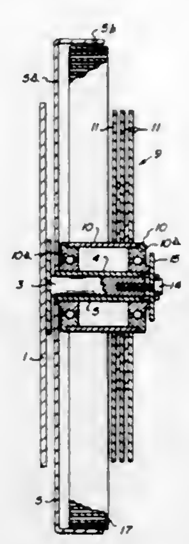
**Arthur Mihalcheon, 14815 125 Ave., Edmonton, Alberta, Canada**

**Continuation-in-part of Ser. No. 870,273, Nov. 5, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,234**

**Int. Cl. F16f** *1/10*

**U.S. Cl. 267—156** **5 Claims**

A counterbalance unit, for lifting an overhead door, is provided. The unit includes a flat plate which can be mounted on the wall adjacent the door. A rigid, fixed, horizontal shaft extends forwardly from the plate. A pair of united cable drums is rotatably mounted on the shaft. A spiral spring is also mounted arund the shaft; the spring's inner end is connected to the drums and its outer end is connected to a housing. The spring functions to rotate the drums. The housing can be rotated around the shaft to tension the spring; however, usually it is locked in a fixed position. A cable is attached at its



inner end to each drum; the cables extend over pulleys and are attached at their lower ends to the overhead door. In operation, the spring expands to rotate the drums, thereby winding up the cables and lifting the door.

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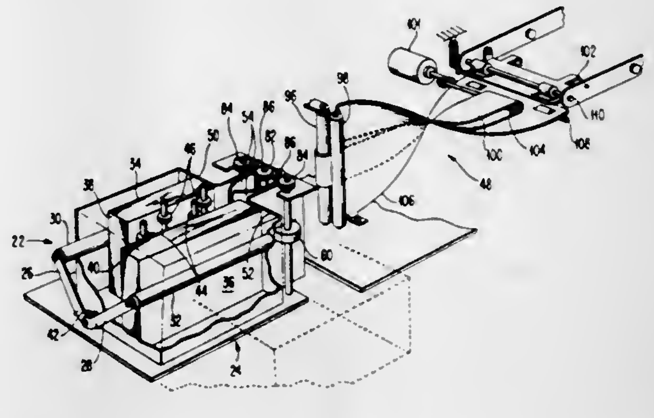
### 3,756,586
### SELECTIVE CUT SHEET FEED DEVICE

**James Alexander Craft, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 16, 1971, Ser. No. 208,868**

**Int. Cl. B65h** *3/44, 1/12;* **B65g** *47/24*

**U.S. Cl. 217—9** **3 Claims**



The paper feed mechanism disclosed has the capability of accepting two packs of sheet material or paper of two different sizes, such as letter and legal size, and selectively feeding sheets from one of the stacks in accordance with the condition to which the paper feed mechanism has been conditioned. The placing of the paper stacks on edge with the picker feed mechanism intermediate the stacks allows the feeding of the sheets by one picker or feed mechanism without the shifting of the paper packs from a first or second position. This also allows the feeding of the sheets without having to overcome gravity effects of the paper stack.

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### 3,756,587
### FABRIC PICK-UP MECHANISM

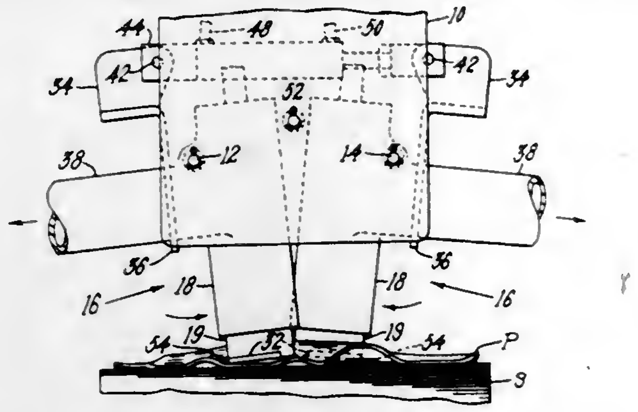
**Carlton G. Lutts, and John W. Brennan, both of Salem, Mass., assignors to USM Corporation, Boston, Mass.**

**Filed Dec. 23, 1971, Ser. No. 211,547**

**Int. Cl. B65h** *3/08, 3/22*

**U.S. Cl. 271—20** **5 Claims**

A versatile mechanism is provided for successively seizing and removing single plies of fabric and the like. A pair of pick-up devices, employing suction holding and friction separating means and without the aid of a hold-down mechanism, cooperate to locally contort and separate a ply from its stack by relative offset pivotal movement whereupon the devices can reliably transfer the single separated work piece.



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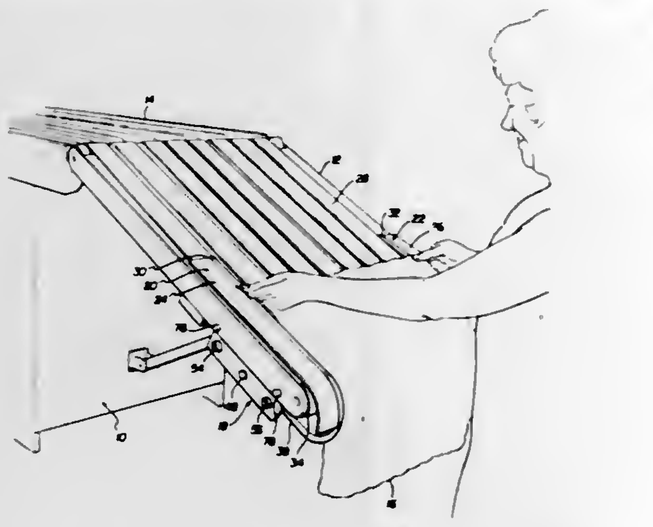
### 3,756,588
### CENTERING GUIDE

**Roland W. Gerstenberger, Fort Lauderdale, Fla., assignor to Jensen Machinery Inc., Fort Lauderdale, Fla.**

**Filed Mar. 6, 1972, Ser. No. 232,014**
**Int. Cl. B65h *9/04***
**U.S. Cl. 271—49** **12 Claims**



A centering guide for aiding an operator in feeding laundry articles onto a conveyor of a laundry treating machine in a predetermined position laterally. In a preferred embodiment, the centering guide includes first and second guide structures having elongated, parallel guide surfaces extending in the direction of movement of the conveyor and terminating in close overlying relationship to the conveyor, so that the operator may slide the side portions of a laundry article along the guide surfaces onto the conveyor. The midpoint between the guide surfaces is centered relative to a portion of the machine so that the laundry article is automatically centered when it is applied to the conveyor. Means is provided for adjusting the first and second guide structures toward and away from each other, the adjusting means including a rod having oppositely threaded sections engaging threaded portions of the guide structures and rotatable by operation of an actuator to move the guide structures in left and right directions.

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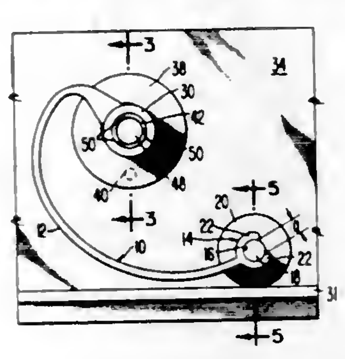
### 3,756,589
### SHEET FEEDING APPARATUS

**Joseph C. Carbine, Wyncote, Pa., assignor to Burroughs Corporation, Detroit, Mich.**

**Filed July 6, 1971, Ser. No. 159,874**
**Int. Cl. B65h *5/06***
**U.S. Cl. 271—51** **16 Claims**

Apparatus for adjustably supporting a pressure roller in a sheet feeding machine. The apparatus comprises a spring member which supports the pressure roller, and a hub member which supports the spring member. The hub and spring members may be constructed separately or as a molded unit. The force exerted by the pressure roller may be varied rapidly manually, without the aid of any tools. The spring member may be provided with an auxiliary spring, and may be shaped to facilitate flexing for feeding sheets whose thickness varies.



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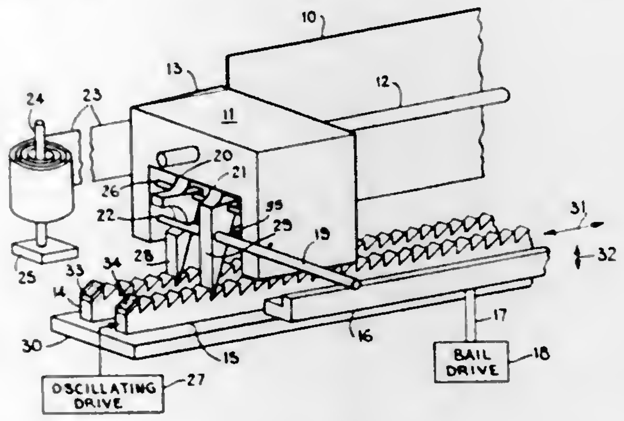
### 3,756,590
### CARD FEEDING DEVICES

**William Redvers John Martin, Bedfordshire, England, assignor to International Computers Limited, London, England**

**Filed Dec. 14, 1971, Ser. No. 207,816**

**Claims priority, application Great Britain, Dec. 16, 1970, 59,653/70**

**Int. Cl. B65h *5/04***
**U.S. Cl. 271—54** **6 Claims**



A card feeding device is disclosed in which a block carrying a picker knife is stepped along by means of a first pawl on the block engaging in a reciprocating rack and a second pawl engaging with a stationary rack. Means are provided to disengage the first pawl to interrupt movement of the block and to disengage both pawls to allow the block to return to its initial position.

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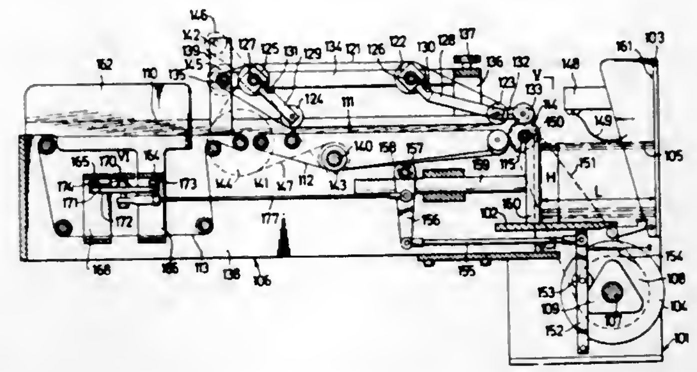
### 3,756,591
### APPARATUS FOR STACKING SHEETS

**Hans Muller, Barenhubel, Zofingen, Switzerland**

**Filed Aug. 10, 1971, Ser. No. 165,841**
**Int. Cl. B65h *29/66, 31/38***
**U.S. Cl. 271—69** **13 Claims**

A support has an upper supporting surface and an abutment projects upwardly from the supporting surface and has an abutment surface normal thereto. A conveyor feeds sheets onto this support in direction normal to the plane of the the abutment surface, and has a discharge end which is spaced from the abutment surface in the direction of conveyance of the sheets, and which is also located upwardly from the support surface at a level corresponding to the maximum height of a stack to be formed on the support surface. Various arrangements are provided by means of which the sheets can be oriented and centered with reference to one another while on the conveyor and/or while on the support surface. A detector

is arranged in the region of the support and includes a detecting element which can move normal to the support surface to and from an upper position located at the aforementioned level. When the member reaches the level it interrupts the main electrical supply circuit for the conveyor drive.



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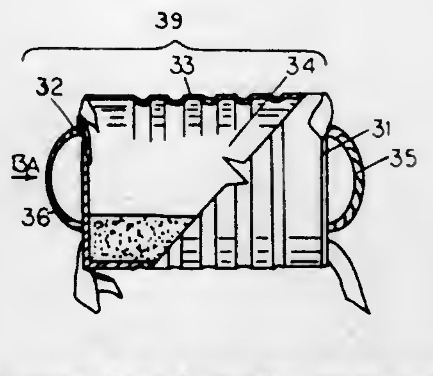
### 3,756,592
### CONTAINER FOR USE AS EXERCISE APPARATUS HAVING FLUENT MASS THEREIN

**Lorene M. Johnson, Rt. 4, Hereford, Tex.**

**Filed Nov. 9, 1971, Ser. No. 196,958**
**Int. Cl. A63b *23/02***
**U.S. Cl. 272—57 R** **5 Claims**



Volume of excess semi-fluid tissue in hypogastric and umbilical and related regions of the human operator's abdomen is selectively reduced by manipulation of operator powered impact producing apparatus to selectively develop forced oscillations in such tissue and express liquid therefrom. The apparatus comprises an elongated container having rigid end walls and an intermediate wall forming a closed chamber. The inside of the chamber is partially filled with a fluent material. On the end walls of the container are located rigid handles, each of which extends laterally from the end wall to which it is attached. By these handles, a user holds the device with his hands in order to perform the above mentioned manipulation.

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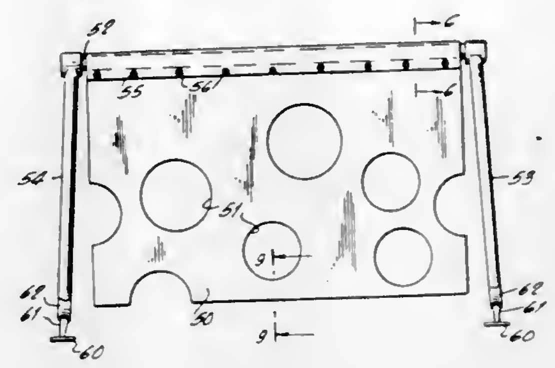
### 3,756,593
### PLAYGROUND EQUIPMENT

**Sheila Berkley Lehr, New York, N.Y., assignor to Sheila Berkley Inc., New York, N.Y.**

**Filed June 9, 1971, Ser. No. 151,491**
**Int. Cl. A63b *7/00***
**U.S. Cl. 272—60** **1 Claim**

Playground equipment employing plastic building materials comprises a free-standing array of large flat panels standing on edge and interlocked together by means of integral tabs and apertures, a hollow dome structure made of two dome half shells joined together by detachable retaining means to the top and bottom of the dome, a punch bag and swing assembly comprising horizontal support members mounted on three vertically extending supports and carrying a plurality of foam filled punch bags suspended therefrom, and a Swiss cheese climbing apparatus comprising a sheet of heavy duty plastic with a plurality of holes of different sizes suspended from a horizontal tube which is in turn cantilevered between a pair of outwardly extending legs. The holes in the Swiss cheese climbing apparatus provide handholds and footholds and are of small and large sizes with the small sizes being too small to permit insertion therein of a child's head and the large sizes being too big for a child's head to get caught.



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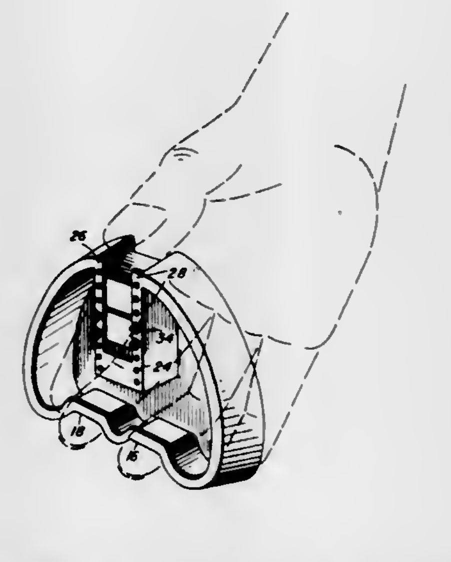
### 3,756,594
### BOWLING GRIP EXERCISE DEVICE

**Frank R. Goodwin, 704 Indiana St., Martins Ferry, Ohio**

**Filed Apr. 13, 1972, Ser. No. 243,735**
**Int. Cl. A63b *21/30***
**U.S. Cl. 272—68** **7 Claims**



A bowling exercise device comprising a relatively thin body or housing with a pair of indentations formed in the peripheral edge thereof and adapted to receive a user's second and third fingers, and an adjustable thumb assembly including a spring-biased member slidably received by the housing and oppositely disposed of the indentations and adapted to accommodate a user's thumb, whereby squeezing and gripping forces are exerted by the user which closely simulate the exercise of bowling. The thumb assembly is variably positioned away from the oppositely disposed indentations to accomodate for users with different size hands.

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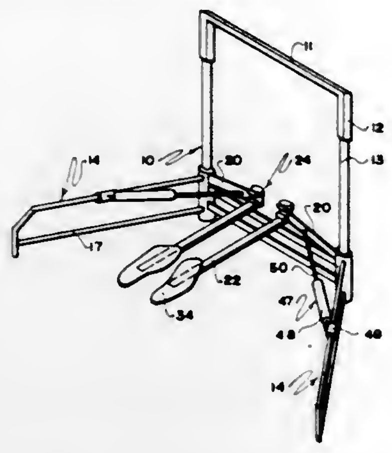
### 3,756,595
### LEG EXERCISING DEVICE FOR SIMULATING ICE SKATING

**George V. Hague, 84 Birchdale Ave., Winnepeg, 6 Manitoba, Canada**

**Filed Apr. 23, 1971, Ser. No. 136,823**
**Int. Cl. A63b *21/02, 21/00***
**U.S. Cl. 272—70** **14 Claims**

A frame carries a pair of articulated components engageable by the feet of the user. Tensioning devices attached to the frame give resistance to rearward movement of a user's legs



thus enabling the user to simulate skating and strengthen the necessary muscles and the like.

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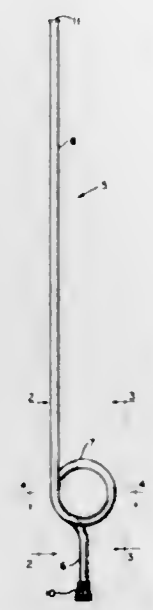
### 3,756,596
### STILT

**Thomas P. Black, Jr., 2527 San Joaquin Court, San Diego, Calif.**
**Filed May 1, 1972, Ser. No. 249,138**
**Int. Cl. A63b** *25/00*
U.S. Cl. 272—70.1 **2 Claims**



A stilt formed integrally in one piece from a single length of tubing (e.g. aluminum tubing such as used for manufacturing furniture) with a stirrup in the form of a loop in the tubing. The ground engaging or leg portion of the stilt extends underneath the integral stirrup and is preferably directly underneath the center of the stirrup or loop while the upper shaft portion which fits behind the armpit of the user is approximately tangential to one side of the stirrup or loop. The bottom end of the stilt is provided with a cane or crutch tip while the upper end is closed by a plug formed of plastic or other material.

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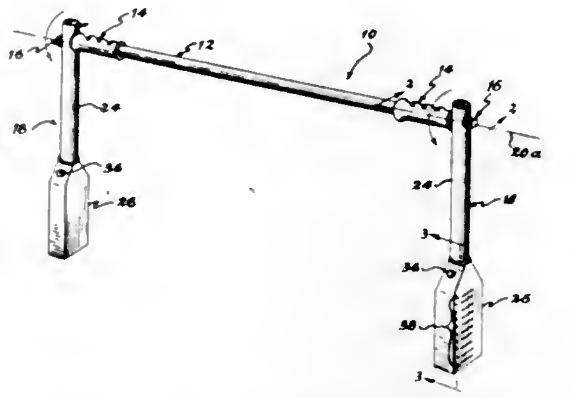
### 3,756,597
### PUSH PULL TYPE WEIGHT SHAFT EXERCISING DEVICE

**Louis F. Monti, 3518 Westwood Dr., Niagara Falls, N.Y.**
**Filed Nov. 12, 1971, Ser. No. 198,369**
**Int. Cl. A63b** *21/22, 21/00*
U.S. Cl. 272—81 **9 Claims**

An exercising device comprising a shaft member having hand grips adjacent opposite ends thereof and two weight members fixed one outwardly of each of the hand grips by bearing devices for independent rotational movement about an axis extending lengthwise of the shaft member. Each weight member includes an adjustable weight in the form of a deformable container for storing water or other flowable material and an arm for connecting the container to its associated bearing device. The hand grips may be slideably supported on the shaft member and provided with spring devices resisting sliding movements of the hand grips towards one another.



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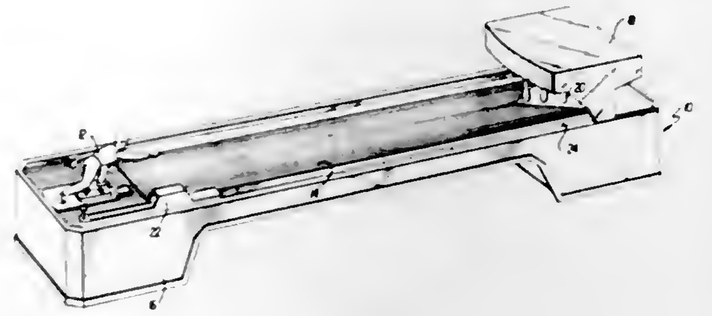
### 3,756,598
### BOWLING GAME AMUSEMENT DEVICE

**Taketora Maeda, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan**
**Filed Nov. 8, 1971, Ser. No. 196,650**
**Int. Cl. A63d** *3/02, 5/08*
U.S. Cl. 273—38 **4 Claims**



A bowling game amusement device featuring a mechanism for permitting the user to load the pins in their proper position and raise same to the level of the alley, a mechanism for retrieving the balls and a movable bowler provided with a spring-biassed arm and means for releasing same to propel the ball.

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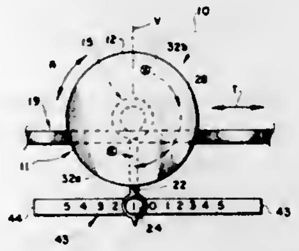
### 3,756,599
### MOVABLE COUNTERWEIGHTED DARTBOARD

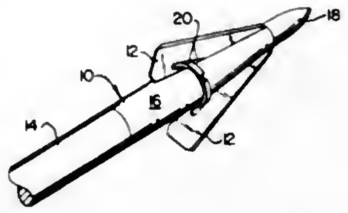
**Alex Imatt, 1595 N. Calle LaCumbre, and Derek Brand, 2132 N. Lynhurst Ave., both of Camarillo, Calif.**
**Filed Apr. 21, 1971, Ser. No. 135,994**
**Int. Cl. A63b** *71/02*
U.S. Cl. 273—102.1 C **8 Claims**



A target is structured to shift to a new location in reaction to being struck by a missile. The target is mounted so as to simultaneously rotate and experience lateral displacement on a horizontal track when a missile such as a dart becomes affixed to the target at a point on either side of a vertical line extending through the target's center.

### 3,756,600
### ARROW TIP HAVING REPLACEABLE CUTTING BLADES

**Richard C. Maleski, 211 Queen St., Bristol, Conn.**
**Filed Apr. 15, 1971, Ser. No. 134,188**
**Int. Cl. F41b** *5/02*
U.S. Cl. 273—106.5 B **10 Claims**



An arrow tip adapted to receive a plurality of replaceable cutting fins or blades comprises an elongated body member to which the replaceable blades are secured by means of a nose piece and snap ring. The body member has an external surface defining longitudinally extending grooves into which the replaceable blades are fitted. The blades may be formed from a section of an injector-type razor blade and are readily installed on or removed from the body member by means of the nose piece and snap ring. The snap ring rotates in a circumaxial groove in the tip and extends through an opening in each blade. A discontinuity in the ring is selectively registerable with each blade.

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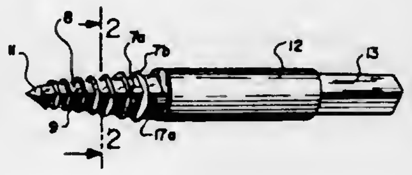
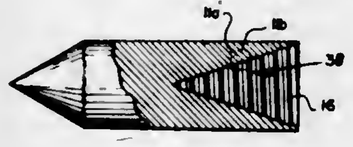
### 3,756,601
### REMOVABLY MOUNTABLE ARROW HEAD AND DRILL TAP FOR MAKING IT

**Edmund F. Frey, Jr., R.D. No. 1, Pittstown, N.J., and Clinton S. Grove, 44 Dogwood Way, Basking Ridge, N.J.**
**Filed July 27, 1972, Ser. No. 275,794**
**Int. Cl. F41b** *5/02;* **B23g** *5/06*
U.S. Cl. 273—106.5 B **9 Claims**





In a preferred embodiment, an arrow head base either a part of the arrow head or mountable thereon of an arrowhead, as the case may be, in which extending along a longitudinal axis from the base end mountable on an arrow shaft, is a conically shaped cavity having its inner walls converging to narrow cavity diameter toward the arrow head end of the arrow head base, and having helically extending paired ridge projections extending about radially inwardly from the converging converging inner walls, with a groove between paired projections and with each of paired projections leaning away from one-another overhanging adjacent inner wall surfaces, such that particularly steel arrow head bases so characterized are manually interchangeably mountable in a secure state not readily dislodged during normal use of the arrow, the process of producing such a steel arrow head base requiring a novel drill tap having helical threads extending along a substantially conical plane around the longitudinal axis of a tap shank of a plurality of sides as viewed in transverse cross-section, typically being substantially squared — such that upon drilling the cavity momentary screw-in rotary motion for predetermined duration of drilling motion, the plurality of shank wall extending angularly to one another forming pointed portions dig-out the groove portions during the forcefully axially moving screw-in and forms the arrow head base paired ridge projections leaning angularly in opposite directions, with the result that the ridge projections in effect act in the nature of barbs securing or secureable of the head in a mounted state on the end of particularly a wooden arrow shaft.

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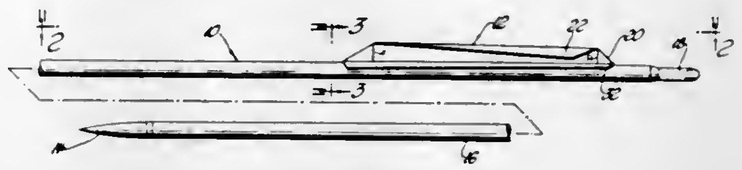
### 3,756,602
### ARCHERY ARROW VANE

**Richard F. Carella, 35572 Strathcona, Mt. Clemens, Mich.**
**Filed Nov. 24, 1972, Ser. No. 309,549**
**Int. Cl. F41b** *5/02*
U.S. Cl. 273—106.5 C **23 Claims**



An archery arrow is provided with a vane means including two flight vanes carried by a mounting vane. The mounting vane extends radially from the arrow shaft, and it is mounted with a slight helical spiral to cause rotation of the arrow during flight. The flight vanes are carried by the mounting vane along the edge of the mounting vane opposite the arrow shaft, and each of the flight vanes forms an angle of approximately 60° with the mounting vane. The flight vanes are mounted on the mounting vane so that the spacing between the flight vanes and the arrow shaft increases from the rearward end of the respective flight vane to the forward end of that flight vane.

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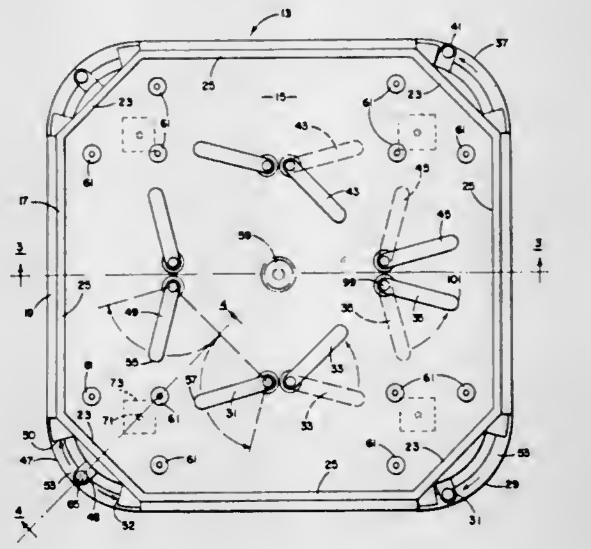
### 3,756,603
### COMPETITIVE BOWLING GAME

**Adolph E. Goldfarb, Tarzana, and Rene Soriano, Los Angeles, both of Calif., assignors to said Goldfarb, by said Soriano**
**Filed Jan. 18, 1971, Ser. No. 107,128**
**Int. Cl. A63b** *67/14*
U.S. Cl. 273—108 **7 Claims**



A game comprising a playing board and pairs of arms rotatably mounted on the playing board disposed around a center or inner area of the board. Pins of each player are disposed in an outer or peripheral area of the board outwardly of a pair of the arms. Control means are provided for each player to rotate his pair of actuator arms to direct a spinning top in the center area away from the outer periphery area where his pins are placed and toward the areas where the opponents pins are placed.

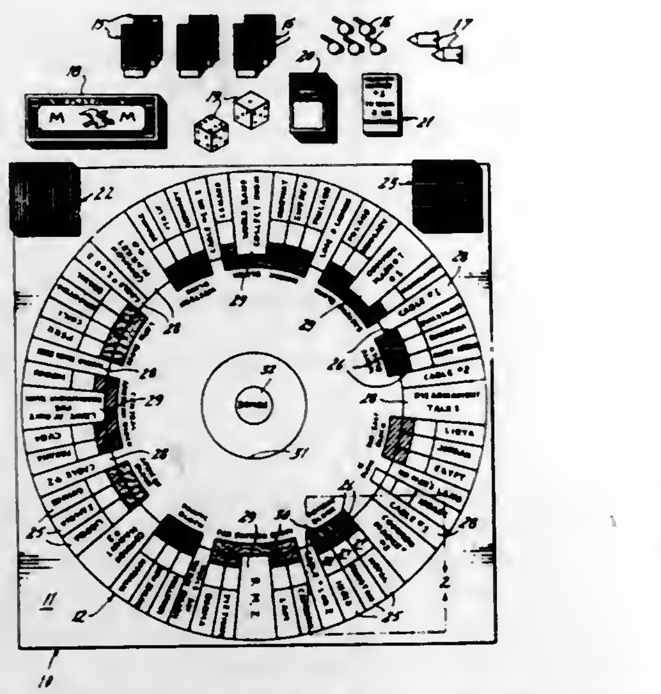
### 3,756,604
### POLITICAL SCIENCE BOARD GAME CONSTRUCTION

**Alexander L. Laszlo, 7126 Creshien Rd., Philadelphia, Pa.**

**Filed Nov. 22, 1971, Ser. No. 200,902**

**Int. Cl. A63f** *3/00*

**U.S. Cl. 273—134 AD** **6 Claims**



A game construction simulating international political science activity wherein a game board is provided with an endless path having country markings serially therealong, group markings respectively associated with groups of country markings, and incident markings along the path, for movement of playing pieces as indicated by chance means to the path markings, whereby the players are subjected to various mandatory and optional costs simulating the military and economic actions of actual world countries.

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### 3,756,605
### ROTATING POINTER CHANCE DEVICE

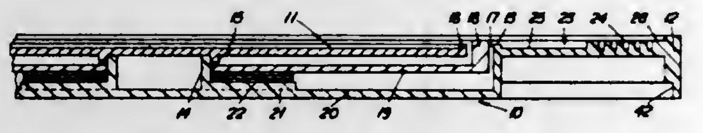
**Thomas Kirkland Robertson, Bosham Hoe, Sussex, England, assignor to Premium Publications Limited, London, England**

**Filed Nov. 16, 1971, Ser. No. 199,142**

**Claims priority, application Great Britain, Nov. 20, 1970, 55,385/70**

**Int. Cl. A63f** *5/00*

**U.S. Cl. 273—141 A** **10 Claims**



A games board assembly is provided of generally circular form in plan, in which the top surface is divided into an inner stationary circular deck and a surrounding stationary annular deck by an intervening spinning ring carrying a pointer, the two decks bearing respective games boards selected from stocks of such boards. A further annulus of the top surface surrounding the aforesaid annular deck is constituted as a peg board. Underneath, a storage section is provided to contain the stock of games boards not in use.

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### 3,756,606
### GOLF GAME PRACTICING MACHINE

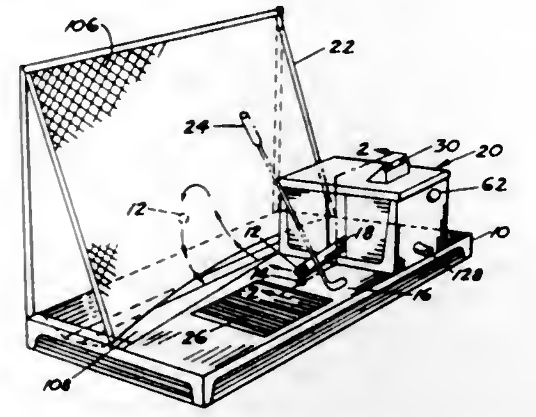
**Dick H. Land, 24020 Sherman, Oak Park, Mich.**

**Filed Mar. 26, 1971, Ser. No. 128,471**

**Int. Cl. A63b** *57/00*

**U.S. Cl. 273—182 R** **2 Claims**

A golf game practicing machine for use indoors or outdoors comprising a control center for automatically determining the allowed number of plays and controling an automatic tee-up means for singly positioning a golf ball upon a tee. When the golf ball is removed from the tee by striking or other means, the flight of the golf ball is arrested by a golf ball receiving means positioned orthogonal to the direction of flight of the ball from the tee means. The player stands on a support means positioned adjacent to the tee on a turf-like playing surface. The disclosure also illustrates two modes of operation, namely where the player supplies two golf balls which are returned after play or where two golf balls are retained by the machine.



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### 3,756,607
### GOLF BALL HAVING IMPROVED PHYSICAL PROPERTIES

**Eugene M. Lukinac, and Joseph N. Massa, both of Ashland, Ohio, assignors to Globetrotter Communications, Inc., Chicago, Ill.**

**Filed Apr. 16, 1971, Ser. No. 134,899**

**Int. Cl. A63b** *37/00*; **C08c** *11/10*

**U.S. Cl. 273—218** **7 Claims**

This invention relates to molded golf balls formed from a composition of matter by vulcanization and which ball includes fumed silica as a reenforcing ingredient to improve the cut and/or impact resistance and to improve the initial velocity of the ball in play.

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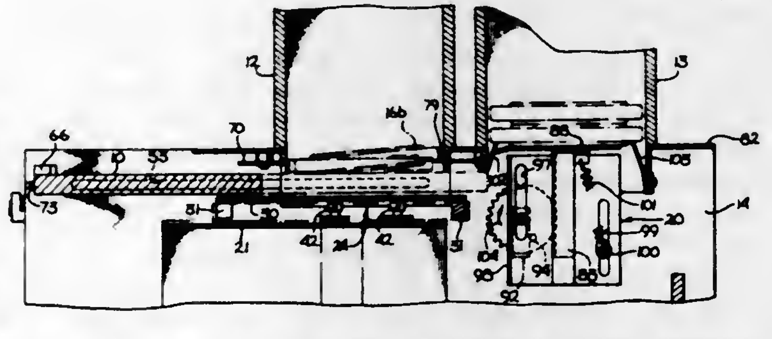
### 3,756,608
### AUTOMATIC CASSETTE CHANGER

**Jerry G. O'Neill, Northridge; Terrance M. Loy, Santa Monica, and Harry Roger Swanson, Canoga Park, all of Calif., assignors to Data Instruments Company, Sepulveda, Calif.**

**Filed Mar. 18, 1970, Ser. No. 20,587**

**Int. Cl. G11b** *23/10*

**U.S. Cl. 274—4 F** **13 Claims**



An automatic cassette or magazine changer for automatically placing and removing cassettes or magazines onto and from a tape recorder is disclosed. The cassettes are lowered and lifted one at a time onto and from the tape recorder by means of a vertically moving platform. A pusher which moves horizontally urges the cassettes from the platform into a discharge hopper once a cassette has been lifted above the tape recorder's drive shafts and guide pins by the platform. The cassettes are stacked in the discharge hopper in the order in which they are played with the first cassette played being the top cassette in the stack.

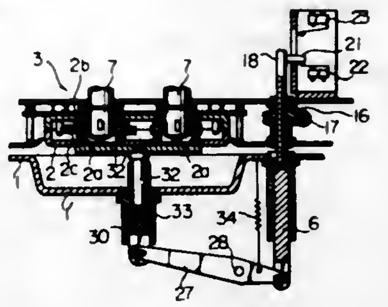
### 3,756,609
### APPARATUS FOR AUTOMATICALLY OPERATING A SELECTED ONE OF A PLURALITY OF TAPE CASSETTES

**Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan**

**Filed Sept. 24, 1970, Ser. No. 75,231**

**Int. Cl. G11b** *5/00*

**U.S. Cl. 274—4 F** **3 Claims**



An automatic cassette tape player for playing a selected one of a plurality of tapes. In one embodiment, the cassettes are arranged in an ordered matrix-like array on a table. The record/playback head and tape advancing mechanism are positioned over the cassette which it is desired to play, and the cassette urged into engagement with the head. After the tape has been played, the cassette is disengaged and the head moved over the next cassette and the process repeated. In another embodiment, the cassettes are mounted onto a plurality of endless belts which are intermittently advanced to select a particular row of cassettes. Then, the playback head is caused to travel until it is positioned over a particular endless belt and then urged into engagement with the thus uniquely determined cassette.

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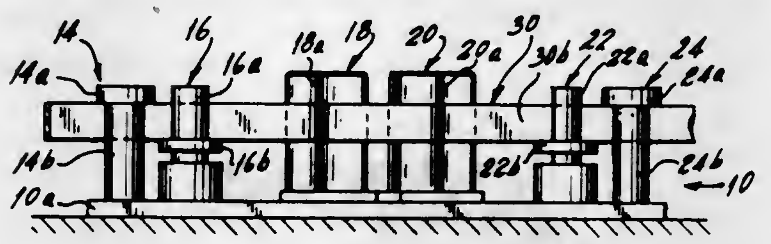
### 3,756,610
### TAPE TRAVEL GUIDING APPARATUS

**Erich O. Naegele, Herkimer; Richard J. Petkovsek, Middleville; Torkjell Sekse, Utica, and Ernesto G. Sevilla, Herkimer, all of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.**

**Filed Jan. 8, 1971, Ser. No. 104,934**

**Int. Cl. G11b** *15/60*

**U.S. Cl. 274—4 R** **14 Claims**



A dual guide post arrangement for guiding recording tape past the read and write heads on a tape deck. A pair of stationary non-rotating posts is arrayed on at least one side of the tape deck heads; such a post pair guides the tape in its travel between the heads and the supply or take-up reel. Each post which is farthest from the heads includes an upper shoulder limiting the sliding movement of the tape in an upward direction, but which would permit unlimited downward movement. However, the other post of each pair, which is nearest the heads, controls such downward movement and provides ultimate control over alignment of the tape and the heads by including a lower flange. The surface of the lower flange is at a level relative to the effective portions of the heads such that the tape will be correctly guided across the heads.

While a pair of posts may be used on each side of the heads, an alternate version provides for a pair of guide posts on only one side of the read and write heads, with a single guide post on the other side of the heads. The provision of a single post between the read head and the capstan permits more uniform speed control of the tape as it is pulled across the head by the capstan, while retaining the advantage of the two guide posts on the other side of the read and write heads.

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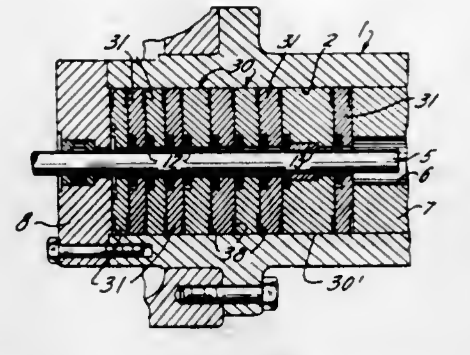
### 3,756,611
### PACKING RETAINER CUP

**Karl W. Wikelski, and Henry K. Tyson, both of Odessa, Tex., assignors to Dart Industries Inc., Los Angeles, Calif.**

**Filed July 15, 1971, Ser. No. 162,915**

**Int. Cl. F16j** *15/56, 15/16*

**U.S. Cl. 277—194** **7 Claims**



An improved packing retainer cup is provided having an increased operational life span which comprises a retaining ring having first and second radially extending side walls and inner and outer circumferential surfaces, an inner peripheral recess in said first side wall communicating with said inner circumferential surface for receiving a sealing ring, the sealing face of said first side wall extending continuously uninterrupted from the recess to the outer circumferential surface, and an outer peripheral undercut in said second side wall communicating with said outer circumferential surface, the sealing face of the second side wall extending continuously uninterrupted from said inner circumferential surface to said undercut.

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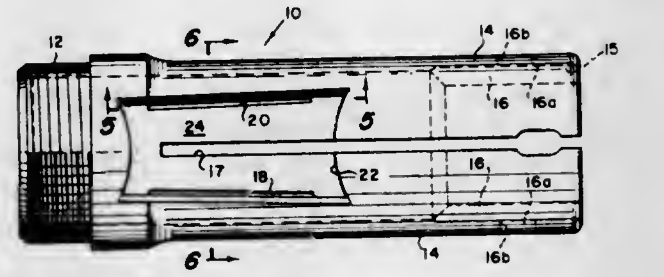
### 3,756,612
### ADJUSTABLE TENSION FEED CHUCK FOR MACHINE TOOLS

**Anders Adolf Peterson, Elmira, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.**

**Continuation-in-part of Ser. No. 877,997, Nov. 19, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,770**

**Int. Cl. B23b** *31/20*

**U.S. Cl. 279—41 A** **22 Claims**



An adjustable tension feed chuck for machine tools including a tubular body member, spring tensioned furcations associated with said body member for gripping bar stock for feeding purposes and means for adjusting the tension of said spring tension furcations.

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### 3,756,613
### TRACTION APPARATUS FOR VEHICLE TIRES

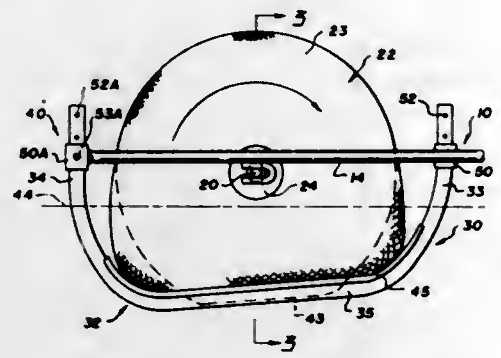
**Russell Rutley, 1630 Croation Road, Campbell River, British Columbia, Canada**

**Filed Apr. 24, 1972, Ser. No. 246,777**

**Int. Cl. B60c** *27/00*

**U.S. Cl. 280—8** **14 Claims**

Apparatus for flattening the bearing surface of a resilient tire on a vehicle wheel to achieve improved performance in deep powder snow. A runner is attached to the frame of the vehicle to shape the bearing surface. A flexible band may be used with the runner to provide a still larger flattened bearing surface. Wear members are provided on the runner, and on the flexible band if it is used, to reduce wear as the moving parts slide on the fixed parts.



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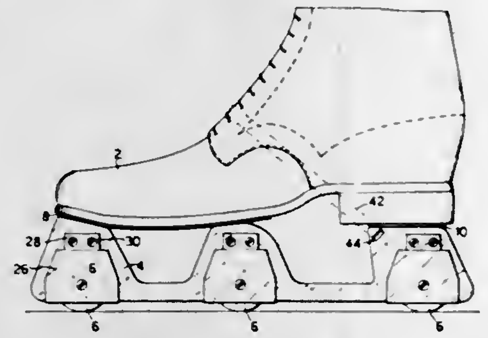
### 3,756,614
### ROLLER SKATES

**Henrich Grubin, 21 Herzl, Ramle, Israel**

**Filed Mar. 31, 1972, Ser. No. 240,011**

**Int. Cl. A63c** *17/06*

**U.S. Cl. 280—11.22** **5 Claims**



A roller skate comprises a flat frame bar having a plurality of downwardly-opening recesses, each recess carrying a housing having a roller, the housing being open at the bottom through which the roller projects, each housing including a pair of mounting ears straddling the frame bar above its recess and fixed thereto by fasteners passing through the ears and the frame bar.

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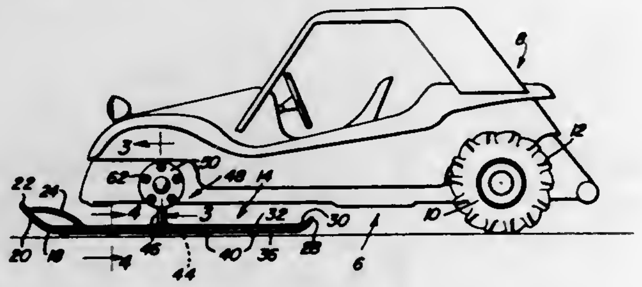
### 3,756,615
### SNOW SKIS FOR VEHICLE WHEELS

**Richard L. Bray, Box 946, Lago Vista, Tex.**

**Filed July 19, 1971, Ser. No. 163,771**

**Int. Cl. B62b** *19/04*

**U.S. Cl. 280—14** **3 Claims**



Replacement means for front vehicle wheels, more particularly, ski-type runners. No modification of the vehicle, other than removing the wheels and substituting the skis or runners, is necessitated. The customary nut-equipped studs or lugs permit ready and reliable conversion. Each runner is provided midway between leading and trailing ends with a balanced adapter embodying a ring-like head or collar which has bolt holes for the studs, said head being united with the upper end of a shank or standard whose lower end is equipped with a base which is joined to the runner. A side-slip preventing rib is provided with dry land rollers for convenient transporting purposes.

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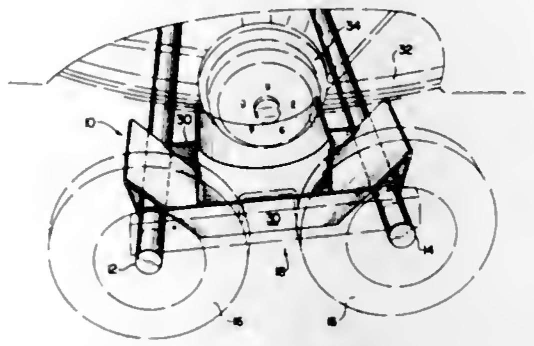
### 3,756,616
### DOLLY BLOCK

**William C. Sapp, Sr., 306 Coastal Hwy., Port Wentworth, Ga.**

**Filed Mar. 1, 1972, Ser. No. 230,881**

**Int. Cl. B62b** *5/00*

**U.S. Cl. 280—79.1** **2 Claims**



A dolly block for selective association with a wheel dolly of a conventional type adapted to support wheels of a vehicle for towing purposes and the like, the conventional dolly being selectively modified by use of the dolly block to support an automobile wheel drum when the tire and wheel are dissassociated from the drum. The modified support eliminates the necessity for a vehicle leaf spring resting on a dolly pan and enables moving of an automobile even though the tire and/or wheel have been removed.

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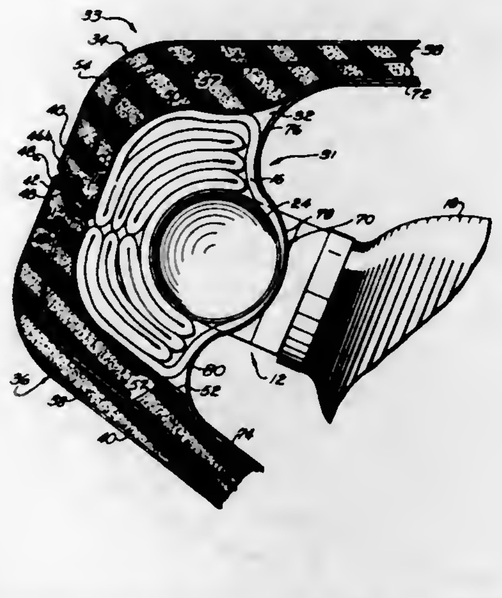
### 3,756,617
### SAFETY APPARATUS

**Darrell S. Brown, Livonia, Mich., assignor to Eaton Corporation, Cleveland, Ohio**

**Division of Ser. No. 857,666, Sept. 15, 1969, Pat. No. 3,640,546. This application July 21, 1971, Ser. No. 164,721**

**Int. Cl. B60r** *21/04*

**U.S. Cl. 280—150 AB** **3 Claims**



A safety apparatus for protecting an occupant of a vehicle during the occurrence of an accident includes an expandable confinement. The confinement has a collapsed inoperative condition and an expanded operative condition for restraining movement of the occupant during the accident. A break-away dash panel is provided for at least in part enclosing the confinement when the confinement is in its inoperative condition.

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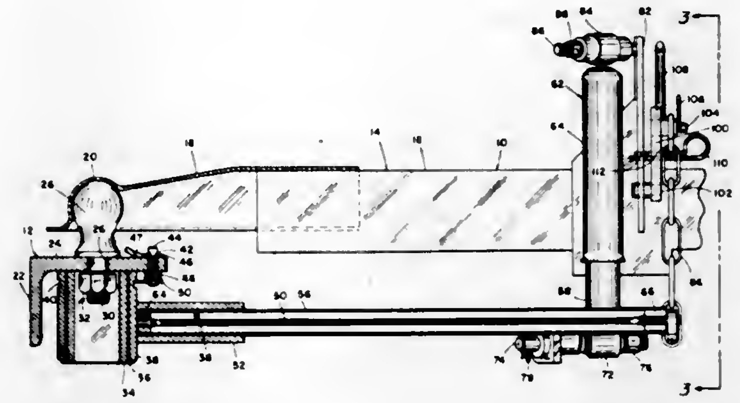
### 3,756,618
### TOW HITCH

**Jesse M. Lewis, Tulsa, Okla., assignor to Thermo-Chem Corporation, Tulsa, Okla.**

**Filed Dec. 30, 1971, Ser. No. 213,985**

**Int. Cl. B62d** *53/00*

**U.S. Cl. 280—489** **7 Claims**



A tow hitch for vehicles pulling trailers whereby the tow hitch is of rigid construction and is secured to the towing vehicle hitch member with one degree of freedom, that being in the horizontal plane thereby allowing free rotation between said vehicle and the trailer during a turn maneuver. The tow hitch comprises dual lever arms with torsion bars journalled therein, said lever arms and torsion bars secured to the trailer frame members through a yieldable piston means. The tow hitch is particularly designed and constructed for greatly reducing relative longitudinal "porpoising" and lateral swaying between the towing vehicle and the trailer, thus providing a high degree of stability during towing operations.

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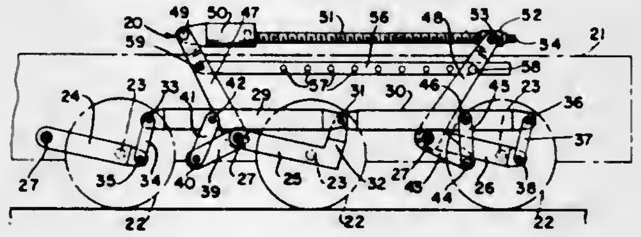
### 3,756,619
### ADJUSTABLE WHEEL SUSPENSION UNITS FOR VEHICLES

**Roland H. Thorsell, Corvallis, Oreg., assignor to Speed Cut, Inc., Corvallis, Oreg.**

**Filed June 8, 1971, Ser. No. 151,061**

**Int. Cl. B60g** *1/00*

**U.S. Cl. 280—104** **9 Claims**



Vehicular wheel suspension units consist of primary support frames upon which plural tandem wheel assemblies are suspended through trailing pivotal link arms. Additional interconnecting linkage means between the several independently suspended wheel assemblies allow the assemblies to operate in unison on rough terrain in a compensating mode to maintain a level and smooth shock-free ride with maximum roll stability. The system is purely mechanical without resort to cables, hydraulics or pneumatics. The wheel suspension is adjustable to raise or lower the vehicle main frame or bed and to lock it at a desired elevation in a safe manner while the vehicle is at rest. The system is applicable to trailers and other vehicles.

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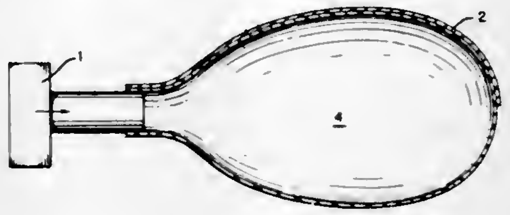
### 3,756,620
### CUSHION WITH RESTRAINING BANDS

**Donald G. Radke, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed Aug. 12, 1971, Ser. No. 171,226**

**Int. Cl. B60r** *21/08*

**U.S. Cl. 280—150 AB** **9 Claims**



Air cushion means including the restraint attached thereto which absorbs energy and deploys the cushion in the desired position.

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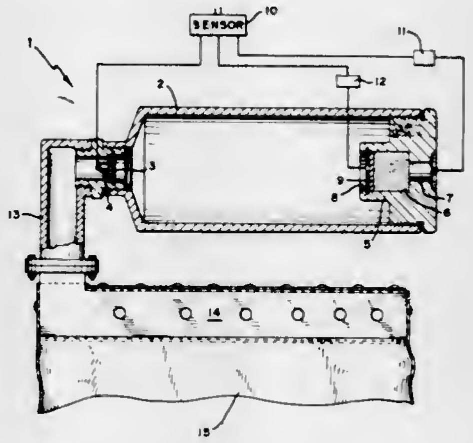
### 3,756,621
### ARGON COMPRESSED GAS SUPPLY

**Donald J. Lewis, Troy, and Robert J. Bishop, Rochester, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Nov. 3, 1971, Ser. No. 195,092**

**Int. Cl. B60r** *21/08*

**U.S. Cl. 280—150 AB** **1 Claim**



Storage and supply of argon in a reservoir for inflation of air cushion.

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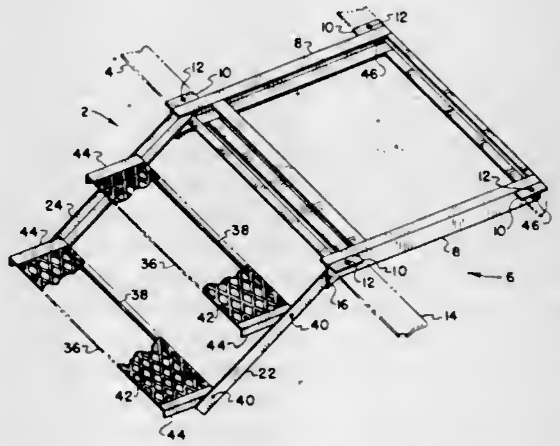
### 3,756,622
### RETRACTABLE VEHICLE STEP

**Archie C. Pyle, 405 W. 10th North, Logan, Utah, and Allen H. Richman, 108 E. 2nd South, Millville, Utah**

**Filed Dec. 3, 1971, Ser. No. 204,544**

**Int. Cl. B60r** *3/02*

**U.S. Cl. 280—166** **2 Claims**



A retractable vehicle step comprising a pair of channel members mounted in facing spaced relation on the frame of said vehicle and each formed with a downwardly inclined lower end portion located adjacent the edge of said frame, a generally rectangular slide carried by said channel members and slidable between an extended position and a retracted position, and at least one generally rectangular step pivotally secured to said slide and rotatable between a nesting position lying substantially in the plane of said slide and a second position substantially horizontally from said slide when said slide is in said extended position.

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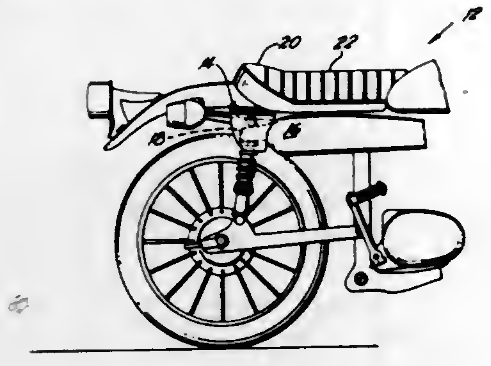
### 3,756,623
### HEAT SHIELD FOR A MOTORCYCLE

**Larry Dale Whittler, 11515 N.W. 27th Avenue, Miami, Fla.**
**Filed Aug. 28, 1972, Ser. No. 284,289**
**Int. Cl. B62j** *23/00*
**U.S. Cl. 280—289** **3 Claims**



A heat shield to be connected to a motorcycle frame and extending over the exhaust of the motor vehicle so that the motorcycle can accommodate a passenger riding behind the driver without being burned by the exhaust pipe of the motorcycle, the heat shield comprising a surface to overlay the exhaust in spaced relation and including means to connect the same to the motorcycle.

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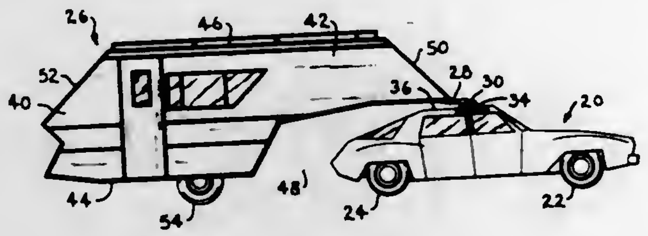
### 3,756,624
### STABILIZED TOWING VEHICLE AND TRAILER COMBINATION AND INTERCONNECTING HITCH

**Harry L. Taylor, Harmon Electronics Inc., Grain Valley, Mo.**
**Filed Jan. 10, 1972, Ser. No. 216,551**
**Int. Cl. B62d** *53/00*
**U.S. Cl. 280—423 R** **9 Claims**



A towing vehicle and trailer combination in which the effect each vehicle has on the other is minimized even at high speeds. The trailer has a primary, rear body section and a secondary, front body section which forms a nose that extends forwardly from the primary section. A clearance cavity for the rear portion of the vehicle (assuming normal towing in the forward direction) is defined beneath the nose in front of the primary section. A ball and socket hitch connects the forward end of the nose to the top of the towing vehicle at its front to rear and lateral center, thereby equalizing the hitch weight on the wheels of the vehicle. The trailer has its weight distributed in the primary and secondary sections to locate the center of gravity of the entire trailer forwardly of the center of the primary section. The trailer wheels are disposed substantially at the center of gravity, with the result that the distance between the trailer axle or axles and the rear axle of the towing vehicle is materially shortened and is approximately equal to the wheel base of the vehicle. The hitch is secured to the vehicle top by a unitary, rigid, rectangular baseplate overlying the top. The baseplate has an elevated central portion on which the hitch ball is mounted, and is of a shallow, generally frustopyramidal configuration to present four downwardly sloping surfaces radiating from the central portion and facing in forward, rearward, and lateral directions respectively.

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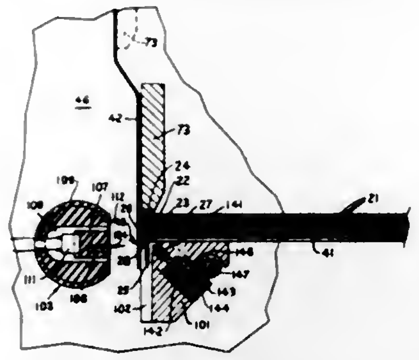
### 3,756,625
### METHOD AND APPARATUS FOR BINDING BOOKS

**William H. Abilgaard, Los Altos Hills, and Charles T. Groswith, III,, Los Altos, both of Calif., assignors to Velo-Bind Inc., Sunnyvale, Calif.**
**Continuation-in-part of Ser. No. 799,045, Feb. 13, 1969, Pat. No. 3,596,929, Continuation-in-part of Ser. No. 875,126, Nov. 10, 1969, Pat. No. 3,608,117. This application Apr. 15, 1971, Ser. No. 134,359**
**Int. Cl. B42b** *1/00;* **B42c** *19/00*
**U.S. Cl. 281—25** **18 Claims**



A machine is provided for first punching holes in sheets and then binding the sheets to form a book. Used with the machine are two thermo-plastic strips, a first having longitudinally spaced, upstanding studs and the second having holes corresponding in spacing to the studs and preferable formed with counterbores on one surface. The machine has a punch to punch the sheets. Punched sheets are placed on a platen on top of the second strip and the studs of the first strip are inserted through the holes in the paper and the holes in the second strip. A pressure foot is mechanically moved to apply pressure on the first strip to compress the paper between the two strips with predetermined force and this pressure is maintained until completion of the binding. Excess stud length protruding below the second strip is cut off a short distance below the second strip by heated knives. The knives are then moved upward, deforming the stud stubs into the counterbores in the second strip to form heads. Upon withdrawal of the knives, cooling and forming fingers are forced against the heads to shape and cool same. When the heads have hardened, the fingers are withdrawn and the pressure foot withdrawn.

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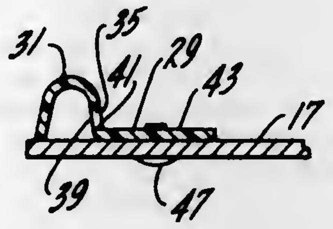
### 3,756,626
### LOOSELEAF BINDER

**Carl D. Anderson, Northfield, Ill., assignor to Donker Products, Inc., Chicago, Ill.**
**Filed July 28, 1971, Ser. No. 166,697**
**Int. Cl. B42d** *3/00*
**U.S. Cl. 281—47** **4 Claims**



A rod type periodical binder having rod holding brackets formed of plastic. The rods are held in spaced elongated slots at least two of which are formed in each bracket. Struts are formed between the slots to strengthen the brackets.

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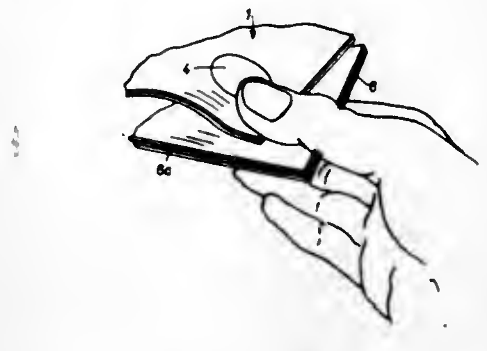
### 3,756,627
### BOOK-LIKE PRODUCT AND METHOD FOR OPENING AND STUFFING SAME WITH AN INSERT

**Walter Reist, Hinwil, Switzerland, assignor to Ferag, Fehr & Reist AG, Hinwil, Switzerland**
**Filed Dec. 29, 1971, Ser. No. 213,626**
**Claims priority, application Switzerland, Jan. 12, 1971, 420/71**
**Int. Cl. B42f** *21/00*
**U.S. Cl. 283—38** **16 Claims**



A book-like product composed of flexible sheets, with given ones of the sheets having indexing means at predetermined index locations of the product for reducing the friction between each two sheets bounding a respective index locations. The indexing means reduces the friction at a zone of the surface of the relevant sheet, and each such reduced friction zone is arranged to be at least partially free of overlapping with regard to the remaining reduced friction zones.

There is also disclosed a method of opening such book-like products wherein the product is engaged at the region of one of the reduced friction zones, the sheets of the product are displaced relative to one another at the relevant index location, thereby opening the product at such index location, thereafter an insert is introduced into such index location, and then such operations are repeated at a different reduced friction zone of the product.

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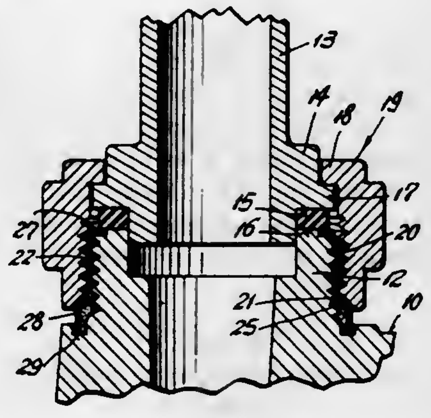
### 3,756,628
### THREADED CONNECTION

**Theodore A. St. Clair, Fairfield, Conn., assignor to Textron Inc., Providence, R.I.**
**Continuation-in-part of Ser. No. 224,127, Feb. 7, 1972, abandoned. This application Mar. 23, 1972, Ser. No. 237,351**
**Int. Cl. F16l** *19/02*
**U.S. Cl. 285—52** **1 Claim**



A die-cast meter top has integral hubs provided with external screw threads to receive a thin sleeve of hard metal, such as steel, which is provided with an internal screw thread fitting said external screw thread on the hub, the sleeve having an external screw thread to receive the internal screw thread on a coupling nut. The sleeve is plastic coated, preferably fluidized bed coated with epoxy, and there is a coating of epoxy resin between the hub and the sleeve to secure the sleeve to the hub against movement and electrically insulate the sleeve from the hub for protection against galvanic corrosion.

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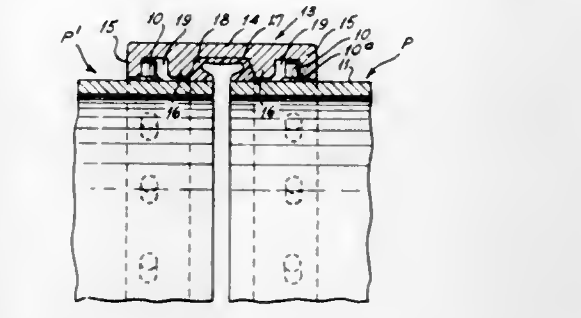
### 3,756,629
### STUD SYSTEM OF JOINING PIPE AND COUPLINGS FOR SAME

**John Gibb, Bolton, Ontario, Canada, assignor to Victaulic Company of America, South Plainfield, N.J.**
**Filed Oct. 1, 1971, Ser. No. 185,505**
**Int. Cl. F16l** *17/00*
**U.S. Cl. 285—112** **19 Claims**



Radially projecting studs are secured around the outer circumference of pipes near the pipe ends by arc stud welding. Mechanical couplings receive the studs of opposed ends of adjacent pipe sections to join the pipe. The couplings may be formed in two or more arcuate parts which mate to form a complete ring, or stab-type couplings may be used, and suitable gaskets cooperate with the couplings to form pressure sealed joints.

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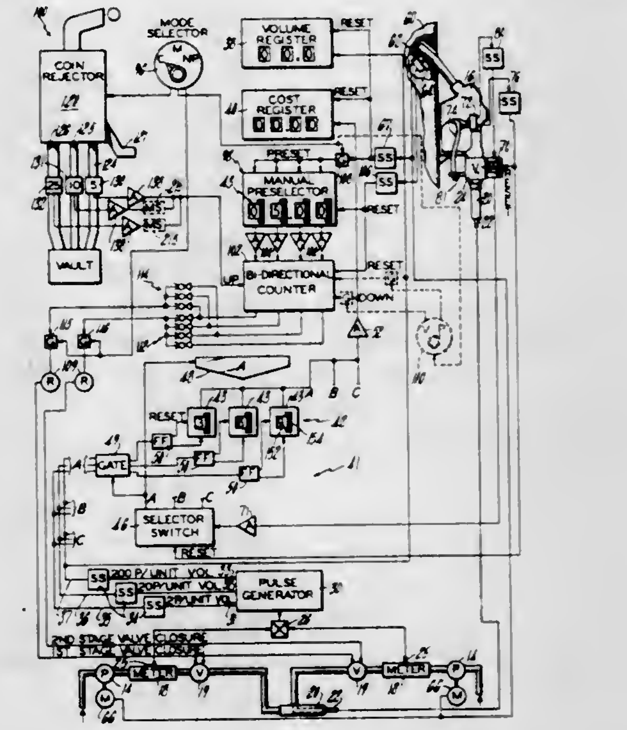
### 3,756,630
### FLUID DISPENSING APPARATUS COMPUTING AND/OR PRESELECTING SYSTEM

**John H. Bickford, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.**
**Filed Jan. 20, 1972, Ser. No. 219,340**
**Int. Cl. G06f** *15/56, 7/39*
**U.S. Cl. 235—151.34** **3 Claims**



A multiple product gasoline dispensing system having a cost counter for accumulating the cost of gasoline dispensed; a bank of three magnetic domain wire pulse multiplier switches for each product angularly settable for generating from 0 to 9 output pulses for each input pulse for establishing the amounts of the three places respectively of a three-plate unit volume price; a pulse generator for generating three pulse trains for operating the three multiplier switches of a selected switch bank having members of pulses in accordance with a geometric progression having a common ratio of 10; and a product selector at a fuel dispensing nozzle comprising a valve for establishing the product and a magnetic domain wire pulse multiplier switch for generating a pulse train having a number of pulses in accordance with the selected product for selectively activating the multiplier switch banks. Each pulse multiplier switch comprises a generally circular magnetic domain wire with a nucleation coil at one end, a pickup coil with separate angularly spaced coils and a settable rotor with a permanent magnet establishing the number of pulses generated by the pickup coil upon each operation of the nucleation coil.

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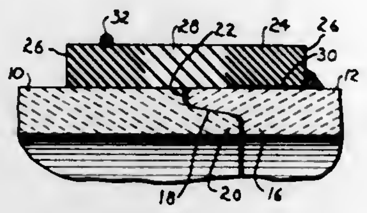
### 3,756,631
### PIPE GASKET COLLAR

**Ellis H. Ross, and John F. Cairl, both of Topeka, Kans., assignors to Ross Sand Company, Inc., Topeka, Kans.**
**Filed May 8, 1972, Ser. No. 251,193**
**Int. Cl. F16l** *49/00*
**U.S. Cl. 285—230** **10 Claims**



A collar especially adapted to join a pair of end-to-end sections of concrete sewer or culvert pipe and to maintain a fluid seal under conditions of misalignment of the sections that may occur due to earth movement. The collar is composed of an elastomeric material and has a pair of outer bands presenting the end portions of the collar that receive the respective pipe sections. An intermediate band spans the distance between the outer bands and is integrally formed therewith to provide a one-piece, monolithic collar construction. Polyurethane rubber, for example, may be employed as the collar material. The durometer hardness value of the intermediate band is significantly less than the outer bands in order to permit the collar to flex in response to relative movement of the pipe sections to a misaligned condition. The less flexible, outer bands are secured directly to the outside surfaces of the pipe sections received therewithin, preferably by a suitable adhesive coating. A positive fluid seal is formed on the relatively rough and irregular surfaces presented by concrete pipe.

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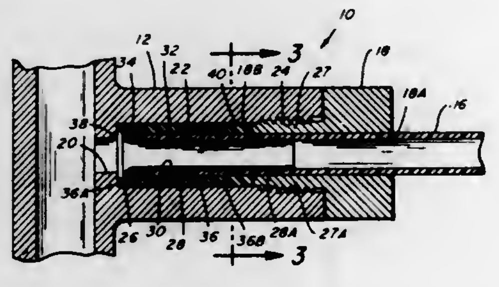
### 3,756,632
### COUPLING APPARATUS FOR PIPE

**Jerry W. Riggs, and Roy E. Stiner, both of Tulsa, Okla., assignors to Continental Industries, Tulsa, Okla.**
**Filed Nov. 10, 1971, Ser. No. 197,309**
**Int. Cl. F16l** *33/00*
**U.S. Cl. 285—250** **1 Claim**



This invention relates to a coupling apparatus for pipe, such as a valve, meter riser, tee fitting, or the like. The apparatus is characterized by a body portion having provision therein for the insertion of a length of pipe having a rigid insert positioned therein with an exposed flange extending therefrom, in conjunction with a rigid tubular collar, a compression ring and a tightening nut which is threadably connected to the body portion for the compression of the compression ring against the collar to apply compressive pressure on the pipe in an arrangement such that pull on the pipe is applied to the collar and thence to the compression ring applying increased compression on the ring.

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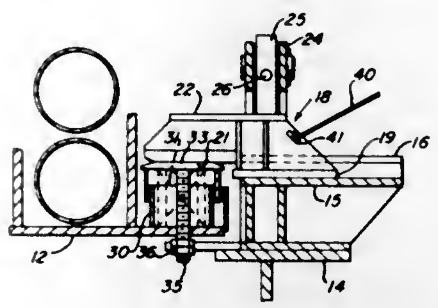
### 3,756,633
### QUICK DISCONNECT SIDE SLIDE COUPLING

**Charles H. Bode, Jr., Upper St. Clair Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Jan. 19, 1972, Ser. No. 219,075**
**Int. Cl. F16b** *7/04*
**U.S. Cl. 287—103 R** **8 Claims**



A quick disconnect side slide coupling for releasably attaching an oscillating continuous casting mold frame to a stationary oscillator support frame. A keeper block is slidably mounted on the support frame for engagement with a spring retainer which is mounted on the oscillating frame. A manually operated cam locks the keeper block in the engaged position.

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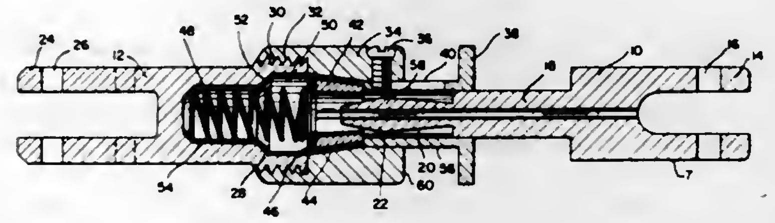
### 3,756,634
### FERRULE LOCK

**Charles J. McGlothlin, Rt. 1, Box 198, Madison Heights, Va.**
**Filed Dec. 2, 1971, Ser. No. 204,251**
**Int. Cl. F16b** *7/00*
**U.S. Cl. 287—119 R** **9 Claims**



A ferrule lock or coupling device embodying a coupling housing enclosing an expansible ferrule and an axial independent locking pin having an enlarge taper axially engageable within said ferrule. The ferrule is longitudinally reciprocable within said coupling housing so as to be enlarged and thereby release said locking pin. The device has particular use in coupling of electric cables, air hoses, tire chains, and the like, providing a strong yet quick disconnect.

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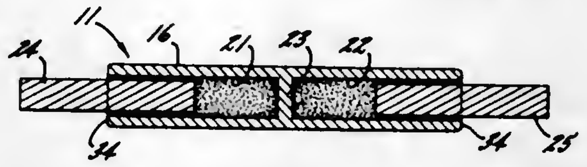
### 3,756,635
### IMPROVED APPARATUS FOR FORMING DOWEL-TYPE JOINTS

**Howard L. Beers, 1 North 403 Gray Ave., P.O. Box 684, Wheaton, Ill.**
**Filed Feb. 17, 1971, Ser. No. 116,138**
**Int. Cl. F16b** *13/00*
**U.S. Cl. 287—127 R** **10 Claims**

Improved apparatus for forming dowel-type joints characterized by a tight frictional contact and a generally evenly distributed adhesive layer between the male-female interface wherein a predetermined amount of adhesive is discharged near the bottom or inner end of the female member from a containing medium as the male member is seated therein to be forced by the increased hydrostatic pressure existing at that time over the interface area. The containing medium may be an encapsulating shell which ruptures under the pressure applied thereto as the male member is seated, or the male member may itself contain the adhesive and act as a positive displacement pump as it is seated.



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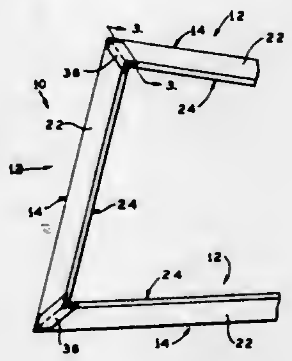
### 3,756,636
### JOINT CONSTRUCTION FOR STRIP STRUCTURES

**Norman C. Jackson, Lorain, Ohio, assignor to The Standard Products Company, Cleveland, Ohio**
**Continuation-in-part of Ser. No. 787,043, Dec. 26, 1968. This application Apr. 14, 1971, Ser. No. 134,017**
**Int. Cl. F16b** *7/00*
**U.S. Cl. 285—189.36 H** **6 Claims**



A joint construction for plastic trim strip structures is disclosed in which a metal plate is positioned over and in engagement with the surfaces of abutting strip sections to be joined together. The plate is shaped to the general configuration of the joint to be formed and is bonded to the strip sections to form a firm interconnection with the strips. Securement of the metal plate is accomplished by coating the plate with a plastisol primer and heating the coated plate with a heating iron to bond the plate to the strip.

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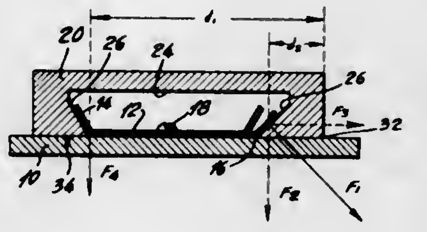
### 3,756,637
### SNAP TRACK

**Theodore Wildi, Quebec City, Quebec, Canada, assignor to Lab-Volt (Quebec) Limited, Quebec, Canada**
**Filed Dec. 3, 1971, Ser. No. 204,620**
**Int. Cl. F16m** *13/00*
**U.S. Cl. 287—189.36 M** **7 Claims**



A snap trac comprising a track adapted to be secured to a supporting surface and having at least one side flange bent upwardly at a predetermined acute angle from the plane of the supporting surface, and a leaf spring also secured to the supporting surface and projecting upwardly from the plane of the supporting surface at an angle slightly less than the angle of the flange of the track. A base adapted to support an object is provided with a dovetail slot and has one wall of such slot arranged to engage the flange of the track and the other wall thereof arranged to engage the leaf spring so as to be firmly snapped on the track and against the supporting surface by the force of the leaf spring acting on such other wall of the dovetail slot in the base.

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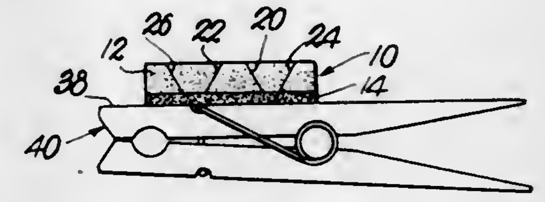
### 3,756,638
### KNOT TYER

**Lamar A. Stockberger, 3505 Drumm, Independence, Mo.**
**Filed Feb. 22, 1972, Ser. No. 227,876**
**Int. Cl. D03j** *3/00*
**U.S. Cl. 289—17** **6 Claims**



A knot tying tool having an elongated, resilient body provided with a pair of transverse inner slits and a pair of transverse outer slits is especially adapted for use in typing a blood or barrel knot for joining a plurality of fishing line leaders. The two inner slits which are disposed in a converging relationship each receive and retain a stretch of their respective leader such that during the process of tying the knot the leaders are withdrawn from the slits and come together as the knot is pulled tight. The free ends of the stretches have in the meantime, been retained in the two outer slits while the knot is being formed and are subsequently removed therefrom after the knot has been completed.

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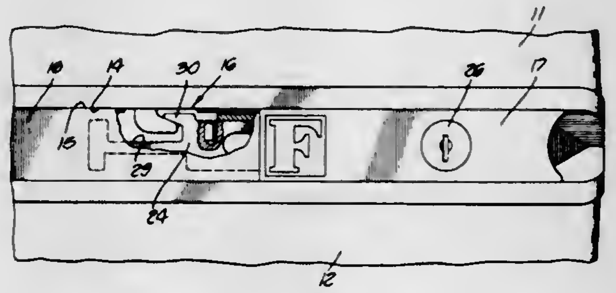
### 3,756,639
### ORIENTATION SENSITIVE LUGGAGE LATCH

**John R. Wilkinson, Aurora, Colo., assignor to Samsonite Corporation, Denver, Colo.**
**Filed Oct. 27, 1971, Ser. No. 193,110**
**Int. Cl. E05b** *65/52*
**U.S. Cl. 292—179** **5 Claims**



A luggage case latch mechanism has a gravity operated detent mechanism which operates when the case is wrongside-up to prevent unlatching.

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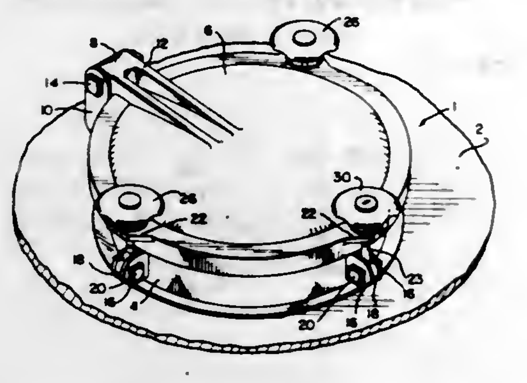
### 3,756,640
### HANDWHEEL SECURITY LOCK

**Edwin W. Johnson, Suisun, Calif., assignor to General American Transportation Corporation, Chicago, Ill.**
**Filed Apr. 28, 1972, Ser. No. 248,362**
**Int. Cl. A47j** *36/10;* **B65d** *45/16*
**U.S. Cl. 292—256.75** **14 Claims**

A handwheel lock particularly designed for use with a hatch cover on a vessel such as a railroad tank car. The apparatus is used with a threaded bolt such as an eye-bolt and includes a handwheel assembly which surrounds a nut which is threadedly connected to the bolt. The handwheel includes a pair of spaced apart sets of ratchet teeth and the nut includes a detent arrangement. In one embodiment, a spring is used to bias the handwheel to a position in which the detent on the nut is in engagement with one set of ratchet teeth so that the handwheel can be turned to tighten the nut on the bolt. If the handwheel is turned in the other direction, it will merely ratchet on the nut and torque will not be transmitted to the nut. To loosen the nut, the handwheel must be lifted against the force of the spring so that the detent engages the other set of ratchet teeth to thereby permit the transfer of torque from the handwheel to the nut. In a modified form, springs are used to center a handwheel so that the detent is between a first and second set of ratchet teeth. In order to tighten the nut on the bolt, the handwheel must be pushed down and then rotated. In order to loosen the nut, the handwheel must be lifted and then turned. A simulated lock is positioned in the handwheel to give a visual impression that a key is required to loosen the handwheel.



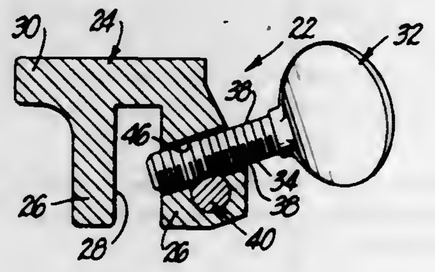
### 3,756,641
### LOCK FOR A SLIDING CLOSURE

**Thomas J. Dugan, 99 Avenida Serra, San Clemente, Calif.**

**Filed Aug. 9, 1971, Ser. No. 170,231**

**Int. Cl. E05c** *19/18*

**U.S. Cl. 292—258** **1 Claim**



A lock for a sliding closure supported along opposite edges in a frame having a flange along one of the edges. The lock has a body with a slot for receiving the frame flange, a lock screw for clamping the body to the flange to lock the closure against opening movement past the position of the lock, and means for locking the screw against turning to prevent rotation of the screw to release the lock by an intruder who may reach the screw from the outside when the closure is locked in partially open position.

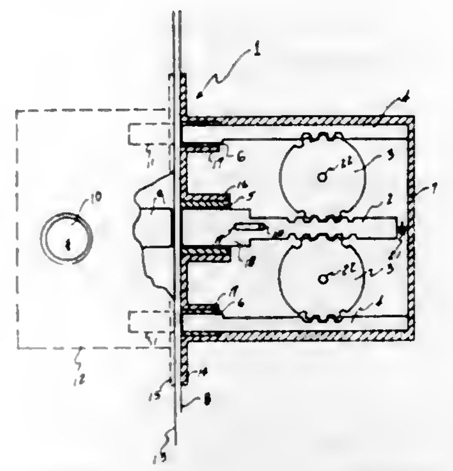
### 3,756,642
### SECURING DEVICE

**Robert L. Fulton, 10063 Jefferey Drive, St. Louis County, Mo.**

**Filed May 14, 1971, Ser. No. 143,435**

**Int. Cl. E05c** *11/00*

**U.S. Cl. 292—341.15** **2 Claims**



The present invention relates to a securing device wherein a conventional lock bolt actuates a linkage which causes securing bolts to extend from the door frame and engage the door.

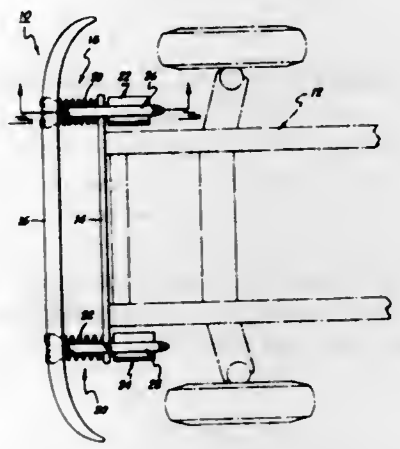
### 3,756,643
### ENERGY-ABSORBING SAFETY APPARATUS

**Oscar D. Weed, 355 Serrano Dr., Apt. 9-H, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 108,344, Jan. 21, 1970, abandoned. This application Dec. 30, 1971, Ser. No. 214,113**

**Int. Cl. B60r** *19/08*

**U.S. Cl. 293—86** **5 Claims**



Safety apparatus for absorbing the impact of shock forces upon a body structure, e.g. an automobile. A bumper is mounted at either end of the automobile. Hydraulic fluid shock absorbing means is interposed between the bumper and automobile. The shock absorbing means include at least one dashpot cylinder carrying a piston which is restricted in its movement by the action of hydraulic fluid being forced through throttling grooves formed in the cylinder. A piston rod carried on the piston extends from the cylinder in a direction remote from the bumper and is mounted to bracket arms for movement therewith. The piston rod is substantially enclosed by the cylinder in the ready position with the piston adjacent the head end of the cylinder. Shock forces acting on the bumper are absorbed as the bracket arms move the piston rod in tension to carry the piston toward the recoil position at the rod end of the cylinder. Resilient means is provided to both absorb a portion of the shock forces and return the elements to the ready position.

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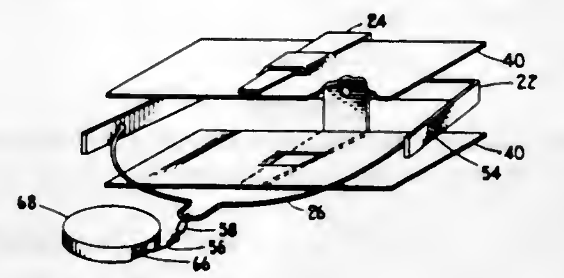
### 3,756,644
### DRAG SCOOP AND LINE FOR RETRIEVAL OF GOLF BALLS FROM WATER HAZARDS

**Rudolph C. Rydberg, 1279 Lewis St., Chehalis, Wash.**

**Filed Aug. 5, 1971, Ser. No. 169,212**

**Int. Cl. B66c** *3/06*

**U.S. Cl. 294—66 R** **3 Claims**



Golf balls, previously considered to be lost, when falling too far from the shore of a golf course water hazard, unless the golfer wades in for it, may now be retrieved by the use of a drag scoop and line.

### 3,756,645
### APPARATUS FOR THE VERTICAL TRANSPORT OF FLAT ITEMS

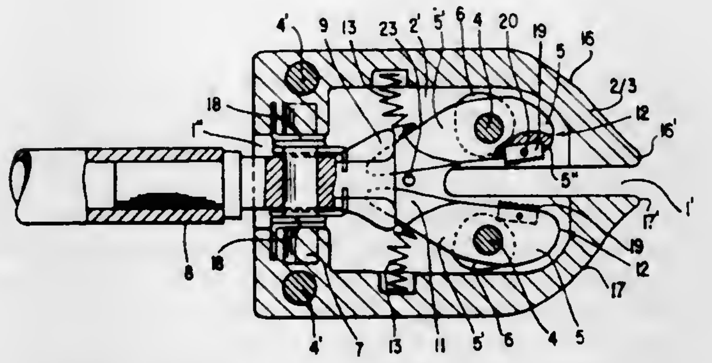
**Helmut Heinemann, Roderberg 14, Hagen-Haspe, Germany**

**Filed June 2, 1972, Ser. No. 259,030**

**Claims priority, application Germany, June 5, 1971, G 71 21 848.9**

**Int. Cl. B25b** *9/00*

**U.S. Cl. 294—116** **6 Claims**



Apparatus for vertically carrying flat items including a housing, a pair of levers mounted within the housing and a handle mounted within the housing so that it engages the levers and displaces them into a closed position. The housing includes two halves which when joined define a recess for the insertion of a sheet of metal or the like. The housing is provided with side walls which have an approximate wedge shape in a direction toward the open end of the recess.

### 3,756,646
### RAILWAY WHEEL AND AXLE ASSEMBLY

**Gilbert Donald Gimlett, and Brian James Hawthorne, both of Derby, England, assignors to British Railways Board, London, England**

**Filed Jan. 19, 1971, Ser. No. 107,747**

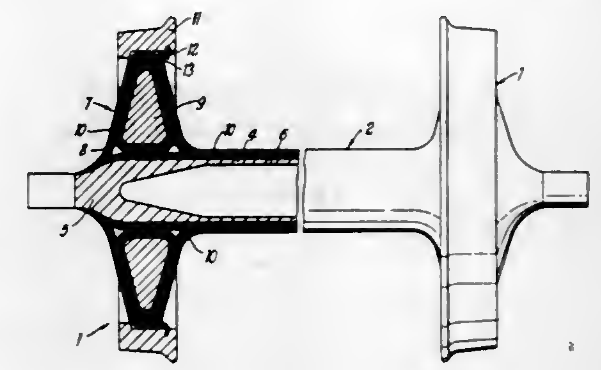
**Claims priority, application Great Britain, Jan. 26, 1970, 3,597/70; Oct. 7, 1970, 47,705/70**

**Int. Cl. B60b** *17/00, 35/12, 37/06*

**U.S. Cl. 295—43** **8 Claims**

This invention relates to a wheelset, that is a pair of railway wheels having tires fixedly connected by fibrous resin bonding materials to an axle so that they rotate with the axle.

According to the invention the axle is formed by applying a resin-bonded fibrous material comprising one of, or any combination of carbon, boron, asbestos and glass fibers to an axle core, the wheels having wheel centers secured to the axle by a continuation of the fibrous material extending from the axle on to each wheel center so that the wheels and axle are an integral assembly.



The wheelset is particularly applicable to railway vehicles.

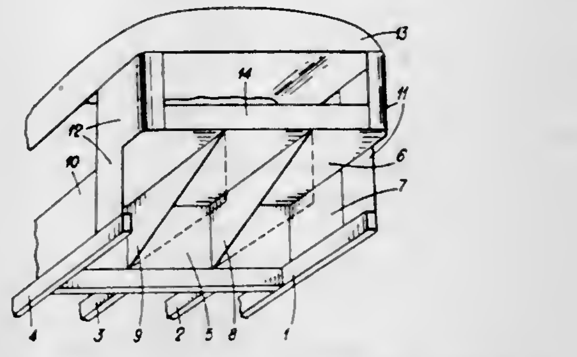
### 3,756,647
### MOTOR VEHICLE BODY STRUCTURE

**Keith Reginald Hemmings, Adlington, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, England**

**Filed July 12, 1971, Ser. No. 161,484**

**Int. Cl. B60k** *5/04*

**U.S. Cl. 296—28 A** **1 Claim**



A motor vehicle body for a passenger vehicle is of monocoque construction and includes a cantilevered section at one end beneath which an engine or its accessories can be mounted.

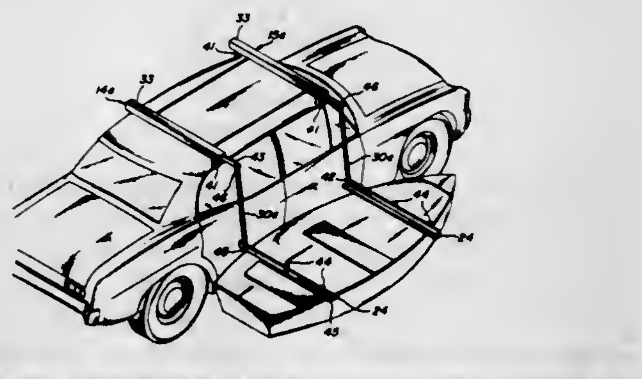
### 3,756,648
### TENT CAMPER

**Herbert C. Greif, 1833 N. Sidney Pl., Tucson, Ark.**

**Division of Ser. No. 888,410, Dec. 29, 1969, Pat. No. 3,680,909, which is a continuation-in-part of Ser. No. 689,416, Dec. 11, 1967, abandoned. This application May 1, 1972, Ser. No. 249,378**

**Int. Cl. B60p** *3/10*

**U.S. Cl. 296—23 B** **1 Claim**



A tent camper foldably stored in a storage unit mounted on the top of a vehicle; the storage unit includes a storage box and a closure member which are slidably and pivotally secured to each other to permit the closure member to pivot and slide relative to the storage box and assume a position horizontal to the ground and close to the ground to expand a tent secured to both the closure member and the storage box. Also disclosed are alternative embodiments of the invention suitable for carrying articles other than tents.

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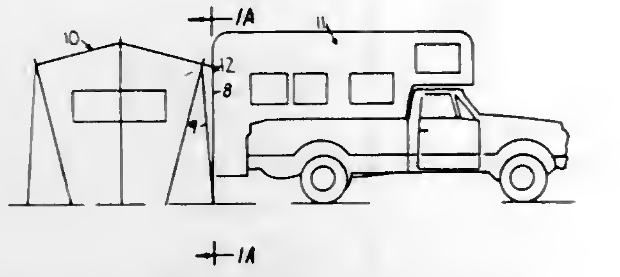
**3,756,649**

### MOTOR VEHICLE CAMPER UNIT

**David D. Wines, 25545 Tweed Dr., Franklin, Mich.**
**Filed Nov. 1, 1971, Ser. No. 194,293**
**Int. Cl. B60p** *3/34*
**U.S. Cl. 296—23 R** **6 Claims**



A motor vehicle camper unit which includes a vehicle having a dwelling unit which is provided with an access opening in a wall thereof for entry into said dwelling unit, a self-supporting living enclosure such as a tent provided with an access opening in a wall thereof for entry into said living enclosure, a fabric collar having an inner end attached to said living enclosure around said access opening therein and having an outer end extended outwardly therefrom and into the access opening in the vehicle dwelling unit, and, a releasable retainer means mounted around the inner periphery of the outer end of the collar for holding the collar against the boundary of the access opening in the vehicle dwelling unit so as to form a weather-tight seal with the dwelling unit to provide a combination vehicle and living enclosure structure that forms a single dwelling structure.

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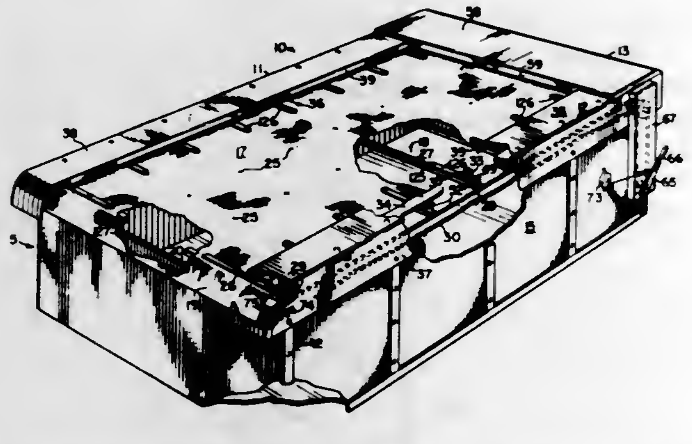
**3,756,650**

### TARPAULIN COVER AND MOUNTING FRAME FOR OPEN TRUCK BODIES

**Walter Michel, Gregor View Farm St., St. Gregor, Saskatchewan, Canada**
**Filed Apr. 9, 1971, Ser. No. 132,763**
**Int. Cl. P60j** *7/10*
**U.S. Cl. 296—137 C** **20 Claims**



A tarpaulin support framework comprising longitudinal side members mountable on the long side walls of an open-topped truck box and a transverse member overlying the front wall of the box, comprises vertical flanges which extend partly down the exterior surfaces of the box walls, and integral horizontal flanges extending partly over the opening. The longer horizontal flanges carry along their undersurfaces parallel hollow trackways formed with continuous slots opening downwardly. A plurality of sliding elements are captively guided in the trackways, preferably being short cylindric rods having depending hangers, and carry transverse cover-reinforcing beam elements by their ends. The tarpaulin is affixed to the beam elements which are spaced at uniform distances along the box length. To avoid binding due to box deformation under load, the suspension links between each beam end and the sliding element are pivotable. Control of rainwater is provided by inwardly upturned brackets fixed on the beam ends, shaping the tarpaulin margins when taut to form lateral spill-guiding walls, so that water or snow is discharged over the front and rear end walls of the box. The tarpaulin is retracted by sliding the rearmost beam element toward the front end wall.

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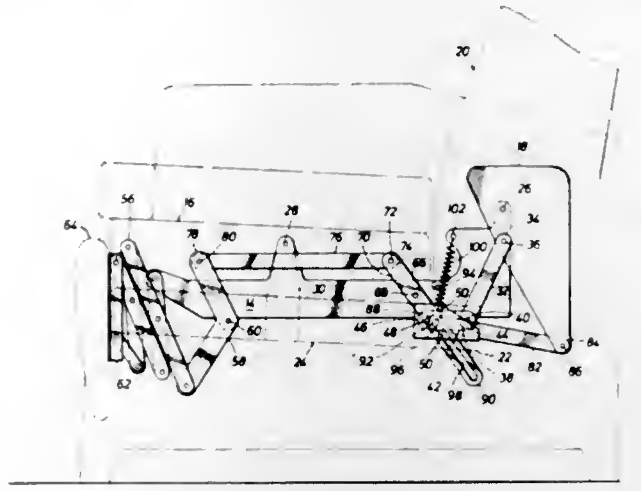
**3,756,651**

### RECLINING CHAIR AND MECHANISM THEREFOR

**Crawford J. Sloan, Denton, Tex., assignor to Forrest Dunlap, Jr., Dallas, Tex.**
**Division of Ser. No. 107,012, Jan. 18, 1971. This application Sept. 28, 1972, Ser. No. 293,087**
**Int. Cl. A47c** *1/02;* **A61g** *15/00*
**U.S. Cl. 297—85** **12 Claims**



A traditional style reclining chair with a T-cushion adapted to accommodate a sitter in upright and reclined positions and a mechanism therefor in which the rear end of a seat frame drops as a back frame reclines from the upright to a semi-reclined position with minimal rearward movement of the front end of the seat frame. As the back frame reclines further to the reclined position, the rear end of the seat frame moves upwardly, although at all positions a slight floating action of the rear end of the seat frame is provided to enable the particular sitter to seek his own most comfortable position. The back frame is resiliently biased toward the semi-reclined position at the reclined position or any position therebetween. A leg support frame is upwardly extensible via a scissors mechanism upon movement of the back frame from the upright to the semi-reclined position and, according to one embodiment, extends further outwardly upon further movement of the back frame toward the reclined position. Reversible electric motors for effecting the foregoing are attached to the back frame and the scissors mechanism.

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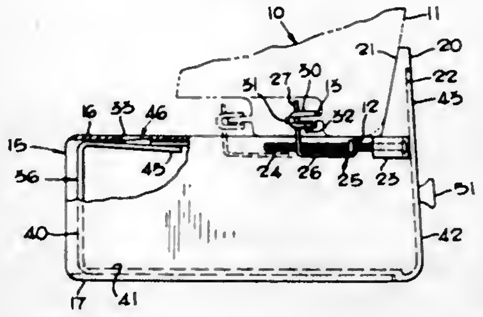
**3,756,652**

### TISSUE DISPENSER FOR AN AUTOMOBILE SEAT ASSEMBLY

**Earl M. Trammell, Jr., c/o E.M.T. Enterprises, Box 435, St. Louis, Mo.**
**Filed Nov. 8, 1971, Ser. No. 196,638**
**Int. Cl. A47c** *7/62*
**U.S. Cl. 297—192** **7 Claims**

A container such as a tissue dispenser in an automobile seat assembly having a case provided with a front opening and with a flange extending upwardly from its top wall, and a drawer slidably received in the case, the drawer being adapted to hold a supply of tissues. A connector arm is adjustably mounted on an elongate member carried by the case and extending under the bottom seat side and rearwardly from the front seat side of an automobile seat. A C-shaped clamp on the connector arm

selectively receives a reardarly facing seat shoulder on the bottom seat side. Selective positioning of the connector arm on the elongate member fixes the case to the seat and clamps the case flange against the front seat side. The connector arm is resiliently flexible to force the top wall of the case against the bottom seat side. The C-shaped clamp is adjustably mounted on a first arm portion of the connector arm extending upwardly from the elongate member to accommodate the height of the seat shoulder so that the seat shoulder is received



in the clamp while the top wall of the case is urged against the bottom seat side. A lock means carried by the clamp fixes the clamp in the adjusted height position both to the first arm portion of the connector arm and to the seat shoulder. The drawer includes a flange extending upwardly from the drawer top wall which is movable against the case flange when the drawer is in its closed position. A tissue partially pulled through the drawer top wall opening is sandwiched between the case flange and drawer flange to preclude exposure.

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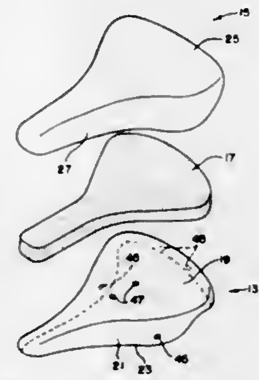
**3,756,653**

### CYCLE SADDLE AND METHOD OF FORMING SAME

**George W. Worley, Bolivar, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.**
**Filed Jan. 19, 1972, Ser. No. 219,077**
**Int. Cl. B62j** *1/08*
**U.S. Cl. 297—195** **3 Claims**



A cycle saddle is disclosed which includes a frame and a plastic cover mounted on top of the frame, with a foam cushion being provided between the cover and the frame. There is disclosed means for securing the cover which includes integrally fused portions of the cover extending through the apertures in the frame to anchor the cover onto the frame. A method is disclosed for producing the cycle saddle which includes the steps of providing a cover provided with a depending skirt having a substantially smooth inner surface portion and provided with a flange integrally attached to said depending skirt at the lower edge thereof having a substantially smooth surface opposing the inner surface portion of the skirt and defining with the inner surface portion an upwardly extending groove, placing the cover on the frame with the depending skirt portions of the frame extending into the groove and with the apertures being disposed in the groove between the inner surface of the flange and the inner surface portion of the skirt, relatively moving the inner surface of the flange and the inner surface portion of the skirt into adjacency through the apertures, and applying ultrasonic means to the skirt and the flange adjacent the apertures for causing portions of the skirt portions and the flange to fuse into integrally fused portions extending through the apertures to anchor the cover onto the frame.

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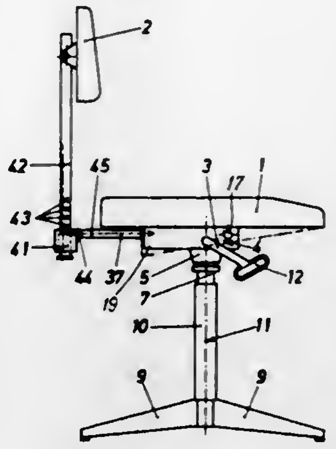
**3,756,654**

### ARTICLE OF SEATING FURNITURE

**Fritz Bauer, Altodorf near Nuremberg, Germany, assignor to Suspa Federungstechnik G.m.b.H., Nuremberg, Germany**
**Filed Jan. 18, 1971, Ser. No. 107,021**
**Claims priority, application Germany, Jan. 31, 1970, P 20 04 372.5**
**Int. Cl. A47c** *1/02, 1/06, 1/12*
**U.S. Cl. 297—345** **6 Claims**



A seat having a seat member and a back rest both adjustable to suit the dimensions of the user, latching devices being provided for latching adjustable members in adjusted positions, the latching devices being actuated by a single operating lever positioned for convenient use from a seated position.

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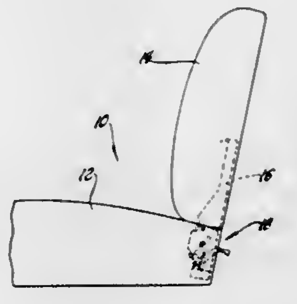
**3,756,655**

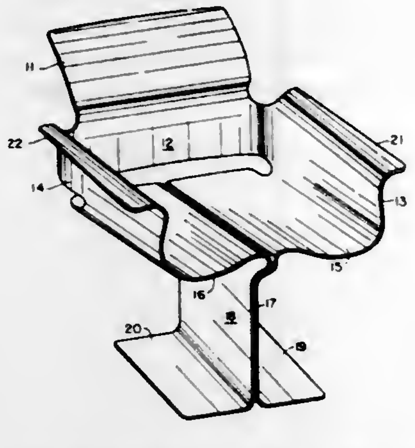
### SEAT ASSEMBLY

**Jimmie G. Perkins, Allentown, Pa., assignor to McCord Corporation, Detroit, Mich.**
**Filed Mar. 20, 1972, Ser. No. 236,291**
**Int. Cl. B60r** *21/06;* **B60n** *1/04*
**U.S. Cl. 297—379** **9 Claims**



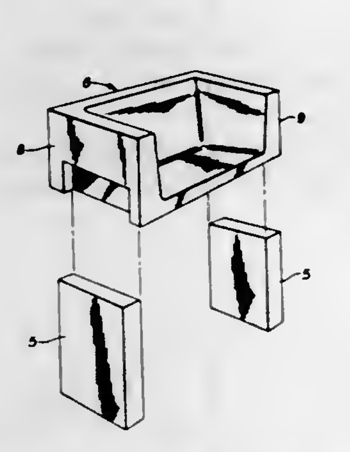
An automobile seat assembly is provided with a latch mechanism to lock the seat back in the uprignt, seat forming position. The seat back includes a latching arm engaging a pin carried by a mounting bracket in a slot having an elongated portion and an end portion generally transverse to the elongated portion. The seat back is locked in the upright, seat forming position when the pin is in the end portion of the slot and misaligned with the elongated portion. When a vehicle door is opened, a solenoid connected to the pin is energized and the pin is aligned with the elongated portion of the slot to unlock the seat back. As an alternative, a manually operated release lever can be actuated to align the pin with the elongated portion of the slot to unlock the seat back.

**3,756,656**
### CHAIR
**John A. Weick, 329 E. 17th St., New York, N.Y.**
**Filed Feb. 4, 1972, Ser. No. 223,486**
**Int. Cl. A47c** *1/12, 5/00*
U.S. Cl. 297—446 **3 Claims**



A chair having the appearance of being bent from a blank cut from a single sheet of material has a back, arms extending forward from the sides of the back, and seat halves extending inward from lower edges of the arms. In addition, two pedestal portions may extend downward from the inner adjacent edges of the seat halves and base portions may extend outward from the bottoms of the pedestal portions.

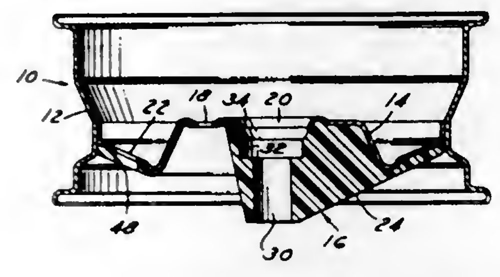
**3,756,657**
### CONCRETE FURNITURE
**Henry Douglas Johnson, New Brittain, Conn., assignor to Random Industries, Inc, Farmington, Conn.**
**Continuation of Ser. No. 58,979, July 28, 1970, abandoned. This application Dec. 29, 1971, Ser. No. 213,846**
**Int. Cl. A47c** *4/02, 7/00, 7/14*
U.S. Cl. 297—440 **7 Claims**



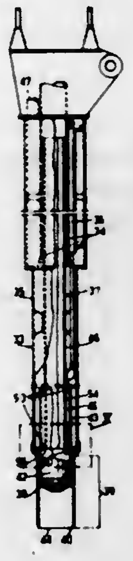
Concrete benches and the like are made by assembling legs and a seat portion. The legs are hexagonal in structure and the outside surfaces of the seats are indented so that each fits over and against one of the legs.

**3,756,658**
### COMPOSITE STYLED WHEEL CONSTRUCTION
**Leslie R. Adams, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.**
**Division of Ser. No. 857,960, Sept. 15, 1969, Pat. No. 3,655,348. This application Oct. 14, 1971, Ser. No. 189,395**
**Int. Cl. B60b** *7/00*
**U.S. Cl. 301—37 R** **22 Claims**

An ornamental composite wheel for use on automotive passenger vehicles and the like including a conventional steel vehicle wheel having a drop center steel rim secured to a central steel disc provided with the usual bolt circle holes and a central aperture so that the disc can be mounted on an axle and drum or disc brake assembly. A high density urethane elastomer in the form of a three-dimensional contoured overlay is permanently attached to the outboard side of the wheel and has a decorative surface so that the elastomer overlay appears to be an integral metallic portion of the steel wheel.



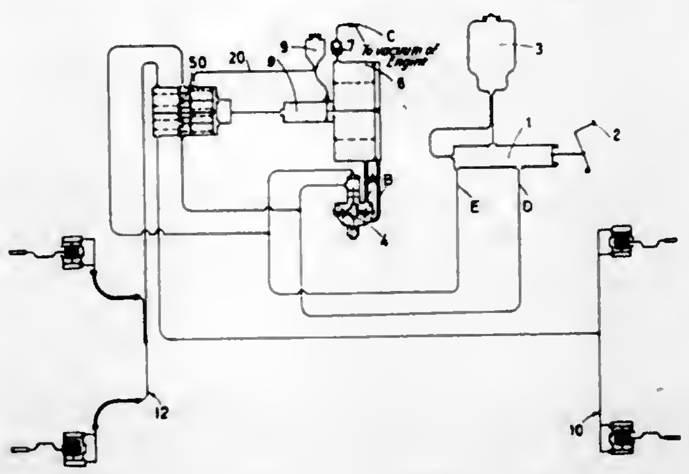
**3,756,659**
### SUCTION DREDGING INSTALLATION
**Jan de Koning, Amsterdam, Netherlands, assignor to N. V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands**
**Filed Oct. 7, 1968, Ser. No. 765,421**
**Claims priority, application Netherlands, Oct. 16, 1967, 6714009**
**Int. Cl. B65g** *53/30*
U.S. Cl. 302—15 **9 Claims**



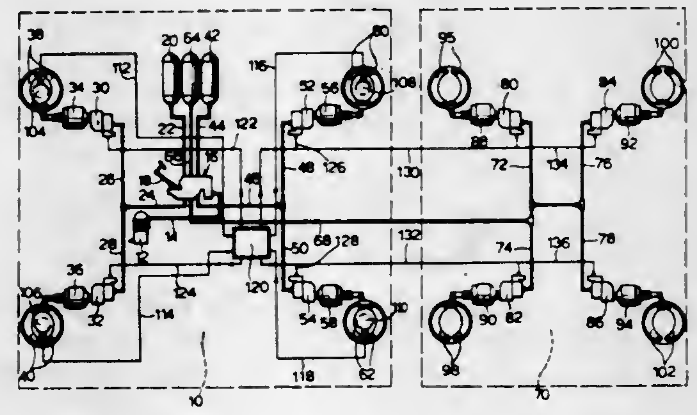
In a suction dredging installation comprising a suction pipe which is connected to a pump and which has a suction mouth at its end and a throat between the pump and the suction mouth, in which the nominal flow section of the suction pipe has substantially a same value from the throat to the pump, whereas the flow section of the suction mouth is larger than said nominal flow section, the part of the suction pipe with the nominal flow section at the location of the throat is provided with a collar extending radially outwards, while the part of the suction pipe extending from the suction mouth to the throat has substantially the large flow section of the suction mouth. This shape of the suction pipe results in a toroidal supporting vortex arising before the throat which considerably reducces flow resistance.

**3,756,660**
### MULTI-CIRCUIT BRAKE SYSTEM
**Jochen Burgdorf, Odenwaldring, Germany, assignor to ITT Industries, Inc., New York, N.Y.**
**Filed Aug. 12, 1971, Ser. No. 171,579**
**Int. Cl. B60t** *13/12*
**U.S. Cl. 303—6 R** **10 Claims**

A two brake circuit pedal master cylinder provides brake fluid pressure for the control valve of a vacuum brake booster and two intermediate master cylinders each coupled to the wheel cylinders of a different brake circuit. A single booster cylinder operated by the brake booster also provides brake fluid pressure for the two intermediate master cylinders. The two intermediate master cylinders are integral in construction. A pair of blind bores are formed in a housing parallel to each other and the longitudinal axis of the housing. Each bore is part of a different intermediate master cylinder, divided longitudinally into two chambers and filled with brake fluid. The first chamber of each bore includes a valve piston operated on hydraulically by the brake fluid pressure from the pedal master cylinder to activate the brake circuit associated with that particular intermediate master cylinder. The second chamber of each bore includes a secondary piston carrying a locking member mechanically operable on the associated valve piston when the booster cylinder applies brake fluid pressure to the secondary piston. The cylindrical member forming the second chamber and carrying the secondary piston is threaded into its associated bore.

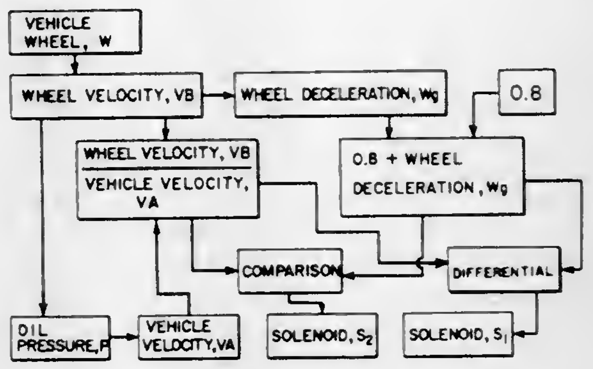


**3,756,661**
### ANTI-SKID BRAKING SYSTEM FOR TOWED VEHICLES
**Giancarlo Michellone, Cambiano, Italy, assignor to FIAT Societa per Azioni, Turin, Italy**
**Filed July 22, 1971, Ser. No. 165,229**
**Claims priority, application Italy, Mar. 27, 1971, 68040 A/71**
**Int. Cl. B60t** *13/00*
U.S. Cl. 303—7 **1 Claim**



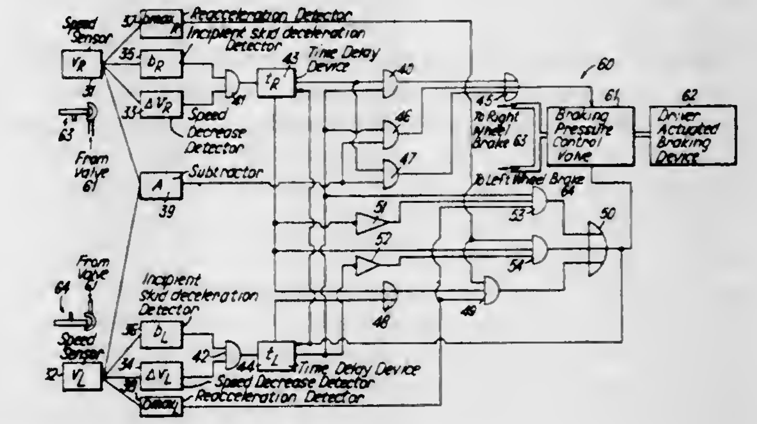
An anti-skid braking system for trailers which are to be towed by tractor vehicles having their own antiskid braking system is disclosed. In this system the extra expense of duplicating much of a tractor vehicle's anti-skid braking system is a trailer is avoided by providing means for connecting the brakes of the trailer into the braking pressure circuit of tractor vehicle, means for modulating the braking pressure applied to the brakes of each wheel, and means for connecting the modulating means of each trailer wheel to the braking pressure control circuit of the vehicle. Preferably the trailer is coupled to receive the same breaking pressure modulating signals which are applied to the brakes of the rear wheels of the tractor vehicle, and preferably the left and right hand side of the trailer receive the signals respectively applied to the left and right hand side near wheels of the tractor vehicle.

**3,756,662**
### PROCESS FOR THE CONTROL OF AN ANTISKID BRAKING SYSTEM, AND APPARATUS ADAPTED FOR PERFORMING THE SAME
**Kazutaka Kuwana, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan**
**Filed Oct. 19, 1970, Ser. No. 82,027**
**Claims priority, application Japan, Oct. 18, 1969, 44/83495**
**Int. Cl. B60t** *8/10*
U.S. Cl. 303—21 P **8 Claims**



This invention presents an improved antiskid brake control method and apparatus for wheeled automotive vehicles which utilizes an electronic circuit into which input signals representing vehicle speed, wheel speed and hydraulic brake apply pressure are fed. The electronic control circuit computes the rate of vehicle deceleration and the ratio of the wheel speed to the vehicle speed and compares this ratio with a constant value. An output signal from the electronic circuit is used to control an electric solenoid valve in the hydraulic brake circuit to modulate the hydraulic pressure and obtain an optimum vehicle braking effort under all conditions and prevent a vehicle skid condition from arising.

**3,756,663**
### ANTI-SKID SYSTEM
**Werner Fink, Frankfurt, and Erwin Schlitz, Heusenstamm, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.**
**Filed Dec. 8, 1971, Ser. No. 206,009**
**Claims priority, application Germany, Jan. 18, 1971, P 21 02 131.8**
**Int. Cl. B60t** *8/08, 8/12*
U.S. Cl. 303—21 BE **13 Claims**



This relates to an electronic control system for an anti-skid system having one braking pressure control valve actuated by the control system to regulate the braking pressure applied to the wheel brakes of both wheels of one axle of a vehicle. The control system includes a speed sensor associated with each wheel. A reacceleration detector, an incipient skid deceleration detector and a speed decrease detector is coupled to each sensor and a subtractor is coupled to both sensors. A first series circuit including a first AND gate and a first time delay device is coupled to one of the incipient skid deceleration detectors and one of the speed decrease detectors. A second series circuit including a second AND gate and a second time delay device is coupled to the other of the incipient skid deceleration detectors and the other of the speed decrease detectors. First logic circuitry is coupled to each of the time delay devices and the subtractor to produce a first actuation signal for the control valve to release the braking pressure in both wheel brakes when both of the incipient skid deceleration detectors and both of the speed decrease detectors having an output signal or when the subtractor has an output signal, one of the incipient skid deceleration detectors has an output signal and one of the speed decrease detectors has an output signal. Second logic circuitry is coupled to each of the time delay devices and each of the reacceleration detectors to produce a second actuation signal for the control valve to reapply braking pressure to both wheel brakes when both of the reacceleration detectors have an output signal and both of the time delay devices have an output signal, or when one of the time delay devices has had no output signal and the other of the time delay devices has had an output signal and the associated one of the reacceleration detectors has an output signal.

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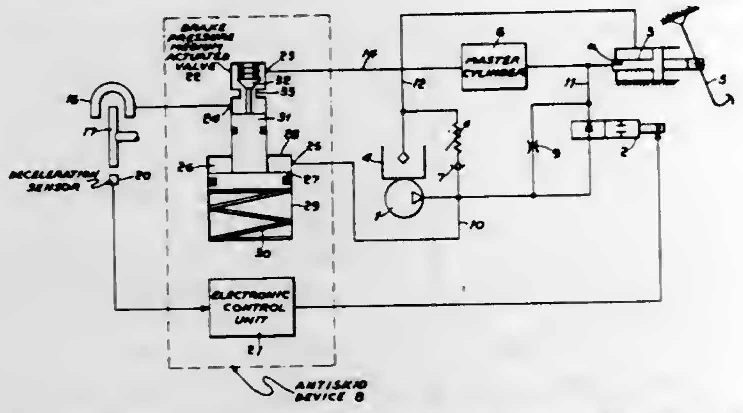
### 3,756,664
### VEHICLE BRAKE SYSTEM

**Erwin Schlitz, Heusenstamm, and Werner Fink, Frankfurt/Main, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 49,644, June 25, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,876**

**Int. Cl. B60t** *8/06, 13/16*

**U.S. Cl. 303—21 F** **4 Claims**



A vehicle brake system including an antiskid device and a pump driven circulation type hydraulic brake booster wherein the booster and the antiskid device are supplied with brake pressure medium from a single pump. The antiskid device includes a deceleration sensor associated with at least one vehicle wheel, an electronic control unit coupled to the sensor to produce an incipient skid signal and a normally open brake pressure medium actuated valve coupled to the single pump and in the brake line coupled between the master cylinder associated with the brake booster and the vehicle wheels for control of the brake pressure applied to these wheels. A normally open solenoid actuated valve is present in the pressure medium line between the single pump and the brake booster. When an incipient skid signal is generated the solenoid actuated valve is closed and the pressure medium from the signal pump closes the brake pressure medium actuated valve to prevent a further increase in braking force on the controlled wheels.

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### 3,756,665
### CONTROL APPARATUS FOR APPLICATION OF AUTOMATIC AIR BRAKE SYSTEMS

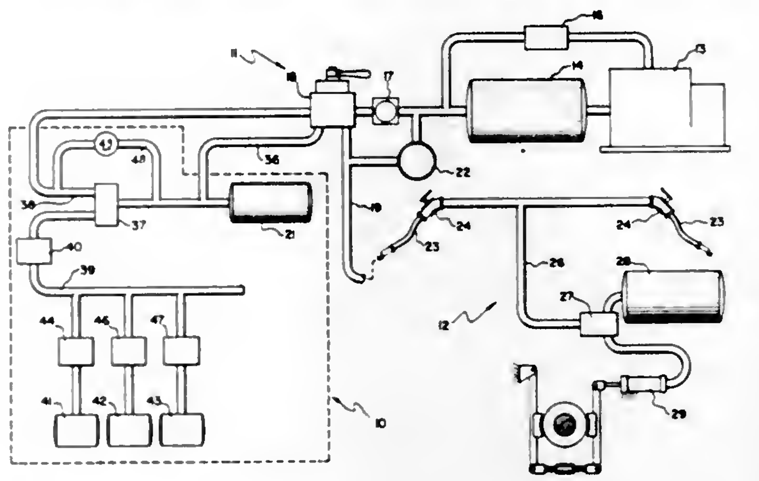
**Paul T. Ryan, Erie, Pa., assignor to General Electric Company, Erie, Pa.**

**Filed July 7, 1972, Ser. No. 269,798**

**Int. Cl. B60t** *15/20*

**U.S. Cl. 303—81** **11 Claims**

A system for remotely controlling in discrete increments the application of pneumatic braking force in an automatic air brake system of a train, to precisely control the amount of braking force applied for a given train length. A plurality of vessels with associated electrically controlled valves is provided to progressively reduce the pressure in a pilot reservoir by expanding the volume of a communicating network, the



degree of expansion in volume being determined by the combination of vessels sequentially added in parallel to the reservoir by control of the associated electrically controlled valves. Brakes are applied by removing electrical energy, whereby loss of power or failure of a circuit will automatically increase braking to an emergency level.

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### 3,756,666
### HYDRAULIC BRAKE SERVO ARRANGEMENT

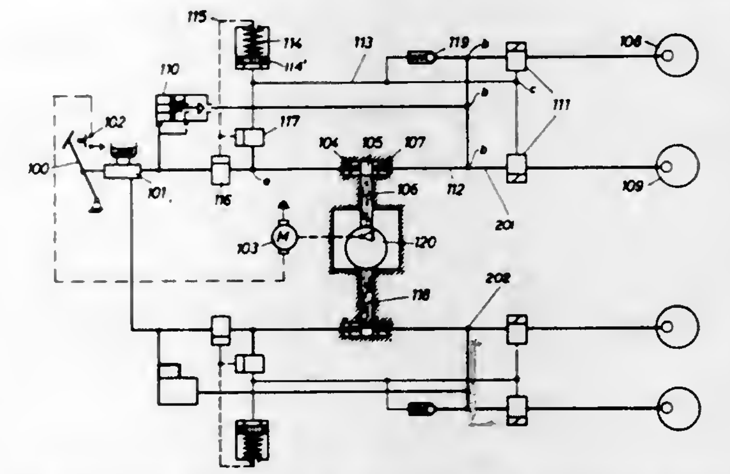
**Heinz Leiber, Leimen, Germany, assignor to Teldix G.m.b.H., Heidelberg, Germany**

**Filed June 2, 1972, Ser. No. 259,031**

**Claims priority, application Germany, June 3, 1971, P 21 27 536.5**

**Int. Cl. B60t** *13/16*

**U.S. Cl. 303—10** **21 Claims**



A hydraulic brake servo arrangement for vehicles including a brake master cylinder, a pump, a secondary circuit and an antiskid system having an accumulator included therein. The pump delivers brake fluid from the master cylinder through the secondary circuit to the vehicle brake or brakes. The servo arrangement is adapted to temporarily disconnect the pump from the master cylinder and connect it to the accumulator so that the pump acts both as a brake servo and a return pump for the anti-skid system.

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### 3,756,667
### SUSPENSION FOR TRACKED VEHICLES

**Jerome Bombardier, and Jules Perreault, both of Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada**

**Filed Nov. 23, 1971, Ser. No. 201,321**

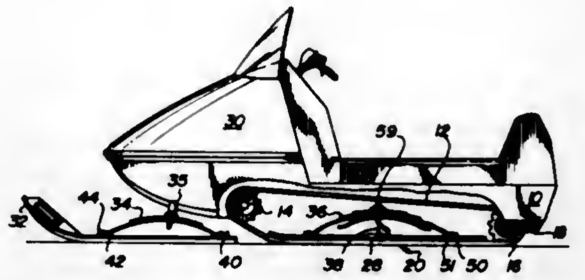
**Claims priority, application Canada, Jan. 21, 1971, 103330**

**Int. Cl. B62d** *55/10;* **B62m** *27/02*

**U.S. Cl. 305—24** **10 Claims**

This invention relates to a suspension system for snowmobiles or like vehicles utilizing a resilient biased support for an

endless track. The suspension system includes at least two laterally spaced longitudinally co-extensive slide units, each said unit having front and rear pivotally interconnected skates.



Superposed each unit is a leaf spring connected at its ends to a front and rear skate. Trasnverse mounting means is provided for attaching the system to the vehicle chassis.

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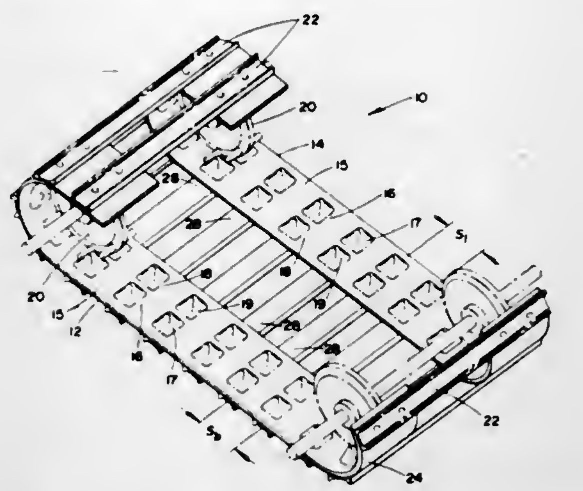
### 3,756,668
### ENDLESS TRACK

**Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.**

**Filed June 16, 1971, Ser. No. 153,544**

**Int. Cl. B62d** *55/24*

**U.S. Cl. 305—35 EB** **7 Claims**



An endless track of the grouser-bar type having at least two flexible bands for mounting the grouser-bars in a spaced-apart relationship, the bands each having at least one row of spaced-apart and longitudinally aligned lugs projecting from the inside surface of each band.

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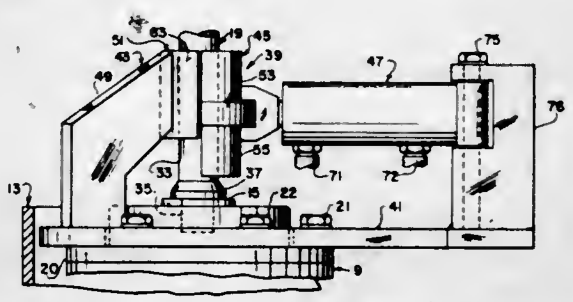
### 3,756,669
### APPARATUS FOR HOLDING A ROTARY TOOL

**Guido Bucelluni, Taylorville, Ill., assignor to Lee-Norse Company, Charleroi, Pa.**

**Filed Jan. 28, 1972, Ser. No. 221,581**

**Int. Cl. F16c** *21/00*

**U.S. Cl. 308—3.9** **12 Claims**



Apparatus for holding a rotary tool, such as a roof drill or a roof bolt wrench, in an upwardly opening drive socket rotatable on a generally vertical axis in a drill box at the end of a pivot boom of a mine roof drill and bolter. The apparatus includes a support adapted to be bolted to the drill box, and at least one retaining member carried by the support for movement between a retracted position permitting insertion of the lower end of the tool in the drive socket and removal of the lower end of the tool therefrom and an operative position in which the retaining member overlies a lower end portion of the tool to restrict upward movement of the tool, with means for effecting movement of the retaining member between its retracted and operative positions.

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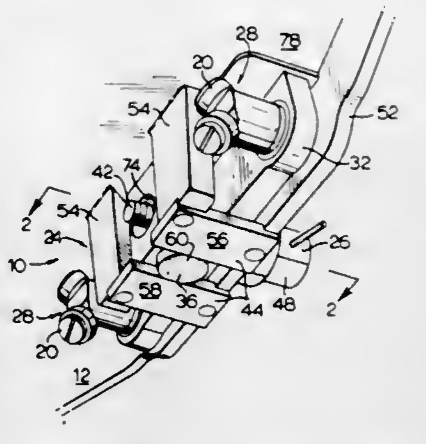
### 3,756,670
### MOTORIZED RACK AND PINION ACTUATED TRACK MOUNTED TOOL CARRIAGE

**Michael Faulkner Harris, Willowdale, Ontario, Canada, assignor to Gulley Company Limited, Scarborough, Ontario, Canada**

**Filed Apr. 28, 1971, Ser. No. 138,184**

**Int. Cl. B23k** *37/02;* **F16c** *21/00, 29/12*

**U.S. Cl. 308—6 R** **14 Claims**



Tool-carrying track-confined and guided vehicles have running gear including roller assemblies of which those on one side may be so moved relative to those on other side as to effect release for removal of the vehicle from the track. The moveable roller assemblies are journalled for swivelling in opposite ends of a horizontal beam connected to the vehicle underside for limited rotation about a central vertical post and for transverse spatial adjustment. Gear transversely shiftable provides optimum loading on all roller assemblies.

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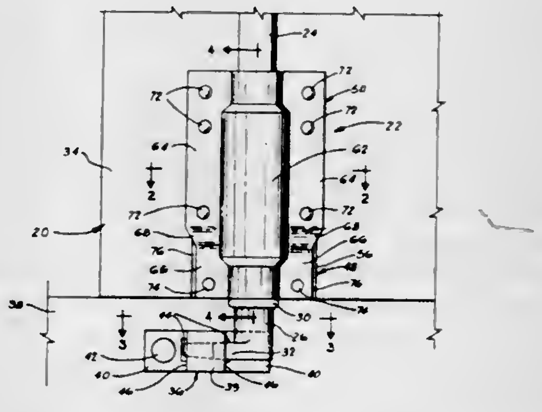
### 3,756,671
### ROTARY BAR GUIDE ASSEMBLY

**Clarence E. White, Kenosha, Wis., assignor to White Welding and Mfg. Inc., Kenosha, Wis.**

**Filed Jan. 27, 1972, Ser. No. 221,158**

**Int. Cl. F16c** *35/02*

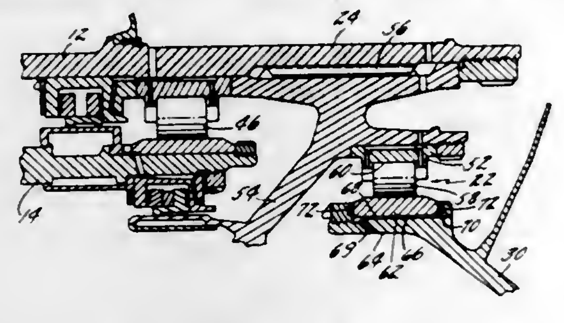
**U.S. Cl. 308—15** **4 Claims**



A rotary bar guide assembly for a door locking mechanism having a front guide plate disposed against a backing plate with both plates being secured together and to a door panel adjacent a horizontal edge of same, the front and backing plates having complementary portions offset forwardly from the plane of the door panel. A rotary locking bar being adapted to extend vertically between the two plates. The backing plate laterally confines the front plate and has a slot engageable by a lip formed on a rotary locking bar.

### 3,756,672
### SHAFT DAMPING ARRANGEMENT

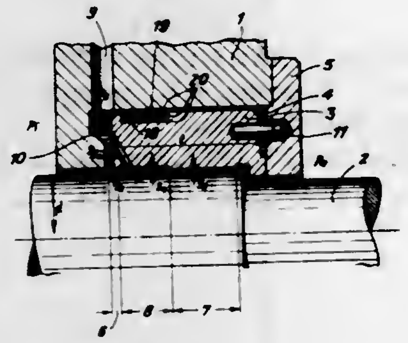
**David H. Hibner, Colchester, Conn., and Roger J. Comeau, Ware, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.**
**Filed May 24, 1972, Ser. No. 256,797**
**Int. Cl. F16c** *27/00*
**U.S. Cl. 308—26** **11 Claims**



Imbalance vibration of each of two concentric rotating shafts is damped simultaneously by a single damped bearing. By supporting one of the shafts on a damped bearing which is fixed to ground, and by transmitting imbalance vibration from the other shaft into the first shaft by means of a nondamped intershaft bearing, the imbalance vibration of both shafts is damped by the single damped bearing.

### 3,756,673
### STUFFING BOX FOR A ROTATING SHAFT

**Rene Strub, Winterthur, Switzerland, assignor to Brown-Boveri Sulzer Turbomachinery, Ltd., Zurich, Switzerland**
**Filed June 30, 1972, Ser. No. 268,162**
**Claims priority, application Switzerland, July 9, 1971, 10098/71**
**Int. Cl. F16j** *15/28, 15/40;* **F16c** *33/72*
**U.S. Cl. 308—36.3** **5 Claims**

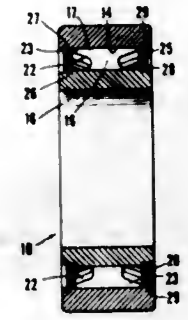


The stuffing box is provided with one or more bush seals in which at least one seal gap is formed about the shaft to provide a sealing means along with a bearing gap of wedge-shape to provide a hydrodynamic bearing. In addition, resilient elements are spaced about the circumferential periphery of the bush containing the bearing gap between the bush and casing to transmit forces from the shaft via the lubricating film to the casing.

### 3,756,674
### BEARINGS

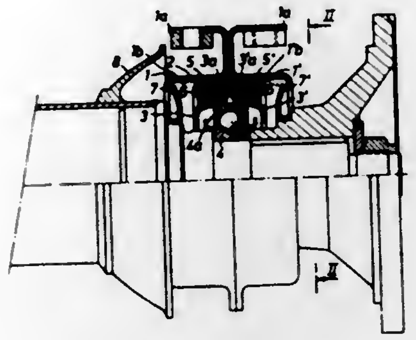
**Wilfrid H. Bendall, 19 N. Broad St., Pawcatuck, Conn.**
**Filed Mar. 29, 1972, Ser. No. 239,210**
**Int. Cl. F16c** *13/02, 33/66*
**U.S. Cl. 308—121** **10 Claims**

Concentric sliding bearing members have axial and annular grooves arranged to provide compliant load-bearing portions and sealed lubricant storage capacity. The construction confines and limits lubricant flow to the amount required to maintain a load-supporting film at the bearing contacts. The disclosure illustrates sealed radial, thrust and self-aligning bearing embodiments of the invention.



### 3,756,675
### BEARING

**Jacques Mangiavacchi, Chatou, France, assignor to Societa Anonyme: Glaenzer Spicer, Poissy, France**
**Filed July 7, 1972, Ser. No. 269,573**
**Claims priority, application France, Feb. 28, 1972, 7206708**
**Int. Cl. F16c** *27/00*
**U.S. Cl. 308—184** **4 Claims**

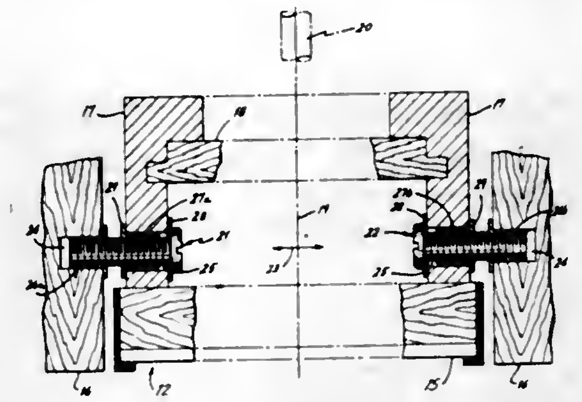


A bearing comprises a ball-race received in a sliding element, the sliding element and an armature being located within a casing. The armature and the sliding element are adapted to allow the ball-race to move axially along a shaft passing through it and angularly about its centre. The casing may comprise two symmetrical portions defining an internal cylindrical guide surface on which the cylindrical armature can slide, the sliding element comprising two cups with part-spherical internal faces on which the external ring of the ball-race can slide, this outer ring having a part-spherical outer surface with the same radius as the internal surface of the cups. Alternatively the casing may include two symmetrical portions defining a part-spherical internal surface, the armature being in two pieces having a peripheral part-spherical surface of the same radius as the part-spherical surface of the casing, the armature enclosing a cylindrical ring in which is located for sliding movement a conventional ball bearing. Elastic means are inserted between the armature and the sliding elements to take up play. Protective elements may be placed inside and outside the casing to protect the bearing against solid or liquid impurities.

### 3,756,676
### PIVOTED CABINET STRUCTURE

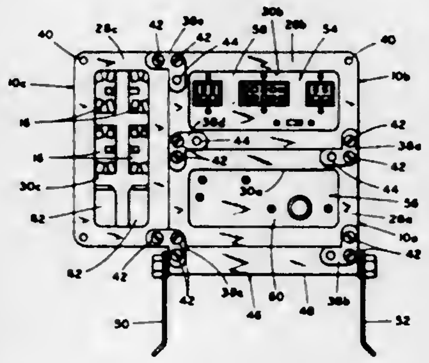
**Joseph S. Catinella, Philadelphia, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.**
**Filed Aug. 22, 1972, Ser. No. 282,849**
**Int. Cl. G11b** *1/00*
**U.S. Cl. 312—8** **2 Claims**

Combined hinging and adjusting means pivotally mounting a shelf-like support member within a cabinet with freedom for swinging movements between a retracted position, generally flush with the cabinet, and an operative position extending at least partially from the cabinet, said combined means affording three-dimensional adjustment of said support member to provide for proper alignment of the cabinet and member. Internally threaded means, specifically T-nuts, are associated with confronting wall portions of the support member and the cabinet, certain of said means being relatively movable with respect to said support member in a plane transverse the axis of pivotation.



### 3,756,677
### MODULAR HOUSING SYSTEM FOR EMERGENCY VEHICLE ACCESSORY CONTROLS

**Earl W. Gosswiller, Chicago, Ill., assignor to Federal Sign and Signal Corporation, Chicago, Ill.**
**Filed Feb. 10, 1971, Ser. No. 114,168**
**Int. Cl. A47b** *87/00;* **F16b** *12/00*
**U.S. Cl. 312—108** **7 Claims**

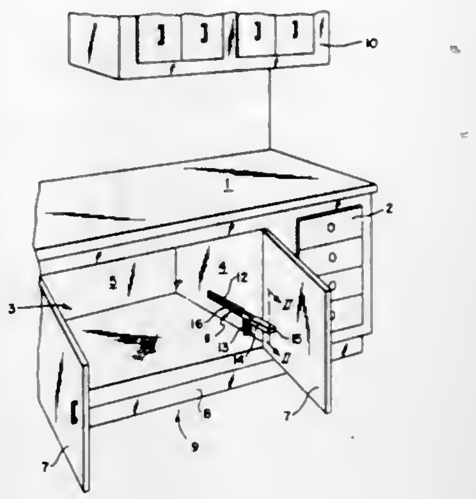


A modular housing system for mounting the controls for various accessory equipment used in police and other emergency vehicles comprising a plurality of modular housing members connected to one another in a selected arrangement and designed with removable front panels so that control mechanism can be removed from the front of any selected housing member for repair or replacement without disturbing the control mechanism mounted in any of the other housing members and without the necessity of disconnecting any of the housing members from one another.

### 3,756,678
### RETRACTABLE STEP

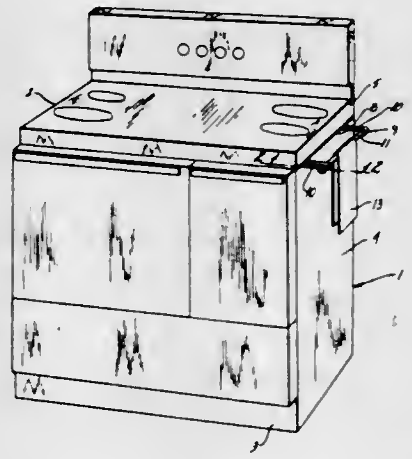
**Glenn A. Klopfenstein, 230 Meriden-Waterbury Rd., Southington, Conn.**
**Filed Aug. 24, 1971, Ser. No. 174,429**
**Int. Cl. A47b** *83/00*
**U.S. Cl. 312—235** **10 Claims**

The retractable step is mounted solely by means generally in one vertical plane for securement on one side only to the vertical wall of a cabinet interior, the support legs and brace members of a work bench, or like framework of any rigid device wherein it is desired to provide a step so that a person may assume a higher than normal position for reaching elevated objects and the like. In the extended position, the step is cantilevered so that a torque will be produced on its mountings when a person steps on the cantilevered forward portion, which mountings are separately rigidly secured to the framework to absorb the entire spaced vertical oppositely directed force components of the torque so that when the step is pivotally mounted, the pivot pin will not be stressed during use. Desired cut lengths of indefinite length stock metallic tubing and channel members are used in constructing the components for economy.



### 3,756,679
### HOME APPLIANCE WITH HANGER RACK

**Norman E. Schoenfelder, 2869 S. 75th St., West Allis, Wis.**
**Filed Oct. 18, 1971, Ser. No. 189,816**
**Int. Cl. A47b** *83/00*
**U.S. Cl. 312—237** **1 Claim**

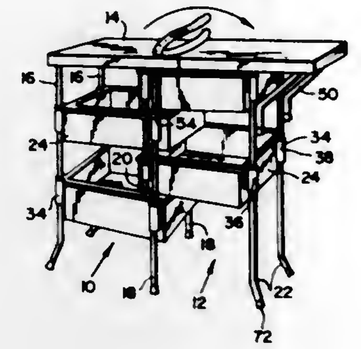


A free standing appliance is provided with a removable hanger rack for towels and the like. The rack includes a plurality of flat support arms joined by a hanger bar. The arms are slidably positioned in the horizontal planular space between the upper deck and a side wall of the appliance. Means are provided to resist accidental removal of the rack from the appliance.

### 3,756,680
### INFANT DRESSING TABLE

**Robert Lerner, Roslyn, N.Y., assignor to Formulette Company, Inc., Long Island City, N.Y.**
**Filed Dec. 6, 1971, Ser. No. 204,968**
**Int. Cl. A47b** *83/00*
**U.S. Cl. 312—237** **5 Claims**

A dressing table for an infant or the like comprising first and second sections, each of which comprises two pairs of spaced legs between which at least one drawer is arranged. One pair of legs of one section is freely arranged between the two pairs of legs of the other section so that the two sections are linearly slidable with respect to each other. Preferably, each section is provided with two or more drawers in staggered spaced relationship permitting the drawers to be arranged in tier formation.



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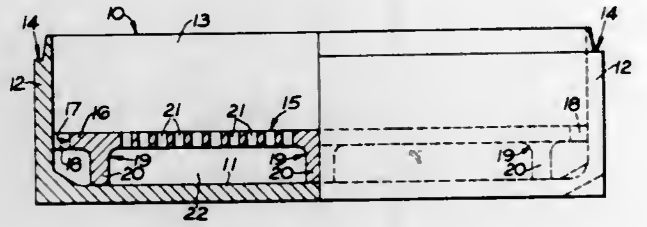
### 3,756,681
### CONTAINER

**William Gordon Croston, Wexford, Ireland, assignor to International Technical Assistance, Vaduz, Liechtenstein**
**Filed June 23, 1971, Ser. No. 155,813**
**Int. Cl. B65d** *25/00;* **A47j** *47/02*

**U.S. Cl. 312—351** **8 Claims**



The invention provides a container assembly for packing material such as fish cooled with ice which comprises a box like container and an insert panel for location in the container as to be spaced above and apart from the bottom of the container. The water resulting from the melting of the ice is retained in the container until the container is inverted. At the same time the fish are not being contaminated.

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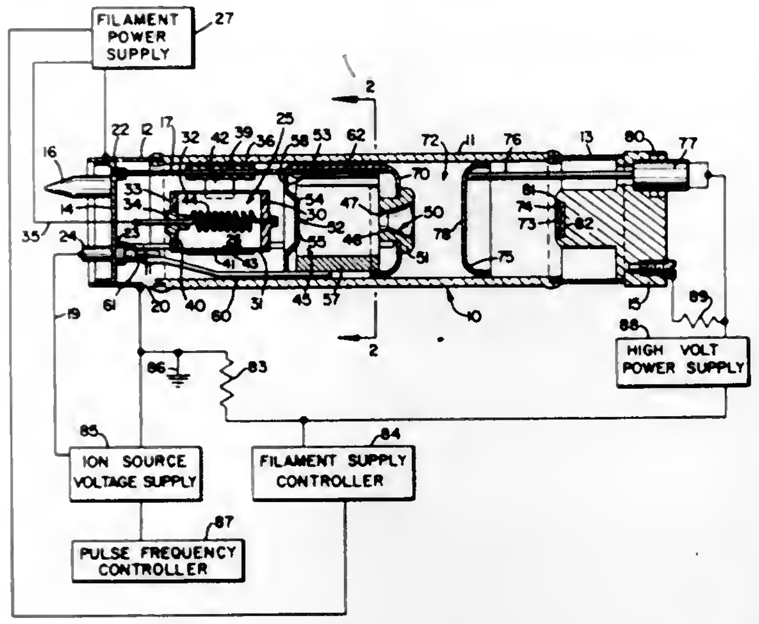
### 3,756,682
### METHOD FOR OUTGASSING PERMANENT MAGNETS

**Arthur H. Frentrop, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, Houston, Tex.**
**Division of Ser. No. 615,638, Feb. 13, 1967, Pat. No. 3,546,512. This application Aug. 3, 1970, Ser. No. 67,661**
**Int. Cl. H01j** *9/18*

**U.S. Cl. 316—19** **5 Claims**

A permanent magnet is outgassed for use in a controlled atmosphere by heating a ferromagnetic material to a temperature at which an irreversible loss of remanence takes place, but below the temperature at which material effects substantially reduce or remove all remanence without further special heat treatment. Gases emitted from the heated surfaces of the magnet then are evacuated. Permanent magnetic properties are not destroyed by this heat treatment, and a magnetic field of substantial strength subsequently is produced by magnetizing the outgassed material. A specific embodiment of the invention enables a hollow cylindrical ion source magnet to be placed within the envelope of a small neutron generator to provide both a magnetic field and an ion source electrode. The assembled generator then is outgassed and sealed. Subsequent magnetization enables the electrode to produce the high intensity magnetic field needed for ion generation.



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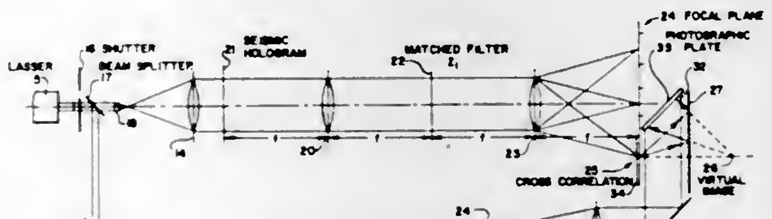
### 3,756,683
### HOLOGRAM IMAGE-SPACE SCALLING

**Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.**
**Continuation-in-part of Ser. No. 852,602, May 19, 1969, abandoned. This application May 3, 1971, Ser. No. 139,863**
**Int. Cl. G02b** *27/38*

**U.S. Cl. 350—3.5** **28 Claims**



The image space of a hologram is analyzed by forming a diffraction-point hologram of a diffraction point at a known distance from the plane on which its hologram is formed and cross-correlating the diffraction-point hologram and the hologram being analyzed. An image is formed in the plane of the cross-correlation when the diffraction point depicted in the diffraction-point hologram is spaced from the plane of its hologram as a diffraction point on the object of the hologram being analyzed is spaced from the plane of its hologram.

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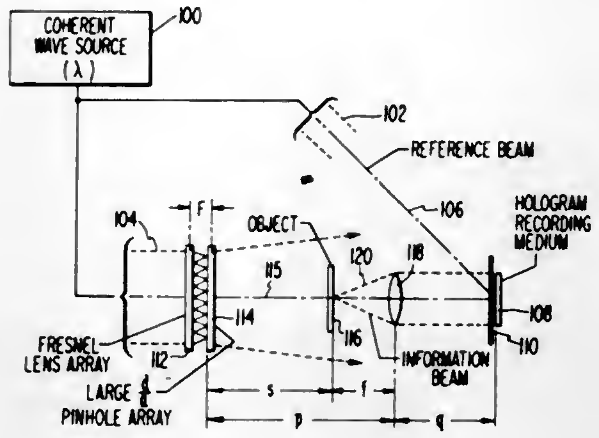
### 3,756,684
### COARSE PINHOLE ARRAY FOR RECORDING IMPROVED REDUNDANT HOLOGRAMS

**Edward Coley Fox, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.**
**Filed Dec. 9, 1971, Ser. No. 206,389**
**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—3.5** **17 Claims**

The use of a redundancy means including a pinhole array having a ratio of the distance between adjacent pinholes to the maximum linear dimension of a pinhole of at least 30 not only provides high effective redundancy, but the spatial signal-to-noise ratio in the reconstructed image of a recorded hologram recorded with such a pinhole array and played back with coherent wave energy is significantly higher than heretofore obtainable, particularly when less than ideal optic elements are employed in the recording system.



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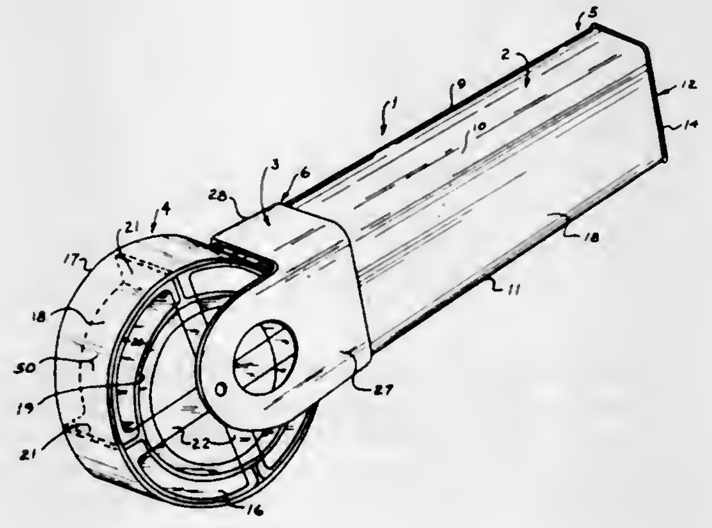
### 3,756,685
### KALEIDOSCOPE

**Robert Forsee, Columbia, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.**
**Filed Mar. 10, 1972, Ser. No. 233,630**
**Int. Cl. G02b** *27/08*

**U.S. Cl. 350—5** **9 Claims**



A kaleidoscope is provided having an object enclosure containing a multiplicity of pattern producing objects mounted to one end of a tubular body section. The enclosure is mounted so that the objects are presented along the end of the body section in a plane which is perpendicular to the plane of the body section. In one embodiment, the object enclosure is transparent and the pattern producing objects appear in two parallel planes simultaneously, both parallel planes being perpendicular to the plane of the body section, giving an unusual three dimensional effect to the illusionary kaleidoscope image.

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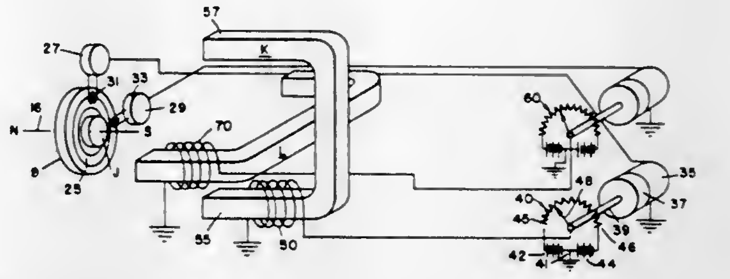
### 3,756,686
### SERVO-INTEGRATING STABILIZER

**William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.**
**Filed Sept. 8, 1971, Ser. No. 178,672**
**Int. Cl. G02b** *23/00*

**U.S. Cl. 350—16** **16 Claims**



In an optic stabilizer having case mounted optic elements and a complementary and movable optical element for stabilizing an image, an apparatus for imparting improved stabilizing motion to the moving optical element is disclosed. The movable optical element, typically a mirror, is mounted for two degrees of motion relative to a neutral position along the optic axis. A variable torque field, typically magnetic, is provided to pass through the optical element and to urge the optical element back to its neutral position. By the expedient of providing a sensor for detecting misaligned positions of the movable optical element and integrating on a time average basis the misaligned position of the movable element, the magnitude and polarity of the variable torque field can be controlled to provide improved stabilizing motion of the movable optical element.

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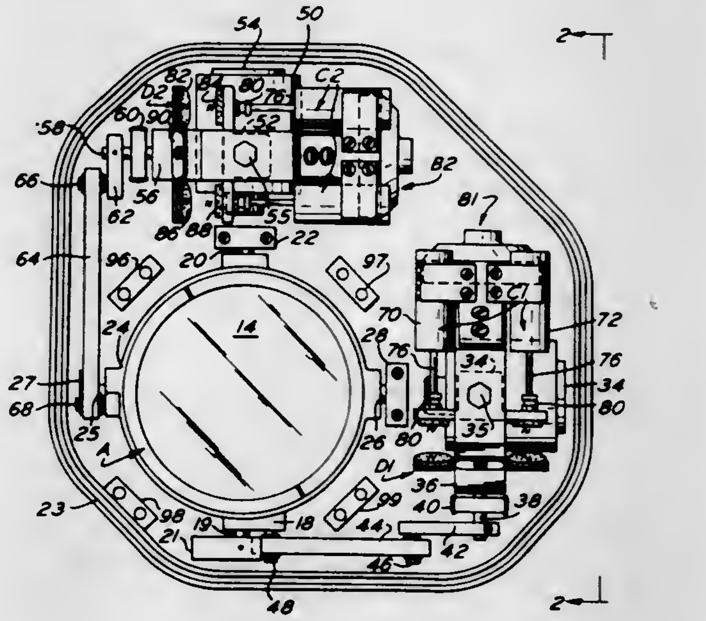
### 3,756,687
### DUAL GYRO MECHANICALLY COUPLED IMAGE MOTION COMPENSATOR HAVING NON-LINEAR DAMPING MEANS

**Ihsuk Shin, Berwyn, and John R. Richards, Dresher, both of Pa., assignors to Dynasciences Corporation, Blue Bell, Pa.**
**Filed Sept. 23, 1971, Ser. No. 183,030**
**Int. Cl. G02b** *23/00*

**U.S. Cl. 350—16** **7 Claims**



An image motion compensator for optical systems employs a variable-angle fluid medium encapsulated between spaced transparent elements pivotally disposed about mutually perpendicular axes. A pair of gyros whose axes are orthogonal to each other are mechanically coupled to the respective transparent elements to avoid cross coupling of image motion.

Damping is non-linear — minimal about the center of precession and increasing exponentially with increase of precession angle. Restoring torque is applied magnetically to precession axis by means of opposed permanent magnets.

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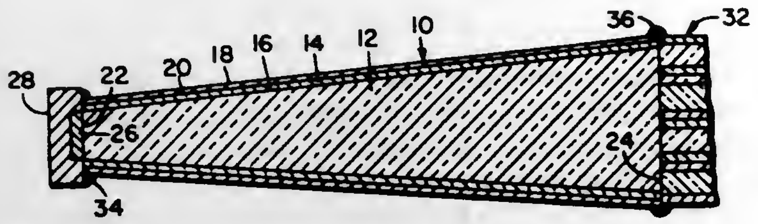
### 3,756,688

### METALLIZED COUPLER FOR OPTICAL WAVEGUIDE LIGHT SOURCE

**Marshall C. Hudson, Corning, and Felix P. Kapron, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 30, 1972, Ser. No. 239,517**
**Int. Cl. G02b** *5/14*
**U.S. Cl. 350—96 WG** **19 Claims**



A light coupler for transferring optical wave energy to or from light transmitting means including at least one optical waveguide. The coupler comprises a tapered core of transparent material of refractive index $n_1$ and a layer of transparent cladding material of refractive index $n_2$ disposed upon the surface of the tapered core, $n_1$ being greater than $n_2$. The tapered core has a large diameter end which is aligned with an end of the light transmitting means and a small diameter end which is disposed adjacent to electro-optic energy conversion means such as a light emitting diode, a light detector or the like. A reflecting metallic layer is disposed upon at least that portion of the surface of the cladding layer which is adjacent to the small diameter end of the coupler to reflect light which is incident upon the core-cladding interface at angles less than the critical angle and which passes through the cladding layer.

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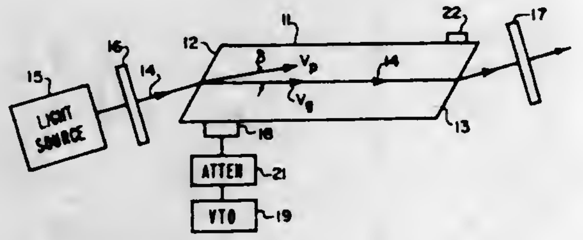
### 3,756,689

### ELECTRONICALLY TUNABLE ACOUSTO-OPTIC FILTER HAVING SELECTED CRYSTAL ORIENTATION

**Donald L. Hammond, Los Altos Hills; John A. Kusters, San Jose, and David A. Wilson, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Nov. 17, 1971, Ser. No. 199,705**
**Int. Cl. G02f** *1/24*
**U.S. Cl. 350—149** **26 Claims**



A birefringent crystal is provided for an electronically tunable acousto-optic filter wherein a light beam is diffracted by a collinear acoustic wave in the birefringent crystal from a first polarization into an orthogonal polarization, the crystal orientation being such that the effect due to birefringence changes is balanced by the effect due to acoustic anisotropy, providing a filter with high resolution and large optical apertures. For a filter employing a quartz crystal, a crystal cut is utilized wherein the longitudinal axis of the filter medium lies along a crystal orientation of approximately (*zyw*) - 11.2°; for a lithium niobate crystal, the cut is (*zyw*) 4.0°.

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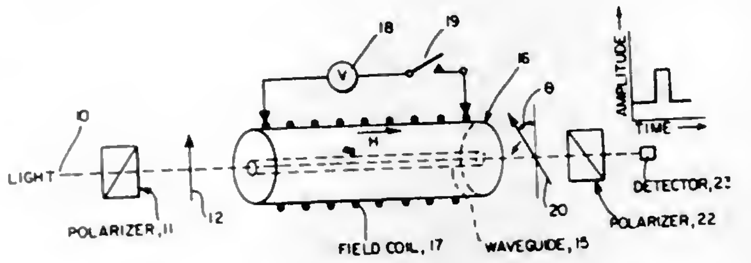
### 3,756,690

### OPTICAL WAVEGUIDE LIGHT MODULATOR

**Nicholas F. Borrelli; Felix P. Kapron, both of Elmira, and Donald B. Keck, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 30, 1972, Ser. No. 239,748**
**Int. Cl. G02f** *1/22*
**U.S. Cl. 350—151** **19 Claims**



Modulation of light in a fused silica optical waveguide is accomplished by a Faraday effect rotation of the plane of polarization of the light propagating in the waveguide. The fused silica waveguide utilized has unique characteristics of low attenuation and low depolarization due to the purity of the fused silica, the manner in which the fused silica is made, the use of the same base material for the core and cladding layer, and a single mode transmission characteristic. The low attenuation and low depolarization permit low strength magnetic fields to cause large rotations of the plane of polarization of the light beam in the waveguide. Because of the length of the light path exposed to the magnetic field, rotations of at least 90° can be accomplished with the application of as little as 100 oersteds of magnetic field along the longitudinal axis of the guide.

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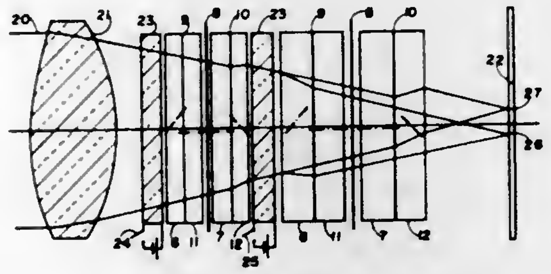
### 3,756,691

### APERTURE ABERRATION REDUCING DEVICE

**Gunter Pasold, Dresden, Germany, assignor to Veb Kombinat Robotron, Radeberg, Germany**

**Continuation-in-part of Ser. No. 22,202, March 24, 1970, Pat. No. 3,644,018. This application Sept. 20, 1971, Ser. No. 181,684**
**Int. Cl. 350** *175 DR*; **G02b** *5/30*
**U.S. Cl. 350—157** **15 Claims**



The invention reduces aperture aberrations, for example in digital light deflecting systems by means of two identical crystal systems each of which comprises at least one double refractive crystals. An element for rotating the polarization plane of the partial beams of rays is located between the two crystal systems.

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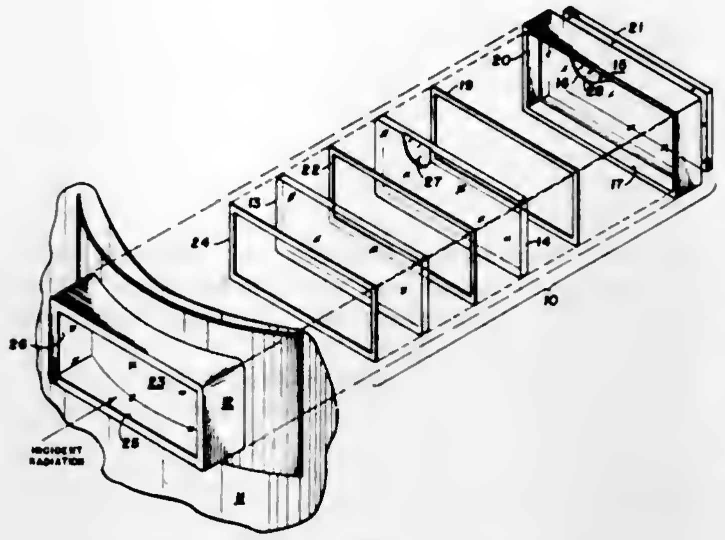
### 3,756,692

### PHOTOCHROMIC PROTECTIVE EYE SHIELD LENS

**Donald D. Scott, assignor to The Johns Hopkins University, Baltimore, Md.**

**Filed July 15, 1971, Ser. No. 162,836**
**Int. Cl. G02b** *5/22*
**U.S. Cl. 350—160 P** **5 Claims**

A protective lens structure of variable opacity for installation in a welder's face shield to provide decreasing radiation transmission through the structure with increasing radiation impingement on the structure. The optical density of photochromic material within the lens structure varies according to the intensity of the radiation produced by the welding instrument. The photochromic material is held between an ultraviolet (UV) transmitting frontal lens and a UV-absorbing rear lens, the frontal lens having a coating with low infrared (IR) transmittance and the rear lens having a UV-reflective coating. The frontal lens essentially blocks IR while transmitting UV and visible light to the photochromic material. The UV radiation striking the front surface of the photochromic material activates the material, causing it to become optically dense. Any UV radiation transmitted through the photochromic material is reflected back into the material by the UV-reflective coating on the rear lens, thereby activating the material over the rear surface thereof. Incident radiation in the visible spectral range is predominately absorbed by the activated photochromic material. Any UV-radiation transmitted through the reflective coating is absorbed by the rear lens to prevent transmission to the user's eyes.



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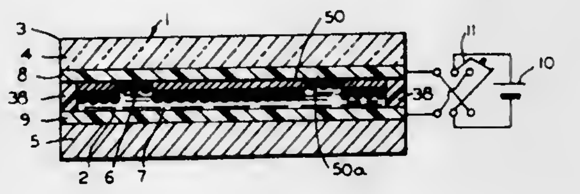
### 3,756,693

### ELECTROPHORETIC DISPLAY DEVICE

**Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan**

**Filed Dec. 20, 1971, Ser. No. 209,729**
**Claims priority, application Japan, Dec. 21, 1970, 45/116183**
**Int. Cl. G02f** *1/40*; **B01k** *5/00*
**U.S. Cl. 350—160 R** **15 Claims**



An electrophoretic display device in which an electrophoretic suspension layer including a dispersion of at least one electrophoretic material in a finely divided powder form suspended in a suspending medium is interposed between a pair of electrodes, at least one of which is transparent. A colored layer of a desired pattern is provided at the transparent electrode. An electric field is imposed between the pair of electrodes so as to change the optical property such as reflective color or luminescent color of the suspension layer by changing the spatial distribution of the electrophoretic material in the suspending medium electrophoretically.

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### 3,756,694

### ELECTRIC FIELD CONTROLLABLE BIREFRINGENCE LIQUID CRYSTAL MEDIA AND OPTICAL DISPLAY DEVICES FOR USE THEREOF

**Richard A. Soree, Chestnut Hill, and Mary Jane Rafuse, Harvard, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Sept. 9, 1971, Ser. No. 178,982**
**Int. Cl. G02f** *1/28*
**U.S. Cl. 350—160 LC** **22 Claims**

Thin flat panel display devices utilize optical polarization elements to control the amount and location of light transmitted through liquid crystal media having electric field controllable birefringence properties. Nematic liquid crystal compositions are provided, particularly adapted for use in such display systems, that demonstrate electric field controllable birefringence properties, for example, from above room temperature to about −30° Centigrade. These compositions include binary mixtures of p-toluylidene p-n-butylaniline with p-n-butoxybenzylidene p-n-butylaniline or pentyl p-anisylidene p-aminophenyl carbonate with p-ethoxybenzylidene p-n-butylaniline. Ternary compositions may be formed by adding ionizable materials.

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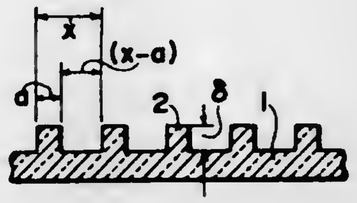
### 3,756,695

### OPTICAL LOW-PASS FILTER

**Masayuki Mino, and Yokio Okano, both of Sakai-shi, Osaka-fu, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan**

**Filed July 12, 1971, Ser. No. 161,454**
**Claims priority, application Japan, July 14, 1970, 45/61020; Nov. 14, 1970, 45/99812**
**Int. Cl. G02b** *27/38*
**U.S. Cl. 350—162 SF** **14 Claims**



An optical low-pass filter which is inserted in an image forming optical system in order to attain the response to zero in a frequency over the cut-off frequency and which is adapted to that the response in said optical system may not undergo a change depending upon the variation of F-number of the optical system. The filter gives a blur to all images formed by said image forming optical system, and is composed of phase elements provided on a transparent base plate. The phase elements are disposed systematically on a base plate for giving the phase difference to the wave front of light ray incident upon said transparent base plate.

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### 3,756,696

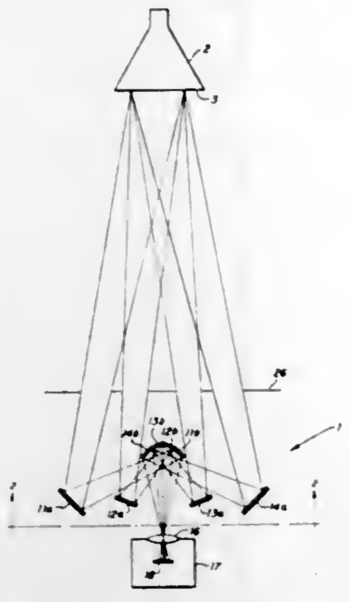
### OPTICAL IMAGE TRANSFER APPARATUS

**Charles W. Gardiner, Manchester, Mass., assignor to Itek Corporation, Lexington, Mass.**

**Filed Dec. 7, 1971, Ser. No. 205,574**
**Int. Cl. G02b** *27/10*
**U.S. Cl. 350—169** **7 Claims**

A method and apparatus for transferring a plurality of characters from a first medium wherein said characters are arranged in a first array to a second medium wherein the same characters are rearranged into a second array different from the first array. The technique employs an arrangement of mirrors or other optical elements positioned to optically divide the first array of characters into a plurality of segments and to then reassemble those segments together into the second array. The system is particularly designed for use in Computer-

Output-Microfilm recording units to transfer data from the face of an inexpensive cathode ray tube readout display to microfilm but may also be employed in many other image transfer operations. Large expensive CRT readout displays are thus eliminated for COM operations.



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### 3,756,697

### AUTO-FOCUSING OPTICAL SYSTEM

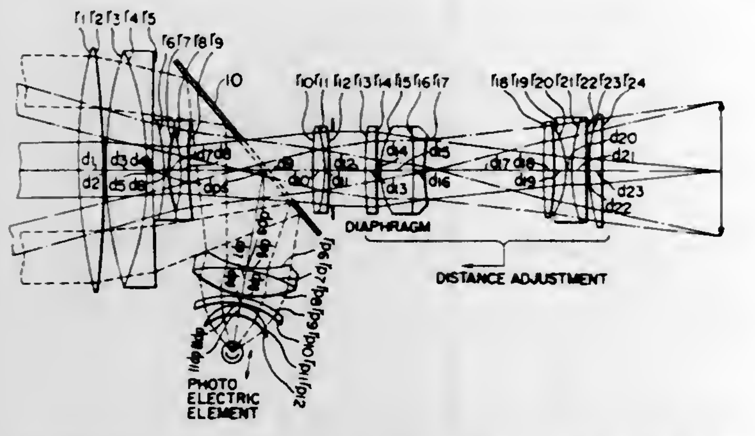
**Soichi Nakamura, Kamakura-ken, Japan, assignor to Nippon Kogaku K.K., Chiyoda-ku, Tokyo, Japan**

**Filed Mar. 31, 1972, Ser. No. 240,213**

**Claims priority, application Japan, Apr. 16, 1971, 46/23900**

**Int. Cl. G02b** *9/64, 27/10*

**U.S. Cl. 350—202** **3 Claims**



An automatic focusing optical system having a range determining system and a photo-taking system. The photo-taking system is divided into two groups with a beam splitter interposed therebetween. The range determining system has its forward group provided by the whole or part of the forward group of the photo-taking system and has its rearward group disposed in the path of light reflected by the beam splitter. All or part of the rearward group of the photo-taking system is axially moved for focusing the photo-taking system.

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### 3,756,698

### PLANAPOCHROMATIC OBJECTIVE LENS SYSTEMS FOR USE IN MICROSCOPES

**Jibei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Company Limited, Shibuya-ku, Tokyo, Japan**

**Filed June 29, 1972, Ser. No. 267,493**

**Claims priority, application Japan, Feb. 12, 1972, 47/15057**

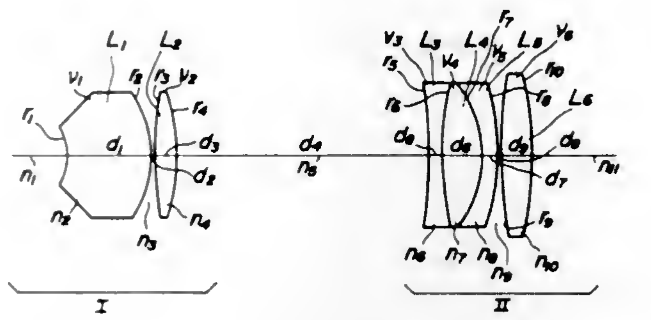
**Int. Cl. G02b** *9/34, 21/02*

**U.S. Cl. 350—220** **1 Claim**

A planapochromatic objective lens system for use in microscopes, which is constructed as two groups and six lenses and in which a first group of lenses comprises a first negative meniscus lens that has at its object side a concave surface, and a second positive lens slightly air spaced from the first meniscus lens, and a second group of lenses is separated from the first group of lenses by a long air space and comprises a compound lens including third, fourth and fifth lenses, the fourth lens sandwiched between the third and fifth lenses being made of fluospar, and a sixth positive lens having a significantly large dispersive power, and which is defined by the following five conditions, i.e.,

1. $\nu > 45$ for all lenses except the first lens,
2. $\nu_6 \geqq 70$,
3. $30 > \nu_5 - \nu_3 > 10$,
4. $d_1 > |r_1| + |r_2|/2$, and
5. $r_3 < 0$

where $\nu$ is the dispersive power of all of the lenses, $\nu_3$, $\nu_5$ and $\nu_6$ are the dispersive powers of the third, fifth and sixth lenses, respectively, $d_1$ is the axial thickness of the first lens, and $r_1$, $r_2$ and $r_3$ are the radii of curvatures of the front and rear surfaces of the first lens and of the front surface of the third lens, respectively, wherein specific values are chosen for the air spaces, refractive indexes and dispersive powers of the six lenses.



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### 3,756,699

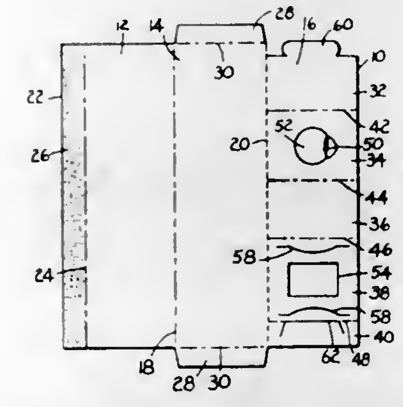
### MAILABLE DISPOSABLE VIEWER

**Robert L. Martin, 14313 N.E. Fremont, Portland, Oreg.**

**Filed July 21, 1971, Ser. No. 164,503**

**Int. Cl. G02b** *7/02*

**U.S. Cl. 350—250** **2 Claims**



A viewer made of inexpensive material such as paper and designed to be disposed of after minimum usage. The viewer is constructed of a blank of paper having means for forming an envelope around the viewer portion for mailing and being separable from the viewer portion for disposing of such envelope portion. The viewer portion has a magnifying lens and means for receiving a slide viewable through the lens and is foldable into a box-like viewer having a handle.

### 3,756,700

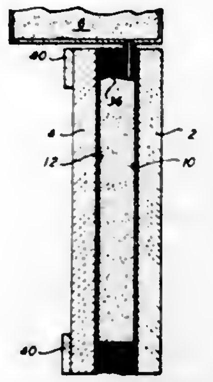
### METHOD AND APPARATUS FOR INCREASING OPTICAL DENSITY RATIOS OF LIGHT VALVES

**Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.**

**Filed Feb. 9, 1972, Ser. No. 221,141**

**Int. Cl. G02f** *1/30;* **G03b** *9/00*

**U.S. Cl. 350—267** **16 Claims**



A method and apparatus is disclosed for increasing the optical density ratio of light valves. The optical density ratio is a measure of the range of light transmission of the light valve, and is the ratio between the optical density with the valve inactivated and the optical density when it is activated. To accomplish this change, the valve is constructed so that it contains more fluid suspension when it is in the off (inactivated) condition to produce a high optical density, and contains less fluid just prior to being activated as well as in the activated condition to controllably decrease its optical density. This increased amount of fluid in the off condition and decrease in the on condition increases the optical density ratio of the valve. Apparatus for incorporating this device into a photographic camera is also disclosed.

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### 3,756,701

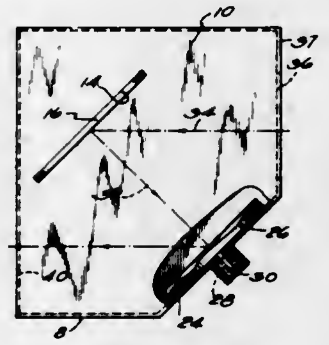
### VIEWING DEVICE FOR PRODUCING ILLUSION OF MOTION

**Fortunato S. Ajero, 521 Rawson Ct., South Milwaukee, Wis.**

**Filed Oct. 15, 1971, Ser. No. 189,712**

**Int. Cl. G02b** *5/08*

**U.S. Cl. 350—288** **5 Claims**



Illusion of motion is made by relative movement between the image of an object or picture viewed in camera in a collapsible chamber, and distortions of such image produced by a distorted mirror which is rotatable in the chamber between the eye of the observer and the object or picture which is reflected in the mirror.

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### 3,756,702

### METHOD FOR PRODUCING PRECISELY FITTED CONTACT LENSES

**Eugene Trachtman, 346 Harding Rd., Fair Haven, N.J.**

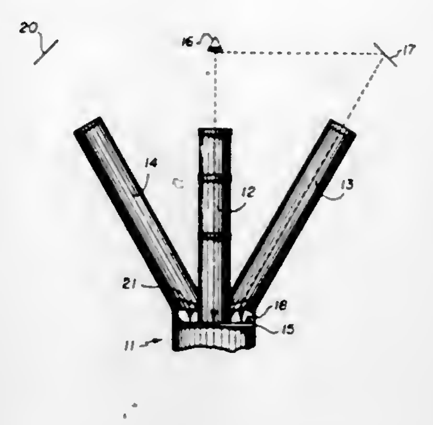
**Continuation of Ser. No. 802,309, Jan. 24, 1969, abandoned.**

**This application Oct. 20, 1971, Ser. No. 191,081**

**Int. Cl. A61b** *5/10*

**U.S. Cl. 351—40** **5 Claims**

Apparatus and method for producing contact lenses precisely fitted to the eye including the steps of preparing a photographic profile of the anterior surface of the eye from the axis thereof radially outwardly to or past the limbal area, the photographic profile having a known, exacting proportional size relationship to the eye; enlarging the photographic profile by a predetermined, precise degree; superimposing upon the enlarged profile any desired, corrective radius to produce a composite curve; preparing a template in precise conformity with the composite curve; and generating anterior and posterior surfaces on a contact lens by use of the template, the posterior surface of the contact lens being fitted to any degree of precision desired to the anterior surface of the eye to which it is to be applied.



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### 3,756,703

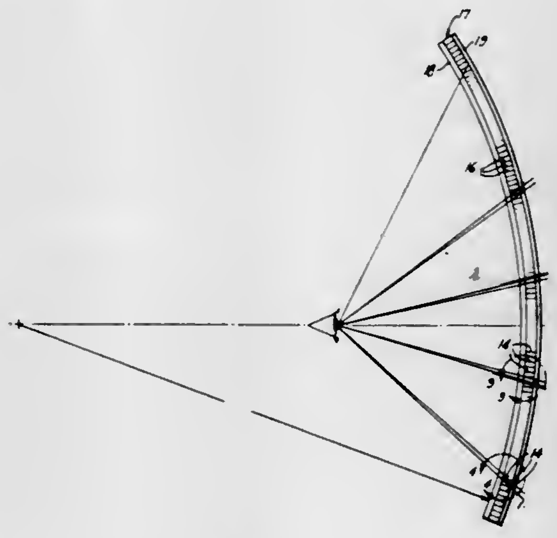
### SUNGLASSES CONTAINING EMBEDDED LOUVER MEANS

**Robert J. Nelson, 620 W. Flora, Apt. 25, Stockton, Calif.**

**Filed Dec. 29, 1971, Ser. No. 213,655**

**Int. Cl. G02c** *7/16*

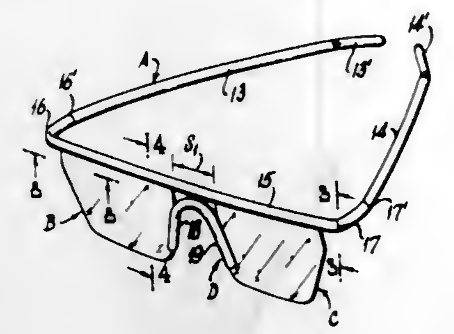
**U.S. Cl. 351—45** **5 Claims**



A sunglass lens of a type to be worn by a person includes a plurality of laterally extending, transparent panes disposed one above the other wherein the panes are curved about the face of the wearer in vertical and horizontal planes. One of the panes is unobstructed so as to form an elongate viewing aperture. Longitudinally extending louvers are disposed within each of two other panes in a manner whereby the louvers are arranged in spaced relation one above the other to form partially transparent masking panes above and below the aperture pane. In manufacturing the sunglass lens of the foregoing type a method is provided for tipping the panes upwardly and downwardly progressively above and below the viewing aperture, the tipping becoming progressively increased with displacement from the plane of the viewing aperture pane.

### 3,756,704
### PLIABLE MOUNTING ASSEMBLY FOR SPECTACLE

**Mortimer Marks, 166-25 Cryders La., Whitestone, N.Y.**
**Filed Mar. 30, 1971, Ser. No. 129,386**
**Int. Cl. G02c** *7/02*
**U.S. Cl. 351—60** **21 Claims**



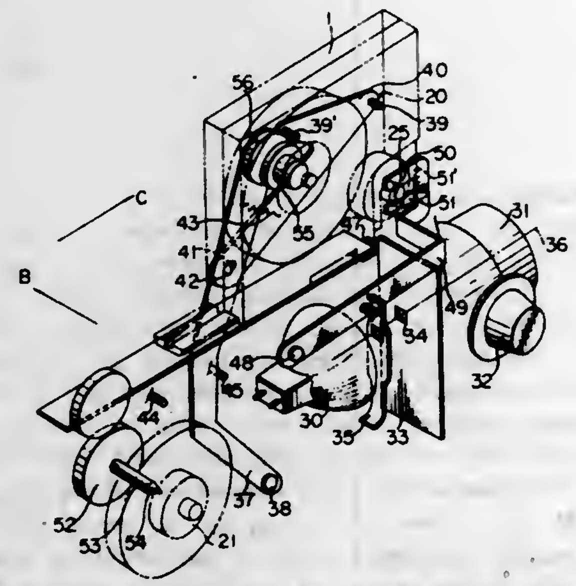
The invention provides a viewing device, eye "glasses" or spectacles of such inexpensive construction that it lends itself to expendable use, as when fitted with orthogonally related polarized plastic lens elements, to enable 3-dimensional movie viewing. The lens elements are held in aligned and spaced relation by a compliant yet permanently deformable channel, which, in one form, is locally bent to define integral temples or ear pieces, which extend rearwardly of the general plane of orientation of the lens elements. A second and shorter length of what may be the same channel material is used as a bridge element, embracing corresponding other edges of the lens elements and also permanently and locally bent for comfortable support by the nose. The channel sidewalls are locally crimped at the bent localities to secure permanent assembly to the lens elements, and the channel section may be so devised that the indicated crimping is the inherent result of permanent bending.

### ERRATUM

For Class 352—27 see:
Patent No. 3,756,714

### 3,756,705
### MOTION-PICTURE PROJECTOR

**Morio Takeichi, Inazawa, and Takashi Ishigaki, Nagoya, both of Japan, assignors to Elmo Company Limited, Nagoya, Japan**
**Filed Sept. 20, 1971, Ser. No. 181,959**
**Claims priority, application Japan, Oct. 2, 1970, 45/97340; Oct. 2, 1970, 45/97339**
**Int. Cl. G03b** *23/02*
**U.S. Cl. 352—72** **4 Claims**

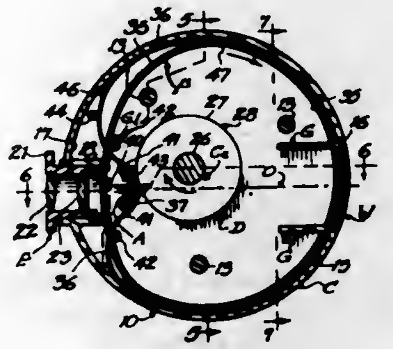


A motion-picture projector is adapted for the employment of a film cartridge of such a type as containing a film supply reel with the film trailing end secured thereto, and a take-up core with the film leading end secured thereto, which core is separable from the cartridge housing through a recess built up in one end of the cartridge. The housing is preferably made from two molded hair sections, one of which is formed with an opening through which a film rewinding spindle of the projector is engageable with the film supply reel, and the other being provided on the inner surface and at a portion corresponding in position to the opening on one of the half sections with a support for supporting the film supply reel to be held in such a manner that at least a portion of spindle hole of the reel appears in the opening formed on one of two half sections.

The cartridge is initially set in a first position in the projector in which the spindle of the projector engages the supply reel, and then transferred to a second position due to rotation of a reel supporting member of the projector having said spindle mounted thereon. In the second position, the take-up core is gripped by a gripper on a take-up transferring member, so that upon the rotation of the take-up core transferring member the take-up core is transferred with the film leading end to a film winding position.

### 3,756,706
### MOTION PICTURE VIEWER

**Herbert D. Klynn, 12754 Ventura Blvd., Tarzana, Calif.**
**Filed June 5, 1972, Ser. No. 259,826**
**Int. Cl. G03b** *21/00*
**U.S. Cl. 352—129** **9 Claims**



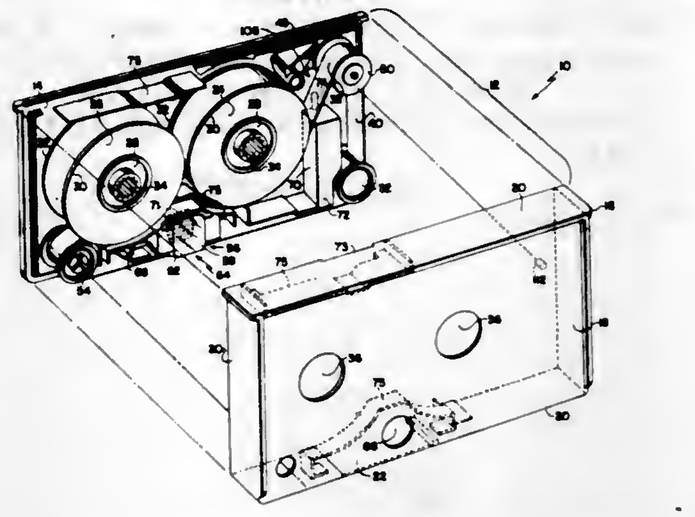
An extremely inexpensive motion picture viewer consists of simply a drum-shaped casing having in its periphery at opposite sides thereof, a viewing lens and a light admitting window respectively, an endless coil of motion picture film within the casing, and a hand-cranked sprocket engageable therewith to orbit the coil in an intermittently advancing movement in a generally circular path adjacent the casing periphery, with one turn of the coil deflected to one side of the casing to intersect the optical path, and the remainder of the coil retained in the other side of the casing, in a plane offset laterally from the optical path.

### 3,756,707
### PHOTOGRAPHIC FILM HANDLING CASSETTE

**John R. Sharp, Squantum, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**
**Filed Jan. 3, 1972, Ser. No. 214,548**
**Int. Cl. G03d** *3/00*
**U.S. Cl. 352—130** **33 Claims**

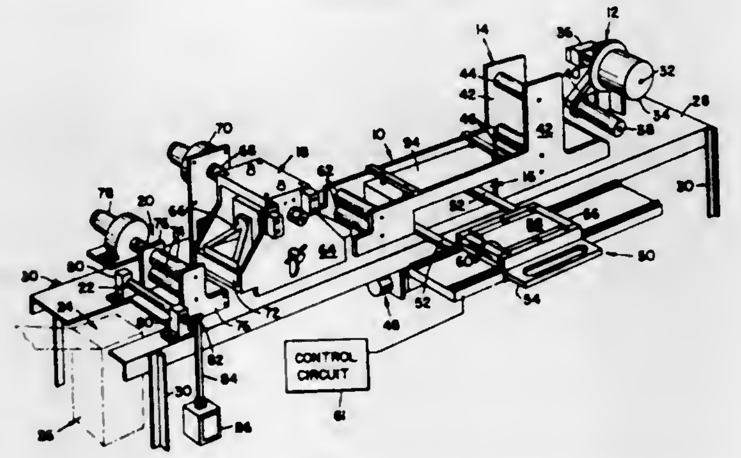
A multi-purpose film handling cassette adapted for use with a motion picture camera and projector of the type including a film transport mechanism for progressively transporting an incremental section of a film strip, stored on a supply reel within the cassette, past a cassette exposure and projection station. The cassette is provided with a film tension regulator for establishing a feed loop of film strip between the supply reel and the exposure and projection station to isolate that portion of the film strip near the exposure and projection station from the inertial drag of the supply reel thereby preventing the film transport mechanism from applying excessive pressure to the

film strip. The tension regulator is also configured to guide the film strip onto the supply reel in a manner which precludes disturbing a coating of liquid processing composition applied to the film strip during a processing mode of operation.



### 3,756,708
### MICROFICHE DUPLICATING APPARATUS

**Harold Lakin, Portola Valley; Thomas R. Bristol, and William J. Rensch, both of Redwood City, all of Calif., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio**
**Filed Apr. 5, 1971, Ser. No. 131,331**
**Int. Cl. G03b** *21/14*
**U.S. Cl. 355—27** **8 Claims**

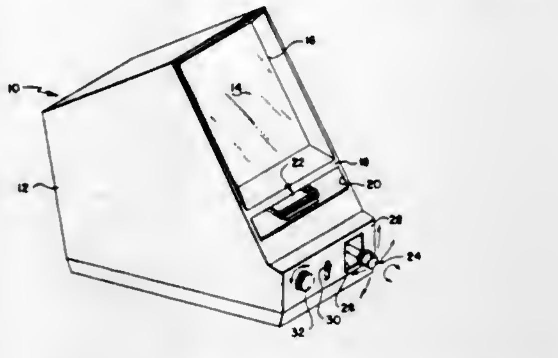


Unexposed film in roll form is fed to an exposure station. At the station, a tray assembly for holding the fische original slides perpendicularly to the direction of travel of the film. The tray comprises a platen connected to a lower plate by pivot arms so that when the tray assembly is slid toward the exposure station, the platen section contacts a fixed stop in the station while the lower plate continues to move laterally a short distance thereby pivoting the arms and causing the platen to be pressed upward against the unexposed film during exposure. Developing uses high pressure anhydrous ammonia. A pressure pad, which is heated, is pressed onto the film surface. A Teflon coating and small holes insure even heat distribution and the holes also allow air to escape from the film surface.

### 3,756,709
### MICROFILM READER AND MULTIFRACTION CONTROL MEANS THEREFOR

**Richard H. Lettan, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed July 16, 1971, Ser. No. 163,158**
**Int. Cl. G03b** *21/11, 23/08*
**U.S. Cl. 353—27** **7 Claims**

A microfilm reader having a microfilm carriage movable relative to the reader optic axis in at least mutually perpendicular directions by means of a universally mounted control lever. Movement of a filter into and out of intersection with the optic axis is accomplished by rotation of the control lever. The control lever is also movable to a film loading position in which it functions (1) to open a film gate mounted on the carriage, and (2) to turn the illumination system of the reader off. Rotational movement of the microfilm carriage is prevented by means of a scissors linkage.

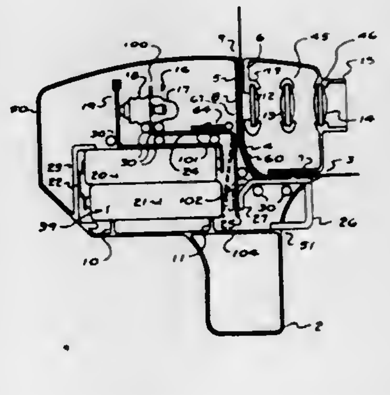


### ERRATA

For Classes 353—15 and 353—21 see:
Patents Nos. 3,756,715 thru 3,756,717

### 3,756,710
### TOY HAND PROJECTOR

**Beverly W. Taylor, Hermann, Mo., assignor to Steven Manufacturing Co., Hermann, Mo.**
**Filed July 22, 1970, Ser. No. 57,148**
**Int. Cl. G03b** *21/00*
**U.S. Cl. 353—43** **7 Claims**



A hand held, toy projector has a battery operated light source and fixed lens system. A pistol type enclosure with a handle and trigger arrangement provides a realistic toy. The trigger is both an on-off switch for an enclosed, battery operated light source and a means to advance manually each picture frame.

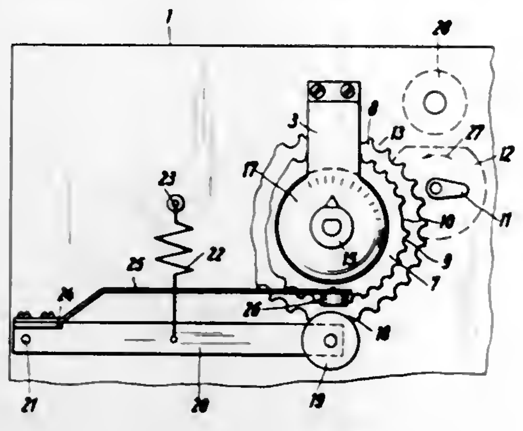
### ERRATUM

For Class 355—27 see:
Patent No. 3,756,708

### 3,756,711
### COUNTER FOR WORKING CYCLES

**Walter Limberger, Alte Landstrasse 248, 200 Hamburg-Poppenbuttel, Germany**
**Filed Feb. 1, 1972, Ser. No. 222,620**
**Claims priority, application Germany, Feb. 1, 1971, P 21 04 520.5**
**Int. Cl. G03b** *27/48, 27/50*
**U.S. Cl. 355—50** **7 Claims**

A counting device for working cycles and more particularly for copying apparatus for counting an adjustable number of copies as a function of an element which rotates in accordance with the working cycle, comprising a drive wheel adjustable in



accordance with the number of working cycles, whereby a signal is produced when a certain number of working cycles has been executed.

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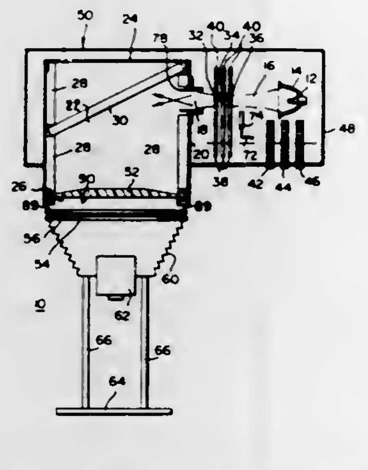
### 3,756,712
### ILLUMINATION SYSTEM FOR COLOR ENLARGERS AND THE LIKE

**Louis L. Weisglass, New York, N.Y., and Robert A. Flieder, Englewood Cliffs, N.J., assignors to Berkey Photo, Inc., Woodside, N.Y.**

**Filed Dec. 14, 1971, Ser. No. 207,992**

**Int. Cl. G03b** *27/72*

**U.S. Cl. 355—71** **47 Claims**



In the apparatus disclosed, three dichroic filters partially intercept a white light beam emerging from a light source having an elliptical reflector with a focal point at the location of the filters. The filters thus divide the beam into a white portion and an intensely colored portion. The beam enters a mixing chamber through a porthole and strikes a slanted white-opaque ceiling to form a hyperbolic section. White-opaque sidewalls coact with the ceiling to mix the white and intensely colored light. The light exists through a diffuser at the bottom of the chamber so that it can be used to illuminate a color negative in a color enlarger which focuses the light on printing paper. A cylindrical mirror at the entrance porthole reflects a part of the marginal portion of the colored part of the beam toward the white side while reflecting part of the white light into the intensely colored light. This allows the mixing chamber to blend the light and avoid a color wedging effect on the print. The diffuser at the exit of the chamber tapers from a thick center outwardly toward thinner edges. Thus, the diffuser scatters more of the light at its center and transmits more at its edges. This compensates for falloff of intensity from center to outside. The scattering of light within the diffuser causes unused light to reenter the chamber for further mixing. A matte finish on the bottom of the diffuser prevents the light which is reflected by a carrier holding the film from being rereflected onto the edges of the film.

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### 3,756,713
### PHOTO PRINTING MACHINE WITH EXPOSURE CONTROL

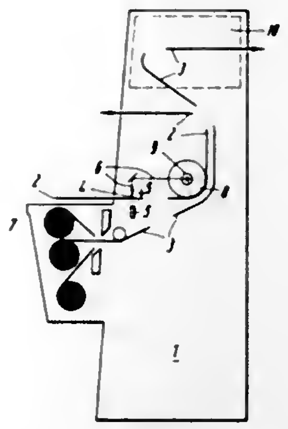
**Heinrich Isermann, Siegen, Germany, assignor to Meteor-Siegen Apparatebau Paul Schmeck GmbH, Siegen, Germany**

**Filed Apr. 6, 1972, Ser. No. 241,564**

**Claims priority, application Germany, Apr. 23, 1971, P 21 19 869.6**

**Int. Cl. G03b** *27/78*

**U.S. Cl. 355—83** **8 Claims**



A photo-printing machine has a light transmission measuring station with a control value forming device connected thereto. The control value is retained in a store and is utilized through a transfer regulator to control the drive speed of the mechanism carrying printing paper through the exposure station, thereby to control the exposure in accordance with the density of the material being printed.

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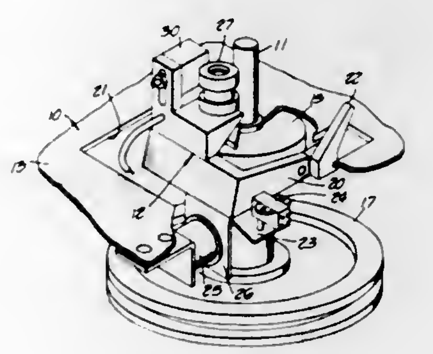
### 3,756,714
### PINCH ROLLER ASSEMBLY

**Guy C. Caraway, Downey, Calif., assignor to Technicolor, Inc., Hollywood, Calif.**

**Filed May 14, 1971, Ser. No. 143,448**

**Int. Cl. G03b** *31/02*

**U.S. Cl. 352—27** **4 Claims**



There is disclosed herein a capstan and pinch roller assembly for use in moving material in strip form, such as for moving motion picture film in a cartridge-loaded motion picture projector. The pinch roller is pivotally mounted and normally remains in a rest position for allowing entry of a film cartridge or the like into the machine. Insertion of the cartridge into the machine engages a member of the pinch roller assembly to move the roller into a second position, from which it is then moved to a final, capstan-engaging, position by means of an electromagnet. The electromagnet thus serves to finally position the roller, and to properly bias the pinch roller against the capstan. A suitable sound pick-up, such as an optical or magnetic pick-up, also may be positioned by movement of the pinch roller assembly.

This invention relates to apparatus for moving webs of strips of material and more particularly to an improved pivotally mounted pinch roller assembly for use with cartridge loaded motion picture projectors and the like.

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### 3,756,715
### TAPE RECORDER WITH CONTROL DEVICE FOR A SLIDE PROJECTOR

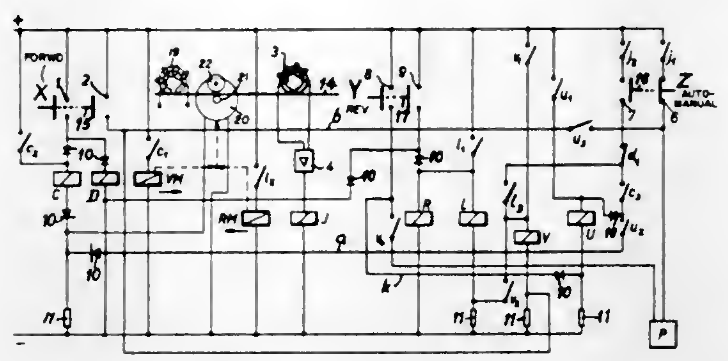
**Otto Naf, Kilchberg, Switzerland, assignor to Ganz & Co., Zurich, Switzerland**

**Filed Mar. 4, 1971, Ser. No. 100,099**

**Claims priority, application Switzerland, Mar. 6, 1970, 3306/70**

**Int. Cl. G03b** *31/06*

**U.S. Cl. 353—15** **11 Claims**



A tape recorder and a slide projector, especially intended for language teaching systems, with a control device, by means of which a change of picture can be obtained on the slide projector for exact synchronisation of the projected picture and the corresponding section of the tape, even when the tape is wound back over any desired length for the purpose of repeating the text.

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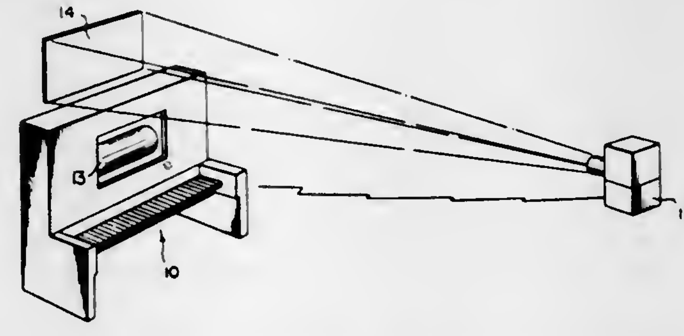
### 3,756,716
### PLAYER PIANO WITH RADIO-CONTROLLED PROJECTION OF LYRICS

**Clinton L. Gitchel, 0-9815 Kenowa S.W., Grand Rapids, Mich. Continuation-in-part of Ser. No. 884,597, Dec. 12, 1969, abandoned. This application Dec. 14, 1971, Ser. No. 207,820**

**Int. Cl. G03b** *31/00*

**U.S. Cl. 353—15** **6 Claims**



A coin-controlled player piano is provided with a radio-controlled projection of lyrics therefor. Control circuit means are provided which operate completely independently from the piano roll of the player piano for actuating a slide projector in synchronism with the musical composition being played by the player piano.

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### 3,756,717
### SLIDE PROJECTOR

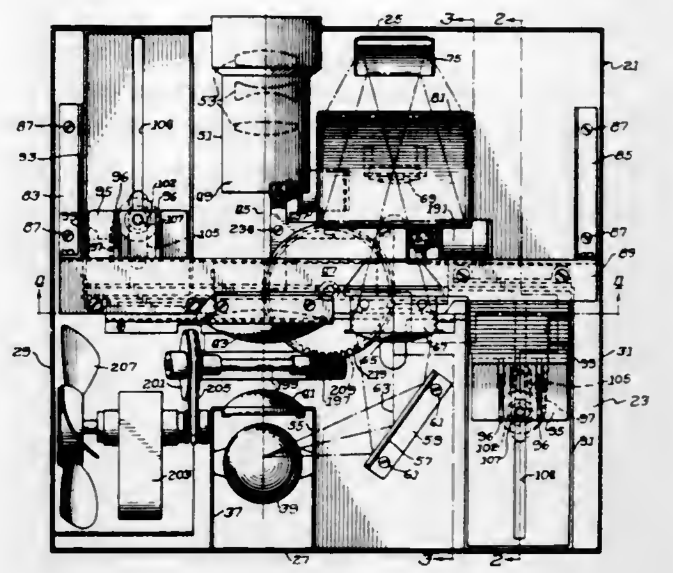
**Frank C. Badalich, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.**

**Filed May 10, 1971, Ser. No. 141,618**

**Int. Cl. G03b** *21/02*

**U.S. Cl. 353—21** **23 Claims**

This disclosure describes a slide projector having a slide transfer mechanism for moving slides from a slide supply tray, through slide preview and projection stations, to a slide storage tray. The transfer mechanism operates in either a forward or a reverse mode. A pair of yokes are moveable into and out of slide contact in accordance with the setting of face cams. The setting of the face cams is determined by the mode of operation of the projector. During slide movement, the



yokes are moved into contact with the slides. While during return movement, the yokes are moved out of contact with the slides.

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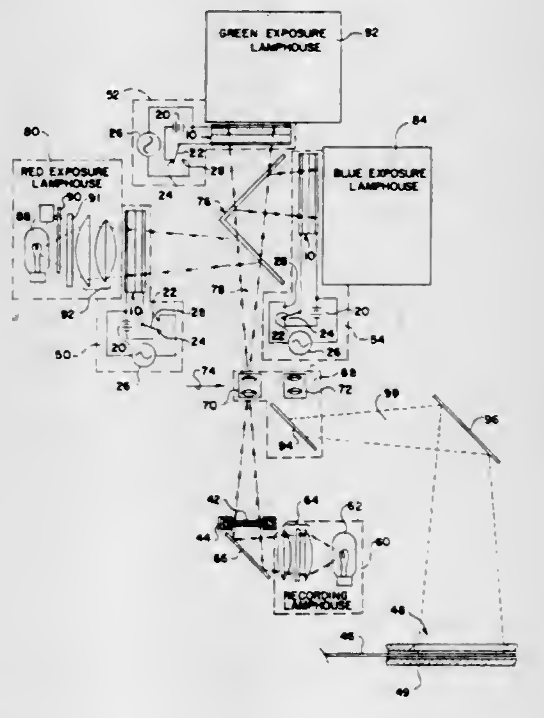
### 3,756,718
### COLOR PRINTER

**Edward K. Letzer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Mar. 29, 1972, Ser. No. 239,152**

**Int. Cl. G03b** *27/32*

**U.S. Cl. 355—32** **12 Claims**



Photofinishing production of prints from positive photographic original transparencies such as color slides is accomplished by recording the pictorial information from the photosensitive photographic original transparency in three primary colors on three electro-optical temporary image forming and storing devices, then additively projecting corresponding color separation images of the three temporary images stored by the temporary image forming devices onto conventional color printing paper or film. The temporary image forming devices may each consist of a photoconductor liquid crystal sandwich structure in which each temporary image is formed in response to a first voltage potential applied to each of the sandwich structures during the interval in which the pictorial information on the positive photographic original transparency is recorded. After exposure of the photosensitive print material is completed, the temporary images may be erased by applying a second voltage potential to the photoconductor liquid crystal sandwich structures.

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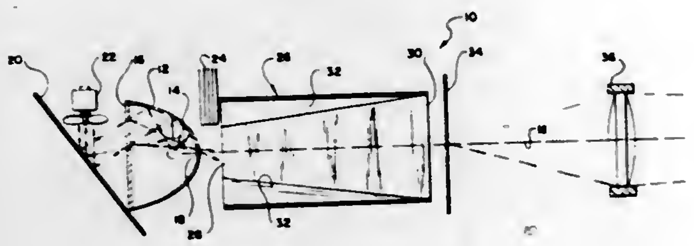
### 3,756,719
## HIGH EFFICIENCY INTEGRATOR BOX
**James E. Harter, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Apr. 17, 1972, Ser. No. 244,486**
**Int. Cl. G03b** *27/54*
**U.S. Cl. 355—67** **4 Claims**



An improved integrator box for use in a high intensity lamphouse to produce reflection images of the lamphouse aperture to increase the illumination uniformity. A plurality of triangular shaped reflectors are placed within the integrator box of the lamphouse. By proper location and sizing of the reflectors supplementary first reflection images of the light source can be directed into the quandrant centers of the printing plane.

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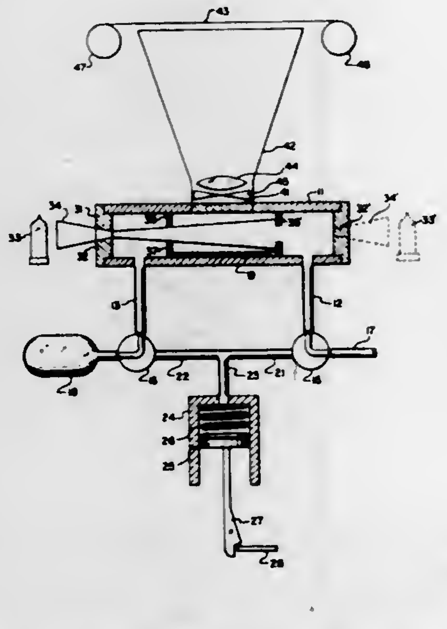
### 3,756,720
## PORTABLE PHOTOGRAPHIC ATMOSPHERIC PARTICLE DETECTOR
**George F. Skala, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.**
**Filed Jan. 27, 1972, Ser. No. 221,225**
**Int. Cl. G01n** *1/00, 21/00*
**U.S. Cl. 356—37** **8 Claims**



A compact, portable photographic atmospheric particle detector that is relatively independent of operator technique and can be operated rapidly and easily in the field for use in field aerosol measurements in remote areas where concentrations of less than 1,000 particles per cubic centimeter are expected to be encountered. The detector includes a camera viewing a precise measurement illuminated volume of known dimension within an expansion type condensation chamber for photographically recording pictures of the cloud of liquid droplets produced about atmospheric particles as centers of condensation during a measurement cycle.

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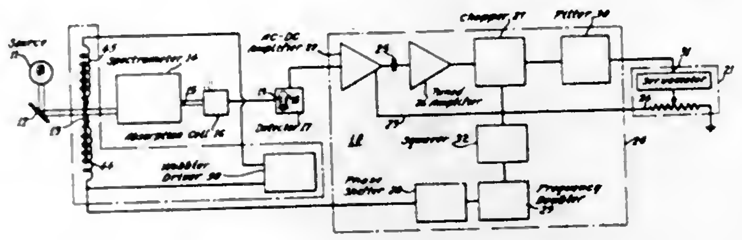
### 3,756,721
## SPECTROMETER SYSTEM
**David T. Williams, Gainesville, Fla., assignor to Board of Regents, State of Florida, Tallahassee, Fla.**
**Continuation-in-part of Ser. No. 59,456, July 30, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 232,053**
**Int. Cl. G01j** *3/04, 3/42*
**U.S. Cl. 356—80** **12 Claims**



A wobbling single slit is provided as the entrance slit of a spectrometer which rectilinearly reciprocates at a constant amplitude, such amplitude being selectively adjustable. A control signal is obtained from a circuit that oscillates the slit for controlling the frequency and phase of the ac signal component detected and amplified from the detector after the superposed dc detected signal component is separated from the ac signal component.

The invention described herein was made in the course of work under a grant or award from the Department of Health, Education and Welfare.

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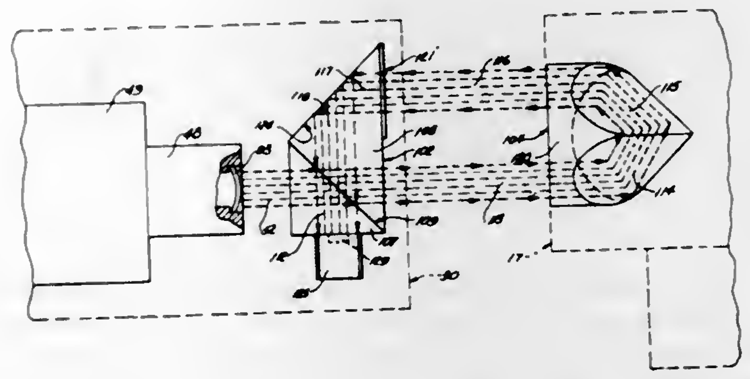
### 3,756,722
## INTERFEROMETRIC MEASURING SYSTEM
**Theodore A. Wetzel, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.**
**Filed July 29, 1965, Ser. No. 475,720. The portion of the term of this patent subsequent to Mar. 4, 1988 has been disclaimed.**
**Int. Cl. G01b** *9/02*
**U.S. Cl. 356—106** **7 Claims**



This invention relates to an interferometer particularly adapted to measure distances with extreme accuracy. To obtain maximum accuracy, a base having a table rectilinearly movable thereon is provided with a laser light source for projecting a light beam parallel to the path of table movement. A unitary prismatic element affixed to the base provides a single beam splitter interposed in the path of the laser beam for dividing it into two split beams including a parallel measuring beam and a transverse reference beam. Prismatic reflector means are secured to the table in a position to receive the measuring beam from the unitary prismatic element and reflectively return thereto a continuous, spaced apart parallel measuring beam. An angular reflector is affixed to the unitary primsmatic element for reflecting the returned beam transversely toward the beam divider along a direction and path joining the transverse reference beam for combining therewith to provide interference fringes. The interference fringes extend transversely from the beam splitter to activate a light responsive counting device for indicating the extent of movement between the table and base.

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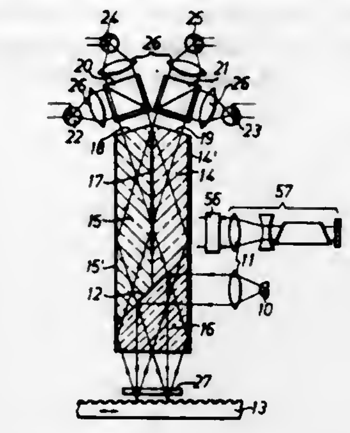
### 3,756,723
## METHOD OF MEASURING THE DISPLACEMENT OF AN OBJECT AND ARRANGEMENT THEREFOR
**Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany**
**Filed Jan. 15, 1971, Ser. No. 106,735**
**Claims priority, application Germany, Jan. 27, 1970, P 20 03 492.8**
**Int. Cl. G01b** *9/02*
**U.S. Cl. 356—110** **18 Claims**



The method includes the steps of producing at least two bundles of light rays for measurement in one coordinate or at least four bundles of light rays for measurement in two coordinates by diffraction on a grating which is connected to the object to be measured or to a measuring head being provided with photoelectric detecting means. The bundles of light belong to different diffraction orders and pass through optical paths of substantially equal length and through a beam combiner wherein the polarized components are phase-shifted relative to one another. On leaving the beam combiner, the components are displaced in modulation phase by an angle unequal to *n* × 180° relative to one another and are detected by photoelectric means for providing signals from which the displacement of the object may be deduced.

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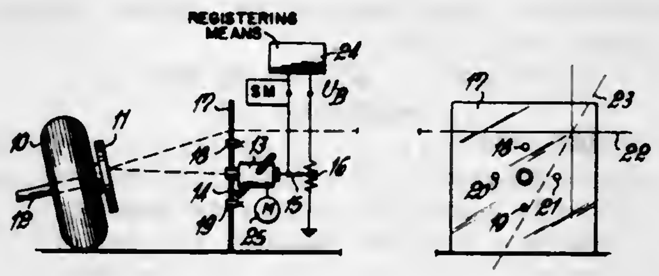
### 3,756,724
## DEVICE FOR MEASURING CAMBER AND CASTER OF VEHICLE WHEELS
**Gunter Schirmer, Leinfelden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**
**Continuation-in-part of Ser. No. 47,034, June 17, 1970, Pat. No. 3,630,623. This application Oct. 28, 1970, Ser. No. 84,798**
**Claims priority, application Germany, June 1, 1969, P 19 30 737.0**
**Int. Cl. G01b** *11/26*
**U.S. Cl. 356—155** **11 Claims**



A projector pivotal about an inclined axis casts upon a reflector mounted on a wheel a pattern, in the form of cross hairs, which reflector returns the image to a screen having therein two photo-diodes, the angular movement of the projector required to cause a cross hair to fall across the respective photo-diode is a measure of the caster or camber of the wheel. The projector is connected to the tab of a resistor, the voltage at the tab being indicative of the pivotal movement of the projector.

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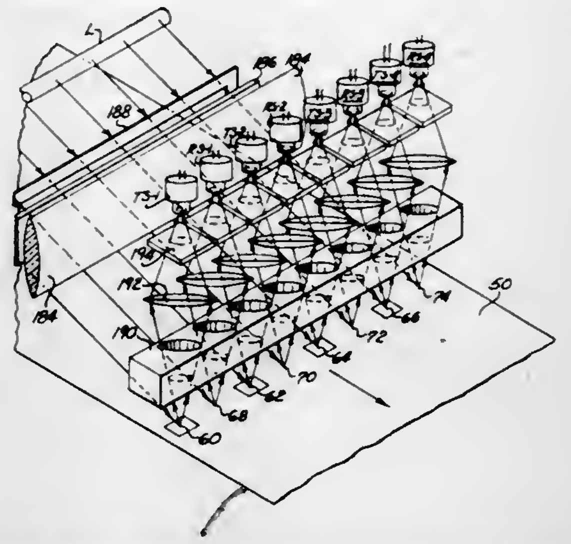
### 3,756,725
## MEASUREMENT AND CONTROL OF INK DENSITY
**John Michael Manring, Cleveland, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio**
**Filed Oct. 12, 1970, Ser. No. 79,952**
**Int. Cl. G01n** *21/48*
**U.S. Cl. 356—195** **22 Claims**



Apparatus and method are provided for use in determining the density of color reproductions in printing with ink on moving sheet material, such as sheet members or elongated webs, in a printing press, such as a sheet fed or a web fed press. Light is transmitted to the sheet material so as to simultaneously impinge upon an inked test patch surface area and an adjacent reference surface area. Light reflected from these areas along a particular angle is sensed and electrical signals are obtained and which are utilized to provide output indications of ink density of the test patch surface area.

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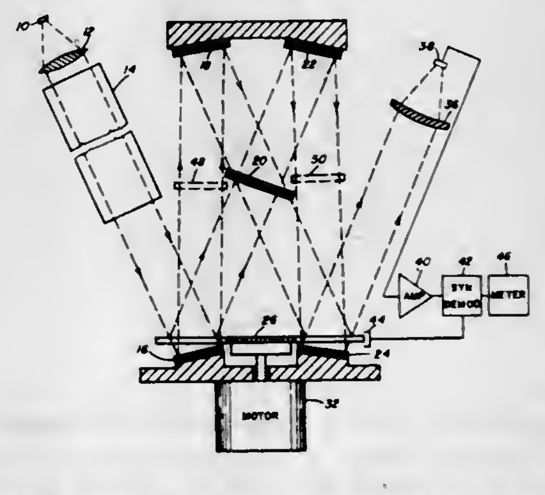
### 3,756,726
## SPECTRAL ANALYSIS UTILIZING A BEAM-SWITCHING OPTICAL SYSTEM
**Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.**
**Filed Mar. 29, 1971, Ser. No. 128,786**
**Int. Cl. G01n** *21/22*
**U.S. Cl. 356—205** **4 Claims**



A beam-switching optical system receives radiation from a source which is passed through a sample cell containing matter to be analyzed. The system is comprised of four small fixed mirrors, a narrow band pass interference filter, and a mirrored radiation chopper having an odd number of alternating reflecting and open sectors. The small fixed mirrors are arranged in cooperating reflecting pairs with the interference filter and chopper positioned therebetween, such that the rotation of the radiation chopper alternately directs the radiation through the interference filter at two different angles of incidence. This switching of the incidence angle shifts the band pass of the interference filter to provide radiation in two spectral regions. The output of the beam switching optical system is applied to a detector producing an AC signal which is the measure of the slope of the transmission curve of the filter. The amplitude of the signal which is synchronously demodulated constitutes an indication of the magnitude of the constituent of the sample being analyzed.

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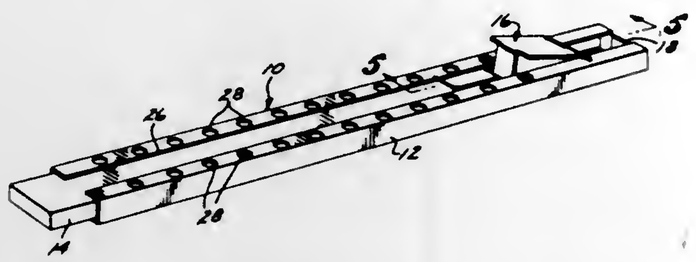
### 3,756,727
### HOLDER FOR MARKING MATERIAL

**R. Dennis Gallagher, Fountain Valley, Calif., assignor to Maitlen & Benson, Inc., Long Beach, Calif.**
**Filed Dec. 1, 1971, Ser. No. 203,619**
**Int. Cl. B43k** *21/00*
**U.S. Cl. 401—84** **3 Claims**



A holder having a receptacle for slidably receiving a stick of marking material such as soapstone. An indexing member resiliently holds one end of the soapstone stick, slides with the stick, and engages one of several longitudinally spaced stops on the receptacle to control the extent of projection of the soapstone. The indexing member is depressible to disengage the stops for slidable readjustment of the longitudinal position of the soapstone.

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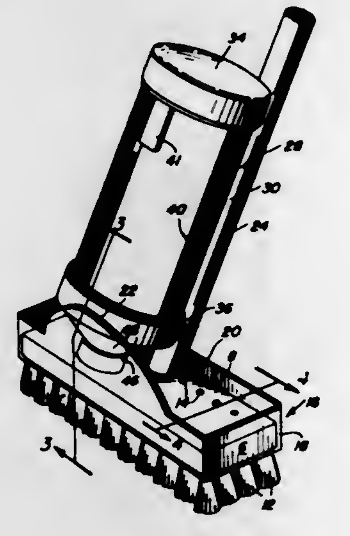
### 3,756,728
### CARPET AND RUG CLEANING IMPLEMENT

**Henry L. DeLaughter, P.O. Box 1202, Americus, Ga.**
**Filed Jan. 28, 1972, Ser. No. 221,524**
**Int. Cl. A46b** *11/04*
**U.S. Cl. 401—140** **4 Claims**



A manually actuatable implement for spot cleaning rugs and carpets or for cleaning entire rugs and carpets in the form of a shower washer which does not use a faucet or valve for flow control. The implement includes a brush designed to automatically control the flow of shampoo or cleaner so that the correct amount will be applied to a predetermined area. Flow of shampoo may be stopped at any time by bodily lifting and removing the source of supply. The brush embodies a rigid head provided with brushing and scrubbing bristles. The head also has vertical bores which provide fluid distributing and gravitating passages. Plastic or equivalent wall means is attached to and surrounds the marginal edges of the head. Upper projecting portions of the wall means provide endless flanges which border and rise above the top side and coact therewith in providing a tray-like fluid pooling sump. A readily applicable and removable inverted fluid containing bottle serves to deliver the fluid into the sump. This bottle is removably mounted in the hollow portion of the holder provided therefor on a portion of the handle which is adjacent and aligned with the wall means sump.

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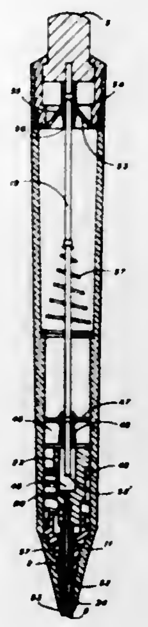
### 3,756,729
### DISPENSING APPLICATOR

**William F. Tufts, 2116 Peachtree Rd., N.W., Atlanta, Ga.**
**Continuation of Ser. No. 25,499, April 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 12,578, Feb. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 800,381, Feb. 19, 1969, abandoned. This application June 26, 1972, Ser. No. 266,083**
**Int. Cl. B43k** *5/18*
**U.S. Cl. 401—150** **20 Claims**



A correction device, in the general shape of a writing pen, containing a rapid drying opaque liquid of the type used to mask typing and drafting errors. The pen's structure includes a reservoir, a pump system and an applicator all having a common central axis. An actuating button causes the pump to eject a small globule of liquid thru a normally closed orifice at the center of the applicator, which is located at the bottom of the pen, for easy application to the subject error.

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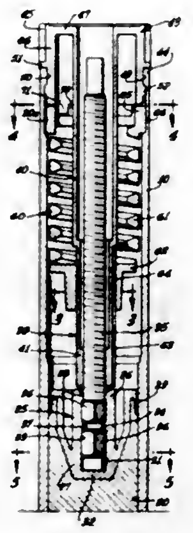
### 3,756,730
### FLUENT MATERIAL DISPENSER HAVING OOZE PREVENTION MEANS

**Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.**
**Filed Dec. 8, 1971, Ser. No. 205,998**
**Int. Cl. B43k** *5/06*
**U.S. Cl. 401—174** **12 Claims**

A fluent substance is forced through the dispensing outlet of a container by a screw-fed piston upon rotation of a screw mechanism in a dispensing direction. One end of a torsion spring device is secured for rotation with the drive portion of the screw mechanism, its other end frictionally engaging the inner container wall, such that rotation of the drive portion in the dispensing direction energizes the spring device, release of the drive mechanism enabling the torsion spring device to automatically reversely turn the drive mechanism and slightly retract the piston, thereby relieving the pressure on the fluent substance to prevent its oozing from the dispensing outlet of the container.



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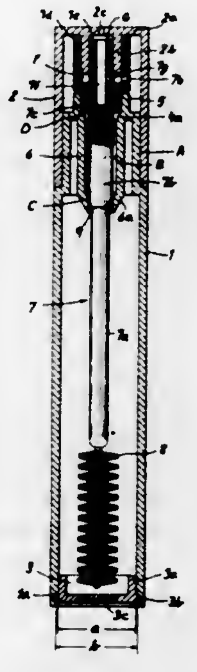
### 3,756,731
### APPLICATOR FOR PASTE-LIKE OR SEMI-LIQUID PRODUCTS

**Fernand Albert Joseph Aubry, La Jonchere 92, Ave. Saint-Claire, Rueil Malmaison, France**
**Filed Mar. 9, 1972, Ser. No. 233,165**
**Int. Cl. A45d** *39/16*
**U.S. Cl. 401—122** **4 Claims**



An applicator for paste-like or semi-liquid products comprising a container enclosed by a cap having a brush attached thereto and extending axially into the container, said container having, in the order of withdrawing the brush, a draining lip, a smoothing chamber and a relaxing chamber for the bristles of the brush, two seals being provided by cylindrical sliding portions of the brush and container, one between the lip and the smoothing chamber, and the other in the relaxing chamber.

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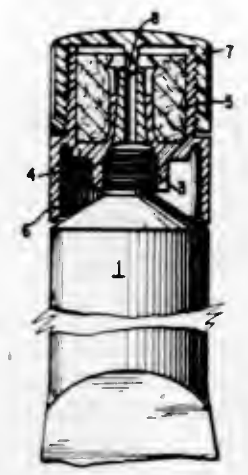
### 3,756,732
### SPREADER ASSEMBLY FOR ADHESIVE CONTAINERS

**Albert Stoffler, Dusseldorf-Benrath, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany**
**Filed June 18, 1971, Ser. No. 154,289**
**Claims priority, application Germany, Nov. 6, 1970, P 20 54 667.2**
**Int. Cl. B43k** *1/00*
**U.S. Cl. 401—202** **7 Claims**

This invention relates to a spreader assembly for an adhesive container having an elongated dispenser neck comprising a holder containing a porous spreader adapted to removably engage the elongated neck of the adhesive container and having claws deformable by said neck to secure said porous spreader, said holder containing a porous spreader when engaged with said dispenser neck extends beyond the tip of said dispenser neck.



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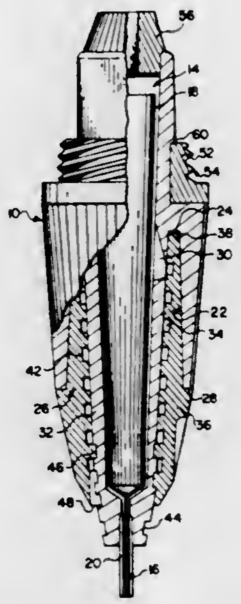
### 3,756,733
### TUBULAR WRITING PEN

**Stefan Glasa, Wedel, and Werner Westphal, Pinneberg, both of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.**
**Filed Aug. 29, 1972, Ser. No. 284,537**
**Claims priority, application Germany, Dec. 1, 1971, P 21 59 522.2**
**Int. Cl. B43k** *1/06*
**U.S. Cl. 401—259** **9 Claims**



A tubular writing instrument having a writing nib consisting of a cylindrical body having an inside bore operatively containing a drop weight and cleaning wire extending therefrom which projects into a writing tube positioned in the front of the writing nib, the inside bore being connected with a compensating chamber for the ink through an aperture interconnecting the compensating chamber and the bore through the body of the cylindrical body.

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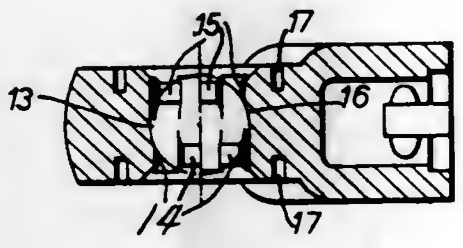
### 3,756,734
### SOCKETS FOR BALL AND SOCKET JOINTS

**Lawrence George Nicholls, Tyseley, Birmingham, England, assignor to Girling Limited, Birmingham, England**
**Filed Mar. 6, 1972, Ser. No. 231,893**
**Claims priority, application Great Britain, Mar. 9, 1971, 6,397/71**
**Int. Cl. F16c** *11/06*
**U.S. Cl. 287—90 R** **7 Claims**

A ball socket component of moulded form has its part spherical surface formed by spaced, axial extending projections having concave, part spherical end portions arranged in two annular groups. The projections forming one row are aligned with corresponding recesses between the projections of the other row, enabling the component to be made as a one piece moulding, without the use of a collapsible core piece.

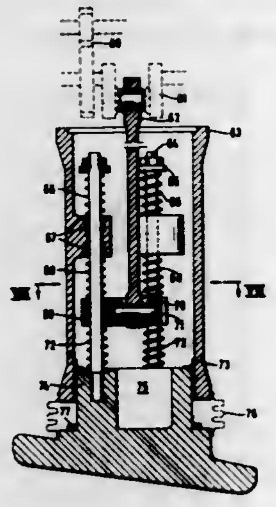


### 3,756,735
### VIBRATION TAMPER

**Albert Linz, Hoffnungsthal, Germany, assignor to Bopparder Maschinenbaugesellschaft mbH, (BOMAG) Boppard/ Rhine, Germany**

**Filed Oct. 15, 1971, Ser. No. 189,555**
**Int. Cl. E01c** *19/34*

**U.S. Cl. 404—133** **10 Claims**



A tamping machine including a motor, a crank driven by said motor over an appropriate mechanical transmission, a linkage connecting the crank to a vertically reciprocating plunger disc, a tamping foot disposed beneath the plunger disc, a housing encasing the crank, linkage and the upper end of the tamping foot, a first set of springs for urging the tamping foot to move in response to movement of the plunger disc, and a second set of springs for damping the shock forces created within the machine when the tamping foot strikes the material to be compacted. The second set of springs eliminates, or at least minimizes, the wear and tear on the drive mechanism of the tamping machine caused by the shock forces by transmitting, directly or indirectly, a substantial portion of such shock forces to the sturdy machine body. The second set of springs are connected between the machine body and the plunger disc and/or tamping foot.

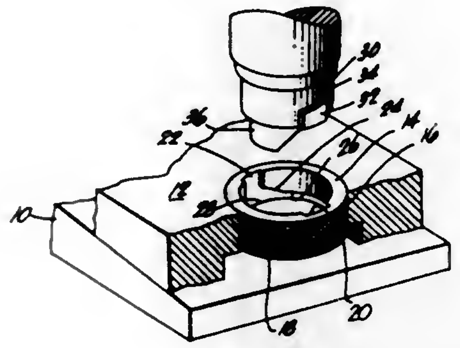
### 3,756,736
### DRILL BUSHING SYSTEM

**Arthur Marcoux, Hermosa Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**

**Filed Mar. 2, 1972, Ser. No. 231,258**
**Int. Cl. B23b** *45/14*

**U.S. Cl. 408—14** **5 Claims**

A drill bushing system for power-fed rotary cutters wherein the tool is releasably locked to the drill bushing in a drill bar to permit power-feeding without separation of the cutter from the bushing during the cutting operation. A novel sensing device is provided to regulate cutting depth even when the work surface is not normal to the cutter axis of rotation.

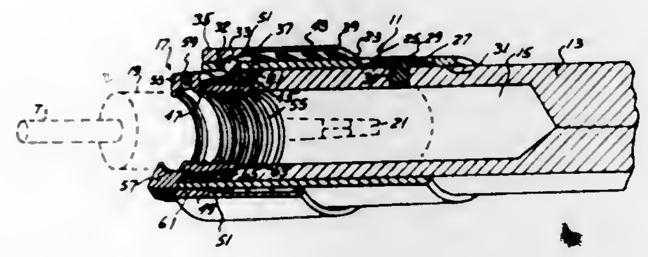


### 3,756,737
### QUICK CHANGE SPINDLE ADAPTER WITH TWO-PIECE NUT ASSEMBLY

**Theodore M. Smith, Detroit, Mich., assignor to The Theodore M. Smith Trust; Lucille G. Smith, trustee and Theodore M. Smith, trustee, Detroit, Mich.**

**Filed Feb. 14, 1972, Ser. No. 225,872**
**Int. Cl. B23b** *31/02*

**U.S. Cl. 408—239** **6 Claims**



A quick change adapter for a power rotated spindle to removably receive a tool holder which includes a cylindrical body mounted on and projecting forwardly of the spindle, with a forwardly retractable spring biased control sleeve movably mounted on said body and so internally threaded two-piece nut assembly adapted to threadedly receive a tool holder which is removably projected into said body and bears against said spindle and wherein a series of spaced balls are nested in said body with portions of the balls extending radially outward operatively engaged by said sleeve and with inner radial portions of said balls retainingly engaging said nut assembly.

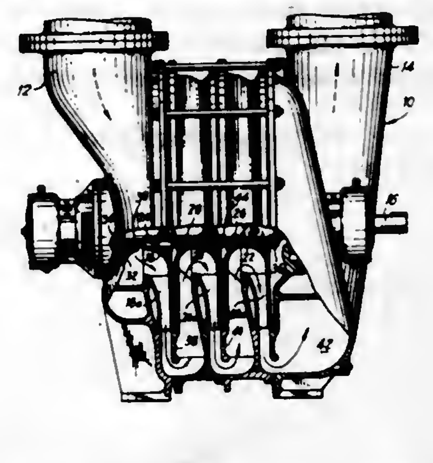
### 3,756,738
### CENTRIFUGAL PUMP WITH DIFFERENTIAL THERMAL EXPANSION RELIEF MEANS

**Wilfred J. Lee, East Syracuse, N.Y., assignor to Clarkson Industries, Inc., New York, N.Y.**

**Filed Oct. 22, 1971, Ser. No. 191,863**
**Int. Cl. F04d** *1/00, 17/08*

**U.S. Cl. 415—131** **7 Claims**

A centrifugal blower having one or more impellers mounted on a shaft for rotation therewith with the impellers and shaft being made of materials having different thermal coefficients of expansion and the impeller hubs being provided with means for relieving compressive stresses generated by differential expansion. The stress relieving means comprises disk-shaped channels formed in the impeller hubs to permit the central portions of the impeller hubs to be resiliently deformed to relieve the compressive stresses, thereby avoiding shaft distortion which produces vibration of the blower.



### 3,756,739
### TURBINE-PUMPS

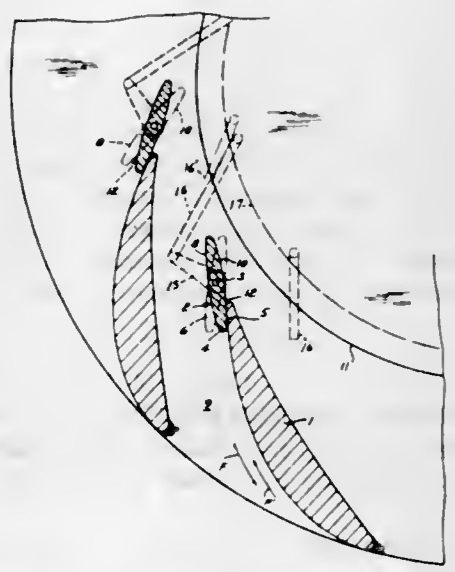
**Pierre Boussuges, Grenoble, France, assignor to Societe Pour L'Etude et le Development Des Turbines Hydrauliques (Neyrpic Sfac), Grenoble, France**

**Filed June 9, 1971, Ser. No. 151,207**

**Claims priority, application France, June 12, 1970, 7021545**

**Int. Cl. F01d** *9/00;* **F03g** *3/18*

**U.S. Cl. 415—161** **6 Claims**



The movable guide vanes of the mobile distributor of the turbine pump are short and so arranged with relation to the fixed guide vanes of the fixed distributor, that when the machine operates as a pump the movable guide vanes bear on the trailing ends of the fixed guide vanes, and when the machine operates as a turbine, the movable guide vanes pivot in a direction to increase the opening necessary to ensure suitable distribution of water over the impeller.

### 3,756,740
### TURBINE STAGE

**Mikhail Efimovich Deich, Energeticheskaya ulitsa 8, korpus 1, kv. 56, Moscow, U.S.S.R., and Klaus Noiman, Michelangelostrasse, 83, 1055, DDR, Berlin, Germany**

**Filed Aug. 13, 1971, Ser. No. 171,589**
**Int. Cl. F04d** *29/08*

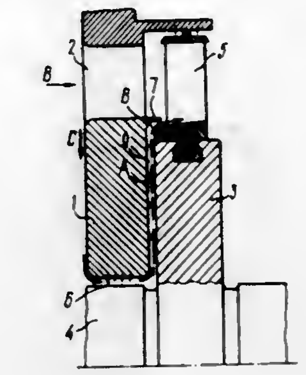
**U.S. Cl. 415—170 R** **1 Claim**

The present invention relates to turbine-building industry and, more particularly, the invention relates to improvements in turbine stages.

The proposed stage comprises a diaphragm with a nozzle ring and a rotor disk with moving blades. The disk is mounted behind the diaphragm with a gap so that the main flow of working medium forced from the nozzle ring acts on the moving blades of the rotor.

The gap between the disk and the diaphragm is an inter-rim gap.

Made on the end face of the diaphragm along the whole length of its root surface on the side facing the inter-rim gap is a projection which partially closes the root surface of the moving blade and forms with this surface an annular gap for passing the working medium.

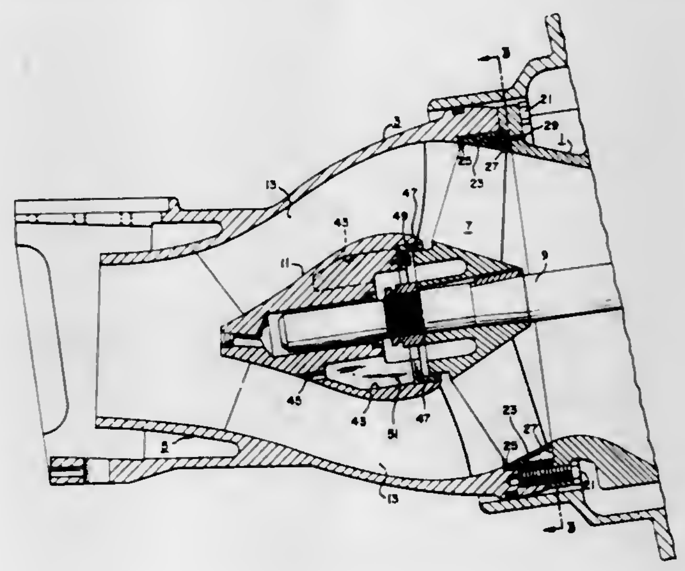


### 3,756,741
### JET PROPULSION PUMP ASSEMBLY

**Fred T. Woell, Jr., Little Rock, Ark., assignor to Jacuzzi Bros., Inc., Little Rock, Ark.**

**Filed Dec. 17, 1971, Ser. No. 209,138**
**Int. Cl. F04d** *29/08;* **F01d** *3/00*

**U.S. Cl. 415—174** **4 Claims**



A jet propulsion pump assembly is provided with wear-ring of non-metallic material such as plastic, the wear-ring being installed so as to be worn in by rotation of the impeller when under load. Provision is made for reducing thrust on the impeller.

### 3,756,742
### CENTRIFUGAL PUMP HAVING STRUCTURE FOR COOLING AND LUBRICATING A SEAL

**Willy Speck, Beringersdorf, and Walter Speck, Heuberg, both of Germany**

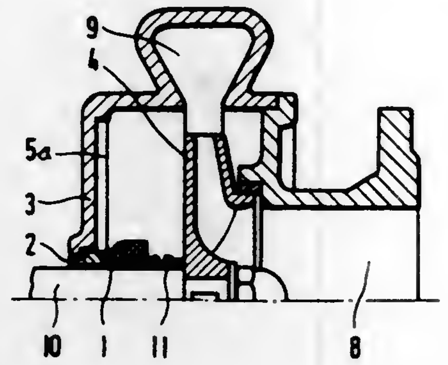
**Filed Oct. 22, 1971, Ser. No. 191,613**

**Claims priority, application Italy, Feb. 4, 1971, 20161 A/71**

**Int. Cl. F01d** *5/08*

**U.S. Cl. 415—175** **10 Claims**

A centrifugal pump which is provided with a structure for cooling and lubricating a sealing gland even when there is no pressure in the pump. The pump has a rotary shaft and an impeller fixed thereto for rotation therewith. A pump housing surrounds the impeller and rotary shaft. The housing has on one side of the impeller a suction inlet and on the other side thereof an inner surface which is directed toward the impeller. At this other side of the pump housing there is in the interior thereof a sealing gland which surrounds the shaft. At its inner surface which is directed toward the impeller the pump housing carries a deflecting structure for deflecting liquid from the impeller to the region of the sealing gland so that the latter will receive cooling and lubricating liquid even in a situation where pressure has not yet built up in the interior of the pump.



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### 3,756,743
## ROTORS FOR ROTARY WINGED AIRCRAFT

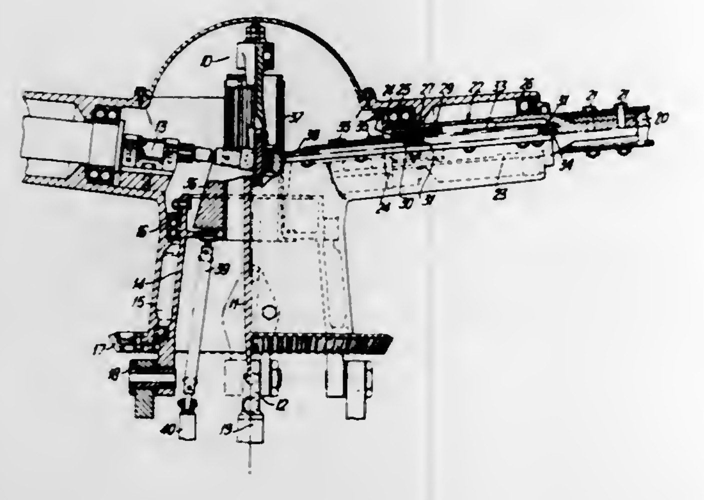
**Frank He[illegible] Robertson, 'Coranodo,' 87 Church Rd., County Down, Holywood, Ireland**

**Filed Apr. 15, 1971, Ser. No. 134,369**

**Claims priority, application Great Britain, Apr. 15, 1970, 17,916/70**

**Int. Cl. B64c 2[illegible]**

**U.S. Cl. 416—108** **1 Claim**



This invention relates to a hub for a rigid rotor of a rotary winged aircraft and includes means for varying the blade angle of attack of each blade of a rotor as each blade rotates around the path traced out by the rotor to bring about a non-sinusoidal cyclic pitch change whilst independently allowing a sinusoidal cyclic pitch control to be superimposed thereon through the medium of a spider, the means being associated with each of the blade roots and includes a spindle for each blade, the spindles being equidistantly mounted for rotational movement in a rotatable component of the hub, and at their inner ends are each in spiral-splined engagement with a plunger whose inner end bears on a [illegible]ed cam and whose outer periphery has a predetermined peripheral profile to enable, for each blade, the blade angle of attack in relation to its azimuth position to be varied to suit the speed of the rotary winged aircraft.

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### 3,756,744
## AXIAL WATER FLOW MACHINES

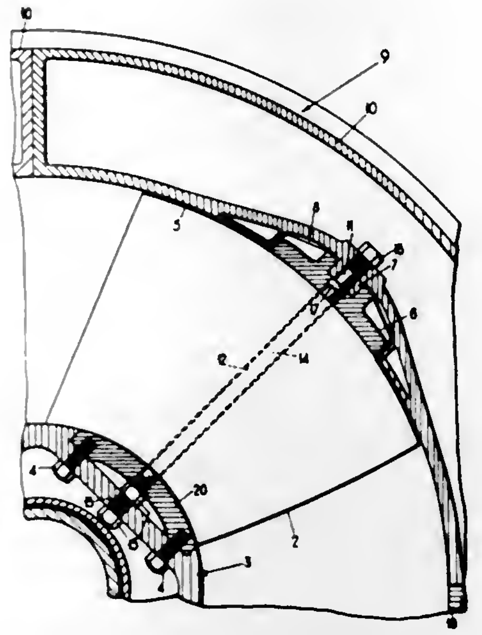
**Michael Braikevitch, Netherton, Lancashire, England, assignor to The English Electric Company Limited, London, England**

**Filed Jan. 21, 1971, Ser. No. 108,535**

**Claims priority, application Great Britain, Jan. 23, 1970, 3,318/70**

**Int. Cl. F01d** *7/00*

**U.S. Cl. 416—189** **6 Claims**



In an axial water flow pump or turbine in which the runner comprises a hub, vanes extending radially from the hub, and a rim disposed around the vanes for example for carrying an electrical rotor, the rim is attached to the hub by tie bars. Preferably one tie bar is associated with each vane and extends through a bore or slot formed in the vane. Whilst tangential forces can be transmitted between the rim and the hub by the vanes, radial forces are carried by the tie bars. Thus bending stresses to which the rim is subjected are reduced, the rim will remain more nearly circular and radial clearance between the rim and its surroundings can be reduced.

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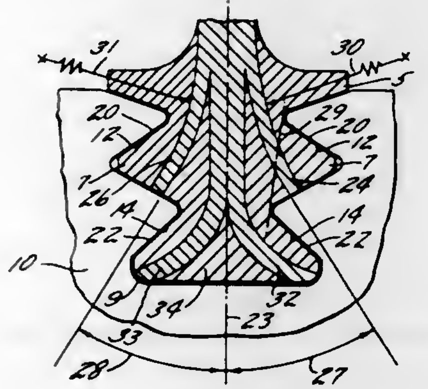
### 3,756,745
## COMPOSITE BLADE ROOT CONFIGURATION

**Alf S. Alver, Wapping, and Walter Pilpel, West Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Filed Mar. 15, 1972, Ser. No. 234,743**

**Int. Cl. F01d** *5/14, 5/14*

**U.S. Cl. 416—230** **8 Claims**



In a fiber reinforced composite blade, having a root comprising a plurality of tangs, the fibers are brought from the airfoil into the root and arranged within the root to control the relative flexibility of the tangs. With a suitable arrangement of fibers within the root, the optimal stresses on the blade can be distributed between the several tangs to best advantage.

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### 3,756,746
## BLADE OR VANE FOR A GAS TURBINE ENGINE

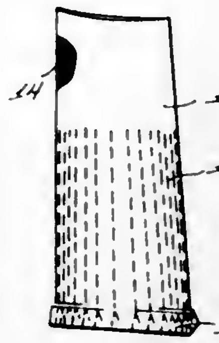
**Alan Anthony Baker, Bramcote, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England**

**Filed Sept. 13, 1971, Ser. No. 180,049**

**Claims priority, application Great Britain, Sept. 15, 1970, 43,924/70**

**Int. Cl. F01d** *5/14*

**U.S. Cl. 416—230** **10 Claims**



The invention relates to a blade or vane for a gas turbine engine which comprises a carbon fibre reinforced matrix material which is further strengthened by strong ductile metal wires whose modulus of elasticity is similar to that of the carbon fibres.

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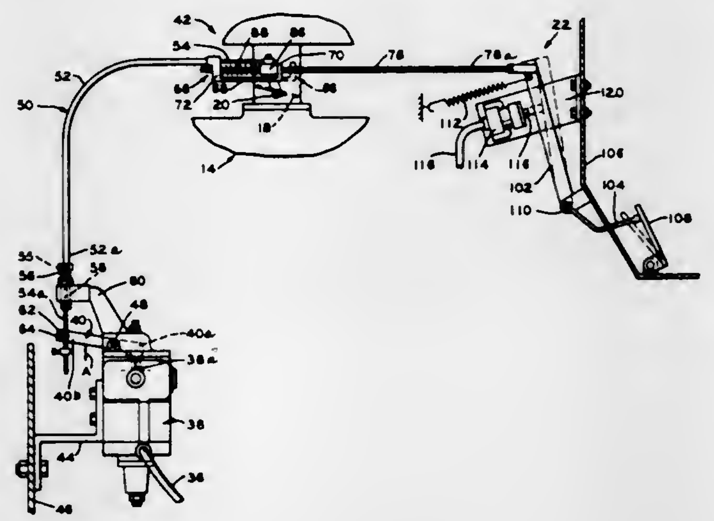
### 3,756,747
## SPEED CONTROL FOR ENGINE DRIVEN FLUID COMPRESSOR

**Terence Caffrey, Kent, Ohio, assignor to Davey Compressor Company, Kent, Ohio**

**Filed Dec. 29, 1971, Ser. No. 213,478**

**Int. Cl. F04b** *49/00;* **F02d** *11/08*

**U.S. Cl. 417—34** **8 Claims**



A speed control arrangement is disclosed for an engine driven fluid compressor. The engine includes a throttle valve by which the engine speed and accordingly the compressor speed is variably regulated. A pressure sensitive device is connected to the compressor to sense compressor output pressure and includes a component having a mechanical displacement proportional to compressor output pressure. Displacement of the component is imparted to the throttle valve through an improved actuator arrangement which permits the pressure sensing device to be selectively mounted relative to the throttle valve and other than directly on the engine or in precise alignment with the throttle valve actuating arm.

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### 3,756,748
## VALVELESS OSCILLATING DISPLACEMENT PUMP

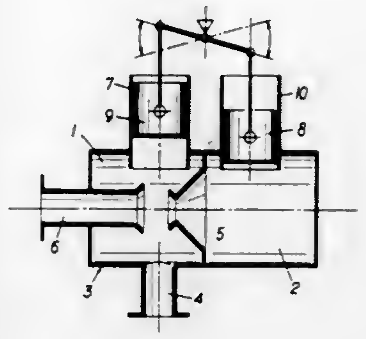
**Ernst Thiele, Staudingergasse 11, Vienna, Austria**

**Filed Dec. 29, 1970, Ser. No. 102,342**

**Claims priority, application Austria, Jan. 2, 1970, A 12/70**

**Int. Cl. F04f** *7/00;* **F04b** *43/00;* **F04f** *9/00*

**U.S. Cl. 417—158** **7 Claims**



A valveless pump having two chambers, one of which is filled with a liquid which when oscillated displaces liquid from the other chamber into a receiving duct, through which the liquid is conducted to a desired location.

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### 3,756,749
## PUMP PRESSURE AND FLOW VOLUME REGULATING APPARATUS

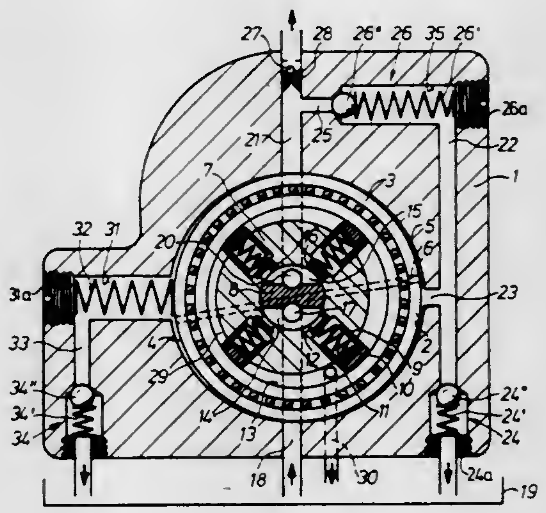
**Ulrich Aldinger, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Feb. 2, 1972, Ser. No. 222,796**

**Claims priority, application Germany, Feb. 3, 1971, P 21 04 932.1**

**Int. Cl. F04b** *49/08*

**U.S. Cl. 417—220** **9 Claims**

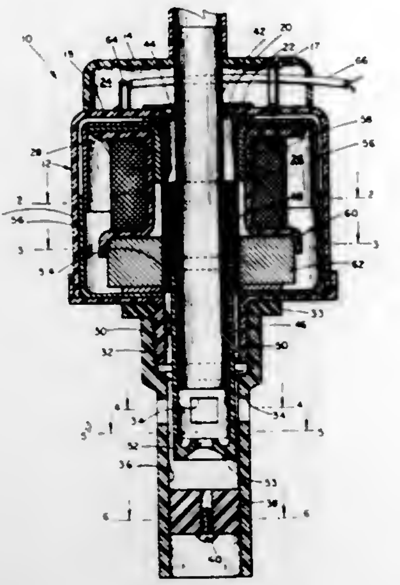


The outlet pressure and pumped volume of a radial piston pump are automatically regulated by adjusting the eccentricity of the actuating ring which reciprocates the pistons during rotation of the cylinder block of the pump. A spring urges the actuating ring in one direction to a position in which the maximum volume is pumped, and a control valve, responsive to the pressure in the outlet conduit, opens at an excess pressure and supplies fluid to a regulating chamber between the actuator ring and a stator cavity, overcoming the spring force and reducing the eccentricity of the actuating ring and thereby the pressure and flow volume in the outlet conduit.

### 3,756,750
### RECIPROCATING VALVELESS PUMP

**William F. Summerfield, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.**

**Filed July 20, 1971, Ser. No. 164,249**
**Int. Cl. F04f** *7/00*
**U.S. Cl. 417—241** **6 Claims**



A valveless pump comprising a housing which is separated into first and second chambers, the second chamber being of annular extent and surrounding the first chamber. A magnetic assembly is provided in the second chamber for generating a magnetic field and for causing a water-ejecting magnetically responsive hollow piston to reciprocate axially along the first chamber in which the piston is freely disposed. The housing furthermore includes water inlet means for directing water into the first chamber and water outlet means for receiving water ejected from the first chamber by the piston. The water inlet means is submergible in water and separated from the second chamber for permitting maintaining the second chamber free from submerging in water during the water ejection by the piston.

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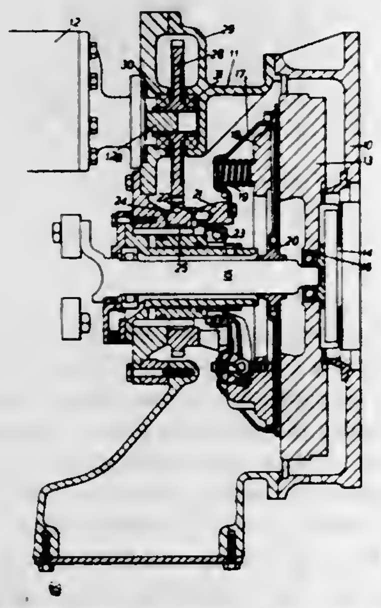
### 3,756,751
### HYDRAULIC POWER FROM A PRIME MOVER

**Joseph Leslie Holmes, Weston, England, assignor to Coventry Climax Engines Limited, Warwickshire, England**

**Claims priority, application Great Britain, Oct. 10, 1970, 48274/70**

**Filed Oct. 1, 1971, Ser. No. 185,778**
**Int. Cl. F04b** *9/02*
**U.S. Cl. 417—364** **4 Claims**



Hydraulic power for a vehicle having an internal combustion engine with a flywheel is generated by a hydraulic pump driven from the flywheel. The arrangement is particularly applicable to fork lift trucks.

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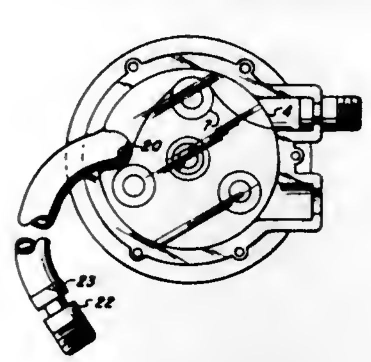
### 3,756,752
### PERISTALTIC PUMP

**Gustav H. Stenner, P.O. Box 17056, Jacksonville, Fla.**

**Filed Dec. 20, 1971, Ser. No. 209,605**
**Int. Cl. F04b** *43/08, 43/12, 45/06*
**U.S. Cl. 417—477** **5 Claims**



A peristaltic pump including a readily replaceable tube with nipples affixed to the tube ends and which fit and are anchored by sockets in the pump casing, and a rotor disk provided with a tube guide for guiding a replacement tube into operative position in the casing.

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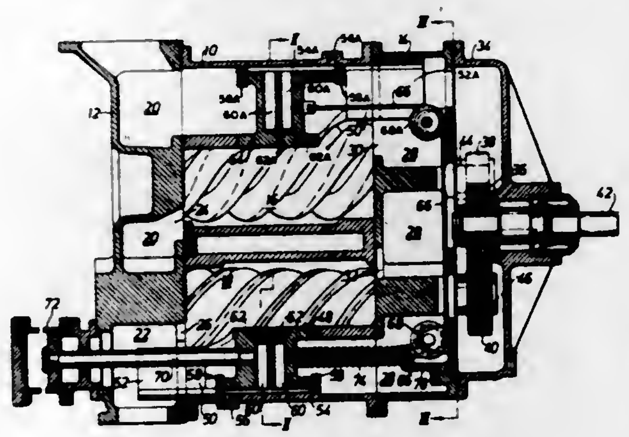
### 3,756,753
### TWO STAGE SCREW ROTOR MACHINES

**Walther Persson, Johanneshov, and Lauritz Benedictus, Saltsjo-Duvnas, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden**

**Filed July 13, 1971, Ser. No. 162,244**

**Claims priority, application Great Britain, July 16, 1970, 34,525/70**

**Int. Cl. F01c** *1/16;* **F04c** *17/12*
**U.S. Cl. 418—9** **8 Claims**



A two-stage screw rotor compressor in which each stage is provided with an adjustable slide valve for varying the volumetric capacity of the stage which makes it possible to vary the capacity of the compressor within wide limits while maintaining a higher efficiency within the whole operating range than in hitherto known compressors of this type. Preferably the two valves are interconnected to move in unison.

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### 3,756,754
### APEX SEAL FOR ROTARY PISTON ENGINE

**Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

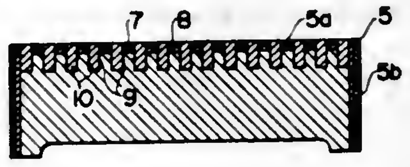
**Filed Oct. 21, 1971, Ser. No. 191,287**

**Claims priority, application Japan, Oct. 24, 1970, 45/93840**

**Int. Cl. F01c** *19/02*
**U.S. Cl. 418—113** **2 Claims**

An apex seal for rotary piston engine has the main body of the apex seal made of a light metal selected from the group of

aluminum, aluminum alloy, magnesium, and magnesium alloy with an oxidized layer of more than 10 microns in thickness



formed by anodic treatment on at least the sliding surface of the main body, and a heat resistant resin impregnating the oxidized layer.

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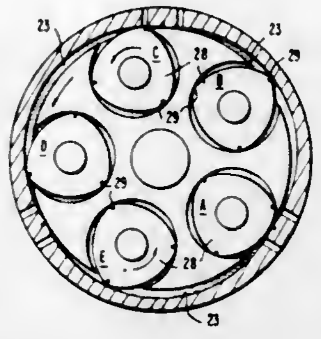
### 3,756,755
### ROTARY POWER DEVICE

**Donald K. Campbell, 35601 S.W. 192nd Ave., Homestead, Fla.**

**Filed Nov. 26, 1971, Ser. No. 202,101**
**Int. Cl. F01c** *1/00*
**U.S. Cl. 418—227** **13 Claims**



A rotary power device embodies a main rotor body which contains a plurality of smaller gear driven rotor elements which revolve with the main rotor body and also revolve relative thereto. Motivating energy for the device is derived in the form of an expanding gas from an external source. A refrigerant type gas or a gaseous product of external combustion may be utilized. Lubricating oil is added to the gas. The device is reversible.

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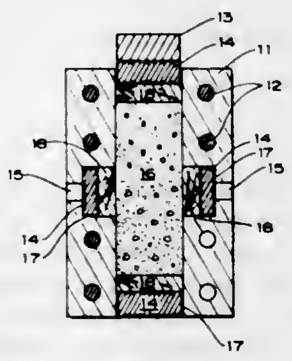
### 3,756,756
### PRESSURE MOLD FOR REMOVING LIQUID FROM MATERIAL BEING CAST

**John E. Wilson, Salt Lake City, Utah; Carl F. Austin, Inyokern, Calif., and William H. Sayler, Salt Lake City, Utah, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C:, by said Austin**

**Filed May 25, 1972, Ser. No. 256,831**
**Int. Cl. B28b** *3/04*
**U.S. Cl. 425—84** **1 Claim**



Grooved plates and end grain redwood boards are combined to form a filtering means used in the preparation of high strength cementitious material.

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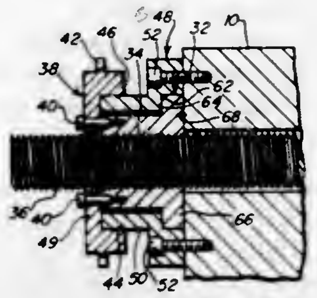
### 3,756,757
### TIE BAR SPROCKET MOUNTING FOR INJECTION-MOLDING MACHINE

**Volker R. Grundmann, Glastonbury, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.**

**Filed Apr. 5, 1971, Ser. No. 130,913**
**Int. Cl. B29f** *1/00*
**U.S. Cl. 425—192** **6 Claims**



An injection-molding machine has a staionary platen and a movable clamp housing joined by tie bars which slidably carried within the clamp housing. Angular motion of a nut carried by threads on the tie bar drives the clamp housing towards and away from the stationary platen. The drive for the nut includes a sprocket suspension wherein the sprocket is carried by a support independent of the tie bar threads which reduce radial forces on the threads.

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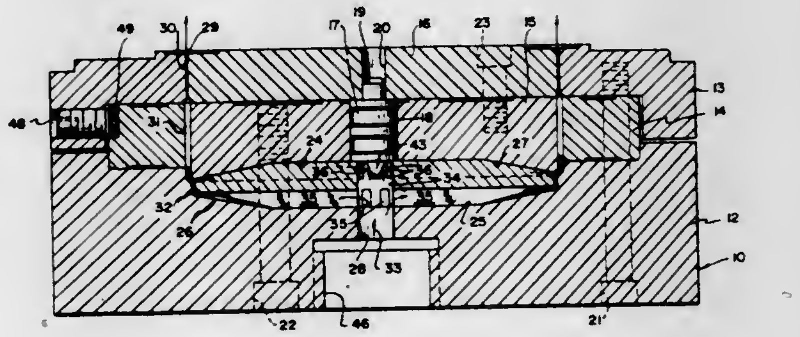
### 3,756,758
### EXTRUSION DIE FOR PLASTIC FILM

**George M. Prall, Barrington, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.**

**Filed July 15, 1969, Ser. No. 841,923**
**Int. Cl. B29f** *3/04*
**U.S. Cl. 425—197** **4 Claims**



An extrusion apparatus for producing plastic film and especially blown film that comprises a die having a passage through it with an entrance and an annular exit from which the plastic film flows in tubular form together with a divider in the passage for dividing the plastic material during its flow into a plurality of spaced separated streams and subdividing each stream into a further plurality of side-by-side film segments, means for then joining the segments at their edges in tubular form, and merging means within the die for merging the tubes of each stream in concentric interfacial contact, with the result that the tubular structure emerging from the annular exit has a wall formed of a plurality of facially merged plastic layers. For improved strength and appearance, each edge joined area of one layer is covered by a film segment of the next tubular layer.

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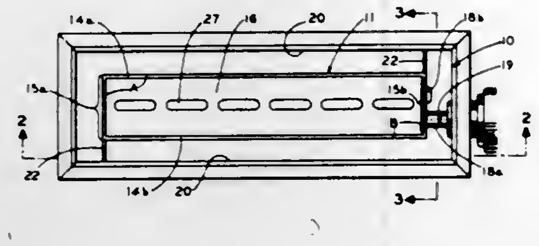
### 3,756,759
### NOVEL CAPSULE DIPPING APPARATUS

**Hugo Jozef Weyers, Reigerslaan, Belgium, assignor to Parke, Davis & Company, Detroit, Mich.**
**Continuation of Ser. No. 159,838, July 6, 1971, abandoned. This application Nov. 30, 1972, Ser. No. 310,829**
**Int. Cl. B29c** *13/00*
**U.S. Cl. 425—270** **6 Claims**



An improved apparatus is provided for producing pharmaceutical capsules by the dipping technique. For the conventional bottom feed dipping pan the improvement comprises open-end tunnel means below the pan whereby overflow dipping solution from opposite sides of the dipping pan is selectively channeled to opposite ends of the pan reservoir for lengthwise and depthwise recycling to the dipping pan by way of the tunnel.

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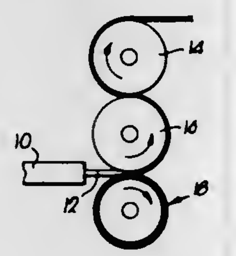
### 3,756,760
### FINISHING ROLL FOR EXTRUDED PLASTIC SHEET

**Donald W. McBride, Independence, Mo., assignor to Hallmark Cards Incorporated, Kansas City, Mo.**
**Filed Nov. 8, 1971, Ser. No. 196,465**
**Int. Cl. B29c** *3/00;* **B29d** *7/14*
**U.S. Cl. 425—363** **12 Claims**



A molten sheet finishing roll has a rigid, metal inner core, a layer of resilient material about the periphery of the core, and a relatively thin, hard, machinable, yet flexible, metal shell encasing the resilient layer which permits the roll to compensate for deviations from uniform thickness of the sheet material such that continuous contact is maintained between the surface of the sheet material and the outer surface of the shell, resulting in a uniform finish being impressed into the sheet material.

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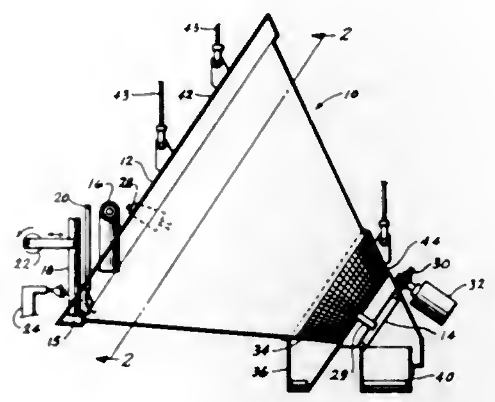
### 3,756,761
### FINES AGGLOMERATOR

**John Henry Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.**
**Filed Dec. 29, 1971, Ser. No. 213,343**
**Int. Cl. B29b** *1/02*
**U.S. Cl. 425—222** **4 Claims**



Apparatus for agglomerating fine solid particles including a rotating frusto-conical housing into which the fines and a molten slag are introduced so as to efficiently form agglomerated members.

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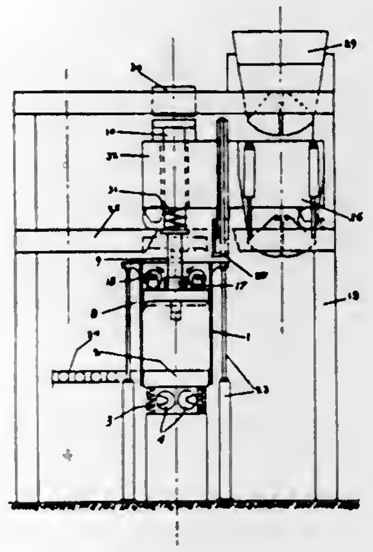
### 3,756,762
### APPARATUS FOR COMPACTING CARBON BODIES

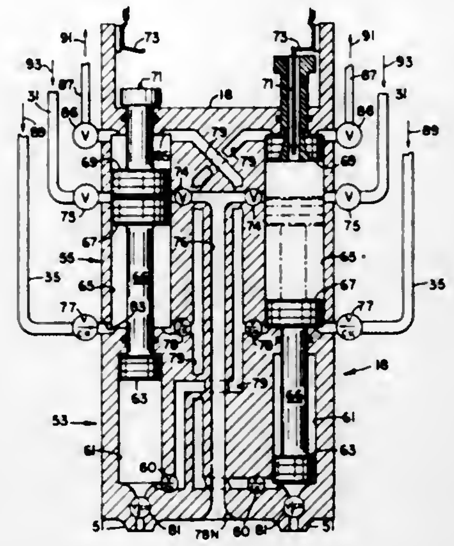
**Gottfried Maugweiler, Chippis, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland**
**Filed Feb. 2, 1970, Ser. No. 7,513**
**Claims priority, application Switzerland, Feb. 4, 1969, 1666/69**
**Int. Cl. B30b** *11/02*
**U.S. Cl. 425—258** **9 Claims**



The present invention discloses a method and apparatus for compacting artificial carbon bodies for use as electrodes in aluminum electrolysis and for lining the cathode portions of an electric furnace and using them as anodes in such furnace, wherein the artificial carbon mass to be compacted is placed into a mold and becomes jarred from below by a freely movable bottom member and at the same time it is loaded from above through a freely movable cover member by a gradually increasing pressure which may be accompanied by additional jarring through the cover member and through the side walls of the mold.

### 3,756,763
### PULSED HIGH PRESSURE LIQUID PROPELLANT COMBUSTION POWERED GAS GENERATORS

**Lester C. Elmore, Portola Valley, and Thomas M. Broxholn, Palo Alto, both of Calif., assignors to Pulsepower Systems Incorporated, San Carlos, Calif.**
**Division of Ser. No. 869,660, Oct. 27, 1969, Pat. No. 3,620,313. This application July 2, 1971, Ser. No. 160,578**
**Int. Cl. F23r** *1/102*
**U.S. Cl. 431—1** **5 Claims**



A liquid propellant is burned in the bulk mode and in pulses to produce high combustion pressures with large power outputs. The pulsed high pressure liquid propellant combustion provides a method of generating high pressure exhaust gases from a compact device. The gases generated are used for powering tools and other mechanisms. The high combustion pressures produced by burning the liquid propellant in the bulk mode and in pulses are used to overcome high back pressures such as those existing in deep ocean depths.

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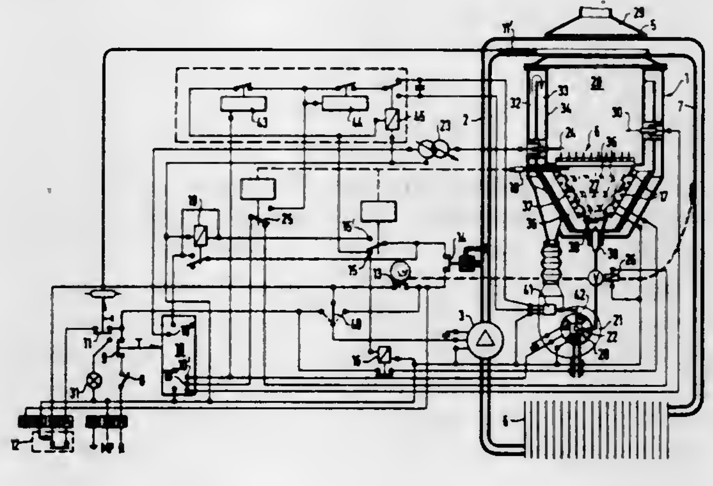
### 3,756,764
### OIL GASIFICATION BURNER

**Horst Reichmann, Wuppertal-Elberfeld, Germany, assignor to Joh. Vaillant KG., Remscheid, Germany**
**Filed May 18, 1972, Ser. No. 254,779**
**Claims priority, application Germany, May 19, 1971, P 21 24 872.6**
**Int. Cl. F23n** *1/00*
**U.S. Cl. 431—37** **5 Claims**



In a burner in which oil is gasified by the heat of the incoming air for combustion, that air is heated upon start up by an electric heater and after the burner is running by heat from the products of combustion. Should the combustion air be inadequately heated during operation a lower limit switch actuates controls to energize the electric heater and simultaneously reduce the amount of air supply by a predetermined increment. This action is repetitious until there is sufficient change thereby caused in the oil/air ratio (due to the decreased air flow) to result in the temperature not dropping below the lower temperature limit. Should the combustion air be excessively heated an upper limit switch actuates controls which shut off the flow of oil and simultaneously increase the amount of air supply by a predetermined increment. When the temperature is reduced to within the normal range, the oil supply turns back on. Again, this action is repetitious until there is sufficient change thereby caused in the oil/air ratio (due to the increased air flow) to result in the temperature not exceeding the upper temperature limit.

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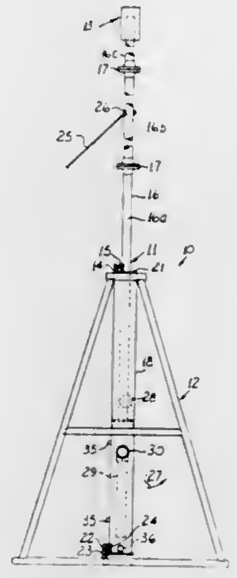
### 3,756,765
### AUTOMATIC FLARE IGNITER AND COUNTERBALANCED FLARE STACK

**Donald Hugh Sparrow, Box 945; Robert William Sparrow, Box 591, both of Leduc, Alberta, and James Ernest Sparrow, 4111 - 117th St., Edmonton, Alberta, all of Canada**
**Filed May 6, 1971, Ser. No. 140,732**
**Claims priority, application Canada, Mar. 17, 1971, 108028**
**Int. Cl. F23d** *13/20*
**U.S. Cl. 431—202** **9 Claims**



An elongated stack unit is mounted on a supporting base for swinging movement from a vertical operative position to a lowered position in which a burner assembly with electrical igniter at the top of the stack unit may be conveniently serviced. The lower end portion of the stack unit includes a liquid separator which collects liquid separated from the gas being burned. The liquid separator functions as a counterweight for normally maintaining the stack unit in its vertical position.

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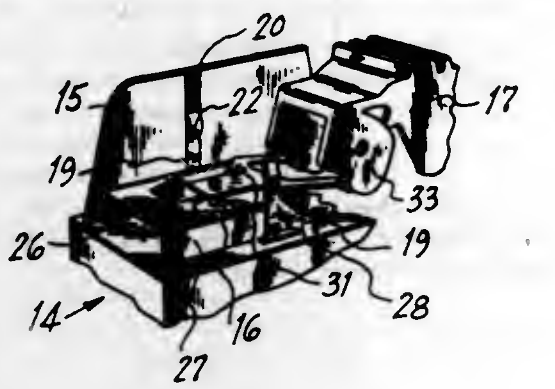
### 3,756,766
### CIGARETTE LIGHTERS

**James Edward Green, Ashtead, Surrey, England, assignor to Ronson Products, Ltd., Surrey, England**
**Filed July 12, 1972, Ser. No. 266,968**
**Claims priority, application Great Britain, July 15, 1971, 33,369/71**
**Int. Cl. F23q** *1/04*
**U.S. Cl. 431—254** **9 Claims**

A plastic lighter having a metallic shroud to shield the plastic from the lighter flame is disclosed. The shroud is removable by the user to enable him to clean the burner valve. A safety mechanism is incorporated between the fingerpiece and the burner valve of the lighter which prevents the burner valve from opening. When the burner valve is closed, no ignition can occur and the plastic portion of the lighter is not exposed to the unshielded flame.



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### 3,756,767
### PIEZOELECTRIC GAS LIGHTER

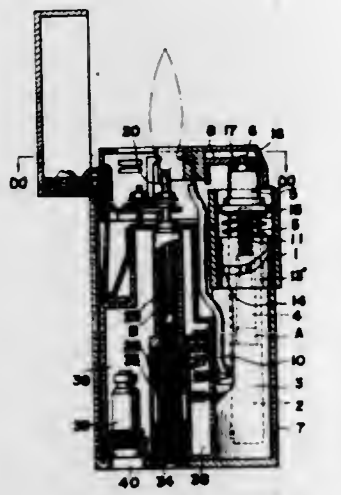
**Mitsue Ishiguro, 31, Kanamecho 2-chome, Toshima-ku, Tokyo, Japan**

**Filed Nov. 10, 1971, Ser. No. 197,257**

**Claims priority, application Japan, May 26, 1971, 46/35980; July 9, 1971, 46/50815**

**Int. Cl. F23q** *2/28*

**U.S. Cl. 431—255** **6 Claims**



A gas lighter includes a piezoelectric element which is connected through a spark ignition line to provide a spark for ignition of a gas flame, or a gas burner. The ignition device includes a rotary member which advances a hammer in a direction against an actuating spring to compress it. Thereafter it is moved by the spring at a rapid rate in a return direction into engagement with the piezoelectric element to cause the element to emit a spark. The gas lighter, includes a burner with a gas supply tank which communicates through a burner tube opening and a capillary tube connection to the gas burner discharge. This capillary tube connection insures that the gas volumes supplied through the opening for ignition will not unduly vary and thus require constant adjustment.

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### 3,756,768
### AIR FLOW CONTROL IN SHAFT FURNACES

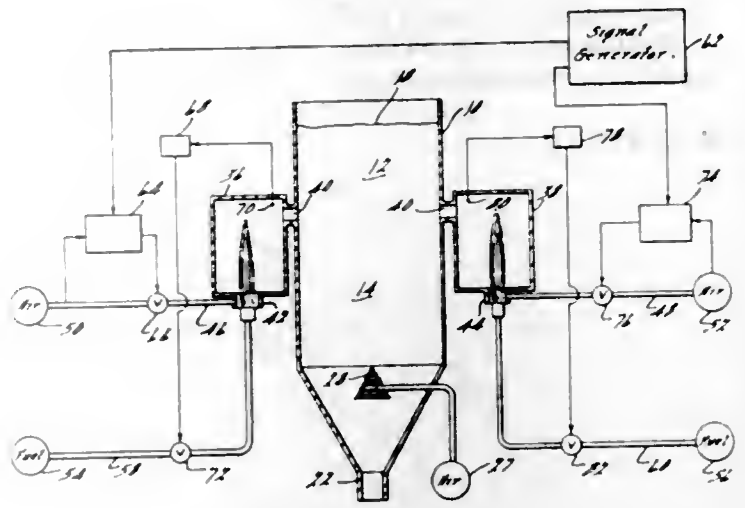
**Robert M. Escott, Toledo, Ohio, assignor to Midland-Ross Corporation and Erie Development Company, both of Cleveland, Ohio**

**Filed May 11, 1972, Ser. No. 252,378**

**Int. Cl. F27b** *1/10*

**U.S. Cl. 432—17** **11 Claims**

Apparatus and method of controlling and distributing air in a vertical shaft furnace for indurating oxide pellets including combustion chambers for introducing heated air at opposite sides of a furnace and varying the quantity of air supplied at one side of the furnace from a minimum to a maximum quantity and simultaneously varying the air delivered at the opposite side from a maximum to a minimum quantity.



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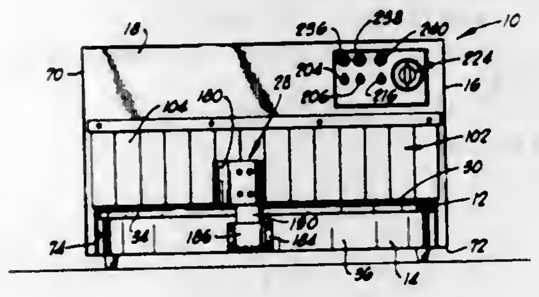
### 3,756,769
### HEAT TUNNEL APPARATUS

**Oliver F. Richardson, Dallas, Tex.; Robert S. Easton, and Roger L. Jack, both of Oklahoma City, Okla., assignors to Emerald Manufacturing Corporation, Oklahoma City, Okla.**

**Filed Jan. 3, 1972, Ser. No. 215,070**

**Int. Cl. F27b** *9/16*

**U.S. Cl. 432—142** **13 Claims**



An improved heat tunnel apparatus for applying heat to predetermined, selected objects having a heated table partially disposed within a heat chamber, the table being rotatingly supported and constructed to receive the objects to be heated and rotatingly move the objects through the heat chamber, which is particuarly useful for sealing overlapping edges of a film-like covering such as a polyvinyl chloride material or the like wherein the film-like material encompasses the object. The object to be heated is disposed on the rotating table such that the overlapping edges engage the heated upper surface of the table and are sealed thereby, and the object is subsequently moved through the heat chamber to shrink the encompassing material about the object, the object to be heated being then withdrawn from the heat chamber and removed from the rotating table via an improved take-off assembly which engages the object, partially lifts the object from the table and moves the object to a removed position.

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# CHEMICAL

### 3,756,770
### AQUEOUS TRANSFER OF DYE FROM WATER SOLUBLE FILAMENT TO WATER INSOLUBLE FILAMENT BLENDED THEREWITH

**Seiichi Kobayashi, Yoshikazu Igarashi, and Hiroaki Morioka, Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan**

**No Drawing. Filed Apr. 27, 1971, Ser. No. 137,956**

**Claims priority, application Japan, Apr. 28, 1970, 45/36,515**

**Int. Cl. D06p** *5/00*

**U.S. Cl. 8—14** **16 Claims**

Process for effecting randomly distributed coloration of textile materials is provided comprising applying to textile materials at least one water-soluble coloring material comprising a water-soluble polymer containing a colorant which exhibits greater affinity for the textile material than for said polymer and is capable of coloring said textile material; heating the resulting textile material while in a wet state to effect migration of the colorant from the water-soluble coloring material to the textile material with resultant random coloration of said textile material, and thereafter removing the water soluble portion of said coloring material from the textile material.

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### 3,756,771
### COMPOSITE CHROMIUM-COMPLEX AZO DYES

**Fabio Beffa, Basel, Switzerland, assignor to J. R. Geigy AG, Basel, Switzerland**

**No Drawing. Continuation of abandoned application Ser. No. 766,031, Oct. 3, 1968. This application Jan. 22, 1971, Ser. No. 108,991**

**Claims priority, application Switzerland, Oct. 9, 1967, 14,065/67**

**Int. Cl. C09b** *45/26*

**U.S. Cl. 8—26** **9 Claims**

Composite dyes which are mixtures of 1:2 chromium complex dyestuffs of two different types in a weight ratio of the first to the second type in the range of from about 4:1 to 1:4, which dyestuffs are each composed of a naphthalene-azo-naphthalene monazo dyestuff moiety and of a naphthalene-azo-benzene-azo-naphthalene or benzene-azo-benzene-azo-naphthalene dyestuff moiety linked together by the complexing chromium atom, dyestuffs of the first type having a sole sulphonic acid group in free or preferably in salt form in the monazo moiety, while the second type must have two and not more such sulphonic acid groups in the complex molecule, one of which is in the monoazo moiety while the second one is linked to a naphthalene nucleus of the monoazo moiety or to one of the two terminal aryl groups of the disazo moiety, and dye compositions containing them together with diluents and/or dispersing agents are disclosed as useful for the dyeing and for the printing of polyamide materials especially from acid media. A process for coloring polyamide materials with the aid of such composite dyes and dye compositions as well as polyamide materials dyed therewith are also described.

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### 3,756,772
### DYEING POLYESTER FIBER WITH AN AQUEOUS PREPARATION OF 1 - AMINO - 4-HYDROXY-2-(4-METHYLMERCAPTOPHENOXY) - ANTHRAQUINONE AND RESULTANT COMPOSITION

**Wilhelm Gohrbandt and Jurgen Schulze, Leverkusen, and Reinhold Hornle, Cologne, and Jurgen Schneider, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed July 22, 1971, Ser. No. 165,403**

**Claims priority, application Germany, July 22, 1970, P 20 36 311.5**

**Int. Cl. C09b** *1/08;* **D06p** *1/20*

**U.S. Cl. 8—39** **2 Claims**

A process for the dyeing of synthetic and semi-synthetic materials by using 1-amino - 4 - hydroxy-2-(4′-methylmercapto-phenoxy)-anthraquinone having lattice plane spacings of 13.14 A., 3.37 A. and 4.28 A.

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### 3,756,773
### COLORING SYNTHETIC HYDROPHOBIC FIBERS WITH ARALKYL SUBSTITUTED PHENOLS

**Jayanti Isharani, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.**

**No Drawing. Filed Aug. 2, 1971, Ser. No. 168,385**

**Int. Cl. D06p** *5/04*

**U.S. Cl. 8—173** **1 Claim**

A technique is disclosed for coloring hydrophobic textile fibers, particularly polyester fibers with a disperse dyestuff employing ortho-benzyl para-chloro phenol.

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### 3,756,774
### AQUEOUS BLEACH BATH

**Uwe Kirner, Bobenheim-Roxheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed Sept. 20, 1971, Ser. No. 182,158**

**Claims priority, application Germany, Sept. 25, 1970, P 20 47 289.3**

**Int. Cl. D06l** *3/02*

**U.S. Cl. 8—111** **6 Claims**

Aqueous acidic bleach bath based on hydrogen peroxide and organic cyanides.

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### 3,756,775
### BLEACHING PROCESS AND COMPOSITION

**Kjell Torsten Nordfalt, Heddon-on-the-Wall, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio**

**No Drawing. Filed June 10, 1971, Ser. No. 151,910**

**Claims priority, application Great Britain, Mar. 3, 1971, 5,896/71**

**Int. Cl. D06l** *3/02*

**U.S. Cl. 8—111** **9 Claims**

A bleaching process in which the bleaching agent is an aqueous solution containing a benzoyl glutaryl peroxide of the formula

$$RCO\cdot OO\cdot CO(CH_2)_3CO_2H$$

wherein R is phenyl or substituted phenyl and an inorganic perhydrate is disclosed. Bleaching compositions containing such peroxides and perhydrates with detergent salts and/or organic surface-active agents are also described.

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### 3,756,776
### BLEACHING PROCESS AND COMPOSITION

**Peter Roscoe Hartley Speakman, Gateshead on Tyne, and David Geoffrey Stewart, Newcastle Upon Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio**

**No Drawing. Filed June 10, 1971, Ser. No. 151,911**

**Claims priority, application Great Britain, June 15, 1970, 28,875/70**

**Int. Cl. D06l** *3/02*

**U.S. Cl. 8—111** **9 Claims**

A bleaching process in which the bleaching agent is an aqueous solution containing a benzoyl glutaryl peroxide of the formula

$$RCO\cdot OO\cdot CO(CH_2)_3CO_2H$$

wherein R is phenyl or substituted phenyl is disclosed. Bleaching compositions containing such peroxides with detergent salts and/or organic surface-active agents are also described.

### 3,756,777
### PAD-CURE PROCESS FOR THE PREPARATION OF DEAE-COTTON

**Earl J. Roberts, Clinton P. Wade, and Stanley P. Rowland, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture**
**No Drawing. Filed July 30, 1971, Ser. No. 167,814**
**Int. Cl. D06m** *13/38, 13/34*
**U.S. Cl. 8—188 6 Claims**

This is an improved process for preparing diethylaminoethyl cotton. 2-chloroethyldiethylamine (DEAE) hydrochloride is first reacted with alkaline hydroxide to produce a water-insoluble liquid which is then thoroughly mxed with a quantity of water and in a matter of minutes is converted to a water-soluble diethylaziridinium chloride (DAC). The preparation of diethylaminoethyl cotton can be carried out in a one-step operation with reagent concentration of up to a saturated solution, about 2 molar, and can be accelerated with base in the pad bath. The process is amendable to continuous operation.

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### 3,756,778
### POLYESTER MATERIALS DYED WITH STYRYL DYES

**Guido R. Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Lock Haven, Pa.**
**No Drawing. Feb. 17, 1972, Ser. No. 227,296**
**Int. Cl. D06p** *3/52*
**U.S. Cl. 8—179 8 Claims**

A series of styryl dyes is provided through Knoevenagel synthesis of a substituted benzaldehyde and a nitrile containing an active methylene group. The styryl dyes of the invention are suitable for the coloration of synthetic fabrics and plastics. Excellent dyeings are provided on polyethylene terephthalate of outstanding fastness characteristics.

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### 3,756,779
### SPECTRAL ANALYSIS OF KETOXIMES

**Roger E. Rondeau and B. Lawrence Fox, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force**
**Filed Nov. 16, 1971, Ser. No. 199,155**
**Int. Cl. G01n** *27/78*
**U.S. Cl. 23—230 R 14 Claims**

A process is provided whereby hydrogen chloride gas is added to a sample of a ketoxime in solution in an aromatic solvent after whcih the same is subjected to nuclear magnetic spectroscopy. The spectrum obtained makes it possible to determine whether the sample is a single ketoxime or a mixture of ketoxime isomers as well as whether a single ketoxime has a syn or anti form or the relative amount of the syn and anti forms in isomeric mixtures.

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### 3,756,780
### PREPARATION OF CHLORINE PENTAFLUORIDE

**Donald Pilipovich, Canoga Park, Walter Maya, Los Angeles, and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation**
**Filed Sept. 30, 1963, Ser. No. 313,410**
**Int. Cl. C01b** *7/24, 9/08*
**U.S. Cl. 423—466 5 Claims**

1. A process for preparing chlorine pentafluoride comprising the steps of mixing fluorine with at least one member of the group consisting of chlorine, chlorine monofluoride and chlorine trifluoride under temperature and pressure conditions such that a temperature of from about 100° to about 400° C. and a pressure of at least 100 p.s.i. are reached, whereupon chlorine pentafluoride is formed.

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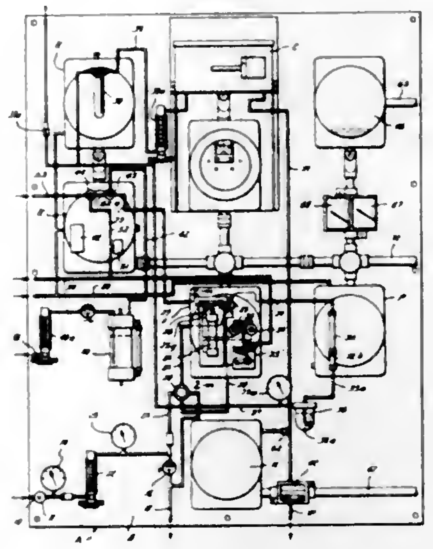
### 3,756,781
### TOTAL SULFUR ANALYZER AND METHOD

**Charles L. Kimbell, 9441 Baythorne, Houston, Tex.**
**Filed May 18, 1971, Ser. No. 144,434**
**Int. Cl. G01n** *31/12*
**U.S. Cl. 23—230 PC 12 Claims**

A total sulfur analyzer and method wherein a hydrocarbon sample usually in liquid form and having sulfur or sulfur compounds therewith, is pyrolyzed to convert the hydrocarbons to lighter molecular weight hydrocarbons, such as methane, which is gaseous at ambient temperatures, and then the gaseous sample is hydrogenated to convert the sulfur in the sample into hydrogen sulfide which is then measured by a hydrogen sulfide measuring device, whereby the total sulfur content of the sample, regardless of its original form in the sample, is analyzed.



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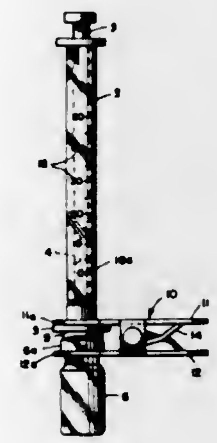
### 3,756,782
### METHOD AND APPARATUS FOR DETERMINING CARBON DIOXIDE CONTENT OF BLOOD SAMPLES

**Roger Phillips, Palo Alto, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.**
**Filed Feb. 22, 1972, Ser. No. 228,073**
**Int. Cl. G01n** *31/00, 33/16*
**U.S. Cl. 23—230 B 15 Claims**



A method and apparatus for determining the carbon dioxide content of blood samples in which a syringe is connected in gas-tight relation to a vial containing a blood sample. The sample, when acidified, releases carbon dioxide and a quantitative measurement is then obtained by measuring the displacement of the syringe plunger. Specific features of the apparatus include the clamping means for securing a gas-tight seal between the syringe and vial.

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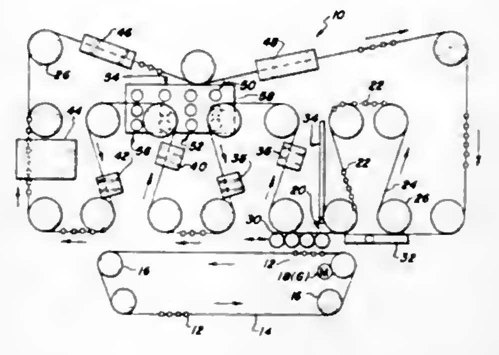
### 3,756,783
### AUTOMATIC CLINICAL CHEMISTRY ANALYZER

**Melvin Williams, 840 Elmwood, Evanston, Ill. 60202**
**Filed Aug. 23, 1971, Ser. No. 173,855**
**Int. Cl. G01n** *1/00, 33/16*
**U.S. Cl. 23—253 R 3 Claims**

Apparatus for automatically sequentially performing chemical analyses of a plurality of the same or different types of discrete samples utilizing any one or more of a number of reagents, including a unique reagent selection device useful in multi-specimen testing systems, wherein any one of a number of reagents can be selected for mixing with a particular fluid specimen. An improved probe photometer for measuring the emission characteristics of the specimen under test.



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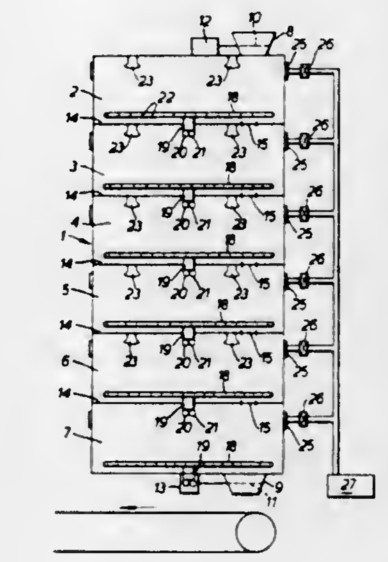
### 3,756,784
### APPARATUS FOR COMPOSTING

**Arthur Stanley Pittwood, Brewood, England, assignor to International Combustion (Holdings) Limited, London, England**
**Filed July 6, 1970, Ser. No. 52,481**
**Claims priority, application Great Britain, July 9, 1969, 34,602/69**
**Int. Cl. C05f** *9/02*
**U.S. Cl. 23—259.1 3 Claims**



Apparatus for composting waste material by aerobic action comprises a series of superposed chambers. Material to be composted is loaded into the uppermost chamber and passes into the lower chambers in turn via controlled transfer ports. Each chamber has its own water and air supply and an agitator for stirring material in the chamber.

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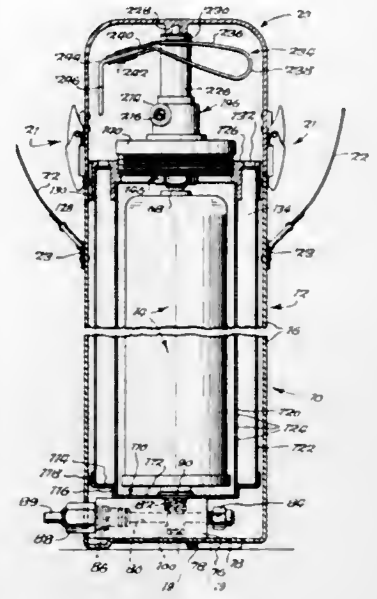
### 3,756,785
### GAS GENERATOR ASSEMBLY

**Loyal G. Netteland, East Aurora, N.Y., assignor to A-T-O Inc., Willoughby, Ohio**
**Filed Sept. 15, 1971, Ser. No. 180,558**
**Int. Cl. B01j** *7/00*
**U.S. Cl. 23—281 16 Claims**

A gas generator assembly comprising a housing containing an oxygen evolving cartridge in spaced relation to the housing. A manually operable actuating mechanism, easily reset or cocked by hand, is releasably secured in the housing in spaced relation to the cartridge for igniting the oxygen candle therein. A safety release pin locks the actuating mechanism in the cocked position to prevent inadvertent ignition of the candle.



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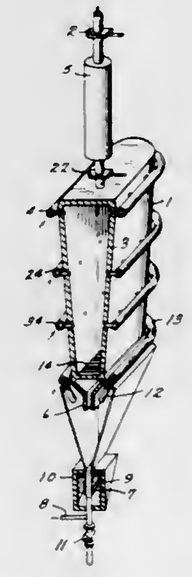
### 3,756,786
### PROCESS AND APPARATUS FOR THE RECOVERY OF NUCLEAR FUEL MATERIAL FROM FUEL ELEMENTS OF GRAPHITE MODERATED HIGH TEMPERATURE REACTORS

**Ulrich Tillessen, Grossauheim, Karl-Heinz Engel, Hanau am Main, Hans Pirk, Dornigheim, Karl-Gerhard Hackstein, Hanau am Main, and Dietger Habermann, Bremen, Germany, assignors to Nuken, Nuklear-Chemie und- Metallurgie Gesellschaft mbH, Wolfgang bei Hanau am Main, Germany**
**Filed Nov. 30, 1970, Ser. No. 93,535**
**Claims priority, application Germany, Dec. 5, 1969, P 19 61 145.1**
**Int. Cl. C01g** *56/00*
**U.S. Cl. 423—4 11 Claims**



Nuclear fuel elements containing a graphite moderator are reworked by burning the unground fuel element carbon in a two step fixed bed process with oxygen. The structural and matrix graphite are burned in a first step at 800° C. to 1100° C., and the pyrolytic carbon is burned in a second step at a lower temperature of 600° C. to 900° C. There is also disclosed a shaft furnace for performing the process.

### 3,756,787

### METHOD FOR PREPARING HARD METAL BASED ON TITANIUM CARBIDE AND WEAR RESISTANT OBJECTS MANUFACTURED FROM THIS HARD METAL

**Robert Gerardus De Lange, Vlaardingen, Jacobus Antonius Zijderveld, Waddinxveen, and Gerardus Antonius Van Kuppevelt, Delft, Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer, Hague, Netherlands**

**Filed Nov. 15, 1971, Ser. No. 198,820**

**Claims priority, application Netherlands, Nov. 20, 1970, 7016999**

**Int. Cl. B22f** *1/00*

**U.S. Cl. 29—182.8** **5 Claims**

The invention relates to a method for preparing a hard metal based on titanium carbide, wherein a mixture of titanium carbide powder and at least four percent by weight of titanium nickel powder is ground and the ground blend of TiC and TiNi is sintered for at least three minutes under vacuum or an inert gaseous atmosphere and under a mechanical pressure of at least 150 kg./cm.$^2$ at a temperature that lies above 1315° C., the melting-point of TiNi.

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### 3,756,788

### LAMINATED MAGNETIC MATERIAL

**Clayton N. Whetstone, 850 S. Oneida, Apt. 401 B, Denver, Colo. 80222**

**Filed Oct. 12, 1970, Ser. No. 79,864**

**Int. Cl. B32b** *15/00*

**U.S. Cl. 29—194** **41 Claims**

An extrusion billet is fabricated from layers of soft magnetic material separated by one or more metal layers. The billet is coreduced and heat treated to impart the desired magnetic properties to the soft magnetic material and also to form intermetallic insulating layers between the magnetic layers. Electric field shield sections are formed in a similar manner by placing relatively thick layers of copper between adjacent layers of metal located adjacent the layers of soft magnetic material.

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### 3,756,789

### METALLURGICALLY BONDED LITHIUM/CONDUCTIVE METAL ELECTRODE

**Hanspeter Alder, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed Mar. 3, 1971, Ser. No. 120,764**

**Int. Cl. B32b** *15/00*

**U.S. Cl. 29—194** **4 Claims**

A composite anodic electrode having lithium metallurgically cold bonded to a conductive metal selected from the group consisting of stainless steel, aluminum and zinc for use in nonaqueous electrolyte galvanic cells can be prepared by etching the conductive metal in a mixture of hydrochloric and nitric acids, cleaning and drying the etched conductive metal and then pressing the etched conductive metal surface into contact with a fresh lithium surface.

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### 3,756,790

### COMPOSITE THERMOSTAT MATERIAL

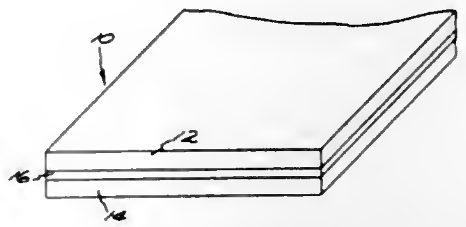
**Jacob L. Ornstein, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Nov. 22, 1971, Ser. No. 200,741**

**Int. Cl. B32b** *15/00*

**U.S. Cl. 29—195.5** **2 Claims**

An improved multilayer composite thermostat material is disclosed having predetermined characteristics of electrical resistivity and flexivity, including first and second outer layers of preselected metallic alloys having relatively high and relatively lower coefficients of thermal expansion respectively, and an intermediate layer of a third preselected metallic material of a substantially nickel-free, non-ferrous copper alloy. The composite material may have a resistivity of between approximately 100 ohms per circular mil foot to 400 ohms per circular mil foot and a flexivity of between approximately $100\times10^{-7}$ to $160\times10^{-7}$ inch per inch per degree Fahrenheit.



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### 3,756,791

### METHOD FOR SIMULTANEOUSLY CALCINING AND DESULFURIZING AGGLOMERATES OF COAL AND/OR COAL DERIVATIVES

**Edgar B. Mancke, Bethlehem, Pa., assignor to Bethlehem Steel Corporation**

**Filed June 9, 1971, Ser. No. 151,323**

**Int. Cl. C10l** *5/00*

**U.S. Cl. 44—1 R** **7 Claims**

Agglomerates of coal and/or coal derivatives are simultaneously calcined and desulfurized by exposure to heated particles of a desulfurizing agent in a rotary kiln. The agglomerates and heated particles of the desulfurizing agent flow countercurrently through the kiln. The agglomerates are charged into the kiln within a temperature range of between about ambient temperature to about 850° F. The agglomerates are discharged at a temperature above about 1400° F. It is preferred to discharge the agglomerates at a temperature above about 1950° F. The agglomerates are heated by heat exchange with the particles of the desulfurizing agent which are charged into the kiln at a temperature above about 1400° F. It is preferred to charge the particles of the desulfurizing agent at a temperature above about 1950° F. The particles of the desulfurizing agent can be at about 600° F. and preferably about 1100° F. when discharged, dependent upon the temperature of the agglomerates when charged. The agglomerates so produced have a relatively medium or low reactivity to carbon dioxide at elevated temperatures, good resistance to abrasion and sufficient strength to resist degradation when transported and charged into a furnace.

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### 3,756,792

### BABASSU SOLID FUEL PROCESS

**James D. Carter and Elga M. Carter, Pittsburgh, Pa., assignors to Clean Air Fuels, Inc., Pittsburgh, Pa.**

**Filed Oct. 8, 1970, Ser. No. 79,066**

**Int. Cl. C10l** *5/44*

**U.S. Cl. 44—1 R** **4 Claims**

A method of obtaining high thermal output from a solid fuel while resisting air pollution including providing solid fuel material consisting of a unitary or mechanically fragmented babassu nut, igniting the solid fuel material to provide a calorific output of not less than 7500 B.t.u./lb. and thereby producing a flue discharge having less than about 100 parts per million total sulfur oxides and substantially no arsenic, lead, mercury or cadmium. The method may be employed using the entire raw nut, or portions thereof such as the entire nut less the kernels thereof or solely the endocarp portion thereof.

A method of providing such a fuel by heating portions of the babassu nut at about 200 to 1200° C. for about 0.25 to 4 hours. The method may be preferably employed with substantially all of the portions of the babassu nut being taken from the endocarp with or without kernel retention and heating effected at about 200 to 600° C. for about 0.75 to 4 hours and preferably 250 to 400° C. for about 1.5 to 3 hours.

A non-contaminating carbonaceous fuel obtained through thermal treatment of the babassu nut including about 50 to 90% fixed carbon, about 5 to 45% volatile matter, about 2.5 to 4.25% ash, about 0.015 to 0.1% sulfur and less than about 10% moisture and having a calorific value of about 11,000 to 14,000 B.t.u./lb. A preferred form of the thermally prepared fuel consists substantially completely of the endocarp portion of the babassu nut thermally treated to drive off portions of the volatile matter contained therein, with the resultant product weighing about 25 to 40% of the product prior to thermal treatment.

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### 3,756,793

### FUEL COMPOSITION

**Isaac C. H. Robinson, Chester, England, assignor to Shell Oil Company, New York, N.Y.**

**No Drawing. Filed June 9, 1971, Ser. No. 151,505**

**Claims priority, application Great Britain, June 16, 1970, 29,142/70**

**Int. Cl. C10l** *1/22*

**U.S. Cl. 44—62** **3 Claims**

Detergent/dispersant properties are imparted to liquid hydrocarbon fuels containing minor amounts of (A) a polyamine which is the reaction product of a halohydrocarbon having an average molecular weight between 600 and 2500 and an alkylenepolyamine and (B) an organic substance having a viscosity between 20 and 2500 cs. at 20° C.

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### 3,756,794

### EMULSIFIED HYDROCARBON FUELS

**Peter T. Ford, Chester, England, assignor to Shell Oil Company, New York, N.Y.**

**No Drawing. Filed July 16, 1969, Ser. No. 842,399**

**Claims priority, application Great Britain, July 22, 1968, 34,755/68**

**Int. Cl. C10l** *1/32*

**U.S. Cl. 44—51** **6 Claims**

Emulsified fuel compositions comprising a hydrocarbon fuel as the disperse phase, an emulsifier, water and urea or formamide as an emulsion stabilizer have improved flow and demulsification characteristics.

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### 3,756,795

### SYNERGISTIC ANTI-ICING COMPOSITION

**Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**No Drawing. Filed Feb. 16, 1971, Ser. No. 115,693**

**Int. Cl. C10l** *1/22*

**U.S. Cl. 44—72** **7 Claims**

Synergistic anti-icing composition of (1) polymeric reaction product of aliphatic monoamine and epihalohydrin compound and (2) polyhydroxy alcohol.

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### 3,756,796

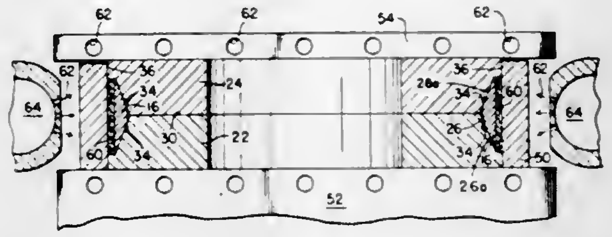
### METHOD OF FORMING A PERIPHERAL GRINDING WHEEL

**Harold C. Miller, Chicago, Ill., assignor to Super-Cut, Inc., Chicago, Ill.**

**Continuation-in-part of application Ser. No. 858,474, Sept. 16, 1969, which is a division of application Ser. No. 690,201, Dec. 13, 1967, now Patent No. 3,522,676. This application June 16, 1971, Ser. No. 153,726**

**Int. Cl. B24d** *5/02*

**U.S. Cl. 51—293** **3 Claims**



A method of making an internally reinforced peripheral grinding wheel by applying radial outward pressure to a mold mixture confined within an annular ring in the presence of heat.

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### 3,756,797

### METHOD AND APPARATUS FOR BENDING A SHEET OF GLASS

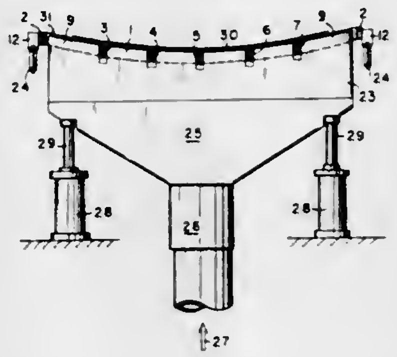
**Kazuyuki Akeyoshi, Yamato, and Katsunori Suga, Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan**

**Filed July 16, 1971, Ser. No. 163,316**

**Claims priority, application Japan, July 16, 1970, 45/61,746**

**Int. Cl. C03b** *23/02*

**U.S. Cl. 65—25 A** **10 Claims**



A sheet of glass positioned on a truck type bending mold having suitable curvature and latticework is conveyed into a main heating zone being received in a hearth bed therein having grooves corresponding to the latticework for ejecting hot gas from a plurality of holes to the lower surface of the glass on the truck, whereby a sheet of glass having a complex shape may be accurately bent into a predetermined curvature.

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### 3,756,798

### NOVEL GLASS-CERAMIC ARTICLE AND WATER CONTENT CRYSTALLIZATION PROCESS OF MAKING SAME

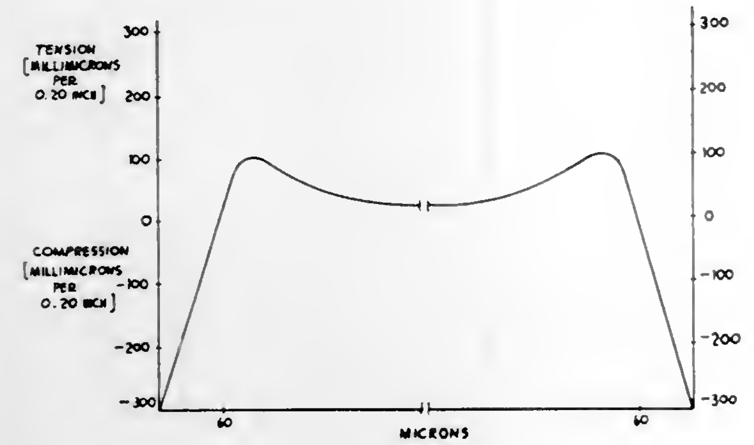
**Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of abandoned application Ser. No. 709,667, Mar. 1, 1968. This application Mar. 16, 1971, Ser. No. 124,722**

**Int. Cl. C03b** *29/00*

**U.S. Cl. 65—33** **10 Claims**

Novel glass-ceramic articles of superior strength and superior thermal stability are characterized as having surface zones in compression, interior zones in tension and being comprised of randomly-oriented crystals of substantially uniform composition disposed substantially uniformly throughout. Such articles are produced by controlling the relative rates of crystallization at the surface and in the interior of a glass-ceramic by controlling the relative water content at the surface and in the interior of the glass-ceramic during nucleation and crystallization.



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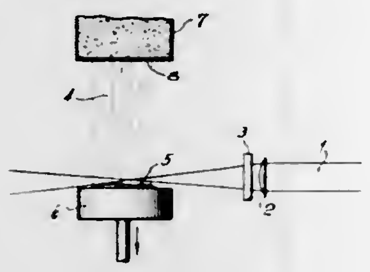
### 3,756,799
### METHOD FOR BEAM HEATING OF GLASS

**Norbert Neuroth, Mainz-Mombach, Germany, assignor to JENAer Glaswerk Schott & Gen, Mainz, Germany**
**Filed Oct. 13, 1970, Ser. No. 80,298**
**Claims priority, application Germany, Nov. 3, 1969, P 19 55 175.8**
**Int. Cl. C03b** *5/16, 9/00, 23/20*
**U.S. Cl. 65—18** **3 Claims**



A finely divided substance, such as a glass powder or crystalline powder, is trickled from an elevated position into a horizontally directed and horizontally flattened laser beam having a wave length greater than 2.5 μm., preferably 10.6 μm. The laser beam melts the powder and the molten material is deposited on a slowly downwardly moving base causing the formation of a rod of glass or crystal on said base.

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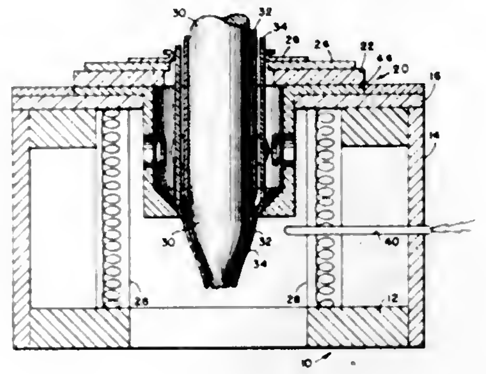
### 3,756,800
### APPARATUS FOR FORMING A DOUBLY CLAD GLASS MONOFIBER ELEMENT HAVING A LOW VISCOSITY OUTER CLADDING

**Roland A. Phaneuf, RFD #1, Simpson St., Sturbridge, Mass. 01566**
**Original application Oct. 29, 1970, Ser. No. 85,204. Divided and this application Sept. 11, 1972, Ser. No. 288,198**
**Int. Cl. C03b** *23/20*
**U.S. Cl. 65—156** **7 Claims**

A glass core is assembled in a glass cladding tube and a plurality of rods of low viscosity glass is fused at regular intervals around the outside of the cladding tube. The fusing process occurs at the mono drawing stage. The assembly is drawn through a ring in the drawing furnace immediately subsequent to the point where the cladding tube is collapsed against the core by a vacuum which is drawn between the cladding and core. In this manner, the rods are forced against the cladding tube, thereby fusing the rods on the surface of the cladding.



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### 3,756,801
### ENHANCED PLANT TISSUE PENETRATION

**Robert J. Herschler, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.**
**No Drawing. Continuation-in-part of application Ser. No. 344,558, Feb. 13, 1964, which is a continuation-in-part of applications Ser. No. 67,493, Nov. 7, 1960, and Ser. No. 203,743, June 20, 1962, all now abandoned. This application Feb. 13, 1967, Ser. No. 615,377**
**Int. Cl. A01n** *5/00, 9/100*
**U.S. Cl. 71—65** **23 Claims**

A method and compositions are described for enhancing penetration of plant-active agents into plants by applying the plant-active agent to the plant in a composition including an amount of dimethyl sulfoxide which may vary from as low as parts per million values up to 100% concentration, depending upon the type of plant and amount and route of application. The agents include insecticides, fungicides, virucides, antibiotics, nutrients, metal salts, plant growth regulators, odorants, colorants, herbicides and defoliating agents. Agricultural diluents and surfactants are preferably incorporated in the composition. Application may be by spray, drench, xylem injection, and bark paints.

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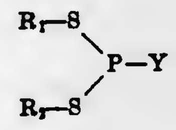
### 3,756,802
### METHOD OF DEFOLIATING PLANTS

**Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 668,164, Sept. 15, 1967. This application Dec. 30, 1970, Ser. No. 103,009**
**Claims priority, application Switzerland, Sept. 20, 1966, 13,572**
**Int. Cl. A01n** *9/36*
**U.S. Cl. 71—71** **6 Claims**

A method of defoliating plants, especially cotton plants, is disclosed, which comprises applying to said plants a compound of the formula



$$\begin{matrix} R_1-S & \\ & \!\!\!\!\searrow P-Y \\ R_2-S & \!\!\!\!\nearrow \end{matrix}$$

wherein $R_1$ and $R_2$ each represents an alkyl group containing up to 6 carbon atoms and Y stands for halogen.

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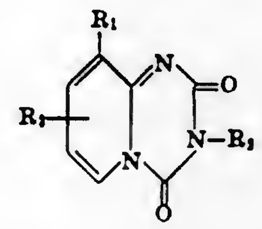
### 3,756,803
### HERBICIDAL PYRIDO[1,2-DELTA]-s-TRIAZINE-DIONES

**Karl Hoegerle, Basel, and Christian Vogel and Jurg Rumpf, Binningen, near Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**
**No Drawing. Original application Apr. 22, 1969, Ser. No. 818,432, now Patent No. 3,609,148. Divided and this application Nov. 5, 1970, Ser. No. 87,338**
**Claims priority, application Switzerland, May 6, 1968, 6,700/68**
**Int. Cl. A01n** *9/22*
**U.S. Cl. 71—93** **10 Claims**

Pyrido[1,2-a]-s-triazine-diones of the formula



wherein:

$R_1$ represents hydrogen, halogen, nitro, lower alkyl, lower alkoxy, or halogenalkyl,

$R_2$ represents straight- or branched-chain alkyl, lower alkenyl, lower alkinyl, cycloalkyl, alkoxyalkyl or halogenalkyl, and

$R_3$ represents hydrogen, halogen, nitro, lower alkyl, lower alkoxy or halogenalkyl,

are disclosed as herbicidally active compounds. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

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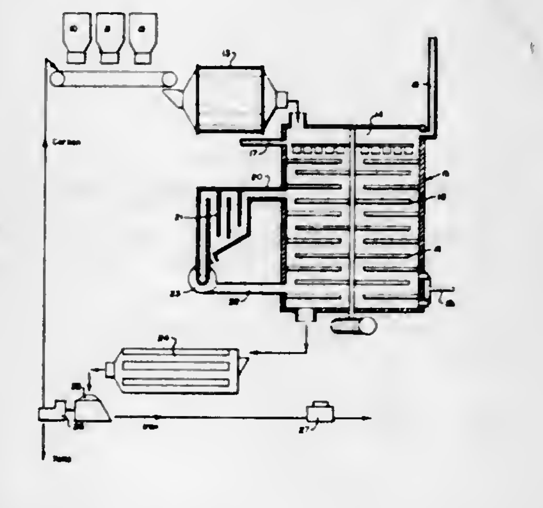
### 3,756,804
### PROCESS FOR RECLAMATION OF FLUE DUST

**Calvin Leo Stevenson, Denver Colo., assignor to Deltech, Inc., Denver, Colo.**
**Continuation of abandoned application Ser. No. 865,569, Oct. 13, 1969. This application Feb. 16, 1972, Ser. No. 226,930**
**Int. Cl. C21b** *3/04;* **C22b** *7/02*
**U.S. Cl. 75—25** **10 Claims**



A method for the treatment of flue dust from iron making furnaces to recover minor constituents therefrom which are volatile at high temperature and to reduce the iron components in the dust to a state where they can be re-cycled to the furnace or otherwise used. The method consists essentially in preheating the flue dust to a temperature approaching 1700 degrees F. Thereafter, the flue dust particles are passed into a reducing, essentially oxygen-free, atmosphere where the temperature is increased to as high as 2200 degrees F. A portion of this reducing atmosphere is continuously diverted and cooled to condense the metallic volatiles, primarily zinc. Thereafter, the remaining components of the dust are cooled and released, at a temperature less than 700 degrees F., to recover the iron without reoxidation when it is exposed to the atmosphere.

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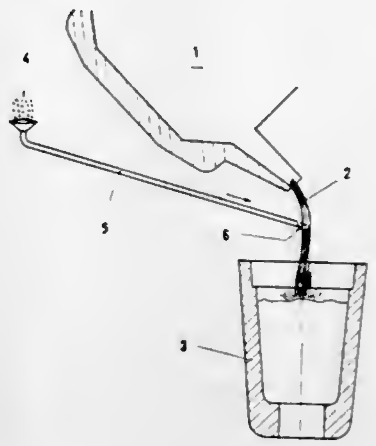
### 3,756,805
### METHOD OF PRODUCING LEAD-BEARING STEEL

**Jose Joaquin Aguirre Ormaechea, Independencia 1, Vitoria, Spain**
**Filed Oct. 9, 1970, Ser. No. 79,529**
**Claims priority, application Spain, Feb. 3, 1970, 376,188**
**Int. Cl. C22c** *39/54*
**U.S. Cl. 75—58** **5 Claims**



Method for producing lead-bearing steel and the product produced thereby comprising discharging a stream of molten steel from a melting furnace to a ladle, and adding lead to the stream of molten steel as it is being discharged from the melting furnace at temperatures above 1600° C. and controlling the temperature of the bath, and dissolving oxygen in the bath in the ladle in order to favor the formation of lead-oxide.

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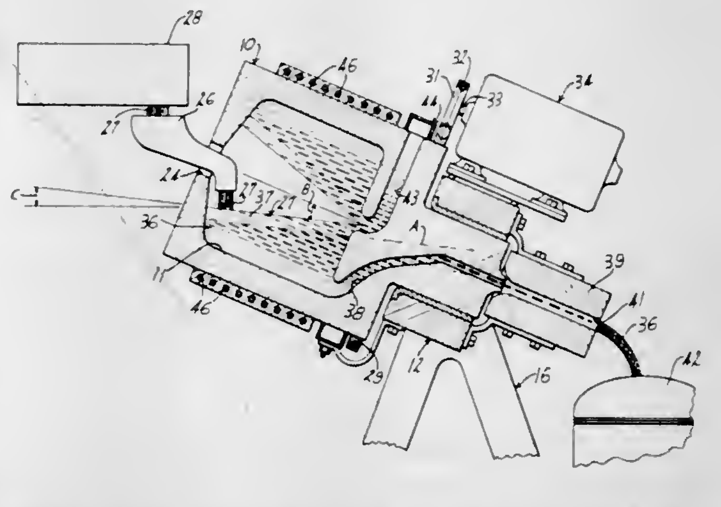
### 3,756,806
### PROCESS AND APPARATUS FOR SEPARATING MOLTEN METAL FROM MIXTURES THEREOF WITH LIGHTER MATERIALS

**Roy C. Hathorn, P.O. Box 1806, Anniston, Ala. 36201**
**Filed July 19, 1971, Ser. No. 163,774**
**Int. Cl. C22b** *9/02*
**U.S. Cl. 75—93 R** **9 Claims**



Method and apparatus for separating molten metal from a mixture thereof with lighter materials wherein mixture is introduced into the upper end of an inclined rotating chamber. The chamber is rotated at a speed and at an inclined angle to separate molten metal from lighter materials with outer surface of the mixture conforming to inner surface of chamber and inner surface of mixture forming a cone. Upon a predetermined increase in mixture level, molten metal is removed from outer portion of mixture adjacent lower end of the chamber and lighter materials are removed from inner portion of mixture adjacent lower end of the chamber.

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### 3,756,807
### AUSTENITIC STAINLESS STEELS

**Kazuo Hoshino, Tokuyama, and Daisaku Yamamoto, Tokyo, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan**

**No Drawing. Filed June 22, 1970, Ser. No. 48,545**
**Claims priority, application Japan, Jan. 13, 1970, 45/3,184; Jan. 21, 1970, 45/5,135**
**Int. Cl. C22c** *39/14*
**U.S. Cl. 75—125** **1 Claim**

Austenitic stainless steels containing 0.05–0.15% C, 0.3–1.0% Si, 13.0–16.0% Cr, 4.0–12.0% Mn, 0.5–3.0% Ni, 0.05–0.20% N and the balance of Fe as the essential ingredients.

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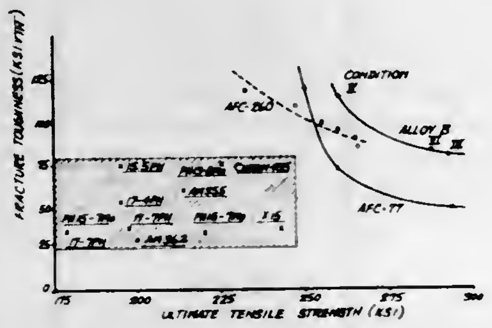
### 3,756,808
### STAINLESS STEELS

**Donald Webster, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.**

**Filed Aug. 12, 1971, Ser. No. 171,181**
**Int. Cl. C22c** *39/20*
**U.S. Cl. 75—128 B** **2 Claims**



Disclosed are high-strength stainless steels of the following composition:

| Element: | Weight percent |
|---|---|
| Carbon | 0.12 to 0.20 |
| Nitrogen | 0 to 0.07 |
| Chromium | 12 to 16 |
| Molybdenum | 0 to 7 |
| Vanadium | 0 to 0.6 |
| Cobalt | 12 to 16 |
| Nickel | 0.5 to 1.5 |
| Niobium | 0.1 to 0.3 |
| Iron | Balance |

These steels exhibit high strength, fracture toughness, ductility and uniform elongation.

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### 3,756,809
### CHROMIUM-COBALT ALLOY

**Kamal Asgar, Ann Arbor, Mich., assignor to The Regents of The University of Michigan, Ann Arbor, Mich.**

**No Drawing. Filed May 1, 1972, Ser. No. 248,843**
**Int. Cl. C22c** *19/00, 31/00*
**U.S. Cl. 75—134 F** **6 Claims**

An alloy containing as essential ingredients 18% to 28% chromium, 25% to 50% cobalt, 18% to 40% nickel and 12.3 to 13.5% tantalum has high strength and an improved balance of elongation and toughness, making the alloy particularly useful for partial denture prosthetics.

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### 3,756,810
### HIGH TEMPERATURE TITANIUM ALLOY

**Warren M. Parris, Las Vegas, and Donald B. Hunter, Henderson, Nev., assignor to Titanium Metals Corporation of America, Caldwell, N.J.**

**No Drawing. Filed Apr. 4, 1972, Ser. No. 241,075**
**Int. Cl. C22c** *15/00;* **C22f** *1/18*
**U.S. Cl. 75—175.5** **9 Claims**

A titanium base alloy comprising 5.9 to 6.75% aluminum, 1.5 to 2.5% tin, 0.5 to 2.0% zirconium, 0.8 to 2.0% molybdenum, 0.15 to 0.6% bismuth, 0.07 to 0.18% silicon, less than 0.12% oxygen, less than 0.2% carbon and less than 0.1% nitrogen, characterized by good elevated temperature creep strength.

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### 3,756,811
### ELECTROPHOTOGRAPHIC PROCESS EMPLOYING PHOTOCONDUCTIVE MATERIALS OF DIFFERENT DYNAMIC RANGES

**Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.**

**Filed Apr. 3, 1967, Ser. No. 628,017**
**Int. Cl. G03g** *13/00, 5/04*
**U.S. Cl. 96—1 PC** **1 Claim**

A xerographic plate of extended dynamic range and process for using same, the plate comprising an electrically conductive backing and overlying said backing, a photoconductive insulating layer having a multiplicity of a plurality of alternating discrete small areas of photoconductive insulating material, each of said plurality of small areas having a different photosensitivity to a given exposure.

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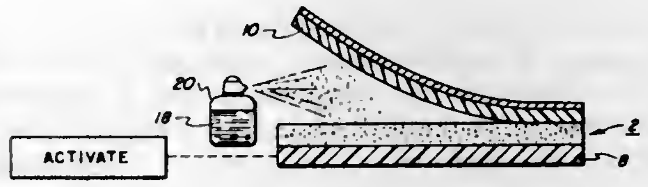
### 3,756,812
### MANIFOLD IMAGING PROCESS

**Ivar T. Krohn and Geoffrey A. Page, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.**

**Continuation of abandoned application Ser. No. 887,201, Dec. 22, 1969. This application Jan. 14, 1972, Ser. No. 218,036**
**Int. Cl. B03g** *5/00, 13/00*
**U.S. Cl. 96—1 R** **14 Claims**



An imaging process wherein an electrically photosensitive imaging layer is exposed to electromagnetic radiation to which it is sensitive while the layer is subjected to an electric field. Subsequent to exposure, the imaging layer is activated so as to render the layer cohesively weak such that when it is sandwiched between a donor sheet and a receiver sheet and subjected to an electric field the imaging layer fractures in imagewise configuration upon separation of the sandwich.

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### 3,756,813
### CHARGELESS METHOD OF PRODUCING IMAGE ON PHOTOCONDUCTIVE SURFACE

**Joseph Stephen Boroky, 3 Standford-Smith St., Klemzig, South Australia, and Kenneth Archibald Metcalfe, 1 Corona Ave., Fulham Park, South Australia**

**No Drawing. Continuation-in-part of application Ser. No. 870,079, Apr. 17, 1969, which is a continuation-in-part of application Ser. No. 449,882, Apr. 21, 1965, both abandoned. This application Sept. 8, 1971, Ser. No. 178,846**
**Claims priority, application Australia, Apr. 23, 1964, 43,660/64**
**Int. Cl. C03g** *13/10, 13/22*
**U.S. Cl. 96—1 LY** **6 Claims**

An image developing technique according to which an image is developed under darkroom conditions first with a medium which is adsorbed or chemisorbed by the surface and which extends the image forming field by transmitting the charges from the surface to a higher level above the surface, and then developing the raised image by a developer attracted to the field, the field extender being cyclohexane, cyclohexanone, nitrobenzene, furan, toluol, acetone, ketones, aldehydes, acids and esters.

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### 3,756,814
### COLOR DIFFUSION TRANSFER IMAGE-RECEIVING LAYER COMPRISING A GRAFT COPOLYMER WHEREIN THE GRAFTED MOIETY HAS MORDANT CAPABILITY

**Stanley F. Bedell, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 58,685, July 27, 1970. This application June 23, 1971, Ser. No. 156,035**
**Int. Cl. G03c** *1/04, 5/48, 5/54*
**U.S. Cl. 96—3** **50 Claims**

A diffusion transfer photographic product including an image-receiving element comprising an alkaline solution permeable and dyeable layer for receiving a dye image; said layer comprises a graft copolymer wherein the grafted moiety provides a mordant capability.

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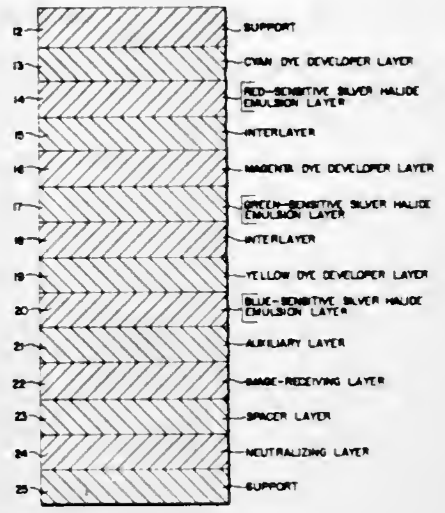
### 3,756,815
### PHOTOGRAPHIC COLOR-DIFFUSION TRANSFER UNITS WHICH UTILIZE NEUTRALIZING LAYER COMPRISING A WATER-SOLUBLE POLYMERIC ACID AND A WATER SOLUBLE BINDER

**Herbert N. Schlein, Beverly, and Richard W. Young, Wellesley Hills, Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed July 22, 1971, Ser. No. 165,171**
**Int. Cl. G03c** *1/04, 5/48, 5/54*
**U.S. Cl. 96—3** **51 Claims**

Film units for forming color transfer images including a negative component comprising at least one light-sensitive silver halide layer and an associated dye image-providing material and a positive component containing a dyeable stratum, which film units may be developed with an aqueous alkaline processing composition to provide the color transfer image, wherein the film unit further contains a neutralizing layer comprising a water-soluble polymeric acid and a water-soluble binder. The neutralizing layer is preferably associated with the positive component of the film unit.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SUPPORT
CYAN DYE DEVELOPER LAYER
RED-SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN-SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE-SENSITIVE SILVER HALIDE EMULSION LAYER
AUXILIARY LAYER
IMAGE-RECEIVING LAYER
SPACER LAYER
NEUTRALIZING LAYER
SUPPORT

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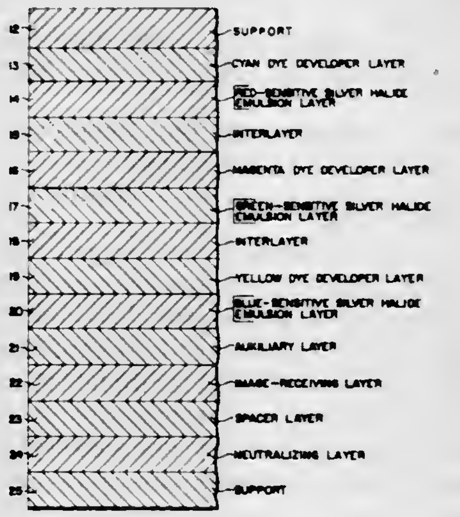
### 3,756,816
### PHOTOGRAPHIC FILM UNITS INCLUDING A LAYER COMPRISING AN AQUEOUS FILM-FORMING POLYMER DISPERSION

**Charles I. Sullivan, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Dec. 17, 1971, Ser. No. 209,229**
**Int. Cl. G03c** *7/00, 5/54*
**U.S. Cl. 96—3** **21 Claims**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SUPPORT
CYAN DYE DEVELOPER LAYER
RED-SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN-SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE-SENSITIVE SILVER HALIDE EMULSION LAYER
AUXILIARY LAYER
IMAGE-RECEIVING LAYER
SPACER LAYER
NEUTRALIZING LAYER
SUPPORT

Coating compositions for preparing an interlayer between two silver halide layers each of which has a dye image-providing material associated therewith in a film unit for preparing color images; and film units including at least one such interlayer, wherein the coating composition includes a dye impermeable coalesced essence of an aqueous film-forming polymer dispersion and a processing composition permeable material associated therewith and adapted to render the interlayer formed therefrom permeable to solubilized dye image-forming material subsequent to being contacted with the processing composition employed to develop the film unit, and wherein the coalesced essence material has a mean particle size of from about $0.095\mu$ to about $0.115\mu$.

**3,756,817**

### METHOD FOR CORRECTION OF COLOR IMAGES

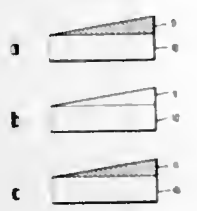
**Seiichi Taguchi, Keishiro Kido, Akinori Kimura, Takeshi Tomatsu, and Eiichi Mizuki, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

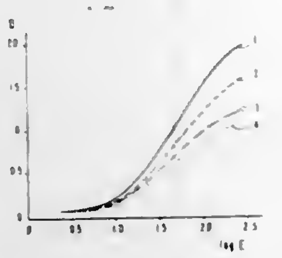
**Filed Sept. 9, 1971, Ser. No. 178,971**

**Claims priority, application Japan, Sept. 9, 1970, 45/79,022**

**Int. Cl. G03f** *3/00, 3/04;* **G03c** *5/44*

**U.S. Cl. 96—12** **16 Claims**





Color images produced by dyeing gelatin reliefs containing silver are color corrected by rehalogenating the gelatin relief and then subjecting it to a tanning development. This treatment controls the dye-absorbing ability of the gelatin relief.

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**3,756,818**

### PROCESS FOR FORMING DYE IMAGES

**Yoshihide Hayakawa and Masato Satomura, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**Continuation of abandoned application Ser. No. 719,592, Apr. 8, 1968. This application Apr. 30, 1971, Ser. No. 139,131**

**Claims priority, application Japan, Apr. 8, 1967, 42/22,002**

**Int. Cl. G03c** *5/26, 1/68*

**U.S. Cl. 96—48 R** **31 Claims**

A process for forming dye images whereby a photographic silver halide emulsion layer is subjected to radiation so as to create centers for developing within the silver halide grains, subjecting the exposed silver halide to a compound resorcinol, m-aminophenol, naphthol or derivatives thereof and to a polymerizable vinyl compound capable of being electrically charged by ionization or by the addition of a hydrogen ion, polymerizing the vinyl compound with said activated silver halide grains and dyeing the resulting ionizable polymer with a dye having an electric charge opposite to the polymer.

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**3,756,819**

### PHOTOGRAPHIC MORDANTS

**Robert A. Sinclair and Louis A. Errede, Harlow, England, assignors to Minnesota Mining and Manufacturing Company**

**No Drawing. Filed June 14, 1971, Ser. No. 153,045**

**Claims priority, application Great Britain, June 15, 1970, 28,943/70**

**Int. Cl. G03c** *1/84*

**U.S. Cl. 96—48 R** **4 Claims**

A polymeric material useful for mordanting dyes in a photographic element, the polymeric material containing recurring quaternary ammonium groups which have covalently bonded to the nitrogen atoms thereof allyl groups.

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**3,756,820**

### POLYMER IMAGE FORMATION

**Yoshihide Hayakawa and Masato Satomura, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**No Drawing. Continuation of abandoned application Ser. No. 873,125, Oct. 31, 1969. This application Feb. 14, 1972, Ser. No. 226,208**

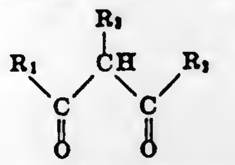
**Claims priority, application Japan, Oct. 13, 1968, 43/79,516**

**Int. Cl. G03c** *1/68, 5/26*

**U.S. Cl. 96—48 R** **37 Claims**

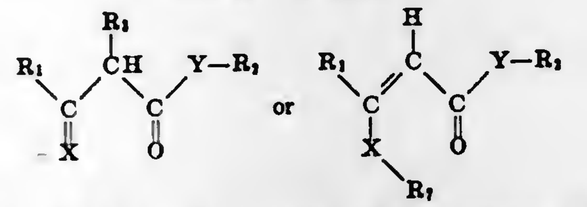
A method of forming an image which comprises reacting a silver halide photographic emulsion having a latent image with at least one active methylene compound represented by the following General Formulas (a), (b) or (c), tautomeric isomers thereof and metal complex salts thereof, in the presence of at least one addition-polymerizable vinylidene monomers or vinyl monomers, to polymerize said monomer selectively at latent image areas

General Formula (a)

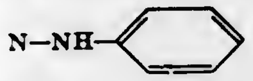


in which $R_1$ and $R_2$ are alkyl, substituted alkyl or phenyl groups, $R_3$ is a hydrogen atom, alkyl or substituted alkyl group, and $R_1$ may form a ring with $R_2$ or $R_3$,

General Formula (b)

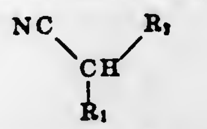


in which $R_1$ is hydrogen atom or alkyl group, $R_2$ is an alkyl group, substituted aromatic ring or sodium, $R_3$ is hydrogen atom, alkyl substituted alkyl, cyano group or chlorine atom, $R_2$ and $R_3$ may form a ring, $R_7$ is an aromatic ring when X is —NH— and an acyl or alkyl group when X is —O—, X is O, NH or



and Y is O or NH, and

General Formula (c)



in which $R_1$ is hydrogen atom, acyl or phenyl group and $R_2$ is an ethoxycarbonyl or cyano group.

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**3,756,821**

### PROCESS FOR THE FORMATION OF COLOR PHOTOGRAPHIC IMAGES

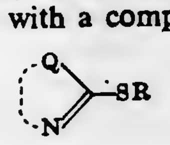
**Jun Hayashi, Reiichi Ohi, and Tadao Shishido, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**No Drawing. Filed Sept. 29, 1971, Ser. No. 184,951**

**Claims priority, application Japan, Sept. 29, 1970, 45/85,463**

**U.S. Cl. 96—55** **13 Claims**

A process for the formation of color photographic images on a multi-layer type color photographic light-sensitive material having at least two silver halide emulsion layers on a support, which comprises developing said light-sensitive material with a compound of the formula:



wherein Q represents an atomic group necessary to complete a heterocyclic ring, which may further be substituted and R is an alkyl group having 1–6 carbon atoms, which may further be substituted or a phenyl group, which may be substituted.

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**3,756,822**

### PHOTOGRAPHIC COLOR PROCESSING MONOBATHS

**Melville R. V. Sahyun, St. Paul,. Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**No Drawing. Filed Sept. 20, 1971, Ser. No. 182,225**

**Int. Cl. G03c** *7/00*

**U.S. Cl. 96—55** **13 Claims**

An aqueous photographic color processing monobath which includes a color developer and a fixing agent, the bath having a pH of above about 13.2 and being capable of color developing and fixing an exposed photographic film.

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**3,756,823**

### PLANOGRAPHIC DIAZO PRINTING PLATE

**Johannes Josephus Ten Haaf, Milsbeek, and Louis Bernard Heuts, Venlo, Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands**

**No Drawing. Filed Mar. 10, 1971, Ser. No. 122,990**

**Claims priority, application Great Britain, Mar. 13, 1970, 12,265/70**

**Int. Cl. G03f** *7/08*

**U.S. Cl. 96—75** **16 Claims**

A paper-based planographic printing plate giving up to 1500 or more good prints with reproduction of fine screen areas is obtained by providing a water-repellent coating on the paper surface, on that coating an intermediate layer of a filler-permeated mixture of a hydrophilic organic binder and a hydrophobic thermoplastic film-forming polymer, on that layer a filler-permeated planographic layer of cross-linked polyvinyl alcohol having a degree of hydrolysis greater than 98% and a light-sensitive diazo compound coated on the planographic layer. The intermediate layer is formed from an aqueous dispersion of hydrophobic polymer and filler, advantageously finely divided clay, having the hydrophilic binder, e.g., a starch derivative, and a crosslinking agent in the continuous phase. The filler in the planographic layer advantageously is pigmentary $TiO_2$. The light-sensitive coating is formed into a water-insoluble ink-receptive image by imagewise exposure and development with an azo coupling component, giving a positive image, in use of a diazonium salt of high coupling activity, e.g., a 4-benzoylamino-2,5-dialkoxy benzene diazonium salt, and by imagewise exposure giving a negative image when a diazo resin is used.

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**3,756,824**

### PHOTOGRAPHIC SELF-DEVELOPING FILM UNIT WITH RUPTURABLE CONTAINER OF PROCESSING LIQUID

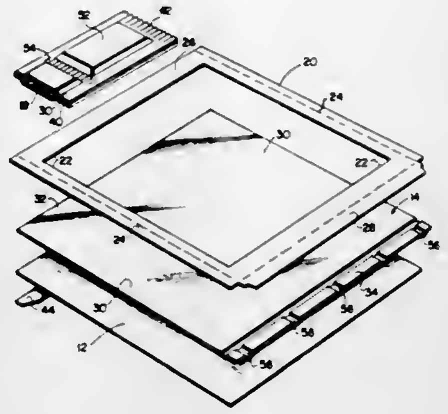
**Richard J. Chen, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of abandoned application Ser. No. 851,213, Aug. 9, 1969. This application Mar. 15, 1971, Ser. No. 124,273**

**Int Cl. G03c** *5/54*

**U.S. Cl. 96—76 R** **15 Claims**

A self-developing film unit including photosensitive and second sheets secured in face-to-face relation and adapted to be processed by a liquid processing composition distributed between said sheets from a rupturable container secured to the sheets externally thereof adjacent a transverse edge of one of the sheets. The container is formed of a rectangular blank of sheet material folded upn itself to form walls sealed to one another along three sides to form a liquid-filled cavity. Edge portions of the container are adapted to become unsealed in response to the application of compressive pressure to the liquid-filled container. The container is attached to one of the sheets by a first retaining sheet secured to an edge portion of the container and a transverse edge portion of the one sheet. Another retaining sheet is secured to the other sheet and to the container so as to prevent movement of at least a portion of the container relative to the other sheet. The first retaining sheet cooperates to form a passage for conducting the liquid contents of the container between the photosensitive and second sheets. The container is elongated in the direction of liquid distribution as it is flattened by compressive pressure and a space is provided between the edge portions of the container and the transverse edge of the one sheet to accommodate the container elongation.



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**3,756,825**

### PHOTOGRAPHIC PRODUCTS AND PROCESSES HAVING A POLYCYCLIC S-SUBSTITUTED TETRAHYDROPYRIMIDINE COMPOUND

**Donald O. Rickter, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**No Drawing. Filed Feb. 25, 1972, Ser. No. 229,504**

**Int. Cl. G03c** *1/48*

**U.S. Cl. 96—76 R** **18 Claims**

The present invention is directed to the use of certain polycyclic, S-substituted tetrahydropyrimidine compounds as toning agents for silver images.

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**3,756,826**

### TREATMENT OF ALUMINUM PREPARATORY TO APPLICATION OF PHOTOSENSITIVE COATING THERETO

**Walter G. Zelley, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.**

**No Drawing. Nov. 15, 1971, Ser. No. 199,031**

**Int. Cl. G03c** *1/94*

**U.S. Cl. 96—86** **12 Claims**

Use of ammoniacal or amine tartrate, citrate, malate or the like at pH 8.1–9.9 in anodizing aluminum preparatory to application of photosensitive coating thereto.

### 3,756,827

## PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING CYCLIC CIS-α-DICARBONYL COMPOUNDS AND SELECTED SENSITIZERS

**Catherine Teh-Lin Chang, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed Jan. 25, 1972, Ser. No. 220,694**

**Int. Cl. G03c** *1/70*

**U.S. Cl. 96—86 P** **12 Claims**

Photopolymerizable compositions comprising an ethylenically unsaturated monomer and an initiating combination of a cyclic cis-α-dicarbonyl compound and certain radiation-absorbing sensitizers are disclosed. Compositions of the invention have improved photospeed and may be chosen to provide a wide range of spectral sensitivity.

### 3,756,828

## PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING GOOD ANTISTATIC PROPERTIES

**Masakazu Yoneyama, Nobuo Yamamoto, and Koutaro Endo, Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

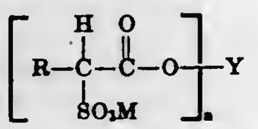
**No Drawing. Filed Mar. 8, 1972, Ser. No. 232,941**

**Claims priority, application Japan, Mar. 11, 1971, 46/13,315**

**Int. Cl. G03c** *1/82*

**U.S. Cl. 96—87 A** **9 Claims**

A silver halide photographic light-sensitive material endowed with good antistatic property by incorporating in the photographic emulsion layer or applying to the surface of the support for the photographic light-sensitive material a polyhydric alcohol ester derivative of an alpha-sulfofatty acid having the general formula



$$\left[R-\underset{SO_3M}{\overset{H}{C}}-\overset{O}{\overset{\|}{C}}-O-\right]_n-Y$$

wherein R is a saturated or unsaturated straight or branch chain aliphatic group having more than 6 carbon atoms; M is a hydrogen atom, an alkali metal atom, or a quaternary ammonium group; Y is a residual group having at least one hydroxyl group and from 2 to 18 carbon atoms; and *n* is an integer of from 1 to 7.

### 3,756,829

## THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENTS

**Kinji Ohkubo, Junpei Noguchi, and Takao Masuda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**No Drawing. Filed Jan. 29, 1968, Ser. No. 701,065**

**Claims priority, application Japan, Jan. 27, 1967, 42/5,326**

**Int. Cl. G03c** *1/02, 1/76, 3/00*

**U.S. Cl. 96—114.1** **11 Claims**

A thermally developable light-sensitive element comprising a support bearing, at least one layer containing at least (a) a light insensitive and reducible organic silver salt, (b) at least one member selected from the group consisting of a silver halide and an inorganic halide capable of forming a silver halide by the reaction thereof with said organic silver salt (a), and (c) a reducing material capable of being decomposed by the irradiation with actinic radiation to lose its reducing properties, which contacts at least one material capable of accelerating the decomposition of the reducing material by irradiation with actinic radiation in at least one layer thereof.

### 3,756,830

## FLUORINATED ALCOHOLS AS SOLVENTS FOR SPECTRAL SENSITIZING DYES

**Richard Waack, Wayland, and Bernard Zuckerman, Framingham, Mass., assignors to Polaroid Coporation, Cambridge, Mass.**

**No Drawing. Filed Jan. 3, 1972, Ser. No. 215,099**

**Int. Cl. G03c** *1/16*

**U.S. Cl. 96—132** **11 Claims**

Fluorinated lower alcohols are advantageously employed as solvents for photographic spectral sensitizing dyes thereby avoiding problems associated with the use of prior art solvents.

### 3,756,831

## MODIFIED SKIM MILK AND PROCESS FOR ITS PREPARATION

**Winston Harold Wingerd and Russell D. Damisch, Elgin, Ill., assignors to Borden, Inc.**

**No Drawing. Filed Jan. 6, 1971, Ser. No. 104,453**

**Int. Cl. A23c** *9/00*

**U.S. Cl. 99—54** **18 Claims**

A protein-modified skim milk product which can bind 4 to 5 times as much, and more, water as unmodified skim milk, is prepared by admixing 1 to 30 parts by weight of condensed skim milk solids with one part of lactalbumin or lactalbumin phosphate or a mixture thereof and up to 2.5% of a reducing agent, on total solids basis; heating the mixture at 140° F. to 220° F. to develop complexes; adding enough alkali to raise pH of the mixture within the range of from 7.5 to 9.5 while maintaining the mixture at 130° F. to 150° F. for a period sufficient to rehydrate the complexes; and spray-drying the mixture to form a free-flowing powder product.

### 3,756,832

## BREAD INCLUDING LARGE AMOUNT OF NON-WHEAT PROTEIN

**Sidney K. Wolf, Hillsdale, N.Y., and Robert M. Cavanaugh, Greenville, Del., assignors to International Food Technology Inc., Hillsdale, N.Y.**

**No Drawing. Filed May 19, 1972, Ser. No. 255,079**

**Int. Cl. A21d** *2/26, 13/06*

**U.S. Cl. 99—90 HP** **7 Claims**

Large amounts of a highly proteinaceous non-wheat protein source are incorporated in bread dough. Corn flour or corn meal is also utilized in the dough to mask the non-wheat flour taste imparted by utilizing the non-wheat protein in the bread, such as the bitter taste and beany taste associated with the use of soy as a non-wheat protein source. The non-wheat proteins are those such as soy, fish, or the like, which are rich in at least one amino acid, such as lysine, in which wheat protein is deficient.

### 3,756,833

## FOOD COMPOSITION CONTAINING GARLIC POWDER, PAPRIKA AND BLACK PEPPER AND METHOD OF USING SAME

**Louis A. Powell, Winter Haven, Fla., assignor to Wellman-Power Gas Incorporated, Lakeland, Fla.**

**No Drawing. Continuation-in-part of application Ser. No. 26,124, Apr. 6, 1970. This application Aug. 13, 1971, Ser. No. 171,722**

**Int. Cl. A23l** *1/22, 1/26*

**U.S. Cl. 99—140 R** **9 Claims**

A base food composition consisting essentially of garlic powder and paprika is provided. It can be blended with seasoning ingredients, e.g., onion powder and salt; sealants, e.g., black pepper; and flavor enhancers, e.g., MSG, to provide a seasoning composition which can be used in a process for cooking food products, e.g., meat, fowl or fish.

### 3,756,834

## ALLOY METALIZATIONS

**Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Continuation-in-part of application Ser. No. 136,190, Apr. 21, 1971, which is a continuation-in-part of abandoned application Ser. No. 873,055, Oct. 31, 1969, which is a continuation-in-part of abandoned application Ser. No. 705,305, Feb. 14, 1968, and which in turn is a continuation-in-part of abandoned application Ser. No. 626,394, Mar. 28, 1967. This application June 6, 1972, Ser. No. 260,244**

**Int. Cl. C09d** *5/24*

**U.S. Cl. 106—1** **6 Claims**

Metalizing compositions comprising alloys of three or more metals are used in ceramic capacitor electrodes and capacitors therefrom. The alloys have a critical surface area. The specific metals of the alloy are palladium, platinum and gold. The metalizing compositions are especially suitable for producing capacitors on ceramic dielectric substrates which contain bismuth stannate.

### 3,756,835

## PROTECTIVE POLISH

**Roy J. Betty, Jr., and Harold C. Nemeth, Chicago, Ill., assignors to Akzona Incorporated, Asheville, N.C.**

**No Drawing. Filed Apr. 5, 1971, Ser. No. 131,543**

**Int. Cl. C08h** *9/00;* **C09f; C09g**

**U.S. Cl. 106—11** **4 Claims**

A protective polish composition for use in auto laundries comprising a di(long chain aliphatic) quaternary ammonium nitrite, a di(long chain aliphatic) diethoxylated quaternary ammonium compound or a di(long chain alkyl) quaternary ammonium compound; an ethoxylated tertiary amine cationic emulsifier; and an emulsifiable mineral oil.

### 3,756,836

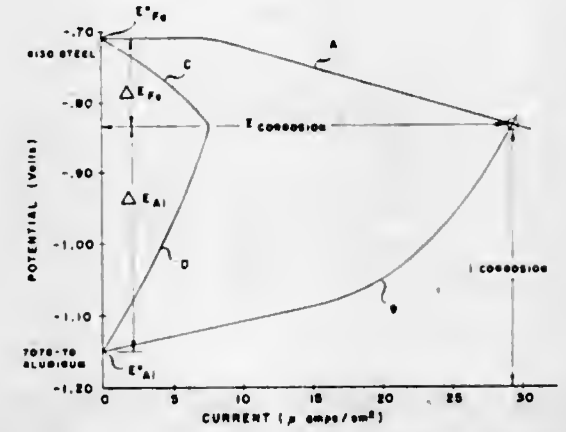
## USE OF COBALT CHROMATES IN INHIBITING GALVANIC CORROSION

**Kenneth E. Weber, Los Angeles, John L. Wanamaker, Burbank, and Marshall L. Ogne, Sagus, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.**

**Continuation-in-part of application Ser. No. 28,008, Apr. 13, 1970. This application Apr. 4, 1972, Ser. No. 240,994**

**Int. Cl. C09d** *5/08*

**U.S. Cl. 106—14** **18 Claims**



Galvanic corrosion between iron and aluminum can be effectively controlled through the use of a cobalt chromate corrosion inhibitor in the areas where corrosion is anticipated betwen these two metals. Preferably the cobalt chromate used is dicobaltous oxychromate or a percobaltous oxychromate composition or a mixture of these. The cobalt chromate employed may be located directly between two parts of dissimilar metals within a carrier such as a conventional coating vehicle used between or to cover parts of dissimilar metals. Preferably such a carrier contains from 10 to 20% by weight of the cobalt chromate employed.

### 3,756,837

## COATING COMPOSITIONS USING LIQUID DRYING VEHICLES

**Kenneth E. Weber, Granada Hills, John L. Wanamaker, Burbank, and Geraldine M. Hoch, Chatsworth, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.**

**No Drawing. Continuation-in-part of application Ser. No. 28,009, Apr. 30, 1970. This application Apr. 4, 1972, Ser. No. 240,995**

**Int. Cl. C09d** *5/08*

**U.S. Cl. 106—14** **12 Claims**

Coating compositions for use in inhibiting galvanic corrosion can be created utilizing a cobalt chromate compound or mixture as drying agents for a liquid drying vehicle or mixture and to inhibit galvanic corrosion. Such a liquid drying vehicle may be a natural drying or semi-drying oil or a reaction product of such an oil or a fatty acid within such an oil with a synthetic resin such as an alkyd or an epoxy resin.

### 3,756,838

## STRONTIUM FLUORMICA GLASS-CERAMICS

**George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed May 28, 1971, Ser. No. 148,057**

**Int. Cl. C03c** *3/04, 3/10, 3/22*

**U.S. Cl. 106—39.6** **3 Claims**

This invention relates to the production of glass-ceramic articles wherein the predominant crystal phase is an essentially alkali metal-free fluormica. Such articles are machinable with normal metal tools and consist essentially, by weight on the oxide basis, of about 3–30% SrO, 10–35% MgO, 5–26% $Al_2O_3$, 30–65% $SiO_2$, and 3–15% F. Certain of these glass-ceramic bodies also exhibit water-swelling even in contact with cold water. These water-swelling fluormica glass-ceramic bodies consist essentially, by weight on the oxide basis, of about 8–30% SrO, 10–35% MgO, 5–26% $Al_2O_3$, 30–60% $SiO_2$, and 3–15% F.

### 3,756,839

## METHOD FOR IMPROVING THE CELLULAR STRUCTURE OF RIGID LOW DENSITY SILICATE FOAMS

**Ramesh P. Rao, Sarnia, Ontario, Canada, assignor to Fiberglas Canada Limited, Toronto, Ontario, Canada**

**No Drawing. Continuation-in-part of application Ser. No. 34,880, May 6, 1970, which is a continuation-in-part of application Ser. No. 34,882, May 5, 1970, which in turn is a continuation-in-part of application Ser. No. 875,568, Nov. 10, 1969, all now abandoned. This application June 1, 1971, Ser. No. 148,929**

**Claims priority, application Canada, May 5, 1971, 112,221**

**Int. Cl. C04b** *21/02, 35/16*

**U.S. Cl. 106—75** **9 Claims**

The addition of a finely divided compatible powder to a hydrated alkali silicate composition promotes the uniform initiation of bubble formation throughout the mixture. During the foaming of the mixture, the particles of powder act as nucleation centers for the generation of foam bubbles by the water of hydration which constitutes the blowing agent. The powder may be chosen from nonreactive or only slightly reactive materials such as carbon black, silica, glass powder, glass fibers, ferric oxide

(Fe$_2$O$_3$) metal powder and powders of organic polymers such as polyethylene and polyvinyl chloride. Alkali metal silicate foam and in particular sodium silicate foam, may be produced by the known liquid, gel or solid processes, involving the rapid input of heat energy, preferably microwave energy.

The addition of finely divided metal powder to an alkali metal silicate composition may contribute heat energy by exothermic reaction during the foaming of the silicate by input of thermal energy, and further may as a result of formation of insoluble products contribute to the insolubilization of the foam article produced thereby. In particular the use of such metal powder increases the efficiency of absorption of microwave heat energy in the foaming step.

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### 3,756,840
### ZIRCONIUM PIGMENTS
**Joseph Gascon, Thann, France, assignor to Fabriques de Produits Chimiques de Thann et de Mulhouse, Thann, Haut-Rhin, France**
**Filed Apr. 21, 1971, Ser. No. 135,905**
**Claims priority, application Great Britain, Apr. 22, 1970, 19,364/70**
**The portion of the term of the patent subsequent to Sept. 15, 1987, has been disclaimed**
**Int. Cl. C09c** *1/00, 1/28*
**U.S. Cl. 106—299 12 Claims**

Praseodymium yellow zircon based pigments are prepared by calcining at below 900° C. a mixture of an alkali metal silicozirconate, a basic zirconium sulphate, free silica or silicic acid, a mineraliser and praseodymium oxide, the silicozirconate being present in a stoichiometric excess, e.g. 10–50 molar percent, with respect to the basic zirconium sulphate.

The zirconium sulphate is preferably of formula (ZrO$_2$)$_2$.SO$_3$ and may be prepared by reacting the silicozirconate with sulphuric acid. Glazes containing the pigments are of superior quality to those containing pigments derived from smaller quantities of silicozirconate.

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### 3,756,841
### CHLORIDE TiO$_2$ PIGMENTS SUITED FOR HIGH SOLIDS, LOW VISCOSITY SLURRIES
**Thomas J. Beliveau, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed June 30, 1971, Ser. No. 158,513**
**Int. Cl. C09c** *1/36*
**U.S. Cl. 106—300 10 Claims**

Chloride TiO$_2$ pigments are given a treatment to render them suitable for preparation of high solids, low viscosity aqueous slurries, i.e., so that they are suitable for the papermaking industry. The treatment involves calcination of the chloride TiO$_2$ particles in the presence of particular quantities of alkali metal and phosphorus followed by dry milling with an amine dispersing agent.

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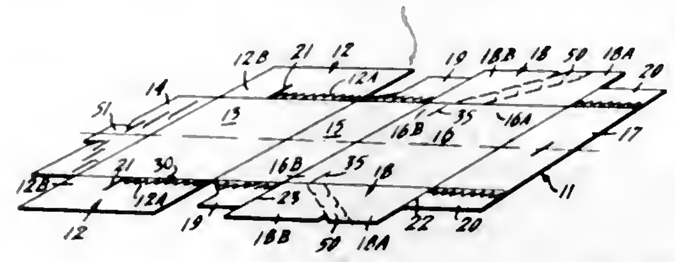
### 3,756,842
### METHOD OF SKIP APPLYING ADHESIVE TO A CARTON PANEL
**George Le Roy Meyers, Menasha, and Paul James Belke, Wausau, Wis., assignors to American Can Company, New York, N.Y.**
**Original application July 10, 1969, Ser. No. 840,745, now abandoned. Divided and this application June 4, 1971, Ser. No. 150,245**
**Int. Cl. B44d** *1/32*
**U.S. Cl. 117—11 6 Claims**

A cardboard blank for a carton having a panel with a slit therein. A first surface portion of the panel has a straight-line adhesive pattern thereon, adjacent to the slit, and a second surface portion of the panel, adjacent to the slit, has no adhesive pattern thereon. The slit is adapted to providing adhesive on only the first surface portion of the panel in conjunction with a method for contacting only the first surface portion of the panel with an adhesive applicator wheel in a standard, straight-line gluing operation.



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### 3,756,843
### METHOD OF PRODUCING ELECTROPHOTOGRAPHIC COATINGS
**Satoru Honjo and Hajime Miyatuka, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan**
**No Drawing. Filed Jan. 12, 1971, Ser. No. 105,988**
**Claims priority, application Japan, Jan. 12, 1970, 45/34,261**
**Int. Cl. G03c** *1/74*
**U.S. Cl. 117—34 3 Claims**

Prior to blending with a resin binder, an inorganic photoconductive powder is wetted with an organic solvent having a strong dissolving power such as ketones, pyridines, benzaldehyde, nitrobenzene, ethylenediamine, etc. By virtue of the pretreatment of the photoconductive powder, the period for blending with a resin binder solution is remarkably reduced, and the resulting coating exhibits a high sensitivity to light with an improved surface smoothness. The coating is especially suited for liquid development. This invention is an improvement of the method described in British Patent No. 1,067,116.

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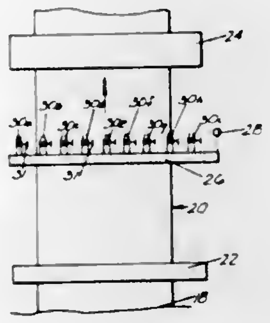
### 3,756,844
### CONTROLLING COOLING OF GALVANIZED STRIP IN PROCESS OF FORMING MINIMIZED SPANGLE PRODUCT
**Edmond C. Bunnell, Trenton, and Paul E. Schnedler, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio**
**Filed July 30, 1971, Ser. No. 167,726**
**Int. Cl. C23c** *1/02*
**U.S. Cl. 117—64 R 6 Claims**



Method for controlling the cooling pattern of a molten metallic coating on a ferrous strip after it emerges from the bath of molten metal, wherein a heating and/or a cooling fluid is directed at selected longitudinal zones of the strip.

The apparatus includes a manifold arranged transversely of the path of movement of the strip and extending across its full width. The manifold will be supplied with a heating or cooling fluid, and a plurality of nozzles directed at selected longitudinal zones of the strip. Each nozzle is independently controlled so that the fluid is directed only at the desired longitudinal zones of the strip.

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### 3,756,845
### METHOD FOR IMPROVING ADHESION OF POLYURETHANE COATINGS TO SUBSTRATES
**Ronald J. Zasadny, Wyandotte, and James A. Gallagher and Herbert Phelps Trix, Grosse Ile, Mich., assignors to BASF Wyandottte Corporation, Wyandotte, Mich.**
**No Drawing. Filed Apr. 27, 1971, Ser. No. 137,999**
**Int. Cl. B32b** *13/12, 27/40*
**U.S. Cl. 117—72 8 Claims**

Masonry products and other substrates primed with an organic isocyanate prior to applying a urethane composition thereon exhibit improved adhesion, a water resistant bond, 100% cohesive failure, and 0% adhesive failure.

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### 3,756,846
### WEATHERPROOF CAULKED EXTERNAL METAL SURFACES
**Klaus Hossenfelder, Westphalia, Germany, assignor to Glasurit-Werke M. Winkelmann AG, Hamburg-Wandsbek, Germany**
**No Drawing. Continuation-in-part of application Ser. No. 18,346, Mar. 10, 1970. This application Oct. 29, 1971, Ser. No. 194,035**
**Claims priority, application Austria, Mar. 19, 1969, A 2,705/69**
**Int. Cl. B32b** *15/08*
**U.S. Cl. 117—75 5 Claims**

Weatherproof caulked external surfaces of iron and steel having a metal base and coated thereon a synthetic rubber dispersion of copolymers of styrene, butadiene and an unsaturated carboxylic acid made thixotropic by the addition of organic and/or inorganic thickeners, and inorganic and/or organic fibrous substances.

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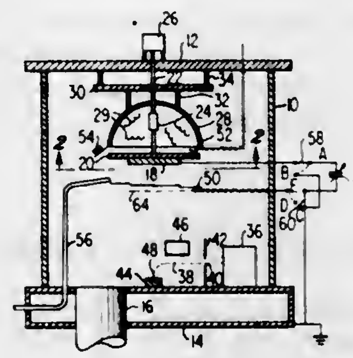
### 3.756.847
### METHOD FOR CONTROLLING THE COMPOSITION OF A DEPOSITED FILM
**Donald Leibowitz, Trenton, Dorothy Morse Hoffman, Titusville, and Frederick James Tams III, Trenton, N.J., asssignors to RCA Corporation**
**Filed Nov. 4, 1971, Ser. No. 195,784**
**Int. Cl. C23c** *17/00*
**U.S. Cl. 117—93.3 6 Claims**



Deposition of a film of a compound on a substrate by electron beam evaporation of the compound is controlled by reestablishing substrate electrical potential. An electrical potential is applied to the substrate and is properly adjusted to attract or repel a predetermined portion of the negatively charged ions formed during evaporation of the compound.

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### 3,756,848
### METHOD OF MAKING HIGH TEMPERATURE POLYURETHANE PRESSURE-SENSITIVE ADHESIVE TAPE
**Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.**
**No Drawing. Application May 6, 1969, Ser. No. 822,314, now Patent No. 3,671,301, which is a continuation-in-part of application Ser. No. 762,995, Sept. 26, 1968, now Patent No. 3,515,773. Divided and this application Feb. 2, 1972, Ser. No. 222,989**
**Int. Cl. C09j** *7/02*
**U.S. Cl. 117—122 P 6 Claims**

Ordinary pressure-sensitive adhesives based on natural or synthetic rubber are made high temperature resistant by curing with reaction-products of polyisocyanates and hydroxylated elastomers.

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### 3,756,849
### METHOD OF FORMING A BACKING FOR METAL SHELLS
**Allan C. Buchholz, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**No Drawing. Filed Apr. 1, 1971, Ser. No. 130,503**
**Int. Cl. B28b** *7/36;* **C23c** *17/00*
**U.S. Cl. 117—131 3 Claims**

A two-part backing composition useful for backing metal shells comprises Part A and Part B wherein; Part A comprises a pliable, workable, thermoconductive, particulate metal aggregate of metal particles having an average size of between 60 and 400 mesh; from 0.2 to 18 parts by weight of a heat activated nonvolatile binder per 100 parts by weight of metal particles and an effective amount of a catalyst for the thermosetting resin of Part B; and Part B comprises a thermosetting resin. The metal aggregate can be cured to a rigid porous structure which is thereafter filled with the thermosetting resin and the entire combination cured to a strong, structurally stable backing.

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### 3,756,850
### ANTI-STAIN TREATMENT FOR LUMBER IN TRANSIT
**Laurence A. Story, Burnaby, British Columbia, Canada, assignor to SCM (Canada) Ltd.**
**No Drawing. Filed May 12, 1971, Ser. No. 142,791**
**Int. Cl. B27k** *3/18, 5/00;* **B44d** *1/26*
**U.S. Cl. 117—147 8 Claims**

Disclosed are methods and compositions for preventing or minimizing staining of lumber during transit, particularly during rail and ship transit, under conditions of exposure to iron contaminants by adhering to the lumber an essentially atinctorial deposit of exposed particles of a slow-leaching base in an amount sufficient to maintain the surface of the lumber at a pH at about 10 or above for the period of transit.

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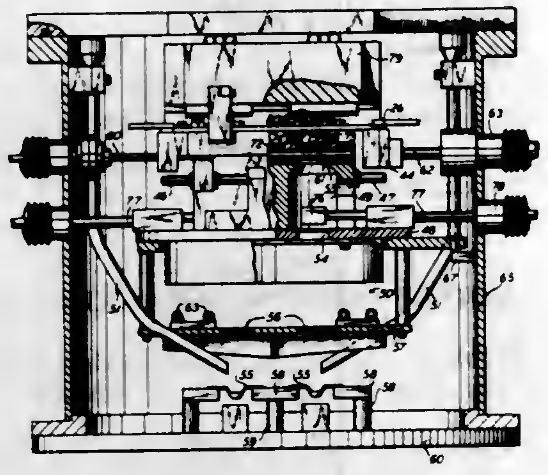
### 3,756,851
### METHOD FOR AUTOMATICALLY ADJUSTING THE FREQUENCY OF MONOLITHIC CRYSTAL FILTERS
**Robert C. Rennick, Center Valley, Pa., and William C. Morse, Newbury, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., and Western Electric Company, Incorporated, New York, N.Y.**
**Filed Oct. 8, 1971, Ser. No. 187,716**
**Int. Cl. B44d** *1/18;* **G05f** *3/00*
**U.S. Cl. 117—201 7 Claims**

Individual resonators on each of a plurality of monolithic crystal filters are adjusted to respective predetermined frequencies. An electrode of a selected resonator on each filter is positioned in the respective path of a substantially non-divergent stream of metal vapor. Each selected resonator, in turn, is excited and its resonant frequency is monitored to interrupt the respective vapor stream when a predetermined value is reached. An electrode of another selected resonator on each filter is positioned in a respective vapor stream and the frequency monitoring facilities are changed to sense a different predetermined value. The width of the vapor streams may be changed to accommodate different widths of electrodes and the density of the vapor stream may be reduced when the resonant frequency approaches the predetermined value. Also, timing facilities advance the cycle if a resonator fails to reach the predetermined value within a predetermined duration. After all the resonators are first adjusted to value, the steps of adjusting are again repeated to change the resonators to still different predetermined values.



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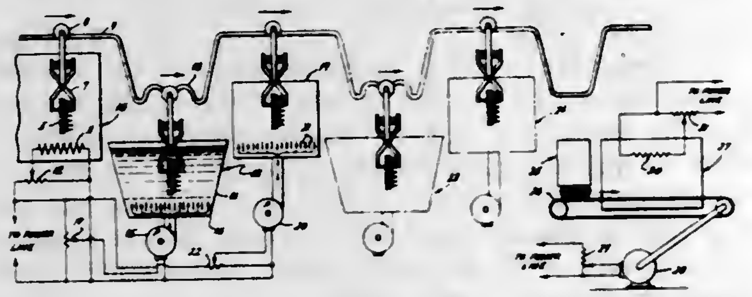
### 3,756,852
## CONFORMAL COATING PROCESS TO IMPROVE PACKAGE RELIABILITY IN ADVERSE ENVIRONMENTS

**Robert J. Scheetz, Sellersville, and Stephen M. Sobota, Jr., Souderton, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.**
**Filed Oct. 22, 1971, Ser. No. 191,864**
**Int. Cl. B44d** *1/094, 1/095*
**U.S. Cl. 117—212 8 Claims**



A conformal insulating coating is applied to the hermetic package housing an electronic device using a process that eliminates the coating from the tips of the electrical connecting leads. The encapsulated device is heated and then immersed into a fluidized bed containing solid granules of unreacted coating material. The granules stick to the major portions of the package but the lead extremities, being cooler because of their low thermal mass and remoteness from the body of the package, cool to a temperature too low to permit the granules to stick. Upon firing, the adhering granules melt and coalesce permitting a chemical reaction to take place and complete the coating. The resultant coating improves the package hermeticity and greatly improves resistance to adverse ambient atmospheres. The coating is applied without the masking normally required to prevent its application to unwanted areas on the connecting leads.

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### 3,756,853
## PROCESS FOR THE PRODUCTION OF NON-HAZING STARCH CONVERSION SYRUPS

**Gilbert R. Meyer, Overland Park, Kans., assignor to CPC International Inc.**
**No Drawing. Filed Oct. 27, 1970, Ser. No. 84,518**
**Int. Cl. B01d** *13/00;* **C13k** *1/06, 1/08*
**U.S. Cl. 127—38 18 Claims**

Process for the production of a non-hazing starch conversion syrup having a D.E. of from about 5 to about 18 which comprises first hydrolyzing starch to a D.E. of from about 20 to about 40 and thereafter subjecting the resulting starch conversion syrup to reverse osmosis until the D.E. of the syrup has been reduced to from about 5 to about 18.

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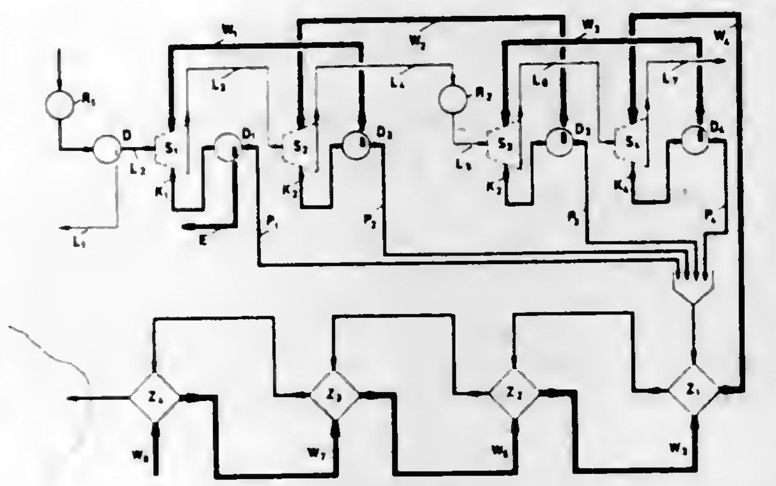
### 3,756,854
## PROCESS AND PLANT FOR OBTAINING STARCH FROM CROPS

**Heinz Hemfort, Heinrich Huster, and Franz Heimeier, Oelde, Westphalia, Germany, assignors to Westfalia Separator AG, Oelde, Westphalia, Germany**
**Filed Apr. 22, 1971, Ser. No. 136,466**
**Claims priority, application Netherlands, Apr. 30, 1970, 7006416**
**Int. Cl. C13l** *1/00*
**U.S. Cl. 127—24 4 Claims**



Starchiferous material such as potatoes are pulped; starchiferous solids are separated and passed through a washing section in which starch is extracted with a liquid in a plurality of contacting stages; the liquid is passed through the washing section countercurrently with respect to the solids; and liquid from the washing section containing extracted starch is passed to refining section wherein the starch content thereof is enhanced. In at least some of the contacting stages, the liquid containing extracted starch, separated from the solids, before transfer to the next preceding contacting stage is centrifuged to separate a concentrated starch milk, and that milk is fed to the refining section from the washing section. In this way, the water load in the refining section is reduced.

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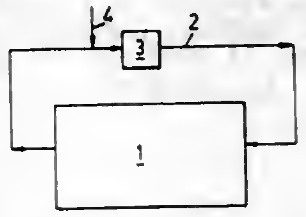
### 3,756,855
## METHOD FOR DRYING CRYSTALLIZED SUGAR

**Georges Francois Duchateau, Tienen, and Paul Joseph Dewulf, Outgaarden, Belgium, assignors to Raffinerie tirlemontoise, Brussels, Belgium**
**Filed May 28, 1971, Ser. No. 148,042**
**Claims priority, application Luxemburg, June 3, 1970, 61,049**
**Int. Cl. C13f** *5/00*
**U.S. Cl. 127—63 5 Claims**

Method for drying crystallized sugar in the presence of a heated environment, wherein said environment has a relative humidity less than, but close to the equilibrium relative humidity of the sugar to be dried, at the temperature of the environment. This method permits crystallized sugar to be obtained in bright crystals and to exhibit physical characteristics similar to those of products produced by the Adant method, such as hardness, resistance to abrasion, porosity, rate of dissolution, and density.



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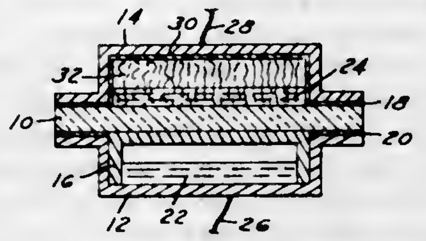
### 3,756,856
## FLEXIBLE SEALING MATERIAL FOR ENERGY CONVERSION DEVICES

**Gerald J. Tennenhouse, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.**
**Filed Nov. 2, 1971, Ser. No. 194,909**
**Int. Cl. H01m** *43/00*
**U.S. Cl. 136—6 FS 7 Claims**



Polycarborane siloxanes having about 1.5–2 silicone linkages per polymer unit perform effectively in sealing junctions and other internal elements of sodium-sulfur energy conversion devices. The sealing materials retain satisfactory properties at elevated temperatures exceeding 300° C. and can be placed in contact with both molten sodium and molten sulfur. Adding considerable amounts of carbon particles renders the sealing materials electrically conductive without depreciating significantly the corrosion resistance thereof to the reactants.

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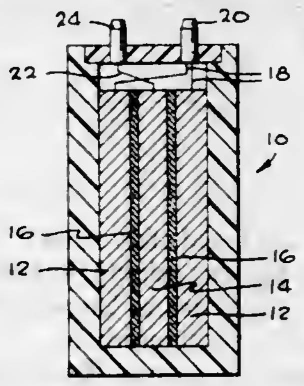
### 3,756,857
## SUBSTANTIALLY NON-GASSING ALKALI RESISTANT BATTERY SEPARATOR AND METHOD OF PRODUCTION

**Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**
**Filed Oct. 23, 1970, Ser. No. 83,315**
**Int. Cl. H01m** *3/02, 41/00*
**U.S. Cl. 136—30 18 Claims**



Production of inorganic porous sintered battery separator substantially eliminating formation of gas when in contact with a zinc electrode, and permitting long cycle life of a high energy density battery such as a silver-zinc battery, produced according to one embodiment by initially firing a mixture of magnesium-bearing material, e.g., MgO, manganese-bearing material, e.g., MnO, and silica ($SiO_2$), at temperature in the range of about 1,100 to about 1,400° C., to produce a magnesium silicate-manganese silicate composition, granulating and compacting said composition into plaques, and sintering said compacted plaques at temperature ranging from about 1,000 to about 1,300° C., to produce porous sintered separator members, in the form of a sintered solid solution of magnesium silicate and manganese silicate, having good transverse strength and low resistivity.

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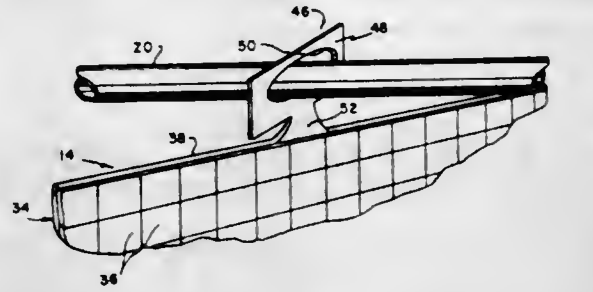
### 3,756,858
## FOLDING THIN-FILM DEPLOYABLE PANEL STRUCTURE

**Paul A. Dillard, Littleton, Colo., assignor to TRW Inc., Redondo Beach, Calif.**
**Filed Sept. 14, 1970, Ser. No. 72,015**
**Int. Cl. H01l** *15/02*
**U.S. Cl. 136—89 5 Claims**



A deployable panel structure for a spacecraft solar ray and other uses. The panel structure has a support mounting a deployable boom attached to a folding panel including a number of panel sections hinged edge-to-edge along parallel hinge lines normal to the extension axis of the boom. The folding panel is extendable with the deployment boom from a stowed configuration wherein the panel sections are folded accordian-fashion into confronting face-to-face relation flat against one side of the support to a deployed configuration wherein the panel sections are disposed edge-to-edge substantially in a common plane containing the boom. The panel sections comprise thin-film substrates attached to the deployment boom by tab-like extensions having outer apertured portions which slidably receive the boom and inner neck portions which twist to accommodate folding and unfolding rotation of the panel sections relative to the boom during retraction and extension movement of the panel between its stowed and deployed configurations. These tabs provide the panel with minimum overall folded thickness in its stowed configuration and produce minimal distortion of the panel section substrates in deployed configuration. The folding panel may be reinforced along its hinge lines to prevent buckling and may be provided along its longitudinal edges with electrical bus conductors which serve the dual function of electrical and mechanical hinge connections between adjacent panel sections.

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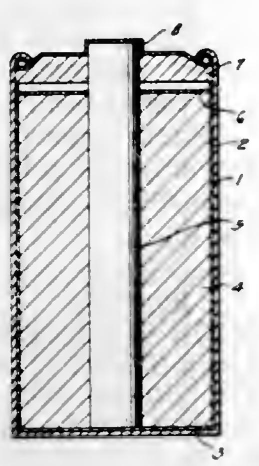
### 3,756,859
## LEAK-PROOF GALVANIC CELL EMPLOYING CATION EXCHANGE COMPOUND SEPARATOR

**Winfried Krey, Neunhaim, Germany, assignor to Varta Pertrix-Union Gesellschaft mit beschrankter Haftung, Ellwangen-Jagst, Germany**
**Continuation of abandoned application Ser. No. 14,707, Feb. 9, 1970, which is a continuation of application Ser. No. 676,499, Oct. 19, 1967. This application Dec. 17, 1971, Ser. No. 209,357**
**Int. Cl. H01m** *21/00, 3/00*
**U.S. Cl. 136—107 5 Claims**

An electric cell is provided with an electrolyte, a depolarizer and a substantially coherent blocking layer disposed between the negative electrode and the depolarizer. The blocking layer comprises a cation exchange compound of a high swelling capacity.



An example of the cation exchange compound is a styrene-divinylbenzene copolymer which includes up to 3 mol percent divinylbenzene as cross-linking agent.

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**3,756,860**

## ELECTRODES WITH MIXED CATALYSTS OF METAL CARBIDE FOR HYDROGEN FUEL CELLS

**Horst Binder, Petterweil, and Wolfgang H. Kuhn and Gerd Sandstede, Frankfurt am Main, Germany, assignors to Battelle Institut, Frankfurt am Main, Germany**
**No Drawing. Filed Apr. 4, 1969, Ser. No. 813,717**
**Claims priority, application Germany, Apr. 4, 1968, P 17 71 112.5**
**Int. Cl. H01m** *13/00*
**U.S. Cl. 136—120 FC 5 Claims**

The invention relates to hydrogen electrodes for fuel cells whose high efficiency results from the use of supplemental treated tungsten-carbide catalysts and a process for the manufacture of such treated catalysts.

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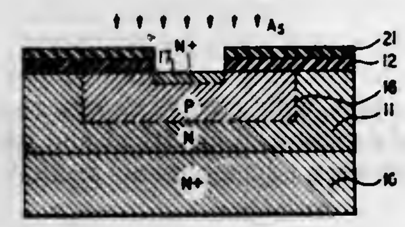
**3,756,861**

## BIPOLAR TRANSISTORS AND METHOD OF MANUFACTURE

**Richard Steven Payne, Piscataway, N.J., and Robert John Scavuzzo, Bethlehem, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.**
**Filed Mar. 13, 1972, Ser. No. 234,021**
**Int. Cl. H01l** *7/54*
**U.S. Cl. 148—1.5 9 Claims**



A bipolar transistor is fabricated by means of a two-step base formation and an emitter formed by chemical diffusion or ion implantation. One processing step in forming the base is either a diffusion or ion implantation of impurities which determines sheet resistivity. The other processing step is an ion implantation which determines doping concentration under the emitter. The resulting composite doping profile has a minimum and two peak values. The emitter is preferably implanted and then diffused to a depth which locates the emitter-base junction at or near the minimum of the base profile.

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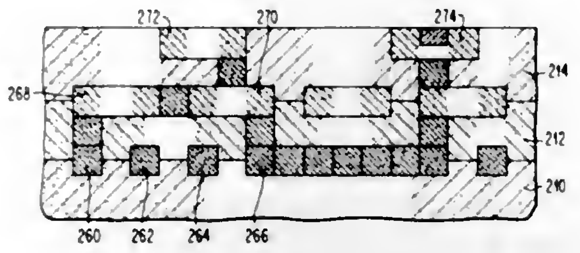
**3,756,862**

## PROTON ENHANCED DIFFUSION METHODS

**Junghi Ahn, San Jose, Calif., and David De Witt, Poughkeepsie, and William S. Johnson and Walter J. Kleinfelder, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Dec. 21, 1971, Ser. No. 210,464**
**Int. Cl. H01l** *7/54*
**U.S. Cl. 148—1.5 17 Claims**



Improved semiconductor devices are made by the method of proton enhanced diffusion. A semiconductor wafer having a buried subcollector region, is raised to an elevated temperature and exposed to an accelerated beam of hydrogen or helium ions which may either be focused or be directed through a mask. The beam is rendered incident on the subcollector region. The ions penetrating the subcollector region enhance the diffusion of subcollector type impurities producing a collector pedestal and a collector reach-through for a pedestal transistor. The transistor produced thereby has a uniformly narrow base width having a relatively long minority carrier lifetime and very steep impurity profiles. An improved diffusion capacitor, IGFET, and subsurface diffused interconnection is also made by the method of proton enhanced diffusion.

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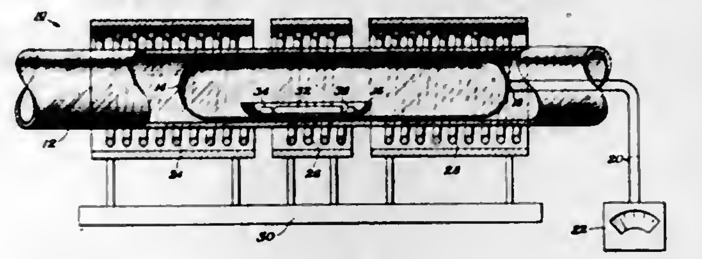
**3,756,863**

## PROCESS FOR MANUFACTURING MERCURY-DOPED GERMANIUM INFRARED PHOTOCONDUCTIVE DETECTOR

**Oran W. Wilson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Application Oct. 23, 1968, Ser. No. 770,897, now Patent No. 3,674,712, which is a continuation of application Ser. No. 672,399, Oct. 2, 1967, which in turn is a continuation of application Ser. No. 347,905, Feb. 27, 1964, both now abandoned. Divided and this application Apr. 30, 1970, Ser. No. 33,507**
**Int. Cl. B01j** *17/02;* **H01l** *3/12, 7/42*
**U.S. Cl. 148—1.6 19 Claims**



A process is disclosed for manufacturing mercury-doped germanium photoconductor material having a short time constant at liquid neon temperatures. The process includes refining the germanium by a number of molten zone-refining passes to reduce the impurities which act as shallow acceptors to a level on the order of $10^{12}$ atoms/cm.$^3$ or less and then compensating the remaining shallow acceptors with shallow donors such as antimony or arsenic and then doping the germanium with mercury from the vapor state to a level on the order of $10^{14}$ atoms/cm.$^3$ or greater.

**3,756,864**

## CYANURIC ACID AS A SCALE REDUCING AGENT IN COATING OF ZINC SURFACES

**John Bruno Zaccagnini, Warren, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.**
**No Drawing. Filed Sept. 7, 1971, Ser. No. 178,504**
**Int. Cl. C23f** *7/00*
**U.S. Cl. 148—6.14 R 15 Claims**

An alkaline composition suitable for forming a coating on zinc and zinc alloy surfaces wherein the improvement comprises employing a scale reducing amount of cyanuric acid in the composition.

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**3,756,865**

## RAZOR BLADES AND PROCESS FOR MAKING SAME

**Aiyaswami Suryanarayan Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.**
**No Drawing. Filed Nov. 1, 1971, Ser. No. 194,166**
**Int. Cl. C22c** *39/30, 39/32;* **C21d** *9/18*
**U.S. Cl. 148—12 16 Claims**

This application is concerned with processes for producing novel steel which, in its finished form, is at least 80% austenitic and in preferred embodiments is substantially fully austenitic, but yet has at least the hardness and strength of high carbon martensitic steels. The hardness of the steel plus its temper-resistance (due to the fact that it is austenitic) makes it especially useful for making cutting edges, e.g. knives and especially razor blades having improved temper-resistance. The steel is made by (a) heating a steel comprising from about 7 to about 30% manganese and about 0.6 to about 1.4% carbon to at least the austenizing temperature to make it fully austenitic and to dissolve sufficient carbides so as to depress the "Ms" temperature sufficiently below room temperature that the steel will remain mainly in the austenitic form, e.g. at least 80% austenitic, when it is both cooled, preferably by quenching, to room temperature and subsequently cold-worked; (b) cold-working the steel and (c) thereafter age-hardening the steel. In a preferred process for making razor blades from such steels, the cutting edge is formed between the cold-working step and the ageing step.

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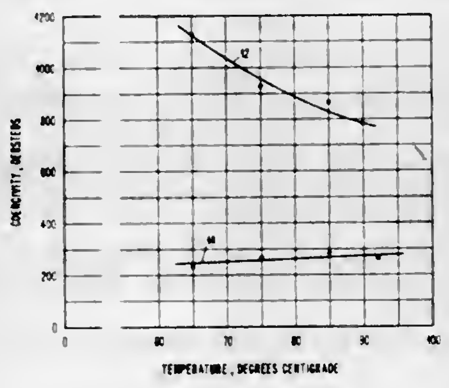
**3,756,866**

## METHOD AND MANUFACTURING MAGNETIC ALLOY PARTICLES HAVING SELECTIVE COERCIVITY

**Charles C. Parker, Longmont, and Rhodes W. Polleys and Joseph S. Vranka, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed June 30, 1970, Ser. No. 51,051**
**Int. Cl. H01f** *1/06*
**U.S. Cl. 148—105 6 Claims**



Magnetic cobalt-phosphorus particles having selectively controlled high coercivity are provided by controlling the temperature at which chemical decomposition is initiated in a basic bath of the cobalt cation-hypophosphite anion type which is free of strong complexing agents and in which the source of hydroxyl ions is a non-complexing base. By controlling the reaction temperature of such a solution, in the absence of strong complexing agents and including a non-complexing base, small uniform cobalt-phosphorus particles having high coercivities, in the range of 750 to 1200 oersteds, with a marked inverse dependence upon temperature are obtained.

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**3,756,867**

## METHOD OF PRODUCING SILICON STEELS WITH ORIENTED GRAINS BY COILING WITH ALUMINUM STRIP

**Pierre Brissonneau and Georges Couderchon, Grenoble, France, assignors to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Firminy, St. Etiene, Jacob Holtzer), Paris, France**
**No Drawing. Filed Oct. 13, 1970, Ser. No. 80,411**
**Claims priority, application France, Nov. 3, 1969, 6937712**
**Int. Cl. H01f** *1/04*
**U.S. Cl. 148—111 5 Claims**

A method of manufacturing steel sheets having a "cube on edge" grain texture and high magnetic properties in the rolling direction, which comprises the steps of using as a starting material a steel strip capable of receiving said "cube on edge" texture but not having same, by resorting to a suitable composition and to a suitable cold rolling of the steel sheet, followed by a decarburizing annealing step to reduce the carbon content to less than about 0.005%, wherein aluminum is deposited on said strip and subsequently hot diffused throughout the mass of the strip to be treated, in the solid phase, said aluminum diffusion taking place before performing the hot secondary recrystallization to produce the desired "cube on edge" grain texture.

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**3,756,868**

## METHOD OF ANNEALING STEEL COILS MOVING THROUGH A FURNACE

**William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Brackenridge, Pa.**
**Original application Feb. 26, 1969, Ser. No. 802,548. Divided and this application May 4, 1971, Ser. No. 140,084**
**Int. Cl. H01f** *1/04*
**U.S. Cl. 148—112 4 Claims**

A furnace for annealing whole coils of silicon steel which includes a welded gas tight shell lined with varying thickness refractory material defining a plurality of independently controllable heating and cooling zones and in which a hydrogen atmosphere is maintained; the furnace having cars of special design for transporting the coils therethrough, special heating elements extending along the furnace walls of the heating zone and a supplemental cooling arrangement for the coils to provide a controlled heat treatment.

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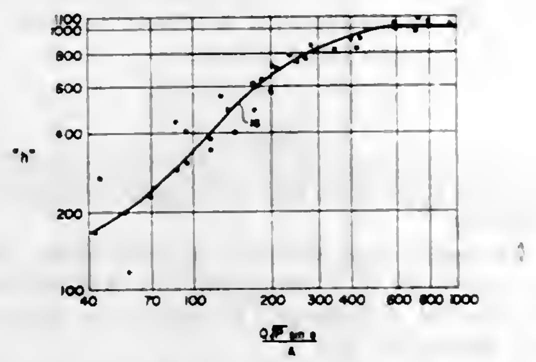
**3,756,869**

## METHOD OF HARDENING STEEL PLATES

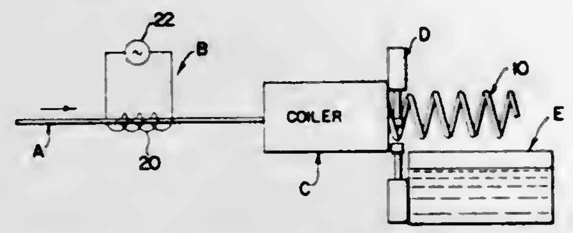
**George F. Melloy and Joseph W. Hlinka, Bethlehem, Pa., assignors to Bethlehem Steel Corporation**
**Continuation-in-part of application Ser. No. 563,016, June 22, 1966, which is a continuation-in-part of application Ser. No. 542,982, Mar. 14, 1966, which in turn is a continuation-in-part of application Ser. No. 509,593, Nov. 24, 1965. This application Sept. 3, 1970, Ser. No. 72,933**
**Int. Cl. C21d** *9/46, 1/62*
**U.S. Cl. 148—143 1 Claim**

This invention relates to a method of hardening steel, and more specifically to a method of hardening quench hardenable steel plates as they are being moved through a quench zone. The improved quench is characterized by a new combination of the rate of water application, water pressure, the angle of water impingement upon the surface of the plate, and the area of direct impingement, all in a particular relationship. The quench water directly impinges both sides of a plate being hardened, throughout the complete area of the quench zone so as to cool the steel at the maximum possible rate and minimize the formation of high temperature transformation products.



### 3,756,870
### INDUCTION HEATING METHOD OF CASE HARDENING CARBON STEEL ROD

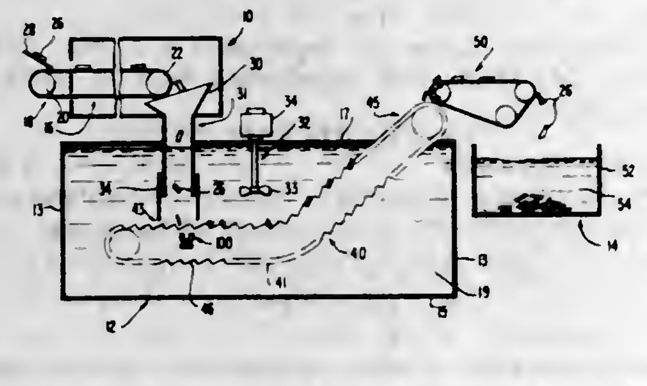
**Robert J. Kasper, Seven Hills, and James J. Snyder, Sagamore Hills, Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio**
**Filed May 10, 1971, Ser. No. 141,677**
**Int. Cl. C21d *1/10***
**U.S. Cl. 148—150 15 Claims**



A method of case hardening to a desired depth a rod formed from carbon steel which method includes the steps of moving the rod longitudinally, inductively heating the rod at a rate that creates a heat profile within the rod which profile exceeds the upper critical heating transformation temperature adjacent the surface of the rod and to a depth generally corresponding to the desired depth to be hardened with the average temperature of the heating profile being less than the lower critical heating transformation temperature of the rod, allowing the rod to soak, and, then quenching the rod within less than about 50 seconds after the heating step.

### 3,756,871
### PROCESS FOR THERMALLY TRANSFORMING METAL PARTS

**Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.**
**Filed Jan. 12, 1971, Ser. No. 105,932**
**Int. Cl. C21d *1/18***
**U.S. Cl. 148—153 16 Claims**

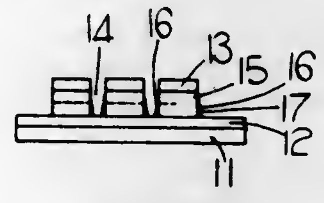


A process and an apparatus for thermally transforming metal elements wherein magnetic forces are employed to enhance reproducible positioning of the elements on a conveyor in a quenching bath as well as to enhance reliable removal of the elements from the bath. The apparatus includes a controlled rate conveyor having a first end positioned within a cooling and isothermal transformation reservoir and a second end extending to a position exteriorly of the reservoir. The first end of the conveyor serves as a loading station and the second end functions as an unloading station. A vertically adjustable chute extends within the reservoir adjacent the loading station for guiding parts onto the conveyor. A bank of magnetic flux producing members are positioned within the cooling reservoir adjacent the loading station for assisting in the location of metal elements upon the conveyor. A magnetic flux producing assembly is positioned at the unloading station for reliably removing transformed elements from the conveyor.

The process includes the steps of guiding elements to be transformed into a cooling and isothermal transformation reservoir and magnetically attracting them onto a conveyor within the reservoir. The elements are then carried on the conveyor through the reservoir at a controlled rate whereupon isothermal transformation takes place. The transformed elements are then magnetically removed from the conveyor for further processing, storage or use.

### 3,756,872
### METHOD OF MAKING NON-PLANAR SEMICONDUCTOR DEVICES

**Dennis George Goodman, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**
**Filed Oct. 6, 1969, Ser. No. 863,984**
**Claims priority, application Great Britain, Oct. 28, 1968, 51,035/68; May 16, 1969, 24,991/69**
**Int. Cl. H01l *7/34***
**U.S. Cl. 148—187 10 Claims**

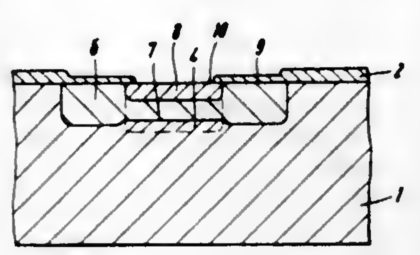


In the manufacture of a semi-conductor device, a wafer with at least one p zone and at least one n zone is positioned on a support and divided into a plurality of parts each of which is to constitute a device, channels being defined between the devices and p-n junctions being exposed in the channels. A curable compound is then poured into the channels, this compound being capable of protecting the p-n junctions, and finally the compound is cured so as to form a protective film over the junctions.

### 3,756,873
### METHOD OF MAKING A SEMICONDUCTOR DEVICE

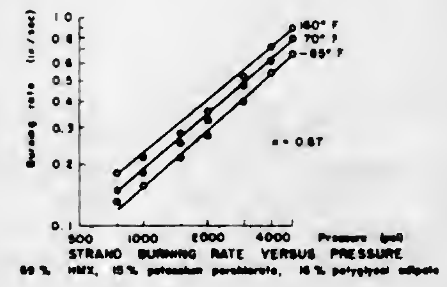
**Reinhold Kaiser, Heilbronn, Neckar, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany**
**Original appplication June 21, 1968, Ser. No. 738,908. Divided and this application Mar. 12, 1970, Ser. No. 18,928**
**Claims priority, application Germany, June 22, 1967, T 34,151**
**Int. Cl. H01l *7/34***
**U.S. Cl. 148—187 4 Claims**

A transistor having an emitter zone and a collector zone separated by a base zone, and a method of making the same. The region of the collector zone adjacent to the base zone and opposite the emitter zone is of lower resistance than the remainder of the collector zone. The method of forming the transistor entails opening a diffusion window of the size and location of an emitter diffusion window in a diffusion masking layer formed on the surface of a semiconductor body of a first conductivity type, and forming a low-ohmic region of the first conductivity within the semiconductor body by the diffusion of an impurity. The base diffusion window is then opened and the base zone formed by diffusion so that the base zone extends to a lesser depth from the surface of the semiconductor body than the low ohmic region, and finally the emitter diffusion window is opened at the location and of the size of the first opened diffusion window and an emitter zone is formed by diffusion in the base zone.



### 3,756,874
### TEMPERATURE RESISTANT PROPELLANTS CONTAINING CYCLOTETRAMETHYLENETETRANITRAMINE

**Marguerite S. Chang, Forest Heights, and James U. Lowe, Jr., Landover, Md., assignors to the United States of America as represented by the Secretary of the Navy**
**Continuation-in-part of application Ser. No. 643,292, May 23, 1967. This application July 1, 1969, Ser. No. 839,802**
**Int. Cl. C06d *5/06***
**U.S. Cl. 149—19 9 Claims**

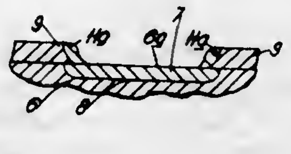


An oxidant for composite propellants comprising the admixture of HMX with potassium perchlorate.

A composite propellant wherein the above oxidant is incorporated with a fuel-matrix binder.

### 3,756,875
### MAKING SEMICONDUCTOR DEVICES

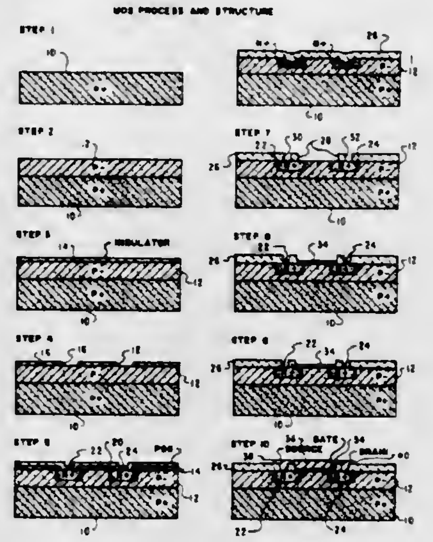
**William Eccleston, Bugbrooke, and Kenneth David Perkins, Wootton, England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland**
**Filed Aug. 26, 1971, Ser. No. 175,265**
**Claims priority, application Great Britain, Sept. 18, 1970, 44,547/70**
**Int. Cl. H01l *7/50***
**U.S. Cl. 156—11 3 Claims**



A method of producing a semiconductive structure which includes the step of applying a liquid to a surface of the structure which has a contour having sharp surface irregularities, the liquid, on solidification, forming on the surface an electrically insulating solid film which is etchable and has a relatively smooth surface contour which is free from sharp surface irregularities. When the solid film is formed on the surface of a passivation layer and part of the surface of an underlying semiconductive layer which has a semiconductor junction therein that is covered by, and lies near to an edge of, the passivation layer, the method includes the step of etching the solid film to leave a fillet of the film material at the edge of the passivation layer. The fillet effectively stops the migration of surface species along the semiconductive-passivation layer interface. The liquid can be applied by a whirling or a dip-coating operation.

### 3,756,876
### FABRICATION PROCESS FOR FIELD EFFECT AND BIPOLAR TRANSISTOR DEVICES

**William A. Brown, Wappingers Falls, and Walter F. Krolikowski, Hopewell Junction, N.Y., Roger F. Maude, Trumbull, Conn., and James L. Reuter and Jagtar S. Sandhu, Fishkill, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.**
**Filed Oct. 27, 1970, Ser. No. 84,262**
**Int. Cl. H01l *7/50***
**U.S. Cl. 156—17 18 Claims**

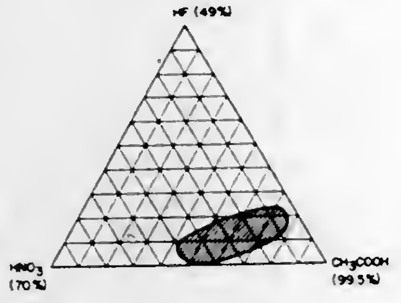


A fabrication process for manufacturing field effect (FET) or bipolar transistor devices is disclosed. In making an FET device, the gate window and the source and drain contact holes are opened up simultaneously after the source and drain diffusion operation. This simultaneous oxide etching operation for both FET and bipolar devices is achieved after the prior formation of an optimum differential oxide thickness or in the surface of the semiconductor substrate. In making a bipolar device, the emitter, base and collector contact holes are opened up simultaneously without any over or under etching of any of the holes.

### 3,756,877
### METHOD FOR MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED BY DIELECTRIC MATERIAL

**Hisashi Muraoka, Yokohama, Taizo Ohashi, Kanagawa, and Toshiko Yasui, Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan**
**Filed Oct. 4, 1971, Ser. No. 186,257**
**Claims priority, application Japan, Oct. 5, 1970, 45/86,586; July 6, 1971, 46/49,250**
**Int. Cl. H01l *7/50***
**U.S. Cl. 156—17 11 Claims**

A method for manufacturing an integrated circuit isolated by dielectric material comprising the steps of carrying out the selective epitaxial growth of island regions on the upper surface of a silicon substrate, coating said island regions and the upper surface of the substrate with an insulating film, forming a silicon layer on said insulating film and etching the silicon substrate with an etchant



comprising HF, HNO$_3$ and CH$_3$COOH and a decomposing or oxidizing agent which can selectively etch the silicon substrate without etching said island regions.

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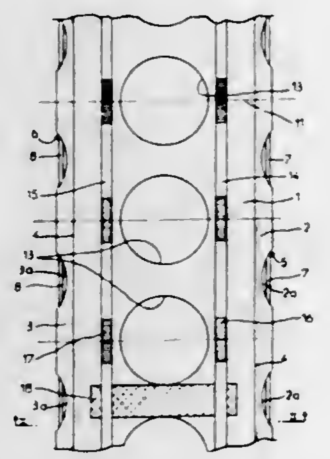
### 3,756,878
## DISPOSABLE PANTS AND THE METHOD OF MANUFACTURING SAME

**Antoine Willot, Flers, Nord, France, assignor to Consortium General Textile, S.A., Linselles, France**
**Filed Mar. 26, 1971, Ser. No. 128,478**
**Claims priority, application France, Mar. 26, 1970, 7011065; May 14, 1970, 7017751**
**Int. Cl. A41h** *3/00*
**U.S. Cl. 156—70** **6 Claims**



This invention relates to disposable pants formed of plastic sheet having means for retaining an absorbent pad. The pants are formed by a method characterized by the feature that a band of flexible material is continuously advanced, at least one of the longitudinal edges of the said band is folded on itself and kept thus folded at least in places, so as to form a longitudinal passage. A draw tie or fastening means is housed in the longitudinal channel. There are formed in the central portion of the band cut-out sections which are symmetrical with respect to equidistant transverse lines and form leg openings, and the said band is cut along the said transverse lines so as to separate the pants from one another.

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### 3,756,879
## METHOD OF MANUFACTURING A HAIRPIECE

**David C. Bonham, 3594 South 3610 East, Salt Lake City, Utah 84109**
**Original application Jan. 31, 1967, Ser. No. 612,851, now Patent No. 3,523,802, dated Aug. 11, 1970. Divided and this application July 15, 1968, Ser. No. 744,754**
**Int. Cl. B32b** *5/00*
**U.S. Cl. 156—72** **3 Claims**

A method of manufacture of a hairpiece having a silicone rubber covered scalp base into and through which hairs are individually inserted to be secured in place.

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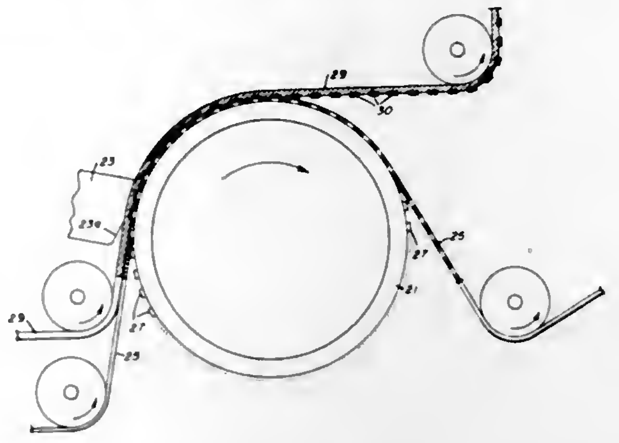
### 3,756,880
## ULTRASONIC PERFORATING A SHEET OF FILM, PAPER OR THE LIKE, WITH CHIP REMOVAL

**Thadeus S. Graczyk, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Mar. 19, 1971, Ser. No. 126,163**
**Int. Cl. B32b** *31/16;* **B26d** *7/06*
**U.S. Cl. 156—73** **7 Claims**



A hole is punched through a sheet of photographic film or paper by positioning the sheet with one side in contact with a hollow punch, and applying ultrasonic energy to the opposite side to force the punch through the sheet. A long web of such material can be passed continuously past an ultrasonic horn while a series of punches are successively brought into register with the horn to pierce a series of spaced holes. Such a series of punches can be carried by a rotating cylindrical anvil over which the web is passing. Cores or chips from the holes are removed by causing them to adhere to a secondary sheet or web which is in contact with the sheet or web being perforated, adherence being assured by the ultrasonic vibration which soften thermoplastic material of either the chips or the secondary sheet.

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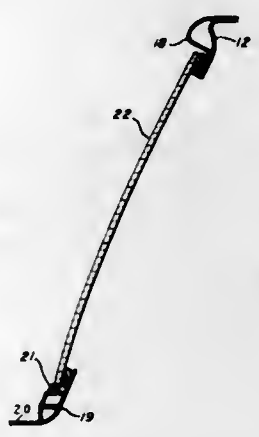
### 3,756,881
## METHOD OF COUPLING ARTICLES OF UNLIKE MATERIALS

**Stephen A. Denman, 3030 E. Dorothy Lane, Apt. 24, Dayton, Ohio 45420**
**Original applications Jan. 18, 1966, Ser. No. 536,242, and May 6, 1969, Ser. No. 825,122, both now abandoned. Divided and this application Jan. 11, 1971, Ser. No. 105,553**
**Int. Cl. B32b** *31/26;* **H05b** *3/54, 3/64*
**U.S. Cl. 156—108** **9 Claims**



The disclosed method is advantageous for coupling glass to metal parts and particularly so for creating improved window or windshield installations. The method utilizes, as a bonding element, an elongate thermo-plastic or equivalent strip material so structured to provide that on application thereto of heat in the range from about 300° to about 500° F. that the surface and only the surface thereof becomes fluidly adhesive and particularly

adapted thereby to quickly form a ready bond and a clean seal between glass and/or metal parts. While under the application of heat, in the range specified, the surface of the strip becomes fluidly adhesive, the inner portion of the body thereof retains an essentially stable form, though modified to a condition to enable said strip to accommodate and plastically conform to the contour of an applied load. In practice of the disclosed method, the strip is mounted to one of the unlike parts to be coupled and has placed thereagainst surface portions of the other part. While in such position, the strip material is heated to achieve a temperature from about 300° to about 500° F. to cause only the surface thereof to become fluidly adhesive, whereupon there is a quick and clean adhesive contact between the strip and the contacting portions of the relatively abutted dissimilar parts. On cooling in place, the strip provides a uniquely complete and extremely strong bond and seal between the parts.

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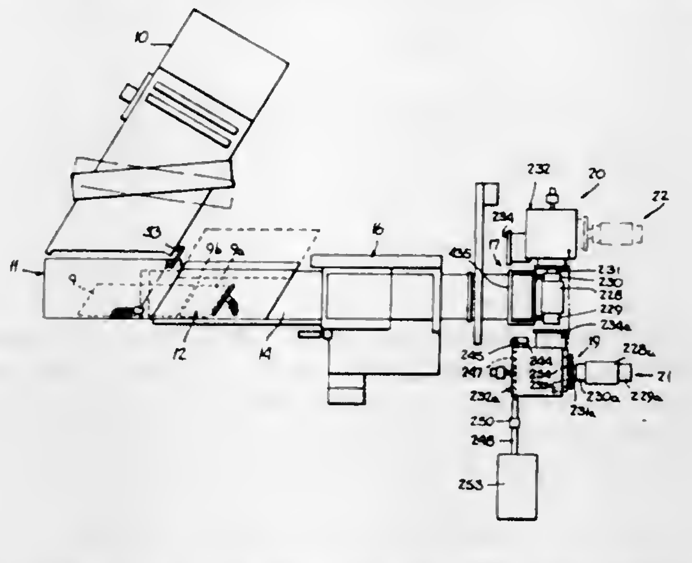
### 3,756,882
## TIRE BUILDING METHOD

**George R. Vila, Far Hills, N.J., assignor to Uniroyal, Inc., New York, N.Y.**
**Continuation of abandoned application Ser. No. 784,156, Dec. 16, 1968. This application Dec. 8, 1970, Ser. No. 96,288**
**Int. Cl. B29h** *17/00, 17/14*
**U.S. Cl. 156—111** **10 Claims**



A method of building tires on an apparatus employing a pair of tire building drum assemblies constructed and arranged to alternately move respective drums between a common first position and separate second positions is disclosed. The method comprises the following: (1) fabricating untreated carcasses on said drums at said common first position; (2) moving alternate drums and alternate of said untreated carcasses fabricated on said drums at said common first position to one of said separate second positions and the remaining ones of said drums and of said untreated carcasses fabricated on said drums at said common first position to the other of said separate second positions; (3) removing said untreated carcasses alternately from said pair of drum assemblies at said separate second positions; and (4) applying treads to said untreated carcasses after removal of said untreated carcasses from said drum assemblies.

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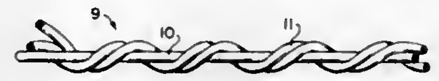
### 3,756,883
## FLAT BAND METHOD OF MAKING RADIAL TIRES

**Clarence Russell Gay, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio**
**Filed June 4, 1971, Ser. No. 150,128**
**Int. Cl. B29h** *9/02, 17/26*
**U.S. Cl. 156—123** **1 Claim**

This disclosure relates to a radial ply tire wherein the tread ply belt was constructed having reinforcing cords comprised of a low tensile strength core around which the tire reinforcing cable was helically wrapped so that in the expanded, finished tire the tread ply belt cords had the reinforcing cables fully extended and adjacently



aligned and the low tensile strength cores have broken in several places along their length. This radial ply tire construction permits the building of the radial ply tire by the single stage method.

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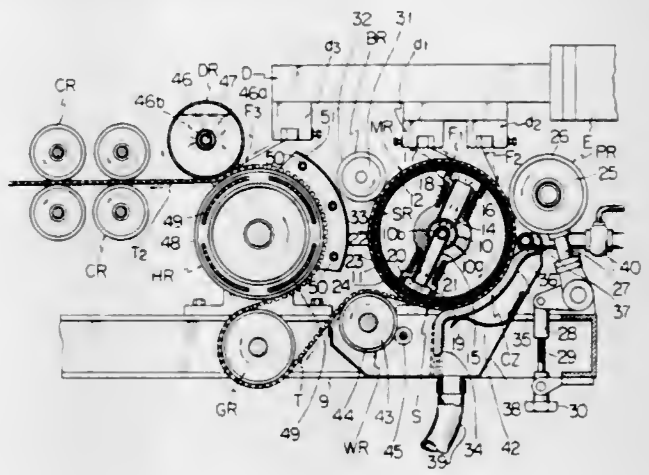
### 3,756,884
## PROCESS AND APPARATUS FOR PRODUCING LAMINATED STRUCTURE HAVING HOLLOW CLOSED CELLS

**Seigi Hagino, Nagoya, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan**
**Filed Dec. 21, 1971, Ser. No. 210,333**
**Claims priority, application Japan, Dec. 21, 1970, 45/115,999**
**Int. Cl. B31f** *1/20*
**U.S. Cl. 156—145** **11 Claims**



Improved process for producing a laminated structure having hollow closed cells and an apparatus therefor, characterized in that a molding rotary roll is loosely fitted to a hollow support roll provided in the inside thereof, and the molding roll is intimately contacted with the support roll at the position of a pressure-reduction chamber by a balancing roll, which cooperates with a bonding roll, and thus molding member can be readily exchanged.

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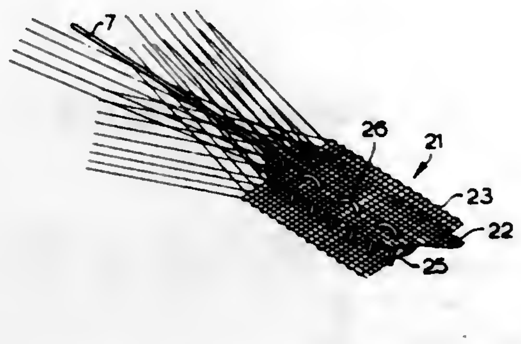
### 3,756,885
## METHOD OF WEAVING AND INTERLACING A MONOFILAMENT BETWEEN SEPARATE TAPE PARTS OF A SLIDE FASTENER

**Wilhelm Uhrig, Mannesmannstrasse 11, Wuppertal-Elberfeld, Germany**
**Filed May 7, 1971, Ser. No. 141,160**
**Claims priority, application Germany, May 13, 1970, P 20 23 413.3**
**Int. Cl. A44b** *19/00;* **B32b** *7/08*
**U.S. Cl. 156—148** **13 Claims**

A method of weaving two seperate tape parts of a slide fastener and apparatus therefor wherein the two tape parts comprising warp and weft threads are woven on a needle loom and are positioned one above the other. A continuous thermoplastic monofilament is interlaced between the tape parts to form meandering strand sections uniformly spaced apart and in uniform length, these sections being subsequently deformed, embossed, and molded into fastening links of the tapes. After folding and molding, the several plies of the tapes may be combined by sewing, adhesion or welding where thermoplastic warp and/or weft fibers are employed to provide a two-ply construction.



### 3,756,886

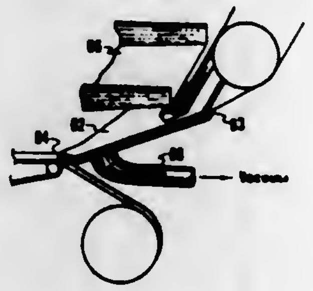
### METHOD OF INCORPORATING SOLID PARTICLES WITH A MULTIFILAMENT TOW

**George A. Watson, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.**

**Application Apr. 26, 1967, Ser. No. 661,484, now Patent No. 3,551,256, dated Dec. 29, 1970, which is a division of application Ser. No. 325,255, Nov. 21, 1963, now abandoned. Divided and this application Aug. 28, 1970, Ser. No. 73,617**

**Int. Cl. A24c** *5/50*

**U.S. Cl. 156—166** **7 Claims**



An apparatus is described for use in forming a multisegmented filter at least a portion of the segments of which have solid particles freely associated therein.

### 3,756,887

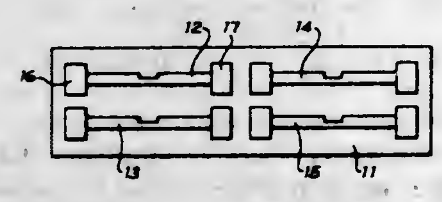
### METHOD OF MAKING MICROFUSES ON A THIN FILM CIRCUITRY PANEL

**Ronald F. Cruthers, Indianapolis, Ind., assignor to the United States of America as represented by the Secretary of the Navy**

**Filed July 29, 1971, Ser. No. 167,312**

**Int. Cl. B44c** *1/22;* **H05k** *1/00*

**U.S. Cl. 156—3** **4 Claims**



A method of making microfuses on a thin film circuitry panel comprising depositing a layer of chromium on a substrate and then etching said chromium to provide a plurality of rectangular areas each having a notch therein. A layer of conductive metal is provided at each end of each rectangular area to serve as conductors.

### 3,756,888

### METHOD OF MAKING A THREE-DIMENSIONAL APPLIQUE

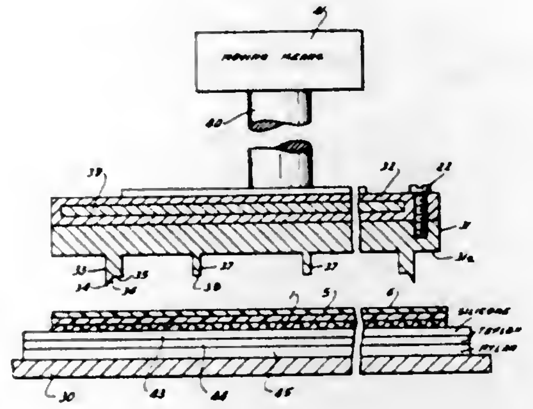
**Minoru Kuroda, Amakasaki, Japan, assignor to Nishizawa Shoji Co., Ltd., Osaka, Japan, and Pilgrim Industries, Inc., New York, N.Y., fractional part interest to each**

**Continuation-in-part of application Ser. No. 113,088, Feb. 5, 1971, which is a continuation of appplication Ser. No. 662,962, Aug. 24, 1967, now abandoned. This application Nov. 4, 1971, Ser. No. 195,611**

**Claims priority, application Japan, Dec. 19, 1966, 41/115,532**

**Int. Cl. B29c** *3/00*

**U.S. Cl. 156—220** **6 Claims**



A die having raised ridges corresponding to a design to be provided in depressed form on an applique is mounted on one electrode of a high-frequency welding apparatus. Onto the cooperating counterelectrode is placed a sandwich composed of a layer of Teflon located between a layer of silicone and a layer of Mylar with the latter facing the associated counterelectrode. A layer of synthetic plastic foam and a layer of polyvinylchloride are superimposed and placed between the two electrodes. Thereupon the electrodes are moved together and the layer of foam and polyvinylchloride are bonded to one another under pressure and simultaneous application of heat along zones formed by the raised ridges and along which zones the foam collapses. The electrodes are then moved apart and between the sandwich and the layer of foam is inserted another layer of thermoplastic material, whereupon the electrodes are again moved together and the new layer of thermoplastic material is bonded to the first-mentioned layer of thermoplastic material and the layer of foam along the aforementioned zones, but pressure and heat are applied for a briefer period of time and to a lesser extent than before.

### 3,756,889

### GLUE FASTENING OF SUPERIMPOSED LEAVES

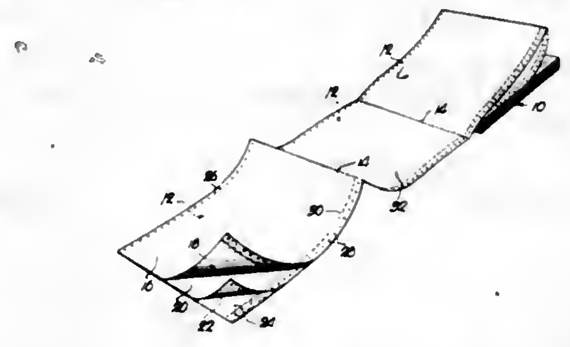
**Larry B. Wolfberg and John Harper, Wichita, Kans., assignors to Service Business Forms, Inc., Wichita, Kans.**

**Continuation of abandoned application Ser. No. 882,256, Dec. 4, 1969. This application Dec. 20, 1971, Ser. No. 210,124**

**Int. Cl. B32b** *31/12, 31/28*

**U.S. Cl. 156—253** **5 Claims**

A method of producing continuous and snap-out business forms, consisting of a plurality of properly aligned, superimposed sheets, cross perforated and interleaved with carbon paper, and especially adapted for use in data processing printers, wherein the glue lines are continuuous, uniform and of minimal width and thickness, eliminating undue bulkiness and rigidity, and assuring complete and effective bonding throughout the length of the sheets.



### 3,756,890

### MANUFACTURE OF MULTI-LAYER ARTICLES BY IN SITU POLYMERIZATION OF ADHESIVE COMPONENTS

**Frederick M. Galloway, Coraopolis, Pa., and Earle F. Webster, Riverton, N.J., asssignors to H. K. Porter Company, Inc., Pittsburgh, Pa.**

**Filed Aug. 12, 1969, Ser. No. 849,357**

**Int. Cl. B29c** *17/00*

**U.S. Cl. 156—286** **1 Claim**

Manufacture of multilayer objects or articles by an improved technique for securing a permanent bond between layers of different materials, such as polyester fiber or fabric reinforcement and elastomeric layers in hose, belting and the like and in other situations where a complete and uninterrupted bond throughout an area of substantial extent is required, by saturating the intermediate reinforcing layer with the mixed ingredients of a polymeric adhesive as the outer layers are brought into contact therewith and producing the adhesive in situ by thereafter effecting polymerization of said ingredients.

### 3,756,891

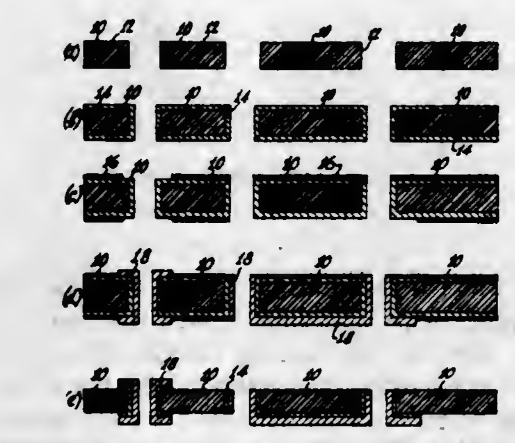
### MULTILAYER CIRCUIT BOARD TECHNIQUES

**Robert J. Ryan, Trenton, N.J., assignor to RCA Corporation**

**Original application Dec. 26, 1967, Ser. No. 693,672, now Patent No. 3,606,677, dated Sept. 21, 1971. Divided and this application Dec. 8, 1969, Ser. No. 882,956**

**Int. Cl. B32b** *27/38;* **B41m** *3/08*

**U.S. Cl. 156—309** **2 Claims**



The disclosed technique comprises the lamination of two or more circuit boards using a controlled flow adhesive layer; the controlled flow adhesive permitting through holes to remain unobstructed after lamination. Final interconnection is made by plating through the holes, thereby providing the requisite interconnections between surfaces.

### 3,756,892

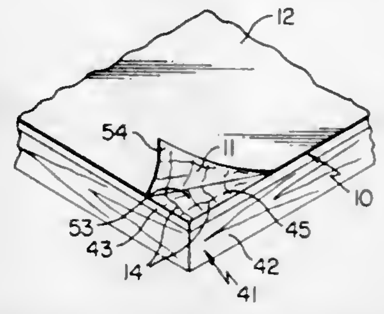
### LAMINATE AND METHOD OF MAKING SAME

**William R. Mills and Roger C. Griffin, Jr., Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.**

**Filed June 10, 1971, Ser. No. 151,774**

**Int. Cl. B32b** *31/20;* **C09j** *7/00*

**U.S. Cl. 156—323** **10 Claims**



A laminate and method of making same is provided wherein the laminate is comprised of a layer of metallic foil and a layer of cellophane bonded together by a casein-latex adhesive with the adhesive enabling the provision of the laminate at comparatively low cost while providing a high strength bond between the layers.

### 3,756,893

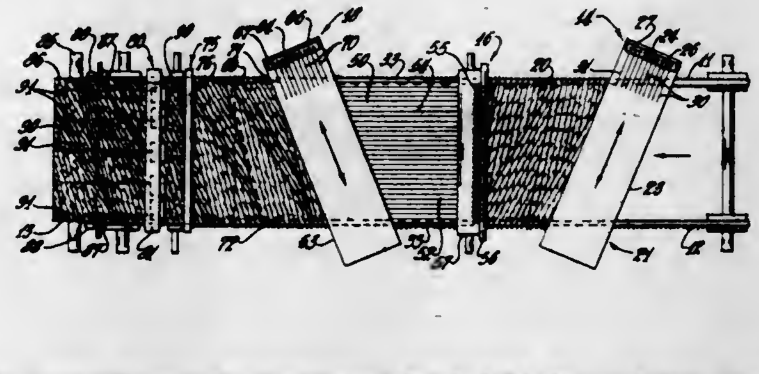
### NONWOVEN STRUCTURE AND METHOD AND APPARATUS FOR PRODUCING IT

**Roy E. Smith, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation**

**Original application Apr. 3, 1969, Ser. No. 813,218, now abandoned. Divided and this application Feb. 8, 1971, Ser. No. 113,482**

**Int. Cl. B65h** *57/16, 57/28;* **D04h** *3/05*

**U.S. Cl. 156—440** **4 Claims**

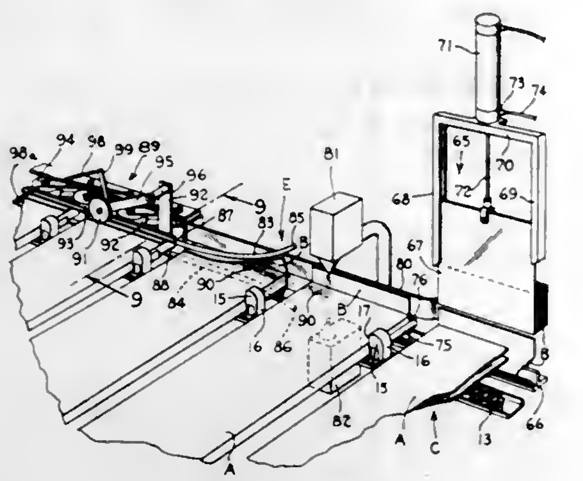


A nonwoven structure and apparatus and method for making it where the structure includes successive strips of linear material extending in overlapping relation across it and where the end of each of the strips at one side of the structure is laterally offset in the same direction with respect to the end of each of the strips at the opposite side.

**3,756,894**

### REEL CAPPING APPARATUS

**Henry Lester Shugart, Rte. 1, Chester, S.C.**
**Filed May 3, 1971, Ser. No. 139,691**
**Int. Cl. B31b** *13/60*
**U.S. Cl. 156—443** **12 Claims**



An apparatus for placing caps on the end of elongated members which includes a conveyor means for feeding the elongated members in succession past a supply of blanks. A blank and the elongated member is shifted by the conveyor means into a folding mechanism which folds the blanks over the ends of the elongated member. Adhesive is applied between the blanks and the elongated member and pressure is exerted on the blank for a predetermined length of time so as to allow the adhesive to dry. The conveyor mechanism can be shifted laterally to accomodate different lengths of elongated members.

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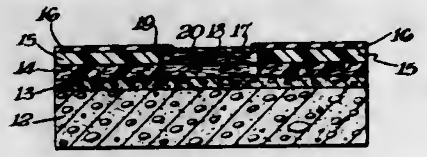
**3,756,895**

### VENTED ROOF SYSTEMS EMPLOYING MICROPOROUS MEMBRANES

**Robert G. Bellamy, St. Davids, Pa., assignor to Selby, Battersby & Co., Philadelphia, Pa.**
**Original application Aug. 26, 1968, Ser. No. 755,199, now Patent No. 3,598,688. Divided and this application July 23, 1970, Ser. No. 63,991**
**Int. Cl. B32b** *31/00;* **D06n** *5/00;* **E04b** *13/16*
**U.S. Cl. 156—257** **2 Claims**



Traffic bearing and nontraffic bearing roof systems comprising a substantially vapor impermeable structural substrate and a waterproof, substantially vapor impermeable protective top layer vented with a microporous membrane to relieve vapor pressure from within the system thereby preventing blistering, cracking and eventual destruction of the weatherproof protective top layer.

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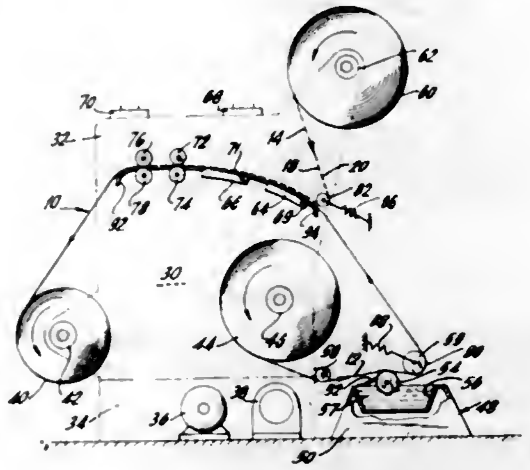
**3,756,896**

### MACHINE FOR LAMINATING MAGNETIC STRIP ON TAG OR LABEL STOCK

**Harry W. Kono, Lido Beach, N.Y., assignor to Tag-a-Tron, Inc., New York, N.Y.**
**Continuation of abandoned application Ser. No. 757,819, Sept. 6, 1968. This application June 18, 1971, Ser. No. 154,640**
**Int. Cl. B32b** *31/00*
**U.S. Cl. 156—495** **2 Claims**



A machine for laminating strip of magnetic material comprising essentially of a magnetic iron oxide filler in a binder vehicle applied to a strip of magnetically inert material, such as polyester film (Mylar), paper or other equivalent material.

The laminating machine includes a series of rollers and a heated curved platen which is temperature controlled to 110° F. Raw tag stock and the magnetic strip are passed over the heated platen under slight pressure to laminate the magnetic surface of the strip directly to the surface of the tag stock.

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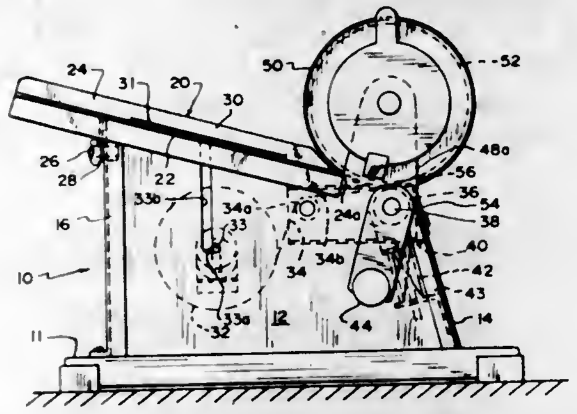
**3,756,897**

### LABEL LAMINATING MACHINE

**John Shields, Terre Haute, Ind., and Lyman D. Dunn, Chicago, Ill., assignors to Marlan Company**
**Filed June 2, 1971, Ser. No. 149,243**
**Int. Cl. B32b** *31/18, 31/20*
**U.S. Cl. 156—517** **14 Claims**

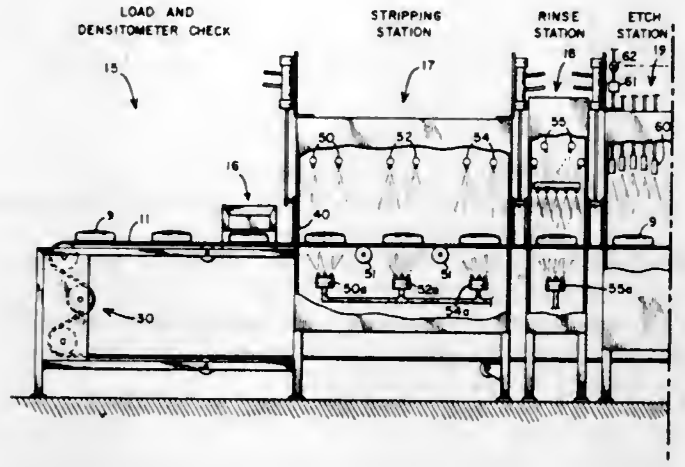


An apparatus for laminating a label or card-like article to an adherent strip including a label-feeding ramp, for feeding the label to laminating rollers into engagement with the adherent strip, characterized by the provision of a laminating roller and an enlarged or elongated platen means onto which the adherent strip and laminated label are fed, with the platen means having a medially located groove for grasping the laminated tape and label and stripping the same therefrom.

**3,756,898**

### SYSTEM SUITABLE FOR CONTROLLING ETCHING WITHOUT THE AID OF AN ETCHANT RESISTANT

**John J. Frantzen, North St. Paul, and Charles M. Lund, Stillwater, Minn., asssignors to Buckbee-Mears Company, St. Paul, Minn.**
**Filed July 14, 1969, Ser. No. 841,317**
**Int. Cl. B08b** *3/10;* **C23f** *1/02*
**U.S. Cl. 156—345** **22 Claims**



An etching system having sets of prearranged nozzles for dispensing etchant onto preformed masks in a predetermined pattern to allow an operator to controllably enlarge the apertures in a preformed mask without the aid of an etchant resist.

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### ERRATUM

For Class 156—166 see:
Patent No. 3,756,910

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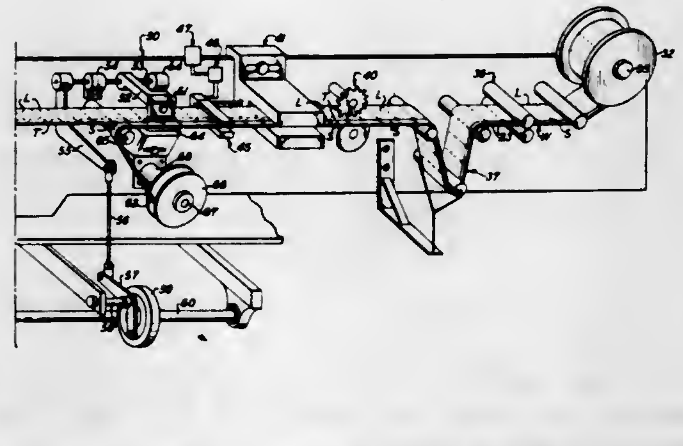
**3,756,899**

### SYSTEM OF LABEL VERIFICATION CONTROL AND PRODUCT ACCOUNTABILITY

**George W. von Hofe, Millington, and Edwin K. Wolff, Stockholm, N.J., assignors to New Jersey Machine Corporation, Hoboken, N.J.**
**Original application Feb. 12, 1968, Ser. No. 704,916, now Patent No. 3,607,537, dated Sept. 21, 1971. Divided and this application May 5, 1971, Ser. No. 140,433**
**Int. Cl. B32b** *31/18*
**U.S. Cl. 156—521** **9 Claims**



The system herein comprises means for intermittently feeding to a label applying means, a continuous web having a width greater than the width of a given label and having provided on one longitudinally extending section thereof a series of labels for a given product, and having provided on a second longitudinally extending section thereof a series of indicia associated with the labels. The system further includes means to provide successively and simultaneously control information on both sections of the web as it is being fed to the applying means, means to progressively separate the second section from the first section after the control information has been provided thereon and moving it along a different path to a place of storage, means for successively separating the terminal labels from the first section, and means for transferring the separated labels to the applying means.

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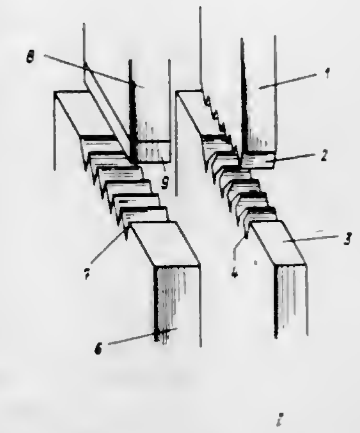
**3,756,900**

### APPARATUS FOR ULTRASONICALLY WELDING THE ENDS OF TUBES IN SYNTHETIC PLASTIC MATERIALS

**Georges Maurice Michel, Paris, France, assignor to Geneco Inc., Panama, Geneva, Switzerland**
**Filed Mar. 8, 1972, Ser. No. 232,801**
**Claims priority, application Switzerland, Mar. 9, 1971, 3,464/71; Aug. 25, 1971, 12,480/71**
**Int. Cl. B32b** *31/16;* **B65b** *1/00;* **B23k** *1/06*
**U.S. Cl. 156—580** **2 Claims**



The ends of plastic material tubes, for example containing a living biological product, are ultrasonically welded by a cooperating tool and block which press the ends of the tubes into a V-section inscribed within the initial outer circumference of the tubes. The tubes are supported in grooves defined by elastic ribs on a conveyor belt, these ribs serving to prevent propagation of the ultrasonic vibrations along the tubes.

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**3,756,901**

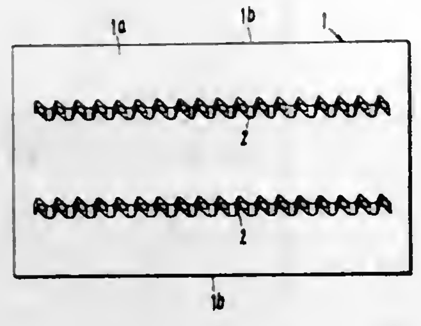
### TWO SHEET OVERLAY AND LAMINATES COMPRISING THE SAME

**Lee E. Veneziale, Jr., Tyrone, Pa., assignor to Westvaco Corporation, New York, N.Y.**
**No Drawing. Filed Feb. 8, 1971, Ser. No. 113,631**
**Int. Cl. B32b** *17/12, 21/08, 27/36*
**U.S. Cl. 161—6** **10 Claims**

A decorative and functional overlay comprising a sheet of glass fibers and a single decorative, shock-absorbing sheet, both sheets containing polyester resin. The single decorative and shock-absorbing sheet is a saturating grade kraft paper having a basis weight of at least 140 pounds. The sheets may be layed up with and fused directly to a rigidity-imparting base member or the sheets may be consolidated into a thin unitary panel not exceeding 0.024 inch in thickness which may be bonded or glued to a core material. A low pressure laminate with high impact resistance, suitable for horizontal as well as vertical surface applications, is produced by laminating the sheets in particular order to flakeboard having a density of at least about 46 pounds per cubic foot, preferably about 55 pounds per cubic foot.

### 3,756,902
### THERMAL INSULATION FOR FLAT OR TUBULAR STRUCTURAL ELEMENTS

**Jan Konecny, Buxtehude, and Jan Tomas Haas, Hamburg, Germany, assignors to Hamburger Flugzeugbau G.m.b.H., Hamburg, Germany**
**Filed Feb. 16, 1971, Ser. No. 115,372**
**Claims priority, application Germany, Feb. 24, 1970, P 20 08 455.3**
**Int. Cl. B32b** *3/12, 3/30;* **E04c** *2/32*
**U.S. Cl. 161—39** **9 Claims**



A body to be thermally insulated from its surroundings, such as an instrument housing or a duct, has its exposed surface shielded by one or more foils of metal or polymeric material separated from that surface, and possibly from one another, by transversely spaced undulating profiles with flattened bases on one side and rounded crests of small radius of curvature on the other side. The flattened bases serve for the mounting of the profiles on the foil or foils whereas the rounded crests minimize the area of contact between the insulation and the protected surface.

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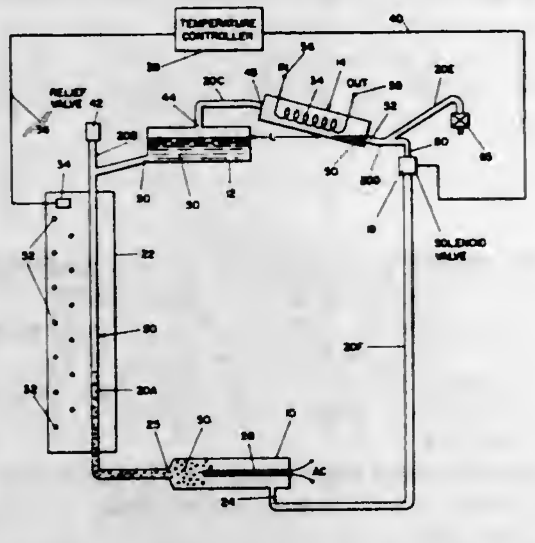
### 3,756,903
### CLOSED-LOOP SYSTEM FOR MAINTAINING CONSTANT TEMPERATURE

**Elmer R. Jones, Reading, Mass., assignor to Wakefield Engineering, Inc., Wakefield, Mass.**
**Filed June 15, 1971, Ser. No. 153,296**
**Int. Cl. B60h** *1/00*
**U.S. Cl. 161—39** **16 Claims**



The fluid-filled closed loop system maintains a temperature stable platform, having dynamically operated electronic devices such as power transistors secured thereto, at a constant predetermined temperature. In addition to the platform, the system comprises a heater positioned below the platform and a reservoir and associated heat exchanger positioned above the platform. A continuous multi-section conduit circuit couples the output of the heater to the reservoir and thence to an input of the heat exchanger, and is in thermal contact with a surface of the temperature stable platform. Vapor bubbles formed in the heater rise in the conduit circuit section contacting the platform, are released from the surface of the liquid in the reservoir, and are condensed by the continuously operated heat exchanger.

The system also comprises a temperature controlled solenoid valve at the output of the heat exchanger, and a return conduit section coupled from the valve to an input of the heater. The valve which is responsive to the temperature of the platform, opens when the temperature exceeds a predetermined value thereby providing cooled liquid for the heater which in turn lowers the temperature of the liquid in the fluid conduit and platform. When a small temperature decrease occurs, the valve closes and the temperature of the platform increases. This cyclic operation continues and the temperature of the platform is controllable to within fractions of a centigrade degree.

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### 3,756,904
### CELLULAR STRUCTURE

**Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.**
**Application June 19, 1970, Ser. No. 47,719, now Patent No. 3,669,820, dated June 13, 1973, which is a continuation-in-part of abandoned application Ser. No. 865,087, Oct. 9, 1969. Divided and this application Mar. 23, 1972, Ser. No. 237,467**
**Int. Cl. B32b** *3/12*
**U.S. Cl. 161—49** **10 Claims**

A cellular, honeycomb-like structure comprised of a plurality of elements in stacked or juxtaposed relation and each having a pattern of corrugations. At least every other element is characterized by a plurality of pairs of sections of dissimilar length which each define a corrugation. The corrugations of adjacent elements internest to define closed, generally triangular cells. It is characteristic of the structure that the peaks or nodes of the corrugations of each element engage upon the internode portions or slopes of the corrugations of the adjacent element. During assembly this enables relative movement between the elements until internesting is achieved. It is also characteristic of the structure that each cell is defined by one complete internodal section and portions of a pair of internodal sections of two adjoining elements. Various configurations of the structure for various purposes are disclosed.

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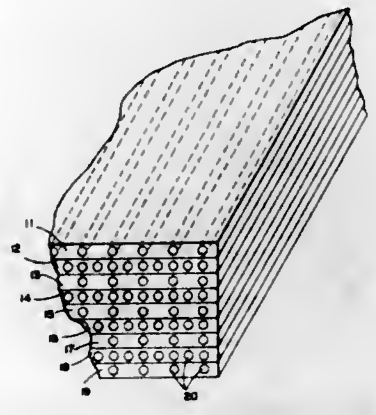
### 3,756,905
### FILAMENTARY-PLASTIC COMPOSITE LAMINATE

**George J. Mills, Santa Ana, and Gary G. Brown, Diamond Bar, Calif., assignors to Northrop Corporation, Los Angeles, Calif.**
**Filed Dec. 20, 1971, Ser. No. 209,862**
**Int. Cl. B32b** *5/12*
**U.S. Cl. 161—60** **4 Claims**



A plastic laminate is formed from layers of composite material made from filaments which have been impregnated with a plastic binder.

A substantial improvement in the structural characteristics of the laminate is achieved by alternating filament rich layers of composite material with resin rich layers of composite material in forming the laminate structure.

### 3,756,906
### RUBBER-POLYESTER COMPOSITIONS

**Boris Nicholas Leyland and Neil Frederick Wood, Blackley, England, assignors to Imperial Chemical Industries Limited, London, England**
**No Drawing. Filed Jan. 18, 1971, Ser. No. 107,410**
**Claims priority, application Great Britain, Feb. 13, 1970, 7,103/70**
**Int. Cl. B32b** *25/02;* **C09j** *5/02*
**U.S. Cl. 161—231** **4 Claims**

Phosphite esters are incorporated into polyester-reinforced rubbers to decrease thermal degradation of the polyester.

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### ERRATUM

For Class 161—168 see:
Patent No. 3,756,911

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### 3,756,907
### PRODUCTION OF PERFORATED NON-WOVEN FIBROUS WEBS

**Wilhelm Heling, Bensheim-Auerbach, Germany, assignor to Carl Freudenberg, Postfach, Germany**
**Filed Nov. 17, 1970, Ser. No. 90,251**
**Claims priority, application Germany, Dec. 1, 1969, P 19 60 141.3**
**Int. Cl. D21f** *11/00*
**U.S. Cl. 162—114** **7 Claims**

Perforated non-woven fabrics are produced by forming a fibrous web containing a binder, forming elongated slits in said web, partially setting the binder, stretching said web transversely of said slits whereby said slits form holes, and completing setting of said binder with said web in stretched condition whereby said web is bonded and retains said holes even upon release of the stretching force.

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### 3,756,908
### SYNTHETIC PAPER STRUCTURES OF AROMATIC POLYAMIDES

**George Conrad Gross, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Feb. 26, 1971, Ser. No. 118,560**
**Int. Cl. D21h** *5/12*
**U.S. Cl. 162—146** **13 Claims**

Nonwoven, flexible sheet structures of commingled fibrids of a nonfusible aromatic polyamide and short aromatic polyamide fibers wherein all fibers have an initial modulus less than 80 gm./denier are disclosed herein. The structures have good thermal properties, good flex life and a high degree of elongation. The structures can be prepared by conventional paper-making procedures. The structures may contain additives to inhibit oxidation, etc., and binders, if desired.

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### 3,756,909
### WATERLAID LEATHER SUBSTITUTE SHEET AND METHOD FOR PREPARING THE SHEET

**Alfred H. Stepan and Robert J. Perkins, White Bear Lake, and Allen L. Griggs, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**No Drawing. Filed Sept. 26, 1972, Ser. No. 292,330**
**Int. Cl. D21h** *3/38*
**U.S. Cl. 162—151** **12 Claims**

The disclosed slurried solids comprise by weight: 20–70% cationic solids and 80–30% anionic polyurethane latex solids, at least 30% of the cationic solids being chrome-tanned leather fibers and at least 10%, preferably at least 25% of the cationic solids being cationized wood flour particles. The slurry is deposited on a papermaking screen in the conventional manner and dried to form shoe insole or upper material. Hot pressing can convert this dried material to outsole material.

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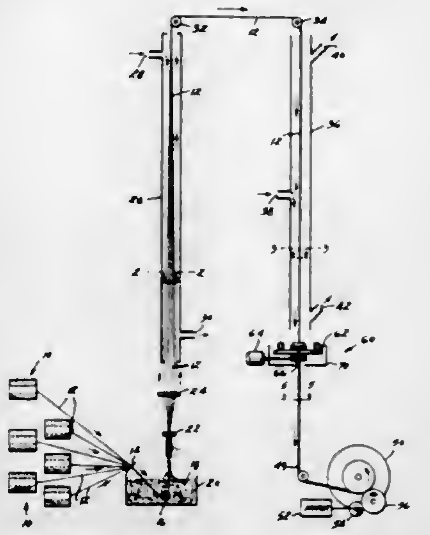
### 3,756,910
### FRICTION MATERIAL AND METHOD OF MANUFACTURE

**Walter B. Peters, South Orange, and Irvin Barnett, Martinsville, N.J., assignors to Johns-Manville Corporation, New York, N.Y.**
**Filed June 24, 1971, Ser. No. 156,267**
**Int. Cl. B44d** *1/02;* **C03c** *25/00*
**U.S. Cl. 156—166** **2 Claims**



Article and method of preparing continuous glass fibers into a continuous bundle for use in forming friction clutch facings. Plural rovings (each containing many thousand individual continuous glass filaments) are impregnated in a cement bath, and, after partial drying, are collected and contained in a continuous bundle by helically wrapping with a soft metal wire. Thereafter the bundles are adapted to be spirally wound upon themselves into disc-like forms and cured under heat and pressure to define a friction clutch facing.

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### 3,756,911
### CARBON-METAL COMPOSITE SLIDE MEMBERS AND METHOD OF MAKING SAME

**Toyonosuke Kanemaru, Kanagawa, Hiroshi Yamazoe, Tokyo, and Hiroshi Ichikawa, Kanagawa, Japan, assignors to Nippon Carbon Company Limited, Tokyo, Japan**
**No Drawing. Filed Dec. 28, 1971, Ser. No. 213,160**
**Claims priority, application Japan, Dec. 28, 1970, 46/119,939**
**Int. Cl. C23c** *1/10*
**U.S. Cl. 161—168** **8 Claims**

Carbon-metal composite slide members with an improved dynamic mechanical strength are made out of a finely divided coal of particle sizes of 74 microns or less and of a volatile matter content of 10 to 45%, a fixed carbon content of 50 to 85% and an ash content of 10% or less by molding (hereafter often referred to as compacting) the finely divided coal, sintering the resulting mold (hereafter often referred to as a compact) to form a porous carbonaceous body and impregnating a fused metal or alloy into the porous body to form a carbon-metal composite.

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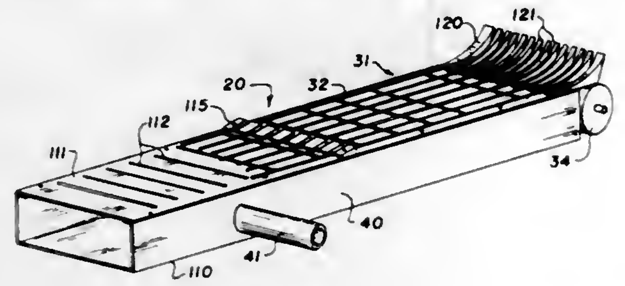
### 3,756,912
### CONVEYOR MECHANISM FOR TRANSFERRING PAPER WEB

**Sidney C. Rooney, Vancouver, British Columbia, Canada, assignor to Durand Machine Company Ltd., New Westminster, British Columbia, Canada**
**Filed Dec. 31, 1970, Ser. No. 103,035**
**Int. Cl. D21f** *1/36*
**U.S. Cl. 162—255** **3 Claims**

In or for a paper making or processing machine a conveyor for transporting a paper tail between rollers of the drier and a calender, between adjacent calenders or between a calender and a reel drum. The conveyor is formed of a plurality of endless cords extending around grooved rollers, and comprises a suction box located between transport and return courses of the conveyor and is open to the transport course to support a paper tail on that course.



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### 3,756,913
### MODIFIED CELLULOSIC FIBERS AND PRODUCTS CONTAINING SAID FIBERS

**Edward A. Wodka, Philadelphia, Pa., assignor to Scott Paper Company, Philadelphia, Pa.**
**Filed June 18, 1971, Ser. No. 154,393**
**Int. Cl. B22c** *17/08*
**U.S. Cl. 162—183** **21 Claims**

Twisted, flexible, modified, cellulosic fibers which exhibit improved properties, such as reduced swellability, comprise wood pulp fibers coated with a substantive polymeric compound. The above-mentioned fibers are produced by a three-step process which comprises treating an aqueous slurry of the cellulosic fibers with a substantive polymeric compound, drying the treated fibers to cause the polymeric compound to react with itself and with the fibers under conditions wherein the fibers are relatively free from contact with one another, and refiberizing the treated and dried fibers under dry conditions to separate individual modified fibers. The modified fibers are useful in the preparation of coherent, dry-formed webs having improved properties, such as enhanced wet and dry resiliency, increased breaking length, and improved shape retention when either wet or dry.

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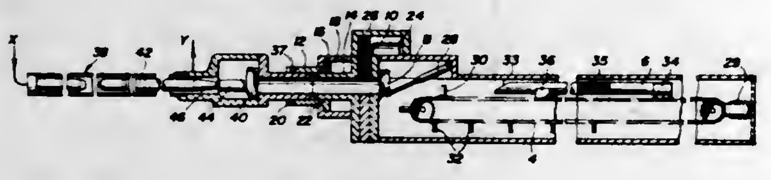
### 3,756,914
### METHOD AND APPARATUS FOR FUELLING A PRESSURISED NUCLEAR REACTOR

**Stanley James Whittaker, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada**
**Filed July 16, 1971, Ser. No. 163,169**
**Claims priority, application Canada, Oct. 26, 1970, 96,529**
**Int. Cl. G21c** *19/22*
**U.S. Cl. 176—32** **8 Claims**



A nuclear reactor fuel channel which extends horizontally and has a flap valve sealing the fuel channel is fuelled by means of a fuelling machine comprising a casing, a driven endless conveyor within the casing, a fuel stringer engaging means on the conveyor, fuel stringer guides on the conveyor, a rotatable ram having an inclined end face, and means for rotating the ram when it has opened the flap so that the inclined end face is turned away from the flap valve. By attaching the fuelling machine to a pressurised fuel channel the ram may be advanced to open the flap valve, rotated, and then retracted to allow a spent fuel stringer to be moved out of the fuel channel by the coolant flow therein until the fuel stringer is engaged by the engaging means and hauled on to the conveyor.

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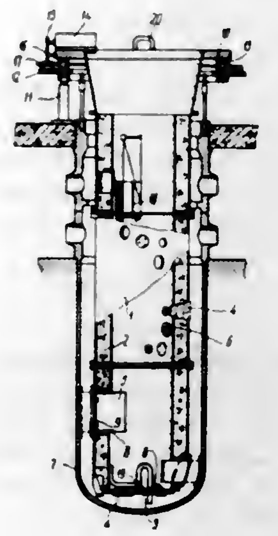
### 3,756,915
### DEVICE FOR DETECTING FLAWS ON NUCLEAR REACTOR INNER SURFACES AND INTERNALS

**Anatoly Matveevich Bukrinsky, ulitsa Krylenko 9, kv. 6; and Jury Kupriyanovich Gladkov, 4 Vyatsky pereulok 22b, kv. 41, both of Moscow, U.S.S.R.; Vladimir Abramovich Kazakov, ulitsa Mirnaya 30, kv. 32, Lobnaya Moskovskoi Oblasti, U.S.S.R.; and Leonid Pavlovich Maximov, Anadyrsky proezd 63, kv. 205; Viktor Nikolaevich Mironov, 1 ulitsa Mashinostroenia 2/7, korpus 2, kv. 58; Vladimir Alexandrovich Khmelnitsky, ulitsa Usacheva 29, korpus 7, kv. 410; and Nikolai Nikolaevich Habanov, Ozerkovskaya naberezhnaya 48/50, kv. 137, all of Moscow, U.S.S.R.**
**Filed Jan. 24, 1972, Ser. No. 220,339**
**Claims priority, application U.S.S.R., Jan. 25, 1971, 1612258**
**Int. Cl. G21c** *17/08*
**U.S. Cl. 176—19** **1 Claim**



A device for detecting flaws on nuclear reactor inner surfaces and internals, wherein an inspection chamber with at least one inspection window moves about inside the reactor with the help of a means for positioning the inspection chamber. The chamber is connected with said means via a support element mounted above the reactor such that the chamber can rotate about and move along the vertical axis of the reactor.

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### 3,756,916
### METHOD OF ISOLATING AMINO ACID PRODUCING MUTANT MICROORGANISMS AND MUTANTS OBTAINED THEREFROM

**Richard Irwin Leavitt, Morrisville, Pa., assignor to Mobil Oil Corporation**
**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,190**
**Int. Cl. C12b** *1/00*
**U.S. Cl. 195—28 R** **8 Claims**

A method of isolating a mutant strain of an amino acid-producing microorganism, which mutant produces said amino acid at a greater rate than normally produced by its microorganism parent, by the step of culturing the microorganism parent in the presence of (1) an antimetabolite and (2) a co-inhibitor agent, thereby inhibiting the growth of the normal microorganism, isolating and subculturing the mutant and obtaining the desired amino acid.

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### 3,756,917
### FERMENTATION PROCESS FOR THE PRODUCTION OF ERYTHRITOL

**John R. Dezeeuw, Stonington, and Edward J. Tynan III, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.**
**No Drawing. Filed Nov. 12, 1971, Ser. No. 198,451**
**Int. Cl. C12d** *13/02*
**U.S. Cl. 195—28 R** **3 Claims**

A process for producing erythritol by aerobically fermenting an aqueous hydrocarbon-containing nutrient medium with a new strain of the yeast, *Candida lipolytica*.

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### 3,756,918
### PROCESS FOR INHIBITING FOAMING

**Israel J. Heilweil, Princeton, and Richard I. Leavitt, Pennington, N.J., assignors to Mobil Oil Corporation**
**No Drawing. Original application Sept. 8, 1969, Ser. No. 856,198. Divided and this application Mar. 1, 1972, Ser. No. 231,045**
**Int. Cl. C12b** *1/00*
**U.S. Cl. 195—28 R** **2 Claims**

This specification discloses inhibition of foaming in a liquid system containing water and a hydrocarbon. Inhibition is effected by the presence in the system of particles of a solid, insoluble material. These particles have a surface area of less than 50 square meters per gram and a portion of their surfaces is occupied by polar sites. Representative solid materials are poly-2,6-dimethyl-1,4-phenylene oxide, a copolymer of 2,6-dimethyl phenol and 2-methyl-1,6-tetradecyl phenol wherein the proportion of the latter compound does not exceed about 20 percent by weight of the copolymer, a copolymer of vinyl stearate and maleic anhydride, sublimed sulfur, silicon carbide, and polytetrafluoroethylene comminuted under cryogenic conditions.

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### 3,756,919
### PROCESS FOR THE PRODUCTION OF NON-HAZING STARCH CONVERSION SYRUPS

**Irving Fransen Deaton, La Grange, Ill., assignor to CPC International Inc.**
**No Drawing. Filed Sept. 16, 1970, Ser. No. 73,198**
**Int. Cl. C12b** *1/00;* **C12c** *11/04;* **C12d**
**U.S. Cl. 195—31 R** **17 Claims**

This invention discloses a process for the production of a non-hazing starch conversion syrup having a D.E. of from about 5 to about 15 which comprises first hydrolyzing starch to a D.E. of from about 20 to about 43 and thereafter subjecting the resulting starch conversion syrup to molecular exclusion until the D.E. of the syrup has been reduced to from about 5 to about 18.

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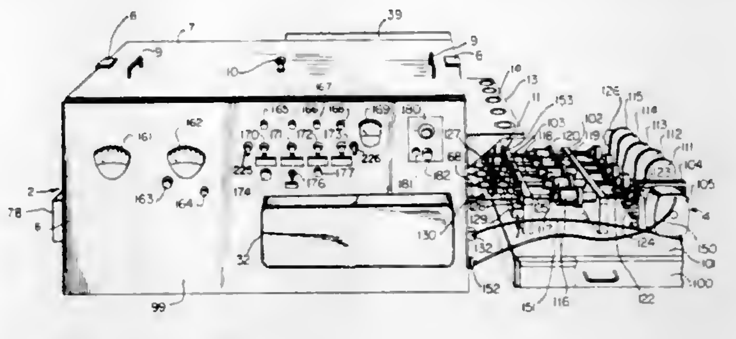
### 3,756,920
### AUTOMATIC INSTRUMENT FOR CHEMICAL PROCESSING TO DETECT MICROORGANISMS IN BIOLOGICAL SAMPLES MY MEASURING LIGHT REACTIONS

**Burton N. Kelbaugh, Lanham, Grace L. Picciolo, Tantallon, and Emmett W. Chappelle, Baltimore, Md., and Maurice E. Colburn, Arlington, Va., asssignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Continuation-in-part of abandoned application Ser. No. 60,882, Aug. 4, 1970. This application Apr. 30, 1971, Ser. No. 139,094**
**Int. Cl. C12k** *1/10*
**U.S. Cl. 195—127** **15 Claims**

An automated apparatus for sequentially assaying urine samples for the presence of bacterial adenosine triphosphate (ATP) comprises a rotary table which carries a plurality of sample containing vials; dispensing means which automatically dispense fluid reagents into the vials at predetermined times preparatory to injecting a light producing luciferase-luciferin mixture into the samples; and indicating means which automatically measure the light produced in each urine sample by a bioluminescence reaction therein of the free bacterial adenosine triphosphate with the luciferase-luciferin mixture. The light measured is proportional to the concentration of bacterial adenosine triphosphate which, in turn, is proportional to the number of bacteria present in the respective urine sample. After the light measurement is performed, the vials are ejected from the table.



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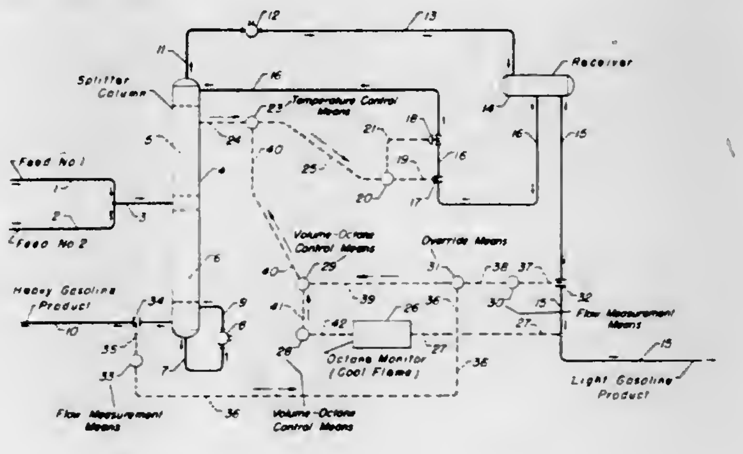
### 3,756,921
### SPLITTER COLUMN OVERHEAD

**Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**
**Continuation-in-part of application Ser. No. 868,459, Oct. 22, 1969. This application Dec. 22, 1971, Ser. No. 210,942**
**The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed**
**Int. Cl. B01d** *3/42;* **C10g** *7/00*
**U.S. Cl. 196—132** **8 Claims**



This application discloses an overhead control system for a gasoline splitter column which utilizes an octane monitor in combination with flow measuring means on the bottom and overhead streams to produce a controlled overhead volumetric-octane yield. The bottoms flow rate means can override the overhead flow signal when excess quantities of bottoms are produced to prevent the column from emptying.

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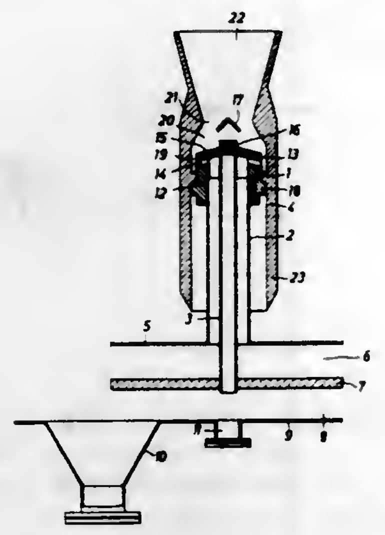
### 3,756,922
### MIXING NOZZLES FOR CARBONIZING FINE GRAIN FUELS IN A FLUIDIZED BED

**Paul Schmalfeld, Bad Homburg, and Roland Rammler, Frankfurt, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**
**Original application June 3, 1970, Ser. No. 43,091, now abandoned. Divided and this application Mar. 6, 1972, Ser. No. 232,228**
**Claims priority, application Germany, Aug. 28, 1969, P 19 43 752.6**
**Int. Cl. C10b** *1/04, 49/22*
**U.S. Cl. 202—121** **5 Claims**

Mixing nozzle for fluidized bed reactors having a nozzle shaft through which air and fluid fuel are introduced, a nozzle body over the nozzle shaft having radial openings and a nozzle top having a cup-like shape over the nozzle body and extending upwards therefrom. The process is also disclosed wherein air and fuel are mixed in the nozzle and combusted in close proximity thereto in such a way that combustion gases flow upward through the fluidized bed at high velocity.



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### 3,756,923

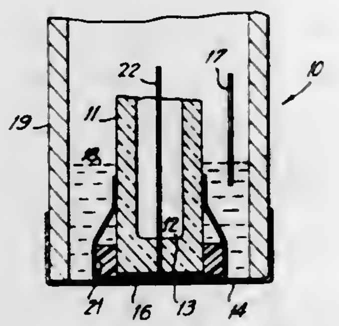
### METHOD OF DETERMINING $SO_2$ CONCENTRATION

**Harald Dahms, 22 Lakeview Road, Ossining, N.Y. 10562**

**Continuation-in-part of abandoned applications Ser. No. 718,032, Apr. 2, 1968, and Ser. No. 841,745, July 15, 1969. This application Nov. 30, 1970, Ser. No. 93,752**

**Int. Cl. G01n** *27/46*

**U.S. Cl. 204—1 T** **22 Claims**



A measuring cell for determining the concentration of $SO_2$ in a fluid. The cell includes an electrode covered with a thin layer of an electrolyte containing silver ions, and a counterelectrode. A voltage is applied across the electrodes and the resulting current is a measure of the concentration of $SO_2$.

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### 3,756,924

### METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

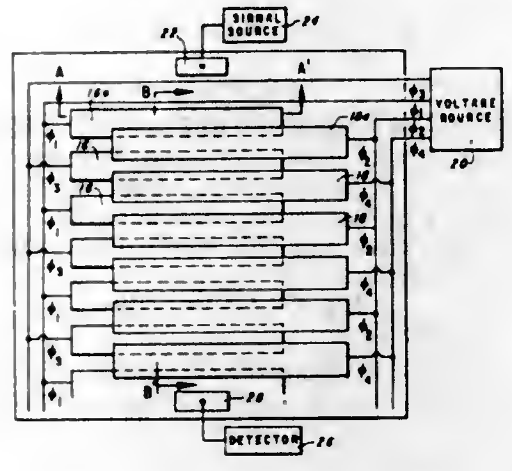
**Dean Robert Collins, Dallas, and William Raymond McMahon, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Apr. 1, 1971, Ser. No. 130,358**

**Int. Cl. C23b** *5/48, 9/02, 11/02*

**U.S. Cl. 204—15** **11 Claims**

Disclosed is a method for forming a structure having adjacent closely spaced electrodes coplanar with the surface of a substrate and electrically insulated therefrom. A first layer of metal is deposited to overlie a passivated surface of a semiconductor substrate. The layer of metal is patterned to define a set of electrodes and a bus bar is formed to connect the various electrodes to a voltage source. The exposed surface layer of each electrode is anodized to form an insulating layer thereover. The bus bar is subsequently removed. A second layer of metal is formed over the first set of electrodes and the exposed surface of the substrate between adjacent electrodes. The second layer of metal is patterned to define a second set of electrodes which are separated from the first set of electrodes by only the thickness of the anodized oxide layer. In one aspect of the invention, the method is utilized to fabricate a charge coupled device.



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### 3,756,925

### DRY LUBRICANT COATING OF SELF-REPLENISHING TYPE AND METHOD OF MAKING THE SAME

**Harpo Takeuchi, Hirakata, Yoichiro Okamoto, Nara, Shigehiko Kurosaki, Hirakata, and Kikuo Nakamoto, Kyoto, Japan, assignors to Uemura Kogyo Co., Ltd., Osaka, Monolon Co., Ltd., Kyoto, and Nippon Carbon Co., Ltd., Tokyo, Japan**

**No Drawing. Filed Dec. 23, 1971, Ser. No. 211,741**

**Claims priority, application Japan, Dec. 26, 1970, 45/118,726**

**Int. Cl. C23b** *7/00;* **C10m** *5/00*

**U.S. Cl. 204—16** **7 Claims**

A dry lubricant coating comprising graphite fluoride powder having a lubricating property dispersed in a coating metal is electrophoretically deposited on a substrate simultaneously with the electrolytic deposition of the coating metal. The graphite fluoride is produced by reacting carbon or graphite with fluorine at a temperature of lower than 550° C.

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### 3,756,926

### METHOD OF PREPARING TIN-FREE, CHROMIUM COATED STEEL

**Lewis Judson Brown, North Wales, and Joseph Edmund Lippy, Jr., Norristown, Pa., and Herbert James Payne, New Brunswick, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.**

**No Drawing. Filed Mar. 3, 1972, Ser. No. 231,747**

**Int. Cl. C23b** *5/50, 9/00*

**U.S. Cl. 204—29** **4 Claims**

Tin-free, chromium oxide and chromium metal coated steel strip having defect-free surfaces is prepared by subjecting steel to hot-rolling, pickling, cold-rolling to form strip, cleaning, rinsing in an aqueous medium containing a substance in minor concentration that remains on the steel strip and is capable of reacting with carbonaceous material during the batch annealing cycle, winding the strip into a tight coil, batch annealing, temper rolling, cleaning, pickling, and coating with a thin film of metallic chromium and chromium oxide.

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### 3,756,927

### MAGNETIC PLATING SOLUTION FOR NDRO MEMORY WIRE

**Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 882,332, Dec. 4, 1969. This application Oct. 27, 1971, Ser. No. 193,202**

**Int. Cl. C23b** *5/32*

**U.S. Cl. 204—43 T** **6 Claims**

An aqueous electrolyte for plating NDRO memory wire having consistent magnetic properties along its length, said electrolyte comprising nickel sulfate and nickel chloride in a concentration ratio of at least two to one, cobalt and saccharin in a concentration ratio of about ten to one and a ferrous compound having a complex anion, such as ferrous ammonium sulfate, for example.

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### 3,756,928

### PROCESS FOR THE MANUFACTURE OF SEBACIC ACID DIESTERS OF HIGHER ALCOHOLS

**Wolfgang Eisele, Heinz Nohe, and Hubert Suter, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed Aug. 3, 1971, Ser. No. 168,733**

**Claims priority, application Germany, Aug. 12, 1970, P 20 39 991.1**

**Int. Cl. C07b** *29/06;* **C07c** *69/50, 67/00*

**U.S. Cl. 204—59 R** **5 Claims**

A process for the manufacture of sebacic acid diesters of higher alcohols by electrochemical condensation of the corresponding adipic acid monoesters in methanolic solution, wherein the flow of current through the electrolytic cell is intermittently stopped and the electrodes are short-circuited.

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### 3,756,929

### METHOD OF OPERATING AN ALUMINUM OXIDE REDUCTION CELL

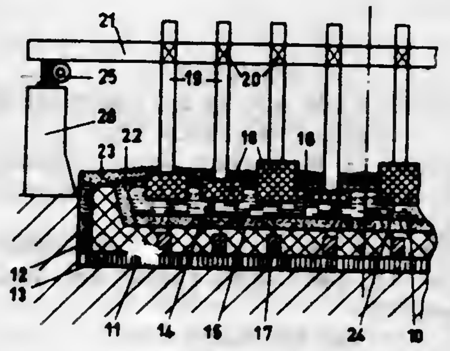
**Wolfgang Schmidt-Hatting, Chippis, Rudolf Pawlek, Sierre, and Rudolf Taufenecker, Therwil, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland**

**Filed Nov. 30, 1971, Ser. No. 203,383**

**Claims priority, application Switzerland, Dec. 1, 1970, 17,763/70**

**Int. Cl. C22d** *3/12*

**U.S. Cl. 204—67** **3 Claims**



A method of operating a cell of at least 50 ka. for the production of aluminium, comprising choosing that anodic current density with which, with a determined electrolyte temperature, a determined interpolar distance and a determined thickness of the alumina covering on the encrusted surface of the bath, as much heat is produced in the cell as the cell can carry away as losses, after deduction of the useful amounts of heat for the decomposition of the alumina and for heating of the raw materials.

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### 3,756,930

### ELECTROLYTIC RECOVERY OF CHLORINE AND HYDROGEN FROM AQUEOUS HYDROCHLORIC ACID

**Guenther Weiss, Wachenheim, and Heinz Weller and Ewald Wygasch, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed June 28, 1971, Ser. No. 157,766**

**Claims priority, application Germany, July 28, 1970, P 20 33 802.7**

**Int. Cl. C01b** *7/06, 13/02*

**U.S. Cl. 204—129** **3 Claims**

Aqueous hydrochloric acid is electrolyzed in a diaphragm cell to recover chlorine and hydrogen therefrom. The acid to be electrolyzed should have a concentration of from 18 to 28% by weight of HCl and should be degraded by not more than 2% by weight during its passage through the cell. The mean temperature in the cell is kept at from 75° to 90° C.

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### 3,756,931

### ELECTROLYTIC CLEANING AND CORROSION-REMOVAL PROCESS

**Cyrus M. De Boer, Rte. 2, Newaygo, Mich. 49337**

**No Drawing. Filed Sept. 13, 1971, Ser. No. 180,179**

**Int. Cl. C23b** *3/02, 1/04, 1/06*

**U.S. Cl. 204—141.5** **3 Claims**

A process for removal of foreign material and corrosion primarily from metallic surfaces utilizing a particular chemical bath in conjunction with electrolysis.

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### 3,756,932

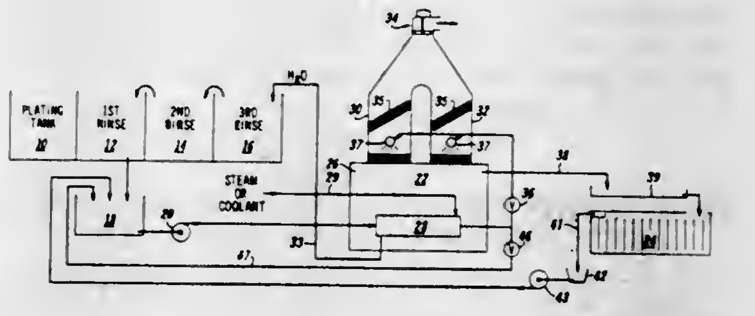
### ELECTROLYTIC CYANIDE DESTRUCTION

**James F. Zievers, La Grange, and Charles J. Novotny, Hickory Hills, Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.**

**Filed Apr. 8, 1971, Ser. No. 132,396**

**Int. Cl. C02c** *5/12, 1/82*

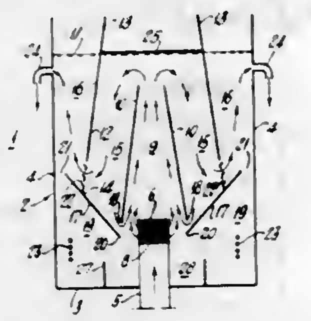
**U.S. Cl. 204—149** **3 Claims**



Cyanide bearing waste solutions are passed through an evaporator to increase the concentration of cyanide therein before being supplied to an electrolytic decomposition tank from which the solution is recirculated through the evaporator to maintain the concentration of cyanide in the electrolytic decomposition tank at a level permitting efficient operation thereof.

### 3,756,933
### METHOD OF PURIFYING SEWAGE EFFLUENT AND APPARATUS THEREFOR

**Bernard Greenberg, 33—24 Junction Blvd., Jackson Heights, N.Y. 11372**
**Continuation-in-part of application Ser. No. 111,868, Feb. 2, 1971, which is a continuation-in-part of application Ser. No. 55,121, July 27, 1970, both now abandoned. This application Aug. 25, 1971, Ser. No. 174,625**
**Int. Cl. C02b** *1/82;* **C02c** *5/12;* **B01k** *3/04*
**U.S. Cl. 204—149 55 Claims**



Polluted aqueous liquid such as sewage or industrial wastes which contain organic materials which are anionic polyelectrolytes and their precursors, including compounds of phosphorus, nitrogen, carbon or other elements, and a dissolved polyvalent metal such as aluminum, calcium or magnesium and chloride ions is electrolytically treated by circulating the liquid past the cathode and upwardly with the cathode evolved hydrogen to raise the pH of the circulating liquid and precipitate, flocculate and float the alkaline earth products of the products of the organic materials and the other pollutants. The floated materials are separated from the liquid, and the liquid so depleted then flows downwardly, and any unfloated material is returned to the cathode upward liquid flow, and at least part of the liquid is withdrawn from the lower part of the downward flow and is exposed to the oxygen and chlorine bubbles evolved at the anode which is immersed in a quiescent body of the liquid communicating electrically with the cathode. Alternatively the cathode and anode are positioned in respective longitudinal channels separated by macroscopically perforate partition which permits ionic crossflow but inhibits liquid cross flow. The influent traverses the cathode channel and the flocculant skimmed from its surface and then traverses a settling tank and the anode channel to be treated as above. The cathode is formed of a corrosion resistant metal having a thin coating of the electrically non-conducting oxide of the cathode metal and is advantageously titanium. The cell includes a baffle structure which delineates an upward flow first passage above the cathode joined at its top to an adjacent downward flow passage which communicates at its bottom with the first passage and with an upward flowing outer discharge chamber into which gases rise through small openings from an underlying chamber containing the anode in a quiescent body of the liquid.

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### 3,756,934
### PRODUCTION OF AMINO ACIDS FROM GASEOUS MIXTURES USING ULTRAVIOLET LIGHT

**Carl Edward Sagan, Pasadena, Calif., and Bishun N. Khare, Ithaca, N.Y., assignors to Cornell University, Ithaca, N.Y.**
**Filed Feb. 22, 1972, Ser. No. 228,066**
**Int. Cl. B01j** *1/10*
**U.S. Cl. 204—162 R 9 Claims**

Amino acids are produced by exposing a precursor gaseous mixture containing a nitrogen source such as ammonia or nitrogen, water vapor and a hydrocarbon containing from two to eight carbon atoms together with a near ultraviolet photon acceptor which will dissociate with the production of sufficient energy to effect bond dissociation of the ingredients in the precursor gaseous mixture thereby to initiate chain reactions resulting in the production of amino acids.

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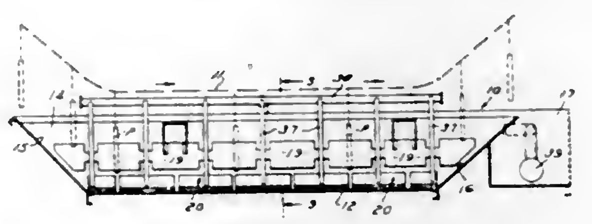
### 3,756,935
### ELECTROPAINTING

**Lyman L. Thornton, Waterford, Mich., assignor to Mahon Technology Group, Inc., Sterling Heights, Mich.**
**Original application Sept. 24, 1968, Ser. No. 761,930. Divided and this application Apr. 19, 1971, Ser. No. 135,348**
**Int. Cl. B01k** *5/02;* **C23b** *13/00*
**U.S. Cl. 204—181 5 Claims**



An electropainting apparatus comprising a longitudinally extending tank having a side and bottom and an overflow area. Deflector assemblies are provided at longitudinally spaced points at the areas of juncture of the side and bottom walls and liquid is introduced into the assemblies and directed by the assemblies transversely of the tank to cause a transverse circulation.

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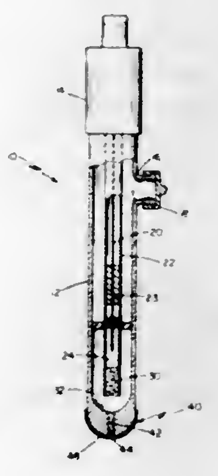
### 3,756,936
### ELECTROCHEMICAL ELECTRODE STRUCTURE

**Robert N. Neuwelt, Arlington, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.**
**Filed Sept. 28, 1970, Ser. No. 76,097**
**Int. Cl. G01n** *27/30*
**U.S. Cl. 204—195 F 5 Claims**



Sealing leak structures of electrochemical electrodes with a continuous organic film applied to the external face of the leak structure, the film being inert to electrolyte in the electrode, essentially insoluble in that electrolyte at ambient electrode condition, and water-soluble at a temperature above ambient.

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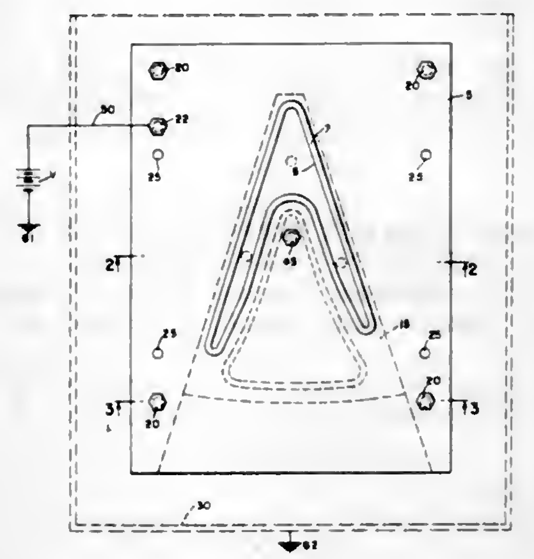
### 3,756,937
### APPARATUS FOR AN ELECTROCHEMICAL MILLING PROCESS

**Joseph G. Lucas, 12 Hedgehog Road, Trumbull, Conn. 06611, and John Zuryk, R.F.D. 3, Morehouse Highway, Fairfield, Conn. 06430**
**Continuation-in-part of abandoned application Ser. No. 638,298, May 15, 1967. This application June 24, 1971, Ser. No. 156,372**
**Int. Cl. B23p** *1/02*
**U.S. Cl. 204—224 M 7 Claims**

A process and apparatus for the selective removal of metal from a corrosion resistant metal piece by electrochemical milling by covering the piece with an aluminum or titanium electrically conductive mask which is provided with a protective surface through anodization during the process, the non-masked, etched surfaces of the metal piece being electrochemically dissolved to a predetermined depth.



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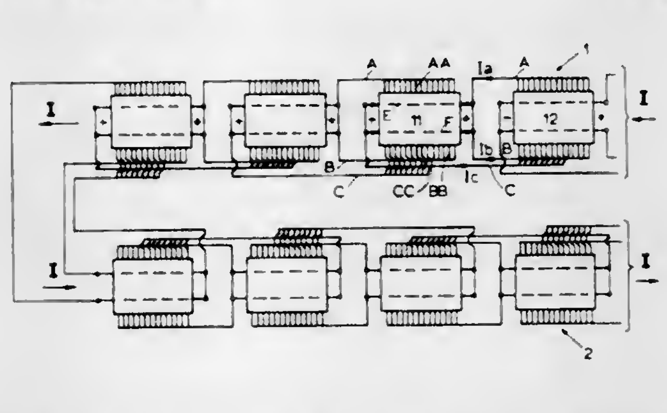
### 3,756,938
### CONDUCTOR ARRANGEMENT FOR COMPENSATING DETRIMENTAL MAGNETIC INFLUENCE ON A ROW OF POTS FROM ANOTHER IN PLANTS FOR PRODUCING METAL, FOR INSTANCE ALUMINUM, BY ELECTROLYTIC REDUCTION

**Hans Georg Tidemann Nebell, Ovre Ardal, Norway, assignor to A/S Ardal og Sunndal Verk, Oslo, Norway**
**Filed June 21, 1971, Ser. No. 154,925**
**Claims priority, application Norway, June 25, 1970, 2,476/70**
**Int. Cl. C22d** *3/02, 3/12*
**U.S. Cl. 204—243 M 3 Claims**



Conductor arangement for compensating detrimental magnetic influence on a row of pots from another in plants for producing metal, for instance aluminum, by electrolytic reduction, in which the current supply to the anodes of each pot from the cathode in the preceding pot in the row, as far as the main proportion is concerned is conducted to the plus end of the pot while another and smaller proportion of the current supply is conducted to the minus end of the pot, characterized therein that the other proportion of the current supply is in its entirety located along that side of each pot in said one row facing the other pot row.

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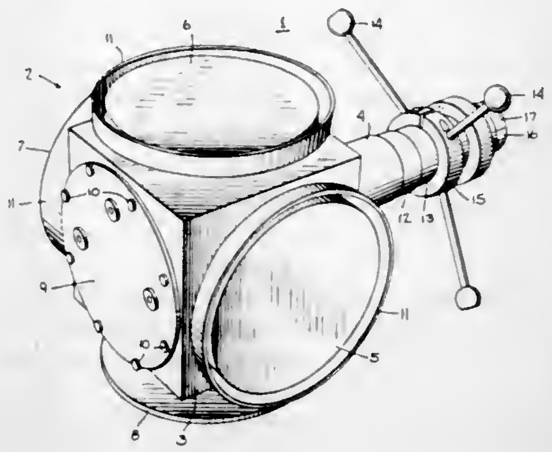
### 3,756,939
### TARGET MOUNTING DEVICE FOR SEQUENTIAL SPUTTERING

**Steven Hurwitt, Park Ridge, N.J., assignor to Materials Research Corporation, Orangeburg, N.Y.**
**Filed Oct. 14, 1971, Ser. No. 189,156**
**Int. Cl. C23c** *15/00*
**U.S. Cl. 204—298 7 Claims**

An improved target mounting device provides capability for sputter etch precleaning of substrates followed by sputtering deposition from a number of targets in sequence in a vacuum chamber of relatively small diameter without moving the substrate support or requiring movable shutters. The mounting device holds the targets in spaced angular location relative to an axis of rotation such that each target in sequence faces a substrate support when the mounting device is rotated through a corresponding plurality of angular positions about its axis. The mounting device is preferably in the form of a polygonal turret head mounted on a rotatable tubular shaft. The shaft projects through the chamber wall and carries a commutator on its outer end for selectively connecting a source of electrical energy to each of the targets in turn as they rotate to face the substrate support.



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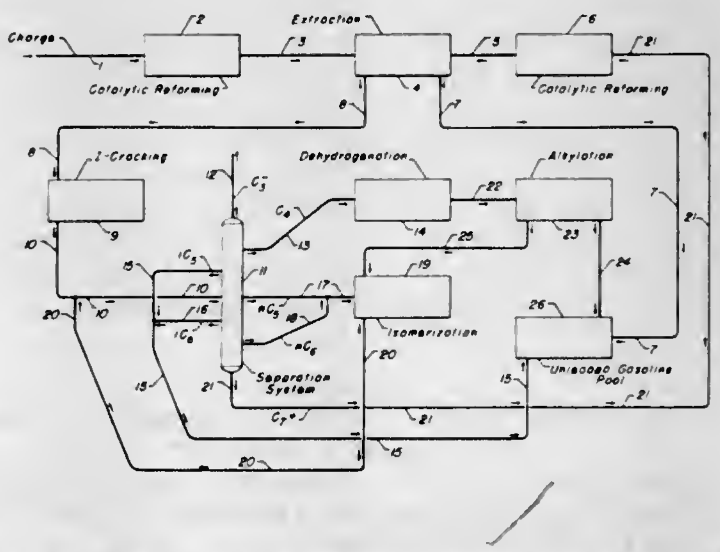
### 3,756,940
### SIMULTANEOUS PRODUCTION OF AROMATIC HYDROCARBONS AND ISOBUTANES

**George R. Donaldson, Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**Filed Apr. 18, 1972, Ser. No. 245,149**
**Int. Cl. C10g** *39/10*
**U.S. Cl. 208—66 10 Claims**



A naphtha boiling range hydrocarbon charge stock is converted into aromatic hydrocarbons and an isobutane concentrate via a combination process involving catalytic reforming, separation and hydrocracking. The catalytic reforming is effected in two distinct, individual reforming reaction zones, one of which operates at a relatively high severity, and the second of which operates at a relatively low severity. Following separation of an aromatic concentrate, the remaining saturated hydrocarbons are subjected to a particular hydrocracking process which results in exceedingly high yields of isobutane.

### 3,756,941
## DEHYDROISOMERIZATION PROCESS

**Norman D. Carter, Poughkeepsie, John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Filed June 21, 1971, Ser. No. 155,348**
**Int. Cl. C10g** *35/06, 35/08*
**U.S. Cl. 208—135 18 Claims**

Alkylcyclopentanes and gasoline or naphtha fractions containing the same are dehydroisomerized to aromatic compounds by contacting with a fluorided Group VII–B or VIII metal-alumina catalyst and a carbon oxide as a conversion reaction moderator. By employing a fluorided metal-alumina catalyst and a carbon oxide moderator, such as carbon monoxide or carbon dioxide, alkylcyclopentanes are selectively converted to aromatics and gasoline or naphtha fractions containing the same are upgraded.

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### 3,756,942
## PROCESS FOR THE PRODUCTION OF AROMATIC COMPOUNDS

**John Cattanach, Camberley, England, assignor to Mobil Oil Corporation**
**No Drawing. Continuation-in-part of appplication Ser. No. 153,855, June 16, 1971. This application May 17, 1972, Ser. No. 253,942**
**Int. Cl. C10g** *35/06*
**U.S. Cl. 208—137 15 Claims**

A process for the preparation of aromatic compounds in high yields is set forth which involves contacting a particular feed consisting essentially of mixtures of paraffins, and/or olefins, and/or naphthenes with a crystalline aluminosilicate of the ZSM-5 type under conditions of temperature and space velocity such that a significant portion of the feed is converted directly into aromatic compounds.

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### 3,756,943
## METHOD FOR IMPROVING THE STABILITY OF HYDROFINISHED DISTILLATES AND RAFFINATES OF DISTILLATES

**Paul Donald Hopkins and Roland L. Menzl, Hammond, Ind., assignors to Standard Oil Company, Chicago, Ill.**
**No Drawing. Filed Oct. 28, 1971, Ser. No. 193,583**
**Int. Cl. C10g** *23/02*
**U.S. Cl. 208—143 26 Claims**

The method comprises adding an inhibitor to a hydrofinished distillate or a hydrofinished raffinate from a distillate prior to the time that said distillate or said raffinate is contacted with air. The inhibitor is a member selected from the group consisting of hindered phenols, amines, and metal complexes of Mannich condensation products from phenols, aldehydes, and polyamines. If the distillate has been hydrofinished in a two-stage process under relatively severe conditions, an inhibitor may be added to the effluent from the first stage and an inhibitor may be added to the product from the second stage.

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### 3,756,944
## CATALYTIC PROCESS FOR HYDRODESULFURIZING HYDROCARBONS

**Tadashi Ishiguro and Akio Okagami, Tokyo, and Seiichi Matsuoka, Yokohama, Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan**
**No Drawing. Continuation-in-part of application Ser. No. 871,752, Aug. 19, 1969, which is a continuation-in-part of application Ser. No. 523,899, Feb. 1, 1966, both now abandoned. This application Feb. 25, 1971, Ser. No. 119,015**
**Claims priority, application Japan, Feb. 2, 1965, 40/5,596**
**Int. Cl. C10g** *23/02*
**U.S. Cl. 208—217 8 Claims**

A process for hydrodesulfurizing a hydrocarbon which contains sulfur impurities by contacting the impure hydrocarbon with a gas at a temperature of 200–450° C. in the presence of a catalyst. The gas contains at least 10 mol percent of hydrogen and carbon oxide in the form of carbon monoxide and/or carbon dioxide. The catalyst consists essentially of nickel subsulfide and comprises nickel and sulfur in an atomic ratio of 1:0.5–0.8. The process results in the hydrogenolysis of only the sulfur impurities contained in the hydrocarbon but without any appreciable hydrogenation of the carbon oxides.

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### 3,756,945
## PROCESS FOR THE DECOMPOSITION OF NORMAL PARAFFIN-UREA ADDUCTS

**Gerhard Wirtz, Kalbach, Taunus, Germany, assignor to Edeleanu Gesellschaft m.b.H., Frankfurt am Main, Germany**
**No Drawing. Filed Aug. 5, 1971, Ser. No. 169,504**
**Claims priority, application Germany, Aug. 6, 1970, P 20 39 120.2**
**Int. Cl. C07b** *21/00*
**U.S. Cl. 208—25 4 Claims**

The formation of an oil solvent-water azeotrope in a vessel for the decomposition of normal paraffin-urea adducts is substantially prevented by passing a hot stream of n-paraffins recovered from the decomposition vessel through a flash evaporation unit operated at a higher temperature and lower pressure than the decomposition vessel to remove oil solvent from the n-paraffins prior to their introduction into the decomposition vessel as part of the heat input thereto.

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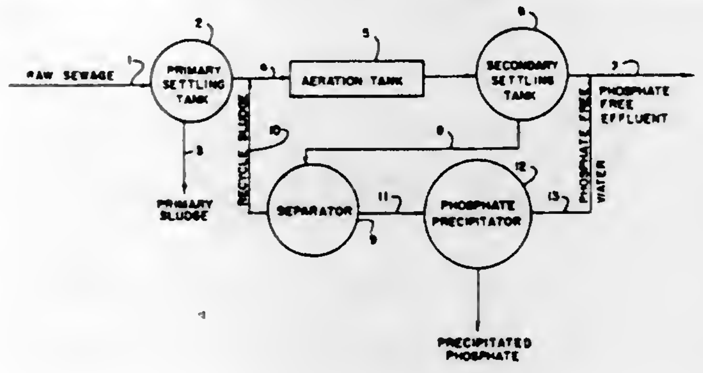
### 3,756,946
## SEWAGE TREATMENT PROCESS

**Gilbert V. Levin, Chevy Chase, and George J. Topol, Silver Spring, Md., assignors to Biospherics Incorporated, Rockville, Md.**
**Filed June 13, 1972, Ser. No. 262,376**
**Int. Cl. C02c** *1/06*
**U.S. Cl. 210—6 8 Claims**



There is disclosed an activated sludge sewage treatment process which comprises mixing influent sewage material with activated sludge to provide a mixed liquor. The mixed liquor is passed to an aeration zone wherein it is aerated to reduce the BOD content thereof and to cause the microorganisms present to take up phosphate. The mixed liquor is then passed to a settling zone containing an anaerobic layer of sludge. In the settling zone, phosphate-enriched sludge, in which the phosphate is present in the cells of the organisms, settles into the anaerobic layer of sludge and a substantially phosphate-free effluent is removed from above the layer of sludge. The sludge is maintained under anaerobic conditions in the sludge layer of the settling zone for a time sufficient to cause the organisms in the sludge to release phosphate to the liquid phase of the sludge. Sludge containing soluble phosphate in the liquid phase thereof is removed from the settling zone. The sludge is then treated to separate a phosphate-enriched aqueous phase and to provide a sludge having a higher concentration of solids and a lesser concentration of phosphate. The concentrated sludge is recycled for mixing with influent sewage material in the activated sludge sewage treatment process.

### 3,756,947
## PROCESS FOR TREATING WASTE WATER CONTAINING NITRILES

**Yoshitsugu Fujii, Tokyo, and Tokuichi Oshimi, Hiratsuka, Japan, assignors to Sumitomo Shipbuilding & Machinery Co., Ltd., Tokyo, Japan**
**No Drawing. Filed Sept. 13, 1971, Ser. No. 180,081**
**Claims priority, application Japan, Dec. 9, 1970, 45/108,452**
**Int. Cl. C02c** *5/10*
**U.S. Cl. 210—11 7 Claims**

A waste water effluent containing nitriles and cyanides is treated by passing through an acclimated, activated sludge containing at least one of microorganisms capable of degrading nitriles and cyanides selected from the genera Alcaligenes and Achromobacter, for example, *Alcaligenes viscolactis* ATCC 21698 and *Achromobacter nitriloclastes* ATCC 21697 thereby to purify the waste water effluent. The waste water effluent containing 10 to 50 p.p.m. of cyanide and 1,000 to 2,500 p.p.m. of COD (Potassium Dichromate Method) can be purified with a high efficiency.

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### 3,756,948
## METHOD AND MEANS FOR ABSORBING CRUDE OIL AND THE LIKE FOR TRANSPORTATION AND RECOVERY

**Jerome Weinberg, San Diego, Calif., assignor to The Grantley Company, Jefferson, Ohio**
**No Drawing. Continuation-in-part of application Ser. No. 163,035, July 15, 1971. This application Mar. 23, 1972, Ser. No. 237,524**
**Int. Cl. B01d** *15/00;* **E02b** *15/04*
**U.S. Cl. 210—36 7 Claims**

Crumbs of a particular polystyrene foam are disclosed for the absorption of hydrocarbon oils, one use being for the cleaning up of oil spills on a body of water, another being the cleaning up of a sandy beach polluted by crude oil, and another use being the absorption of crude oil at the well head so that the oil absorbed into the polystyrene may be transported using any ordinary means of transportation and without danger of liquid oil leakage or spillage along the line. Other uses are indicated.

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### 3,756,949
## SHAPED PARTICLES

**Raymond L. Schreurs, St. Paul, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**No Drawing. Continuation-in-part of application Ser. No. 859,210, Sept. 18, 1969. This application Aug. 30, 1971, Ser. No. 176,299**
**Int. Cl. E21b** *37/00*
**U.S. Cl. 252—8.55 B 11 Claims**

Shaped particle of a solid composite of sulfamic acid, alkali metal chloride, polyoxyalkylene ether wetting agent, sodium diphenylamino-azo-m-benzene sulfonate and magnesium oxide. The composite preferably also contains a polyalkylene glycol lubricant. In another embodiment the composite also contains an acid corrosion inhibitor. In still another embodiment the composite also contains a barium compound. The composite is used to remove incrustations which plug well streams.

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### 3,756,950
## FABRIC SOFTENING COMPOSITIONS

**Bruno Anthony Gluck, Hamburg, Germany, assignor to Lever Brothers Company, New York, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 746,324, July 22, 1968. This application Mar. 8, 1971, Ser. No. 122,186**
**Int. Cl. D06m** *13/46*
**U.S. Cl. 252—8.75 12 Claims**

A fabric softening composition is disclosed which incorporates a cationic fabric softening agent and a water-soluble acid salt of an amphoteric amino carboxylic acid chelating agent to decrease fabric yellowing caused by the presence in the water used of dissolved or suspended metal compounds.

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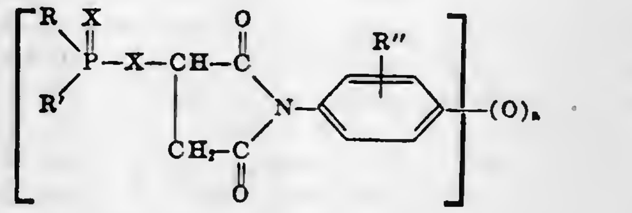
### 3,756,951
## PHOSPHORUS DERIVATIVES OF 4,4′-DISUCCINIMIDOBIPHENYLOXIDE AND LUBRICANT COMPOSITIONS CONTAINING SAME

**Joseph J. Dickert, Jr., Lower Makefield Township, Pa., assignor to Mobil Oil Corporation**
**No Drawing. Filed Aug. 30, 1971, Ser. No. 176,270**
**Int. Cl. C10m** *1/48, 1/10*
**U.S. Cl. 252—46.7 8 Claims**

Herein are disclosed phosphorus derivatives of 4,4′-disuccinimidobiphenyls or 4,4′-disuccinimidobiphenyloxides and lubricant compositions containing same. Said phosphorus derivatives having the structural formula:



wherein R and R′ are individually selected from the group consisting of hydrocarbyl and hydrocarbyloxy, R″ is selected from the group consisting of hydrogen, R and R¹, *n* is 0 or 1 and X is oxygen or sulfur.

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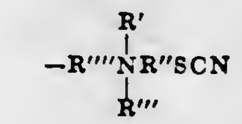
### 3,756,952
## SYNTHETIC AIRCRAFT TURBINE OIL

**Frederick G. Oberender, Wappingers Falls, Edwin L. Patmore, Fishkill, and David D. Reed, Lagrangeville, N.Y., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Filed July 6, 1971, Ser. No. 160,192**
**Int. Cl. C10m** *1/38*
**U.S. Cl. 252—47.5 9 Claims**

Synthetic lubricating oil composition comprising a major portion of an aliphatic ester base oil having lubricating properties formed by the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing from about 0.01 to 2.5 weight percent of an ammonium thiocyanate represented by the formula:

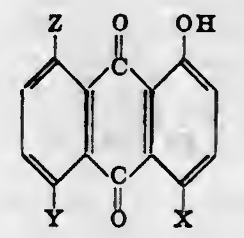
$$R\overset{+}{N}R'R''R'''\overset{-}{S}CN$$

in which R is a hydrocarbyl or amino-substituted hydrocarbyl group having from 1 to 30 carbon atoms or a radical having the formula:



$$-R''''\underset{R'''}{\overset{R'}{N}}R''SCN$$

in which R'''' is a bridging polymethylene radical having from 2 to 4 carbon atoms, and R′, R″ and R‴ represent hydrogen or a hydrocarbyl group having from 1 to 30 carbon atoms, and from about 0.04 to 2 weight percent of a polyhydroxy-substituted anthraquinone represented by the formula:



in which X, Y and Z each represent hydrogen or a hydroxyl group and at least one of the these is a hydroxyl group.

### 3,756,953
### CONCENTRATE AND CRANKCASE OILS COMPRISING OIL SOLUTIONS OF BORON DERIVATIVES OF HIGH MOLECULAR WEIGHT MANNICH REACTION CONDENSATION PRODUCTS

**Edmund J. Piasek, Chicago, and Robert E. Karll, Batavia, Ill., assignors to Standard Oil Company, Chicago, Ill.**
**No Drawing. Application Apr. 14, 1969, Ser. No. 816,079, now Patent No. 3,697,574, which is a continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633. Divided and this application Jan. 7, 1972, Ser. No. 216,273**
**Int. Cl. C10m** *1/54*
**U.S. Cl. 252—49.6** **5 Claims**

Oil solutions containing 0.1–70 weight percent of boron-containing Mannich Reaction condensation products of (1) high molecular weight alkyl-substituted hydroxyaromatic compounds whose alkyl substituent has upward from 40 to 20,000 carbon atoms, (2) an amine which contains an HN< group, and (3) an aldehyde in the respective reactant molar ratio of 1:0.1–10:1.0–10, further condensed with a boron compound are novel lubricant oil compositions. Such solutions afford protection against sludge and varnish deposition and corrosion on or in engine parts.

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### 3,756,954
### DEGRADED ETHYLENE-PROPYLENE INTERPOLYMERS USEFUL AS VISCOSITY MODIFIERS FOR LUBRICANTS

**Franklin Paul Abbott, Brooklyn, and Nils Olof Pearson, Lyndhurst, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio**
**No Drawing. Filed Sept. 16, 1971, Ser. No. 181,212**
**Int. Cl. C10m** *1/28, 1/32*
**U.S. Cl. 252—55** **10 Claims**

Interpolymers (especially copolymers) of ethylene and propylene are oxidized and degraded by heating above 100° C. with an oxygen-containing gas, usually air, in the presence of an aliphatic amine. The degraded polymers are characterized by causing substantially no increase in the low-temperature fluidity of a fuel oil, and are useful as viscosity modifiers for lubricants.

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### 3,756,955
### METHOD OF PRODUCING A GALLIUM ARSENIDE CRYSTAL FROM A SOLUTION OF GaAs IN Ga DOPED WITH SILICON OR GERMANIUM

**Wolfgang Touchy, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**
**Filed Feb. 2, 1971, Ser. No. 111.853**
**Claims priority, application Germany, Feb. 3, 1970, P 20 04 849.1**
**Int. Cl. H01l** *3/20*
**U.S. Cl. 252—62.3 GA** **6 Claims**

Method of producing a gallium arsenide crystal from a solution doped with silicon or germanium, comprising the steps of adding silicon or germanium to a gallium arsenide containing melt, and also adding prior to the crystallization of the gallium arsenide an amount of at least about 0.5% up to about 2% by weight of aluminum.

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### 3,756,956
### DEICER COMPOSITION

**Erwin Panusch, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 84,156, Oct. 26, 1970. This application Jan. 17, 1972, Ser. No. 218.573**
**Int. Cl. C09k** *3/18*
**U.S. Cl. 252—70** **1 Claim**

The present invention is based on the discovery that a combination of a higher fatty acid or water-soluble salt thereof, or with either a sulfonated higher fatty acid, or water-soluble salt thereof, or an organic phosphate ester surfactant minimizes the corrosive effect of aqueous solutions of formamide, urea or mixtures thereof. This advantage has been especially noted when the mixture is used as an anticorrosive agent in deicer compositions consisting essentially of formamide, urea and water.

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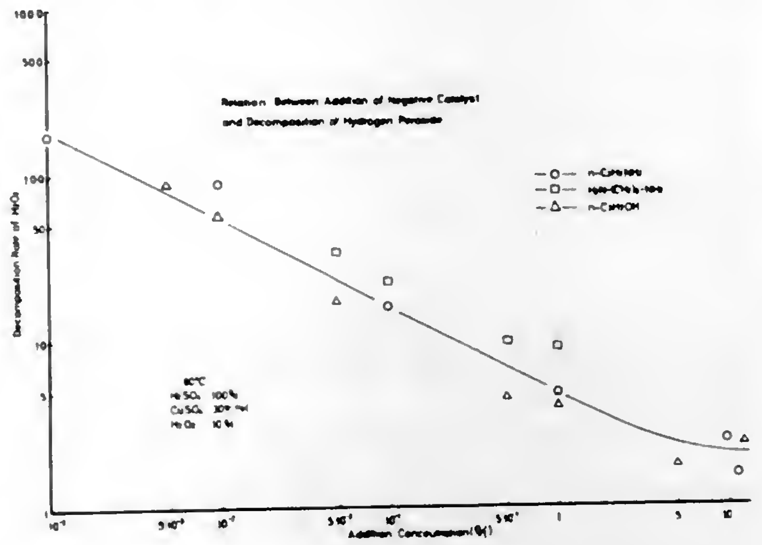
### 3,756,957
### SOLUTIONS FOR CHEMICAL DISSOLUTION TREATMENT OF METALLIC MATERIALS

**Shoji Shiga, Nikko, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan**
**Filed Mar. 15, 1971, Ser. No. 124,035**
**Int. Cl. H05k** *1/00*
**U.S. Cl. 252—79.4** **8 Claims**



Solutions for the chemical dissolution treatment of metallic materials comprising an aqueous solution of sulphuric acid, hydrogen peroxide and at least one organic compound selected from the group consisting of aliphatic amines and their salts, alkoxy amines, aliphatic acid amides and alicyclic imines, said organic compound being present in an amount of more than 0.001 g./l.

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### 3,756,958
### PROCESS FOR INCREASING SIZE OF SILICA PARTICLES IN AQUEOUS SILICA SOL

**Ralph Kingsley Iler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Apr. 12, 1972, Ser. No. 243,405**
**Int. Cl. B01j** *13/00;* **C01b** *33/14*
**U.S. Cl. 252—313 S** **6 Claims**

The size of silica particles in a hot alkaline colloidal silica sol can be increased by adding sodium silicate to the sol and removing sodium ions from the sol through a cation exchange membrane into an acid. Salt formed by migration of anions from the acid into the sol must be maintained within a concentration range determined by the concentration of silica in the sol.

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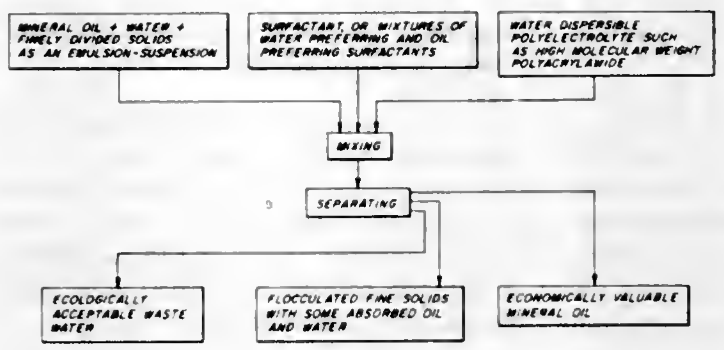
### 3,756,959
### ECOLOGICALLY ACCEPTABLE METHOD OF BREAKING MINERAL OIL EMULSIONS-SUSPENSIONS

**Emil Alfred Vitalis and Ralph Joseph Chamberlain, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.**
**Filed Oct. 20, 1971, Ser. No. 190,994**
**Int. Cl. B01d** *17/04*
**U.S. Cl. 252—336** **8 Claims**

A wide variety of mineral oil (petroleum) suspensions of the oil-in-water, water-in-oil types, particularly those containing finely divided solid suspended matter are broken into an economically valuable mineral oil fraction low in suspended solids and water and an ecologically acceptable waste water by using a high molecular weight water soluble polyelectrolyte, such as a polyacrylamide, and at least one surface acting agent such as an alkyl sulfosuccinate. Other polyelectrolytes and other surfactants and mixtures thereof are effective with a wide variety of such emulsion-suspensions; and result in an ecologically effective separating procedure. The combination of (1) a preferentially water soluble surfactant such as sodium isopropylnaphthalene sulfonate which is particularly effective in coalescing water particles, (2) a preferentially oil soluble surfactant such as sodium di(2-ethylhexyl)sulfosuccinate which is particularly effective in coalescing oil particles, and (3) a high molecular weight polyacrylamide of up to about 20 million molecular weight which is particularly effective in flocculating finely divided solids, potentiate and synergistically aid each other and with heat to thin the oil layer, if it is viscous, gives particularly ecologically advantageous results.


MINERAL OIL + WATER + FINELY DIVIDED SOLIDS AS AN EMULSION-SUSPENSION
SURFACTANT, OR MIXTURES OF WATER PREFERRING AND OIL PREFERRING SURFACTANTS
WATER DISPERSIBLE POLYELECTROLYTE SUCH AS HIGH MOLECULAR WEIGHT POLYACRYLAMIDE
MIXING
SEPARATING
ECOLOGICALLY ACCEPTABLE WASTE WATER
FLOCCULATED FINE SOLIDS WITH SOME ABSORBED OIL AND WATER
ECONOMICALLY VALUABLE MINERAL OIL

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### 3,756,960
### PENTACHLOROPHENOL PRESERVATIVE

**Rudolf Junghahnel and Albino Pastura, Witten, Ruhr, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**
**No Drawing. Filed Mar. 1, 1971, Ser. No. 119,827**
**Int. Cl. C07c** *39/36;* **D06m** *13/08*
**U.S. Cl. 252—404** **9 Claims**

A preservative which is liquid at 0° C. and which contains a predominant amount of pentachlorophenol esters of fatty acids comprising, in addition to pentachlorophenol ester mixtures of fatty acids having from 6 to 12 carbon atoms, esters which are liquid at 0° C. consisting essentially of lower chlorinated or non-chlorinated phenol or alkylphenol esters of fatty acids having from 1 to 12 carbon atoms.

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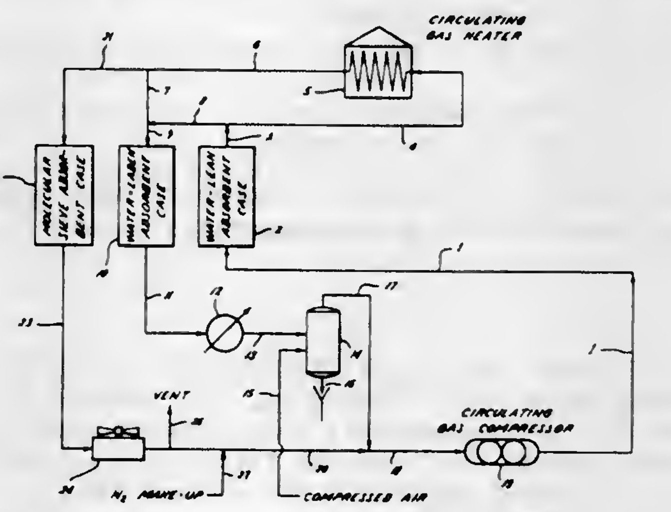
### 3,756,961
### REGENERATION OF MOLECULAR SIEVES WITH REGENERATION OF SOLID WATER ADSORBENTS

**James O. Francis and Randlow Smith, Houston, Tex., assignors to Texaco Inc., New York, N.Y.**
**Filed June 2, 1971, Ser. No. 149,275**
**Int. Cl. B01j** *11/04;* **R01j** *11/72*
**U.S. Cl. 252—419** **5 Claims**


CIRCULATING GAS HEATER
MOLECULAR SIEVE ABSORBENT CASE
WATER-LEAN ABSORBENT CASE
WATER-LEAN ABSORBENT CASE
VENT
CIRCULATING GAS COMPRESSOR
N2 MAKE-UP
COMPRESSED AIR

A process for regenerating a bed of coke-containing crystalline zeolitic molecular sieves by continuously passing a closed-loop flow of hot, oxygen-containing inert gas through the molecular sieve bed, wherein water in the circulating gas stream is maintained below a preselected concentration.

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### 3,756,962
### GRAPHITE-COPPER(II)-CHLORIDE INTERCALATION CARRIER-CATALYST COMBINATION

**Hans Brinkel, Nienburg, Helmut Derleth, Sarstedt, and Hermann Fischer, Evern, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany**
**No Drawing. Filed Sept. 15, 1971, Ser. No. 180,863**
**Claims priority, application Germany, Sept. 17, 1970, P 20 45 949.8**
**Int. Cl. B01j** *11/78*
**U.S. Cl. 252—441** **12 Claims**

A catalyst-carrier combination comprises the calcined product of a graphite-copper(II)-chloride intercalation compound and a carrier therefor. The carrier comprises aluminumoxyhydrate of a specific surface of 50–300 m.$^2$/g. The carrier may also include asbestos powder. The graphite-copper(II)-chloride intercalation compound is present in an amount from 25–66% by weight and the carrier is present in an amount of 75–34% by weight. If the carrier includes asbestos powder, the amount of asbestos is up to 15% by weight relative to the non-calcined total mixture.

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### 3,756,963
### PROCESS FOR PREPARING A DIMERIZATION CATALYST

**Lucio Forni, Milan, Italy, assignor to Società Italiana Resine S.p.A., Milan, Italy**
**No Drawing. Filed Nov. 18, 1971, Ser. No. 200,181**
**Claims priority, application Italy, Nov. 26, 1970, 32,211/70**
**Int. Cl. B01j**
**U.S. Cl. 252—447** **9 Claims**

Catalysts for the production of 4-methyl-1-pentene are made by heating graphite, potassium carbonate or other carrier in an inert gas, adding an alkali metal and a thermally decomposable mercury salt, and again heating in an inert gas.

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### 3,756,964
### SUPPORTED COPPER CHROMITE CATALYST

**John Robert Frazee, Gambrills, Brian Read Martin, Catonsville, and Charles Philipp Brundrett, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.**
**No Drawing. Filed Apr. 26, 1972, Ser. No. 236,460**
**Int. Cl. B01j** *11/00, 11/06, 11/40*
**U.S. Cl. 252—454** **10 Claims**

A very effective supported copper chromite catalyst can be produced by reactively forming basic ammonium cupric chromate in the pores of the support, followed by calcination to yield a supported catalyst having the support pores loaded with copper chromite. The support which is used may be a silica, alumina, silica-alumina mixture, or an aluminosilicate. This supported copper chromite catalyst is very useful in hydrogenation reactions.

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### 3,756,965
### PROCESS FOR THE PREPARATION OF OXIDATION CATALYSTS

**Keishi Yamada, Sumio Umemura, Kyoji Ohdan, Kenichi Miki, and Yasutaka Arima, Ube, Mikio Hidaka, Shimonoseki, and Yasuo Bando, Kazuo Fukuda, and Masao Sawazi, Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan**
**No Drawing. Filed July 21, 1971, Ser. No. 164.809**
**Claims priority, application Japan, July 24, 1970, 45/64.342**
**Int. Cl. B01j** *11/06, 11/32*
**U.S. Cl. 252—467** **12 Claims**

A process for the preparation of oxidation catalysts consisting essentially of molybdenum, antimony, bismuth and oxygen, which comprises adding to a dispersion of antimony oxide or bismuth antimonate a solution of a soluble molybdic acid or soluble molybdate and a solution of a soluble bismuth salt, the antimony oxide or bismuth antimonate, the soluble molybdic acid or molybdate, and the soluble bismuth salt being present in such proportions that the atomic percentile ratio of the three components is:

Mo: 5–60%
Sb: 5–70%
Bi: 25–70%

forming a co-precipitate by adjusting the pH of the resulting mixture to 1–7; separating the co-precipitate from the mother liquor, washing the co-precipitate; and thereafter calcining the co-precipitate at a temperature ranging from 450 to 650° C.

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### 3,756,966
### SULFOSUCCINATE DERIVATIVES OF CARBOHYDRATES AS BUILDERS FOR DETERGENT COMPOSITIONS

**Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.**
**No Drawing. Filed Feb. 1, 1972, Ser. No. 222,648**
**Claims priority, application Great Britain, Sept. 28, 1971, 45,161/71**
**Int. Cl. C11d** *3/22, 3/24*
**U.S. Cl. 252—557** **15 Claims**

The use of sulfosuccinate derivatives of carbohydrates such as starches, sucrose, cellulose, glycogen, hemicellulose, gums, as biodegradable builders in detergent compositions. The aforementioned compounds can be substituted in detergent compositions for existing builders containing phosphorus or nitrogen without impairing the efficiency of such detergent compositions.

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### 3,756,967
### POLY(VINYL CHLORIDE) HOMOPOLYMER PARTICLES OBTAINED BY FREEZE-DRYING

**Harmon L. Liebman and Shirley A. Liebman, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.**
**No Drawing. Filed Dec. 8, 1971, Ser. No. 206,132**
**Int. Cl. C08j** *1/30*
**U.S. Cl. 260—2.5 B** **5 Claims**

Particles of poly(vinyl chloride) homopolymers having increased porosity are obtained by freeze-drying suspension or bulk polymerized poly(vinyl chloride) homopolymer particles thus minimizing significant heat history during particle formation.

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### 3,756,968
### CYCLIC ETHER POLYMERIZATION PROCESS

**John Boor, Jr., El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.**
**No Drawing. Filed Aug. 9, 1971, Ser. No. 170,393**
**Int. Cl. C08g** *23/14*
**U.S. Cl. 260—2 A** **7 Claims**

Vicinal epoxides are polymerized to high molecular weight polyether-type polymers in the presence of a catalyst formed by reacting (A) a premixture of (1) at least one dialkyl zinc compound, and (2) a primary or secondary amine and (B) a sulfur compound having the formula H—S—R wherein R represents hydrogen or a mercapto-substituted hydrocarbon radical. The high molecular weight polymeric products are useful in moldings, coatings, films and fibers.

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### 3,756,969
### SOLID VULCANIZABLE RUBBER COMPOSITION

**Arthur C. Danielson, Royal Oak, Mich., assignor to Uniroyal, Inc., New York, N.Y.**
**No Drawing. Original application Nov. 21, 1967, Ser. No. 684,645, now Patent No. 3,598,690. Divided and this application May 18, 1970, Ser. No. 48,747**
**Int. Cl. B29h** *17/28*
**U.S. Cl. 260—3** **6 Claims**

A solid vulcanizable rubber composition useful in making tire carcasses which contains (1) a nitroamine having the nitrocarbon bonded to the aminocarbon and (2) a resorcinol-type methylene donor.

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### 3,756,970
### POLYURETHANE FOAMS HAVING IMPROVED COMPRESSION SET

**Peter Siegbert Bauchwitz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed May 19, 1972, Ser. No. 255,181**
**Int. Cl. C08g** *22/44*
**U.S. Cl. 260—2.5 AC** **14 Claims**

A process for producing a flexible polyurethane foam, with low 90% compression set which comprises reacting an undistilled phosgenation product of tolylene diamine, which has an amine equivalent of about 90–125, a polymeric polyol and a cross-linking agent, in the presence of a foaming agent, a halogen source, a mineral acid, a tin-based urethane catalyst and a tertiary amine catalyst.

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### 3,756,971
### BINDER FOR WET FORMING MINERAL FIBRE BOARD

**Hiroshi Watanabe and Masato Sadachi, Okayama, Yoshimitsu Nakamura, Osaka-fu, and Akira Onishi, Ashiya, Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kaisha, Osaka-shi, Japan**
**No Drawing, Filed May 3, 1971, Ser. No. 139,814**
**Claims priority, application Japan, May 4, 1970, 45/38,097**
**Int. Cl. C08g** *9/02, 51/04, 51/14*
**U.S. Cl. 260—17.3** **7 Claims**

A binder for mineral fibers comprises a water-dispersible salt of methylolated copolymer composed of 3 to 10 mole percent of at least one of acrylic acid and methacrylic acid, 40 to 77 mole percent of at least one of acrylamide and methacrylamide and 20 to 50 mole percent of at least one of acrylonitrile and methacrylonitrile.

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### 3,756,972
### TREATING AGENT FOR THERMOPLASTIC SYNTHETIC FIBERS

**Yoshihiro Kobayashi and Namio Taguchi, Mihara, Japan, assignors to Teijin Limited, Osaka, Japan**
**No Drawing. Filed Oct. 5, 1971, Ser. No. 186,793**
**Claims priority. application Japan, Oct. 5, 1970, 45/87,395; Apr. 22, 1971, 46/26,326**
**Int. Cl. C08g** *51/72*
**U.S. Cl. 260—18 S** **5 Claims**

A treating agent for thermoplastic synthetic fibers comprising

(1) 50–99.5% by weight of a specific ethylene oxide/alkylene oxide copolymer,
(2) 0.5–30% by weight of a specific polymethylphenyl siloxane, and
(3) 0–49.5% by weight of another oil component than components (1) and (2) above,

the amounts of the respective components being based on the total weight of the treating agent.

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### 3,756,973
### DISPERSION FOR WATER-REPELLENT COATINGS

**Roland Edgar Stahl, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Sept. 20, 1971, Ser. No. 182,195**
**Int. Cl. C08f** *45/24, 45/52;* **C09d** *5/02*
**U.S. Cl. 260—28.5 R** **9 Claims**

A storage-stable aqueous dispersion, from which a rapid-curing, water-repellent coating can be applied, is provided. The essential ingredients of the dispersion comprise a copolymer of ethylene and an alpha,beta-ethylenically unsaturated carboxylic acid, a wax, and a low molecular weight, water-soluble methylated melamine-formaldehyde resin. An article comprising a fabric having thereon a coating of the dispersed phase of the dispersion and a process for preparing the article are also provided.

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### 3,756,974
### LATEX COMPOSITION

**Wayne J. Buchheim and Wilford D. Bonds, Chattanooga, Tenn., assignors to GAF Corporation, New York, N.Y.**
**No Drawing. Filed Aug. 27, 1971, Ser. No. 175,760**
**Int. Cl. C08d** *7/18*
**U.S. Cl. 260—29.7** **10 Claims**

A latex prepared by emulsion co-polymerization of a monomer mixture containing an aliphatic conjugated diene, a monoalkenyl aromatic monomer, an unsaturated aliphatic carboxylic acid and as surfactant a poly (N-vinyl lactam).

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### 3,756,975
### COMPOSITION FOR ANTI-STAIN TREATMENT FOR LUMBER IN TRANSIT

**Laurence A. Story, Burnaby, British Columbia, Canada, assignor to SCM (Canada) Ltd., Toronto, Ontario, Canada**
**No Drawing. Filed May 12, 1971, Ser. No. 142,751**
**Int. Cl. C08f** *45/24, 45/04*
**U.S. Cl. 260—29.6 R** **8 Claims**

Disclosed are methods and compositions for preventing or minimizing staining of lumber during transit, particularly during rail and ship transit, under conditions of exposure to iron contaminants by adhering to the lumber an essentially atinctorial deposit of exposed particles of a slow-leaching base in an amount sufficient to maintain the surface of the lumber at a pH at about 10 or above for the period of transit.

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### 3,756,976
### PRODUCTION OF ODOR-FREE POLYMER LATEX

**Carl A. Uraneck and John E. Burleigh, Bartlesville, Okla., assignors to Phillips Petroleum Company**
**No Drawing. Filed Apr. 28, 1971, Ser. No. 138,247**
**Int. Cl. C08f** *45/24*
**U.S. Cl. 260—29.7 PT** **10 Claims**

Objectional thiol odor is removed from a polymer latex by treating a thiol-containing polymer latex with an agent which converts the thiol to a compound which is not characterized by an objectionable odor.

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### 3,756,977
### PROCESS FOR PRODUCING HYDROGENATED HYDROCARBON POLYMERS, OIL-EXTENDED RUBBER COMPOSITIONS AND PROCESS FOR PRODUCING THEM

**Toshio Yoshimoto, Makoto Fujimori, Seiya Kaneko, Yukihisa Takeda, and Haruo Koyama, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan**
**No Drawing. Continuation of application Ser. No. 745,139, July 16, 1968, which is a continuation-in-part of application Ser. No. 563,961, July 11, 1966, both now abandoned. This application Aug. 18, 1970, Ser. No. 64,829**
**Claims priority, application Japan, July 19, 1965, 40/43,170**
**Int. Cl. C08c** *11/22, 11/36;* **C08d** *5/00*
**U.S. Cl. 260—33.6 AQ** **1 Claim**

Novel hydrocarbon polymer having hydrogen saturated olefinic bonds is produced by hydrogenating the polymer having olefinically unsaturated bonds with hydrogen in the presence of a catalyst obtained by reacting chromium carboxylate with an organoaluminum compound. Such novel hydrocarbon polymer can provide an oil-extended rubber composition by mixing with a large amount of process oil.

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### 3,756,978
### METHOD OF SOLVATING BUTYL RUBBERS

**Robert August Comandini, Raritan, N.J., assignor to Johns-Manville Corporation, New York, N.Y.**
**No Drawing. Continuation of abandoned application Ser. No. 887,404, Dec. 22, 1969. This application Jan. 20, 1972, Ser. No. 219,493**
**Int. Cl. C08f** *45/28*
**U.S. Cl. 260—33.6 A** **11 Claims**

Method of solvating tacky, crude butyl rubber for wet admixing and blending, comprising hot extruding crude butyl rubber as a small body of high surface area into low boiling petroleum solvent and mixing therewith.

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### 3,756,979
### METHOD OF PLASTICIZING VINYL HALIDE POLYMERS

**Romeo J. Ventres, 58 Clark St., Worcester, Mass. 01606; Eugene A. Duchesneau, Jr., P.O. Box 435, Ashburnham, Mass. 01430; and Constantine Rosis, 35 Yorktown Road, West Boylston, Mass. 01583**
**No Drawing. Filed Jan. 21, 1971, Ser. No. 108,554**
**Int. Cl. C08f** *45/40, 47/00*
**U.S. Cl. 260—34.2** **5 Claims**

This invention relates to an improved method for plasticizing polyvinyl halides, wherein the plasticized product is stabilized against discoloration. Generally, the method comprises the steps of wet ball milling the resin in a liquid slurry for a specified period of time, deliquifying and drying the resin of said slurry, then adding plasticizer and recovering the plasticized product.

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### 3,756,980
### HIGH TEMPERATURE STABLE MODIFIED PHENOLIC MOLDING POWDERS

**Rodney M. Huck, Longmeadow, and John R. Le Blanc, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.**
**Filed Jan. 25, 1971, Ser. No. 109,107**
**Int. Cl. C08g** *51/04*
**U.S. Cl. 260—38** **19 Claims**

Thermosettable molding powders of amine-modified novolac resin and aromatic polycarboxylic compound which have been processed with heat in a shear field to reduce the volatiles content to less than 2 weight percent. The product molding powder displays little or no tendency to blister, swell, or distort during molding and post-curing.

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### 3,756,981
### PROCESS FOR THE DYEING OF POLYURETHANE TEREPHTHALATE GRANULES

**Siegfried Breitschaft, Augsburg, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**
**No Drawing. Filed Apr. 28, 1971, Ser. No. 138,327**
**Claims priority, application Germany, Apr. 21, 1970, P 20 18 976.8**
**Int. Cl. C08g** *51/04*
**U.S. Cl. 260—40 R** **3 Claims**

A process for dyeing linear polyester granules destined for injection moulding, which comprises mixing the polyester granules with dyestuff and/or colouring pigments and a pulverized alkali metal salt of a wax oxidate or of a polyethylene oxidate, which process yields granules, onto which the dyestuff or pigments adhere extremely well, and which granules can be processed into injection moulded shaped articles showing a very homogeneous and uniform colouring.

### 3,756,982

## ANTIFRICTION POLYMER MATERIALS AND METHOD OF PRODUCING SAME

**Vasily Vladimirovich Korshak, ulitsa Gubkina 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova 12, korpus 20, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina 31, kv. 28; Vladimir Alexandrovich Sergeev, Profsojuznaya ulitsa 54, korpus 4, kv. 26; Valentin Kuzmich Shitikov, Lomonosovsky prospekt 18, kv. 99; and Georgy Vasilievich Elerdashvili, 1-y, Baltiisky pereulok 6/21, korpus 7, obschezhitie, all of Moscow, U.S.S.R.**

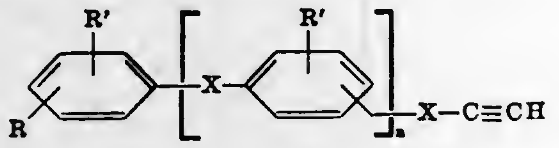
**No Drawing. Filed Aug. 28, 1970, Ser. No. 68,008**

**Claims priority, application U.S.S.R., Oct. 23, 1969, 1376328**

**Int. Cl. C08f** *45/04*

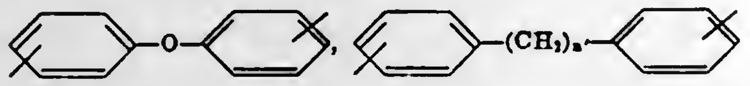
**U.S. Cl. 260—41 R** **3 Claims**

A method of producing heat-resistant up to 350° C. antifriction materials for dry friction units. The method consists in curing a mixture of polyphenylene oligomers in combination with various fillers. The oligomers are characterized by the structure



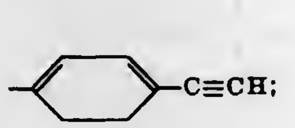
wherein

X is a direct band, phenylene,

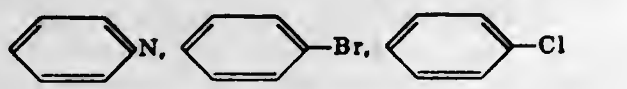


$n'=0$–8;

R is H, phenyl,



R' is H, phenyl,



and also —X—CH≡CH;

$n=0$–600, wherein when X is a direct bond, $n$ is at least 1.

The cured products feature a friction coefficient of 0.08–0.17, heat resistance up to 370° C., impact strength up to 17 kg.-cm./cm.$^2$, and can be used, mainly for rolling and sliding friction units.

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### 3,756,983

## PHENYLENE BIS(AMINO-SUBSTITUTED BENZOATE) UV ABSORBERS FOR POLYMERS

**Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury & Van der Lande N.V., Deventer, Netherlands**

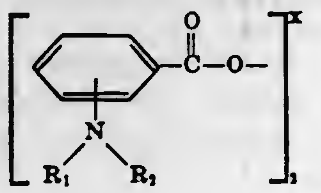
**No Drawing. Original application July 8, 1970, Ser. No. 53,315, now Patent No. 3,719,692, dated Mar. 6, 1973. Divided and this application Sept. 14, 1972, Ser. No. 289,055**

**Claims priority, application Netherlands, July 24, 1969, 6911367**

**Int. Cl. C08b** *27/68;* **C08f** *45/60;* **C08g** *51/60*

**U.S. Cl. 260—45.85 A** **7 Claims**

Ultraviolet light absorbing compounds for polymers and copolymers are disclosed having the general formula:

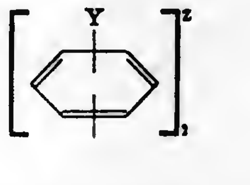


wherein

$R_1$ is hydrogen or a lower alkyl group;

$R_2$ is hydrogen, a lower alkyl group, an acyl group having not more than 20 carbon atoms, a substituted or non-substituted aroyl group, or a substituted or non-substituted benzene sulfonyl group; and

X is phenylene or a biphenylene fragment having the formula:



wherein

Y represents hydrogen or a halogen, and

Z is a sulfonyl group or an alkylidene group having from 3 to 8 carbon atoms.

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### 3,756,984

## EPOXY-IMIDAZOLE ADDUCTS AS CURING AGENTS FOR EPOXY RESINS

**Cornelis H. J. Klaren and Hans Krak, Delft, Netherlands, and Francis Jeanno, Paris, France, assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Continuation of abandoned application Ser. No. 785,781, Dec. 20, 1968. This application Sept. 27, 1971, Ser. No. 184,200**

**Claims priority, application France, Mar. 4, 1968, 142,222**

**Int. Cl. C08g** *30/14*

**U.S. Cl. 260—47 EC** **11 Claims**

The adducts of mono- and polyepoxides with imidazoles having a secondary amino group in the ring are excellent latent curing agents for epoxy resins and accelerators for anhydride curing of polyepoxides.

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### 3,756,985

## PROCESS FOR THE PRODUCTION OF STABLE POLYOXYMETHYLENE COPOLYMERS

**Dieter Gerlach, Grossauheim, Erich Bäder, Hanau am Main, and Wolfgang Sibenhorn, Steinheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany**

**No Drawing. Filed Oct. 16, 1968, Ser. No. 768,196**

**Claims priority, application Germany, Oct. 19, 1967, P 17 20 509.3**

**Int. Cl. C08g** *1/28*

**U.S. Cl. 260—67 FP** **7 Claims**

Polyoxymethylene copolymers are stabilized against heat and alkali degradation by heating the copolymers in aqueous suspension having non-alkaline pH value.

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### 3,756,986

## PROCESS FOR PREPARING POLYESTERS FROM ACYLOXYETHYL TEREPHTHALATES

**Joseph L. Russell, Ridgwood, N.J., assignor to Halcon International, Inc.**

**No Drawing. Filed Dec. 16, 1971, Ser. No. 208,925**

**Int. Cl. C08g** *17/003*

**U.S. Cl. 260—75 M** **14 Claims**

Fiber and film-forming polyethylene terephthalate resins are prepared from bis-(beta-acyloxyethyl) terephthalates, mono-(beta-acyloxyethyl) terephthalates, or mixtures thereof, the acyl groups of which have from 1 to 4 carbon atoms, by a process comprising the steps of adding ethylene glycol to the terephthalates, reacting the resulting mixture to liberate acyl groups associated with the acyloxyethyl moiety of the terephthalates, and to effect reaction with free terephthalic carboxyl groups present in the terephthalates, and to form bis-(beta-hydroxyethyl) terephthalate, and polymerizing the bis-(beta-hydroxyethyl) terephthalate so obtained.

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### 3,756,987

## POLY(ETHYLENE TEREPHTHALATE) FROM ACYLOXYETHYL TEREPHTHALATES

**Charles N. Winnick, Teaneck, N.J., asssignor to Halcon International, Inc.**

**No Drawing. Continuation-in-part of application Ser. No. 139,190, Apr. 30, 1971, which is a continuation-in-part of application Ser. No. 46,448, June 15, 1970, both now abandoned. This application Dec. 16, 1971, Ser. No. 208,933**

**Int. Cl. C08g** *17/01*

**U.S. Cl. 260—75 R** **32 Claims**

Fiber and film-forming polyethylene terephthalate resins are prepared from bis-(beta-acyloxyethyl) terephthalates, mono-(beta-acyloxyethyl) terephthalates, or mixtures of bis-(beta-acyloxyethyl) terephthalates with mono-(beta-acyloxyethyl) terephthalates, the acyl group of which has from 1 to 4 carbon atoms, by a process comprising the steps of adding water to the terephthalate, or to the terephthalate mixture, heating the resulting aqueous mixture to liberate by hydrolysis from 25% to 100% of the acyl groups associated with the acyloxyethyl moiety of the terephthalate or terephthalates to form the corresponding bis-(beta-hydroxyethyl) terephthalate and/or mono-(beta-hydroxyethyl) terephthalate, and polymerizing the terephthalates contained in the hydrolyzate.

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### 3,756,988

## PREPARATION OF POLYESTERS FROM ACYLOXYETHYL TEREPHTHALATES

**John Kollar, Wyckoff, and Joseph Pugach, Ho-Ho-Kus, N.J., assignors to Halcon International, Inc.**

**No Drawing. Filed Dec. 16, 1971, Ser. No. 208,936**

**Int. Cl. C08g** *17/003, 17/01*

**U.S. Cl. 260—75 M** **10 Claims**

Fiber and film-forming polyethylene terephthalate resins are prepared by a process which comprises polymerizing bis-(beta-acyloxyethyl) terephthalate mono-(beta-acyloxyethyl) terephthalate, or mixtures thereof, the acyl groups of which have from 1 to 4 carbon atoms, to form low molecular weight oligomers thereof and to liberate carboxylic acid and lower carboxylate esters of ethylene glycol, adding ethylene glycol to the oligomers thus obtained, and polymerizing the resultant mixtures to form polymers therefrom of increased molecular weight.

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### 3,756,989

## NOVEL POLYETHYLENE TEREPHTHALATE CATALYSTS

**John J. Ventura, Eatontown, Melvin H. Gitlitz, Edison, and James Mackey, Colonia, N.J., by James Mackey, Jr., executor of said James Mackey, deceased, Colonia, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 836,129, June 24, 1969. This application Mar. 15, 1971, Ser. No. 124,525**

**Int. Cl. C08g** *17/015*

**U.S. Cl. 260—75 R** **6 Claims**

A process for preparing polyethylene terephthalate wherein dimethyl terephthalate is reacted with ethylene glycol to form an ester of ethylene glycol and terephthalic acid or where terephthalic acid is reacted with ethylene glycol to form an ester of terephthalic acid and ethylene glycol where the resulting ester is polycondensed in the presence of a polycondensation catalyst, the improvement comprising carrying out the condensation or polymerization of the ester in the presence of a catalytic amount of specified trivalent antimony compounds containing three antimony sulfur bonds.

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### 3,756,990

## PROCESS FOR INCREASING THE MOLECULAR WEIGHT OF POLYETHYLENE TEREPHTHALATE

**Friedrich Jaeger, Bad Hersfeld, Hans-Martin Koepp, Erlenbach, and Fritz Wiloth and Rudolf Eismann, Erlenbach am Main, Germany, assignors to Glanzstoff AG, Wuppertal, Germany**

**Continuation of abandoned application Ser. No. 824,637, May 14, 1969. This application Aug. 9, 1971, Ser. No. 170,281**

**Claims priority, application Germany, May 14, 1968, P 17 70 410.8**

**Int. Cl. C08g** *17/003*

**U.S. Cl. 260—75 M** **15 Claims**

Process for increasing the molecular weight of polyethylene terephthalate or similar linear, fiber-forming polyesters by thermal treatment in the solid phase wherein the initial low molecular weight polyester precondensate is slowly discharged or withdrawn as a coherent granular bed or layer downwardly through a vertical heating zone in stabilized countercurrent flow to an inert gas, preferably nitrogen, while being non-isothermally heated to a maximum temperature of about 210–240° C., preferably 220–235° C. and for a period of time sufficient to cause after-condensation to a desired higher molecular weight.

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### 3,756,991

## COPOLYMERS OF VINYL CHLORIDE WITH N-SUBSTITUTED MALEIMIDES

**Gerhard Kühne, Burghausen (Salzach), and Alfons Neumaier, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Continuation of application Ser. No. 574,551, Aug. 24, 1966, which is a continuation of application Ser. No. 860,162, Sept. 17, 1969, both now abandoned. This application Jan. 27, 1971, Ser. No. 110,269**

**Claims priority, application Germany, Aug. 26, 1965, F 46,995**

**Int. Cl. C08g** *20/20*

**U.S. Cl. 260—78 UA** **1 Claim**

A process for producing copolymers of vinyl chloride and maleic acid imides substituted at the nitrogen atom, said copolymers being obtained by contacting the vinyl chloride with about 1–15% by monomer weight of a maleic acid imide, to obtain a copolymer having improved dimensional stability under heat.

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### 3,756,992

## POLYURETHANE POLYELECTROLYTES AND PROCESS FOR PREPARING SAME

**Dieter Dieterich, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Continuation of abandoned application Ser. No. 809,987, Mar. 24, 1969. This application Mar. 13, 1972, Ser. No. 234,315**

**Claims priority, application Germany, Mar. 27, 1968, P 17 70 068.4**

**Int. Cl. C08g** *22/04*

**U.S. Cl. 260—77.5 Q** **16 Claims**

Polyurethanes are prepared by dispersing solid or liquid polyurethane polyelectrolytes containing methylol groups by mixing with water, subjecting the electrolytes to a heat treatment of 25 to 200° C. and removing the water.

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### 3,756,993

## POLYMERIZATION CONTROL IN WHICH A UNIFORM RATE OF REACTION IS MAINTAINED

**Kenneth J. Green, deceased, late of Bartlesville, Okla., by Ralph Green, administrator, Bozeman, Mont., assignor to Phillips Petroleum Company**

**Filed Mar. 17, 1970, Ser. No. 20,372**

**Int. Cl. C08g** *23/00*

**U.S. Cl. 260—79.1** **10 Claims**

In the production of arylene sulfide polymers, the temperature of the reaction zone is increased from a first temperature to a second temperature at a rate such that the reaction rate is uniform with respect to time. Thereafter, the zone is maintained at the second temperature.

### 3,756,994

### VINYL AROMATIC AMINIMIDES AND POLYMERS THEREOF

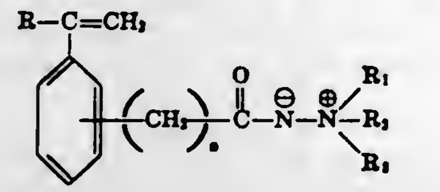
**Billy M. Culbertson, Savage, William J. McKillip, Minneapolis, and Edward A. Sedor, Bloomington, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.**

**No Drawing. Original application Aug. 23, 1967, Ser. No. 662,571, now Patent No. 3,641,145. Divided and this application Sept. 13, 1971, Ser. No. 180,113**

**Int. Cl. C08f** *15/00;* **C08g** *22/18*

**U.S. Cl. 260—82.1** **9 Claims**

Vinyl aromatic aminimides are prepared from vinyl aromatic acids or derivatives thereof. The vinyl aromatic aminimide can be homopolymerized and copolymerized to result in functional group-containing polymeric products capable of thermosetting. The vinyl aromatic aminimides have the general formula



(I)

wherein R is a hydrogen, methyl, or halogen; *n* is zero or one and $R_1$, $R_2$, and $R_3$ are hydrocarbon radicals and $R_1$ and $R_2$ can be combined to form a heterocyclic ring with the nitrogen.

### 3,756,995

### VANADIUM COMPOUND TRIALKYL ALUMINUM-HALOORGANIC ACID CATALYTIC PROCESS

**Mitsuo Ichikawa, Tokyo, Yasumasa Takeuchi, Yokohama, Kenya Makino, Kawasaki, and Masayuki Endo, Yokohama, Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan**

**No Drawing. Filed Mar. 30, 1971, Ser. No. 129,570**

**Claims priority, application Japan, Apr. 10, 1970, 45/30,596, 45/30,597**

**Int. Cl. C08f** *1/56*

**U.S. Cl. 260—85.3 R** **2 Claims**

A process for preparing conjugated diene-olefin copolymers which comprises bringing a conjugated diene and an olefin into contact with a catalyst formed of components selected, at least one each, from the groups (A), (B) and (C) consisting, respectively, of trialkyl aluminums, vanadium compounds, and halogenated organic acids.

### 3,756,996

### PROCESS FOR THE PRODUCTION OF ETHYLENE POLYMERS

**Donald W. Pugh, Roland J. Spomer, and Charles Wolfenberger, Tuscola, and William H. Palmer and Robert W. Horney, Champaign, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.**

**Continuation of abandoned applications Ser. No. 710,682, Feb. 20, 1968, and Ser. No. 401,153, Oct. 2, 1964. This application Feb. 25, 1971, Ser. No. 118,987**

**Int. Cl. C08f** *1/60, 3/04*

**U.S. Cl. 260—87.3** **5 Claims**

A process and apparatus for the production of ethylene polymers at high pressures within a modified, stirred autoclave-type reaction system subdivided into three zones, into the first of which a first, low temperature free radical, chain-initiating catalyst is fed, and into the second of which a second, intermediate temperature free radical, chain-initiating catalyst and a third, high temperature free radical, chain-initiating catalyst are introduced. The first zone is so agitated as to produce both radial and end-to-end mixing therein to thereby establish a substantially uniform reaction temperature therein, whereas the second zone is so agitated as to produce radial mixing therein, with the degree of end-to-end mixing decreasing longitudinally of the zone to thereby establish a temperature differential longitudinally thereof. Both radial and end-to-end mixing are established within the third zone in a manner such as to increase back mixing of the reaction mixture therein, and thereby control the temperature of the reaction mixture leaving such zone and exiting from the reaction system.

### 3,756,997

### THERMOPLASTIC COMPOSITIONS

**Ursula Eichers, Recklinghausen, and Otto Hahmann, Heinz-Hermann Meyer, Konrad Rombusch, and Manfred Rossbach, Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany**

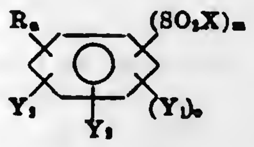
**No Drawing. Filed Jan. 21, 1971, Ser. No. 108,589**

**Claims priority, application Germany, Jan. 21, 1970, P 20 02 489.9**

**Int. Cl. C08f** *29/02, 45/00;* **C08g** *41/02*

**U.S. Cl. 260—88.2 S** **14 Claims**

Crystalline polyolefin and polyamide compositions nucleated with sulfonic acids and salts thereof of the formula



wherein X is —OH, —OMe or —NHR′ in which Me is an equivalent of a metal, preferably alkali metal, and R′ is aryl, preferably phenyl, or hydrogen; *m* is 1 to 2; R is alkyl of 1–4 carbon atoms, phenyl or hydrogen; *n* is 0 to 2; $Y_1$ is amino alkylamino or arylamino; *o* is 1 to 2; $Y_2$ is —OH or —OMe in which Me has the value given above, halo or hydrogen, and $Y_3$ is a nitro, carboxyl, or carboxylate group, or hydrogen, have lowered crystallization half-times and a more uniform spherulite structure, which results in more rapid mold release during cyclic operating procedures; improved mechanical properties; and improved transparency.

### 3,756,998

### POLYMERIZATION OF OLEFINS USING SUPPORTED π-ARENECHROMIUM TRICARBONYL CATALYSTS

**George Leo Karapinka, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Continuation of abandoned application Ser. No. 767,508, Oct. 14, 1968. This application Apr. 23, 1971, Ser. No. 137,083**

**Int. Cl. C08f** *1/58, 3/06*

**U.S. Cl. 260—88.2 R** **14 Claims**

π-Arenechromium tricarbonyls when supported on an activated silica or silica-alumina support become catalytically active for the polymerization of olefins, particularly ethylene, to high molecular weight solid polymers under a variety of conditions.

### 3,756,999

### PROCESS FOR THE PREPARATION OF OXIDATION PRODUCTS OF ETHYLENE POLYMERS

**Karl Stetter, Gersthofen, and Helmut Korbanka, Adelsried, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Filed July 14, 1971, Ser. No. 162,723**

**Claims priority, application Germany, July 18, 1970, P 20 35 706.6**

**Int. Cl. C08f** *27/22*

Oxidates of polyethylenes or copolymers of ethylene with α-olefins containing from 3 to 8 carbon atoms, are prepared by treating a dispersion of the molten polyolefin in water or a low fatty acid with oxygen or an oxygen-containing gas. The oxidates obtained are hard, soft or tough waxes and are used, according to their individual properties, for example, as modified plastics, polishing agents or coating material.

### 3,757,000

### COPOLYMERS AND PREPARATIONAL METHOD THEREFOR

**Frank Scardiglia, Woodcliff Lake, N.J., and Takeo Hokama, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 728,332, May 10, 1968. This application Oct. 29, 1970, Ser. No. 85,297**

**Int. Cl. C08f** *15/04*

**U.S. Cl. 260—88.2 C** **18 Claims**

A solid, homogeneous and essentially random copolymer of styrene and isobutylene having a number average molecular weight of from about 1000 to about 4000, a heterogeneity index of from about 1.50 to about 2.25 and a styrene content of from about 40 to about 90 weight percent with its higher molecular weight fractions having a higher styrene content than the average styrene content of the copolymer.

### 3,757,001

### METHOD FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

**William M. Reiter, Mentor, Ohio, and Algirdas A. Reventas, Rockaway, N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**No Drawing. Filed Apr. 16, 1971, Ser. No. 134,908**

**Int. Cl. C08f** *3/32, 15/06*

**U.S. Cl. 260—92.8 W** **11 Claims**

In suspension polymerization of vinyl chloride in aqueous media in closed polymerization vessels in the presence of conventional suspending agents and oil-soluble polymerization initiators, adhesion of polymer to the inner wall of the polymerization vessel is eliminated or substantially reduced by (1) conducting the polymerization in an acidic aqueous medium, in conjunction with (2) presence during the polymerization in the polymerization mass of oxidized polyethylene having a minimum number average molecular weight of about 1000, containing between about 1 and 5% by weight of oxygen, and having an acid number of from 9 to about 35.

### 3,757,002

### CATALYTIC POLYMERIZATION OF OLEFINS USING CYCLOPENTADIENE MODIFIED SUPPORTED DIARENE CHROMIUM COMPOUNDS

**Frederick J. Karol, Somerset, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 15,931, Mar. 2, 1970, which is a continuation-in-part of application Ser. No. 828,745, May 28, 1969, both now abandoned. This application Sept. 24, 1971, Ser. No. 183,701**

**Int. Cl. C08f** *1/58, 3/06*

**U.S. Cl. 260—94.9 DA** **20 Claims**

Diarene chromium compounds when supported on an inorganic oxide and modified with cyclopentadiene are catalytically active for the polymerization of olefins, particularly ethylene, to produce high molecular weight solid polymers and these catalysts show an unusual utility, when used with hydrogen, to control the melt index of the polymers made therewith.

### 3,757,003

### PROCESS FOR PREPARING L-PYROGLUTAMYL-L-HISTIDYL-L-PROLINAMIDE

**Karl Folkers and Jaw-Kang Chang, Austin, Tex., assignors to Karl Folkers, Austin, Tex.**

**No Drawing. Filed Dec. 18, 1969, Ser. No. 886,351**

**Int. Cl. C07c** *103/52;* **C07g** *7/00*

**U.S. Cl. 260—112.5** **3 Claims**

A synthetically produced tripeptide, L-glutaminyl-L-histidyl-L-prolinamide, can be readily cyclized to provide the tripeptide, L-pyroglutamyl-L-histidyl-L-prolinamide which exhibits the specific and nanogram-activity, in vivo, of the thyrotropin releasing hormone of the hypothalamus gland of mammalian species and which is obtained as a crystalline sulfate and free base.

### 3,757,004

### GELATIN COACERVATE FIBERS

**Arthur G. Brown, Menlo Park, Richard W. Gibson, San Jose, and Gloria F. Sirine, Mountain View, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.**

**No Drawing. Continuation-in-part of application Ser. No. 26,798, Apr. 8, 1970. This application Nov. 19, 1971, Ser. No. 200,521**

**Int. Cl. C08h** *1/06*

**U.S. Cl. 260—117** **4 Claims**

The technique of coacervation is employed to produce an aqueous suspension of liquid, fiber-shaped gelatin particles which can be solidified and recovered in dried fiber form. The gelatin fibers so produced exhibit a certain amount of crystallinity and are flexible, strong and stretchable. They can be used to form various non-woven textile materials, or they can be spun into yarn and then woven into fabrics. The aqueous suspension of coacervated gelatin fiber-shaped particles, wherein the latter are present in liquid form as a separate phase or wherein the particles have become gelled, can be used as a vehicle in which to admix the said gelatin particles with other gelatin fibers or with those of natural leather, cotton, cellulose or other natural or synthetic materials, this admixing step then being followed by one of recovering a product wherein the gelatin and other fibers are evenly distributed.

### 3,757,005

### METHOD FOR PRODUCING ALBUMIN FROM MILK AND WHEY

**Kurt Kantz and Otto Stahnke, Dahlenburg, Germany, assignors to Molkereigenossenschaft Dahlenburg eGmbH, Dahlenburg, Germany**

**Filed Dec. 3, 1970, Ser. No. 94,642**

**Claims priority, application Germany, Dec. 10, 1969, P 19 61 885.0; Jan. 23, 1970, P 20 02 985.0**

**Int. Cl. A23j** *1/20;* **C07g** *7/00*

**U.S. Cl. 260—122** **7 Claims**

Preparation of albumin from milk and whey wherein the material being treated is first concentrated to a solid matter content of about 40–50%, passed through a dialysis zone to obtain an albumin-containing product which is subsequently passed through a concentrating zone followed by sequentially circulating the albumin-containing product through the dialysis zone and concentrating zone. The viscosity of the product is maintained at substantially the value of that resulting from the initial concentration throughout the sequential circulation.

### 3,757,006

### PROCESS FOR THE PRODUCTION OF 5-PHENYL-1,4-BENZODIAZEPINES

**Poul Nedenskov, Birkerod, Denmark, assignor to Aktieselskabet Grindstedvaerket, Arhus, Denmark**

**No Drawing. Continuation-in-part of application Ser. No. 553,613, May 31, 1966. This application Dec. 4, 1969, Ser. No. 882,331**

**Claims priority, application Great Britain, June 9, 1965, 24,418/65**

**Int. Cl. C07d** *53/06*

**U.S. Cl. 260—239 BD** **9 Claims**

A process for the production of certain 1,4-benzodiazepines by reacting the appropriate Grignard reagent with the corresponding benzodiazepine in solution in pyridine and thereafter converting the compound resulting from the Grignard reaction to the desired compound, the Grignard reaction generally introducing a phenyl group into the 5-position.

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### 3,757,007

### PRODUCTION OF ε-CAPROLACTAM AND O-ACETYL CYCLOHEXANONE OXIME

**Isamu Fujita, Ikeda, Tooru Yoneya, Toyonaka, and Shinichi Deguchi, Settsu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan**

**No Drawing. Filed Aug. 10, 1971, Ser. No. 172,342**

**Claims priority, application Japan, Aug. 26, 1970, 45/74,668**

**Int. Cl. C07d** *41/06*

**U.S. Cl. 260—239.3 A** **5 Claims**

A process for producing ε-caprolactam and O-acetylcyclohexanone oxime comprising reacting 0.01 to 100 mols of cyclohexanone oxime with one mol of N-acetylcaprolactam at a temperature of 30 to 120° C. for 10 minutes to 100 hours in the presence of an organic solvent in an amount of 0 to 20 times the total weight of N-acetylcaprolactam and cyclohexanone oxime.

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### 3,757,008

### 1 - (CARBOXYL-HETEROALKYL) - 1,4-BENZODIAZEPINE DERIVATIVES AND PROCESSES FOR PREPARING SAME

**Joseph Hellerbach and Roland Jaunin, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**No Drawing. Filed Sept. 30, 1971, Ser. No. 185,389**

**Claims priority, application Switzerland, Oct. 7, 1970, 14,905/70**

**Int. Cl. C07d** *53/06*

**U.S. Cl. 260—239.3 D** **15 Claims**

Novel 1,4-benzodiazepine derivatives bearing a carboxyheteroalkyl group in the 1-position and processes for preparing said compounds are disclosed. These 1-(carboxylheteroalkyl)-1,4-benzodiazepine derivatives are useful as muscle-relaxant, anti-convulsant and sedative agents.

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### 3,757,009

### SPIRO-[STEROID-17,2′-FURAN-3′-ONES] AND A PROCESS FOR THEIR MANUFACTURE

**Georg Anner, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

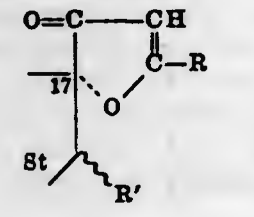
**No Drawing. Filed Mar. 2, 1971, Ser. No. 120,363**

**Claims priority, application Switzerland, Mar. 6, 1970, 3,287/70**

**Int. Cl. C07c** *173/00*

**U.S. Cl. 260—239.55 R** **3 Claims**

Compounds of the formula



wherein

R=hydrogen, lower alkyl, aryl or aralkyl

R′=hydrogen, methyl, free or esterified hydroxyl or β-halogen

St=the residue of a substituted or unsubstituted, saturated or unsaturated steroid ring.

For example: 9α-fluoro-11β-hydroxy - 5′,16α - dimethyl-spiro-[androst-1,4-diene-17α,2′-furane-3,3-dione].

Use: anti-inflammatory or gestagenic agents.

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### 3,757,010

### STILBENE COMPOUNDS

**Hans Balzer, Munchenstein, Basel-Land, Fritz Fleck, Bottmingen, Basel-Land, and Hans-Rudolf Schmid, Rieben, Basel, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland**

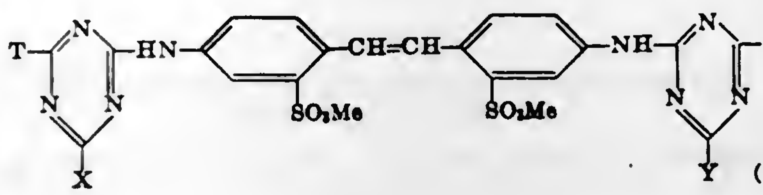
**No Drawing. Filed Dec. 7, 1970, Ser. No. 95,935**

**Claims priority, application Switzerland, Dec. 11, 1969, 18,425/69**

**Int. Cl. C07d** *55/22*

**U.S. Cl. 260—240 B** **17 Claims**

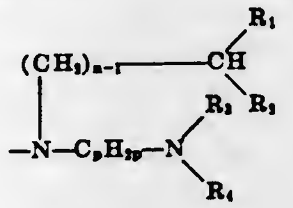
Stilbene compounds suitable for the brightening of textiles in combination with cationic softeners, of paper and of weakly acidic substrates. They have the formula



(I)

wherein

X and Y independently of one another each represents an optionally substituted phenylamino radical or a radical of the formula

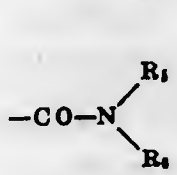


(II)

T and Z each represents the radical of the Formula II,

$R_1$ is hydrogen or lower alkyl

$R_2$ is —OH, —CN, $—CO—C_mH_{2m+1}$,



$$-CO-N\begin{matrix} R_5 \\ R_6 \end{matrix}$$

each of $R_3$ and $R_4$ is lower alkyl or lower hydroxy alkyl or together with N a saturated heterocyclic radical,

each of $R_5$ and $R_6$ is H or has the meaning of $R_3$ or $R_4$

$R_7$ is lower alkyl bearing optionally —OH, —O—alkyl, phenoxy, cresoxy or phenyl,

Me is e.g. Na, K, $NH_4^+$,

Anion is a colourless anion,

*m* is 1 to 3,

*n* is 1 or 2,

*p* is 2 to 6.

### 3,757,011

### PHENANTHROTRIAZOLYL DERIVATIVES

**Fritz Fleck, Bottmingen, Basel-Land, and Horst Schmid, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland**

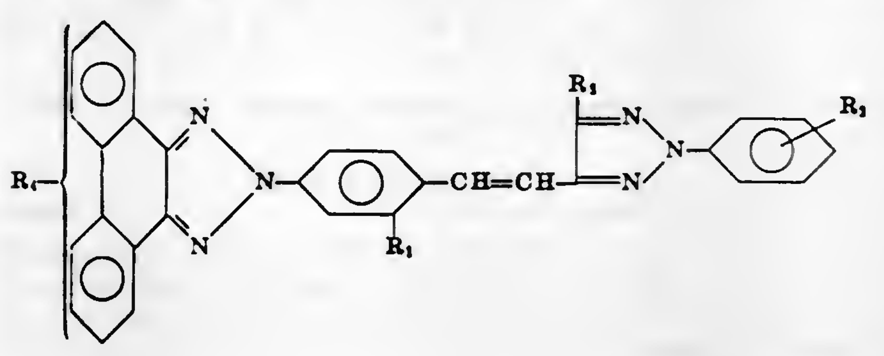
**No Drawing. Filed Apr. 9, 1971, Ser. No. 132,868**

**Claims priority, application Switzerland, Apr. 17, 1970, 5,753/70**

**Int. Cl. C07d** *55/02*

**U.S. Cl. 260—240.9** **10 Claims**

Phenanthrotriazolyl derivatives of formula



(I)

wherein

$R_1$ is H, Cl, F, CN, COOH, $SO_3H$, optionally substituted amide or ester of COOH or $SO_3H$, alkyl-$SO_2$ or aryl-$SO_2$,

$R_2$ is H, Cl, F, CN, optionally substituted alkyl or aryl, COOH, $SO_3H$, optionally substituted $SO_2—NH_2$,

$R_3$ is H or alkyl

and

$R_4$ is H, $SO_3H$, optionally substituted amide or ester of $SO_3H$.

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### 3,757,012

### 7-[D-(α-AMINO-α-PHENYLACETAMIDO] - 3 - (3-METHYL - 1,2,4 - THIADIAZOL - 5-YLTHIOMETHYL)-3-CEPHEM - 4-CARBOXYLIC ACID AND SALTS THEREOF

**Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.**

**No Drawing. Filed Sept. 14, 1970, Ser. No. 72,172**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **7 Claims**

7-[D-(α-amino - α - phenylacetamido)]-3-(3-methyl-1,2,4 - thiadiazol - 5 - ylthiomethyl) - 3 - cephem - 4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

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### 3,757,013

### DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

**Hans Bickel, Binningen, Johannes Mueller and Rolf Bosshardt Arlesheim, Heinrich Peter, Riehen, and Bruno Fechtig, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Filed Sept. 28, 1970, Ser. No. 76,283**

**Claims priority, application Switzerland, Oct. 10, 1969, 15,269/69**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **8 Claims**

7-aminopyridiniumacetylamino - cephalosporanic acids and derivatives thereof. The new compounds have antibacterial properties.

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### 3,757,014

### 7-[D-(α-AMINO-α-PHENYL-ACETAMIDO)] - 3-[S-(5-HYDROXYMETHYL - 1,3,4 - OXADIAZOL-2-YL) THIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACID AND SALTS

**Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.**

**No Drawing. Filed May 7,1971 , Ser. No. 141,417**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **7 Claims**

7-[D-(α-amino - α - phenylacetamido)] - 3 - [S-(5-hydroxymethyl - 1,3,4 - oxadiazol - 2 - yl)thiomethyl]-3-cephem-4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, including by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

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### 3,757,015

### 7-[D-(α-AMINO-α-PHENYL-, 2 - THIENYL- AND 3-THIENYL-ACETAMIDO] - 3 - [S-(2-METHYLTETRAZOLE - 5-YL)THIOMETHYL] - 3 - CEPHEM-4-CARBOXYLIC ACIDS

**Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.**

**No Drawing. Filed Mar. 27, 1972, Ser. No. 238,667**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **24 Claims**

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-[S-(2-methyltetrazole - 5 - yl)thiomethyl]-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitus in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

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### 3,757,016

### HERBICIDAL COMPOUNDS AND METHODS

**Don L. Hunter, Anaheim, and Kiyoshi Kitasaki, Garden Grove, Calif., and Cecil W. Le Fevre, Franklin, Idaho, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.**

**No Drawing. Continuation-in-part of application Ser. No. 833,870, June 4, 1969, which is a continuation of abandoned application Ser. No. 598,981, Dec. 5, 1966, which in turn is a continuation-in-part of abandoned application Ser. No. 524,452, Feb. 2, 1966. This application July 12, 1971, Ser. No. 161,962**

**Int. Cl. C07d** *87/46, 87/42*

**U.S. Cl. 260—247.2 B** **11 Claims**

A novel class of compounds comprising the esters of 2-(ω,ω-diethyleneoxyuramido)benzoic acid and the thio analogues thereof are provided. The compounds are useful as herbicides and are especially useful for controlling wild oats in the presence of desirable crops.

### 3,757,017

### 4,5-POLYMETHYLENE-PYRIMIDINE DERIVATIVES

**Jacques Mathieu, 44 Avenue Heydenberg, Brussels, Belgium**

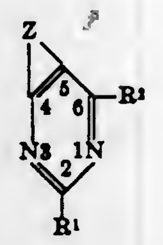
**No Drawing. Filed Jan. 22, 1968, Ser. No. 699,314**

**Claims priority, application Great Britain, Jan. 25, 1967, 3,775/67**

**Int. Cl. C07d** *87/38*

**U.S. Cl. 260—247.5 B** **6 Claims**

New 4,5-polymethylene-pyrimidine derivatives of the general formula



in which

Z is a polymethylene chain containing 3 to 6 carbon atoms

$R^1$ is hydrogen, halogen, alkyl, hydroxyalkylamino or morpholino,

$R^2$ is hydrogen, hydroxyalkylamino, bis(hydroxyalkyl) amino, N-alkyl-N-hydroxyalkylamino or morpholino,

with the proviso that when $R^2$ is hydrogen, $R^1$ must be a hydroxyalkylamino or morpholino radical, as well as their salts with inorganic or organic acids.

The compounds are hypotensives, peripheral and coronary vasodilators, diuretics, bronchodilators, spasmolytics and circulatory and respiratory analeptics.

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### 3,757,018

### PROCESS FOR CHLORINATING CYANURIC ACID

**Raymond N. Mesiah, Somerset, N.J., assignor to FMC Corporation, New York, N.Y.**

**No Drawing. Filed June 1, 1971, Ser. No. 149,035**

**Int. Cl. C07d** *55/42*

**U.S. Cl. 260—248 C** **6 Claims**

An improvement in a 2-stage chlorination process for the production of chlorinated cyanuric acid is provided. The basic 2-stage chlorination process as described in U.S. Pat. 2,969,360 is improved substantially by raising the pH in the primary or first reaction zone to a pH of about 12 or higher. This raising of pH is contrary to the teaching of the prior art, and results in an improved commercial process.

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### 3,757,019

### 3 - (α-SUBSTITUTED AMINO-β-ALKOXYBENZOXYPROPYL)-6,7- OR 6,7,8-ALKOXY-1,2,3-BENZOTRIAZINE-4(3H)-ONES

**Adolf Stachel, deceased, by Ingeburg Lydia Katharina Stachel, heiress-at-law, Offenbach-Main, Rudi Beyerle, Bruchkobel, Rolf-Eberhard Nitz, Bergen-Enkheim, and Klaus Resag and Eckhard Schraven, Frankfurt am Main-Fechenheim, Germany; said Beyerle, Nitz, and Schraven assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany**

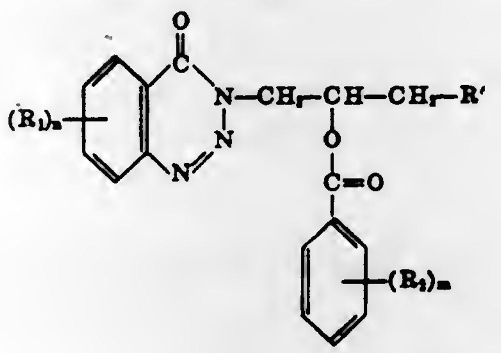
**No Drawing. Original application May 18, 1970, Ser. No. 38,544, now Patent No. 3,706,739. Divided and this application June 22, 1972, Ser. No. 265,249**

**Claims priority, application Germany, May 22, 1969, P 19 26 075.4**

**Int. Cl. C07d** *55/08*

**U.S. Cl. 260—248 AS** **4 Claims**

The present invention pertains to new, pharmacologically valuable basically substituted 1,2,3-benzotriazine-4(3H)-one derivatives having excellent coronary dilatory properties and which have the structural formula



wherein R' is a radical selected from the group consisting of N-methylpiperazino, N-phenylpiperazino and N-trimethoxybenzoxyethylpiperazino, said radical being bound via a nitrogen atom; $R_1$ is a lower alkoxy group having 1–4 carbon atoms which may be in the 6,7 or 6,7,8-position; $R_2$ is an alkoxy group having 1–4 carbon atoms; $m$ is an integer selected from 1, 2 and 3; and $n$ is an integer selected from the group consisting of 2 and 3 and pharmaceutically acceptable acid addition salts thereof.

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## ERRATA

For Classes 423—466 and 423—4 see:
Patents Nos. 3,756,780 and 3,756,786

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# ELECTRICAL

### 3,757,020

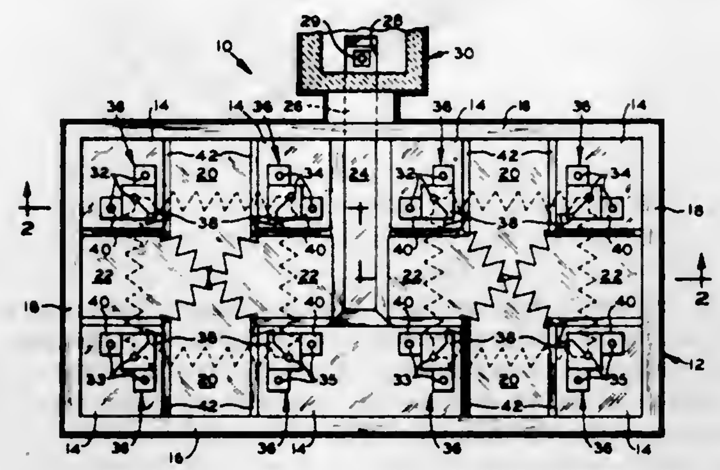
### ELECTRIC GLASS FURNACE STRUCTURE

**William R. Steitz, Toledo; Robert O. Bradley, Ottawa Hills, both of Ohio, and Thomas H. Waterworth, Bridgnorth, England, assignors to Toledo Engineering, Co., Inc., Toledo, Ohio and Elemelt Limited, Kingswinford, England**

**Continuation-in-part of Ser. No. 41,385, May 28, 1970, Pat. No. 3,634,588. This application Dec. 23, 1971, Ser. No. 211,196**

**Int. Cl. C03b** *5/02*

**U.S. Cl. 13—6** **13 Claims**



An electric glass furnace chamber having a bottom floor and side walls wherein the floor of the furnace is formed with a cruciform system of channels by means of which molten glass is withdrawn towards an outlet by opposing flow patterns in the channels thereby reducing flow patterns in the molten glass above the channels which avoids impingement of hot glass against the side walls of the furnace chamber and reduces erosion of these side walls. One or more axially movable electrodes connected to the same terminal project up through the bottom of the furnace between these channels, which electrodes are mounted in special refractory blocks that form platforms above the bottom floor of the furnace and thereby relatively deepen the channels between the electrodes connected to different opposing terminals. These platforms are built up in steps and the edges of their blocks are beveled. Furthermore, the electrodes may be arranged in groups so as to provide one or more separate heating zones connected by these channels. Each electrode is sealed in its refractory block by an inert gas, and it and its block are cooled both by a jacket for coolant liquid around the electrode at least partly recessed in the block, and by a blast of cool air from below and against the jacket, the electrode, and the bottom of the block.

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### 3,757,021

### ARRANGEMENT FOR MEASURING THE CRATER VOLTAGES IN A THREE-PHASE ELECTRIC FURNACE WITH ELECTRODES ARRANGED IN A DELTA

**Oluf Christian Beckman, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway**

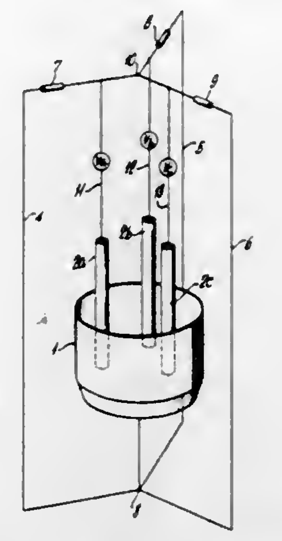
**Filed Oct. 20, 1972, Ser. No. 299,191**

**Claims priority, application Norway, Oct. 22, 1971, 3919/71**

**Int. Cl. H05b** *7/00*

**U.S. Cl. 13—12** **4 Claims**

A plurality of measuring conductors leading from the bottom of a multi-phase electric furnace and symmetrically disposed with respect to one another and with respect to said furnace, and each connected to an associated impedance, each of said impedances having a common junction. In this fashion, cancellation of induced voltages in the measuring conductors is effected, thereby enabling generation of a potential at the common junction of the aforementioned impedances accurately representative of the potential at the bottom of the furnace. Volt meters connected from this common junction to the electrodes in the furnace can then give an accurate reading of the crater voltages.



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### 3,757,022

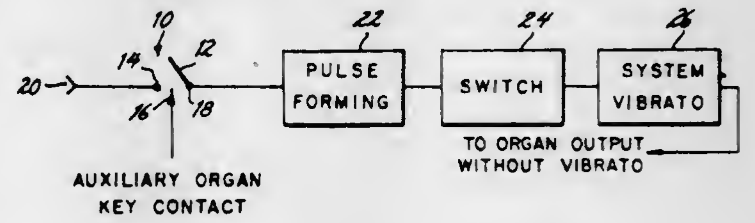
### PITCH ARTICULATION SYSTEM FOR AN ELECTRONIC ORGAN

**Jerome Markowitz, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.**

**Filed Sept. 16, 1971, Ser. No. 181,145**

**Int. Cl. G10h** *1/02*

**U.S. Cl. 84—1.25** **12 Claims**



A pitch articulation system for an electronic organ in which the normal organ sound or voice receives an additional low frequency amplitude or frequency modulation for a short period of time upon depressing each key. Upon depressing a key, a pulse forming circuit is triggered which produces a pulse of a selected duration. This pulse keys a vibrato or a tremolo oscillator for a period of time equal to the pulse's duration.

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### 3,757,023

### HARMONIC SYNTHESIS ORGAN SYSTEM

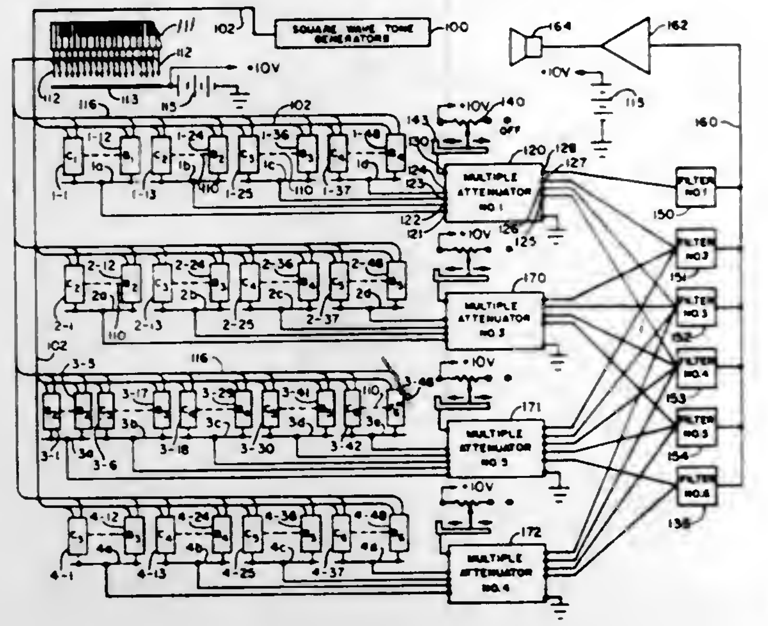
**Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill.**

**Filed Mar. 9, 1970, Ser. No. 17,387**

**Int. Cl. G10h** *1/02*

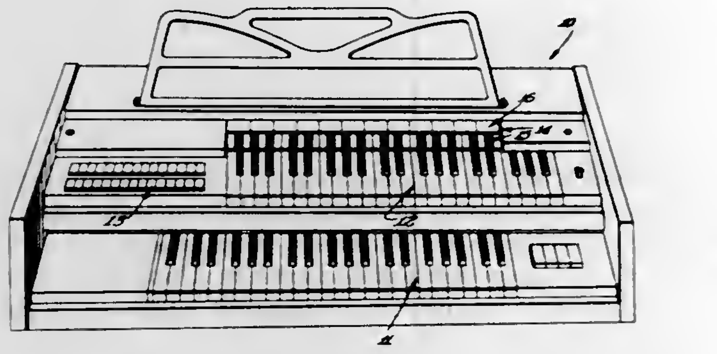
**U.S. Cl. 84—1.11** **3 Claims**

A harmonic synthesis organ in which a complex wave tone generator generates signals corresponding to the frequencies of the fundamentals and hormonic partials. The complex tones are gated and are collected on a plurality of headers, each header corresponding to a particular harmonic partial. The headers are subdivided into groups of approximately one octave of contiguous tones and the groups are individually attenuated by a multiple attenuator controlled by a control element which may be a manually operated draw bar. The outputs of the attenuators are connected to sharp cut off filters which remove all of the natural harmonics from the complex waves, and pass to the amplifier sine waves corresponding to the various partials. A preferred multiple attenuator system employs a plurality of photo resistors associated with a lamp, the intensity of which is controlled by a related draw bar. A lamp control circuit is provided to improve the responsiveness of the lamp to changes in draw bar position. Additional stop control means are provided for controlling the attenuators from either draw bars or from an alternate control system. In the embodiments shown, only a single key contact is associated with each playing key of the organ.



### 3,757,024
### MUSICAL INSTRUMENT

**Herman B. Stinson, Jr., 346 Medina Dr., Warson Woods, Mo., and Ivor G. Noon, 7821 Ravensridge, St. Louis, Mo.**
**Filed Oct. 24, 1965, Ser. No. 504,869**
**Int. Cl. G10h** *1/00*
**U.S. Cl. 84—1.17** **16 Claims**

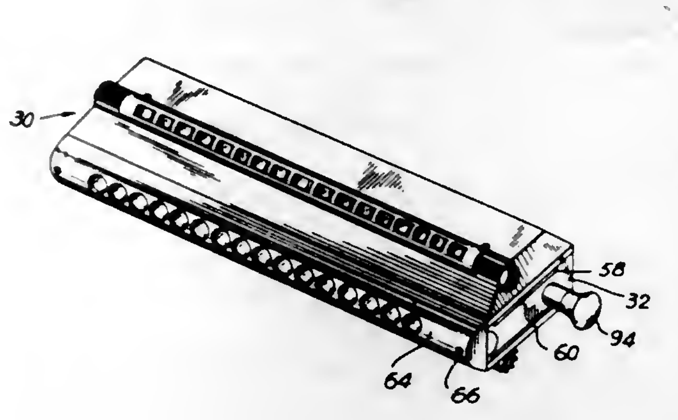


A musical instrument includes an auxiliary keyboard having one set of keys for playing chromatic scales and a second set of keys for playing arpeggios. The first set of keys is connected in parallel with one manual, and the second set of keys is connected in series with the other manual whereby chords played on such other manual enable the playing of arpeggios by a successive operation of successive keys.

### 3,757,025
### HARMONICAS

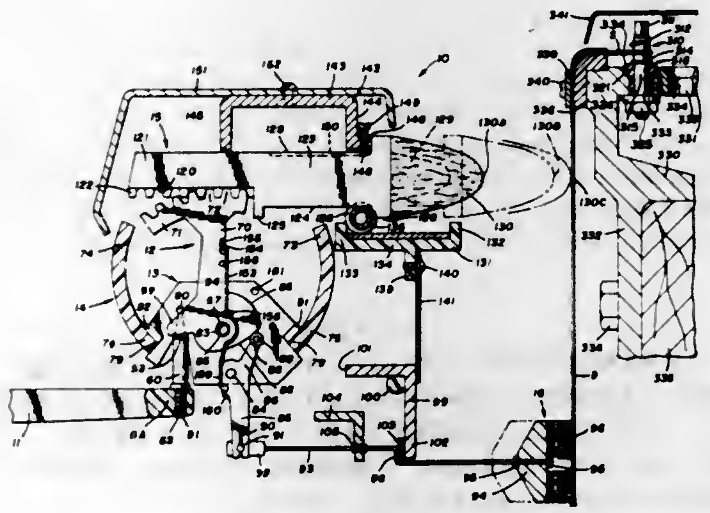
**Cham-Ber Huang, 257 Benson Ave., Elmont, N.Y.**
**Filed Dec. 13, 1971, Ser. No. 207,011**
**Int. Cl. G10d** *71/12*
**U.S. Cl. 84—377** **18 Claims**

A harmonica in which a slide is shiftable for placing openings of a mouthpiece in communication with selected chambers formed in a body of the harmonica and communicating with reeds carried by reed plates which extend over the body chambers. The slide is in direct slidable contact with the mouthpiece and body and has a low coefficient of friction with respect thereto, so that no guiding structure is required to guide the slide. The reed plates are situated between covers which are formed with sound chambers respectively communicating through the reeds with the body chambers, these sound chambers having rear openings. These covers may be provided with forward openings respectively communicating with the sound chambers and the covers are provided with controls for selectively opening and closing these forward openings. Also, the slide is shifted by the operator through a mechanism which requires the operator only to displace a manually operable member through a fraction of the distance that the slide is moved.



### 3,757,026
### PIANO STRIKING MECHANISM

**Jorge L. Carbone, 2104 12th St., Cuyahoga Falls, Ohio**
**Filed July 27, 1972, Ser. No. 275,563**
**Int. Cl. G10c** *3/18*
**U.S. Cl. 84—236** **16 Claims**



Disclosed is a striking mechanism for use in pianos and related instruments having a plurality of strings to produce musical notes and a plurality of keys to select the musical notes. A plurality of lever arms are pivotally mounted within a frame which encloses the striking mechanism. Each lever arm engages a hammer within the frame, communicates with one of the keys, and is adapted for driving a hammer against one or more strings to produce a musical note.

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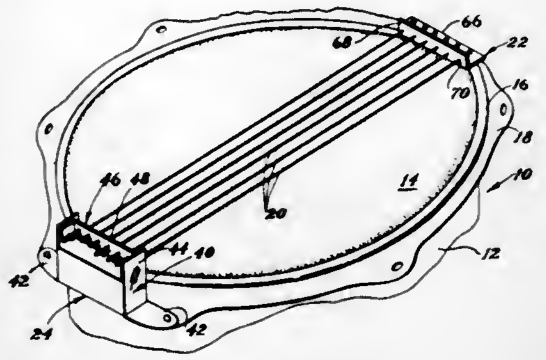
### 3,757,027
### SNARE DRUM AND IMPROVED SNARE WIRE THEREFOR

**John J. Morena, Levittown, and Robert N. Grauso, Bayside, both of N.Y., assignors to C. F. Martin & Co., Nazareth, Pa.**
**Filed July 19, 1971, Ser. No. 165,415**
**Int. Cl. G10d** *13/02*
**U.S. Cl. 84—416** **2 Claims**

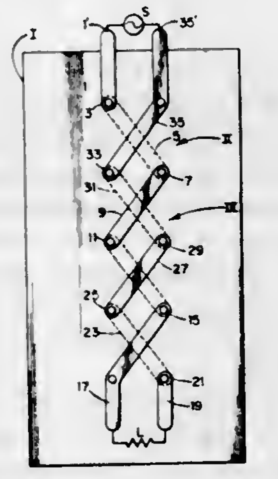


In a snare drum there is provided improved snare drum wire means comprised of at least one elongated core adapted to be secured to the snare drum butt plate at one end and to the throw off bridge tension plate at the other end. The snare drum wire means is provided with a helical outer wrap. The scope of the present invention includes a metallic core with a non-metallic outer wrap, a metallic core with a metallic outer wrap, a non-metallic core with a metallic outer wrap and a non-metallic core with a non-metallic outer wrap. The core may have various cross-sectional configurations, such as square, rectangular, circular and polygonal and may be steel piano wire, nylon, polyacetal, dacron, gut, silk fiber, etc. The outer wrap may be copper, brass, tin, nylon, gut, etc. The helical outer wrap may be secured to the core at either or both ends or may not be secured at all to the core. On the drum itself, means are provided for individually tensioning the wires and means may be provided for making the individual strings of equal length.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

### 3,757,028
### PRINTED-BOARD AND SIMILAR TRANSMISSION-LINE STRUCTURE FOR REDUCING INTERFERENCE

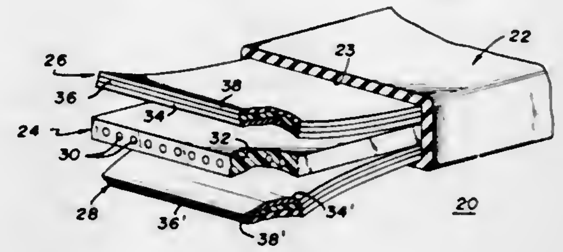
**Joseph Schlessel, 7A Sycamore Dr., Great Neck, N.Y.**
**Filed Sept. 18, 1972, Ser. No. 289,871**
**Int. Cl. H01b** *11/02, 7/08*
**U.S. Cl. 174—33** **4 Claims**



A novel transmission-line structure, particularly adapted for printed circuit sheets and the like, and embodying zig-zag line conductors formed of conductive strips successively disposed on opposite sides of the insulating sheet and interconnected transversely through the sheet, with the corresponding strips of each line conductor crossing those of the other line conductor, through on opposite sides of said sheet, effectively to provide a twist of the line conductors through at least a turn to effect magnetic field cancellation, self-shielding and interference suppression.

### 3,757,029
### SHIELDED FLAT CABLE

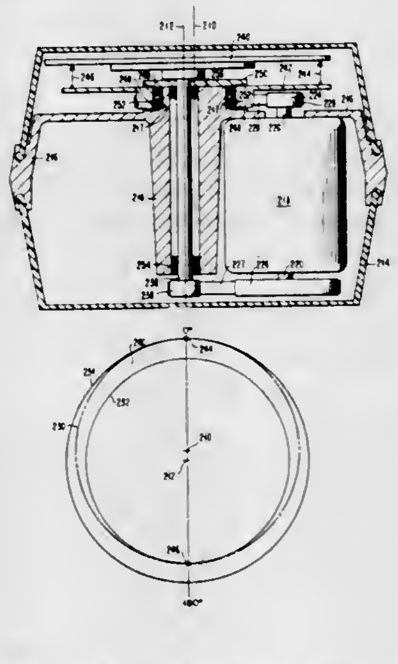
**Joseph Marshall, Trenton, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.**
**Filed Aug. 14, 1972, Ser. No. 280,528**
**Int. Cl. H01b** *11/06*
**U.S. Cl. 174—36** **5 Claims**



Two or more elongate, longitudinally aligned layers each having one or more electrically conductive elements at least partially embedded therein, and which may include a shield layer, are slidably disposed adjacent one another in overlapping relationship and tightly enclosed within an integral flexible plastic covering which may be extruded thereover to provide a multilayer flat cable assembly so arranged that upon the severance of the flexible plastic covering each of the layers is exposed and readily manipulatable for conveneint access to the individual conductive elements of the cable. The shield layer includes a plastic layer and the plastic cover may be bonded to the plastic layer.

### 3,757,030
### CONTINUOUS SPIRAL, ROTATING HEAD AND DISK VIDEO BUFFER SYSTEM

**John J. Lynott, Los Gatos, and Louis D. Stevens, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Jan. 5, 1971, Ser. No. 104,108**
**Int. Cl. G11b** *15/12, 15/18*
**U.S. Cl. 179—100.2 T** **6 Claims**



A video buffer includes a disk and a head rotating about parallel axes, offset by about one half the width of the data tracks band on the disk. Two heads are mounted 180° apart equidistant from the disk of head rotation. The heads and the disks are rotated at a constant ratio such that a spiral track is traced across the recording area of the disk by the head. The first head is rotated through 180° while the second head is rotating to a home position; the heads are switched at that point for a continuous readout. The ratio of disk to head rotational velocity is 20:1 for a ten track spiral.

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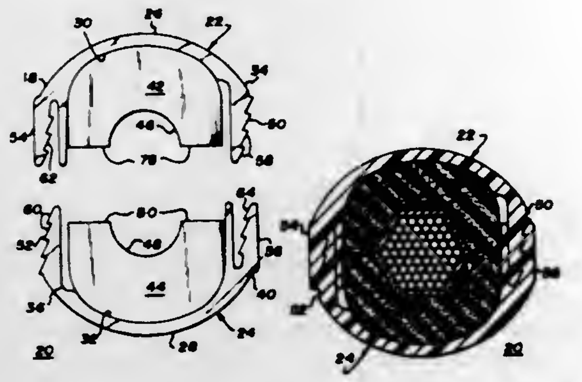
### 3,757,031
## SELECTIVELY CLOSABLE PROTECTIVE ENCLOSURE FOR ELECTRICAL SPLICES AND THE LIKE
**Hyman Izraeli, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.**
**Filed May 2, 1972, Ser. No. 249,568**
**Int. Cl. H02g** *15/08;* **H01r** *5/02*
**U.S. Cl. 174—138 F** **14 Claims**



A protective enclosure preferably for spliced connections and the like comprising, in one embodiment, a pair of universally mating members each having a male and female portion of selectively engageable latch means and a highly resilient inner liner wherein said device may be releasably locked about a wide range of joint sizes to provide a protective enclosure therefore. Further embodiments comprise a plurality of mating members interengageable both circumferentially and longitudinally to further increase the range and versatility of the enclosure. The liner may be formed from a closed cell sponge rubber material or the like. The male and female latch means portions each comprises selectively formed teeth disposed adjacent at least one surface thereof, to provide interlocking engagement in any one of a number of selective positions.

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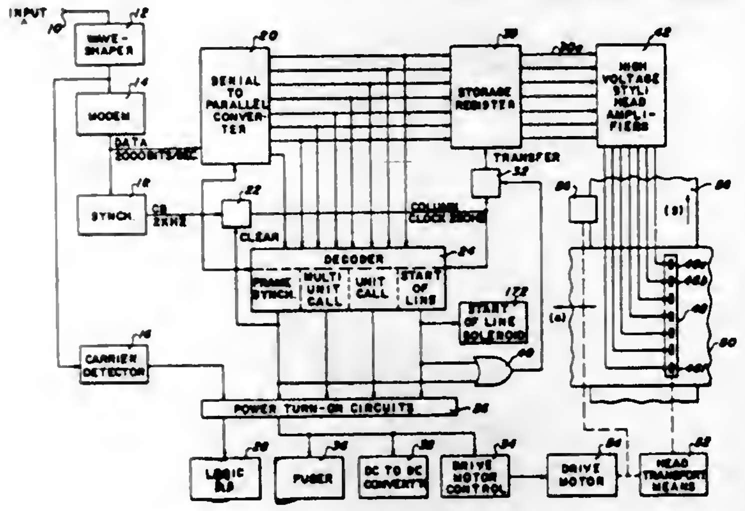
### 3,757,032
## METHOD AND APPARATUS FOR SELECTIVELY ENABLING A REMOTE RECEIVER
**Timothy M. Minerd, Rochester, and Robert D. Houston, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**
**Continuation of Ser. No. 39,687, May 20, 1970, abandoned. This application Jan. 28, 1971, Ser. No. 110,687**
**Int. Cl. H04l** *15/34*
**U.S. Cl. 178—4.1 R** **13 Claims**

An information transmission and recording system wherein a character is arranged in a dot-matrix form and the signals which represent the dots are transmitted column by column of the matrix in serial form to a receiver. The received character signals are applied synchronously to a serial-to-parallel converter, the parallel output thereof being applied to a storage register. The output of the storage register, representing a column of the matrix, is transferred to a line of styli representing a column of the matrix. The styli are transported across a moving recording medium, the character thereby being reproduced column by column. Means are also provided for addressing a selected recording unit among a plurality of such units, full power being applied only to the selected unit after it is properly addressed.



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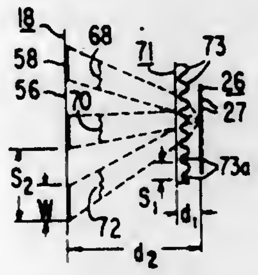
### 3,757,033
## SHADOWING SYSTEM FOR COLOR ENCODING CAMERA
**Hugh Finch Frohback, Sunnyvale; Albert Macovski, Palo Alto, and Philip Joseph Rice, Atherton, all of Calif., assignors to RCA Corporation, New York, N.Y.**
**Continuation-in-part of Ser. No. 798,677, Feb. 12, 1969, Pat. No. 3,619,489. This application Aug. 23, 1971, Ser. No. 173,951**
**Int. Cl. H04n** *9/06*
**U.S. Cl. 178—5.4 ST** **7 Claims**



In a color encoding camera utilizing a color encoding strip filter arrangement in the optical path to separate light from an object into its component colors, a shadowing grating arrangement is utilized to image the encoding filter strips efficiently onto a photosensitive medium without the use of a relay lens.

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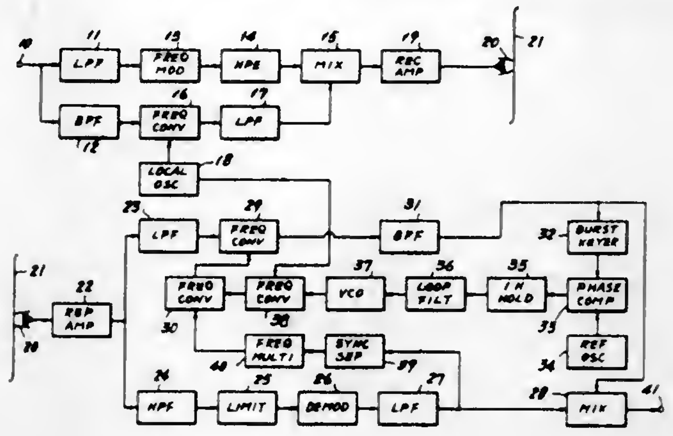
### 3,757,034
## COLOR VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM
**Mitsuo Fujita, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-Ken, Japan**
**Filed Jan. 12, 1972, Ser. No. 217,175**
**Claims priority, application Japan, Jan. 16, 1971, 46/973; Jan. 22, 1971, 46/1841**
**Int. Cl. H04n** *5/78, 9/38*
**U.S. Cl. 178—5.4 CD** **8 Claims**

In a color video signal recording and reproducing system, a color video signal is separated into a luminance signal and a carrier chrominance signal. The luminance signal is frequency modulated, while the carrier chrominance signal is frequency converted to a lower frequency band. The frequency modulated luminance signal and the frequency converted carrier chrominance signal are superimposed one upon the other, and

the superimposed signal is recorded on and reproduced from a magnetic medium. The frequency modulated luminance signal is separated from the reproduced signal and then demodulated. The frequency converted carrier chrominance signal is also separated from the reproduced signal and then reconverted to its original frequency band. A feedback loop, including a voltage control oscillator, extends from the output of the frequency converter means for reconverting the carrier chrominance signal and terminates at the second frequency converter means. The central oscillation frequency of the voltage control oscillator is sufficiently low so that the feedback loop is not substantially unlocked by frequency drifting caused by ordinary changes in ambient temperature.



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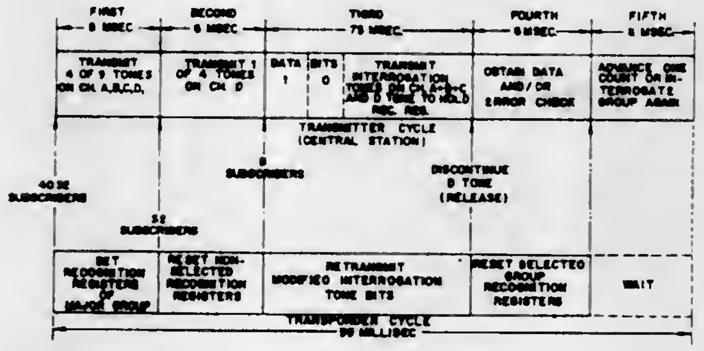
### 3,757,035
## INTERROGATED TRANSPONDER SYSTEM
**Herbert W. Sullivan, New York, N.Y., assignor to Skiatron Electronics & Television Corporation, New York, N.Y.**
**Continuation of Ser. No. 297,397, July 24, 1963, abandoned. This application Apr. 21, 1970, Ser. No. 30,599**
**Int. Cl. H04n** *7/10, 7/16;* **H04q** *9/00*
**U.S. Cl. 178—6** **59 Claims**



A system, method and apparatus for selectively interrogating transponders which are located at remote stations connected to a central interrogating station. In one embodiment, a number of transponders which make up a final group within a larger group of transponders, all attached to a common line running from the central station, are selected and simultaneously caused to retransmit modified interrogation signals in accordance with certain informational characteristics and the identity of each transponder retransmitting. The final group of transponders chosen to be interrogated is selected by first sending a number *n* of tones of a larger group of tones *m* down a branch line to partially activate some of the transponders. These tones are followed by a smaller number of tones *k* chosen from the group n to which only the transponders in the final group respond. The system is particularly designed for use in a subscriber television network and specific circuitry for accomplishing the logical and electrical functions required are described.

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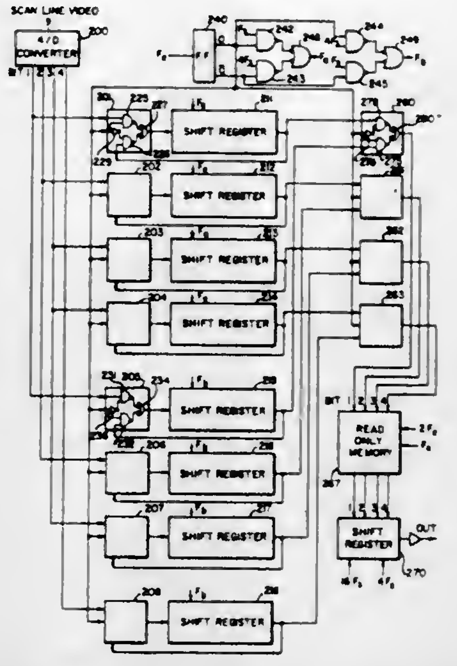
### 3,757,036
## ELECTROSTATIC RECORDING METHOD AND APPARATUS
**Albert H. Libbet, Eliot, Maine, and David R. Spencer, Waltham, Mass., assignors to EG & G, Inc., Bedford, Mass.**
**Filed Apr. 5, 1972, Ser. No. 241,187**
**Int. Cl. G11b** *9/08*
**U.S. Cl. 178—6.6 R** **49 Claims**



Method for electrostatic recording utilizing translatory motion between a stylus or styli and an electrostatic recording medium, including the steps of overlapping recorded lines and depositing a charge of one polarity on the recording medium through the stylus when a signal is to be recorded while depositing a charge of opposite polarity on the recording medium through the stylus during the absence of a signal to be recorded. Converting reflectance to suitable signals for area modulation provides grey scale recording. An exemplary apparatus for performing the method also is disclosed.

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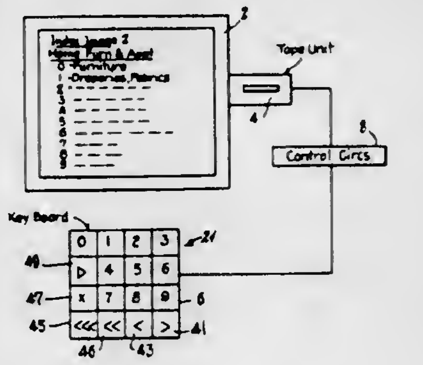
### 3,757,037
## VIDEO IMAGE RETRIEVAL CATALOG SYSTEM
**Norman Bialek, 14 Broadview Rd., Westport, Conn.**
**Filed Feb. 2, 1972, Ser. No. 222,746**
**Int. Cl. H04n** *1/10*
**U.S. Cl. 178—6.6 A** **14 Claims**

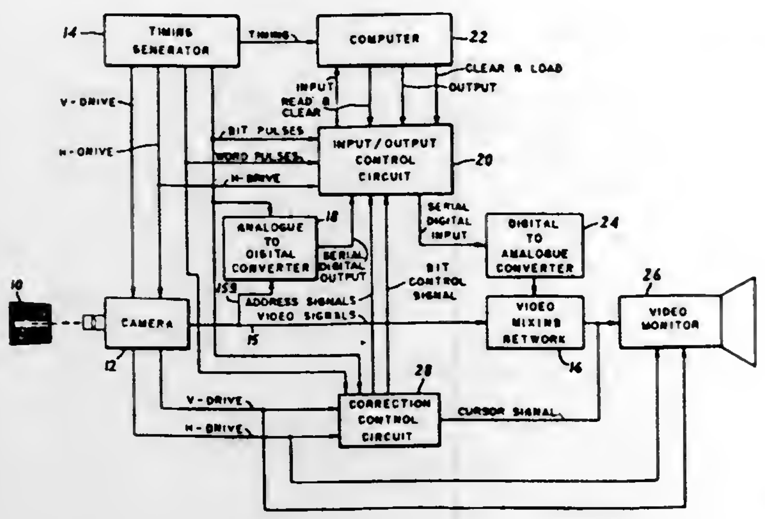


An image retrieval is provided for displaying any selected image stored on a tape cassette or cartridge, which may be a video tape, a photographic film tape, etc., using available display equipment, by keying, on a simple numerical keyboard, index numbers which indicate successively finer categories of subject matter until the desired item (or small group of items) is displayed, or alternatively, selecting any one of these items if its code number is known. Means are provided for selectively advancing or backing up the displays for a desired examination, and for rapid visual display scanning of any series of successive stored images.

### 3,757,038
## IMAGE ANALYZING APPARATUS

**George E. Jannery, Ridgefield, Conn.; John F. O'Donnell, Jr., White Plains, N.Y., and Herman David Parks, Norwalk, Conn., assignors to Time, Incorporated, New York, N.Y.**

**Filed Sept. 4, 1969, Ser. No. 855,127**
**Int. Cl. G06k** *15/20;* **H04n** *7/18*
**U.S. Cl. 178—6.8 5 Claims**



As described herein, television information signals are supplied concurrently to a display device for reproduction and to a converter network which converts the analogue television information signals into digital signals. The digital signals are then stored in the memory of a computer. To compare the stored signals with the developed television signals, means are provided for retrieving the computer-stored digital words, converting the signals into analogue signals and supplying the converted signals and the developed signals simultaneously to a display device. To correct or modify any portion of the reproduction of the converted signals in relation to the reproduction of the developed signals, a correction circuit is provided for altering the digital bits corresponding to the desired portion of the reproduction.

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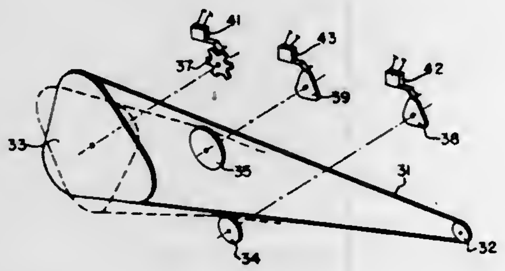
### 3,757,039
## SURVEILLANCE AND CRIME-DETERRENT SYSTEM

**Joseph A. Brewer, 4314 Elwood Dr. West, Tacoma, Wash.**

**Filed Feb. 11, 1970, Ser. No. 114,585**
**Int. Cl. H04n** *7/18*
**U.S. Cl. 178—6.8 1 Claim**



A surveillance and crime-deterrent system having several CCTV cameras with scanning motors hanging in a sales area which has one or more monitors for customer viewing of scenes viewed by the cameras, and which automatically random-selects the camera being monitored, varies the duration of the viewing periods, and varies the frequency and duration of the scanning cycle of the cameras.

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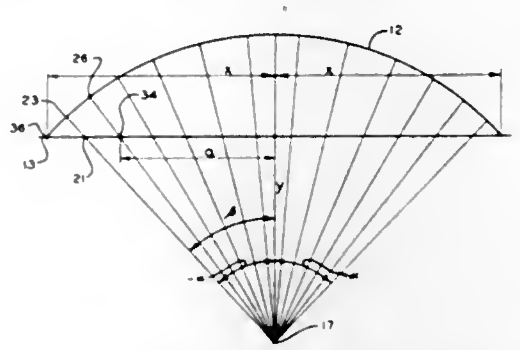
### 3,757,040
## WIDE ANGLE DISPLAY FOR DIGITALLY GENERATED VIDEO INFORMATION

**William S. Bennett, Chenango Bridge; Albert F. Collier, Harpursville, and Arthur Roger Taylor, Kirkwood, all of N.Y., assignors to The Singer Company, Binghamton, N.Y.**

**Filed Sept. 20, 1971, Ser. No. 182,024**
**Int. Cl. H01j** *29/70;* **H04n** *7/18*
**U.S. Cl. 178—6.8 3 Claims**



A method and apparatus for displaying information stored for display on a planar surface onto a wide angle spherical display by painting on the display a spherical raster of great circle formed by the intersections of planes passing through the center of the sphere and raster lines on a nominal display plane and retreiving the stored information non-linearly so that it will properly map on the great circles is shown.

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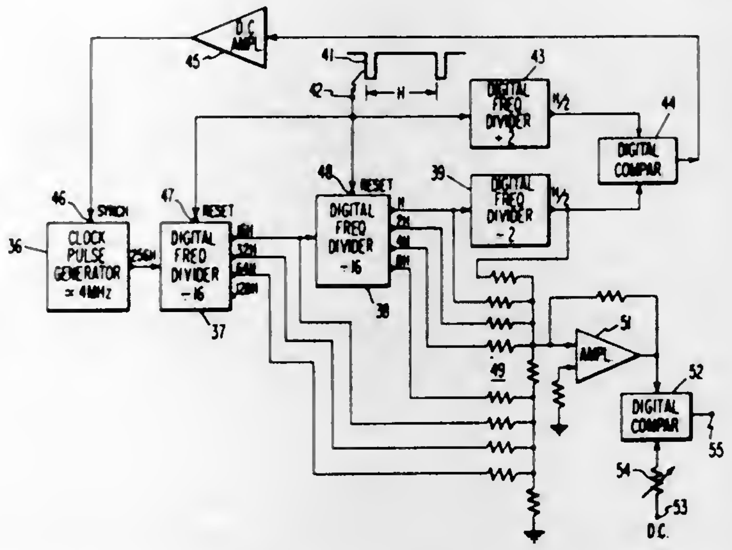
### 3,757,041
## TELEVISION SPECIAL EFFECTS CONTROL PULSE-GENERATING APPARATUS

**Laurence Joseph Thorpe, Marlton, and Joseph Allen Killough, Moorestown, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed May 28, 1971, Ser. No. 147,877**
**Int. Cl. H04n** *5/22*
**U.S. Cl. 178—7.2 9 Claims**

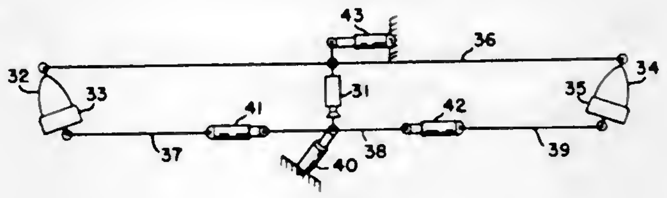


A digital frequency divider produces a plurality of divisional frequency pulses from clock pulses having a multiple of a camera scanning rate for conversion by a digital-to-analogue converter into a ramp type sawtooth-shaped timing wave at a frequency related to the camera scanning rate. An up-down type of digital frequency divider produces a triangle type sawtooth-shaped timing wave having the camera scanning rate frequency. The ramp type timing wave is multiplied by itself to produce a parabola type timing wave having a camera scanning rate frequency. Any of the timing waves is combined with variable direct current to generate pulses by which to control the transfer from the video signals of one camera to the video signals of another camera to produce composite video signals representative of selected parts of two scenes.

### 3,757,042
## PAN AND TILT UNDERWATER OPTICAL VIEWING SYSTEM WITH ADJUSTABLE SOURCE-RECEIVER SEPARATION AND ZOOM LENSES

**Clarence J. Funk, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Feb. 18, 1972, Ser. No. 227,635**
**Int. Cl. H04n** *7/18*
**U.S. Cl. 178—7.2 9 Claims**



An improved underwater, remotely-controlled camera is equipped with a coupled illumination system. The illumination system incorporates spaced light beam sources which are steered and focused to illuminate the field of view of the camera. Additionally, the light sources are equipped with polarization filters to polarize the light so as to cooperate with a similar device on the camera to eliminate backscattered light from particulate matter in suspension in the water between the camera and the object being viewed.

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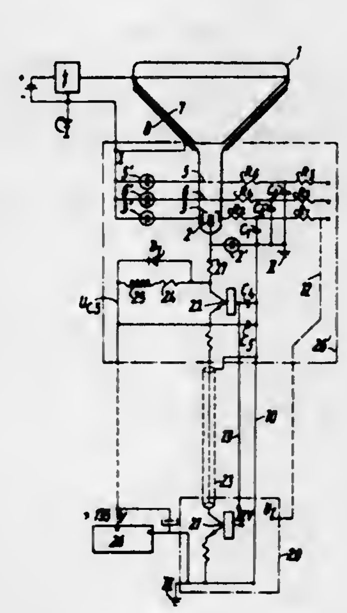
### 3,757,043
## TELEVISION RECEIVER WITH VIDEO AMPLIFIER PROTECTED FROM HIGH-VOLTAGE FLASH-OVER

**Dieter Spannhake, am Alten Bahnhof, Germany, assignor to Fernseh GmbH Darmstadt, Darmstadt, Germany**

**Filed Dec. 7, 1971, Ser. No. 205,672**
**Claims priority, application Germany, Dec. 10, 1970, P 20 60 749.2**
**Int. Cl. H04n** *5/44, 5/68*
**U.S. Cl. 178—7.5 R 8 Claims**



A system for protecting a video output amplifier from damage due to flash-over in a picture tube by providing separate electrically isolated ground points respectively for the electrodes of the tube controlled by and not controlled by the amplifier, and for capacitively coupling the power supply lines of the amplifier to one of the ground points.

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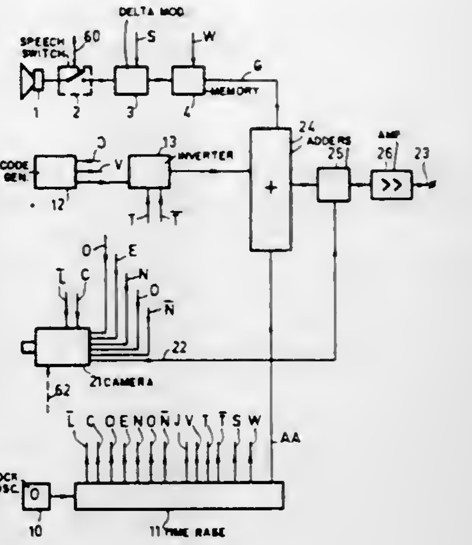
### 3,757,044
## VIDEOPHONE SYSTEM

**Nicolaas Alphonsus Maria Verhoeckx, Eindhoven; Herman Van Der Hoff, Hilversum; Cornelis Henricus Johannes Vos, and Johannes Wilhelmus, Coenders, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 2, 1971, Ser. No. 194,816**
**Claims priority, application Netherlands, Nov. 13, 1970, 7016627**
**Int. Cl. H04j** *3/06;* **H04n** *5/08, 7/18*
**U.S. Cl. 178—69.5 TV 8 Claims**



In a videophone system sound, video, synchronizing and signalling signals are to be transmitted through a single pair of telephone cables of existing telephone communications. In that case sound, synchronizing and signalling signals are transmitted in a digital form and video signals are transmitted in an analog form. It is then possible to achieve optimum picture quality at the given bandwidth of the existing telephone communications. If for the given bandwidth the video signal were also digitalized, then this would be at the expense of the picture quality. However, it is then necessary to transmit information regarding clock pulses for decoding at the receiver end. These clock pulses must be regenerated at the receiver end for which purpose a synchronizing circuit is provided. To enable this synchronizing circuit to run in or to come into an on-synchronizing state again, information regarding the clock pulses is also transmitted at the transmitter end during at least part of a line scan period namely the part commencing after the beginning of a field flyback period and ending when a field code word is transmitted. This period must be long enough to introduce the direct voltage component lost during transmission and it must be long enough to establish synchronisation because otherwise the field code word cannot be detected in the correct manner. Furthermore means are present at the receiver end (clamping circuit or highpass filter) so as to restore this direct voltage component during the said period of transmitting clockpulse information.

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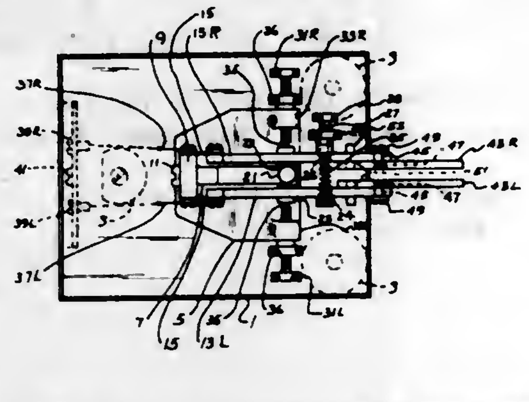
### 3,757,045
## TWIN LEVER RADIO-TELEGRAPH KEY UNIT

**William F. Brown, 1570 Fairmount Ave., St. Louis, Mo.**

**Filed Jan. 12, 1972, Ser. No. 217,187**
**Int. Cl. H01h** *21/86*
**U.S. Cl. 178—101 15 Claims**

A twin lever radio-telegraph key unit has the levers hinged at their ends remote from the paddles to an upright insulated block by flat flexible metal strips, and a single contact post is positioned between the levers intermediate the ends of the levers. An adjustable spring between the levers biases them to the open position against adjustable stops.



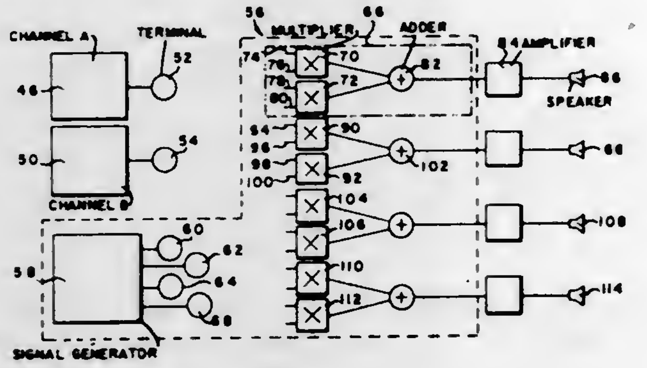
## 3,757,046
## MOVING SOUND SPEAKER SYSTEM INCLUDING A PLURALITY OF SPEAKERS AND A CONTROL SIGNAL GENERATING DEVICE

**Thomas H. Williams, 2015 Country Squire Dr., Urbana, Ill.**

**Filed July 23, 1970, Ser. No. 57,445**

**Int. Cl. H04r** *5/00*

**U.S. Cl. 179—1 G** **17 Claims**



A multi-speaker system where the sound emanating from the speakers is sequentially amplified by means of electronic control circuits to give the impression of sound movement around the listener.

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## 3,757,047
## FOUR CHANNEL SOUND REPRODUCTION SYSTEM

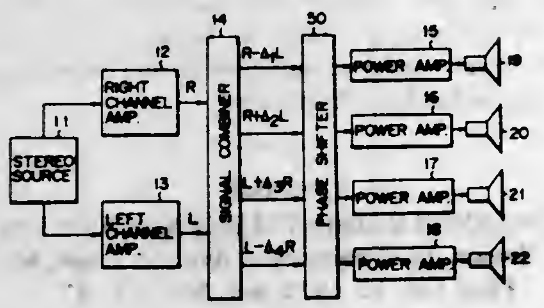
**Ryosuke Ito, and Toshiaki Ishida, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan**

**Filed May 18, 1971, Ser. No. 144,550**

**Claims priority, application Japan, May 21, 1970, 45/43010; June 24, 1970, 45/54490; July 16, 1970, 45/61979; July 16, 1970, 45/61980; Sept. 25, 1970, 45/83696; Sept. 25, 1970, 45/83698**

**Int. Cl. H04r** *5/00*

**U.S. Cl. 179—1 GQ** **11 Claims**



A sound reproduction system comprising a stereophonic source for generating right and left audio signals, signal combining means for combining said right and left signals to obtain four composite audio signals, phase shifting means for shifting the phases of said composite signals to prevent any of said composite signals from being substantially reversed in phase from the others, and four electroacoustic transducers located so as to define a listening area and supplied with said four composite signals respectively.

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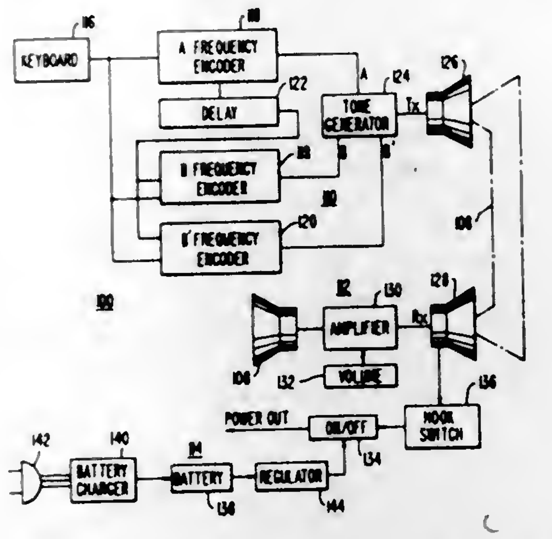
## 3,757,048
## ALPHANUMERIC AUDIO RESPONSE TERMINAL UNIT

**John A. McAvoy, Fenton; Eugene F. Banka, Livonia; Terry G. Griner, Westland, and Robert C. Hagemann, Farmington, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.**

**Filed Nov. 5, 1971, Ser. No. 196,041**

**Int. Cl. H04m** *11/06*

**U.S. Cl. 179—2 DP** **2 Claims**



Described herein is an audio terminal unit with an alphanumeric keyboard having a reticulated grid overlying the keyboard limiting key depression to a single key for entering data information to be encoded into a three of 12 frequency coding for communication with a central processor over telephone lines. The received signals are broadcast through an output speaker unit that is positioned and mounted within the terminal in such a manner as to reduce cross talk and magnetic coupling among the speaker, the acoustic and magnetic transducers and the circuit transformers.

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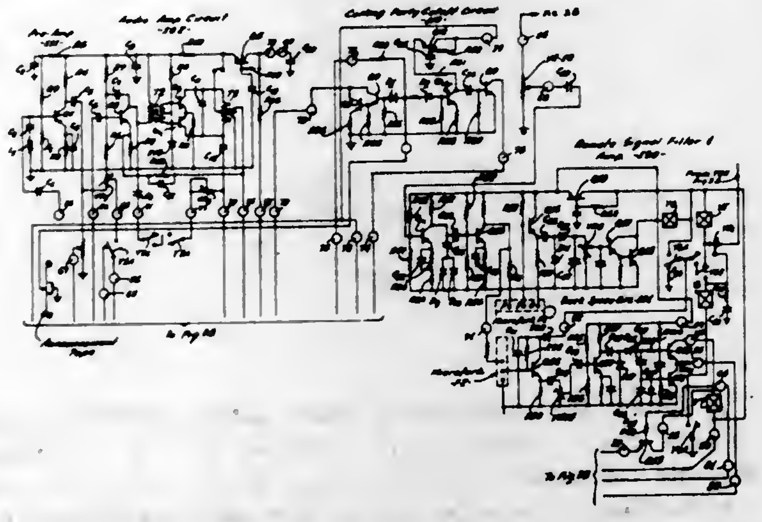
## 3,757,049
## TELEPHONE ANSWERING INSTRUMENT AND SYSTEM

**Elmer C. Bonsky, Long Beach, and Lawrence A. Curtis, Huntington Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.**

**Filed Oct. 14, 1971, Ser. No. 189,268**

**Int. Cl. H04m** *1/64*

**U.S. Cl. 179—6 E** **2 Claims**



A telephone answering instrument and system is provided which is constructed so that the calling party may record a message of any length within the recording capabilities of the message tape of the answering system, the system continuing to operate until the calling party actually hangs up. The instrument and system of the invention also has a feature in that it may be set to respond only after a predetermined number of phone rings has been received, in the event the user wishes to leave the equipment activated, and to answer the phone himself if he is available. In addition, the system may be operated from a remote point, whereby a caller sends a coded signal over the telephone line to cause the equipment to transmit to him the messages recorded on the message tape. The remotely controlled equipment to be described may be caused to backspace and then read over all the accumulated messages to the remote caller.

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## 3,757,050
## MULTICHANNEL TRANSMISSION SYSTEM USING CLOCK PULSES EACH OCCURRING WITHIN A DEFINITE TIME POSITION

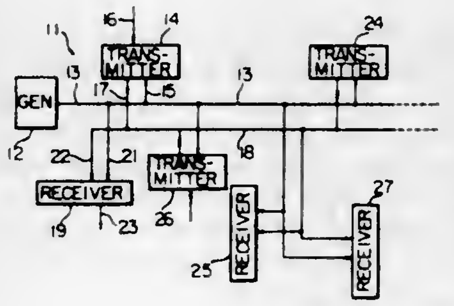
**Masanori Mizote, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan**

**Filed Dec. 1, 1971, Ser. No. 203,598**

**Claims priority, application Japan, Apr. 21, 1971, 46/25929; May 29, 1971, 46/37369**

**Int. Cl. H04j** *3/08*

**U.S. Cl. 179—15 AL** **5 Claims**



A multichannel transmission system comprising a generator for supplying to all the transmitters and receivers with a reference signal consisting of a plurality of clock pulse combined with a periodic sequential pulse signal. Each transmitter produces amplitude-modulated carrier pulses each occurring within a time position defined by the clock pulses in accordance with a given information signal to be conveyed. Each receiver opens its gate the same time position as the associated transmitter so as to receive and demodulate the carrier pulses from the transmitter.

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## 3,757,051
## REGENERATIVE REPEATER FOR PCM SIGNALS TRANSMITTED IN THE ALTERNATE POLARITY MODE

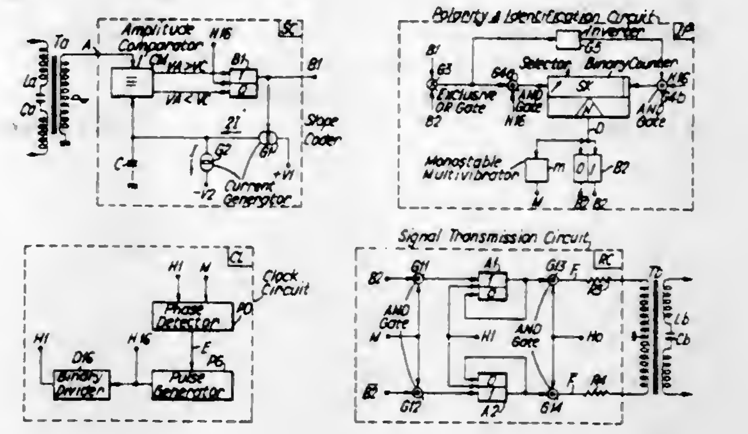
**Pierre Girard, Paris; Claude P. H. Lerouge, Maurepas, and Marc A. Regnier, Aulnay-sous-Bois, all of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Nov. 23, 1971, Ser. No. 201,557**

**Int. Cl. H04b** *3/38*

**U.S. Cl. 179—15 AD** **8 Claims**

A regenerative repeater for alternate polarity PCM signals is disclosed that does not require an equalizer or amplifier. The PCM signals are directly detected by (1) determining whether the slope of the pulse is greater or less than a reference value and (2) if its polarity is opposite to that of the preceding pulse. The detected signals are reshaped by a monostable multivibrator and are retimed by a phase-locked loop. The repeater is completely digital except for the slope comparator.



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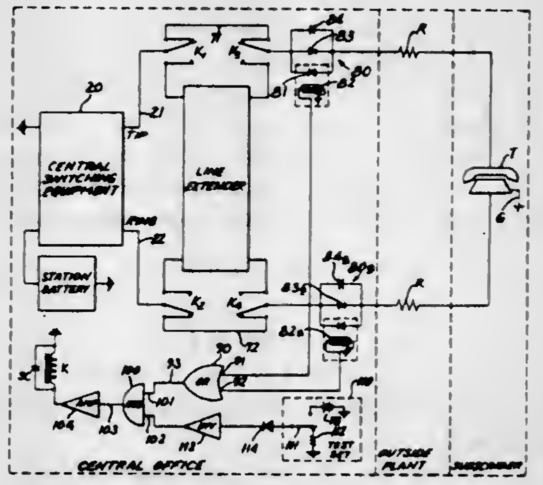
## 3,757,052
## TELEPHONE LINE EXTENDER WITH TEST-THRU CAPABILITY

**Gordon R. Tothill, Chatham, Ontario, Canada, assignor to Electro Dynamics & Telecom, Ltd., Ontario, Canada**

**Filed Oct. 19, 1971, Ser. No. 190,533**

**Int. Cl. H04m** *3/24*; **H04b** *3/36*

**U.S. Cl. 179—16 F** **11 Claims**

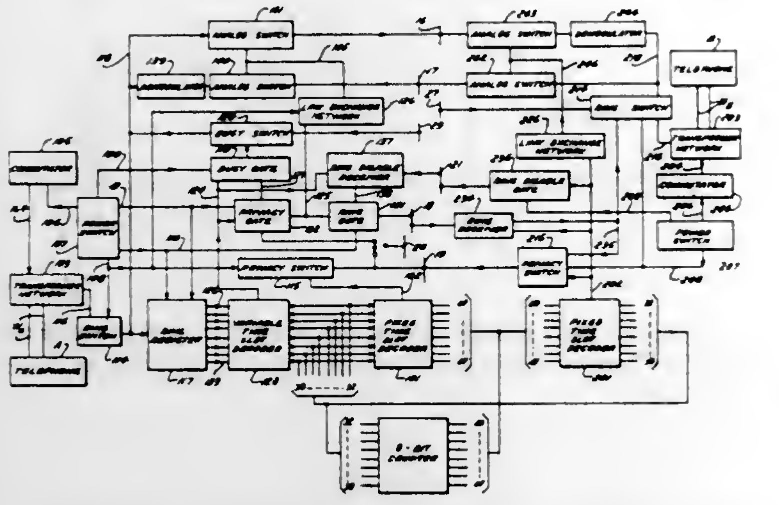


A line, or loop, extender for a telephone system which is intended for connection in the tip and ring lines of a remotely located telephone set thereby to increase the line current to a level capable of more reliable operation of relays and the like in the central office switching equipment. A diversion relay is provided having contacts interposed between the line extender and the lines so connected that when the relay is in a first state the line extender is connected in series with the lines and so that when the relay is in its opposite state corresponding lines are connected together to form a metallic by-pass around the line extender completely isolated from the latter to establish a standard condition for the making of tests upon the lines. In the preferred embodiment the bridging relay is caused to be in its normal state during ringing to provide a "metallic" i.e., directly connected ringing circuit. A current detecting relay in the subscriber's lines is connected to the diversion relay so that when the receiver is raised at the subscriber's telephone set the line extender is connected into the circuit to raise the current to a reliable level. For purposes of isolation the current detecting relay preferably consists of a light-emitting diode plus photocell.

### 3,757,053
## TIME MULTIPLEXED SAMPLED DATA TELEPHONE SYSTEM

**Richard B. Pell, Wantagh, N.Y.; Steven T. Churchill, North Bennington, Vt., and William Seeley, Williamstown, Mass., assignors to Delta Communications Corp., Plainview, N.Y.**

**Filed Sept. 10, 1971, Ser. No. 179,344**
**Int. Cl. H04q** *11/00*; **H04m** *3/42*
**U.S. Cl. 179—18 J** **24 Claims**



In a telephone system, audio signals to and from each telephone in the system are connected to a time division, amplitude modulated, multiplexed sampled data transmitting and receiving means by a pair of wires. Each telephone in the system may be used to receive paging or music signals, to make a call when it has been called, to intercept a conversation between two other telephones, to forward a call intended for it to another telephone, to complete a call directed to one of a group of telephones with any one telephone in the group which is not busy, and to provide a hands free operation at a called telephone. The various uses are selected by connecting a D.C. voltage, via each pair of wires, to each of the telephones, having the telephones draw currents according to desired modes of operation, and having the time multiplexed transmitter process audio signals according to the currents drawn.

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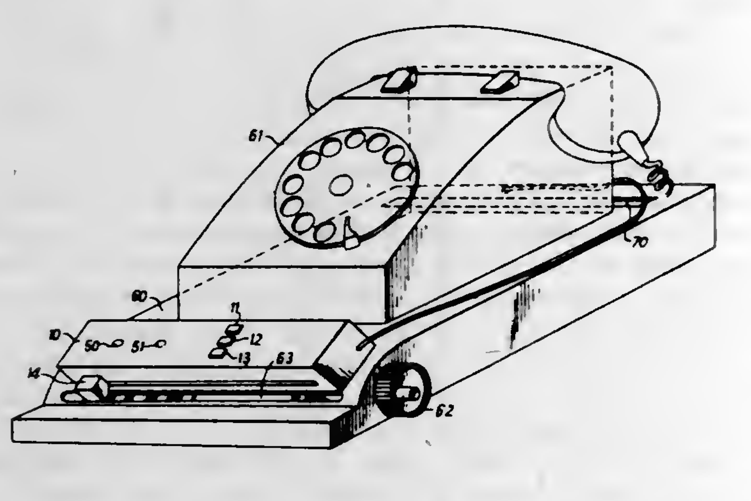
### 3,757,054
## AUTOMATIC DIALLER

**Geoffrey William Harries, 101 Avenue de Paris, 94 Saint-Mande, France**

**Filed Oct. 22, 1971, Ser. No. 191,866**
**Claims priority, application France, Nov. 6, 1970, 7040100**
**Int. Cl. H04m** *1/23*
**U.S. Cl. 179—90 B** **9 Claims**



An automatic telephone dialling apparatus comprises an optical scanning means capable of scanning dialling information in coded form, and a pulse generator connected to said scanning means controlled thereby, said pulse generator having an output connectible with a telephone. This enables the coded information, which may be typed or printed on strips, to be scanned to thereby initiate dialling of the required number on the actuation of a press button.

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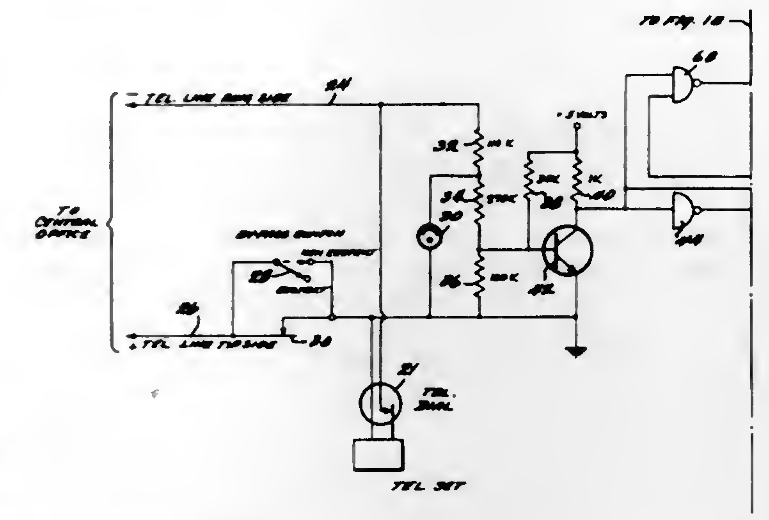
### 3,757,055
## ELECTRONIC TOLL RESTRICTOR

**George A. McCann, 339 Okaloosa Rd.; James E. Landis, 316 Stacy Cir., and Jimmie S. Kimbrell, 308 Stacy Cir., all of Walton Beach, Fla.**

**Filed Mar. 21, 1972, Ser. No. 236,735**
**Int. Cl. H04m** *1/66*
**U.S. Cl. 179—90 D** **12 Claims**



An apparatus for preventing unauthorized long distance calls from a conventional dial or push-button telephone including a switch connecting the telephone to the telephone lines, a counting circuit which counts the number of digits dialed and causes the switch to be opened when the count reaches eight, and a logic circuit which also causes the switch to be opened whenever the digit zero is among the first three digits dialed. The apparatus can be disposed either at the users facility or at a central telephone exchange.

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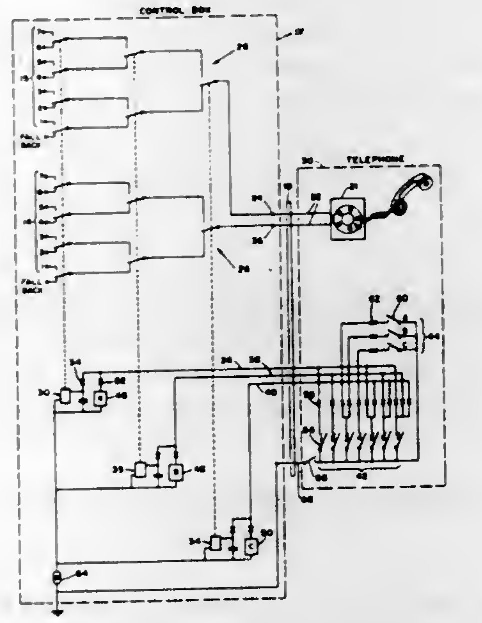
### 3,757,056
## BIPOLAR MULTIPLEXING CIRCUIT FOR TELEPHONE LINE SELECTION

**John D. Foulkes, assignor to Telecommunication Engineering Corporation, Burlington, Mass.**

**Filed Mar. 16, 1972, Ser. No. 235,236**
**Int. Cl. H04q** *3/00*
**U.S. Cl. 179—99** **2 Claims**



A telephone is selectively connectable with any one of a plurality of central office lines through tree-connected relay circuits located in a remote control box. Line selection switches located at the telephone operate the relay circuits over control leads, each lead being adapted for two functions by a pair of branch circuits with rectifiers connected to the lead at each end.

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## ERRATUM

For Class 179—100 see:
Patent No. 3,757,030

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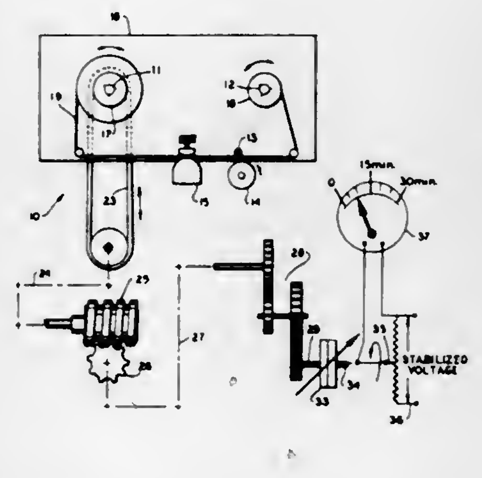
### 3,757,057
## RECORDER INDEXING APPARATUS WITH A CUMULATIVE INDICATION OF THE AMOUNT OF TAPE WITHDRAWN FROM THE SUPPLY REEL

**Ronald F. Fleming, assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.**

**Filed Mar. 17, 1972, Ser. No. 235,541**
**Int. Cl. G11b** *27/14, 15/18*
**U.S. Cl. 179—100.2 R** **14 Claims**



Indexing apparatus for use with a tape recorder or the like, and providing a cumulative indication of the amount of tape withdrawn from a supply reel. The apparatus is coupled to the tape recorder spindle on which a tape supply reel is mounted, and includes a one-way drive arrangement which permits an indicator to be advanced only when the spindle is being moved by the initial withdrawal of tape from the supply reel. The indicator can be unchanged by movement of the spindle to rewind tape onto the supply reel, so that the indicator always provides a cumulative indication of the amount of tape initially withdrawn from the supply reel. Apparatus is provided to reset the indicator to zero or another starting point.

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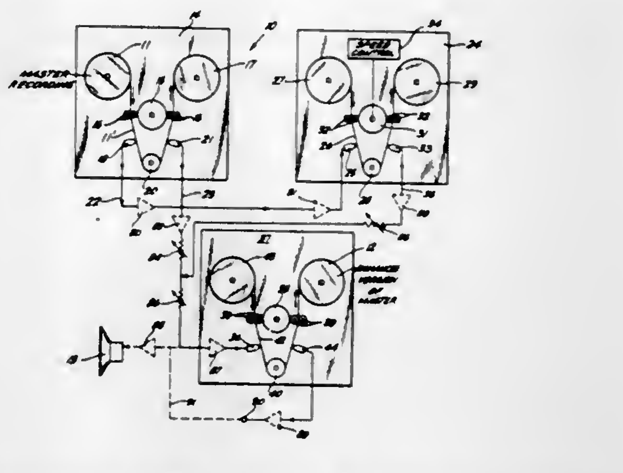
### 3,757,058
## RECORDING ENHANCEMENT SYSTEM USING TWO TAPE PLAYING DEVICES RUNNING AT DIFFERENT BETWEEN-HEAD TRANSIT TIMES

**Brian D. Ingoldsby, Los Angeles, Calif., assignor to Ira Goldenring, Sherman Oaks, Calif., a part interest**

**Filed Apr. 19, 1971, Ser. No. 135,132**
**Int. Cl. G11b** *23/18, 27/08, 21/00*
**U.S. Cl. 179—100.2 RE** **11 Claims**

A system for enhancing a magnetic tape master recording played back on an apparatus having first and second reproduce heads respectively spaced along the direction of tape travel. The playback output of the first reproduce head is recorded by a magnetic tape recording apparatus having a third reproduce head situated downstream of the record head and adapted to play back information just recorded. By adjusting the between head tape transit time in the recording apparatus to be slightly different from that of the master playback apparatus, and combining the playback outputs of the second and third reproduce heads, an enhanced version of the master recording is produced. The system also may be used to produce "quad" sound from a prerecorded two-channel stereophonic tape.



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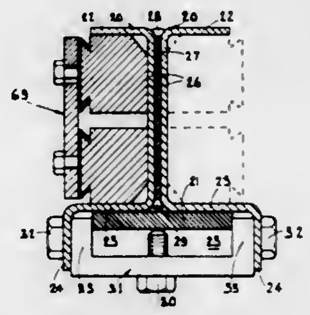
### 3,757,059
## ELECTRIC CONDUCTOR RAILS

**George Robert Falkiner-Nuttall, Richmond, Surrey, England, assignor to Tracked Hovercraft Limited, London, England**

**Filed Sept. 7, 1971, Ser. No. 178,107**
**Claims priority, application Great Britain, Sept. 8, 1970, 42,979/70**
**Int. Cl. B60m** *1/30*
**U.S. Cl. 191—29** **18 Claims**



An electric conductor rail for engagement by opposed current collectors comprises two contact members of a hard-wearing material having a substantial electrical conductivity. The contact members have channel-shaped portions arranged back-to-back to receive the current collectors, and an integral extension of a first of the arms of each channel-shaped portion. The integral extensions form a channel in which is received a conductor member which has a high electrical conductivity and which is forced into intimate contact with the first arms at least at intervals along the conductor rail.

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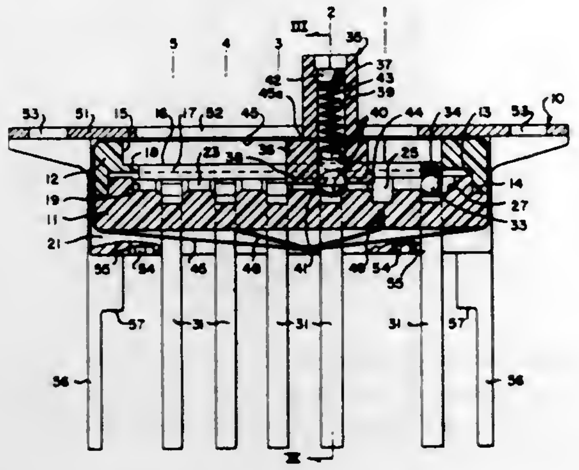
### 3,757,060
## SLIDE SWITCH ASSEMBLY WITH AUXILIARY SWITCH DEACTIVATED BY CONTROLLER IN EXTREME POSITION

**Joseph N. Ianuzzi, Vestal, and Donald A. Mohney, Afton, both of N.Y., assignors to The Union Corporation, Verona, Pa.**

**Filed June 12, 1972, Ser. No. 262,097**
**Int. Cl. H01h** *15/02, 9/04*
**U.S. Cl. 200—16 C** **13 Claims**

The specification discloses a miniaturized multi-position slide switch adapted for low voltage, low current applications, for example, so-called "shirt pocket" electronic calculators employing printed circuitry. Switch control elements of uniform configuration are arranged in a row in facing pairs in an insulating base, while an insulating cover for the base carries a track for a sliding contactor having a spring-biased steel ball. The base has a central longitudinal groove of V-shaped cross section in which the steel ball rides. Detenting is accomplished by a declining bevel or ramp connecting the V-groove to the V-shaped seat formed between the pairs of switch contact elements. One of the pairs of contact elements has a connector biased into normally closed contact therewith. At one extremity of its travel, the sliding contactor engages the connector and disengages it from contact with the contact elements. A dust shield in the form of an endless tape longitudinally surrounds the base and cover and has an opening through which the handle of the sliding contactor extends. The tape shield is thus shifted in an endless path by shifting of the sliding contactor.



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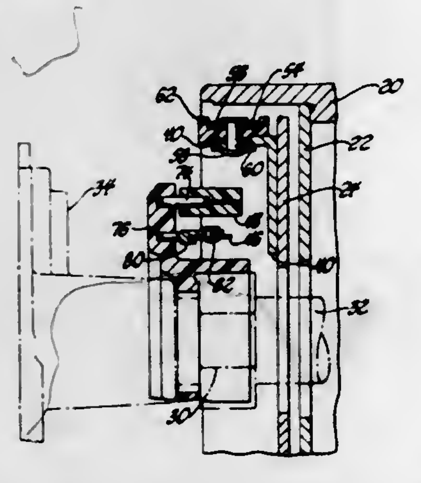
### 3,757,061
### SNAP ACTION IGNITION CONTACT ASSEMBLY

**Edwin F. Clemett, Jr., Detroit, Mich., assignor to McCord Corporation, Detroit, Mich.**

**Filed Dec. 20, 1971, Ser. No. 212,138**

**Int. Cl. H01h** *19/60*

**U.S. Cl. 200—19 A** **6 Claims**



An ignition system distributor is provided having snap action contact closure and separation. A movable contact carried by a resilient cantilever is snapped into and out of contact with a fixed contact under the control of a cam arrangement. A first cam and cam follower alternately bias the resilient cantilever to urge the movable contact toward and away from the fixed contact. A second cam and cam follower restrain movement by the movable contact except during predetermined times. The two cams and cam followers cooperate such that the movable contact is biased toward the fixed contact but restrained from moving into engagement until a predetermined time when it is snapped into engagement. Subsequently, the movable contact is urged away from the fixed contact but restrained from separating until a predetermined time when separation is accomplished by snap action. Accordingly, snap action closure and separation of the ignition contacts is effected.

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### 3,757,062
### ELECTRIC ROTARY SWITCH

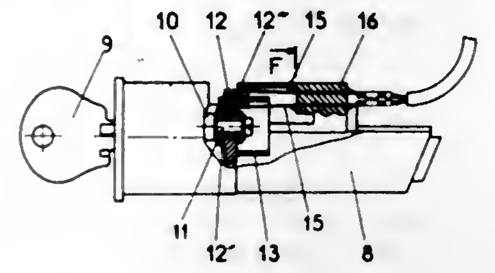
**Paul Lipschutz, Neuilly-sur-Seine, France, assignor to Societe D'Exploitation Des Brevets Neiman, Neuilly-sur-Seine (Hauts de Seine), France**

**Filed Mar. 21, 1972, Ser. No. 236,719**

**Claims priority, application France, Mar. 24, 1971, 7110308**

**Int. Cl. H01h** *27/00*

**U.S. Cl. 200—44** **6 Claims**



This electric rotary switch comprises a double track formed in the switch rotor and associated with sets of twin resilient blades.

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### 3,757,063
### OUTPUT TAPPING UNIT FOR USE WITH ELECTRIC DISTRIBUTION TRACKS

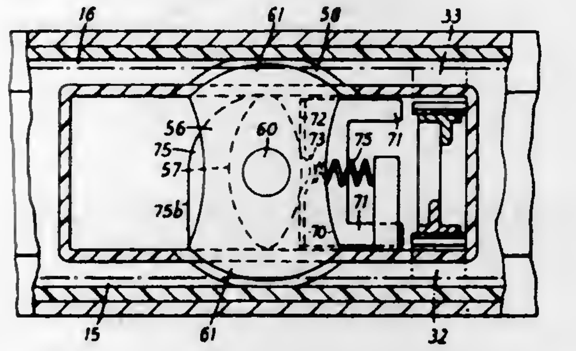
**Derek James Hart; Robert Davis, and Wilhelm Henry Valentine Sanhen, all of London, England, assignors to Thorn Lighting Limited, London, England**

**Filed Aug. 3, 1972, Ser. No. 277,753**

**Claims priority, application Great Britain, Oct. 18, 1971, 48,426/71**

**Int. Cl. H01r** *19/50*

**U.S. Cl. 200—51.07** **10 Claims**



An electrical fitting enabling power to be tapped from an electric distribution trunking has movable contacts carried by rockers which move, following a scissor action, to set the contacts to on and off positions. The fitting has a rotatable clamp to allow the fitting to be secured to the trunking and has an interlocking arrangement effective between the clamp and the rockers to ensure:

1. that the clamp cannot be released when the contacts are set to their on positions; and

2. that the contacts are prevented from being set to their on positions when the clamp is released.

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### 3,757,064
### SWITCH ACTUATING MECHANISM RESPONSIVE TO OPENING AND CLOSING OF A DOOR

**Hisashi Ogawa, Kuwana, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Aichi-ken, Japan**

**Filed Mar. 22, 1972, Ser. No. 236,923**

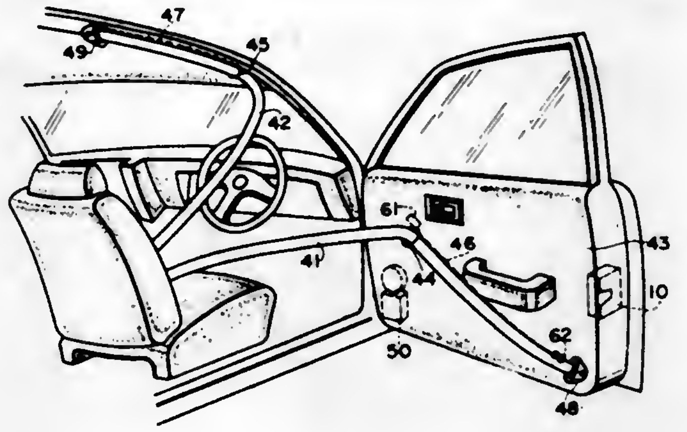
**Claims priority, application Japan, Oct. 26, 1971, 46/99345**

**Int. Cl. H01h** *27/00*

**U.S. Cl. 200—61.64** **3 Claims**

A switch actuating device responsive to the opening and closing of the door of a motor vehicle or the like.

The device comprises a striker of a door lock mechanism, a contact disposed in a striker receiving gap of the door lock mechanism and slidable in a full latch stroke section of the striker, the contact being normally urged to move toward an opening of the gap by the biasing force of a spring, and an actuator of a limit switch disposed in the path of rearward movement of the contact.



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### 3,757,065
### DEVICE FOR INDICATING THE LOADING OF A VEHICLE SEAT

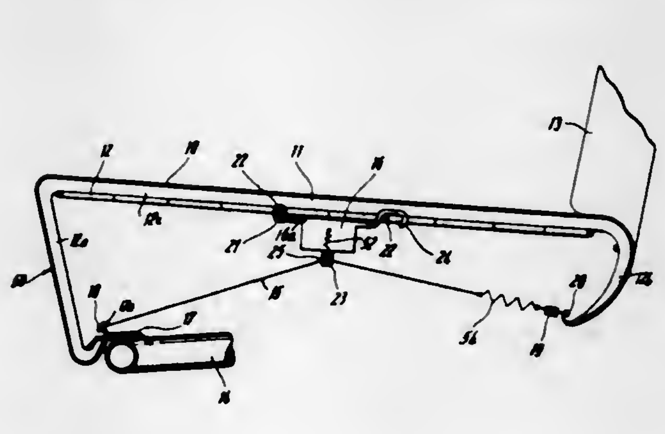
**Dieter Eberle, Tamm/Wurttemberg; Dieter Hanselmann, and Hans Prohaska, both of Bietigheim/Wurttemberg, all of Germany, assignors to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Postfach, Bietigheim, Germany**

**Filed Apr. 20, 1972, Ser. No. 245,907**

**Claims priority, application Germany, Apr. 22, 1971, P 71 15 514.1**

**Int. Cl. H01h** *3/14*

**U.S. Cl. 200—85 A** **9 Claims**



A device for indicating a load on a seat, such as whether it is occupied by a passenger of a motor vehicle comprises, a seat having an interior spring suspension with an indicator switch secured to the suspension and depending therefrom. The indicator switch includes an actuator member which is held in one operating position by a cable which is connected to the actuating member and tensioned by a connection to the spring suspension frame of the seat. The cable holds the actuator member in a position, for example, in which the switch is actuated, and a return spring acts to move the actuating member in an opposite direction to a deactuated position when the seat is loaded which causes the indicator to flex with the seat spring and move in a direction to relax the tension on the holding cable.

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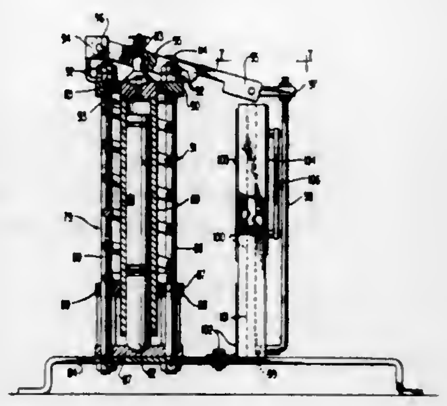
### 3,757,066
### SAFE LOAD CONTROL SYSTEM FOR TELESCOPIC CRANE BOOMS

**Russell L. Sterner, Greencastle, Pa., and William L. Lowe, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.**

**Division of Ser. No. 785,145, Dec. 19, 1968. This application Nov. 29, 1971, Ser. No. 202,983**

**Int. Cl. H01h** *35/38*

**U.S. Cl. 200—82 R** **8 Claims**



An overload prevention and indicator system for telescopic boom cranes of the stationary and/or mobile types in which the boom is pivotally raised and lowered in vertical planes by hydraulic lift motor means, the system including first electrical circuit means responsive to complete a selected one of a plurality of circuits corresponding to the length of the boom, the plurality of circuits being respectively connected in series to a corresponding plurality of second electrical circuit means, each representative of a predetermined increment of boom length, responsive to angular position of the telescopic boom in the vertical plane. The plurality of angular position outputs of each second electrical circuit means are connected according to predetermined crane overload information to a plurality of third circuit means representative of pressure range increments, and a pressure switch responsive to fluid pressure in the lift motor means, which is indicative of boom load, is connected to successively operate said third circuit means as the fluid pressure in said lift motor means increases and actuate an indicator and render inoperative selected operations of the crane when the crane approaches an overload or tipping condition at the particular length, angle and load condition at which it is operating at any instant.

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### 3,757,067
### SWITCH DEVICE FOR INDICATING THE PRESENCE OF A LOAD ON THE SEAT OF AN AUTOMOTIVE VEHICLE

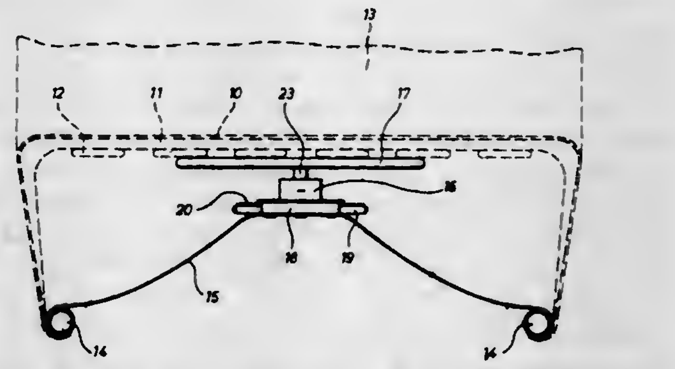
**Dieter Eberle, Tamm/Wurttemberg, and Dieter Hanselmann, Bietigheim, both of Germany, assignors to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany**

**Filed Apr. 13, 1972, Ser. No. 243,673**

**Claims priority, application Germany, Apr. 20, 1971, G 71 14 940.1**

**Int. Cl. H01h** *3/14*

**U.S. Cl. 200—85 A** **4 Claims**



The switch device is useful with a resilient automotive seat having a supporting frame and including a spring suspension supporting upholstery covered by a seat cover. A band spring extends transversely of the seating surface of the seat, in the form of an upwardly extending arch. A support is mounted on the band spring at the top of the arch, and carries a pressure switch having an actuating member. A pressure plate on the actuating member engages the underside of the spring suspension or the seating surface. A bearing bush is secured to the band spring and receives a bearing connected to the pressure switch so that the pressure plate, secured to the switch actuator, can adapt itself to inclinations of the seating surface without the actuating member of the pressure switch being unequally loaded.

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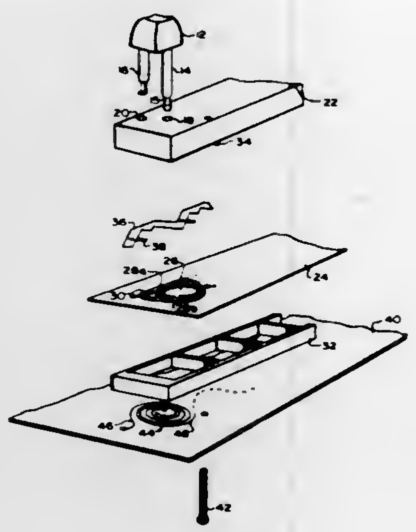
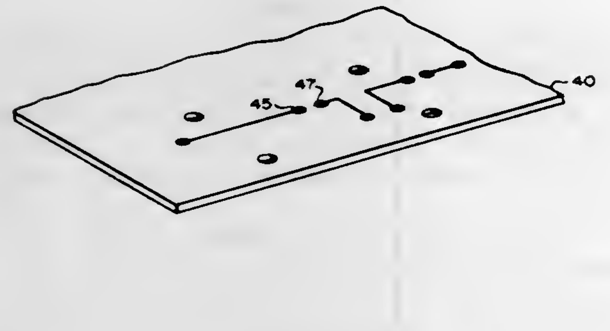
### 3,757,068

## KEYBOARD ACTUATING MECHANISM WITH PARTICULAR FEEL AND CONTACT MECHANISMS

**Bernard E. Musch, and Donn D. Lobdell, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Apr. 15, 1971, Ser. No. 134,181**
**Int. Cl. H01h** *13/50, 3/50, 5/18*
**U.S. Cl. 200—159 R** **7 Claims**





A plurality of plates and springs are formed in a strip of metal with the springs suspending the plates from the strip. The strip is supported by an insulating support structure which acts as a guide for a plurality of shafts, each shaft being attached to a key. When a key is depressed, the shaft attached to that key displaces a corresponding plate toward one of a plurality of circuit elements on a printed circuit board, which is also fastened to the support structure. An additional shaft is also attached to each key and is guided by the support structure. When a key is depressed the additional shaft deflects a resilient member which exhibits a sudden change in resilience in response to being deflected. This sudden change in resilience provides a tactile signal to the user indicating that the key has been depressed.

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### 3,757,069

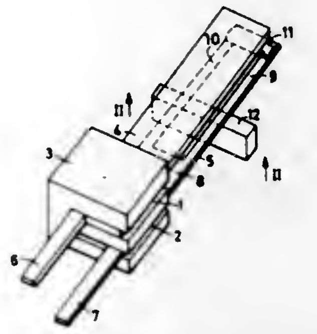
## CONTACT SPRING SET

**Hans Werner Reuting, Peine, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany**

**Filed Apr. 11, 1972, Ser. No. 242,972**

**Claims priority, application Germany, Apr. 21, 1971, P 21 19 428.5**

**Int. Cl. H01h** *1/26*
**U.S. Cl. 200—166 J** **4 Claims**



A contact spring set has a generally rectilinear moving contact spring one end of which is movable into engagement with a co-operating counter-contact, the moving contact spring being provided at that end with a transverse contact of linear form extending at right angles to the longitudinal direction of the spring. The moving spring contact is in the form of two transversely spaced-apart parallel spring arms and the transverse linear contact extends between these two spring arms and joins them.

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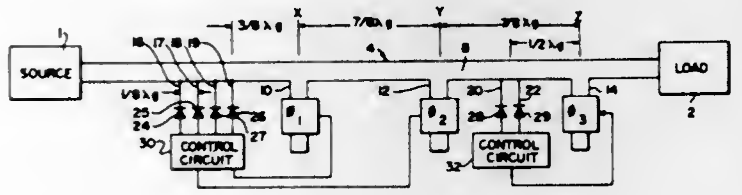
### 3,757,070

## MICROWAVE HEATING APPARATUS WITH TUNING MEANS

**Allan Leroy VanKoughnett, and Walter Wyslouzil, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**

**Filed June 19, 1972, Ser. No. 263,975**
**Int. Cl. H05b** *9/06*
**U.S. Cl. 219—10.55** **2 Claims**



In a microwave heating apparatus the tuning means, connecting the microwave source to the microwave heating means in which a material is heated by exposure to microwave energy, comprises a main section of waveguide having first, second and a third branch waveguides each having an adjustable tuning stub in the form of a rotatable vane in a circular extension of each branch waveguide. A group of four sensing probes attached to the main section of waveguide between the source and first branch adjusts the effective electrical lengths of the tuning stubs in the first and second branch waveguides, and a further two sensing probes between the second and third branch waveguides adjust the effective electrical length of the tuning stub in the third branch waveguide.

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### 3,757,071

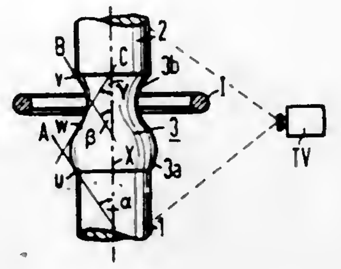
## METHOD FOR CRUCIBLE FREE ZONE MELTING

**Hans Stut, Grobenzell, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Mar. 2, 1972, Ser. No. 231,182**

**Claims priority, application Germany, Mar. 22, 1971, P 21 13 720.2**

**Int. Cl. H05b** *5/00*
**U.S. Cl. 219—10.43** **11 Claims**



Method for crucible free zone melting of a vertically oriented semiconductor rod, wherein the melting zone is monitored by a television camera and the information taken from the electric pulses supplied by the television cameras, not only regarding the cross section of the crystallizing material, but regarding the angle of two tangents of the melting zone profile and are used for the regulation and control of the melted zone. One tangent is applied in the crystallization boundary and the other tangent, beyond the bulge of the melting zone at a distinctive point of the melting zone profile, in particular at an inversion point.

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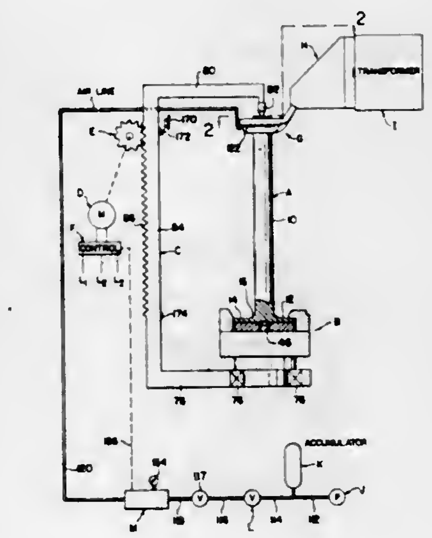
### 3,757,072

## INDUCTION HEATING APPARATUS AND METHOD

**Anthony F. DelPaggio, Parma, Ohio, assignor to Park Ohio Industries, Inc., Cleveland, Ohio**

**Filed Aug. 10, 1972, Ser. No. 279,700**
**Int. Cl. H05b** *5/02*
**U.S. Cl. 219—10.41** **13 Claims**



A desirable relative relationship between an inductor and a workpiece surface is measured by directing an air jet toward the workpiece surface from an outlet of an air delivery means stationarily positioned adjacent the inductor. Back pressure in the air delivery means is sensed to indicate the existence of desired relative relationship between the inductor and workpiece surface.

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### 3,757,073

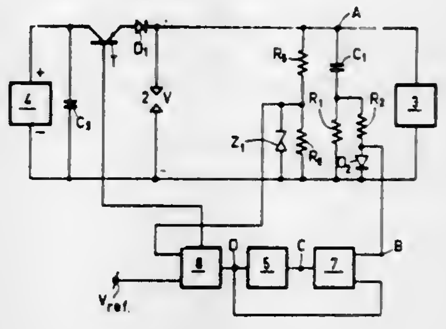
## CONSTANT-CURRENT-DENSITY METHOD OF MACHINING A WORK-PIECE BY MEANS OF SPARK EROSION

**Cornelis van Osenbruggen, and Adriaan Abraham Van der Veeke, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Jan. 21, 1971, Ser. No. 108,525**

**Claims priority, application Netherlands, Feb. 4, 1970, 7001538**

**Int. Cl. B23p** *1/08*
**U.S. Cl. 219—69 C** **16 Claims**



A method and a device for machining a work-piece by means of spark erosion are described, in which a breakdown is produced in a discharge space formed by the work-piece and a tool electrode which are connected to a supply source. It is shown that the current density in the discharge space may be maintained substantially constant by switching a stabilized voltage source across the discharge space at the instant of breakdown.

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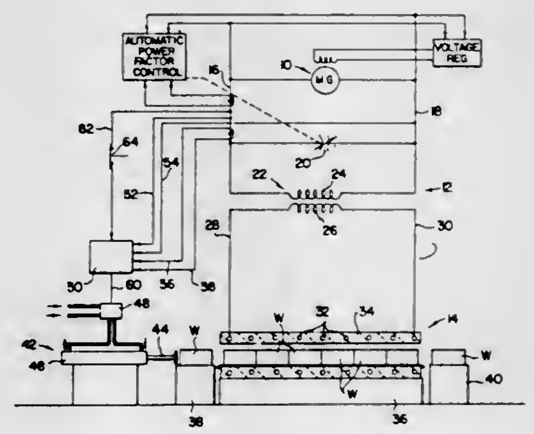
### 3,757,074

## SYSTEM FOR CONTROLLING RELATIVE DISPLACEMENT BETWEEN WORKPIECES AND AN INDUCTOR

**Robert J. Kasper, Seven Hills, and William H. Killian, Parma Heights, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio**

**Filed Apr. 28, 1972, Ser. No. 248,423**
**Int. Cl. H05b** *1/02*
**U.S. Cl. 219—10.77** **10 Claims**



A system is disclosed for controlling the intermittent feeding of workpieces in magnetically coupled relationship with respect to an induction heating coil. A pusher mechanism is provided and is reciprocated intermittently to push a workpiece to be heated into one end of the coil and to displace workpieces in the coil so that the workpiece adjacent the other end thereof is discharged. Intermittent reciprocating movement of the pusher mechanism is controlled by an electric signal representative of the energy input to the workpieces, and which signal is derived by creating a power signal representative of the instantaneous power supplied to a workpiece and integrating the power signal with respect to time. When the energy input signal reaches a preselected value the pusher mechanism is actuated and the time integrating portion of the control circuitry is interrupted and reset. The power signal is then again integrated with respect of time to create another energy signal for subsequently actuating the pusher mechanism.

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### 3,757,075
### METHOD FOR PRODUCING SMALL CONTACTS OF UNIFORM THICKNESS FOR THICK-FILM CIRCUITS

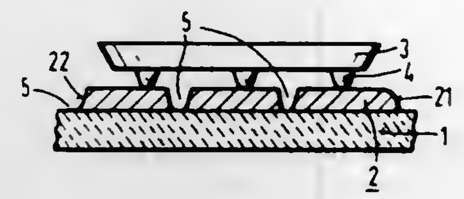
**Hartwig Muat, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Feb. 1, 1971, Ser. No. 111,538**

**Claims priority, application Germany, Feb. 3, 1970, P 20 04 857.1**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 219—121 LM** **1 Claim**



A method of producing small contacts of uniform thickness for thick film circuits has the steps of applying interconnected contacts to a substrate of nonconductive material, firing the contacts to secure the later to the substrate, and subdividing the interconnected contacts to form mutually separated individual contacts.

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### 3,757,076
### VACUUM CHAMBER WITH STATIC MOBILE SEALING JOINTS

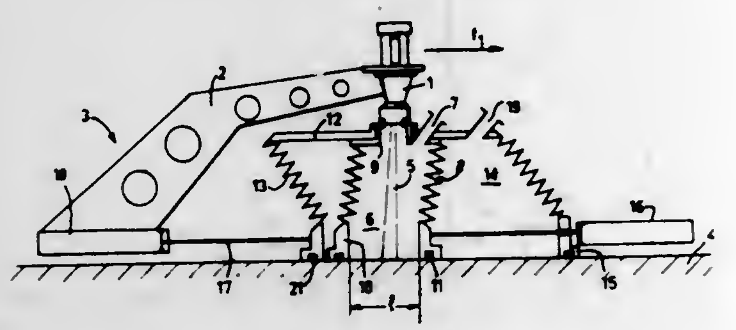
**Jean-Pierre Peyrot, 1, avenue de la Division du General Leclerc, Villejuif, Val-de-Marne, France**

**Filed Dec. 20, 1971, Ser. No. 209,648**

**Claims priority, application France, Dec. 21, 1970, 7046061**

**Int. Cl. B23k** *15/00*

**U.S. Cl. 219—121 EB** **3 Claims**



Vacuum chamber for welding apparatus comprising two bellows skirts coupled together by an upper collar on the top of an electron gun, the lower part of the skirts being located inside one of the others, and mobile continuous joints at the bottom of the skirts being at will alternatively pressed in a fluid tight manner in a static condition against a working table during the whole working operation where the gun walks along a welding line on the table.

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### 3,757,077
### APPARATUS FOR CUTTING SLIVERS OF CONTINUOUS TEXTILE FILAMENTS BY MEANS OF FOCALIZED LASER RAYS

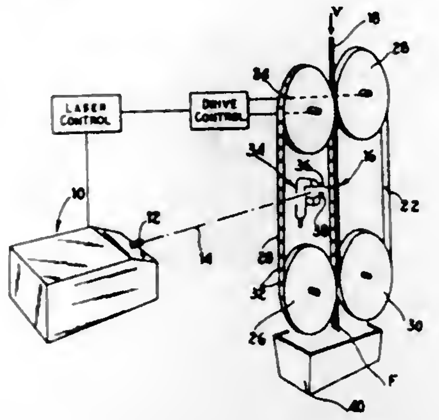
**Francesco Siclari; Franco Magnoni, and Giancarlo Bianucci, Milan, Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa, Milan, Italy**

**Filed Mar. 22, 1971, Ser. No. 126,787**

**Claims priority, application Italy, Mar. 26, 1970, 22493A/70**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 219—121 L** **6 Claims**



A method and equipment for cutting slivers of continuous filaments of textile material into tuft fibres adapted for further spinning and twisting operations, wherein a continuous sliver formed by said filaments is advanced at a high speed in a plane and laser ray pulses are focalized on said plane in the form of a narrow window having a length greater than the width of said sliver, in order to cut the same into a plurality of tuft fibres having a predetermined length.

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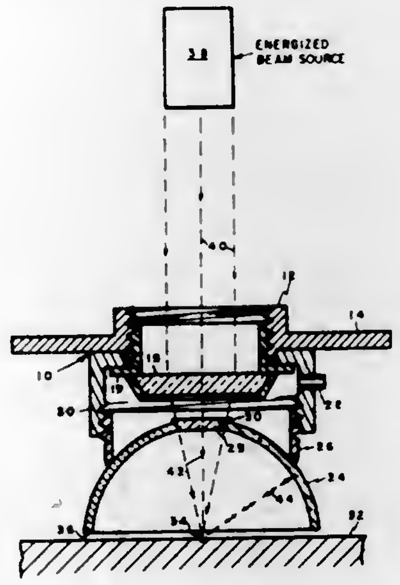
### 3,757,078
### APPARATUS FOR REFOCUSING REFLECTED ENERGY AT A TARGET FOCAL POINT

**Ronald J. Conti, Diamond Bar, and Steven R. Berry, Pomona, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.**

**Filed Aug. 19, 1971, Ser. No. 173,201**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 219—121 L** **14 Claims**



Apparatus for directing a beam of energy upon a workpiece including, a lens for focusing the beam of energy at a particular focal point, a holder for supporting the lens, a flange for providing cooling of the lens and a hemispherical mirror mounted to the holder having an opening through which the focussed beam passes and mounted in such a way as to refocus energy reflected by the workpiece back to the focal point of the lens.

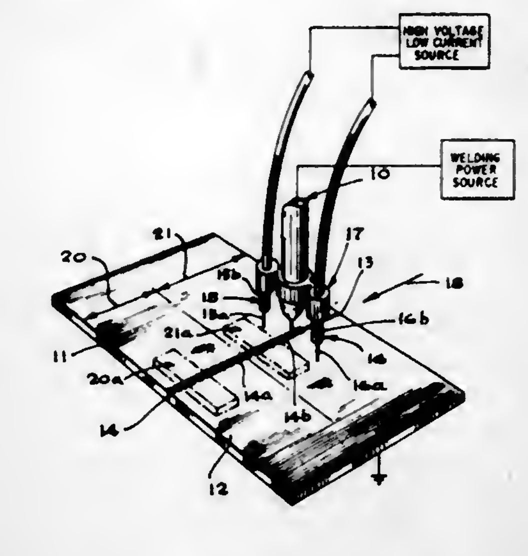
### 3,757,079
### METHOD AND APPARATUS FOR ELECTRIC ARC WELDING UTILIZING HIGH VOLTAGE, LOW CURRENT ELECTROSTATIC COOLING

**Oscar C. Blomgren, Sr., and Oscar C. Blomgren, Jr., both of Lake Bluff, Ill., assignors to Inter-Probe, Inc., North Chicago, Ill.**

**Filed July 2, 1971, Ser. No. 159,355**

**Int. Cl. B23k** *9/00*

**U.S. Cl. 219—137** **20 Claims**



Method and apparatus for welding metal workpieces to provide a distortion-free weld of high integrity where the method includes the use of an electric arc welding head for carrying out the usual welding operation and means for generating an electrostatic field at or adjacent the point of weld to facilitate heat transfer and otherwise treat the welding operation, thereby resulting in overcoming welding problems heretofore encountered, and in particular producing a weld having grain size substantially as fine as the base metal workpieces and, retarding the formation of scale and discoloration of the weld surface during the welding cycle. Apparatus for carrying out the method includes high voltage probe means arranged adjacent the workpiece being welded, and connecting the probe means to a high voltage, low current potential such as to cause corona at the probe means and/or the workpiece and connecting the workpiece to ground potential.

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### 3,757,080
### CONTACT CLAMP FOR ELECTRIC WELDING APPARATUS

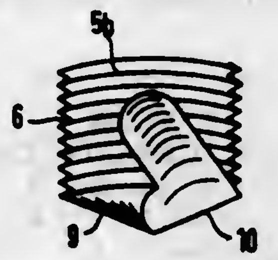
**Norbert Gstohl, Eschen, and Dankmar Tauern, Triesenberg, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Furstentum, Liechtenstein**

**Filed Dec. 14, 1971, Ser. No. 207,732**

**Claims priority, application Germany, Feb. 15, 1971, P 21 07 116.9**

**Int. Cl. B21j** *13/08*

**U.S. Cl. 219—161** **4 Claims**



A contact clamp for use in electrical welding is formed of a pair of arms arranged to be clamped to a workpiece. At least one of the arms has a pointed projection or cutting edge formed on its surface which contacts the workpiece for cutting through poorly conductive or non-conductive layers and assuring a satisfactory electrical contact between the clamp and the workpiece. A separate tightening screw can be used, extending through the end surface of one of the arms into contact with the workpiece. The pointed projection or cutting edge can be formed on the end of the tightening screw which contacts the workpiece. non-resilent

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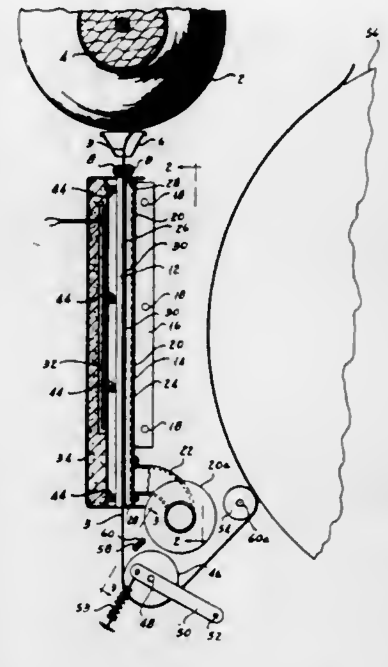
### 3,757,081
### APPARATUS FOR HEATING COPY PAPER FOR ELECTROSTATIC COPIERS

**Ian Edward Smith, Lockleys; Peter John Hastwell, Elizabeth Grove, and Marinus Cornelus Vermeulen, Valley View, all of South Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,081**

**Int. Cl. H05b** *1/00*

**U.S. Cl. 219—216** **13 Claims**



In using the method of contact transfer of electrostatic images developed by a tacky toner shown in our co-pending application, Ser. No. 155,108, filed June 21, 1971, it is advantageous to heat the plain paper to which the developed images are to be transferred.

An improved heating assembly is provided which will ensure that the paper will not burn or char. A passageway is formed between a radiant heating assembly and a manifold which connects with an exhaust blower. The paper is drawn from the storage roller through this passageway around a tensioning roller which may be independently heated and then brought into contact with the photoconductive surface bearing the tacky toner developed image.

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### 3,757,082
### HUMIDIFIER AND HEATER FOR DELIVERED GASES

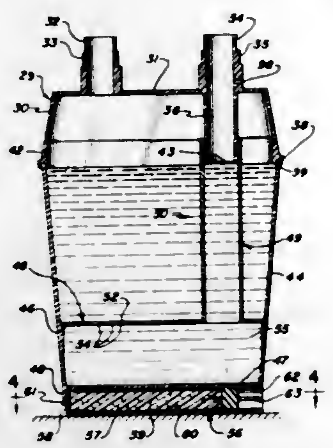
**George Leandro Goicoechea, Chicago, Ill., assignor to Critical Care Systems, Inc., Village, Ill.**

**Filed Jan. 21, 1972, Ser. No. 219,697**

**Int. Cl. F22b** *1/28*

**U.S. Cl. 219—271** **17 Claims**

A humidifier to moisten and heat delivered gases from a source such as a respiratory machine. In a preferred form, the humidifier is a disposable assembly unit formed from a thermoplastic material in which the heating means is part of the assembly unit, removable or fixed. The structure of the humidifier further provides an improved handling of the delivered gas for moistening and heating in that gas is, delivered through an inlet and tube means to a rebound chamber in a lower portion of the container where the gas is moved upwardly through a dispersion plate for bubbling through a body of water prior to discharge through an outlet.



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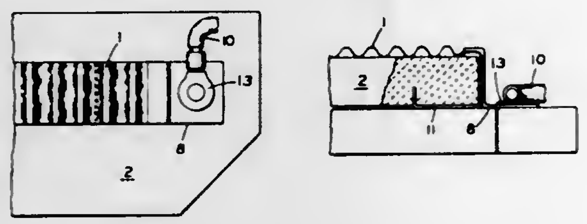
### 3,757,083
### CONNECTOR FOR HIGH OUTPUT, QUICK RESPONSE, RADIANT HEATER

**George C. Dietz, and Nathaniel E. Hager, Jr., both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.**

**Filed Feb. 22, 1972, Ser. No. 228,091**

**Int. Cl. H05b** *3/26;* **H01c** *1/14;* **H05b** *3/08*

**U.S. Cl. 219—356** **5 Claims**



A high intensity, quick response, electrical resistance foil radiant heater is described as having a heating element in the form of a corrugated metal foil ribbon adapted to be heated by electricity to a temperature in the range of about 1,200° to 1,800° F. The heating element is backed by a thermally insulating backing preferably of a ceramic material. A particular connector structure is provided on each end of the foil ribbon to provide a means to fasten power supply leads to the foil ribbon. The connecting means also functions as a means for fastening the ends of the foil ribbon to the backing. The connector structure is composed of two parts, one part constituting a means for receiving electrical leads while the other part constitutes a means for holding the connector in position.

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### 3,757,084
### DOOR LATCHING SYSTEM

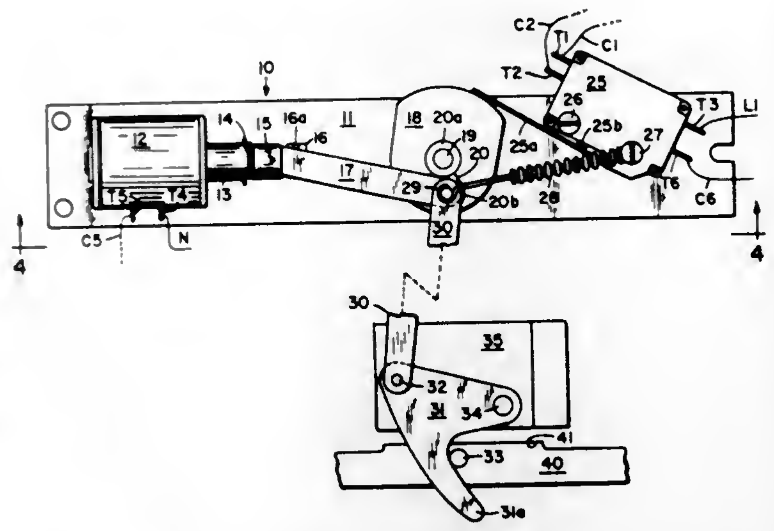
**Byron R. McLean, Coopers Plains; Donald R. Shriner, Big Flats, both of N.Y., and John C. Swan, Elkland, Pa., assignors to Corning Glass Works, Corning, N.Y.**

**Continuation-in-part of Ser. No. 87,828, Nov. 9, 1970, abandoned. This application Sept. 27, 1971, Ser. No. 183,865**

**Int. Cl. H05b** *1/02*

**U.S. Cl. 219—413** **25 Claims**

A substantially fool-proof system for latching a door in a closed position in response to the actuation of a manually actuable electric circuit controlling device to a first position and unlatching the door in response to the actuation of the device to a second position. The system is especially adaptable to the latching and unlatching of an oven door of a self-cleaning oven during a self-cleaning cycle of operation of the oven and, when such system is so employed, the system is inoperable to a door latching condition unless the oven door is closed. Following a self-cleaning cycle of operation of the oven, the system maintains the oven door in the door latched condition until the temperature in the oven falls below a selected safe oven temperature. An electrically energizable coil and an associated plunger actuated by the energization of the coil are used to control the latching and unlatching of a door in the latching system. Such coil and plunger are preferably a solenoid coil and its associated movable core.



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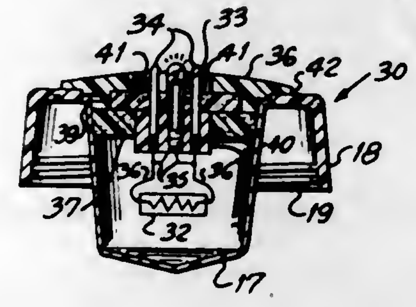
### 3,757,085
### REMOVABLE TOP WITH A HEATING ELEMENT FOR A VACUUM INSULATED BOTTLE

**Rodolfo R. Balaguer, 2607 Grace Dr. Harbor Beach, Fort Lauderdale, Fla.**

**Filed Apr. 24, 1972, Ser. No. 246,844**

**Int. Cl. H05b** *3/06*

**U.S. Cl. 219—523** **11 Claims**



A removable top for a thermos bottle. The removable top is provided with means for continuously generating heat, e.g. a resistor mounted therein which may be heated when an electric current is passed therethrough. The top is utilized in conjunction with a thermos bottle by continuously generating an amount of heat approximately equivalent to the heat which would be lost from a pre-heated material within the vacuum insulated bottle.

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### 3,757,086
### ELECTRICAL HEATING CABLE

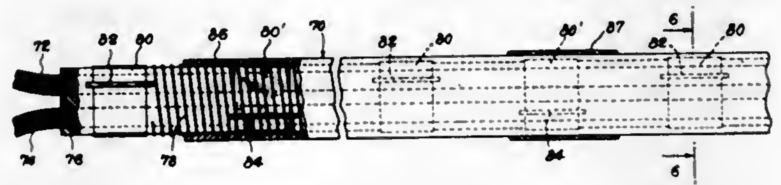
**William J. Indoe, 45 Oak St., Allendale, N.J.**

**Continuation-in-part of Ser. No. 199,472, Nov. 17, 1971, abandoned. This application Oct. 5, 1972, Ser. No. 295,228**

**Int. Cl. H05b** *3/56*

**U.S. Cl. 219—528** **4 Claims**

An electrical heating cable having at least two low-resistance current-carrying wires and a high-resistance, heating wire spirally wound about the current-carrying wires; in one embodiment, the current-carrying wires are bared at spaced intervals so that the high-resistance wire makes electrical contact at the bared points with one of the current-carrying wires at each interval. In another embodiment, a plurality of copper foil wraps surrounds both insulated, current-carrying wires at spaced intervals and the high-resistance, heating wire is spirally wound over the current-carrying wires and the copper foil wraps. A staple is driven through the insulation and one of the current-carrying wires at each interval so that electrical connection is made between the current-carrying wire and the heating wire at that interval. The construction permits the user to cut the cable to any length and still maintain the same current flow in any given length for the same applied voltage.



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### 3,757,087
### HEATING ELEMENTS

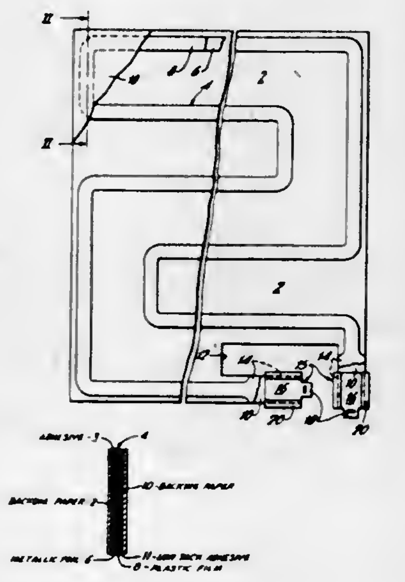
**Dominic Paul Edmund Bernard, Witney, England, assignor to Smiths Industries, Limited, London, England**

**Filed Mar. 8, 1971, Ser. No. 121,819**

**Claims priority, application Great Britain, Sept. 11, 1970, 43,477/70**

**Int. Cl. H05b** *3/36;* **B32b** *7/06*

**U.S. Cl. 219—549** **12 Claims**



Heater assembly that may be used for heating a surface such as the glass rear windscreen (or window) of a motor vehicle comprises a heater element having a continuous metal strip of sinuous form. The element is sandwiched between two paper backing sheets which are adhesively secured to opposed surfaces of the metal strip. A first backing sheet is for removal prior to the mounting of the element on an automobile rear windscreen, and the other backing sheet is to be removed after the element has been so mounted. The first backing sheet is coated with a silicone or wax to facilitate its ready removal from the element. The surface of the element covered by the other backing paper is provided with a layer of electrically insulating material.

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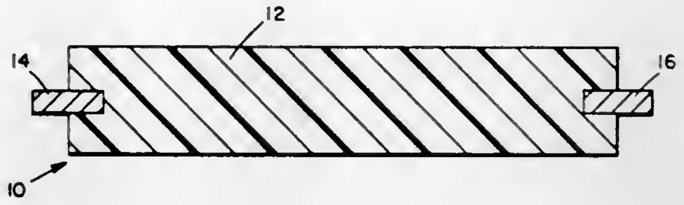
### 3,757,088
### ELECTRICALLY CONDUCTING ELASTOMERS AND ELECTRICAL MEMBERS EMBODYING THE SAME

**Robert H. Osborn, Green Acres, Del., assignor to Hercules Incorporated, Wilmington, Del.**

**Filed Feb. 29, 1972, Ser. No. 230,268**

**Int. Cl. H05b** *3/10*

**U.S. Cl. 219—553** **16 Claims**



Electrically conducting elastomers having utility as flexible heating elements and the like are disclosed.

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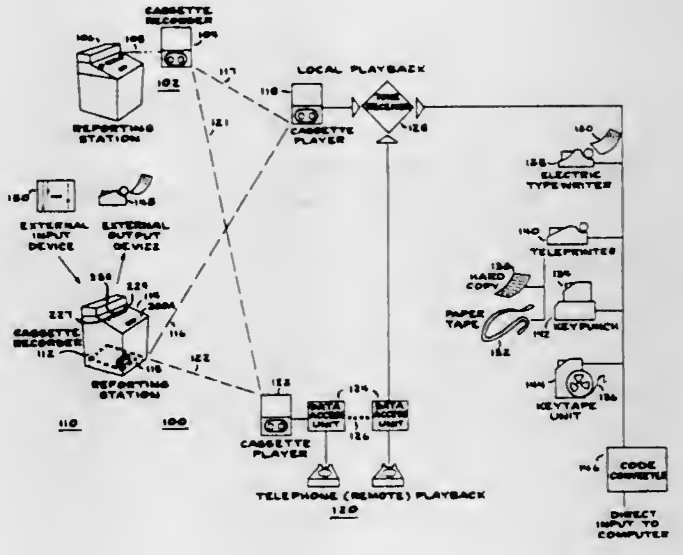
### 3,757,089
### REPORTING AND SECURITY SYSTEM

**Norman Nathan Hockler, Galion, Ohio, assignor to North Electric Company, Galion, Ohio**

**Filed Aug. 24, 1971, Ser. No. 174,329**

**Int. Cl. B41j** *5/36;* **G06k** *7/06, 15/00*

**U.S. Cl. 235—61.7 B** **14 Claims**



A reporting and security system in which a person identifies himself at a station by means of an identifying indicia bearing member, such as a card which may be inserted in a card reader to provide personal identifying information along with time, date, number of station, and other fixed and/or variable information, the information input being recorded as tones on a low cost cassette recorder associated with the station in a computer compatible form suitable for playback and processing at a convenient time. Authentic indicia bearing members may also be used to operate a security device such as a lock or turnstile when presented to the identification station. The system may be used simply as an attendance reporting system or as a system which provides variable information related to job reporting, inventory control, banking information, and the like.

### 3,757,090
## MECHANICAL READING AND RECOGNITION OF INFORMATION DISPLAYED ON INFORMATION CARRIERS

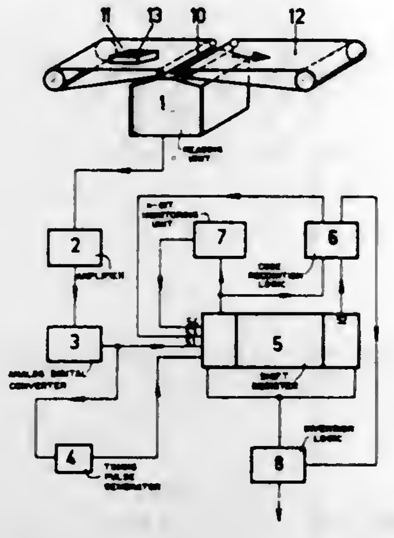
**Hans Rudolf Haefeli, Seengen, and Tit Turnsek, Schaffhausen, both of Switzerland, assignors to Zellweger Ltd., Uster, Switzerland**

**Filed July 1, 1971, Ser. No. 158,696**

**Claims priority, application Switzerland, July 3, 1970, 10089/70**

**Int. Cl. G06k** *7/10, 19/06*

**U.S. Cl. 235—61.11 E** **20 Claims**



The information carrier contains a code made up of a number of code signs including at least one recognition code sign. The information to be displayed is contained in a maximum of *n*-1 information code signs while a separating code between each two adjacent information code signs is of a value so that no more than *n* identical code signs can follow each other. The control and monitoring means are constructed to detect the succession of more than n identical code signs and separate out each possible code with more than n identical successive code signs.

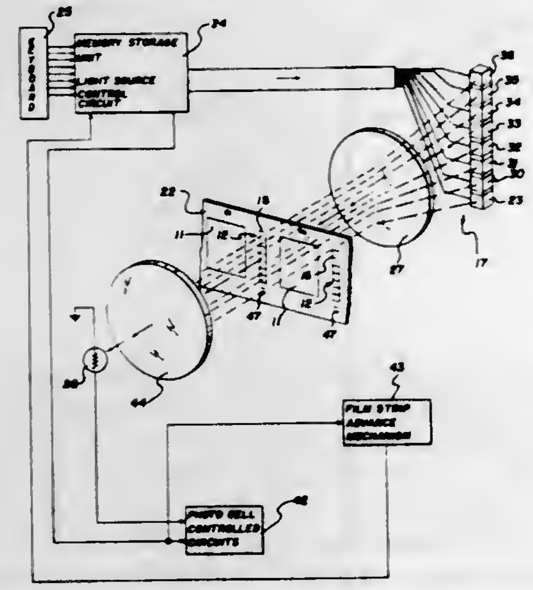
### 3,757,091
## AUTOMATIC RETRIEVAL APPARATUS

**Ambrose D. Baker, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Mar. 3, 1972, Ser. No. 231,478**

**Int. Cl. G06k** *7/10*; **G03b** *23/12*

**U.S. Cl. 235—61.11 E** **2 Claims**


MEMORY STORAGE UNIT
LIGHT SOURCE CONTROL CIRCUIT
KEYBOARD
FILM STRIP ADVANCE MECHANISM
PHOTO CELL CONTROLLED CIRCUITS

Apparatus for retrieving a particular microfilm document image from a film strip having a plurality of document images and an identifying code field for each such document image. Each identifying code field includes a plurality of binary information positions, with each such position having a selectable contrast (viz., light transmission capability) to either pass or substantially block light. The apparatus includes a reader station having a plurality of actuatable light sources, each light source being located relative to a particular bit position of an aligned code field in the reader station and operative when actuated to illuminate such position. The apparatus further includes a memory unit for storing information corresponding to a code field which identifies a particular document image and logic circuitry coupled to the storage unit for actuating particular light sources which correspond to those bit positions which substantially block light in the particular document image and a photosensitive device responsive to the absence of light passing through a document code field to indicate whether the particular document image is at the reader station.

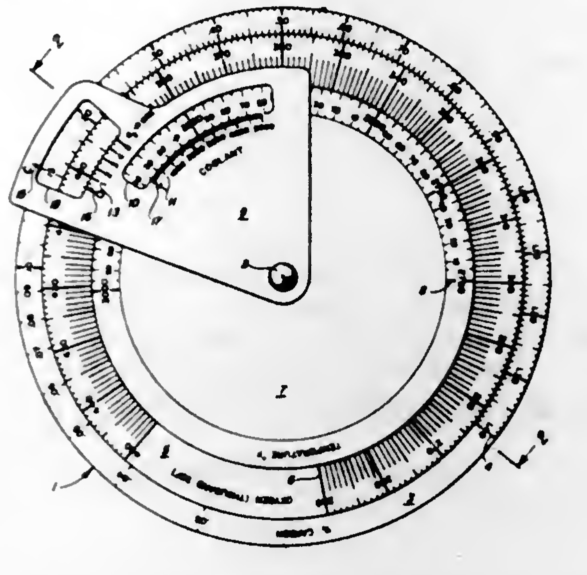
### 3,757,092
## CALCULATOR FOR CONTROLLING BASIC OXYGEN STEELMAKING

**Timothy W. Miller, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.**

**Filed Feb. 2, 1972, Ser. No. 222,736**

**Int. Cl. G06c**

**U.S. Cl. 235—74** **5 Claims**



A calculator designed for use by steelmakers in connection with the basic oxygen process and capable of quickly calculating the amount of oxygen and/or coolant that must be added to the basic oxygen furnace in order to produce a steel of a predetermined carbon and temperature level.

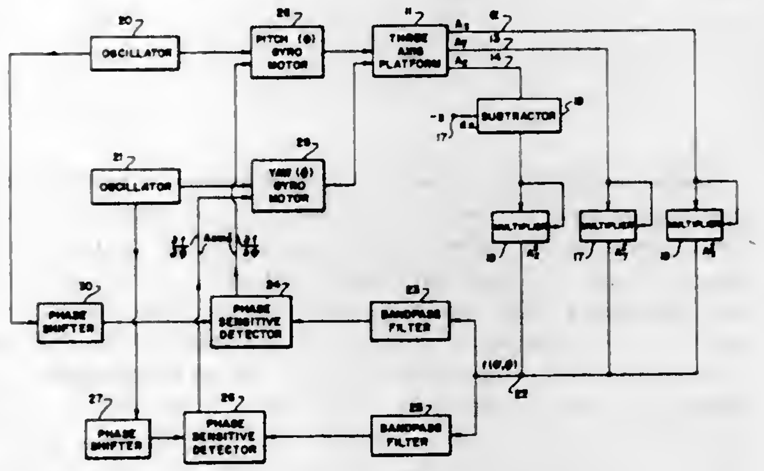
### 3,757,093
## SELF LEVELING SYSTEM USING PERIODIC PERTURBATIONS

**William H. Licata, Adelphi, Md., assigner to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Sept. 22, 1972, Ser. No. 291,471**

**Int. Cl. G06f** *15/20*

**U.S. Cl. 235—150.1** **6 Claims**



A system for leveling a stable or strapped down missile guidance platform on a moving ship having accelerometers and gyroscopes. Periodic signals perturbate the system allowing leveling of the platform which is superimposed on a control function to cancel ship motion.

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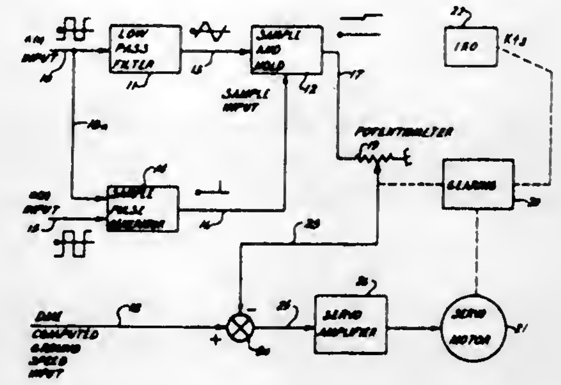
### 3,757,094
## METHOD AND APPARATUS FOR COMPUTING GROUND SPEED IN AREA NAVIGATION COMPUTERS

**Jerry C. Schmitt, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.**

**Filed Apr. 19, 1971, Ser. No. 135,042**

**Int. Cl. G06g** *7/78*

**U.S. Cl. 235—150.2** **4 Claims**



An area navigation computer includes circuitry for computing aircraft ground speed to a waypoint. The ground speed of the aircraft relative to a VORTAC station is determined by information from a DME. Further, a means is provided for determining an angle defined as the included angle between the aircraft bearing to the associated VORTAC station and the aircraft bearing to the waypoint. The above-mentioned DME determined ground speed is then divided by the absolute value of the cosine of the included angle and the quotient is displayed in terms of aircraft ground speed with respect to the waypoint.

## ERRATUM

For Class 235—151 see:
Patent No. 3,756,630

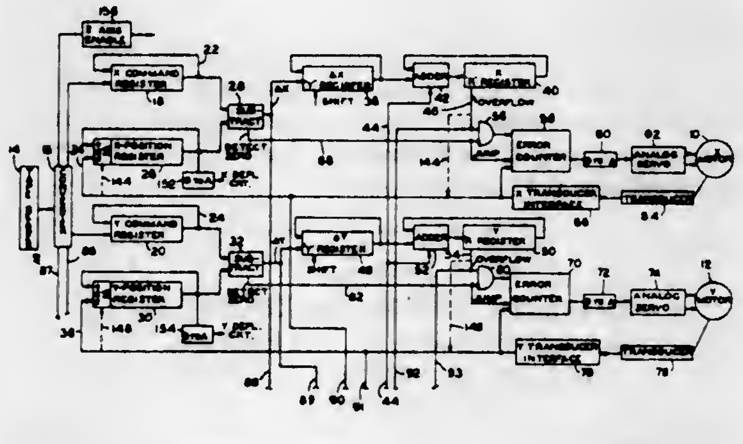
### 3,757,095
## NUMERICAL CONTROL SYSTEM

**William B. Kiwiet, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.**

**Filed Aug. 26, 1970, Ser. No. 66,979**

**Int. Cl. G05b** *19/24*

**U.S. Cl. 235—151.11** **47 Claims**



A numerical control system for operating a machine tool or the like receives successive coordinate movement instructions for controlling a device such as a cutting tool. The system employs a digital differential analyzer in each coordinate axis for generating a servo rate command, while providing linear interpolation for each movement. Feedrate is digitally controlled, with acceleration and deceleration being digitally directed for adapting the numerical control system to the particular device operated thereby. A cathode ray storage tube display provides high speed verification of input information as well as monitoring of subsequent machine operation.

## ERRATUM

For Class 235—151 see:
Patent No. 3,757,261

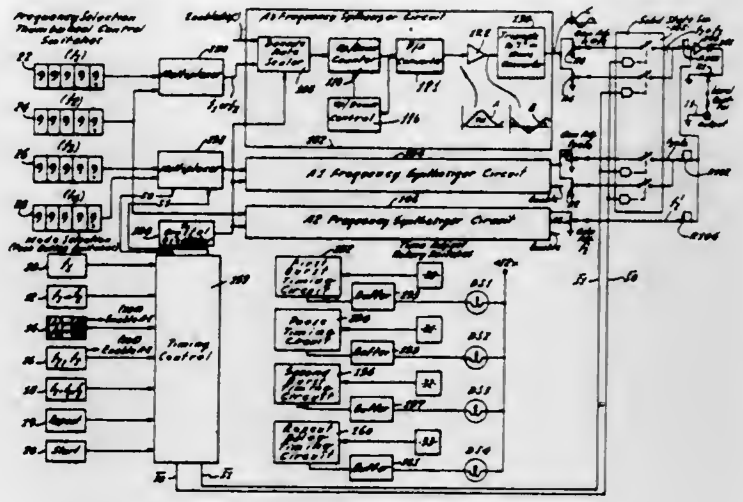
### 3,757,096
## WIDE BAND DIGITAL SINE WAVE SYNTHESIZER

**Brian G. Moonier, Los Angeles, Calif., assignor to The Singer Company, New York, N.Y.**

**Filed Apr. 24, 1972, Ser. No. 247,066**

**Int. Cl. H03b** *19/14*

**U.S. Cl. 235—152** **2 Claims**



A solid state tone generator is provided which is capable of digitally synthesizing sine wave tones, and which has particular utility for producing tones for testing selective call paging receivers. The tone generator may be set to generate a plurality of tones, either continuously or in bursts, and either simultaneously or in sequence, so that it may be easily adapted for testing a wide variety of paging receivers used in a wide variety of different paging systems. Each of the tones may be set to any selected frequency in a range extending from 0.1 Hz to 9999.9 Hz. As will be described, decade rate scalers (DRS) are used in conjunction with a crystal oscillator to provide a digital output corresponding to a selected tone, and the digital output is then ultimately converted into a sine wave of the selected tone frequency.

### 3,757,097
## EXTRA BIT FOR FLOATING DECIMAL CONTROL AND CORRECTION OF FALSE INTERMEDIATE ARITHMETIC RESULTS

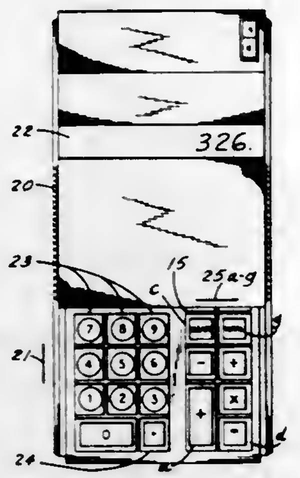
**Han Kuijsten, Oakland, Calif., assignor to SCM Corporation, New York, N.Y.**

**Filed Mar. 29, 1971, Ser. No. 129,100**

**Int. Cl. G06f** *7/50, 7/54*

**U.S. Cl. 235—159** **36 Claims**

A floating decimal calculator with controls for decimal location and for correction of falsely-coded sums or differences developed during any of the four basic arithmetic operations, these controls being based on utilization of a fifth bit position



at each digit location in the registers of the calculator for these two purposes.

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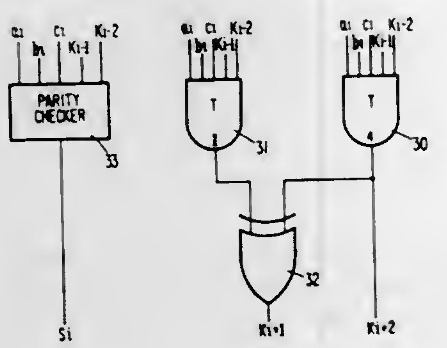
### 3,757,098
## CARRY GENERATION MEANS FOR MULTIPLE CHARACTER ADDER

**Carl Macey Wright, Cinnaminson, N.J., assignor to RCA Corporation, Princeton, N.J.**

**Filed May 12, 1972, Ser. No. 252,589**

**Int. Cl. G06f** *7/385*

**U.S. Cl. 235—175** **9 Claims**



An addition stage of a binary multiple character adder is receptive to input signals, including operand bits from each of the characters and carry-in bits from previous lower order stages. The outputs include the sum for that stage and carry-out signals to succeeding higher order stages. Means are provided for determining the pattern of the input signals and for generating at least one carry-out signal from another carry-out signal in accordance with the input pattern.

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### 3,757,099
## ANALOG SIGNAL TO FREQUENCY SIGNAL CONVERTER

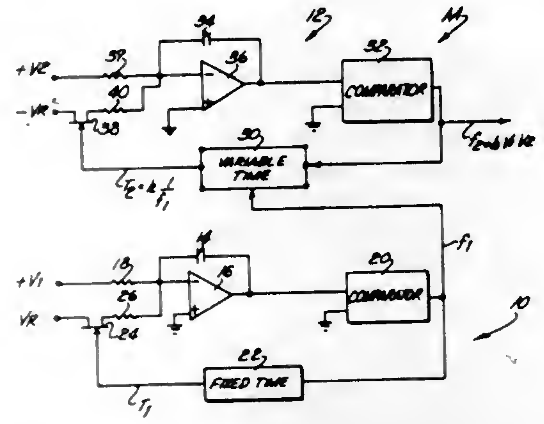
**Dennis R. Anderson, Warrensville Heights, Ohio, assignor to Avtron Manufacturing, Inc., Cleveland, Ohio**

**Filed July 2, 1971, Ser. No. 159,250**

**Int. Cl. G06g** *7/16*

**U.S. Cl. 235—194** **11 Claims**

An analog to frequency converter is disclosed for receiving a first analog signal and a frequency signal to provide a second first frequency signal. Another analog to frequency converter may provide the first frequency signal having a frequency dependent upon the magnitude of another analog signal. Circuitry is provided so that the second frequency will exhibit a frequency proportional to the product of a function of the first and that of the second analog signals.



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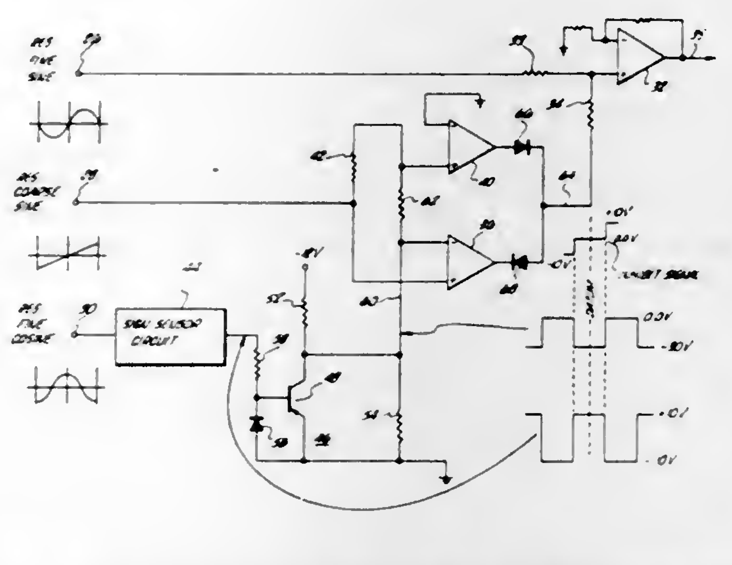
### 3,757,100
## TRIGONOMETRIC SEGMENT DISCRIMINATOR

**Martin R. Coleman, Los Angeles, Calif., assignor to Leak Siegler, Inc., Santa Monica, Calif.**

**Filed Mar. 13, 1972, Ser. No. 234,039**

**Int. Cl. G06g** *7/26, 7/22*

**U.S. Cl. 235—197** **8 Claims**



A trigonometric segment discriminator circuit for selecting a portion of a sinusoidal signal for use as a control signal, is disclosed. Sinusoidal signals in the form of coarse sine and fine cosine signals are applied to the discriminator circuit to produce an inhibit signal which, when summed with a selected zero cross-over portion of a fine sine signal, provides a control signal characterized by a generally linearly increasing segment extending between steady state low and high portions. The discriminator circuit includes a pair of operational amplifiers that are connected in parallel to respectively provide a high, a low, and a zero output voltage signal in response to the level of the fine cosine and coarse sine signals applied thereto. A limiting amplifier may be used as a summing circuit to combine the inhibit signal with the fine sine signal.

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### 3,757,101
## LAMP FOR PROVIDING DAYLIGHT EFFECT

**Zinovia Semotan, 84 McLaren St., Red Bank, N.J.**

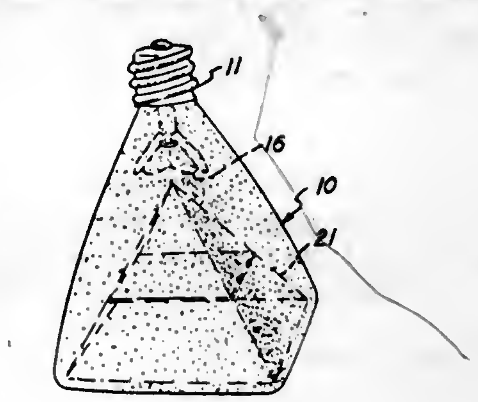
**Filed June 23, 1971, Ser. No. 155,931**

**Int. Cl. F21v** *9/02*

**U.S. Cl. 240—1.1** **15 Claims**

A lamp to produce sunlight effect artificially wherein a white light which is radiated directly from the lamp which includes the form of a pyramid composed of colored transparent

materials. Two opposite triangles of the pyramid present basic spectrum colors; yellow and blue and two other opposite triangles of the pyramid present compound spectrum colors, red



and violet. Bisecting the interior of the pyramid is a blue-green transparent horizontal insertion which simulates the type of illumination received from the sky on a sunny day. There is a glass enclosure for the pyramid and a light source therein.

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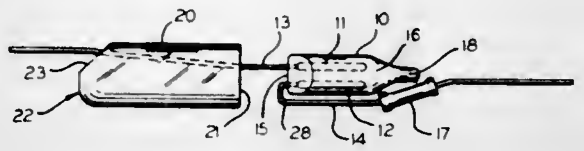
### 3,757,102
## LAMP CAPSULE

**Earl W. Roberts, Lake Bluff, Ill., assignor to Daniel Woodhead Inc., Northbrook, Ill.**

**Filed Oct. 24, 1972, Ser. No. 299,804**

**Int. Cl. F21v** *33/00*

**U.S. Cl. 240—2 R** **7 Claims**



A lamp capsule and uses thereof in electrical receptacles, connectors and plugs for indicating circuit-energization and location in dark areas. The capsule consists of a light-transmitting, tubular, dielectric, synthetic polymer capsule having an open end and a closed end encapsulating a small neon lamp having a pair of bare wires projecting from its base. One wire extends through an opening in the closed end of the capsule and the other wire is curvately bent at its end adjacent the base of the lamp and extends along the lamp and out the open end of the capsule.

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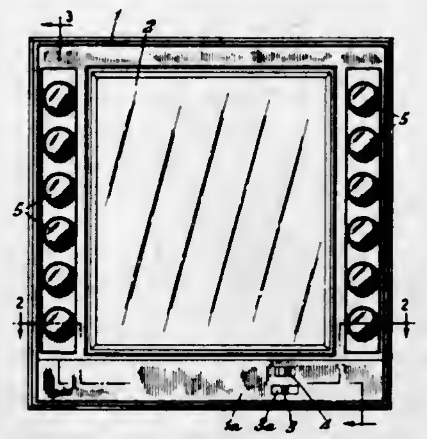
### 3,757,103
## MAKE-UP MIRROR

**Henry J. Walter, Wilton, Conn., assignor to Clairol Incorporated, New York, N.Y.**

**Filed May 17, 1971, Ser. No. 144,041**

**Int. Cl. F21v** *33/00*

**U.S. Cl. 240—4.2** **10 Claims**



An electric make-up mirror having light sources which provide substantially uniform energy output through most of the visible region, which when used in conjunction with light filters will simulate specific lighting conditions such as daylight, office light (fluorescent), home light and evening light (incandescent). The light sources are comprised of special lamps which provide a unique degree of flexibility in that various lighting conditions may be simulated with a minimal loss of energy. The mirror is provided with two matching light sources, and two matching filter assemblies disposed on opposite sides of the mirror. The filter assemblies are adjusted by a single control mounted for the synchronous selection of a matching filter from each of the filter assemblies. The light filters of each filter assembly, when interposed between the light sources and the user, selectively vary the spectral energy distribution of the light transmitted from the light sources so as to simulate daylight, ordinary fluorescent light and incandescent light. The mirror allows the user to select the illumination approximating the type of light under which the user expects to be seen.

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### 3,757,104
## SEALED LAMP UNITS

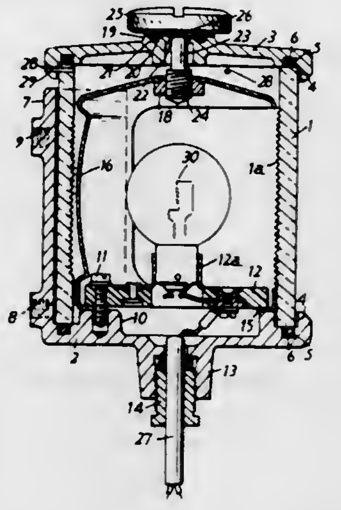
**Peter J. Cooper, Ilford, Essex, England, assignor to The Plessey Company, Limited, Ilford, England**

**Continuation of Ser. No. 780,459, Dec. 2, 1968, abandoned. This application Apr. 30, 1971, Ser. No. 139,150**

**Claims priority, application Great Britain, Dec. 13, 1967, 56,716/67**

**Int. Cl. B63b** *45/04*

**U.S. Cl. 240—7.5** **4 Claims**



The two ends of a cylindrical glass tube are sealed by lid members which are drawn together by a short knurled screw-head passing through a central hole in the top lid and engaging threads in a roof portion of an internal screen-forming housing which, by a bottom flange, is secured to the bottom lid.

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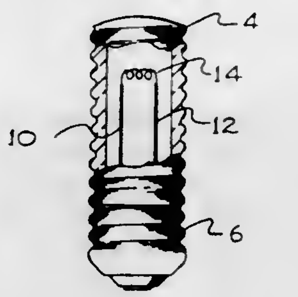
### 3,757,105
## ELECTRIC LIGHT DEVICE

**Jack N. McCarthy, Meadowood Rd., Tolland, Conn.**

**Filed Oct. 4, 1971, Ser. No. 185,934**

**Int. Cl. F21v** *21/00;* **H01k** *1/14;* **H01j** *17/16*

**U.S. Cl. 240—10 R** **30 Claims**



An electric light device having a bulb and base assembly wherein the bulb is formed having external screw threads.

Means are provided for engaging said screw threads wherein the bulb can support said means or the means can support said bulb. This means can be a cover through which light from the bulb can pass and which, in turn, has an attachment means for supporting the whole device. Means are provided to take up tension through the electric light when necessary.

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### 3,757,106
### LIGHT-EFFECT GENERATOR

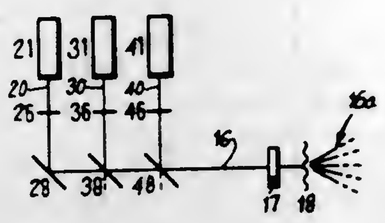
**Peter Bau, Vienna, Austria; Achim Reichelt, and Gerhard Winzer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Mar. 26, 1971, Ser. No. 128,276**

**Claims priority, application Germany, Apr. 9, 1970, P 20 17 084.7**

**Int. Cl. A47g** *33/16;* **F21p** *1/02*

**U.S. Cl. 240—10 R** **3 Claims**



Lighting effects for theaters, advertising, etc., are obtained by a lighting apparatus having at least one coherent light source, preferably a gas laser beam, projecting a beam of light onto and/or through an effect member so that various lighting sensations and/or patterns are simply and easily produced. The lighting effect member may advantageously comprise a translucent disk which is rotated by a motor. The disk may include thermally responsive material, a liquid material, glass configurations, a lacquer layer having a thickness equal to many light-wave lengths etc. One or more light beams may be employed and the effect member may include a plurality of disks arranged one behind the other.

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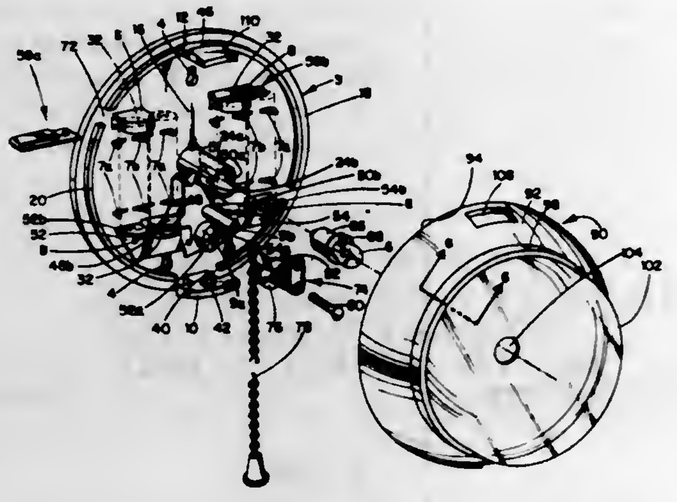
### 3,757,107
### BATTERY POWERED LIGHT FIXTURE

**Curtiss M. Peasley, 25 Boulder Dr., Burlington, Mass.**

**Filed May 16, 1972, Ser. No. 253,876**

**Int. Cl. F21l** *11/00*

**U.S. Cl. 240—10.6 R** **5 Claims**



A battery powered light fixture having a base adapted to be secured to a wall or other like support surface, and a cover assembly overlying and removably attached to the base. The base is preferably plastic injection molded as one piece and has a centrally located bulb support; battery supports for locating pairs of batteries on opposite sides of the bulb support; an off-center switch support on which is mounted an "on-off" switch; a guide through which a pull chain for operating the switch extends beyond the periphery of the base; and a resilient tab which cooperates with the guide to locate and hold the cover assembly on the base. Metallic conductors, including clip-like members attached to the battery supports establish a series connection between the bulb, batteries and switch. The cover assembly includes an opaque wall, a concave reflector having an aperture therein through which the bulb protrudes, and a transparent dome overlying the reflector.

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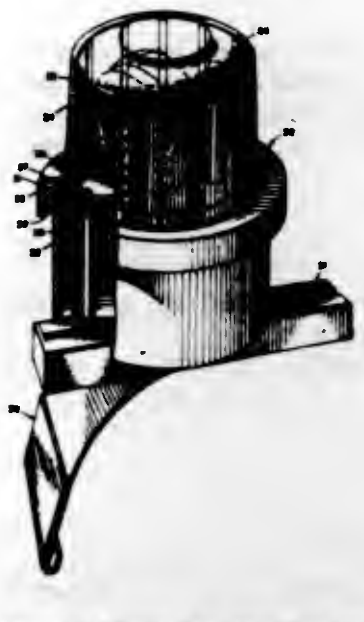
### 3,757,108
### EMERGENCY WARNING LIGHT

**Oliver J. Burland, 214 Rugley Rd., Western Spring, Ill.**

**Filed July 6, 1971, Ser. No. 159,871**

**Int. Cl. F21v** *9/08*

**U.S. Cl. 240—46.59** **6 Claims**



An emergency warning light for vehicles wherein a plastic globe is secured to a plastic base for mounting atop the vehicle, the globe and base being connected by a unique detent locking arrangement and wherein the transparent globe is equipped with internal rib means for the receipt of placards to develop different visual images.

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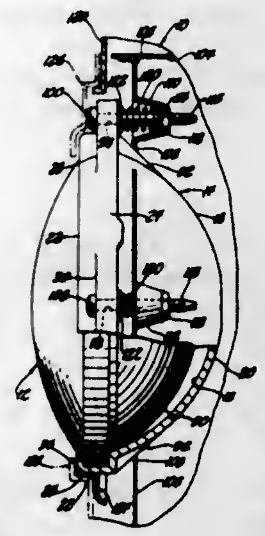
### 3,757,109
### RESILIENT LAMP MOUNTING DEVICE

**Hillery G. Knecht, 525 Kingsley Trl., Bloomfield Hills, Mich., and Adolph W. Grashoff, 13085 Lake Pointe Pass, Belleville, Mich.**

**Filed Feb. 24, 1972, Ser. No. 229,125**

**Int. Cl. F21v** *15/04*

**U.S. Cl. 240—90** **19 Claims**



A resilient mounting device for a lamp, such as a sealed beam unit, is formed of a non-metallic resilient material and has a generally bulbous body portion with a concave inner surface and a convex outer surface; a ring portion formed at the large open end of the body portion, integrally therewith, has an inner annular groove which is partly defined by a forwardly disposed flange or lip portion resiliently deformable to permit the passage therethrough of a sealed beam unit to be carried generally peripherally within the annular groove; a plurality of ears or flange portions are provided for direct mounting of the body and lamp to an associated vehicle.

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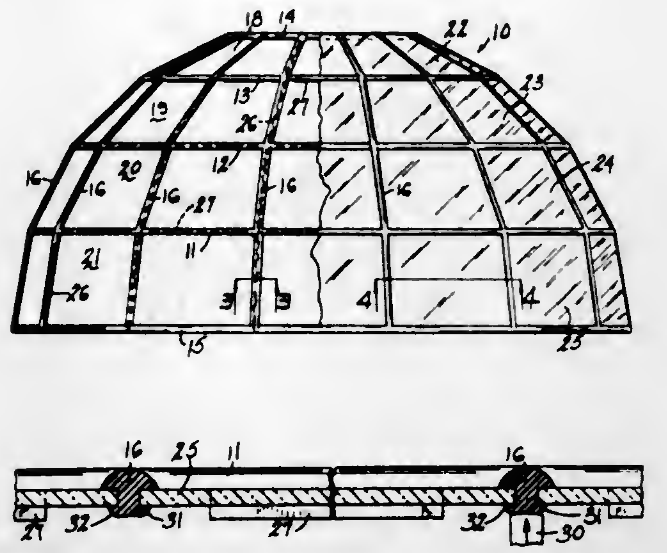
### 3,757,110
### LAMP SHADE AND METHOD OF MAKING THE SAME

**Thadeus J. Soboleski, Clintonville, Conn., assignor to Pyramid Plastics, Inc., North Haven, Conn.**

**Filed Oct. 12, 1972, Ser. No. 296,918**

**Int. Cl. F21v** *1/02, 1/20, 1/26*

**U.S. Cl. 240—108 A** **4 Claims**



A lamp shade frame wherein relatively transverse thermoplastic members define windows therebetween adapted to receive lights therein, and the members have upstanding ribs on the inside thereof defining seating ledges for the lights that may be deformed under heat and pressure to overlie the edges of the lights and lock the lights in the frame.

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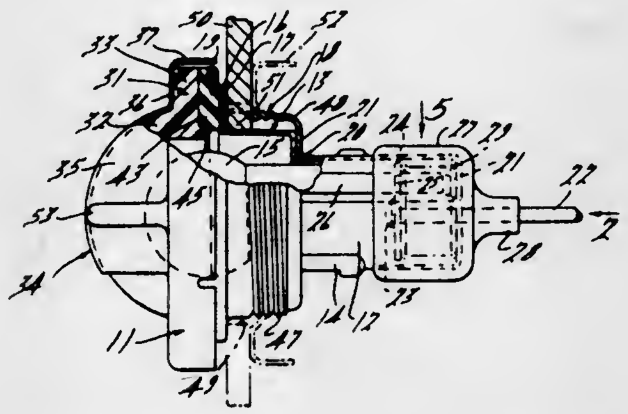
### 3,757,111
### LAMP SOCKET FOR ILLUMINATING AN AREA

**Werner C. Wilking, Pleasant Ridge, and Glenn R. Moore, Detroit, both of Mich., assignors to Microdot Inc., Greenwich, Conn.**

**Filed Nov. 22, 1972, Ser. No. 308,756**

**Int. Cl. F21v** *19/00*

**U.S. Cl. 240—152** **11 Claims**



A socket for a lamp has a tube portion in which the lamp is supported and an enlarged cylindrical extension provided with a transverse end flange containing spaced notches of different length. A dome shaped lens having an end flange containing oppositely disposed slots is supported in a housing having a window on one side of the centerline of a dome shaped central section through which the light from the bulb and lens is directed to a predetermined area. The housing has a pair of inwardly directed flanges of different length conforming to the notches in the end flange and which retain an elastomeric washer within the housing against the lens flange. The dome shaped section of the housing has extending wings thereon which permit the housing to be rotated relative to the socket to released and secured positions.

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### 3,757,112
### SYSTEM, METHOD AND APPARATUS FOR LOCATING MOVABLE OBJECTS ON A FIXED PATH

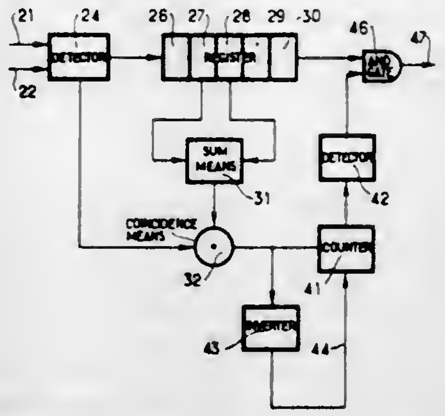
**Roger Lehmann, Paris 14e, France, assignor to Compagnie Generale D'Automative, Paris, France**

**Filed Aug. 17, 1971, Ser. No. 172,536**

**Claims priority, application France, Aug. 17, 1970, 7030197; May 21, 1971, 7118431**

**Int. Cl. B61l** *25/02;* **G06f** *11/02*

**U.S. Cl. 246—122 R** **14 Claims**



A method and apparatus for locating movable objects on a fixed path. Binary coded markers in a pseudo-random sequence positioned along the path. The sequencing is such that a series of different words are formed, each word indicating the relative position of the movable object. The movable object has a detector for detecting the binary digits of the successive markers. The words formed by the digits are stored in an *m*-stage shift register. Means are included for analyzing the accuracy of the word stored in the shift register. If an error is found, then the word stored in the register is not read out to an indicator which gives the position of the movable object.

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### 3,757,113
### CLOSING DEVICE FOR RAIL GAPS IN THE DEFLECTING AND FROG AREAS

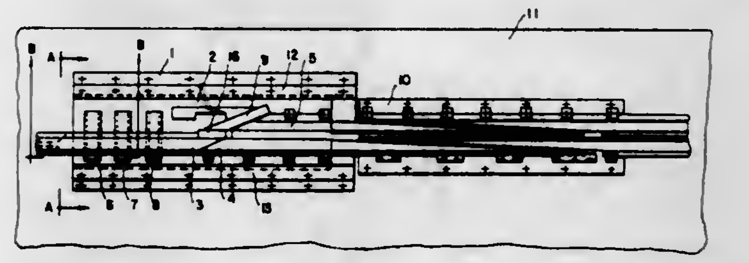
**Ruthard Dohse, Essen-Bredeney, Germany, assignor to Elektro-Thermit G.m.b.H., Berlin, Germany**

**Filed Dec. 3, 1971, Ser. No. 204,495**

**Claims priority, application Germany, Dec. 4, 1970, P 20 59 666.1**

**Int. Cl. E01b** *7/14*

**U.S. Cl. 246—468** **7 Claims**



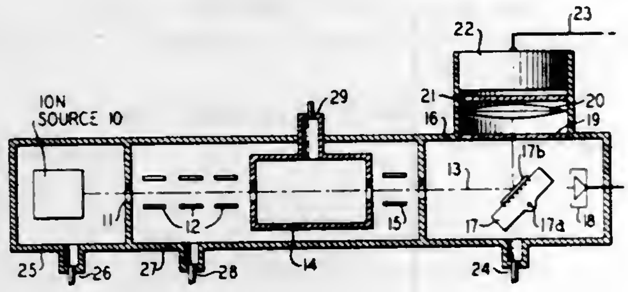
This invention relates to a closing device for rail gaps in the deflecting area and in the frog area comprising mounting plate means, longitudinally displaceable bed plate means on said mounting plate means, slide chair means on said bed plate means for pivoting the rail end of the switch entrance, beveled closing means adapted to close the gap between said pivotal rail end and two rigid connecting rail ends, and carrier plate means for a twin expansion joint rigidly positioned with respect to said mounting plate means.

### 3,757,114

## APPARATUS AND METHOD FOR MEASURING THE INTENSITY OF A BEAM OF NEUTRAL ATOMS OR MOLECULES

**Douglas Leon Simms, East Orange; Norman Henry Tolk, Mendham, and Clark Woody White, Dover, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hills, Berkeley Heights, N.J.**

**Filed Mar. 8, 1972, Ser. No. 232,864**
**Int. Cl. G01t** ***1/20***
**U.S. Cl. 250—41.3** **4 Claims**



The intensity of a beam of neutral particles traveling at velocities of up to 3.4 × $10^7$ cm/sec may be monitored by inserting a precalibrated target in the path of the beam, and measuring the intensity of photon emissions which result from collision of the particles with the target. The intensity of the beam is related to the intensity of the photon emissions by the calibration factor of the target material. The invention may be used, for example, in conjunction with neutral particle implantation techniques.

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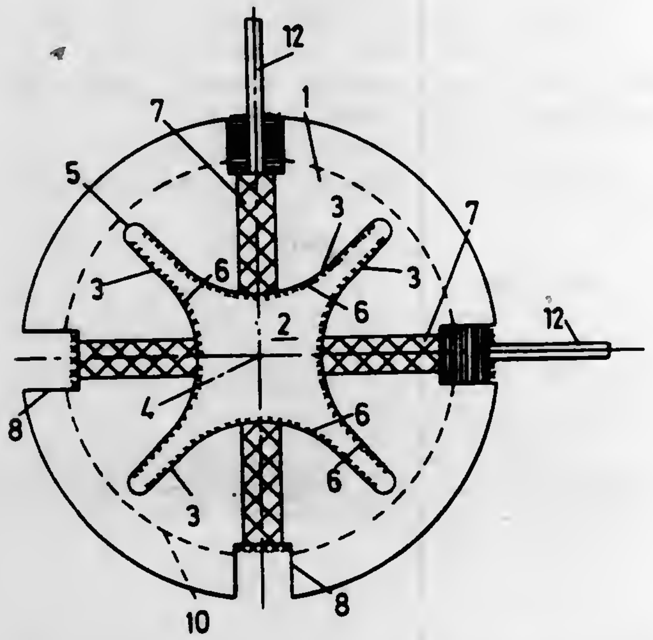
### 3,757,115

## MASS SPECTROMETERS

**Geoffrey William Ball, "Apple Patch" Bellingdon, Chesham, Buckinghamshire, England**

**Filed Oct. 12, 1971, Ser. No. 188,226**
**Claims priority, application Great Britain, Nov. 12, 1970, 53,864/70**
**Int. Cl. H01j** ***39/34***
**U.S. Cl. 250—41.9 DS** **13 Claims**



A mass spectrometer having an ion filter comprising a cylindrical ceramic body with an axial passage. The sides of the passage are four hyperbolic surfaces the axial edges of adjacent hyperbolic surfaces being joined. A metallic plating is formed on each hyperbolic surface but is not connected electrically to the platings on the adjacent hyperbolic surfaces. The ends of each plating are connected as are opposite platings.

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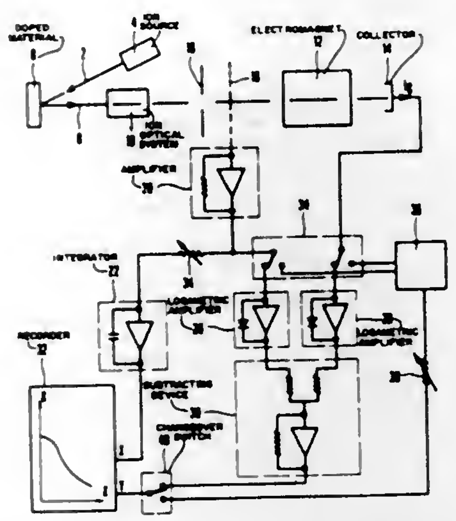
### 3,757,116

## DEVICE FOR DIRECT MEASUREMENT OF THE CURVE OF CONCENTRATION OF AN ELEMENT IN A MATERIAL

**Bruno Blanchard; Noel Hilleret; Joel Monnier, all of Grenoble, and Jean-Baptiste Quoirin, Saint-Martin D'Heres, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France and Commissariat A L'Energie Atomique, Paris, France**

**Filed Feb. 22, 1972, Ser. No. 227,979**
**Claims priority, application France, Feb. 22, 1971, 7105932**
**Int. Cl. H01j** ***39/34***
**U.S. Cl. 250—41.9 G** **5 Claims**



A method for direct measurement of the curve of concentration of an element in a material, wherein said material is subjected to bombardment by a beam of primary ions and said material in turn emits a beam of secondary ions, wherein said method consists in recording simultaneously the total current corresponding to all the ions contained in said secondary beam and the ratio of the current which corresponds solely to the ions of said element contained in said beam, to said total current.

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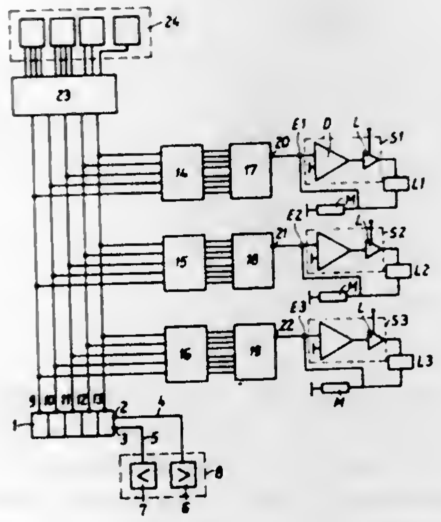
### 3,757,117

## ARRANGEMENT FOR THE MAGNIFICATION ADJUSTMENT OF AN ELECTRON MICROSCOPE

**Karl-Heinz Muller, and Volker Rindfleisch, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Sept. 15, 1972, Ser. No. 289,531**
**Claims priority, application Germany, Sept. 28, 1971, P 21 49 108.7**
**Int. Cl. H01j** ***37/26***
**U.S. Cl. 250—49.5 A** **7 Claims**



An improved setting device for providing accurately reproducible, incrementally variable control voltages to the input of a control and regulating circuit for adjusting electromagnetic coil current in magnifying lenses of electron microscopes. The setting device includes a digital counter, preferably a forward-backward counter, connected to the input of the control circuit through a digital-to-analog converter. A digital-to-digital converter, programmed with a series of predetermined control settings, is connected between the output of the digital counter and the input to the digital-to-analgo converter to serve as a read-only memory for supplying a programmed magnification setting in response to address signals from the counter. A pulse source, preferably pushbutton-controlled, provides stepping pulses for adjusting the output voltage of the setting device to achieve desired values of magnification as indicated by a numeric display device connected to the output of the digital counter.

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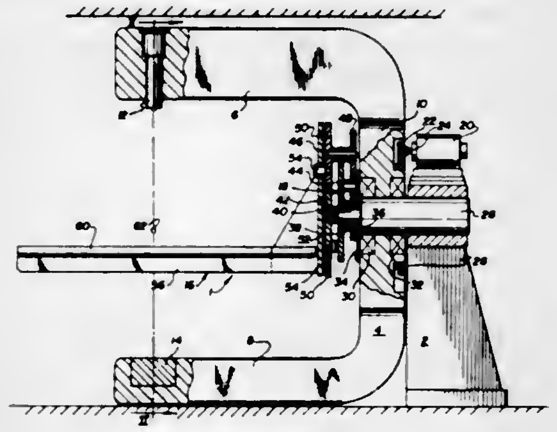
### 3,757,118

## ELECTRON BEAM THERAPY UNIT

**Samuel B. Hodge, Deep River, Ontario, and George O'Dacre, Pembroke, Ontario, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada**

**Filed Feb. 22, 1972, Ser. No. 228,177**
**Int. Cl. H01j** ***37/30***
**U.S. Cl. 250—49.5 TE** **3 Claims**



An electron beam therapy unit in which an electron beam source and a shield are mounted on the opposed horizontally extending arms of a U-frame mounted for rotation about a horizontal axis, and a patient support is pivotally attached at off-centre positions to three planet gears which are rotatable about fixed axis and mesh with a rotatable sun gear.

As the U-frame is rotated a gear train connected to it rotates one of the planet gears, which rotates the other planet gears through the sun gear, so that the patient support is rotated along a circular path around the U-frame axis of rotation so that the patient is always diametrically opposite the electron beam source.

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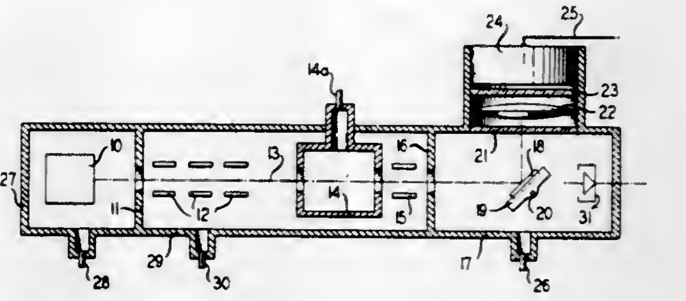
### 3,757,119

## APPARATUS AND METHOD FOR DETERMINING SPUTTERING EFFICIENCY

**Daniel Vincent McCaughan, Westfield; Douglas Leon Simms, East Orange; Norman Henry Tolk, Mendham, and Clark Woody White, Dover, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.**

**Filed Mar. 8, 1972, Ser. No. 232,772**
**Int. Cl. H01j** ***37/00***
**U.S. Cl. 250—49.5 D** **2 Claims**

Efficiencies of sputtering of a material by bombardment with a particle beam are determined by: observing the time required for photon emissions characteristic of the particle sputtered from a film of known thickness of the material to disappear; or observing the time required for photon emissions characteristic of the substrate material to appear.



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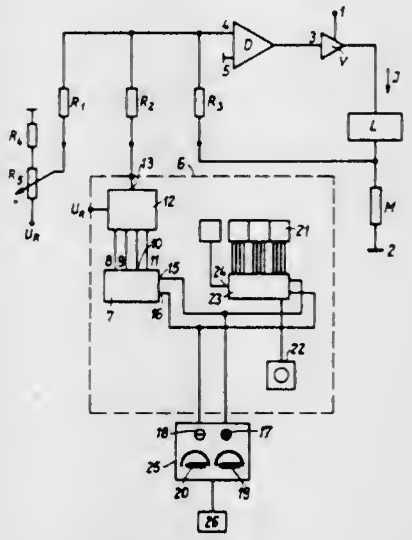
### 3,757,120

## CONTROL AND REGULATING ARRANGEMENT FOR THE CURRENT FED TO ELECTROMAGNETIC COILS OF CORPUSCULAR BEAM APPARATUS

**Karl-Heinz Muller, and Volker Rindfleisch, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

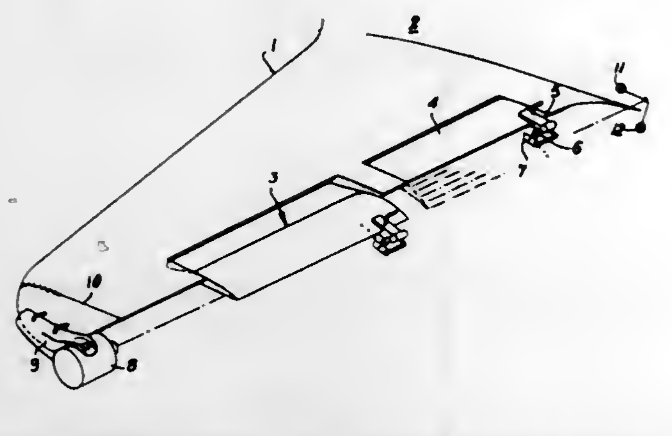
**Filed Sept. 15, 1972, Ser. No. 289,532**
**Claims priority, application Germany, Sept. 28, 1971, P 21 49 107.6**
**Int. Cl. H01j** ***37/26***
**U.S. Cl. 250—49.5 A** **12 Claims**



An improved setting device for providing accurately reproducible, incrementally variable control voltages to the input of a control and regulating circuit for adjusting electromagnetic coil current in charged-particle beam apparatus such as electron microscopes. The setting device includes a digital counter, preferably a forward-backward counter, connected to the input of the control circuit through a digital-to-analog converter. A pulse source, preferably pushbutton-controlled, provides stepping pulses, either one-by-one, or in a series of pulses of variable repetition rate and/or preselectable number, for adjusting the output voltage of the setting device to achieve, for example, desired values of magnification or focus as indicated by a numeric display device connected to the output of the pulse source and/or the output of the digital counter.

### 3,757,121
### MOVEMENT OF A MOVABLE COMPONENT OF AN AIRPLANE

**Albert Poirier, Saint-Benoit, France, assignor to Ulmic S. A., Paris, France**
**Filed Apr. 17, 1972, Ser. No. 244,539**
**Int. Cl. G01j** *1/02*
**U.S. Cl. 250—83.3 UV** **10 Claims**



The movement of a movable component of an airplane wing is measured by a transmitter of pin point radiation on the component. A directional receiver sensitive to the radiation is mounted on the support for the component. The curve described by the source with respect to the receiver is recorded and compared with a theoretical reference curve.

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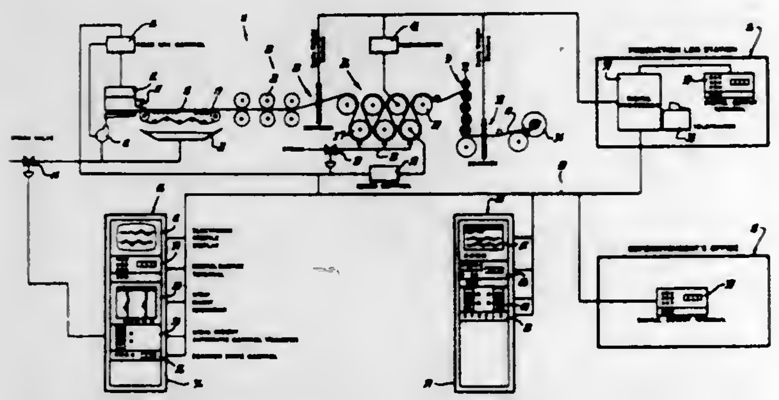
### 3,757,122
### BASIS WEIGHT GAUGING APPARATUS, SYSTEM AND METHOD

**David A. Bossen, 11510 Summit Wood Rd., Los Altos Hills; Eugene R. Anderson, 20335 Argonaut Dr., and Erik B. Dahlin, 13696 Camion Rico, both of Saratoga, all of Calif.**
**Continuation of Ser. No. 115,100, Feb. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 791,972, Jan. 17, 1969, abandoned. This application Oct. 30, 1972, Ser. No. 302,096**
**Int. Cl. G01t** *1/16*
**U.S. Cl. 250—83.3 D** **1 Claim**



A basis weight gauging apparatus and system for ascertaining the basis weight of sheet material having a radiation source providing radiation in the form of a succession of events and a radiation detector located to receive the radiation after it has come into contact with the material. Counting means scale the events which are received by the radiation detector for a predetermined period of time and these counts are utilized to obtain the weight per unit area measurement of the sheet material. When the basis weight measurements are being made continuously, a standardization means is provided to insure that the basis weight measurements are accurate.

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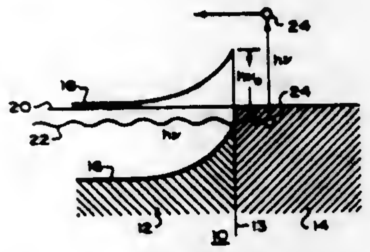
### 3,757,123
### SCHOTTKY BARRIER INFRARED DETECTOR HAVING ULTRATHIN METAL LAYER

**Robert J. Archer, Portola Valley, and Jerome Cohen, San Mateo, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.**
**Continuation of Ser. No. 43,836, June 5, 1970, abandoned. This application July 19, 1972, Ser. No. 273,093**
**Int. Cl. G01t** *1/24*
**U.S. Cl. 250—83.3 H** **8 Claims**



A metal film less than 100 Angstroms thick is deposited on one face of a semiconductor substrate to form a Schottky-barrier diode. Photons absorbed in the metal form electron-hole pairs; and those carriers with sufficient energy, in the right direction to cross the Schottky barrier, cause a current which is proportional to the incident radiant flux.

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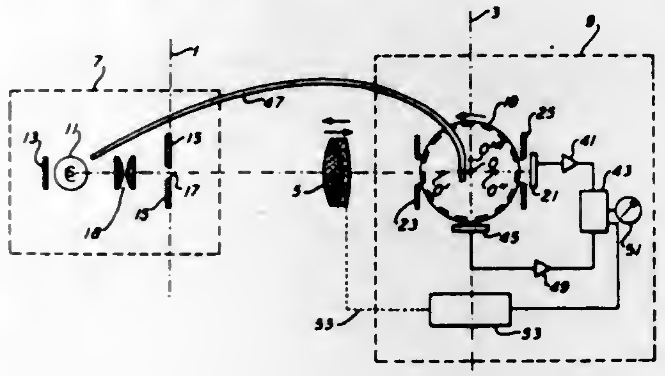
### 3,757,124
### OPTICAL APPARATUS FOR FOCUSING AN IMAGE

**Paul T. Kaestner, 246 Bay Ave., Huntington, N.Y.**
**Filed Aug. 13, 1971, Ser. No. 171,551**
**Int. Cl. G01j** *1/00, 1/20;* **G03b** *3/00*
**U.S. Cl. 250—201** **9 Claims**



Apparatus for determining the optimum focus for an optical system including signal generating means, means responsive to the position of an element in the optical system upon which sharp focus depends for providing an output signal indicating the direction the element is displaced along the optical axis of the system from a point of optimum focus. The ouput signal can be used as a servo error signal to automatically reposition the element to a position of optimum focus or, in the alternative, the element can be manually repositioned until the output signal is driven to null.

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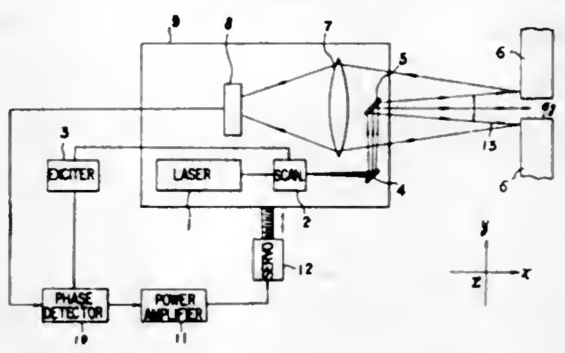
### 3,757,125
### OPTICAL TRACKING APPARATUS

**Kazuo Okada, Suita-shi, and Shigeru Ando, Toyonaka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**
**Filed Dec. 17, 1971, Ser. No. 209,061**
**Claims priority, application Japan, Dec. 26, 1970, 45/123921; Dec. 26, 1970, 45/123923; Oct. 13, 1971, 46/80740**
**Int. Cl. G06k** *11/02*
**U.S. Cl. 250—202** **4 Claims**

This invention consists of an optical tracking apparatus comprising a source of parallel light, such as laser, which irradiates the object to be tracked. A light scanning device, which is disposed between the source of parallel light and the object, is provided to deflect or scan the light from the source across the object to be tracked. A convex lens is provided to focus light reflected from the object. A light detector is provided which receives the reflected light and converts it into an electrical signal. The output of the light detector is fed to a phase detector which senses its phase with reference to the phase of the scanning device. Deviation of the scanning center of the scanned light from a selected position on the object to be tracked is detected, and a servo-system is provided to reduce the deviation to zero.



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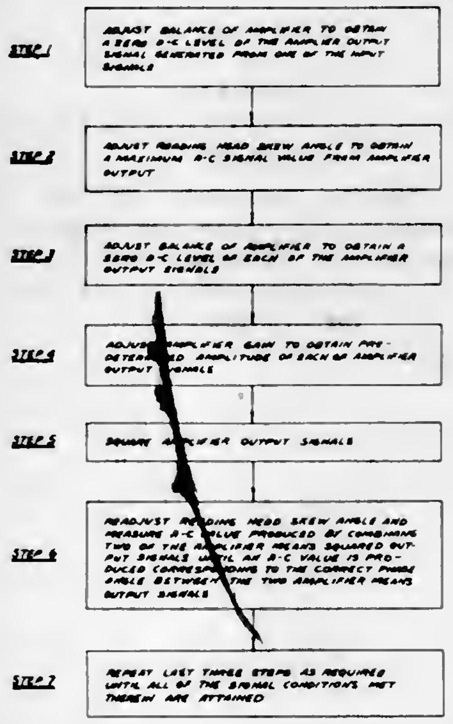
### 3,757,126
### METHOD OF SETTING MOIRE FRINGE TRANSDUCER READING HEAD SKEW ANGLE AND INPUT STAGE AMPLIFIER GAIN AND BALANCE

**Gerald L. Tumbush, Xenia, Ohio, assignor to The Bendix Corporation, Southfield, Mich.**
**Filed Aug. 28, 1972, Ser. No. 284,313**
**Int. Cl. G01b** *11/04*
**U.S. Cl. 250—209** **2 Claims**


STEP 1
ADJUST BALANCE OF AMPLIFIER TO OBTAIN A ZERO D-C LEVEL OF THE AMPLIFIER OUTPUT SIGNAL GENERATED FROM ONE OF THE INPUT SIGNALS
STEP 2
ADJUST READING HEAD SKEW ANGLE TO OBTAIN A MAXIMUM A-C SIGNAL VALUE FROM AMPLIFIER OUTPUT
STEP 3
ADJUST BALANCE OF AMPLIFIER TO OBTAIN A ZERO D-C LEVEL OF EACH OF THE AMPLIFIER OUTPUT SIGNALS
STEP 4
ADJUST AMPLIFIER GAIN TO OBTAIN PRE-DETERMINED AMPLITUDE OF EACH OF AMPLIFIER OUTPUT SIGNALS
STEP 5
SQUARE AMPLIFIER OUTPUT SIGNALS
STEP 6
READJUST READING HEAD SKEW ANGLE AND MEASURE A-C VALUE PRODUCED BY COMBINING TWO OF THE AMPLIFIER MEANS SQUARED OUTPUT SIGNALS UNTIL AN A-C VALUE IS PRODUCED CORRESPONDING TO THE CORRECT PHASE ANGLE BETWEEN THE TWO AMPLIFIER MEANS OUTPUT SIGNALS
STEP 7
REPEAT LAST THREE STEPS AS REQUIRED UNTIL ALL OF THE SIGNAL CONDITIONS MET THEREIN ARE ATTAINED

A method of setting the reading head skew angle and the associated input stage amplifier gain and balance of a Moire fringe transducer system is disclosed which can be carried out with a voltmeter. The procedure involves setting the signal d-c level at zero by means of an amplifier balance potentiometer, measuring the a-c output of the input stage amplifier associated with each channel while adjusting the reading head skew angle to obtain a maximum signal, resetting the d-c level at zero, setting the a-c amplitude at the prescribed level by adjusting the amplifier gain and then measuring and setting the phase angle between square waves produced from the 0° and 90° channel sine waves by measuring the effective a-c value produced by the combined 0° and 90° square waves and adjusting the reading head skew angle to obtain a predetermined a-c reading corresponding to the correct phase angle, and then repeating the procedures involved in the last three steps until all of the conditions are met.

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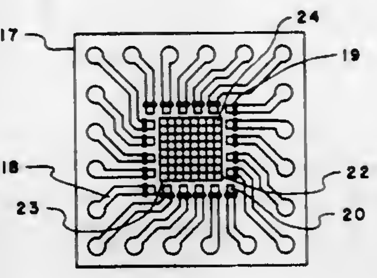
### 3,757,127
### PHOTODETECTOR PACKAGING ASSEMBLY

**Vir A. Dhaka, Hopewell Junction, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.**
**Filed Aug. 10, 1970, Ser. No. 62,298**
**Int. Cl. G02b** *5/16*
**U.S. Cl. 250—227** **1 Claim**



A photodetector assembly includes a slice of semiconductive material having a photodetector array formed thereon. The slice is supported on a substrate. A fiber optics bundle is closely spaced and coupled optically to the devices of the array.

In one embodiment, the substrate is apertured. Contacts space the slice from the substrate with the array positioned over the aperture. The bundle extends into the aperture, terminating at the surface of the substrate. In another embodiment the slice is bonded to a depression in the substrate with the array facing away from the substrate. An apertured cap is mounted over the substrate, with the bundle extending into the aperture.

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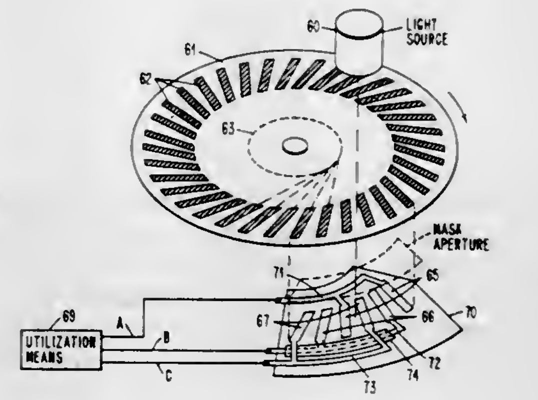
### 3,757,128
### MULTIPHASE TACHOMETER

**Johannes C. Vermeulen, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Mar. 20, 1972, Ser. No. 235,956**
**Int. Cl. G01d** *5/34*
**U.S. Cl. 250—231 SE** **11 Claims**



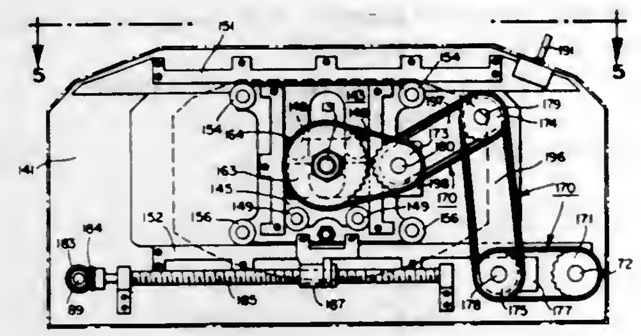
A multiphase tachometer is substantially insensitive to minute relative position changes between a sensing element and the moving tachometer member.

Interdigited techniques, including integrated circuit sensing elements, minimize the distance between sensing elements.

### 3,757,129

### X-RAY TABLE PATIENT ROTATOR BASKET

**William F. Hogan, 49 S. Evergreen Ave., Woodbury, N.J.**
**Filed Nov. 24, 1972, Ser. No. 309,006**
**Int. Cl. G03b** *41/16*
**U.S. Cl. 250—439** **17 Claims**



A basket for receiving a patient for full-length X-ray examination is movable laterally relative to the X-ray table. The basket is also rotatable on its own longitudinal axis, and when so rotated the level or elevational position of the basket is adjusted automatically.

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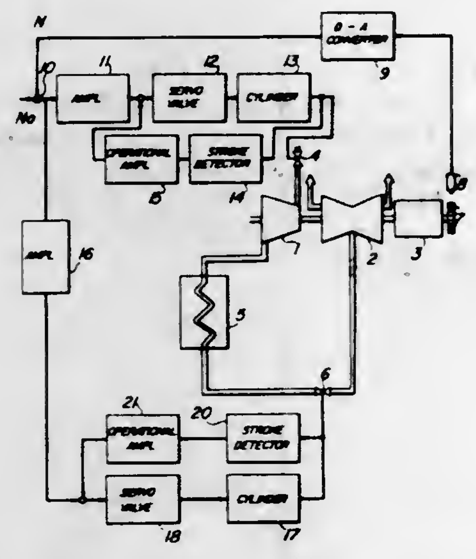
### 3,757,130

### OVERSPEED PREVENTIVE APPARATUS FOR ENGINES

**Yoshihiro Uchiyama; Akihiro Yasumoto; Katsumi Takemura; Takashi Kishigami, all of Hitachi; Mamoru Huzieda, Ibaraki-ken, and Ryosuke Arie, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**
**Filed Dec. 16, 1970, Ser. No. 98,568**
**Claims priority, application Japan, Dec. 19, 1969, 44/101646; Dec. 19, 1969, 44/101647; July 24, 1970, 45/64306**
**Int. Cl. H02p** *9/04*
**U.S. Cl. 290—40** **13 Claims**



An electro-hydraulic overspeed preventive apparatus for an engine in which two overspeed preventive control systems are provided in addition to a speed control system including a working fluid flow regulating valve disposed at the inlet of the engine and means for controlling the opening of the working fluid flow regulating valve in response to an error signal representative of the deviation of the actual speed from the desired speed. The two overspeed preventive control systems respectively are operated to close the working fluid flow regulating valve prior to the operation of the speed control system when the acceleration signal representative of the actual acceleration exceeds a predetermined limit and when the difference between two signals respectively representative of the state of flow of the working fluid and the electrical output of the load exceeds a predetermined limit.

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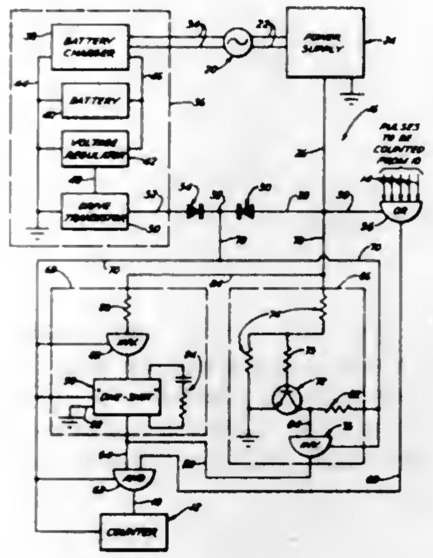
### 3,757,131

### EMERGENCY POWER SWITCHING CIRCUIT FOR COUNTERS

**Ronald L. Krutz, and Thomas J. Villella, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**
**Filed June 2, 1972, Ser. No. 259,273**
**Int. Cl. H02j** *9/06*
**U.S. Cl. 307—64** **9 Claims**



A circuit positioned between an array of a normal power supply and an emergency power supply, a source of pulses to be counted, and at least one counter for counting said pulses, which circuit serves the functions of smoothly isolating the counter from the pulse source in the event of a failure of the normal power supply to hold the count on the counter. When normal power returns, the circuit waits for the pulse source to stabilize and then reconnects the counter to the pulse source. All operations are performed without losing or gaining any counts on the counter.

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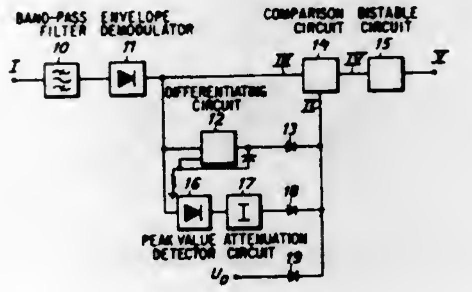
### 3,757,132

### APPARATUS FOR THE DETECTION OF RECTANGULAR PULSES

**Lars Konrad Nilsson, Hagersten, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden**
**Filed Mar. 24, 1972, Ser. No. 237,656**
**Claims priority, application Sweden, May 17, 1971, 6365/71**
**Int. Cl. H04l** *15/24*
**U.S. Cl. 307—106** **5 Claims**



The invention refers to an apparatus for the detection of rectangular pulses in which the duration of the leading edge and the trailing edge respectively is constant whereas the peak amplitude can fluctuate. The apparatus includes a comparison circuit that compares the instantaneous amplitude of the rectangular pulses with the amplitude of a reference voltage and which upon equality between the levels of the amplitudes being compared delivers an indicating pulse. According to the invention, the reference voltage is, during the leading edges formed by the output voltage from a differentiating circuit which is fed with the rectangular pulses and which during each of their leading edges delivers an output voltage the time function of which has such a predetermined intersection point with the time function of the leading edge that the amplitude value at the intersection point equals a selected fraction of the peak amplitude of the rectangular pulse.

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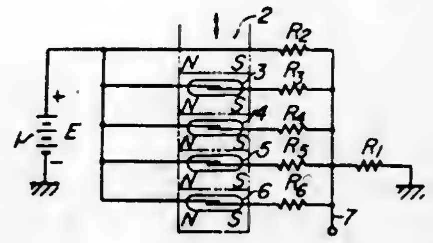
### 3,757,133

### CONTROL FOR AUTOMATIC TRANSMISSION

**Hiroshi Arai, and Takakazu Mori, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan**
**Division of Ser. No. 80,116, Oct. 12, 1970, Pat. No. 3,707,097. This application Nov. 29, 1971, Ser. No. 203,092**
**Int. Cl. H01h** *36/00*
**U.S. Cl. 307—116** **9 Claims**



In an electrical control for an automatic transmission, including a throttle position signal generator and having vehicle speed as well as throttle position as input signals and an optimum selection of gear range as an output, the improvement wherein the throttle position signal generator comprises a magnet operatively connected to a throttle valve, a plurality of magnetically energized switches connected with a circuit including resistors and a source of electric energy for generating a stepped throttle position signal voltage.

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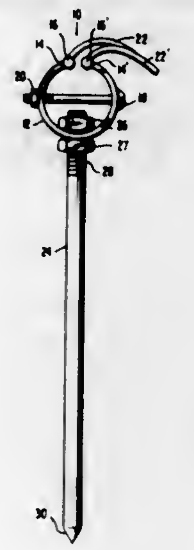
### 3,757,134

### LIQUID SENSING SWITCH ASSEMBLY

**Robert V. Whitener, 20 Tall Tree Ct., Huntington, N.Y.**
**Division of Ser. No. 170,525, Aug. 10, 1971. This application June 6, 1972, Ser. No. 260,332**
**Int. Cl. H01h** *35/42*
**U.S. Cl. 307—118** **6 Claims**



A switch assembly activated by conductive liquids, typically water, and based upon use of a longitudinally slit resilient cylinder, carrying one of a pair of spaced, parallel rod-shaped electrodes at each side of the cylinder wall slit. A bolt passed transversely through the cylinder may be adjusted as to constrict or relax the resilient cylinder to thereby vary the spacing of the parallel electrode rods and the sensitivity characteristics of the switch. Moisture, for example, in the form of sprinkler produced water droplets, or the level of surface irrigation water, may bridge the electrode gap by impinging thereon and spreading longitudinally by surface tension effects. The resulting change in current may be utilized to trip a relay in an irrigation system supplying the activating water droplets, or—where the switch is used in a level detector system—to provide a precise indicating signal that the monitored liquid level has become accessible to the electrode gap.

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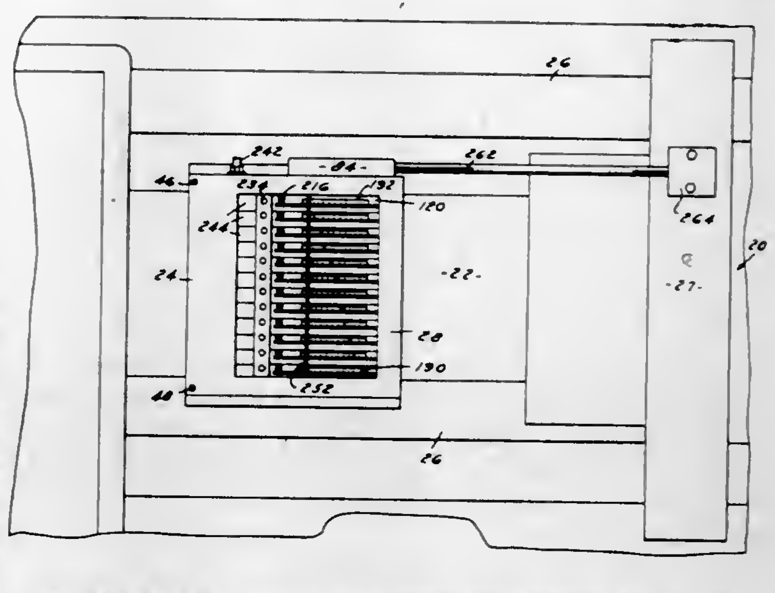
### 3,757,135

### ADJUSTABLE CONTROL SWITCHING MECHANISM

**David M. Tenniswood, Troy; John E. Arnold, Auburn Heights; Robert E. Kaptur, Birmingham; Toncho G. Tonchev, Detroit, and Herbert J. Franke, Troy, all of Mich., assignors to Gemco Electric Company, Clawson, Mich.**
**Filed Jan. 6, 1972, Ser. No. 215,826**
**Int. Cl. H01h** *3/16*
**U.S. Cl. 307—139** **15 Claims**



An adjustable control switching mechanism for machines having a repetitive cycle of operation, comprising a support fixed with respect to the machine, a part mounted for movement on the support and coupled to a shifting machine element to be moved correspondingly to such element, and a plurality of switch modules each having a micro-switch selectively shiftable therealong for actuation by the movable part as it is moved in response to the operation of the machine, with each microswitch connected to a machine function to actuate the machine in a predetermined cycle of operation.

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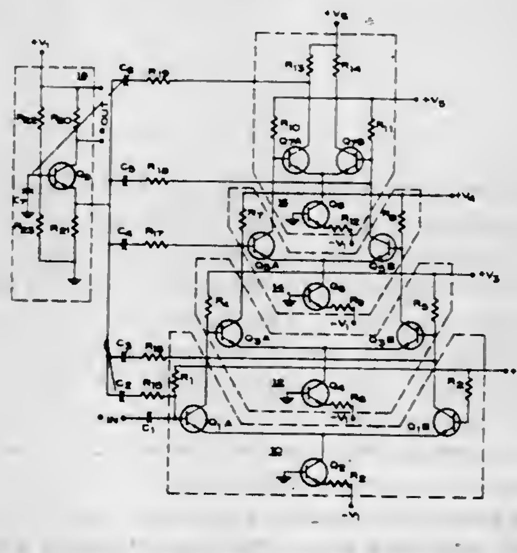
### 3,757,136

### DIRECT COUPLED LOGARITHMIC VIDEO AMPLIFIER

**Richard Smith Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Dec. 20, 1971, Ser. No. 209,840**
**Int. Cl. H03k** *17/00*
**U.S. Cl. 307—229** **6 Claims**

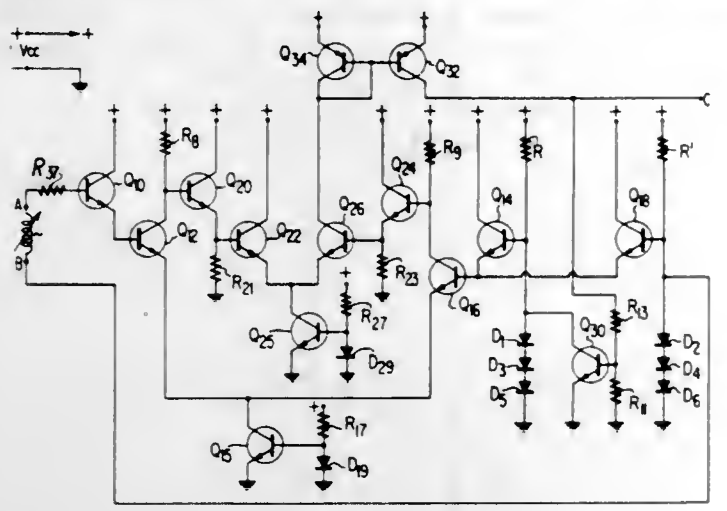


A high duty cycle logarithmic amplifier having differential amplifier stages wherein the stages are direct coupled, i.e., not capacitive coupled.

### 3,757,137
### LOW VOLTAGE REFERENCE CIRCUIT

**Adel Abdel Aziz Ahmed, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.**

**Continuation of Ser. No. 884,384, Dec. 18, 1969, abandoned.**
**This application Jan. 21, 1972, Ser. No. 219,898**
**Int. Cl. H03k** *5/20, 17/30*; **H03f** *3/04*
**U.S. Cl. 307—235 R** **23 Claims**



The accurately predictable voltage difference between forward biased diodes carrying currents in a known ratio is used to obtain an output signal from a circuit whenever the input signal thereto exceeds an accurately known, set threshold, wherein the supply voltage to the circuit precludes the utilization of Zener diodes.

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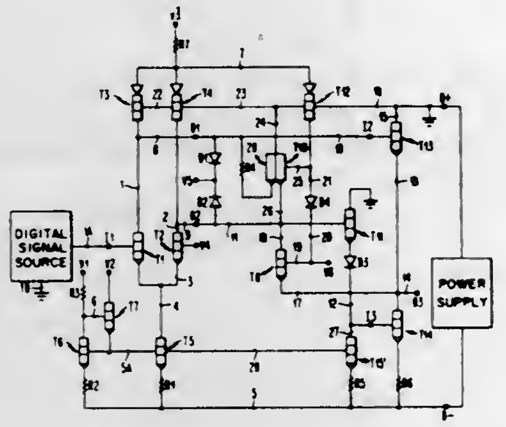
### 3,757,138
### PUSH-PULL LINE DRIVER CIRCUIT

**Harsaran S. Bhatia, Fishkill; Donald E. Davis, Wappingers Falls, both of N.Y., and David H. Martin, Chandlers Ford, England, assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed May 4, 1972, Ser. No. 250,213**
**Int. Cl. H03k** *5/20*
**U.S. Cl. 307—235 R** **14 Claims**



A line driver circuit for driving highly capacitive or low impedance loads such as the data and power lines that extend from chip to chip of integrated memory and logic circuits utilized in digital computers, peripheral apparatuses therefor and similar digital equipment. The line driver circuit comprises a current switch direct-current-coupled to a single-ended push-pull output stage. The current switch comprises a pair of transistors having their emitters connected to a current source. The output stage comprises a pair of output transistors with the emitter of one output transistor and the collector of the other transistor connected together and to the output of the circuit. The collectors of the current switch transistors are direct-current-coupled to the respective bases of the output stage transistors. The line driver circuit further comprises an active feedback network for limiting the amplitude of the downward swing of the potential of the output terminal of the output stage and including a feedback transistor having its emitter connected to the output of the output stage and its collector connected to the collector of one of the current switch transistors.

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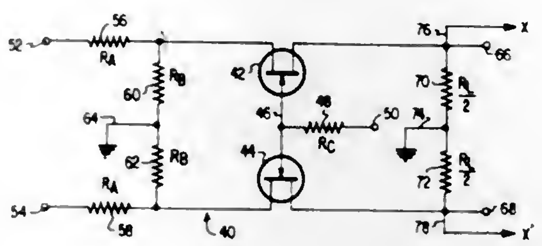
### 3,757,139
### SOLID STATE SWITCHER FOR RADIO BROADCAST PROGRAMMING

**E. Bruce Hunter, Mill Valley, Calif., assignor to Golden West Broadcasters, Los Angeles, Calif.**

**Filed Apr. 9, 1971, Ser. No. 132,728**
**Int. Cl. H03k** *17/00*
**U.S. Cl. 307—251** **6 Claims**



Disclosed is a solid state switcher particularly adapted for switching audio inputs to a common output in radio broadcasting programming. The switcher is comprised of a plurality of novel JFET switching gates which are connected in a control matrix to selectively connect the selected input to the common output in accordance with a solid state logic selection circuit. Also provided are pushbutton selectors and an illuminated display for indicating which input is connected to the output.

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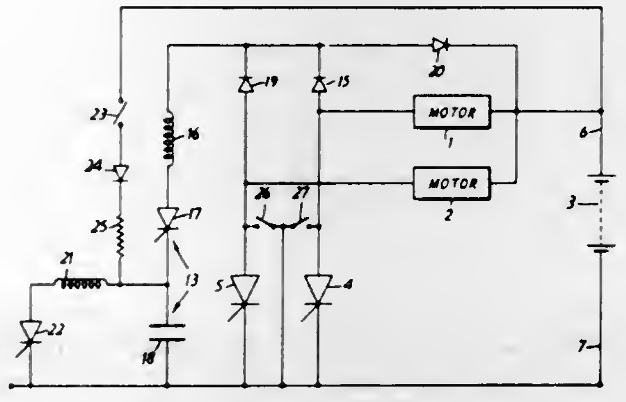
### 3,757,140
### COMMUTATION CIRCUITS

**David Gurwicz, and Albert E. Sloan, both of Gateshead, County Durham, England, assignors to Ransomes Sims & Vefferies Limited, Ipswich and Seacon Engineering Limited, Gateshead, both of England**

**Division of Ser. No. 796,382, Feb. 4, 1969, Pat. No. 3,596,154. This application May 20, 1971, Ser. No. 145,413. The portion of the term of this patent subsequent to July 27, 1970, has been disclaimed.**
**U.S. Cl. 307—252 M** **5 Claims**

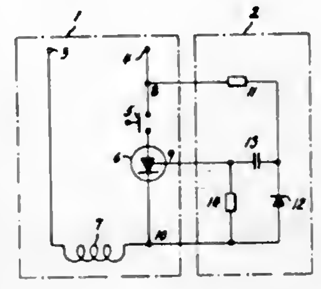


Commutation circuits for simultaneously commutating a plurality of main semi-conductor switching devices, each adapted to effect pulsed connection of an electrical supply to a load individual to the semi-conductor switching device, the simultaneous commutation of the switching devices facilitating variation of the mean power supplied to one relatively to the mean power supplied to another of the different loads.

### 3,757,141
### CIRCUIT ARRANGEMENTS FOR SUPPLYING AN ALTERNATING CURRENT POTENTIAL TO A LOAD

**Sven Gunnar Palsson, Hestra, and Jan Bertil Janocha, Trollhattan, both of Sweden, assignors to Isabergs Verkstads AB, Hestra, Sweden**

**Filed Jan. 10, 1972, Ser. No. 216,755**
**Claims priority, application Sweden, Jan. 14, 1971, 380/71**
**Int. Cl. H03k** *17/72*
**U.S. Cl. 307—252 N** **2 Claims**



A circuit arrangement for supplying an alternating current potential to an operating winding in a portable tool wherein a manually actuable switch connected to one terminal of the power source is connected in series with a thyristor connected to one terminal of the winding the other terminal of which is connected to the other terminal of the power source and the gate of the thyristor is connected to control elements bringing the thyristor in conducting state only during a time period in which the switch is actuated and the positive periods in said alternating current potential.

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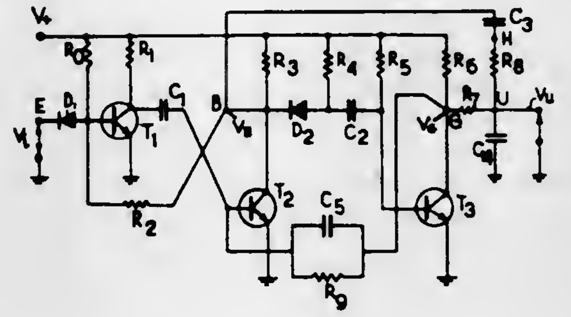
### 3,757,142
### COMBINED THRESHOLD DETECTOR AND MULTIVIBRATOR CIRCUIT

**Mario Palazzetti, Avigliana, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy**

**Filed Jan. 11, 1972, Ser. No. 216,972**
**Int. Cl. H03k** *3/26*
**U.S. Cl. 307—273** **6 Claims**



A circuit which acts simultaneously as a threshold circuit and a monostable multivibrator is disclosed. The circuit, in its preferred form comprises three transistors two of which form the multivibrator and the third of which performs a control switching operation to determine the threshold function. The circuit operates from a single voltage source. When in operation one of the transistors of the multivibrator part of the circuit is biased to saturated conducting state and the other is biased to a non-conducting state, the threshold transistor is biased to a saturated conducting state and connected to the non-conducting transistor such that when a signal is applied to its base its conducting or non-conducting state determines the switching of the multivibrator.

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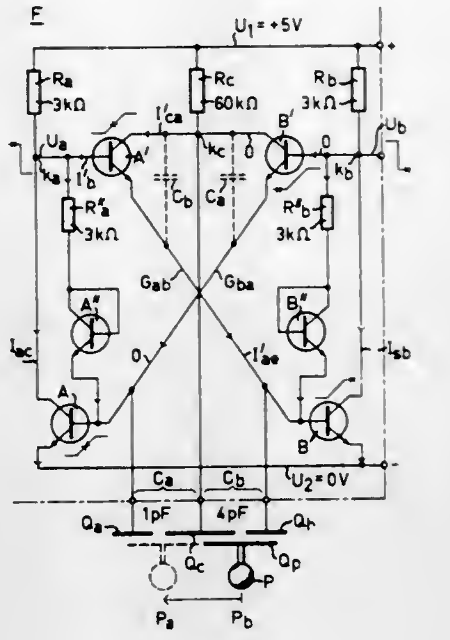
### 3,757,143
### BISTABLE CONTROLLABLE FLIP-FLOP CIRCUIT

**Albert Muller, Uster, Switzerland, assignor to Contraves AG, Zurich, Switzerland**

**Filed Apr. 17, 1972, Ser. No. 244,838**
**Claims priority, application Switzerland, Oct. 22, 1971, 15392/71**
**Int. Cl. H03k** *3/286*
**U.S. Cl. 307—291** **14 Claims**



A bistable controllable flip-flop circuit arrangement comprising two amplifier means and a respective direct current-coupling path for connecting the output of each amplifier means with the input of the amplifier means in such a manner that in each of two possible operating conditions one amplifier means assumes an active amplifying state and the other amplifier means assumes an inactive non-amplifying state. There is also provided a respective alternating current-feedback path for each of the amplifier means, each such alternating current-feedback path being located between the input and output of the associated amplifier means. Each respective alternating current-feedback path for each associated amplifier means comprises a respective inverting coupling amplifier means and alternating current-conductor means connected in circuit between the input and output of the associated amplifier means. At least one of the alternating current-conductor means is externally variable for selectively fulfilling an instability condition for the one or the other of said amplifier means such that there is rendered instable the operating state in which one of said amplifier means is operating and said one amplifier means is caused to assume its other operating state.

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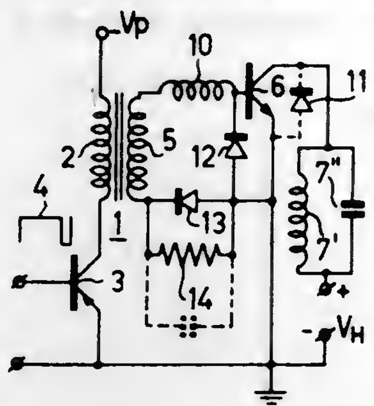
### 3,757,144
### SWITCHING CIRCUIT TRANSISTOR WITH A DELAYED TURN ON DIODE COUPLED TO ITS EMITTER AND BASE ELECTRODES

**Wilhelmus Theodorus Hendrikus Hetterscheid, and Harry Rimmer De Vries, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 26,497, April 8, 1970, abandoned.**
**This application Jan. 14, 1972, Ser. No. 217,985**
**Claims priority, application Netherlands, Apr. 16, 1969, 6905824**
**Int. Cl. H03k** *3/26*
**U.S. Cl. 307—300** **10 Claims**

A switching circuit has a first transistor and a transformer which apply a switching signal to a second transistor. A long turn on time diode is connected to the second transistor base and emitter electrodes, but in an opposite conductivity direction, to prevent excessive power dissipation during the switching off period. A second diode can be connected between the transformer and the emitter to prevent loading of the transformer. Likewise, a coil can be connected between the transformer and the base to improve turn off performance.



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**3,757,145**

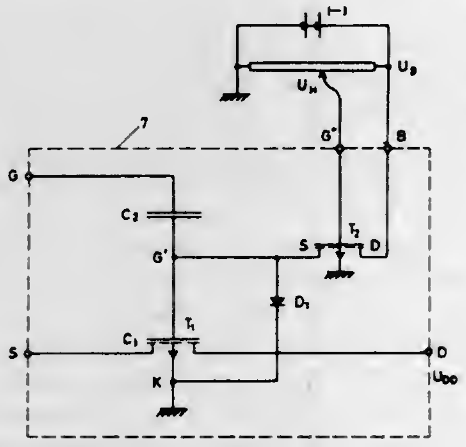
### INTEGRABLE IGFET CIRCUIT

**Fritz Gunter Adam, Freiburg, and Wolfgang Gollinger, Gundelfingen, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.**

**Filed June 30, 1972, Ser. No. 267,794**

**Int. Cl. H03k** *3/26*

**U.S. Cl. 307—304** **10 Claims**



This invention relates to an integrable solid-state circuit for controlling or regulating the effective threshold voltage of an insulated gate field effect transistor (IGFET). The substrate and the gate electrode of the IGFET are bridged by the series arrangement of a diode operating in the reverse direction and an auxiliary IGFET operated in the saturation range.

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**3,757,146**

### THERMOELECTRIC GENERATOR

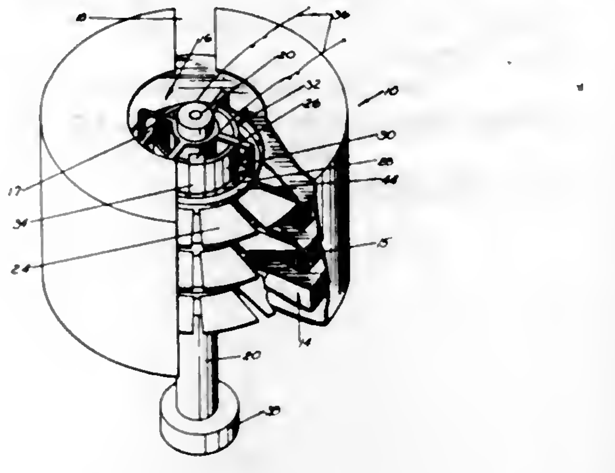
**Wesley Love, 2472 Observatory Rd., Cincinnati, Ohio**

**Filed May 12, 1971, Ser. No. 142,667**

**Int. Cl. H01v** *1/30*

**U.S. Cl. 310—4** **13 Claims**

A thermoelectric generator having a housing which is provided with opposed heat and cold source means positioned so as to define a centrally elongated space therebetween. A rotor shaft is centrally disposed in the housing in the space between the heat and cold source means, and at least one group of substantially coplanar metal blades is radially disposed about the shaft and extend into the heat and cold source means. Each of the metal blades is provided with brush means at the end thereof adjacent the shaft, and opposed pick up bar means are positioned in the space so as to be contiguous with the brush means on adjacent blades. Terminal means are associated with each pick up bar means and means are provided to rotate the shaft.



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**3,757,147**

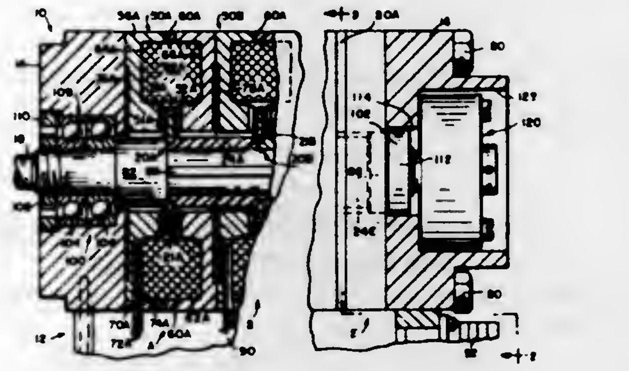
### STEPPING MOTOR

**Frank Lyman, Jr., Cambridge, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.**

**Filed May 18, 1971, Ser. No. 144,494**

**Int. Cl. H02k** *37/00*

**U.S. Cl. 310—49** **5 Claims**



A multiphase rotary stepping motor of the type having a shaft with the rotors distributed axially thereon, and a housing carrying the axially distributed stators, the rotors and stators having their respective pole-forming elements separated by axial air gaps. The shaft is mounted for rotation in the housing by a bearing arrangement which includes an axially fixed bearing, such as a duplex bearing, located at one end of the motor to restrict axial motion of the shaft, and an axially floating bearing located at the other end of the motor and freely allowing the shaft to move axially as a result of thermal expansion and contraction. Mounted on the free end of the shaft are inertial damping means in the form of an annular mass concentric with the shaft, with a spring and disks of low friction material, such as Teflon, linking the shaft and annular mass in a predetermined pressure and friction relationship.

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**3,757,148**

### VIBRATORY MOTOR OF ADJUSTABLE ECCENTRICITY

**Daniel Rene Philibert, Aiguebelle, Savoie, France, assignor to Societe d'Exploitation des Etablissements D. Philibert, Aiguebelle, Savoie, France**

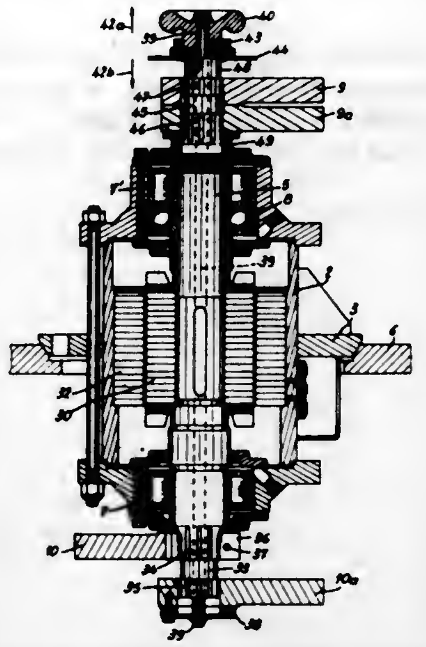
**Filed Jan. 5, 1972, Ser. No. 215,547**

**Claims priority, application France, Jan. 6, 1971, 7100848**

**Int. Cl. H02k** *7/00*

**U.S. Cl. 310—81** **9 Claims**

A vibratory motor with a vertical shaft is eccentrically loaded by two pairs of outrigger arms mounted by a splined connection on the top and bottom extremities of the shaft, the splines of each shaft extremity being interrupted by an axial gap enabling the raising of the hub of the lower arm of the respective pair into a disengaged position in which the arm may be rotated with reference to its mate to vary the effective eccentricity. The lower arm of the bottom pair is linked with a vertical rod, passing axially through the hollow motor shaft, which carries at its projecting top a handwheel enabling that rod to be raised and rotated whereby that lower arm can be disengaged from the shaft and swung into a different angular position relative to the upper arm of that pair.



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**3,757,149**

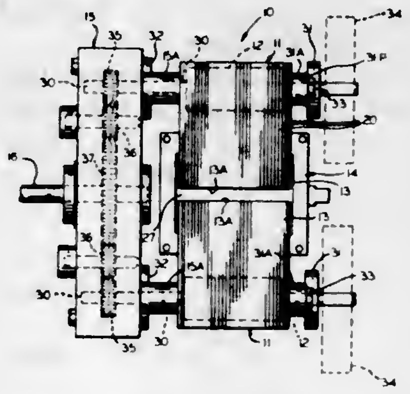
### SHADING COIL MOTOR ASSEMBLY

**Frank Holper, Cary, Ill., assignor to Molon Motor & Coil Corp., Rolling Meadows, Ill.**

**Filed Feb. 16, 1972, Ser. No. 226,787**

**Int. Cl. H02k** *17/10*

**U.S. Cl. 310—114** **6 Claims**



A shading coil motor assembly including a pair of juxtaposed stator frames, each having a rotor, a common coil to produce magnetic flux for both stator frames, and drive shafts joined to the rotor on spaced, parallel axes for delivering torque to a common gear and output shaft.

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**3,757,150**

### DIRECT CURRENT TRACTION MOTOR

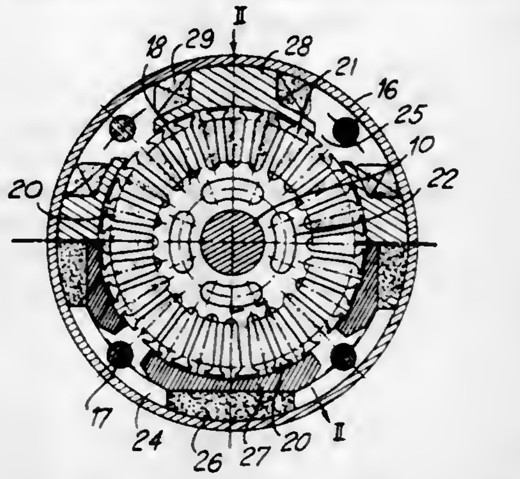
**Jacques H. Benezech, Le Vesinet, France, assignor to S.A. Novi-P.B., Pantin, France**

**Filed Feb. 29, 1972, Ser. No. 230,351**

**Int. Cl. H02k** *23/02*

**U.S. Cl. 310—181** **14 Claims**

A direct current traction motor comprising a rotary armature consisting of a stack of slotted magnetic plates surrounded with a gap by a composite multipolar induction assembly wherein each pole comprises a core-mounted induction coil and a permanent induction magnet, the respective inductors of the poles thus forming two sets spaced equidistantly around the armature, either in fixed axially aligned relationship or in variable angular relationship as between one set and the other, and the axial distance between the coil and the magnet at each pole bearing a predetermined relationship to the gap between the armature and induction assembly.



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**3,757,151**

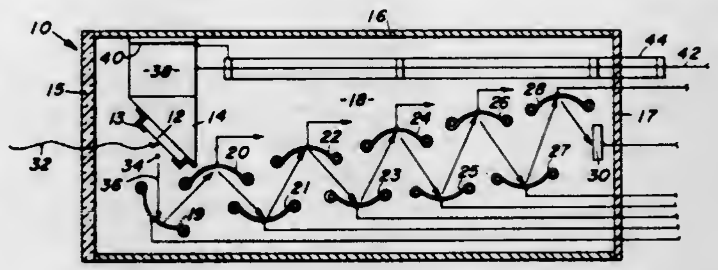
### INTERNAL COOLING FOR PHOTODETECTORS

**Ronald S. Ace, Greenbelt, Md., assignor to Ace Sophisticates Inc., Greenbelt, Md.**

**Filed Aug. 11, 1972, Ser. No. 279,922**

**Int. Cl. H01j** *1/02*

**U.S. Cl. 313—39** **18 Claims**



A technique is disclosed for improving the performance of photodetectors such as the photocathode of a photomultiplier tube, by reducing thermal electron emission noise and thus increasing the signal to noise ratio. A thermoelectric cooler is positioned within the evacuated envelope of a photomultiplier tube in thermal communication with the photocathode, which is normally the predominant source of electronic noise. Location of the cooler within the tube envelope permits efficient cooling of the photocathode while at the same time reducing the expense and bulk of conventional cryostatic coolers.

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**3,757,152**

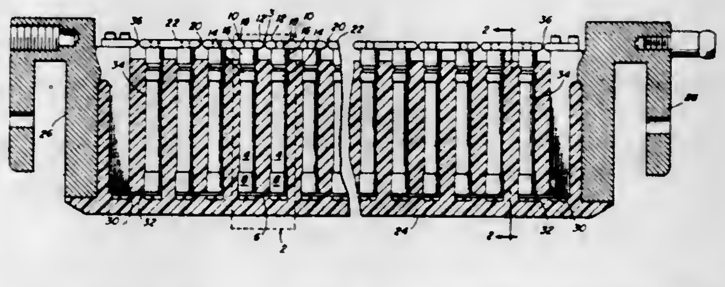
### RESISTOR ASSEMBLY

**Robert R. Charpentier, Chelmsford, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.**

**Filed June 2, 1972, Ser. No. 259,234**

**Int. Cl. H05h** *5/00*

**U.S. Cl. 313—63** **5 Claims**



A resistor assembly capable of withstanding mechanical stresses and high frequency as well as d.c. electrical surges greater than the aggregate voltage rating of its component resistor elements. A plurality of resistor elements are divided into sections, each section bridged by a spark gap. The spark gaps are series connected in a linear sequence between the terminals of the assembly and electrically connected to their respective resistor elements by leads positioned orthogonal to the line of spark gaps. The resulting configuration has a ratio of impedance along the spark gaps to impedance along the resistor elements which is high for steady state low frequency voltage applications and low for large, high-frequency voltage surges. The resistor elements are encapsulated in a thermally conductive, electrically insulating block of epoxy, and advantageously employed as a voltage divider in high voltage charged particle accelerators.

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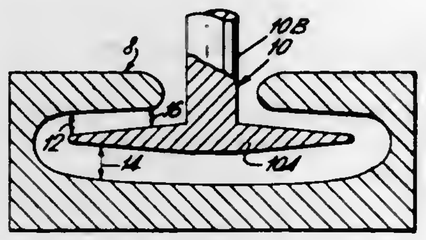
3,757,153

### ELECTRICAL SWITCHING ARRANGEMENTS

**Trevor Evans James, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England**
**Filed July 9, 1971, Ser. No. 161,121**
**Claims priority, application Great Britain, July 21, 1970, 35,388/70**
**Int. Cl. H01j** *17/04*
**U.S. Cl. 313—325** **6 Claims**



Various spark gap switches are disclosed in which an arc is caused to be struck, at a desired switching instant, between two electrodes. The electrodes are constructed so that a surface of one electrode faces an annular edge of the other, and a pronounced change in inter-electrode spacing occurs at this annular edge. The resultant magnetic forces produced at the annular edge when the arc is struck tend to hold the arc in a desired position. In some forms of the switches, the electrodes are generally planar. In others, one electrode is at least partially embraced by the other so as to define a semi-enclosed region within which the magnetic forces retain the arc.

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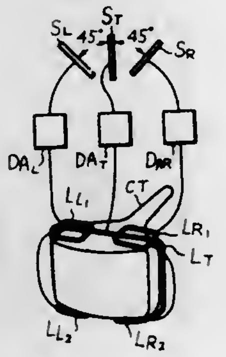
3,757,154

### APPARATUS FOR AUTOMATICALLY ELIMINATING THE INFLUENCE OF THE EARTH'S MAGNETIC FIELD ON COLOR TELEVISION RECEIVERS

**Tetsuo Okita, and Junji Inagawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan**
**Continuation-in-part of Ser. No. 787,385, Dec. 27, 1968, abandoned. This application Mar. 3, 1971, Ser. No. 120,689**
**Int. Cl. H01f** *13/00;* **H01j** *29/98*
**U.S. Cl. 315—8** **4 Claims**



An apparatus for eliminating the influence of the earth's magnetic field on color television receivers including a coil disposed adjacent the face of the cathode ray tube and solid state means sensitive to the earth's magnetic field for generating a signal through the coils to compensate for different field effects as the positioning of the television set is varied.

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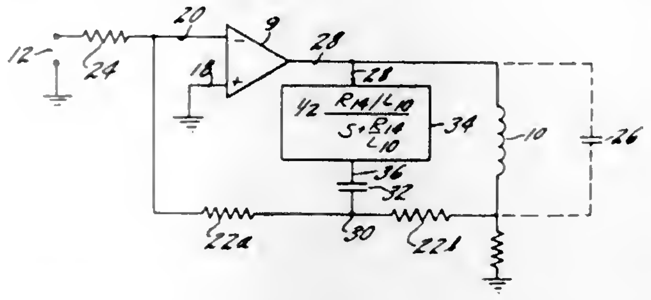
3,757,155

### WIDE-BANDWIDTH DEFLECTION AMPLIFIER

**Glenn C. Waehner, Riverside, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**
**Filed Dec. 20, 1971, Ser. No. 209,842**
**Int. Cl. H01j** *29/70*
**U.S. Cl. 315—27 TD** **2 Claims**



In a deflection amplifier, a sampling resistor is connected in series with a magnetic deflection yoke and develops a sampling voltage in response to the deflection current and parasitic current flowing therethrough. At low frequencies the sampling voltage causes a feedback current and a deflection current which is proportional to an input voltage. At high frequencies, a network responsive to the voltage provided to the series combination of the yoke and the sampling resistor causes the sampling voltage to be ignored and causes the feedback current and the deflection current to be proportional to the input voltage.

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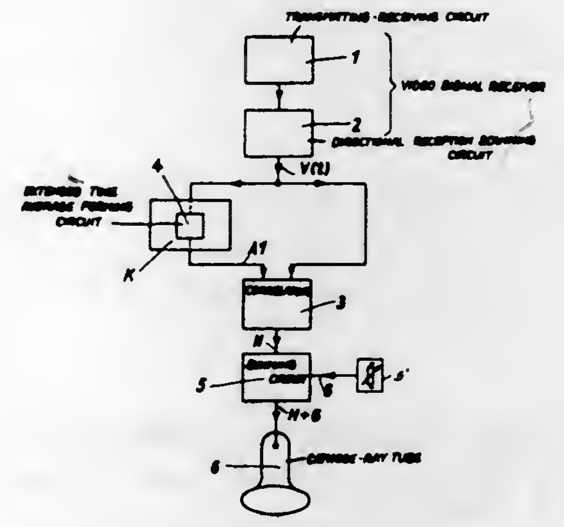
3,757,156

### VIDEO SIGNAL BRIGHTNESS CONTROL CIRCUIT ARRANGEMENT

**Dietrich Mueller, Achim, and Heiner Wulf, Ritterhude, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**
**Filed Oct. 22, 1971, Ser. No. 191,588**
**Claims priority, application Germany, Oct. 24, 1970, P 20 52 283.2**
**Int. Cl. H01j** *29/52*
**U.S. Cl. 315—30** **9 Claims**



A circuit arrangement for processing a sequence of video signals containing useful and interfering components, particularly received ranging signals, for display on a cathode-ray tube. The received video signals are fed via two parallel channels to a correlator. The video signals are unaltered in one of the channels while in the other channel the extended time average of the video signals is formed. The correlator forms the logarithm of the correlation of the two input signals thereto and the output signal thereof is used as the brightness control signal for the cathod-ray tube. A constant background brightness signal is preferably additively superimposed on the output signal from the correlator.

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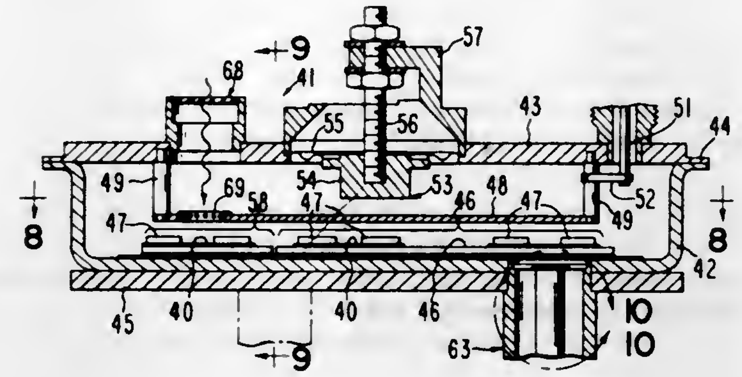
3,757,157

### DYNODE FOR CROSSED FIELD ELECTRON MULTIPLIER DEVICES

**Richard S. Enck, Jr., Mountain View, and Wayne G. Abraham, Los Altos Hills, both of Calif., assignors to Varian Associates, Palo Alto, Calif.**
**Filed Nov. 26, 1971, Ser. No. 202,541**
**Int. Cl. H01j** *7/46, 19/80*
**U.S. Cl. 315—39** **4 Claims**



The secondary electron emission surface portion of the dynode electrode of a crossed field electron multiplier is provided with a concave surface facing the secondary electron stream for focusing the secondary electron stream against unwanted transverse spreading thereof to enhance collection efficiency and in some cases bandwidth.

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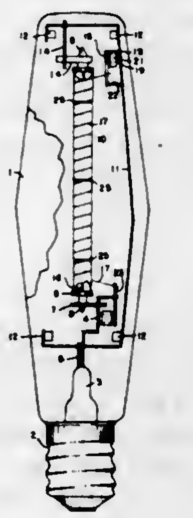
3,757,158

### SODIUM VAPOR LAMP HAVING A GROOVED ALUMINA ARC TUBE

**Bernard Kopelman, Salem, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.**
**Filed June 23, 1972, Ser. No. 265,523**
**Int. Cl. H01j** *7/24*
**U.S. Cl. 315—47** **4 Claims**



The arc tube of a sodium vapor arc discharge lamp has a spiral groove on the outer surface thereof. A refractory metal wire heater is wound around the arc tube and seated in the groove in order to maintain uniform spacing between the turns of the heater throughout the life of the lamp.

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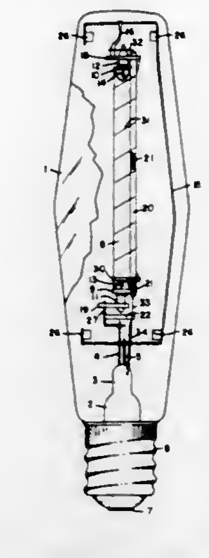
3,757,159

### SODIUM VAPOR LAMP HAVING IMPROVED STARTING MEANS

**John J. Gutta, Salem, and Frederick W. Paget, Rockport, both, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.**
**Filed July 17, 1972, Ser. No. 272,191**
**Int. Cl. H01j** *7/24*
**U.S. Cl. 315—47** **5 Claims**



The arc tube of a sodium vapor arc discharge lamp has an external electrical heater in heat transfer relationship therewith. The heater comprises coiled refractory metal wire and is inserted in a ceramic sleeve that is parallel and adjacent to the arc tube.

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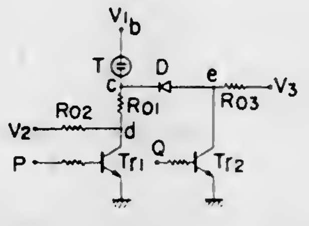
3,757,160

### GASEOUS-DISCHARGE TUBE CONTROL SYSTEM

**Takashi Inoue, Asaka, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan**
**Filed May 24, 1972, Ser. No. 256,373**
**Claims priority, application Japan, June 5, 1971, 46/39552**
**Int. Cl. H05b** *37/00, 39/00*
**U.S. Cl. 315—169 TV** **3 Claims**



A control system for gaseous-discharge tubes which operates upon the hysteresis characteristic of a gaseous-discharge tube. A voltage $V_1$ is normally applied to one electrode of the gaseous-discharge tube, whereas two voltages $V_2$ and $V_3$ are applied to the other electrode through a resistor and a diode respectively. The gaseous-discharge tube is turned on only when the junctions at which said voltages $V_2$ and $V_3$ are impressed, are grounded in response to the driving pulses. The gaseous-discharge tube remains turned on even after the driving pulses have disappeared.

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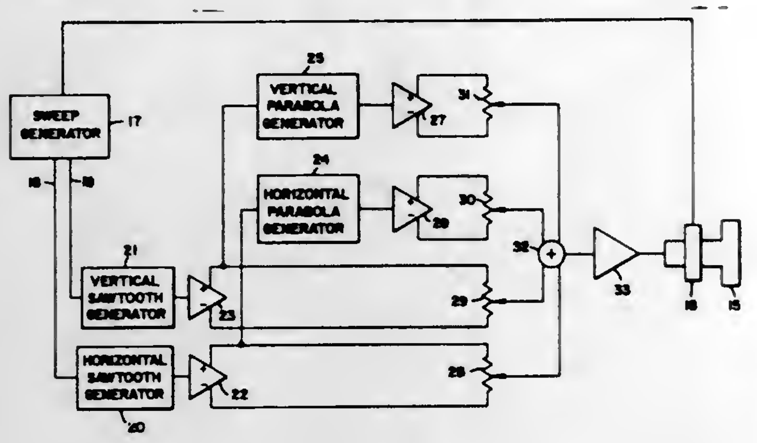
3,757,161

### TELEVISION CAMERA GEOMETRIC DISTORTION CORRECTION SYSTEM

**Donald D. Kline, Palo Alto, Calif., assignor to Commercials Electronics Inc., Mountain View, Calif.**
**Filed Sept. 3, 1970, Ser. No. 69,293**
**Int. Cl. H01j** *29/70*
**U.S. Cl. 315—276 D** **6 Claims**

A geometric distortion correction system for a television camera in which a suitable combination of sawtooth and parabolic wave forms at the horizontal and vertical repetition rates are applied to one of the grids of the camera tube. These wave forms may be regarded as functioning to increase or decrease the deflection sensitivity of the camera tube in synchronism with the scanning thereof, so that the application of conventional linear wave forms to the deflection coils of the camera tube will result in a non-linear scan which, in turn, corrects for the geometric distortion of the camera tube. Preferably, the sawtooth and parabolic wave forms are applied to the focus or G3 grid of the camera tube, the amplitudes and polarities of the wave forms being determined by the nature of the geometric distortion to be corrected for.


SWEEP GENERATOR
17
VERTICAL PARABOLA GENERATOR
25
31
27
HORIZONTAL PARABOLA GENERATOR
24
30
VERTICAL SAWTOOTH GENERATOR
21
23
HORIZONTAL SAWTOOTH GENERATOR
22
20
33
16
15

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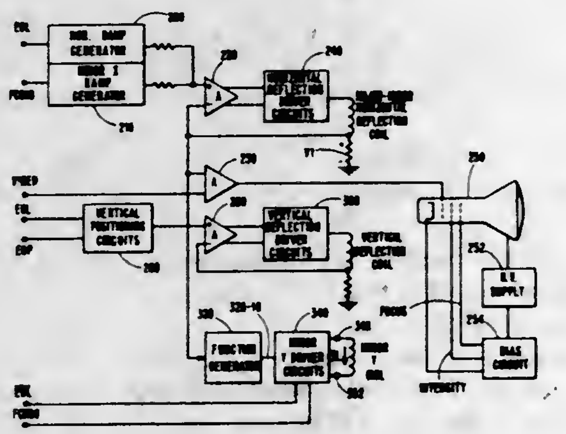
### 3,757,162
### CATHODE RAY TUBE DYNAMIC CHARACTER CORRECTION CIRCUIT

**Robert B. Johnson, Billerica, Mass., assignor to Honeywell Information System Inc., Waltham, Mass.**

**Filed Jan. 3, 1972, Ser. No. 214,938**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—276 D** **17 Claims**


VERTICAL DEFLECTION CIRCUITS
HORIZONTAL DEFLECTION DRIVER CIRCUITS
VERTICAL DEFLECTION COIL
BIAS CIRCUIT
INTENSITY

A low cost cathode ray tube display system includes major vertical and horizontal deflection circuits for providing movement of the beam in a horizontal and vertical direction respectively and further includes minor vertical and horizontal deflection driver circuits which provide for rapid vertical and horizontal trace and retrace of the beam within a selected area within a character position. A correction circuit is associated with the minor vertical deflection circuit for applying a periodic linear triangular waveform synchronized with the operation of the horizontal deflection circuits whose magnitude is adjustable as a function of character line position so as to provide a uniform character height for each of the characters written along a given line.

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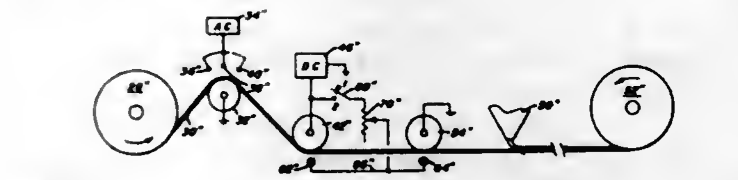
### 3,757,163
### WEB TREATMENT APPARATUS AND METHODS

**Carl B. Gibbons; William C. Kerr, and Roger H. Maddocks, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Division of Ser. No. 804,470, March 5, 1969. This application Mar. 30, 1972, Ser. No. 239,816**

**Int. Cl. H05f** *3/04*

**U.S. Cl. 317—2 R** **6 Claims**



A web with a plastic surface is disclosed as being exposed to an a.c.-produced corona thereby to increase its printability and coatability. As a result of such treatment the web surface undesirably acquires patterns of charge. A circuit technique is disclosed for so erasing such charge patterns that the web surface is assuredly left substantially uncharged.

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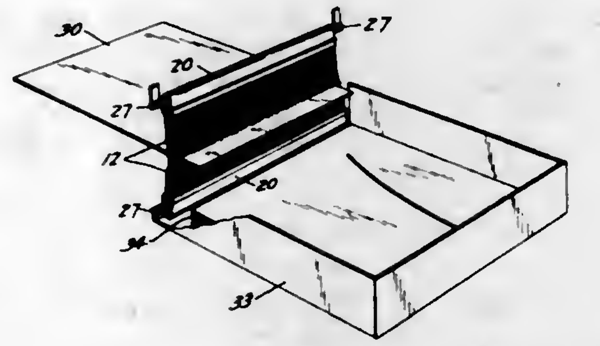
### 3,757,164
### NEUTRALIZING DEVICE

**Leo J. Binkowski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed July 17, 1970, Ser. No. 55,825**

**Int. Cl. H05f** *3/00*

**U.S. Cl. 317—2 R** **8 Claims**



An inexpensive and effective neutralizing device for reducing the potential of static electrical charges present on a sheet or web comprised of supple, resilient, conductive filaments of minute diameter attached to a support and means for electrically connecting the filaments to a ground potential. The device may be positioned to make complete and intimate electrical contact with a surface through the extended tips of the filaments to conduct away static electrical charges present thereon without exerting a significant pressure against the contacted surface, or may be positioned to space the tips of the filaments from the web for use as an effective induction neutralizer.

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### 3,757,165
### DEVICE FOR REMOVING ELECTRIC POTENTIAL FROM AN ELECTRICALLY CONDUCTING MATERIAL LAYER OF A RECORDING SHEET

**Tsukasa Adachi, Tokyo, and Kazuhiko Kasuya, Kawasaki, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan**

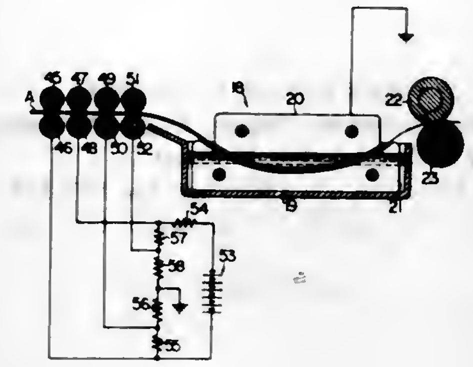
**Filed Dec. 13, 1972, Ser. No. 314,732**

**Claims priority, application Japan, Dec. 21, 1971, 46/103929**

**Int. Cl. H05f** *3/04*

**U.S. Cl. 317—2 R** **3 Claims**

A device adapted for use with electrophotographic image forming apparatus of the type in which the spacing between the voltage impressing station and the developing station for the recording sheet is smaller than the length of the recording sheet. The device is effective to reduce the voltage being impressed on an electrically conducting layer of the recording sheet substantially to the level of the ground potential or reference voltage immediately before the developing station by first impressing on the electrically conducting material layer of the recording sheet a bias voltage of opposite charge to a bias voltage impressed on the layer in the voltage impressing station on the upstream side of the developing station and then alternatingly impressing bias voltages of alternately varying polarities and successively decreasing absolute values on the electrically conducting material layer of the recording sheet, so as to improve the conditions under which the recording sheet is developed.



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### 3,757,166
### MEANS FOR CONTROLLING ACCELERATION OF A WHEEL

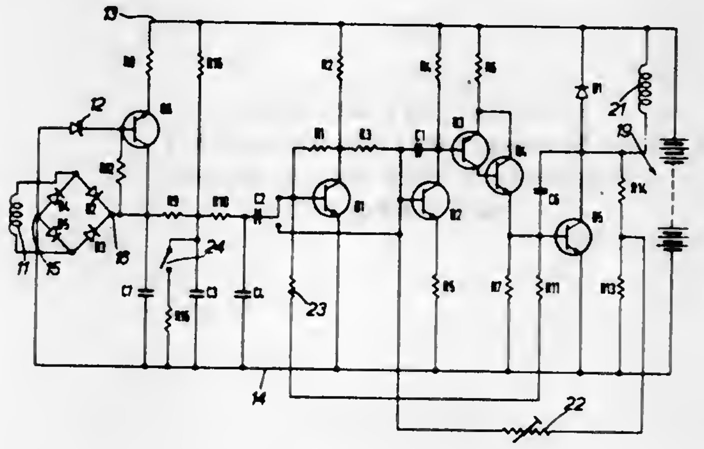
**Stanley Clifford, Coventry, and Leonard Ramsay Hiscox, Birmingham, both of England, assignors to Girling Limited, Birmingham, England**

**Division of Ser. No. 727,469, May 8, 1968, Pat. No. 3,598,452. This application Mar. 3, 1971, Ser. No. 120,732**

**Claims priority, application Great Britain, May 23, 1967, 23883/67; Oct. 12, 1967, 46582/67; Feb. 8, 1968, 6223/68**

**Int. Cl. G08b** *21/00*

**U.S. Cl. 317—5** **1 Claim**



The acceleration of a wheel on a rail vehicle is controlled by using the wheel to drive a generator which produces an electrical signal, the magnitude of which depends on the acceleration of the wheel. This signal is applied to a d.c. control circuit which includes means operable to prevent transmission of driving power to the wheel. The control circuit includes a d.c. source charged by the generator and providing power to the control circuit, and the arrangement also includes a delay network for maintaining the circuit in a condition to prevent transmission of power in the event that the wheels should lock before the power is released.

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### 3,757,167
### REVOLUTIONS MEASURING INSTRUMENT

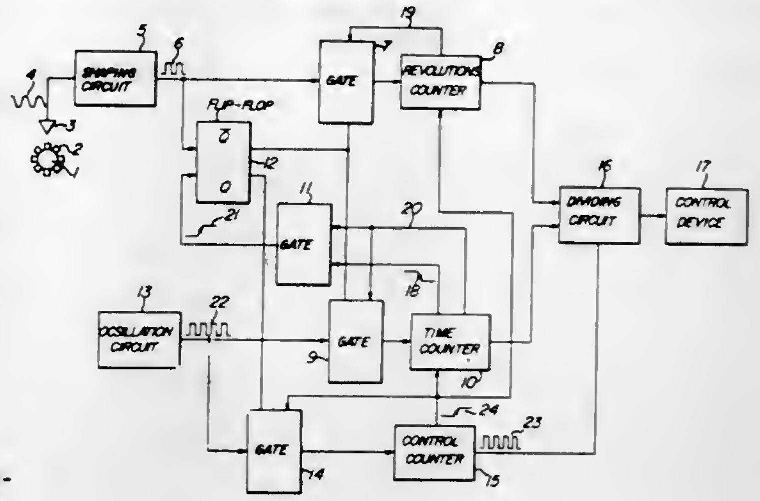
**Isao Yoshikawa, and Takeshi Ochiai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan**

**Filed Mar. 24, 1972, Ser. No. 237,620**

**Claims priority, application Japan, June 15, 1971, 46/42835**

**Int. Cl. G01p** *3/48*

**U.S. Cl. 317—5** **5 Claims**



An instrument for measuring the revolutions of a rotary body comprising a speed pulse generator for generating a first train of pulses including, in a unit length of time, pulses of the number proportional to the revolutions of the rotary body, a reference pulse generator for generating a second train of pulses including a certain number of pulses in a unit time, and first and second counters for counting the number of pulses appearing in the first and second pulse trains respectively during a counting cycle starting with a certain pulse in the first pulse train; wherein the counting operations of both the counters are stopped simultaneously with the appearance of the first pulse of the first pulse train immediately following the time at which the second counter has counted a predetermined number of pulses, and the number counted by the first counter is divided by the number counted by the second counter, thereby measuring the revolutions of the rotary body.

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### 3,757,168
### APPARATUS FOR PROTECTING DATA PROCESSING INSTALLATIONS AND THE LIKE FROM DISTURBANCES

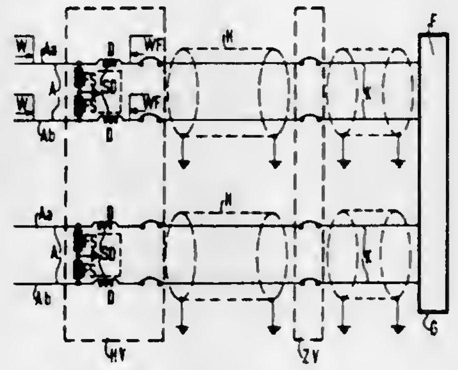
**Friedrich Kreuzer, Allemannenstrasse 20, 8 Munich 90, Germany**

**Filed May 3, 1971, Ser. No. 139,710**

**Claims priority, application Germany, May 8, 1970, P 20 22 553.0**

**Int. Cl. H02h** *9/06*

**U.S. Cl. 317—16** **3 Claims**



Apparatus is described for protecting data processing installations, particularly, telecommunications exchanges from voltage and current surges caused by external influences, such as lightning and from radio frequency disturbances generated from within. At the installation's main distributor to which line pairs are connected, each line of a pair has an inductance coil connected in series therewith, and the coils in a line pair are connected in opposition to each other. Each line has a voltage diverter, preferably, of the spark gap type connected to ground.

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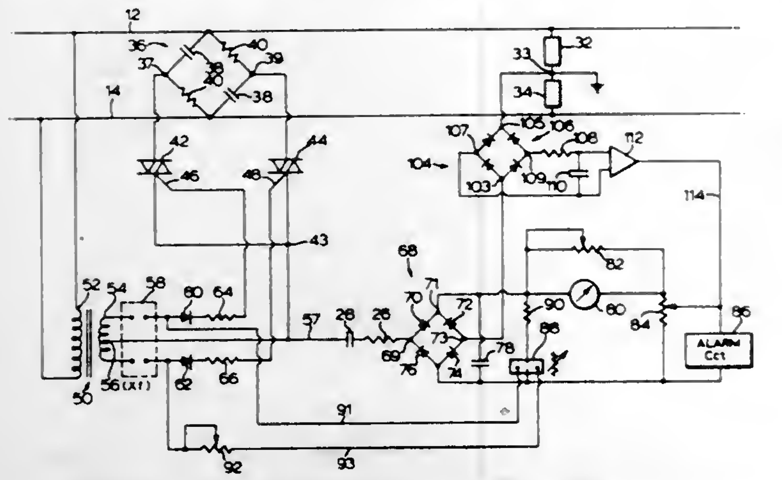
### 3,757,169
### DYNAMIC GROUND DETECTOR

**Victor Beresnikow, Arnprior, Ontario, Canada, assignor to Canadian Stackpole Ltd., Arnprior, Canada**
**Filed May 15, 1972, Ser. No. 253,118**
**Int. Cl. H02h** *3/26*
**U.S. Cl. 317—18 R** **11 Claims**



A dynamic ground detector for monitoring a two-wire power distribution system, where both sides are nominally isolated from ground. A sampling bridge is connected between the lines, each shunt section of the bridge comprising a resistor and a capacitor having impedances in quadriture at the line frequency; and the junctions of the shunt sections of the sampling bridge are alternatively sampled by a switching network. The switching network connected through a phase shifting network comprising an RC filter to a detector network comprising a fullwave rectifier with suitable indicator and alarm apparatus. The rate of sampling is a multiple, including unity, of the line frequency.

Additional circuitry may also be provided for sensing the direction and phase of any fault current caused by a fault to ground from either or both of the lines, so that the fault current may be opposed by insertion of another current having the same phase and opposite direction.

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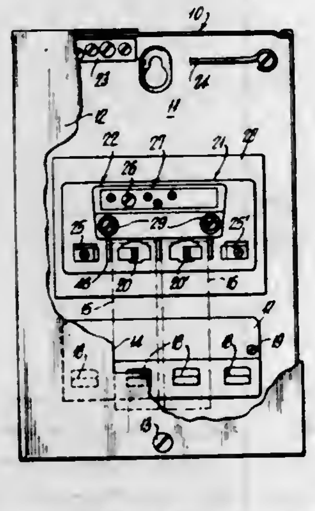
### 3,757,170
### PANELBOARD WITH MOUNTING BLOCK SECURING STAB-CONTACTS

**Herman H. Kobryner, Forest Hills, N.Y., assignor to Arrow-Hart, Inc., Hartford, Conn.**
**Filed Oct. 2, 1972, Ser. No. 294,092**
**Int. Cl. H02b** *1/04*
**U.S. Cl. 317—119** **11 Claims**



The invention contemplates an electrical load center construction wherein specially formed cavities and recesses accommodate slidable insertion and captive retention of (a) a neutral-bar assembly, and (b) a multiple-contact conductor assembly. Captive retention is secured upon clamping the mounting face of the block to a base panel. The particular arrangement of through-openings for inserted reception of various areas of the conductor assembly affords selective accommodation of one or more of a variety of possible conductor assemblies, depending upon the desired application and use of the load center.

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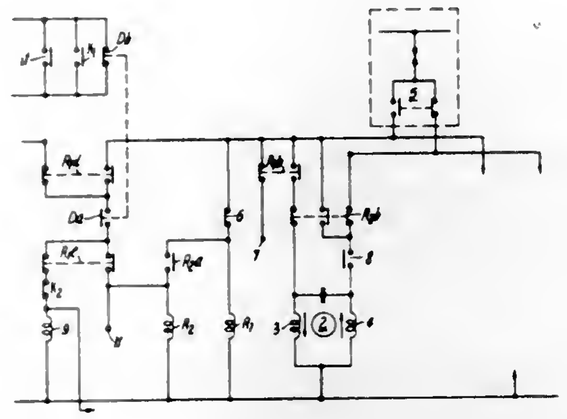
### 3,757,171
### WEB BREAK DETECTOR

**David Elsdon Stansfield, Ongar, England, assignor to Hoe-Crabtree Limited, London, England**
**Filed Jan. 18, 1971, Ser. No. 107,373**
**Claims priority, application Great Britain, Jan. 23, 1970, 3,506/70**
**Int. Cl. H01h** *9/00*
**U.S. Cl. 317—157** **9 Claims**



This invention provides a web break detector incorporated in a machine operating with a web, the detector including a sensor capable of sensing the presence of a web in a given monitoring zone and a device to provide a signal in response to the sensor sensing the absence of a web in the said zone. In the event of a web not being present in the zone whilst the sensor makes an initial sensing operation following start up of the machine, override means operate to render the detector inoperative.

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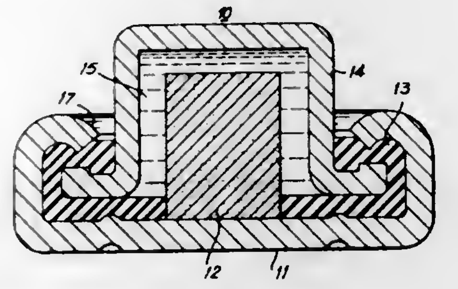
### 3,757,172
### TANTALUM CAPACITOR

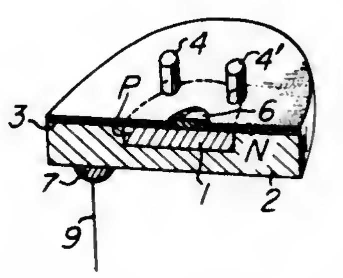
**Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y.**
**Filed Sept. 29, 1972, Ser. No. 293,582**
**Int. Cl. H01g** *9/02*
**U.S. Cl. 317—230** **6 Claims**



The invention is a tantalum electrolytic capacitor in which the cathode is stainless steel and in which the electrolyte is sulfuric acid having a small amount of titanyl sulfate dissolved therein.

### 3,757,173
### SEMICONDUCTOR PRESSURE SENSITIVE TRANSDUCER

**Yasuo Iijima, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**
**This application Nov. 8, 1971, Ser. No. 196,834**
**Claims priority, application Japan, Dec. 4, 1968, 43/89779; Dec. 4, 1968, 43/89779**
**Int. Cl. H01l** *3/00, 5/00*
**U.S. Cl. 317—234 R** **4 Claims**



The pressure sensitive property of a metal-semiconductor contact or a PN junction is utilized to form a mechano-electrical transducer. In such a transducer, a pressure is applied to a pressure sensitive portion through a protrusion of the semiconductor material itself, or a very hard metal or insulating material strongly adhered onto the pressure sensitive portion.

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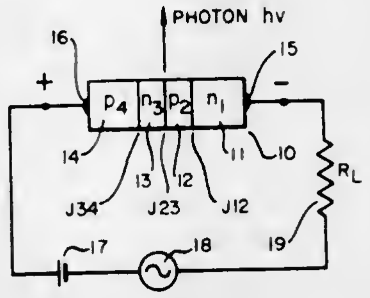
### 3,757,174
### LIGHT EMITTING FOUR LAYER SEMICONDUCTOR DEVICE

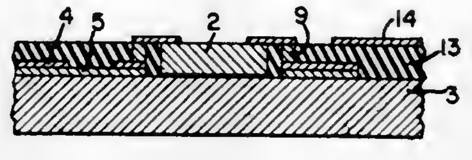
**Junichiro Shigemasa, Yamatokoriyama; Takeshi Sakurai, Nishinomiya, and Zenpei Tani, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan**
**Continuation-in-part of Ser. No. 45,299, June 11, 1970, abandoned. This application July 31, 1972, Ser. No. 276,532**
**Int. Cl. H01l** *11/10*
**U.S. Cl. 317—235 R** **3 Claims**



The two terminal diode type device exhibits a negative resistance characteristic and a high efficiency of light emission with an appreciable intensity. The device is a pnpn four layer structure of semiconductor material having a high band gap energy. The thickness of two base layers is similar to the diffusion length of minority carriers in the semiconductor material for low values of current flowing therethrough while at least one outer layer thereof has a thickness equal to or greater than another diffusion length of minority carriers for higher values of the current therethrough. Biasing connected between the two terminals forward biases the outer junctions and reverse biases the intermediate junction.

### 3,757,175
### COMPOSITE INTEGRATED CIRCUITS WITH COPLANAR CONNECTIONS TO SEMICONDUCTOR CHIPS MOUNTED ON A SINGLE SUBSTRATE

**Chang Soo Kim, 7669 Villa Maria, North Syracuse, N.Y., and Gerald G. Palmer, 105 Hiawatha Tr., Liverpool, N.Y.**
**Continuation-in-part of Ser. No. 687,278, Dec. 1, 1967, abandoned. This application Jan. 6, 1971, Ser. No. 104,299**
**Int. Cl. H01l** *5/00*
**U.S. Cl. 317—234 R** **20 Claims**



Integrated circuits in which individual semiconductor chips exhibiting diverse electrical and compositional characteristics may in combination with thin or thick film passive components be applied to a single flat supporting dielectric substrate, wherein there are provided readily formed connections to the chips and an ease of registration of the chips with respect to one another and to conductive patterns carried by the substrate. The chips are bonded to the dielectric substrate and embedded in a smooth layer of chemically inert, high quality insulating material adhering to the substrate, said chips being applied with the metalized surface thereof contiguous with that of the insulating material so that a continuous supporting structure is formed for said connection. In one specific embodiment, the conductive patterns are deposited both on the substrate surface and on the surface of the insulating material, the patterns being connected by extending portions thereof through the insulating layer.

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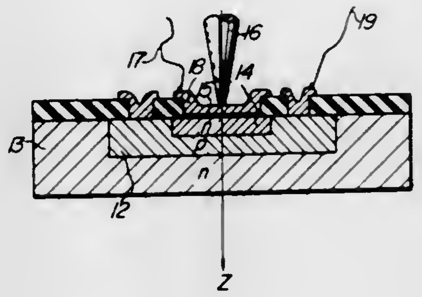
### 3,757,176
### PRESSURE SENSITIVE TRANSISTOR HAVING A SCHOTTKY BARRIER JUNCTION FORMED IN THE EMITTER

**Gota Kano, Otokuni-gun, Kyoto, and Hideomi Kato, Takatsuki-shi, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan**
**Continuation of Ser. No. 867,794, Oct. 20, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,929**
**Claims priority, application Japan, Oct. 28, 1968, 43/80156; Oct. 28, 1968, 43/80157**
**Int. Cl. H01l** *11/00, 15/00*
**U.S. Cl. 317—235 R** **1 Claim**

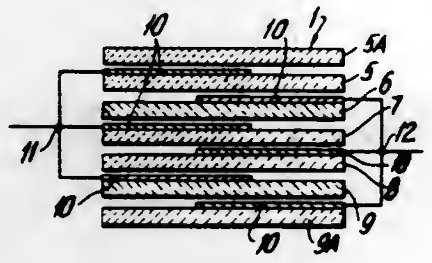


A pressure sensitive semiconductor device which has a schottky barrier junction at an electrode lead-out portion of one region of a p-n-p or n-p-n structure transistor and to which a pressure sensitive junction is formed by providing a pressure applying means to the schottky barrier junction which has a high sensitivity since it amplifies a pressure response signal by the amplifying action of the transistor.

### 3,757,177
## MONOLITHIC BASE METAL ELECTRODE CAPACITOR

**Bert E. Buehler, Chatham, N.J., assignor to Johanson Manufacturing Corporation, Boonton, N.J.**

**Filed Jan. 15, 1973, Ser. No. 323,989**
**Int. Cl. H01g** *1/01*
**U.S. Cl. 317—258** **5 Claims**



A monolithic base metal electrode capacitor is provided comprising a dielectric of barium titanate containing about 15 percent to 25 percent of $MnO_2$, 0.5 percent to 2 percent $Fe_2O_3$, 0.1 percent to 1 percent $CeO_2$, and an effective amount of up to about 2 percent by weight of $CaZrO_3$ sufficient to increase K to a value markedly in excess of 1,200 referred to room temperature. Between thin layers of the dielectric are interleaved deposited films of a base metal electrode, such as Ni, Co, Fe and alloys thereof, the edges of alternate films of the electrode being mechanically and electrically joined.

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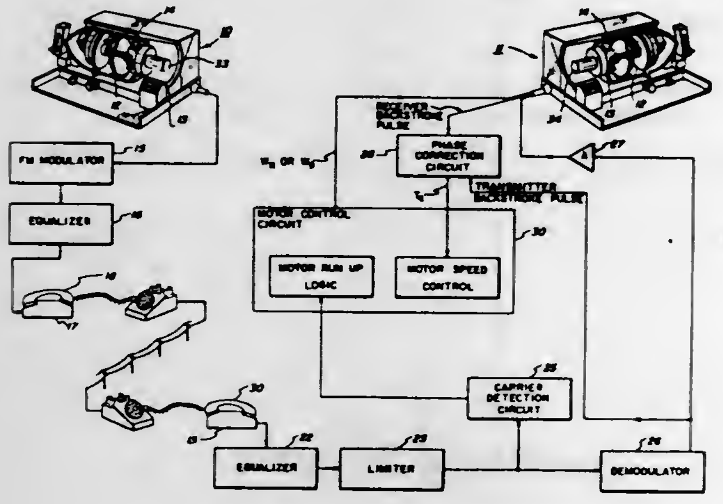
### 3,757,178
## PLURAL MOTOR ELECTRONIC PHASING SYSTEM

**John R. Veale, London, S.W. 19, England, assignor to Xerox Corporation, Rochester, N.Y.**

**Division of Ser. No. 731,857, May 24, 1968, Pat. No. 3,582,798. This application Oct. 14, 1970, Ser. No. 80,708**
**Int. Cl. H02p** *5/50*
**U.S. Cl. 318—71** **4 Claims**



A facsimile system employing electrical circuits to align rotating turrets in remotely located facsimile transceivers to a predetermined phase angle relation, wherein electrical signals indicating the angular position of said turrets are inspected to determine the phase angle between the turrets and a correction signal is generated and applied to the motor of one transceiver to alter its speed, thereby changing the phase angle between the turrets, said correction signal being sufficient to effect only a partial alignment of the turrets and being generated during successive sample periods until the turrets are aligned substantially to the predetermined phase angle relation.

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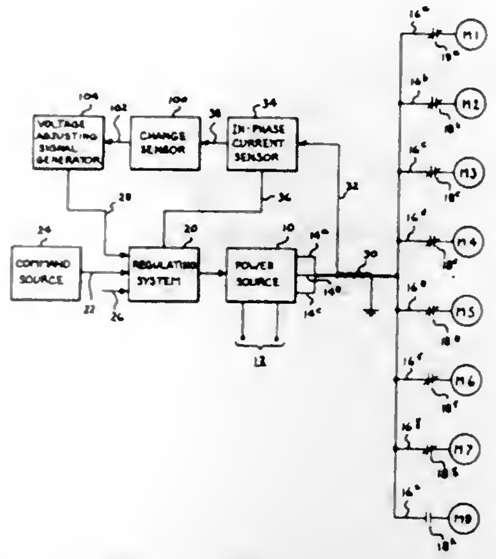
### 3,757,179
## VOLTAGE CONTROL OF AN A.C. DRIVE SYSTEM DURING MOTOR STARTING

**Niels Peder Pedersen, Erie, Pa., assignor to General Electric Company, Erie, Pa.**

**Filed Oct. 24, 1972, Ser. No. 299,756**
**Int. Cl. H02p** *5/46*
**U.S. Cl. 318—85** **17 Claims**



Method and apparatus for providing rapid synchronization of one or more synchronous motors being started in a system in which a source of adjustable voltage a-c electric power such as an inverter supplies electric power to the motors being started and to a plurality of previously operating motors. A selected output parameter of the source which changes substantially from its steady state level during the starting of one or more motors is monitored, and the output voltage of the source is increased for a predetermined period following the sensing of a change in the output parameter which is consistent with the starting of one or more motors, the increased output voltage implementing rapid synchronization of the motors being started without changing the operating speed of the previously operating motors.

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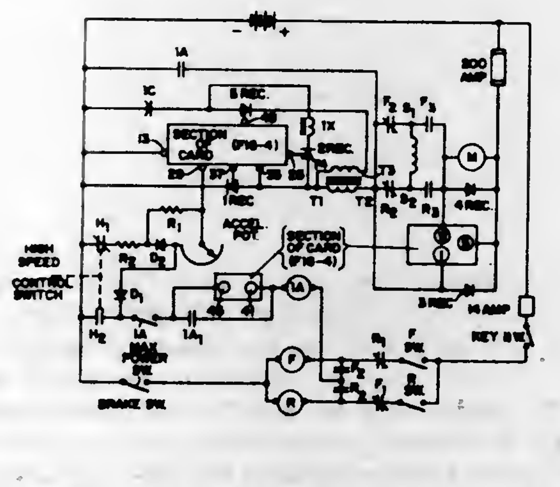
### 3,757,180
## SPEED CONTROLLER FOR AN ELECTRIC VEHICLE

**Bruce M. Subler, North Star, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio**

**Filed July 31, 1972, Ser. No. 276,418**
**Int. Cl. H02p** *7/14*
**U.S. Cl. 318—139** **6 Claims**

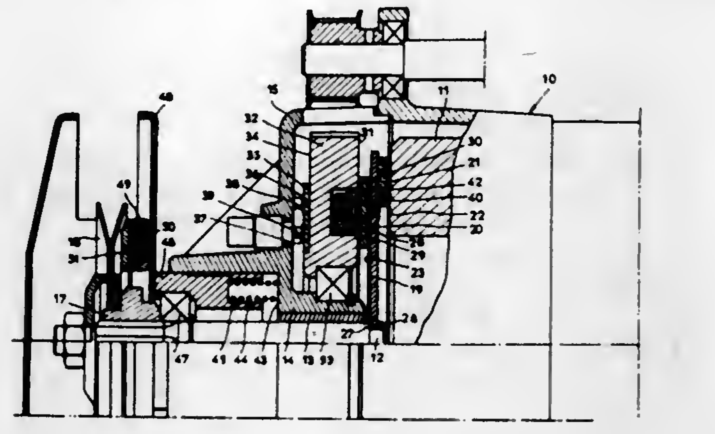


An electrically powered vehicle is controlled by an operator walking therewith or riding thereon. A speed control switch is operable only when the operator rides the vehicle, and increases the maximum attainable speed thereof while having substantially no affect on slow speed operation.

### 3,757,181
## APPARATUS FOR DRIVING AND STOPPING A MACHINE, PARTICULARLY A SEWING MACHINE

**Laszlo Szekely, Bruyeres-le-Chatel, and Claude Pigache, Courbevoie, both of France, assignors to SUBEM**

**Filed Sept. 15, 1971, Ser. No. 180,662**
**Int. Cl. H02k** *7/02*
**U.S. Cl. 318—150** **2 Claims**



An apparatus for driving and stopping a machine, particularly a sewing machine, comprising, on a shaft carrying a pulley linked directly to the machine and rotatably mounted in a housing, a clutch plate between a fly-wheel driven directly by an electric motor and a wheel driven at a reduced speed.

An annular plate is provided which cooperates with the clutch plate to bring it to the fly-wheel, said annular plate having on its opposite face a ring of magnetic material coated on its external face with a lining of friction material for acting with the frontal face opposite the wheel under the action of a coil situated inside the wheel.

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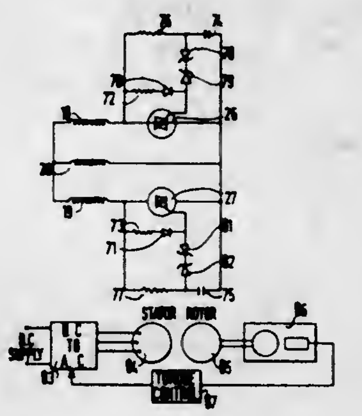
### 3,757,182
## SYNCHRONOUS ELECTRICAL MACHINES

**Brian John Chalmers, Bramhall, England, and Razvan Matei Magureanu, Bucharest, Romania, assignors to National Research Development Corporation, London, England**

**Filed Dec. 8, 1971, Ser. No. 206,051**
**Claims priority, application Great Britain, Dec. 11, 1970, 59,168/70**
**Int. Cl. H02p** *1/46*
**U.S. Cl. 318—186** **24 Claims**



Brushless synchronous electric machines are described in which the rotor is excited by rectifying a.c. induced in a rotor winding. Current flowing in the stator winding sets up a magnetic field with a main component and a subsiduary component. In operation the rotor rotates at the speed of the main component and the a.c. which is rectified, is induced by the subsiduary component. The subsiduary component may be set up for example by a stator-rotor air-gap whose permeance varies with angular position or by supplying the stator from a non-sinusiodal supply, but an additional stator winding is not required.

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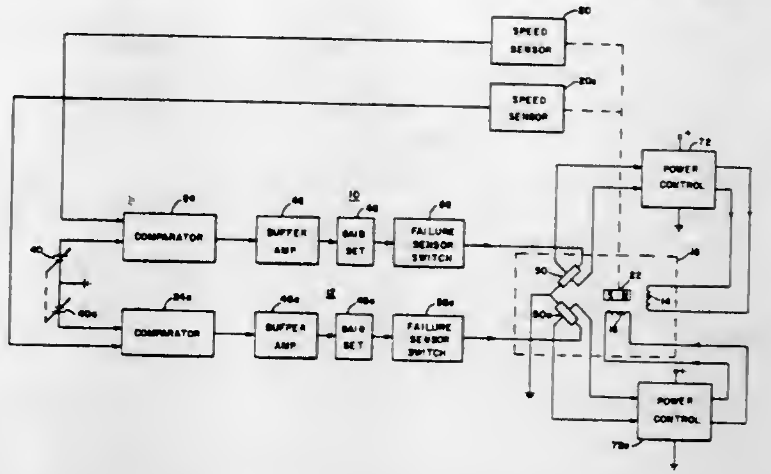
### 3,757,183
## REDUNDANT SPEED CONTROL FOR BRUSHLESS HALL EFFECT MOTOR

**Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Mar. 30, 1972, Ser. No. 239,574**
**Int. Cl. H02k** *29/00*
**U.S. Cl. 318—254** **6 Claims**



A speed control system for a brushless Hall effect device equipped direct current (D.C.) motor in which separate windings of the motor are powered by separate speed responsive power sources and in which a change in speed, upward or downward, because of the failure of a component of one of the power sources results in a corrective signal being generated in the other power source to supply an appropriate power level and polarity to one winding to cause the motor to be corrected in speed.

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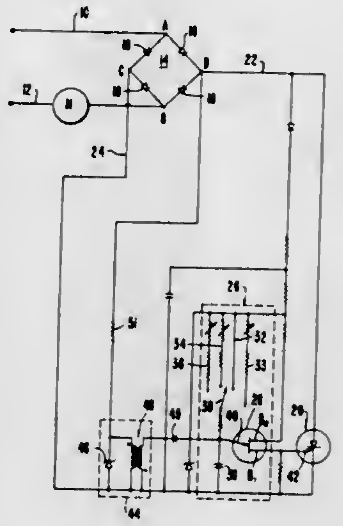
### 3,757,184
## ALTERNATING CURRENT MOTOR SPEED CONTROL CIRCUIT

**Robert D. Chute, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Continuation of Ser. No. 873,803, Nov. 4, 1969, abandoned. This application Mar. 6, 1972, Ser. No. 232,081**
**Int. Cl. H02p** *5/34*
**U.S. Cl. 318—231** **16 Claims**



An induction motor speed control circuit which creates submultiples of the power line frequency by selective switching of the line voltage to allow certain cycles representative of a bilateral network in the form of a frequency lower than that of the power source to pass through and operate the motor. The circuit employs a free-running unijunction transistor relaxation oscillator for firing a controlled rectifier, the period of oscillation being a multiple numberof half cycles of the line frequency and obtained by the selection of one of several resistors switched into the emitter circuit. A pulse generated by a zener diode at each of the zero crossings of the line voltage is superimposed by a transformer upon the sawtooth waveform generated by the relaxation oscillator with the result that the oscillator is synchronized to fire the rectifier precisely at the start of a new one-half cycle of the power line frequency. The circuit performs the conversion of the frequencies of large amounts of power at lower power levels and with inexpensive circuit components.

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### 3,757,185
### BRUSHLESS DC MOTOR HAVING A PERMANENT MAGNET ROTOR AND A STATOR WINDING COMPRISING A PLURALITY OF COMPONENT WINDINGS

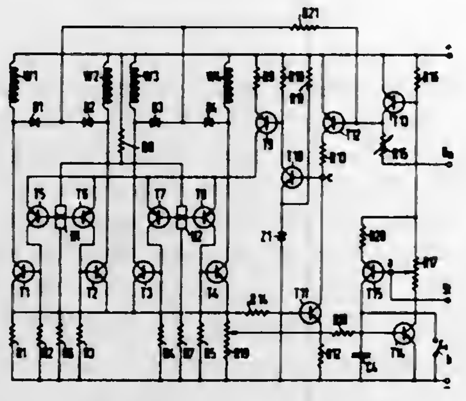
**Julius Brunner, Nurnberg, and Hans Kuhnlein, Grossgrundlach, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Filed Dec. 2, 1971, Ser. No. 204,187**

**Claims priority, application Germany, Dec. 5, 1970, P 20 59 884.9**

**Int. Cl. H02k** *29/00*

**U.S. Cl. 318—254** **8 Claims**



A brushless DC motor comprises continuously adjustable control means for controlling a plurality of power transistors in dependence upon the position of a permanent magnet rotor. The control means comprises a control member having an output coupled to the power transistors and a control input. Current regulating circuit has an actual value derived from a current-proportional voltage derived from a common emitter resistor of the power transistors and a datum value determined from outside the current regulating circuit.

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### 3,757,186
### VERNIER CHOPPER CONTROLLING DEVICE

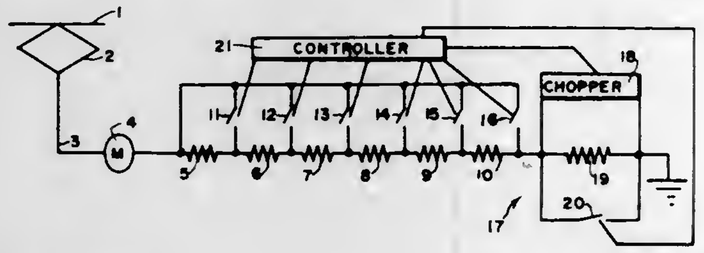
**Tsutomu Ozawa, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan**

**Filed Dec. 16, 1971, Ser. No. 208,821**

**Claims priority, application Japan, Dec. 29, 1970, 45/128558**

**Int. Cl. H02p** *1/20*

**U.S. Cl. 318—514** **9 Claims**



The armature current of a D.C. electric motor is controlled for power control by selectively shunting a plurality of series starting resistances, in order, which have resistance values such that the armature current, upon shunting, changes in value from a fixed starting current minimum to a permissible current maximum for each starting resistance, in combination with means for assuring that each of these current changes will be smooth and continuous over a substantial period of time by changing an effective series connected resistance an amount substantially equal to the starting resistance to be shunted, for each of the starting resistances in the order of their shunting. This means includes a current chopper in parallel electrical connection with a control resistance. The chopper may operate to pass current over a range identical for each shunting with variation of the control resistance to match the starting resistance to be shunted, or the control resistance may be identical for each shunting and the chopper current range may be matched to each of the resistances to be shunted.

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### 3,757,187
### RECORD-REPETITIVE-PLAYBACK TYPE UNIVERSAL POSITION CONTROL SYSTEM

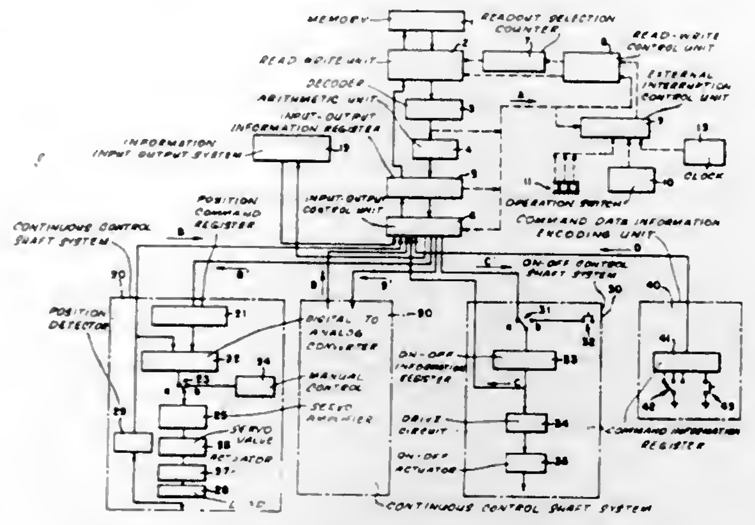
**Nobuhito Arai, Tokyo-to, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan**

**Filed Oct. 14, 1971, Ser. No. 189,207**

**Claims priority, application Japan, Mar. 25, 1971, 46/17393**

**Int. Cl. G05b** *11/32, 19/42*

**U.S. Cl. 318—562** **4 Claims**


MEMORY
READOUT SELECTION COUNTER
READ-WRITE CONTROL UNIT
READ WRITE UNIT
DECODER
ARITHMETIC UNIT
INPUT-OUTPUT INFORMATION REGISTER
EXTERNAL INTERRUPTION CONTROL UNIT
INFORMATION INPUT OUTPUT SYSTEM
CLOCK
OPERATION PANEL
COMMAND DATA INFORMATION ENCODING UNIT
POSITION COMMAND REGISTER
INPUT-OUTPUT CONTROL UNIT
CONTINUOUS CONTROL SHAFT SYSTEM
ON-OFF CONTROL SHAFT SYSTEM
POSITION DETECTOR
DIGITAL TO ANALOG CONVERTER
MANUAL CONTROL
SERVO AMPLIFIER
SERVO VALVE
ACTUATOR
ON-OFF INFORMATION REGISTER
DRIVE CIRCUIT
ON-OFF ACTUATOR
COMMAND INFORMATION REGISTER
CONTINUOUS CONTROL SHAFT SYSTEM

A record-repetitive-playback or -reproduction type universal position control system wherein the operation sequence of each control shaft of a servomechanism is read out from an electronic or magnetic storage device into which is stored the operation sequence, so that each control shaft may be repetitively actuated.

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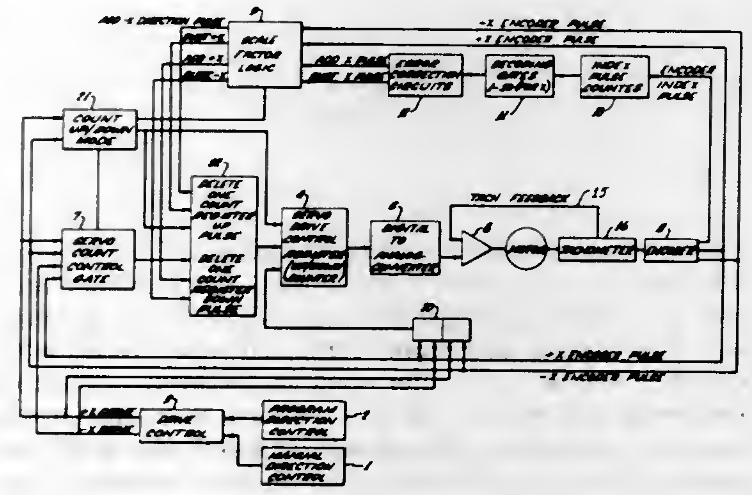
### 3,757,188
### ERROR CORRECTION FOR INCREMENTAL PLOTTER

**Howard E. Brewer, Santa Ana, and Kim E. McCorkindale, Orange, both of Calif., assignors to California Computer Products Inc., Anaheim, Calif.**

**Filed Jan. 12, 1972, Ser. No. 217,374**

**Int. Cl. G05d** *23/275*

**U.S. Cl. 318—632** **7 Claims**



The difference between the desired and actual location of plotting stylus of an X-Y Incremental Plotter can be corrected

by the selective addition or subtraction of pulses to the control circuitry. Where position feedback is employed, the correction can be effectuated by inhibiting either a command pulse or a feedback pulse.

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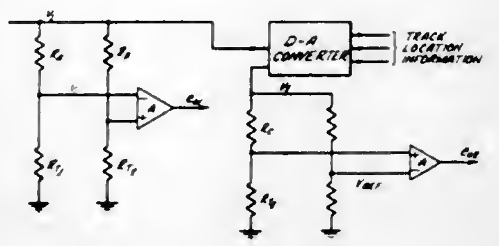
### 3,757,189
### TEMPERATURE COMPENSATION FOR POSITIONING SYSTEM

**William A. Buchan, Newport Beach, and Richard J. Elliott, Costa Mesa, both of Calif., assignors to Century Data Systems, Inc., Anaheim, Calif.**

**Filed Dec. 29, 1972, Ser. No. 319,326**

**Int. Cl. G05d** *23/275*

**U.S. Cl. 318—634** **1 Claim**



The specification discloses an arrangement which compensates for temperature variations in the track positioning system of a rotating magnetic storage device having individual elements which are subjected to different temperatures and environments as a consequence of their physical location.

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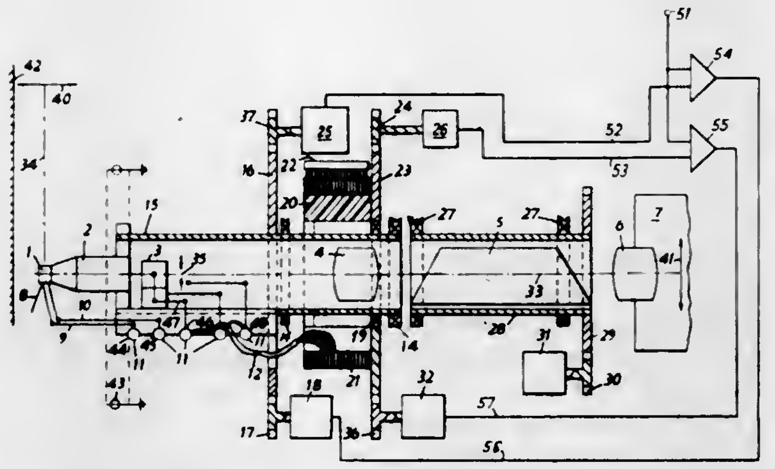
### 3,757,190
### SLIP RING ELECTRICAL CONNECTIONS

**Meville Leslie Shelley, Lindfield, England, assignor to Redifon Limited, London, England**

**Filed Feb. 18, 1972, Ser. No. 227,556**

**Int. Cl. G05b** *11/32*

**U.S. Cl. 318—625** **6 Claims**



A slip-ring servo arrangement for overcoming the friction of electrical slip-ring and brush rotating connections. In such an arrangement with fixed brushes and rotatable slip rings providing electrical connections to a servo motor driven rotor, the slip rings are separately mounted and separately servo motor driven, according to the same demand signal as the rotor, and the slip ring-to-rotor electrical connections are flexible to permit of limited rotational displacement between the rotor and the slip rings.

### 3,757,191
### STEPPING MOTOR CONTROL CIRCUIT

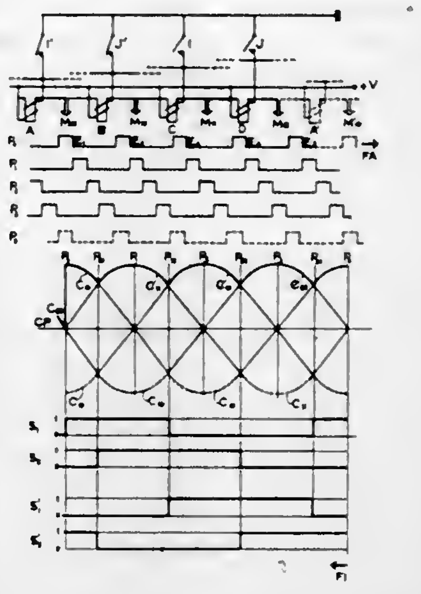
**Roberto A. Agati; Fabrizio O. Castoldi, both of Milan, and Dario A. Mazzucco, Corsico, all of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy**

**Filed Feb. 14, 1972, Ser. No. 225,924**

**Claims priority, application Italy, Feb. 22, 1971, 20854 A/71**

**Int. Cl. G05b** *19/40*

**U.S. Cl. 318—685** **6 Claims**



A device is provided for controlling a stepping motor used in printing apparatus for data processing systems. The device includes a generator of primary pulses which are correlated to the rotational position of the rotor, timing means for applying additional pulses at predetermined intervals for suitably chosen primary pulses. The timing means is effective to command switching of the current pulses energizing the motor windings by selected pulses for providing an initial acceleration stage, a subsequent braking stage, a neutral stage, and a final holding stage.

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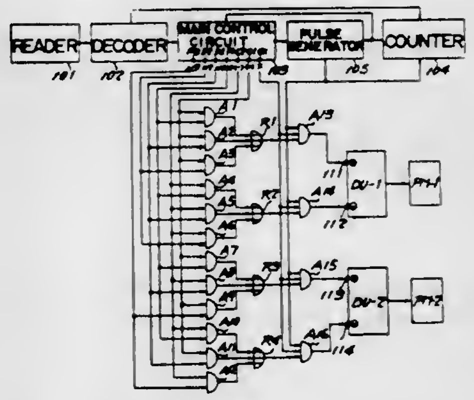
### 3,757,192
### PLURAL STEPPING MOTOR NUMERICAL FEED CONTROL DEVICE

**Hiroaki Asano, Hekikai-gun, Aichi-ken; Tsuyoshi Koide, and Taisuke Kawamata, both of Kariya-shi, Aichi-ken, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan**

**Filed Jan. 4, 1971, Ser. No. 103,683**

**Int. Cl. G05b** *19/40*

**U.S. Cl. 318—696** **6 Claims**



A numerical feed control device is disclosed in which a worktable is driven by a pair of pulse motors, each of which moves a different distance when actuated by a driving pulse. The two motors are mechanically coupled so that their respective movements are added together. A control system is provided for permitting the pulse motors to be selectively driven so that the resolution of the system can be adjusted, where resolution is defined as the movement of the work table for each driving pulse applied to the system. The control system includes decoding equipment for properly selecting resolution commands from input numerical instruction words, and a network of logic gates for appropriately driving the two pulse motors in response to a particular resolution command.

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### 3,757,193
### CIRCUIT FOR DRIVING THE PULSE MOTOR

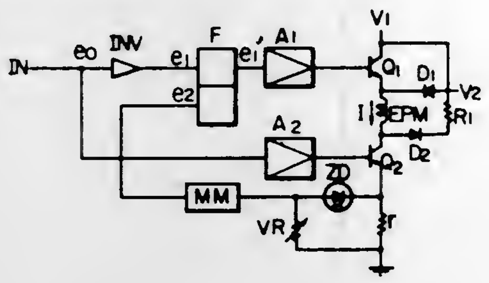
**Seiuemon Inaba; Kanryo Shimizu, both of Kawasaki, and Toshio Kojima, Yamato, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan**

**Filed July 1, 1971, Ser. No. 158,831**

**Claims priority, application Japan, July 6, 1970, 45/58877**

**Int. Cl. H02k** *37/00*

**U.S. Cl. 318—696 4 Claims**



The circuit for driving the pulse motor applies a high voltage to the exciting coil of the pulse motor when the rotor of the pulse motor rotates. The current of the exciting coil is detected in the detector circuit, and when said current reaches a predetermined valve, said high voltage applied to the exciting coil changes to a low voltage. That is, the circuit of the application is composed of a high voltage source, a low voltage source, a detector circuit, and circuit for changing from said high voltage source to said low voltage source.

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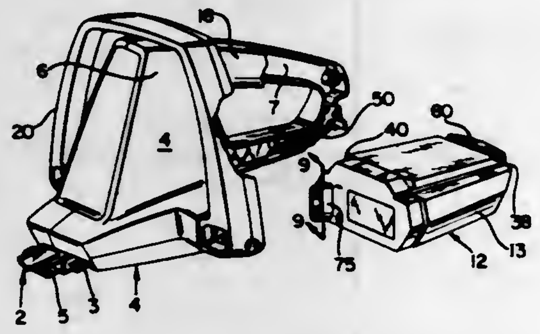
### 3,757,194
### CORDLESS POWER TOOL HAVING REMOVABLE BATTERY PACK

**Edwin J. Weber, and Timothy G. Pugh, both of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed July 3, 1972, Ser. No. 268,770**

**Int. Cl. H02j** *7/00*

**U.S. Cl. 320—2 18 Claims**



A shrub and hedge trimmer including elongated relatively reciprocating toothed blades and a housing containing a D. C. motor for operating at least one of the blades, and incorporating a battery pack having exterior grooves slidably mounted on tracks in the body member for automatic snap-in connection to the motor. The battery pack is shaped to form, with the housing, a smooth, aesthetically pleasing appearance. In addition, the battery pack is readily removably from the housing for recharging and may be replaced by an A. C. – D. C. converter unit of the same size and shape for direct connection of the hedge trimmer to house current. Handles are provided on and attached to the housing for easy handling of the device.

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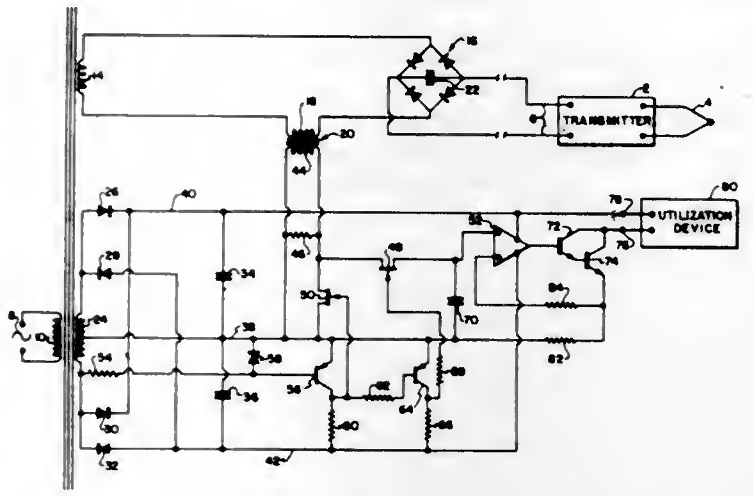
### 3,757,195
### ISOLATED TWO-WIRE SIGNAL TRANSMITTER

**Morton Sklaroof, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Aug. 11, 1972, Ser. No. 279,987**

**Int. Cl. H02m** *5/40*

**U.S. Cl. 321—2 4 Claims**



There is disclosed a process variable signal transmitter system which features a two-wire transmission line yet provides conductive isolation between the transmitter, the power source and the utilization device. The transmitter is powered from a power supply link which is transformer coupled to the power source. The power supply link includes a current transformer to couple a modulated data signal to an output circuit.

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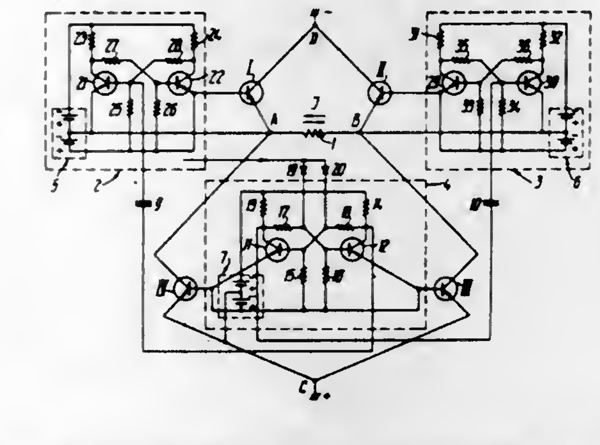
### 3,757,196
### SYNCHRONIZED TRANSISTOR CONVERTER

**Anatoly Evgenievich Fedorovsky, ulitsa Mira, 17b, kv. 105, and Evgeny Mikhailovich Ivanjushkin, ulitsa Kurchatova 15, kv. 125, both of Obninsk Kaluzhskoi oblasti, U.S.S.R.**

**Filed July 10, 1972, Ser. No. 270,282**

**Int. Cl. H02m**

**U.S. Cl. 321—45 R 1 Claim**



A synchronized transistor current converter is disclosed, the converter comprising four transistors arranged in a bridge configuration with a load connected across its two diagonally opposed junctions and controlled by signals applied to the bases of the four transistors from three transistor triggers, two of which initiate and terminate conduction in two collector-connected transistors of the bridge configuration. The emitter of one transistor of the above two triggers is connected to the base of a respective bridge circuit transistor, while the collector of the other trigger transistor is coupled to independent supply sources provided for the triggers. The third trigger, supplied from an independent power source, controls conduction in the two other transistors of the bridge configuration with their emitters interconnected, the bases coupled to the emitters of the respective transistors of the trigger, and the collectors connected through capacitors with the bases of the respective transistors of the two other triggers, with the collectors thereof coupled to the independent supply sources provided for these triggers.

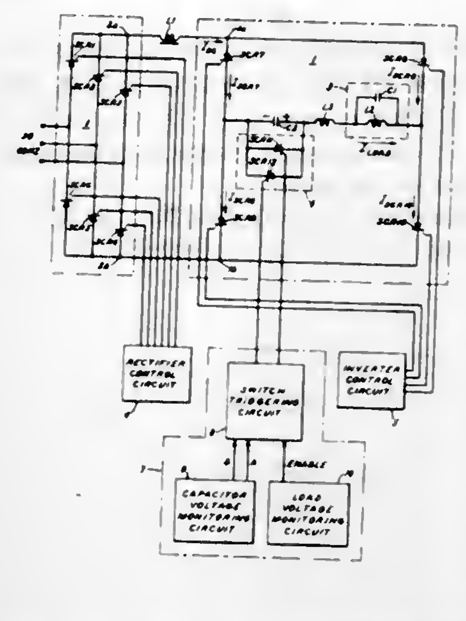
### 3,757,197
### SERIES/PARALLEL COMPENSATED CURRENT SOURCE INVERTER WITH MEANS FOR CLAMPING VOLTAGE ON SERIES COMPENSATING CAPACITOR

**Ronald B. Bailey, Waynesboro, Va., assignor to General Electric Company, Philadelphia, Pa.**

**Filed July 25, 1972, Ser. No. 274,896**

**Int. Cl. H02m** *5/44*

**U.S. Cl. 321—45 C 6 Claims**


RECTIFIER CONTROL CIRCUIT
SWITCH TRIGGERING CIRCUIT
INVERTER CONTROL CIRCUIT
CAPACITOR VOLTAGE MONITORING CIRCUIT
LOAD VOLTAGE MONITORING CIRCUIT
ENABLE

In a current source inverter including a series compensating capacitor for supplying energy to a tank load and associated control circuit establishing a start up mode and a steady state mode of inverter operation, the former being a transitory mode of operation during which the inverter changes from a non-operating state to steady state operation, circuity is provided for clamping the voltage on the compensating capacitor to a very low magnitude at the end of the start up mode and during the steady state mode.

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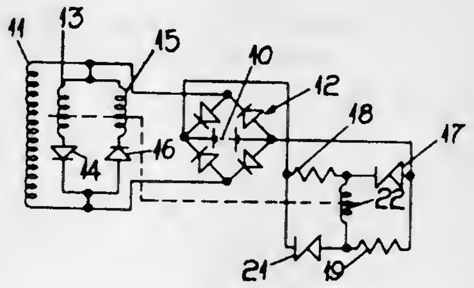
### 3,757,198
### BATTERY CHARGING SYSTEMS

**William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**

**Continuation of Ser. No. 879,826, Nov. 25, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,774**

**Int. Cl. H02p** *9/00*; **G05f** *1/04*

**U.S. Cl. 322—28 1 Claim**



In a system in which a permanent magnet alternator charges a battery through a full wave rectifier, regulation of the output voltage is effected by providing a variable impedance controlling the supply of power from the alternator to the rectifier. This impedance includes a first saturable inductor and a first diode connected in series for passing current of one polarity, and an identical second inductor and a second diode connected in series with one another, the second inductor and second diode together directly across the series connection of first inductor and first diode for passing current of the other polarity. A voltage sensing and controlling means is connected across the battery and controls the impedances of the inductors, by means of a control winding which is associated with said inductors.

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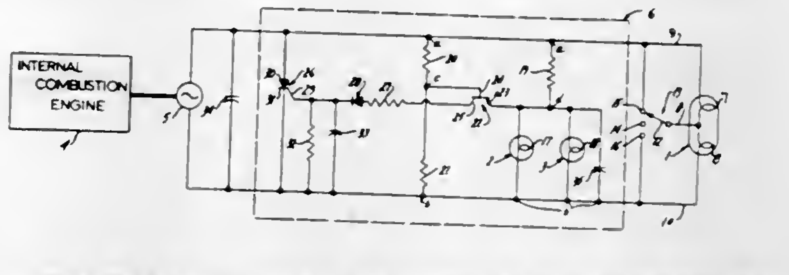
### 3,757,199
### POWER SUPPLY REGULATOR

**Floyd M. Minks, Rt. 1, Box 41, Kissimmee, Fla.**

**Continuation of Ser. No. 817,787, April 21, 1969, abandoned. This application Nov. 16, 1971, Ser. No. 199,388**

**Int. Cl. H02p** *9/30*

**U.S. Cl. 322—28 16 Claims**



This disclosure relates to a snowmobile lighting system having a permanent magnet alternator with a preselected open circuit voltage connected to energize a pair of taillights and a dual filament headlight. A silicon controlled rectifier is connected across the alternator output. A resistance bridge network is also connected across the output of the alternator with one leg of the bridge type network including the taillights. A transistor has its input elements connected across the output terminals of the network and its output elements connected to the gate circuit of the controlled rectifier. The resistance of the taillights increases with the output of the alternator and when it rises about a selected level, the transistor conducts and fires the controlled rectifier. A cutoff switch is connected in parallel with the resistor of the bridge connected to the taillights to directly connect the taillights across the alternator to minimize the output of the alternator. A multiple position switch selectively connects either or both of the filaments of the headlight for bright, dim, or minimal energization, respectively.

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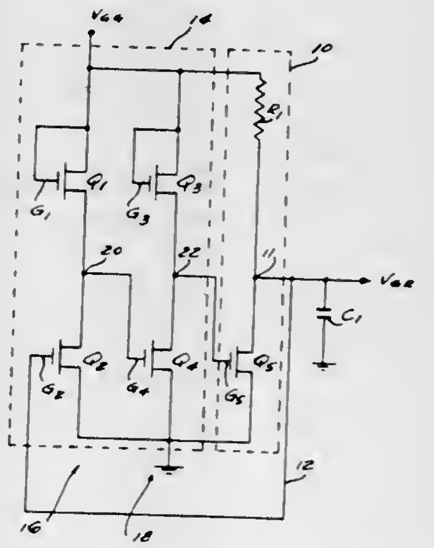
### 3,757,200
### MOS VOLTAGE REGULATOR

**Burton E. Cohen, Huntington Station, N.Y., assignor to General Instrument Corporation, Newark, N.J.**

**Filed July 10, 1972, Ser. No. 270,276**

**Int. Cl. G05f** *1/60*

**U.S. Cl. 323—8 13 Claims**



A voltage regulator circuit for use in integrated micro-circuits which may be integrated directly on the semi-conductor chip and is adapted to limit increases in the external supply voltage above that required for effective circuit operation, thereby to limit the increased current and power that would ordinarily result. The circuit comprises a resistor operatively connected in series with a switching device across the supply voltage to form a ratio circuit, the output of which is fed through a feedback amplifier to the control terminal of the switching device. The resulting negative feedback is effective to bias the output in a direction opposed to increases in the external voltage supply. A capacitor may be operatively connected to the output to prevent circuit oscillation.

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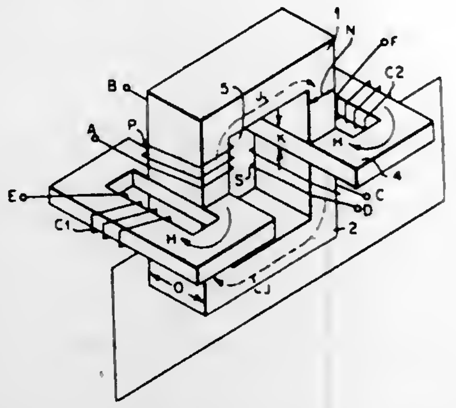
### 3,757,201
### ELECTRIC POWER CONTROLLING OR REGULATING SYSTEM

**Lionel B. Cornwell, 52 Madison Springs Dr., Madison, Conn.**
**Filed May 19, 1972, Ser. No. 255,015**
**Int. Cl. G05f** *1/14*; **Ho2p** *13/04*
**U.S. Cl. 323—44 R** **19 Claims**



An electric power controlling or regulating system comprises a transformer main magnet core portion which forms a first loop opening, a magnetic control core portion forming a second loop opening and magnetically contacting and merging with said main core. The second opening is outside of and separate from the main core opening. Main primary and secondary windings are disposed on the main core portion and pass through the first opening. Control windings are disposed on the control core portion and pass through the second opening while staying free of the first opening. The magnetic flux interlinking the primary and secondary windings on the main core portion is controllable by varying the excitation of the control windings. The second core portion extends either in a plane normal to that of the first loop opening or it extends about the main core portion in the same plane as the latter and has larger dimensions so that the two loop openings are substantially in the same plane.

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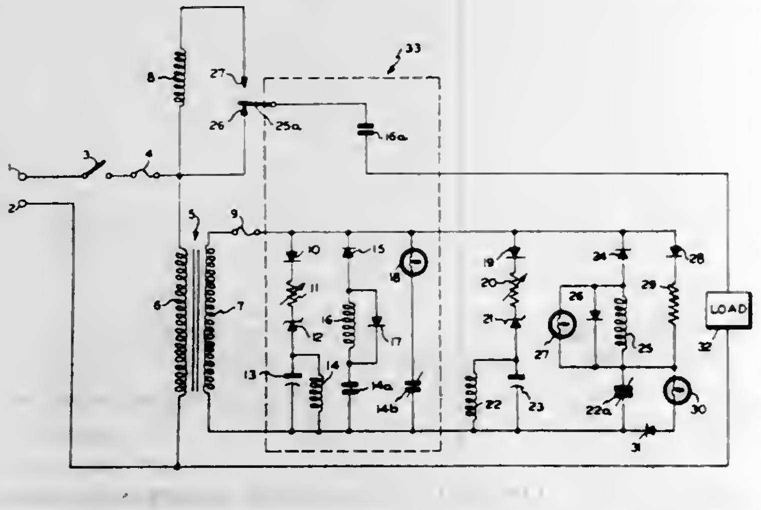
### 3,757,202
### LINE VOLTAGE REGULATOR

**Robert E. Prouty; Martin Wolff, both of Logansport, and Lloyd Bixler, Bringhurst, all of Ind., assignors to Essex International, Inc., Wayne, Ind.**
**Filed Sept. 11, 1972, Ser. No. 287,757**
**Int. Cl. H01f** *31/02*
**U.S. Cl. 323—45** **4 Claims**



This invention comprises a circuit and apparatus for sensing the input voltage to a device and for boosting the input voltage when it falls below a predetermined acceptable level so that the voltage supplied to a device is relatively constant. A sensing circuit acts to switch in the boost winding of an autotransformer when the input voltage is below the predetermined level. A second sensing circuit and apparatus is provided which senses a second input voltage level, lower than the first, and which disconnects the load device when the input voltage is below the second level.

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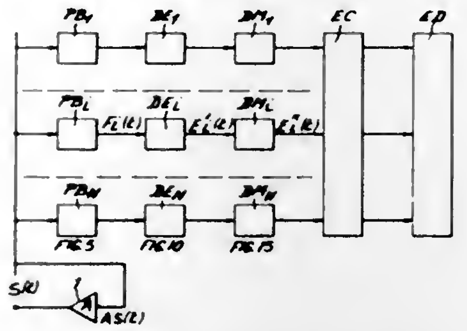
### 3,757,203
### MAGNETOMETER FOR DETECTION AND IDENTIFICATION OF IMMERSED BODIES

**Antoine Salvi, Fontaine, and Guy Chiron, Saint-Martin D'-Heres, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France**
**Filed Sept. 21, 1971, Ser. No. 182,473**
**Int. Cl. G01v** *3/16*; **G01r** *33/22*
**U.S. Cl. 324—4** **8 Claims**



A device for use with a differential magnetometer which is carried or towed by an aircraft is intended to determine whether a signal indicates the presence of a wreck or submarine. The device comprises several bandpass filters whose frequencies are so selected that one of the filters provides an output higher than that of any filter outside a pre-determined frequency range which corresponds to the frequency spectrum of a typical body for a pre-determined speed of the aircraft, if such a body is present.

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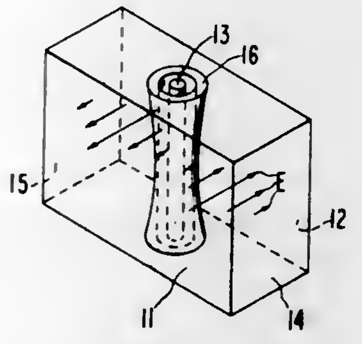
### 3,757,204
### CAVITY RESONATOR STRUCTURE FOR AN EPR SPECTROMETER EMPLOYING DIELECTRIC MATERIAL FOR IMPROVING RF ELECTRIC AND MAGNETIC FIELD UNIFORMITY ALONG THE SAMPLE

**James Stewart Hyde, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.**
**Filed Feb. 28, 1972, Ser. No. 229,788**
**Int. Cl. G01n** *27/78*
**U.S. Cl. 324—0.5 R** **12 Claims**



In an electron paramagnetic resonance cavity resonator having a line sample therein, a dielectric material positioned near the sample and along at least a portion of its length, and extending into the RF electric field region near the sample, changes the gradient of the electric field intensity and, as a result, the RF magnetic field intensity along the line sample so as to make both the RF electric and magnetic field intensities more uniform along the sample length. The dielectric material may take the form of a shaped sleeve surrounding the sample, or two shorter sleeves extending over the sample from either end and spaced apart at the center region, or parallel plates on either side of the sample,

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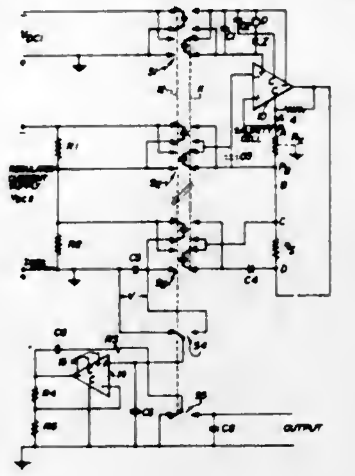
### 3,757,205
### CONDUCTIVITY MEASURING APPARATUS

**Thomas M. Dauphinee, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**
**Filed Oct. 4, 1971, Ser. No. 186,230**
**Int. Cl. G01n** *27/42*
**U.S. Cl. 324—30 R** **3 Claims**



A conductivity measuring apparatus for measuring the conductivity of liquids, e.g. sea-water in which isolating choppers are used to provide square wave voltages to the current electrodes in the salinity cell and an operational amplifier senses the voltage across the electrodes in relation to the voltage on a reference resistor and generates a square wave current which passes through the current electrodes and the reference resistor. This current is proportional to the conductance of the salinity cell.

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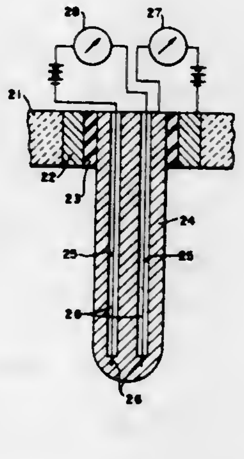
### 3,757,206
### DIFFERENTIAL THERMOELEMENTS

**Hans-Rudiger Dorst, Berlin, Germany, assignor to VEB Qualitats - und Edelstahl - Kombinat, Hennigsdorf/Kr. Oranienburg, Germany**
**Filed May 6, 1971, Ser. No. 140,750**
**Int. Cl. G01k** *7/02*
**U.S. Cl. 324—32** **4 Claims**



Differential thermoelements for the indirect, quantitative determination of an alloying constituent in conductive melts having several constituents, the melt itself preferably forming the common leg of the thermoelement.

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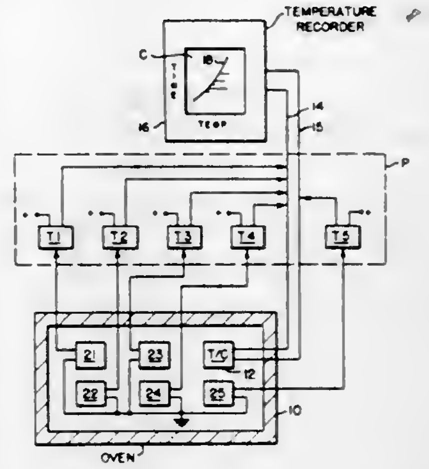
### 3,757,207
### METHOD AND APPARATUS FOR TESTING THERMOSTATIC SWITCHES

**Charles John Hire, Pittsford, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.**
**Filed Jan. 10, 1972, Ser. No. 216,443**
**Int. Cl. G01r** *31/02*; **G01k** *19/00*
**U.S. Cl. 324—28 R** **9 Claims**



Thermostatic switches to be tested are placed in an oven containing a thermocouple connected in normal manner by two lead wires to the input of a conventional temperature recorder of the drag pen variety. Each switch is connected to one of a plurality of timer devices which control normally-open switches connected in parallel across the two lead wires of the thermocouple. As the oven temperature increases a time-temperature curve is inscribed on the chart in the recorder. As each thermostat trips it actuates its timer device, which in turn momentarily closes its associated switch to shunt the lead wires, thus causing the drag pen to shift laterally and mark a line transverse of said curve at the exact temperature the thermostat tripped. Each timer closes its switch for a different interval so that each thermostat is identified by the length of the transverse mark it causes.

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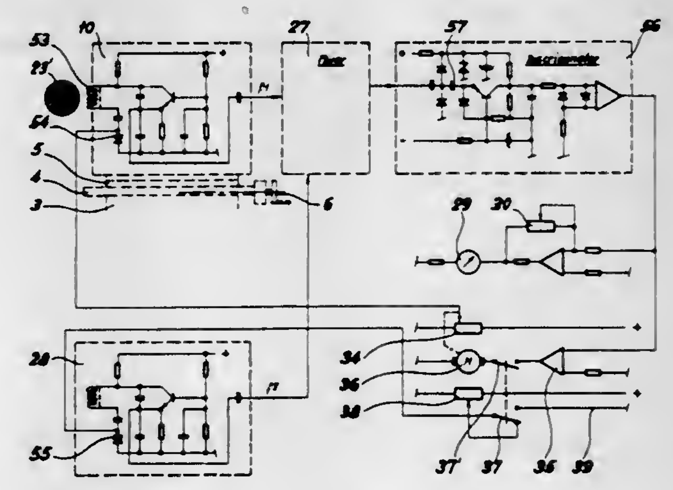
### 3,757,208
### METHOD AND APPARATUS FOR BALANCING AN APPARATUS USED FOR MEASURING THE THICKNESS OF LAYERS

**Mathias Brunner, Alfermee, Switzerland, assignor to Zumbach Electronic-Automatic, Orpund/Biel, Berne, Switzerland**
**Continuation-in-part of Ser. No. 30,542, April 20, 1970, abandoned. This application June 19, 1972, Ser. No. 264,175**
**Claims priority, application Germany, Apr. 23, 1969, P 19 20 709.9**
**Int. Cl. G01r** *33/12*
**U.S. Cl. 324—34 TK** **25 Claims**



A method and device for measuring the thickness of layers, particularly of insulating layers on metallic parts. A measuring signal is produced corresponding to the thickness to be measured and this signal is compared with a comparing signal, balancing means being provided for adjusting both signals independently of the variations of the measuring signal by the measuring object, and means being provided for shifting one of said signals by a constant amount equal to the shift of said measuring signal upon removal of the measuring probe from the influencing range of a measuring object, reference balancing being thus possible with said measuring probe removed from the measuring object and said one signal shifted by said constant amount.

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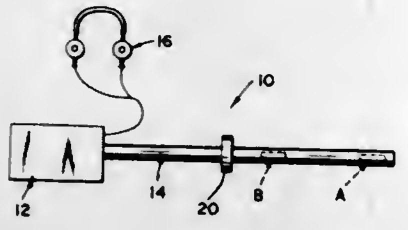
### 3,757,209
### COMPENSATION FOR MISALIGNMENT OF MAGNETIC SENSORS

**Erick O. Schonstedt, 1775 Wiehle Ave., Reston, Va.**

**Filed Feb. 11, 1972, Ser. No. 225,454**

**Int. Cl. G01r *33/02***

**U.S. Cl. 324—43 G** **6 Claims**



Magnetic locator or gradiometer of the fluxgate type comprising an elongated non-magnetic cylindrical tube with a pair of directional magnetic field sensor means spaced apart in and fixed to the tube, the sensor means having individual magnetic axes approximately aligned with the longitudinal axis of the tube, and comprising means for compensating for misalignment of the axis of either of the sensor means with the longitudinal axis. The compensating means may comprise a non-magnetic annulus having an opening through which the elongated tube extends freely and slidably longitudinally and circumferentially, the annulus carrying a body of easily magnetizable material and having a set screw for fixing its position upon the tube after the annulus has been moved longitudinally along the tube and circumferentially of the tube to a position at which substantial compensation for misalignment is attained. Alternatively, the compensating means may comprise a non-magnetic cylindrical cap closing one end of the tube and rotatably adjustable about the longitudinal axis, the cap carrying a body of easily magnetizable material eccentrically thereon and having means for fixing the cap to the tube after the cap has been rotated about the longitudinal axis to a position at which substantial compensation for misalignment is attained.

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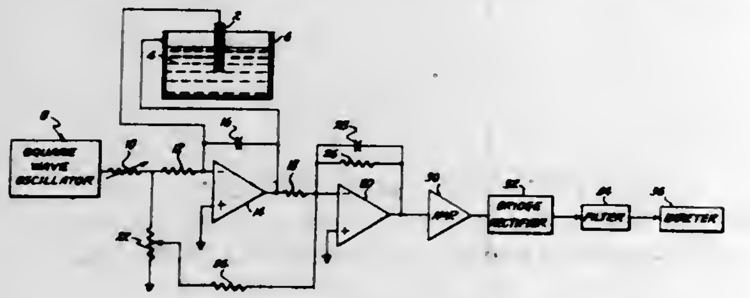
### 3,757,210
### APPARATUS AND METHOD FOR TESTING THE AMOUNT OF DEPOSITION IN AN AQUEOUS SYSTEM

**Gerald D. Hansen, Holicong, Pa., and Paul C. Dryden, Urbana, Ill., assignors to Betz Laboratories, Inc., Trevose, Pa.**

**Filed Mar. 9, 1972, Ser. No. 233,028**

**Int. Cl. G01r *27/02***

**U.S. Cl. 324—61 R** **10 Claims**



To determine the amount of deposition taking place in an aqueous solution which deposits scale or other deposits on the vessels in which it is used, a measurement electrode is placed in the aqueous solution so that it also is subject to deposition. A symmetrical wave electrical signal is impressed between the electrode and the body of the vessel containing the aqueous solution. An output signal is generated which is modified by the dielectric deposit on the electrode and is measured to determine the variation in capacitance between the electrode and aqueous system, thereby providing an indication of the magnitude of the deposit on the electrode.

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### 3,757,211
### METHOD AND APPARATUS FOR ON-LINE YARN QUALITY CONTROL

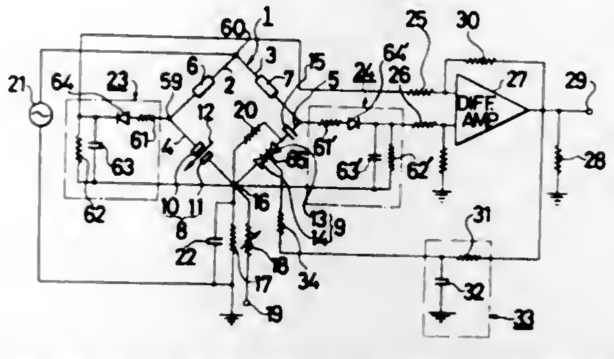
**Tsugio Goto, Nobeoka, Japan, assignor to Asahi Kasei Kabushiki Kaisha, Kita-ku, Osaka, Japan**

**Filed Aug. 30, 1971, Ser. No. 175,849**

**Claims priority, application Japan, Aug. 29, 1970, 45/75756**

**Int. Cl. G01r *27/26***

**U.S. Cl. 324—61 R** **4 Claims**



A continuously spun monofilament is passed through a detector which is capable of providing a continuous signal representative of the yarn parameters such as variations in denier, formation of fluff, split-offs, additions and the like, which will show and identify various latent color defects which will be manufactured during subsequent dyeing operations. The detector device includes a bridge circuit wherein one chord of the bridge is comprised of a pair of electrodes between which the yarn is adapted to pass whereby any variation in the thickness or mass of the travelling yarn will bring the bridge into an unbalanced station and thereby provide an output signal indicative of the variation in the yarn.

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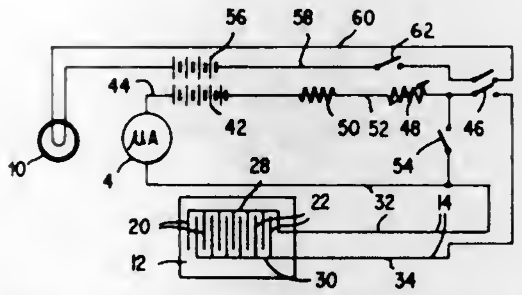
### 3,757,212
### APPARATUS FOR MEASURING UNFROZEN MOISTURE IN SNOW

**Frank Johnson, R.D. 5, Princeton, N.J.**

**Filed Dec. 1, 1971, Ser. No. 203,746**

**Int. Cl. G01r *27/02***

**U.S. Cl. 324—65 R** **6 Claims**



A portable device is provided for determining the quality of man-made snow as represented by the amount of unfrozen moisture contained therein. The device embodies a flat plastic member adapted to be placed in contact with the surface of the snow and having two spaced electrical contacts exposed therein for engagement with the snow. An instrument such as a milliammeter is electrically connected to said contacts and calibrated to read in terms of the moisture content of the snow engaged by said member.

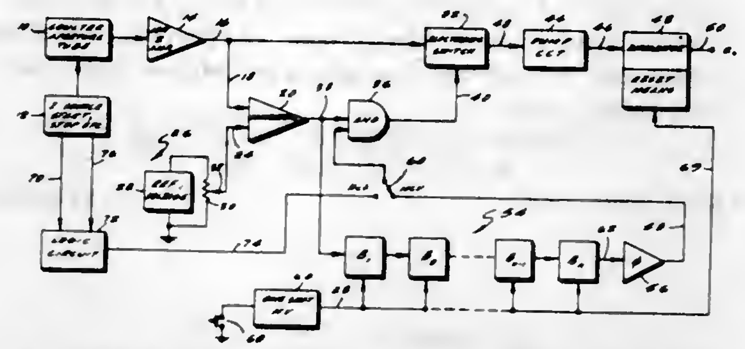
### 3,757,213
### PARTICLE SIZE ANALYZING APPARATUS AND METHOD USING THRESHOLD LEVEL CONTROL

**Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.**

**Filed May 25, 1970, Ser. No. 40,231**

**Int. Cl. G01n *27/00***

**U.S. Cl. 324—71 CP** **22 Claims**



The analog electrical signals from a Coulter type electronic particle analyzing apparatus are applied to a voltage-to-charge converter, only those signals having amplitudes which exceed a pre-selected threshold level are so applied. The resulting charges produced from all of the applied signals are accumulated in a device, such as an integrating circuit, and provide an output voltage the value of which is proportional to the total amplitudes of all applied signals.

Accumulated for a given number of the signals, the said output voltage defines an output voltage which is proportional to the mean particle volume.

Accumulated for a given volume of test suspension which is allowed to flow through the aperture of the particle analyzing apparatus, the first mentioned output signal is proportional to the ratio of total particulate volume to diluent volume.

Providing a plurality of such structures, each having its threshold level set at a different value corresponding to some particle size, a plurality of outputs is available each of which provides an output signal which is proportional to the total particulate volume in the suspension above the said particle size, so that the plotting of the plurality of output signals produces the integral curve of the particulate system being examined. Using differential responsive devices between adjacent outputs provides another set of output signals which enables the differential curve of the particulate system to be constructed.

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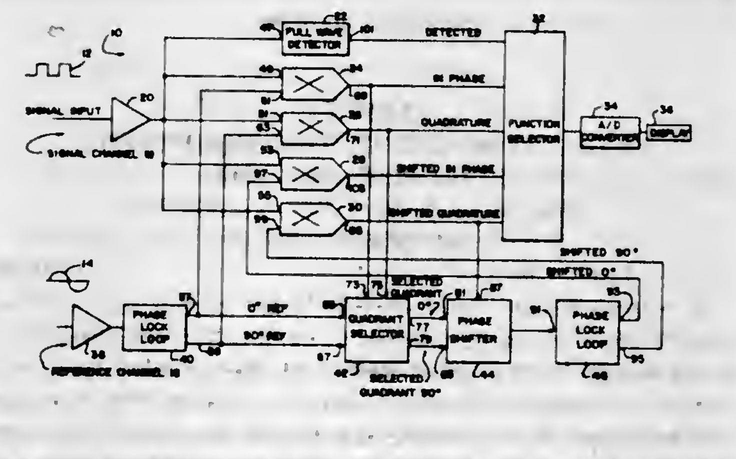
### 3,757,214
### PROGRAMMABLE MULTI-MODE PHASE SENSITIVE VOLTMETER

**David L. Kaufman, Lexington, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.**

**Filed July 6, 1971, Ser. No. 160,002**

**Int. Cl. G01r *25/00***

**U.S. Cl. 324—83 Q** **11 Claims**



Phase sensitive measurements of the fundamental component of a test signal having a complex waveform is performed in two distinct modes of operation using an unshifted and shifted sine wave reference signal. In each mode, the component is examined with respect to either the in-phase or quadrature phase of the reference signal. In measuring the total value of the fundamental component of the test signal with respect to the in-phase shifted reference signal, the reference signal is shifted, in a variable phase shifter having two wideband multipliers, in such a manner that the in phase component of the reference signal is maximized and the quadrature component of the reference signal is minimized. The test signal is multiplied by the in-phase shifted reference signal. The resulting signal is a measure of the total value of only the fundamental component of the test signal.

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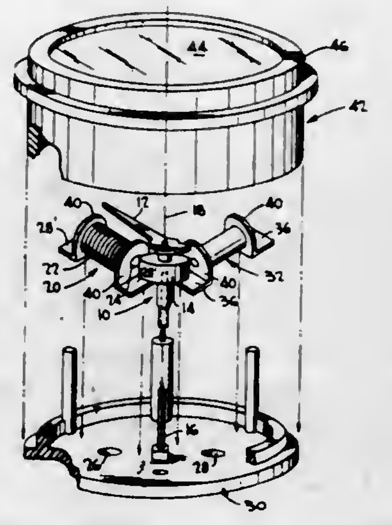
### 3,757,215
### UNICOIL ELECTRICAL INDICATOR INSTRUMENT

**Joseph B. Wible, Lancaster, and Paul E. Martin, Ephrata, both of Pa., assignors to Datcon Instrument Company, East Petersburg, Pa.**

**Filed Apr. 6, 1972, Ser. No. 241,674**

**Int. Cl. G01r *1/20***

**U.S. Cl. 324—146** **6 Claims**



A novel electrical instrument or gauge is disclosed for indicating current flow as produced by an external sending unit, for example. The indicator instrument comprises a rotor assembly which includes a pointer and a permanent magnet armature attached thereto, the rotor assembly being disposed for rotation in a plane about a rotational axis. Importantly, a single electromagnetic coil is disposed substantially in said plane and aligned with respect to said rotor assembly such that the center line of said coil intersects with said rotational axis. A magnetized core piece is also disposed substantially in said plane and is aligned with respect to the rotor assembly and the electromagnetic coil such that the center line of the magnetized core piece intersects with the rotational axis of the rotor assembly and lies at an angle of substantially 90° to the center line of said electromagnetic coil. In the preferred inventive embodiment, a further magnetized core piece is disposed within the electromagnetic coil provided, coaxial with the center line thereof. The single or unicoil design of the instant invention is such that the novel assembly exhibits a simplified construction and increased reliability. The operation of the novel instrument of the instant invention is typical in that the pointer will move in accordance with current flow through the electromagnetic coil, which current is itself in accordance with a variable to be indicated.

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### 3,757,216
### ELECTRICAL TEST INSTRUMENT

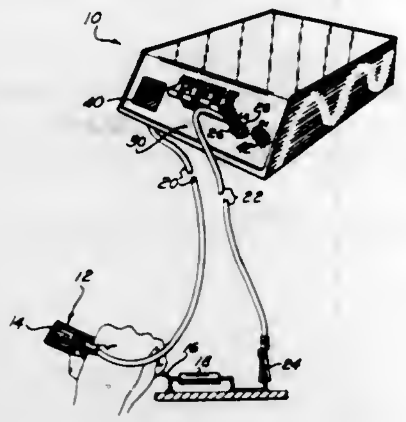
**Stephen L. Kurtin, and Michael P. Anthony, both of Pasadena, Calif., assignors to Keithley Instruments, Inc., Solon, Ohio**

**Filed Dec. 13, 1971, Ser. No. 207,262**

**Int. Cl. G01r *1/06, 31/02***

**U.S. Cl. 324—149** **9 Claims**

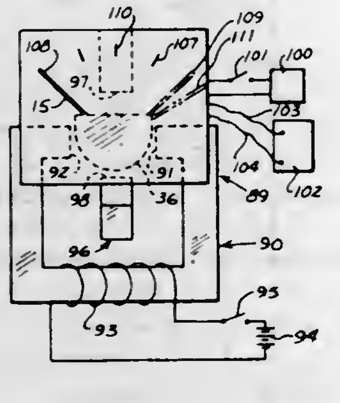
An electrical testing instrument for sensing and indicating electrical characteristics, such as the magnitudes of an unknown voltage source, or of a resistance. The instrument is provided with a probe having a contact tip which is electrically connected to sensing circuitry located in an instrument housing by means of an interconnecting conductor carrying cable. The contact tip on the probe is adapted to engage a portion of a test circuit means having such a characteristic to be sensed by the instrument. The instrument housing contains electrical circuitry including sensing circuit means and power supply means for energizing the sensing circuitry. The sensing circuitry has an input circuit connected to the probe's contact tip through a conductor carried by the cable, and an output circuit which serves, when the sensing circuitry is operative, to provide electrical signals representative of the sensed characteristic. The probe carries a switch which is electrically connected through a conductor carried by the cable to the electrical circuitry in the instrument housing in such a manner that the switch may be selectively actuated to render the sensing circuitry operative or nonoperative. A visual display is also carried by the probe and is energized from the output circuit of the sensing circuitry by conductors carried by the cable. With this construction a visual display is provided only when the probe switch is actuated to cause the sensing circuitry to be operatively energized. Battery drain is minimized since operating power for the sensing circuitry and visual display is provided only when the probe switch is actuated.



### 3,757,217
### METER AND METHOD OF CALIBRATION

**David B. Pearson, Raritan, N.J., assignor to Weston Instrument, Inc., Newark, N.J.**

**Filed Aug. 20, 1971, Ser. No. 173,424**
**Int. Cl. G01r** *1/00, 35/00*
**U.S. Cl. 324—151 R** **17 Claims**



A D'Arsonval type moving coil meter with linear scale deflection characteristics. The magnetic circuit of the meter is such that the sum total of flux which cuts the coil is the same for any operative position of the coil. Correspondingly, angular deflection of the coil is in direct proportion to the current in the coil. The magnetic circuit includes a magnet having fixed locating surfaces thereon which cooperate with fixed locating surfaces on a yoke. This locating arrangement assures that the sum total of flux which cuts the coil is the same for any operative position of the coil and further assures repeatable accuracy in successively assembled meters. The meter is calibrated by magnetizing the magnet to obtain full scale deflection when rated current is applied to the meter terminals. Where a calibrating resistor is used, the resistor is connected to the meter prior to calibration with the result that accuracy of the meter is assured without the need for using a precision resistor.

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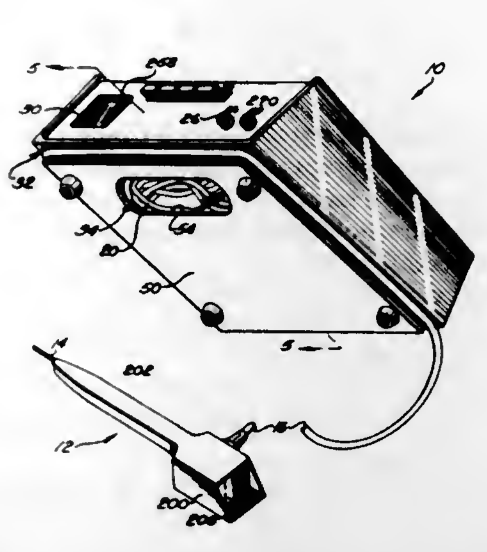
### 3,757,218
### ELECTRICAL TESTING INSTRUMENT STRUCTURE

**Anthony Daniel Oliverio, Chesterland, and Marvin Levi Ward, Brunswick, both of Ohio, assignors to Keithley Instruments, Inc., Solon, Ohio**

**Filed Dec. 13, 1971, Ser. No. 207,264**
**Int. Cl. G01r** *1/04, 1/06*
**U.S. Cl. 324—156** **16 Claims**



An electrical instrument for measuring or testing electrical characteristics, such as resistance or voltage, of test circuits is provided with a probe having an electrical contact tip for engaging a portion of such a test circuit. The contact tip is electrically connected to the instrument's measuring circuitry by an elongated, flexible cable for communicating electrical signals therebetween. An instrument housing serves to contain the measuring circuitry and has surrounding walls which define an encircling trough with a continuous cable receiving opening facing outwardly of the housing. The trough is of sufficient width and depth to receive a substantial portion of the intermediate length of the cable so that the cable may be stored in the trough, as by wrapping or reeling the cable around the housing while being received in the trough. The housing is preferably formed as a three piece structure including a bottom member and an intermediatemember which cooperate together to define a battery storage compartment and an adjacent ground lead storage compartment, with the two compartments being surrounded by the cable receiving trough. The intermediate member has provisions for supporting a printed circuit board, or the like, containing the instrument's measuring circuitry in a compartment defined between the cover and the intermediate member.

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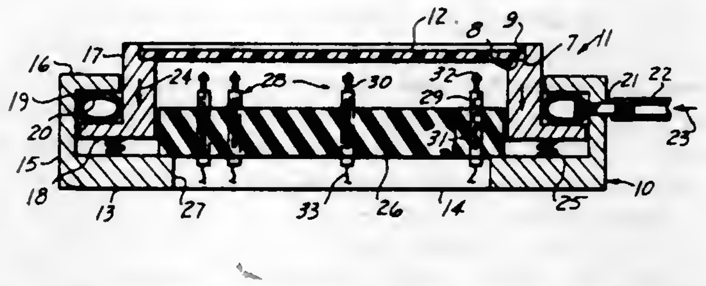
### 3,757,219
### CIRCUIT BOARD TESTING EQUIPMENT

**Akin Aksu, 739 E. 223rd St., Carson, Calif.**

**Filed Dec. 15, 1971, Ser. No. 208,160**
**Int. Cl. G01r** *31/02*
**U.S. Cl. 324—158 F** **12 Claims**

A testing fixture for a circuit board comprises inner and outer frames movable relative to each other, the inner frame being adapted to support and hold the circuit board to be tested. An array of contact units is supported by the outer frame at a position opposite the circuit board and adapted to make contact with selected parts of the circuit board when the inner frame is moved to meet the contact units. For the purpose of moving the inner frame to meet the contact units, a peripheral region is provided between members of the inner and outer frames adapted to be pressurized by fluid and thereby force the inner and outer frames toward each other so that the contact units engage the selected parts of the circuit board.



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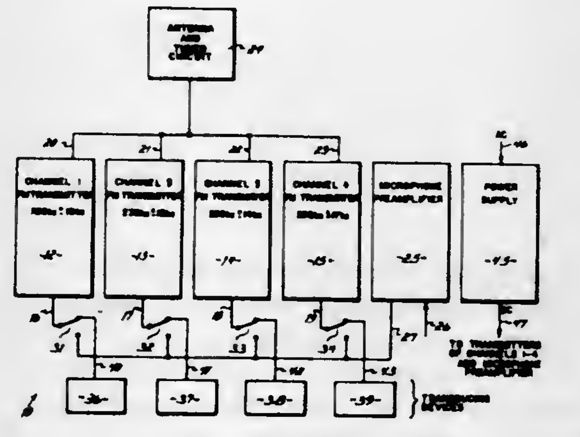
### 3,757,220
### FM RECEIVER

**William E. Abel, 4920 N.E. Glisan St., Portland, Oreg.**
**Continuation of Ser. No. 789,465, Jan. 7, 1969, abandoned, which is a division of Ser. No. 629,641, April 10, 1967, Pat. No. 3,462,688. This application Feb. 24, 1971, Ser. No. 118,471. The portion of the term of this patent subsequent to Aug. 19, 1986 has been disclaimed.**
**Int. Cl. H04b** *1/00*
**U.S. Cl. 325—47** **4 Claims**



A wireless multi-channel FM receiver suitable for use in a classroom by students to selectively receive different instructional material simultaneously transmitted on different channels by an instructor. The receiver includes an RF antenna; RF narrow band filter circuit responsive to transmitted signals received by the antenna and selectively tunable to different channels for selectively passing received RF signals of only a single channel; and RF amplitude-limiter responsive to the RF filter circuit output and having a bandwidth including, but not necessarily limited to or centered on, all RF channels; and a detector responsive to the RF output of the amplifier-limiter and also having a bandwidth including, but not necessarily limited to or centered on, all of the RF channels.

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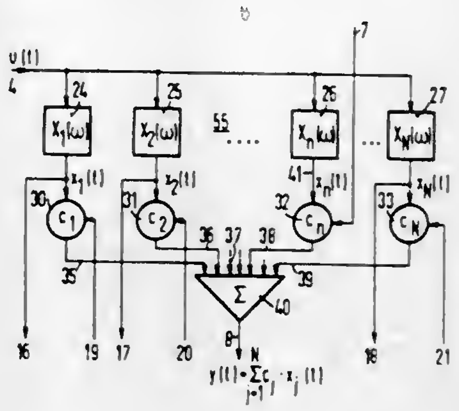
### 3,757,221
### AUTOMATIC EQUALIZER SYSTEM FOR PHASE-MODULATED DATA SIGNALS

**Karlheinz Moehrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed June 2, 1971, Ser. No. 149,258**
**Claims priority, application Germany, June 4, 1970, P 20 27 544.9**
**Int. Cl. H03h** *7/36*
**U.S. Cl. 325—42** **12 Claims**

An automatic equalizer system for phase-modulated data signals, which is provided on the receiving side of a band-limited transmission channel and is connected with a receiver via a demodulator, comprises an equalizer which has N filter members with N respective outputs. N-1 outputs are connected with the inputs of a computer and all N outputs are connected via N variable circuit elements with the inputs of an adder;

the output of the transmission channel is connected with the computer on the one hand via a sync recovery circuit and on the other hand, via a reference clock provided with a synchronization device. N-1 outputs of the computer are associated with those N-1 variable elements whose inputs lead simultaneously to the inputs of the computer, in such a manner as to effect an adaptive adjustment of the variable circuit elements. The output of the equalizer is connected via automatic gain control means with that variable element of the equalizer which is associated with the filter member whose output does not lead to the computer.



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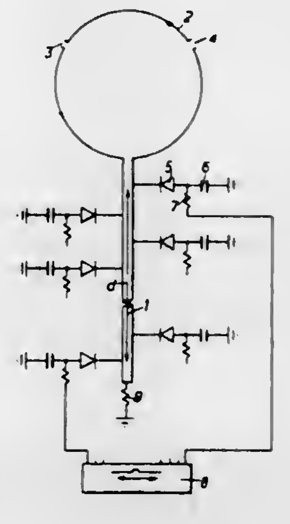
### 3,757,222
### SINGLE SIDEBAND GENERATOR EMPLOYING A PLURALITY OF CYCLICALLY SWITCHED SHORTING DIODES CONTROLLING A TRANSMISSION LINE ELECTRICAL LENGTH

**Francis G. Oberbury, Cuffley, Hertfordshire, England, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Jan. 11, 1971, Ser. No. 216,982**
**Int. Cl. H04b** *1/68*
**U.S. Cl. 325—137** **5 Claims**



A digital single sideband generator in which the carrier frequency is fed via a circulator to a (microstrip) transmission line which has a series of switchable short circuits (RF grounded diodes) along a length of the line equal to half the carrier wavelength. Successive cyclic switching of the diodes simulates a moving RF energy reflector advancing or retarding the phase of the reflected energy according to direction of switching and resulting in a frequency offset at the circulator output determined by the cyclic rate.

3,757,223

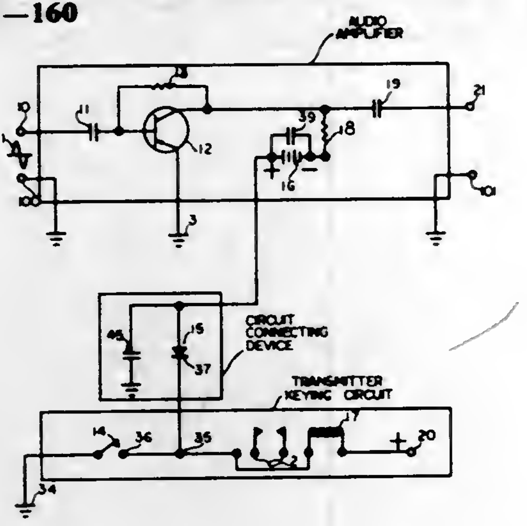
### CIRCUIT CONNECTING DEVICE

**Arthur L. Hazen, Box 211, Kermit, Tex.**

**Filed Apr. 19, 1971, Ser. No. 90,231**

**Int. Cl. H04b** *1/04*

**U.S. Cl. 325—160** **1 Claim**



The SPST transmitter keying switch is used both to operate a transmitter keying relay and switch the audio amplifier power on and off. A diode is used to isolate the relay and amplifier power supplies.

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3,757,224

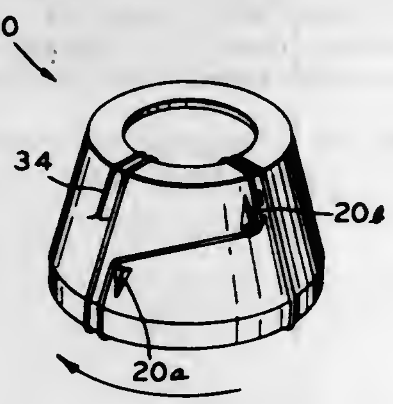
### TOROIDAL YOKE AND CORE ASSEMBLY THEREFOR

**Francis A. Fedorko, Saint Marys; Donald J. Kantner, Emporium; Franklin A. Metzler, Emporium, and James M. Smith, Emporium, all of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.**

**Filed May 1, 1972, Ser. No. 249,390**

**Int. Cl. H01f** *7/00*

**U.S. Cl. 335—210** **6 Claims**



A toroidal yoke having a modified core which contains projecting slewing points whereby the separate and distinct coils of the yoke can be wound as a single coil, thus eliminating the need for stopping the winding machine periodicaly during manufacture. The single coil is after formed into a plurality of separate coils by cutting the wire in the proper locations.

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3,757,225

### COMMUNICATION SYSTEM

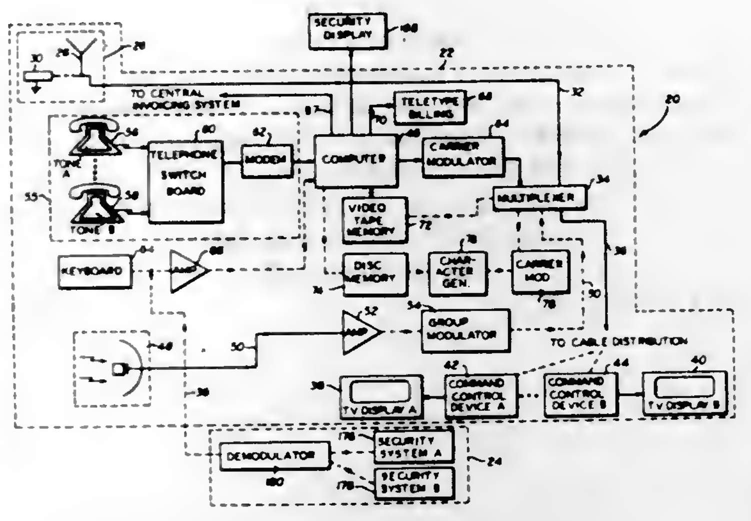
**Edward M. Ulicki, East Paterson, N.J., assignor to Telebeam Corporation, New York, N.Y.**

**Filed Mar. 16, 1972, Ser. No. 235,167**

**Int. Cl. H04n** *7/08, 7/16, 7/18*

**U.S. Cl. 325—308** **45 Claims**

A communication system by which a plurality of substantially simultaneously transmitted different subscription programs may be selectively individually displayed on a common display channel. A multiplexed communication signal containing a plurality of different program information signals and a plurality of command signals is provided to a plurality of display devices which are capable of displaying different selected program information displays from the plurality of such signals in response to selected program information signals. Each display device has an associated means for controlling the selection of these programs which is connected to a common condition responsive means, such as a computer. The control means includes means for demultiplexing the communication signal and for generating a program information selection control signal in response to a uniquely identified command signal. A digital frequency synthesizer may be utilized to generate the control signal at a frequency which, when mixed with the demultiplexed plurality of subscription program information signals, provides the selected one at the frequency of the common display channel. A different program may be substantially simultaneously selected on another display device in the same manner by the generation of a different control signal frequency in response to a different associated command signal. The plurality of initially demultiplexed program information signals may be a digital time division multiplexed signal, in which instance a digital sampler, such as a recirculating register, may be utilized in conjunction with a comparator to time demultiplex the program information signals and provide the selected program in response to the generation of an unload signal from the comparator as the selection control signal, the output of the sampler being thereafter converted to an analog signal. In addition, the computer and common communication signal path thereto of the communication system may be utilized to provide premises access monitoring, in which instance a pair of input devices, such as a card reader and a door position sensor, provide input conditions to the computer indicative of the status of the door to the premises and the authorization of the entrant, a randomly selected insertable card providing the authorization information to the computer through the reader.



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3,757,226

### DIGITAL MEANS FOR IMPROVING THE SIGNAL TO NOISE RATIO OF REPETITIVE MORSE CODE-TYPE SIGNALS

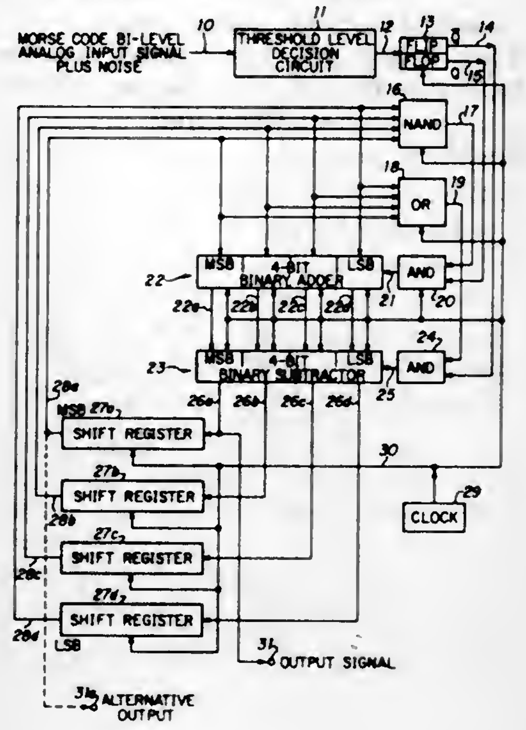
**Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa**

**Filed Jan. 17, 1972, Ser. No. 218,279**

**Int. Cl. H03k** *5/18*

**U.S. Cl. 325—323** **11 Claims**

A digitally implemented means for enhancing the reception of repetitive binary code transmission sequences is based on a statistical approach of comparing a sampled level of the incoming code at any instant with that received and stored at the time occurrence of the corresponding point on a previously received code sequence. The sampled levels are applied to logic circuitry which modifies stored samples in a plurality of shift registers subject to certain logical constraints. After a sufficient number of input level samples, a substantially noise free replica of the incoming code circulates in the most significant bit one of the plurality of shift registers each of which stores and circulates a progressively more significant bit of a multi-bit stored binary number. Either the input to, or output from, the most significant bit shift register comprises the system output.



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3,757,227

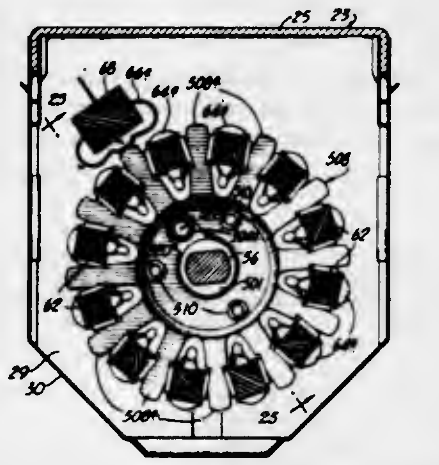
### COMBINED VHF-UHF TELEVISION TUNER

**Morton L. Weigel, Bloomington, Ind., assignor to Sarkes Tragian, Inc., Bloomington, Ind.**

**Continuation of Ser. No. 855,919, Sept. 5, 1969, , which is a continuation of Ser. No. 507,341, Nov. 12, 1965,. This application July 2, 1971, Ser. No. 159,541**

**Int. Cl. H04b** *1/06*

**U.S. Cl. 325—462** **48 Claims**



A twenty-four position combined VHF-UHF television tuner is provided in which the tuner is operative in alternate ones of said twenty-four positions to receive different VHF stations and is operative in UHF positions between said alternate positions to receive signals from different groups of UHF television stations. When the station selector shaft is in any one of said UHF positions the VHF tuner portion is operated as an IF amplifier to amplify intermediate frequency signals produced by the UHF portion.

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3,757,228

### CIRCUIT FOR AUTOMATIC SEARCH TUNING IN RADIO RECEIVERS

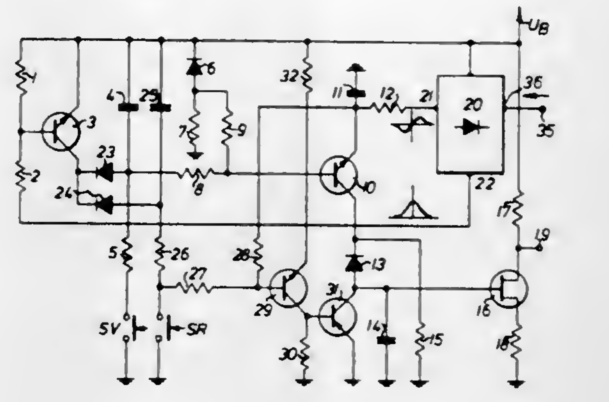
**Otto Klank, Arpke, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany**

**Filed Sept. 9, 1971, Ser. No. 178,875**

**Claims priority, application Germany, Sept. 9, 1970, P 20 44 635.9**

**Int. Cl. H04b** *1/32*

**U.S. Cl. 325—470** **6 Claims**



An automatic tuning circuit for a receiver which has a switch for initiating a search for a station delivering a signal exceeding a threshold level. The circuit is designed to maintain lock-on to such a station even when the received signal momentarily fades. A modification of the circuitry permits reversible tuning across the broadcast band. Fine tuning is achieved by a ratio detector which generates an error signal dependent upon frequency deviation.

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3,757,229

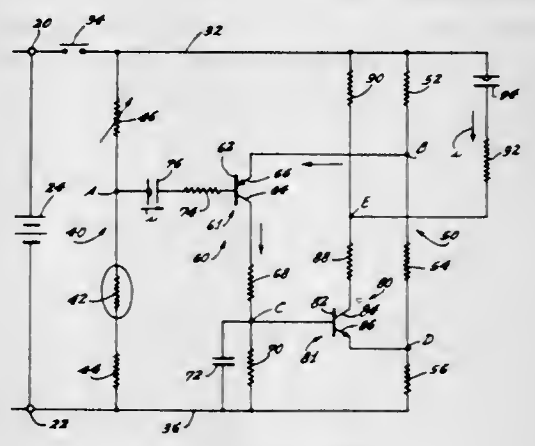
### THERMAL POLLUTION MONITORING DEVICE

**John Brian Murphy, Pacific Palisades, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.**

**Filed June 17, 1970, Ser. No. 47,049**

**Int. Cl. G01k** *7/00*

**U.S. Cl. 328—1** **8 Claims**



A device for monitoring a particular function such as temperature for determining when the function is above a threshold level. A sensor responsive to the particular function being monitored provides a variable electrical signal in response to variations of the particular function. An electrical circuit is coupled to receive the variable electrical signal at an input. The electrical circuit is in a first state in response to the variable electrical signal above the threshold level and is in a second state in response to the variable electrical signal below the threshold level. A first electrolytic cell is coupled to the input of the electrical circuit and is responsive to the variable electrical signal when the electrical circuit is in the first state. A second electrolytic cell is coupled to the output of the electrical circuit and is responsive to a constant signal when the electrical circuit is in the first state.

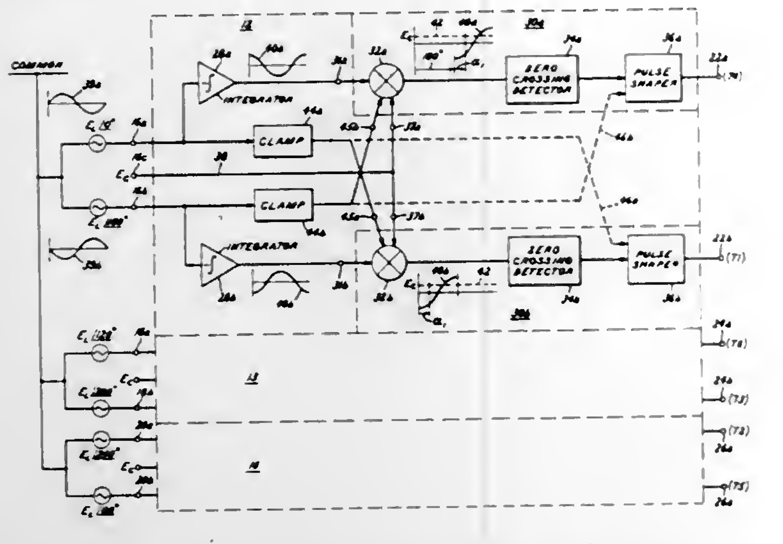
### 3,757,230
## COSINUSOIDAL PULSE GENERATOR WITH INTEGRATOR STAGE

**Marvin F. Keeney, Jr., Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.**

**Filed Jan. 14, 1972, Ser. No. 217,913**

**Int. Cl. H03k** *5/08*

**U.S. Cl. 328—28** **11 Claims**



A pulse generator for developing firing pulses for at least one controlled rectifier located between a source of single or polyphase alternating current and a load. The pulse generator comprises at least one bipolar active integrator which integrates a replica of an alternating source signal. The resulting integrated signal is compared with a control signal in a comparator circuit of the pulse generator and when a preselected relationship exists between the integrated signal and the control signal, the comparator circuit generates a firing pulse which may be utilized to trigger the controlled rectifier.

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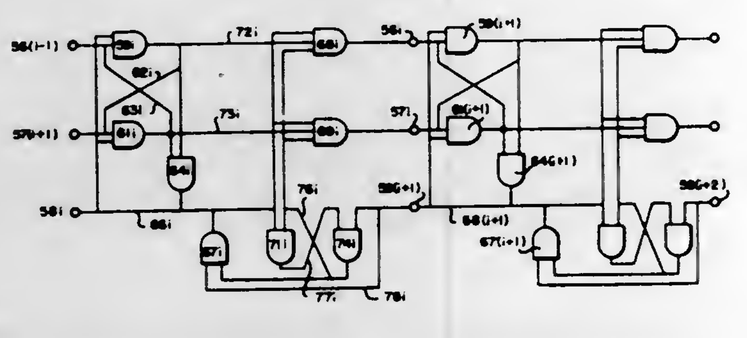
### 3,757,231
## ASYNCHRONOUS CIRCUIT AND SYSTEM

**Carlo Faustini, Silver Spring, Md., assignor to Dyad Systems, Inc., Columbia, Md.**

**Continuation-in-part of Ser. No. 816,573, April 16, 1969, abandoned. This application Mar. 26, 1970, Ser. No. 22,991**

**Int. Cl. G11c** *19/00*

**U.S. Cl. 328—37** **24 Claims**



An asynchronous logic circuit is provided having three stable states, namely two information states and a neutral state. Information is transferred between cacaded such circuits wholly under the control of such circuits and at a rate determined by the delay times through various gates. Feedback is employed between each circuit so that for any two given circuits the transfer logic is 1N → N1, I representing an information state and N representing the neutral state. Reversible cascaded chains are discussed as well as parallel feed-in and feed-out of information, and fan-in, fan-out and recirculating loops of information. The cascaded circuits (nets) employ interface circuits comprising in most instances a specified part of the basic net circuit.

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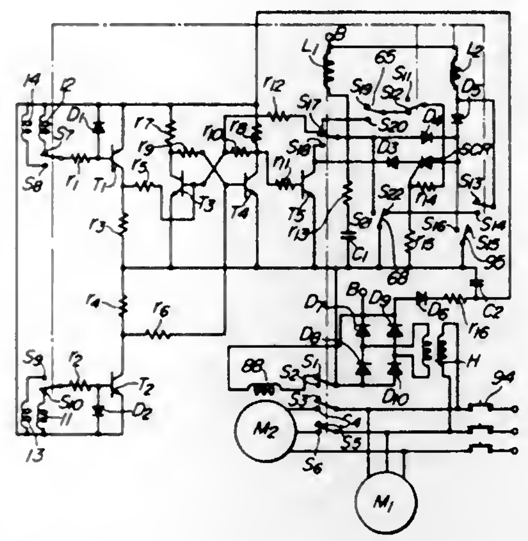
### 3,757,232
## DEVICE FOR STOPPING A ROTATING MEMBER AT A PREDETERMINED ANGULAR POSITION

**Masao Matsuda, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Division of Ser. No. 829,281, June 2, 1969, abandoned. This application Dec. 18, 1970, Ser. No. 99,505**

**Int. Cl. G05d** *3/00*

**U.S. Cl. 328—74** **2 Claims**



A device for stopping a rotary element accurately in a predetermined position by detecting the specific rotational position of the rotary element by a detector and actuating a relay or the like in response to a signal from said detector.

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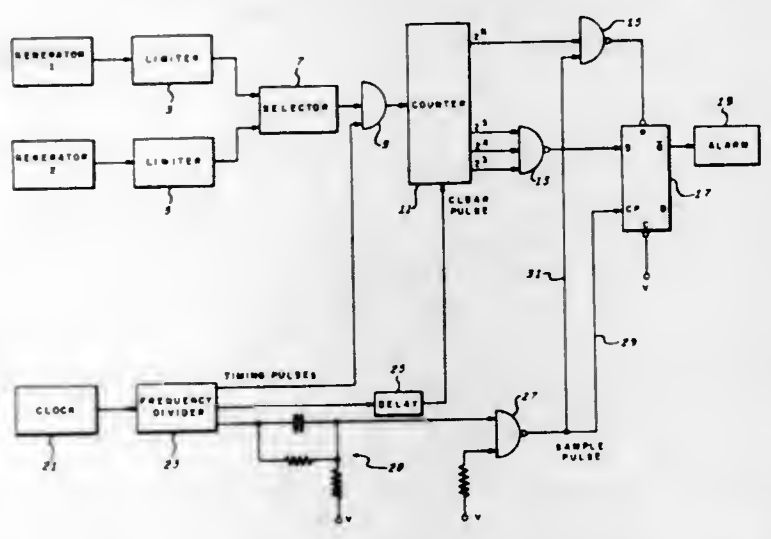
### 3,757,233
## DIGITAL FILTER

**Harold G. Dixon, Charlottesville, Va., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Feb. 4, 1972, Ser. No. 223,554**

**Int. Cl. H03k** *9/06*

**U.S. Cl. 328—138** **8 Claims**



A digital filter is used to provide a distinctive output signal whenever the frequency of an input signal deviates more than a predetermined amount from a nominal value. The input signals are applied to a digital counter through a coincidence gate which is enabled for precisely timed measurement intervals by means of timing pulses derived from a clock source. Signals are taken from those counter stages having a combined binary value equal to the lowest acceptable frequency and applied to a first NAND gate. Signals are also taken from the counter stage having a binary value equal to one count greater than the highest acceptable frequency and applied to a second NAND gate. The output of the first NAND gate is applied to the D terminal of a D-type flip-flop. The output of the second NAND gate is inverted and applied to the P terminal of the same flip-flop. A sampling pulse is derived from the clock source at the termination of each measurement interval and applied to the CP terminal of the flip-flop. An alarm is connected to the Q terminal of the flip-flop. The first NAND gate provides a high level output signal until the counter reaches a count equal to the lowest acceptable frequency. If a sampling pulse occurs before the count reaches this value, the flip-flop is switched and the alarm is actuated. Alternatively, if the second NAND gate is actuated before the sampling pulse occurs, the flip-flop is likewise switched so as to actuate the alarm.

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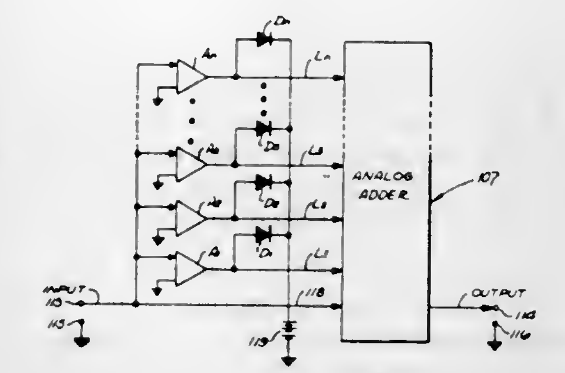
### 3,757,234
## FUNCTION GENERATOR

**Gunnar F. Ohlsen, Rockford, Ill., assignor to International Telephone and Telegraph Corporation, Monterey Park, Calif.**

**Continuation of Ser. No. 70,186, Sept. 8, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,428**

**Int. Cl. H03k** *17/00*

**U.S. Cl. 328—142** **16 Claims**



A plurality of amplifiers have their outputs connected with an input signal to an analog adder. The amplifiers are disabled successively by a clamp. The adder output voltage versus input voltage curve is then a continuous function of contiguous straight line segments which increase or decline in slope in a steplike fashion. Function generator operation is insensitive to temperature and temperature changes produce no errors as in the prior art. The nonlinear voltage-current characteristic curve of the clamping diodes has no deleterious effect on function generator operation as in the prior art.

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### 3,757,235
## SIGNAL CANCELLATION

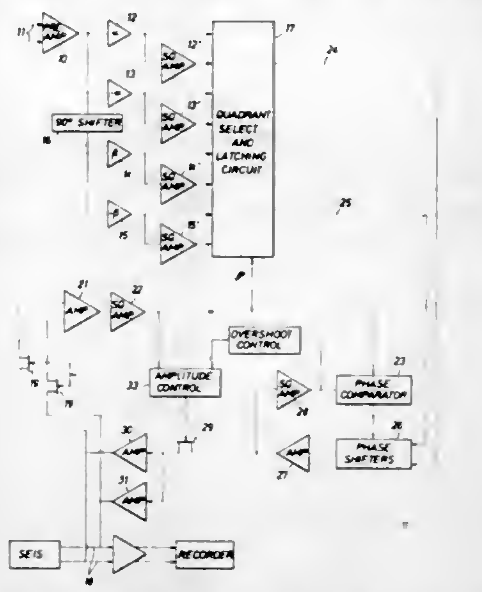
**Karl McCormick, Channelview, and Thorwald John Tvedt, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.**

**Filed June 7, 1972, Ser. No. 260,614**

**Int. Cl. H03h** *1/04*

**U.S. Cl. 328—166** **8 Claims**

A system for cancelling the any frequency power line signal picked up by the electronics of a seismic exploration system, including means for sampling the power line signal, splitting the sample into four quadrant signals, automatically picking the quadrant signal closest to being 180° out of phase with the actual signal to be canceled, automatic means for precisely adjusting the phase relationship to be 180° out of phase and means for automatically adjusting the amplitude of the sampling signal until it exactly cancels the unwanted signal.



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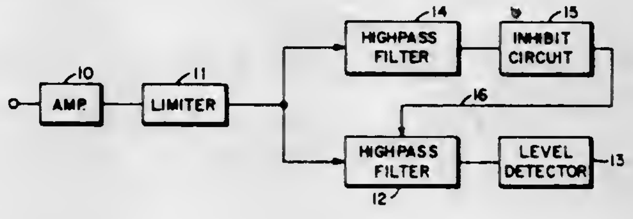
### 3,757,236
## BAND PASS FILTER AND DETECTION CIRCUIT

**Marion J. Langan, Huntsville, Ala., assignor to Avco Corporation, Hunstville, Ala.**

**Filed Dec. 17, 1971, Ser. No. 209,053**

**Int. Cl. H04b** *3/04, 1/10*

**U.S. Cl. 328—167** **2 Claims**



There is herein disclosed a combination involving a limiter, a first active high pass filter, and a level detector in cascade. The first high pass filter is paralleled by an arrangement of second active high pass filter and inhibit circuit in cascade. The first filter accepts frequencies above a first cut-off point and the second filter accepts frequencies above a higher cut-off point and the output of the inhibitor is used to inhibit the output of the first filter. The result is a band pass detector which responds to frequencies within the range defined by the cut-offs.

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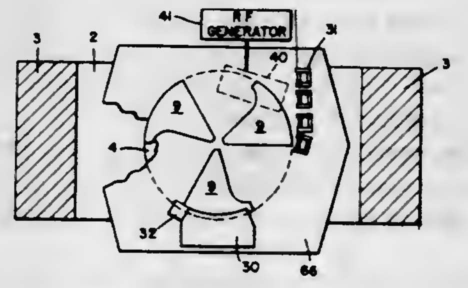
### 3,757,237
## METHOD AND MEANS FOR REDUCING THE POWER DENSITY OF AN INTERNAL CYCLOTRON BEAM

**George O. Hendry, Napa, Calif., assignor to The Cyclotron Corporation, Berkeley, Calif.**

**Filed Feb. 4, 1972, Ser. No. 223,418**

**Int. Cl. H05h** *13/00*

**U.S. Cl. 328—234** **6 Claims**



A method and apparatus for reducing the power density of the internal beam in an isochronous cyclotron at its extraction radius or an internal target wherein the internal beam in its orbits near and at the extraction or target radius is spread axially by applying to it a time-varying electrostatic field tuned to the natural axial oscillation frequency of the beam in such orbits.

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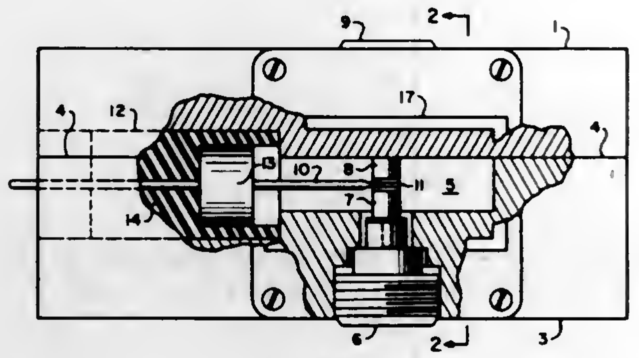
### 3,757,238
### PARAMETRIC AMPLIFIER

**Erich Henry Kraemer, Huntington, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.**

**Filed July 31, 1972, Ser. No. 276,565**
**Int. Cl. H03f** *3/10*
**U.S. Cl. 330—4.9** **3 Claims**



A balanced parametric amplifier with waveguide signal and pump ports and varactor diodes parallel resonant at the idler frequency.

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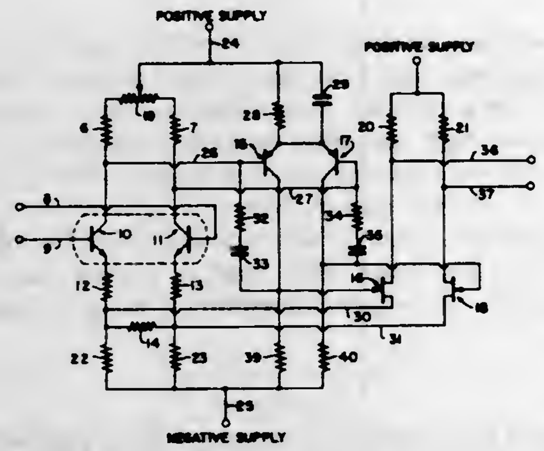
### 3,757,239
### DIRECT CURRENT AMPLIFIER DRIFT REDUCTION METHOD

**Marion J. Langan, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.**

**Filed Dec. 2, 1971, Ser. No. 204,228**
**Int. Cl. H03f** *1/02*
**U.S. Cl. 330—9** **1 Claim**



Herein disclosed is a method of selecting the resistive and temperature co-efficient parameters of emitter resistors in the differential input transistor pair of a direct current amplifier. The amplifier comprises said pair together with cascaded amplifying means and means for degeneratively applying feedback signals to said pair. The amplifier further comprises means for equating the collector currents of said pair and adjusting the output voltage to zero for a starting condition under which said resistive parameters are zero. The method comprises these steps, in sequence:

Changing the resistive parameters from zero at the starting condition to a known value of X each,
measuring the potential across each said resistive parameter,
changing each resistive parameter to a value of X plus Δ X,
noting the resultant change in said potential, thus determining the relationship between ohmage change and change in said potential,
again reducing the resistive parameters to zero, and subjecting the amplifier to a known temperature change,
determining the drift characteristic of the amplifier referred to the input (i.e., the relationship between ambient temperature change and change in said potential), and utilizing the above relationships to predetermine desired resistive and temperature co-efficient parameters which should be possessed by said emitter resistors.

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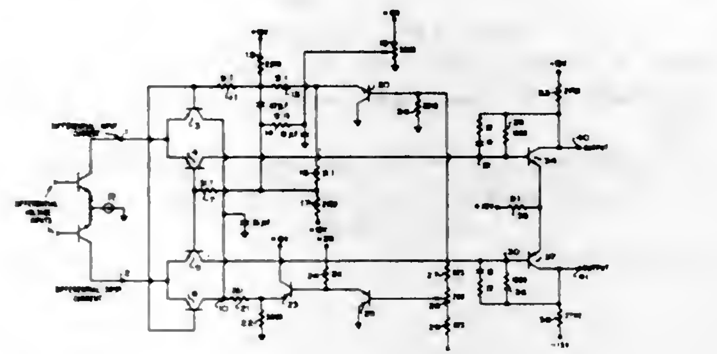
### 3,757,240
### ACTIVE ATTENUATOR

**O. Douglas Fogg, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Mar. 15, 1972, Ser. No. 234,832**
**Int. Cl. H03g** *3/00;* **H03f** *1/30*
**U.S. Cl. 330—29** **2 Claims**



A variable attenuator includes active elements for providing the desired attenuation with good pulse response. Each of the transistors in the circuit is included in a current-splitting network which assures that the power dissipation remains the same, regardless of the attenuation setting.

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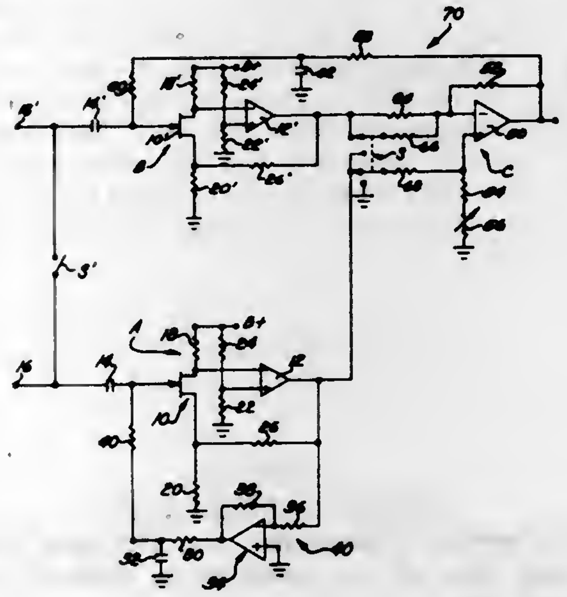
### 3,757,241
### A.C. AMPLIFIER HAVING D.C. BIAS STABILIZATION

**Robert C. Kime, Fairview Park, and Pieter C. Cath, Aurora, both of Ohio, assignors to Keithley Instruments, Inc., Solon, Ohio**

**Filed Nov. 24, 1971, Ser. No. 201,697**
**Int. Cl. H03f** *3/68*
**U.S. Cl. 330—30 D** **11 Claims**



An A.C. amplifier is disclosed having first and second A.C. amplifier sections each including a high input impedance stage followed by an output stage, with the output stages of the two amplifier sections being D.C. coupled to an output amplifier. A first stabilizing circuit serves to stabilize the D.C. bias of one of the amplifier sections and a second stabilizing circuit serves to stabilize the D.C. bias of the other amplifier's section in dependence upon the D.C. level of the output amplifier. The D.C. bias stabilization circuitry permits use of input stages, such as field effect transistors, which are not matched in their D.C. characteristics while still maintaining low noise characteristics.

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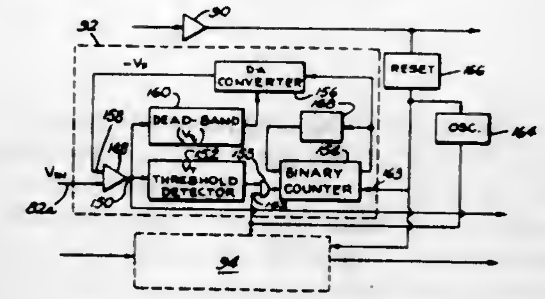
### 3,757,242
### AMPLIFIER WITH LONG TERM, DIGITALLY-CONTROLLED D.C. CLAMPING

**Kenneth J. Law, Southfield, and Gordon R. Brown, Livonia, both of Mich., assignors to Parke, Davis & Company, Detroit, Mich.**

**Division of Ser. No. 31,850, May 1, 1970, Pat. No. 3,651,465, which is a continuation of Ser. No. 605,704, Dec. 29, 1966, abandoned. This application Feb. 8, 1972, Ser. No. 224,436**
**Int. Cl. H03g** *3/22*
**U.S. Cl. 330—129** **7 Claims**



By way of information and not by way of limitation, a six bit bar code and six clock bars, one clock bar being paired with each bit, are printed on a carton. The bar code positively identifies the article for which the carton is labeled. During a packaging operation the code is scanned and detected and then compared against a reference code identifying the article being placed in the carton. The arrangement of the code bits or code bars relative to the clock bars and to the scanning sequence is such that a complete code is read bit-by-bit into a digital logic circuit only after enabling of the logic circuit by a clock pulse produced in response to the paired clock bar for each bit. This is done by entering the code into a shift register bit-by-bit with register shifting being under the control of the clock bars. If the code read is not true to the reference code, a reject indication is provided or the carton bearing the incorrect code is automatically rejected from the packaging line. Code and clock pulse signals are fed to the register via specially constructed amplifiers whose output levels are clamped by respective control circuits each of which comprise an oscillator, a threshold detector, a counter, and a digital-to-analog convertor. The analog output from the convertor reduces the input signal when the amplifier output goes above the threshold of the detector.

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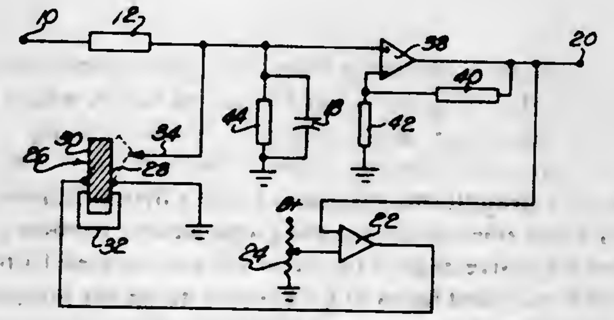
### 3,757,243
### AMPLIFIER AND PROTECTION CIRCUITRY THEREFOR

**William E. Kimberly, Euclid, Ohio, assignor to Keithley Instruments, Inc., Solon, Ohio**

**Filed Jan. 14, 1972, Ser. No. 217,810**
**Int. Cl. H03g** *11/00*
**U.S. Cl. 330—207 P** **7 Claims**



Amplifier having an input circuit protected by contacts which are actuated between open and closed conditions in response to the output of the amplifier to protect the circuit against high input signals. A piezoelectric crystal is stressed by the output of the amplifier to open contacts in series with the input or to close contacts to make a shunt circuit across the input.

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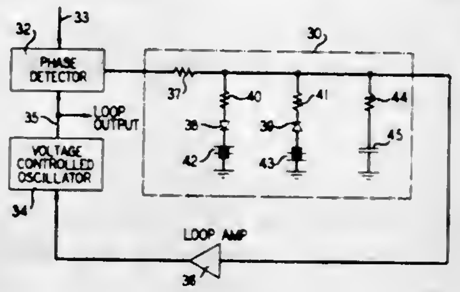
### 3,757,244
### PHASE LOCKED LOOP WITH NON-LINEAR FILTER RESPONSIVE TO ERROR SIGNAL AMPLITUDE

**Adolph Josef Giger, Boxford, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed Mar. 6, 1972, Ser. No. 232,097**
**Int. Cl. H03b** *3/04*
**U.S. Cl. 331—17** **6 Claims**



For use in pulse timing recovery and other applications, a phase locked loop is proposed having a nonlinear network in which both gain and bandwidth are functions of the eror signal amplitude. The network comprises an RC phase-lag filter in which diodes vary the shunt resistance component.

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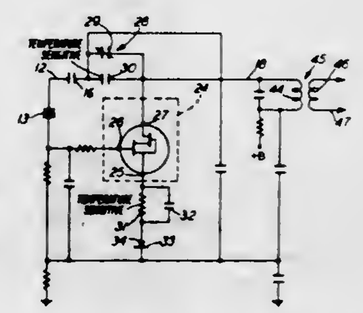
### 3,757,245
### TEMPERATURE COMPENSATED FIELD EFFECT TRANSISTOR CRYSTAL OSCILLATOR

**Robert L. Berger, Raytown, Mo., assignor to Western Electric Company, Incorporated, New York, N.Y.**

**Filed June 2, 1972, Ser. No. 259,321**
**Int. Cl. H03b** *5/36*
**U.S. Cl. 331—66** **4 Claims**



A temperature-compensated field-effect transistor crystal oscillator includes a first impedance with a capacitive component having a negative temperature coefficient in a feedback loop of the oscillator and a second impedance with a resistive component having a negative temperature coefficient in the output loop of the oscillator. The impedances minimize temperature-dependent variations from the characteristic frequency of the oscillator.

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### 3,757,246
### ENERGY STORER AND DISCHARGE CHAMBER FOR A GAS LASER DEVICE

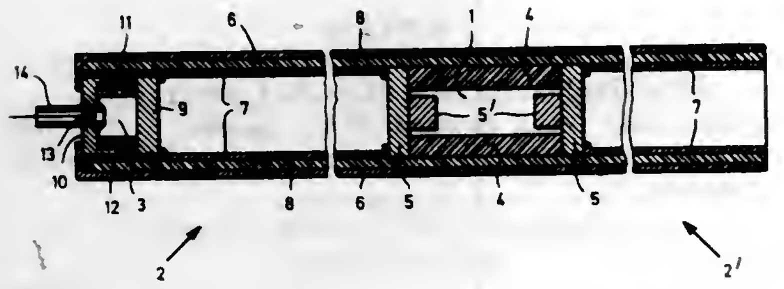
**Dirk Basting, Am Weissen Stein; Fritz Peter Schafer, and Bernhard Steyer, both of Gottingen-Nikolausberg, all of Germany, assignors to Carl-Zeiss-Stiftung dba Carl Zeiss, Heidenheim on the Brenz, Wuerttemberg, Germany**

**Filed July 12, 1972, Ser. No. 271,137**

**Claims priority, application Germany, July 14, 1971, P 21 35 109.7**

**Int. Cl. H01s** *3/09*
**U.S. Cl. 331—94.5** **7 Claims**

A pulsed gas laser device comprises an energy storer in the form of at least one strip conductor having high voltage carrying surfaces, and a pair of opposed parallel electrodes electrically connected to said surfaces and spaced apart to form a discharge chamber. Portion of the strip conductors extend outwardly from one of said electrodes in the shape of a triangle one leg of which is formed by the electrode. A spark gap is located at the corner of the triangle most remote from the discharge chamber.



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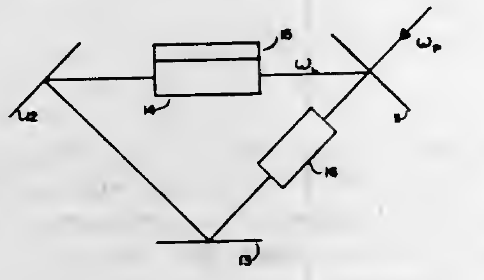
**3,757,247**

### FREQUENCY SELECTIVE OPTICAL ISOLATOR

**Thomas G. Giallorenzi, Alexandria, and Michael H. Reilly, Fairfax, both of Va., assignors to The United States of America as represented by the Secretary of the Navy**

**Filed June 22, 1972, Ser. No. 265,126**
**Int. Cl. H01s** *3/08*

**U.S. Cl. 331—94.5** **4 Claims**



A traveling wave optical oscillator (LASER) in a ring cavity. The system provides loss or gain in the cavity field in order to provide loss or gain in one direction in a two direction system.

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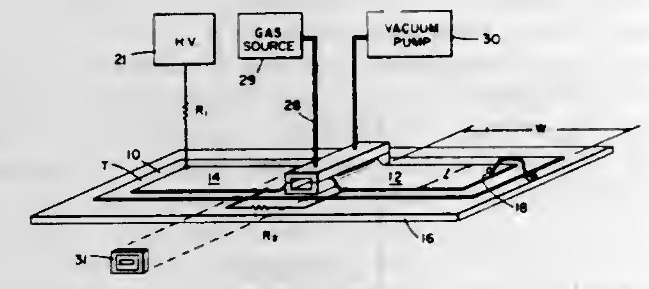
**3,757,248**

### PULSED GAS LASER

**James G. Small, Tacoma, Wash., assignor to Massachusetts Institute of Technology, Cambridge, Mass.**

**Filed July 31, 1972, Ser. No. 276,433**
**Int. Cl. H01s** *3/09*

**U.S. Cl. 331—94.5** **16 Claims**



Pulsed gas laser construction with parallel electrodes disposed in free space with gas pressure bounding the arc along the elongated gap. A pulsed nitrogen laser employs a parallel plate transmission line with edges of its sheet-form conductors supported in free space of a vacuum chamber, with lasing arc established by Blumlein excitation techniques. A compact laser construction comprises a curved transmission line surrounding the elongated arc gap with interposed layers of insulation.

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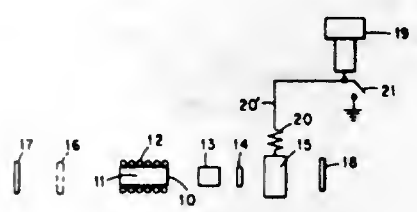
**3,757,249**

### Q-SWITCHED-MODE-LOCKED LASER OSCILLATOR

**Robert L. Carman, Jr.; Lloyd L. Steinmetz, both of Livermore, and Bertram C. Johnson, Jr., Palo Alto, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Feb. 15, 1972, Ser. No. 226,471**
**Int. Cl. H01s** *3/11*

**U.S. Cl. 331—94.5** **9 Claims**



A laser oscillator for producing relatively long duration, Q-switched or Q-switched and mode-locked bandwidth-limited pulses. The oscillator is self-driven, wherein a large optical noise pulse of controllable duration is allowed to buildup by means of controlled bandwidth feedback. Combined with a synchronized pulse-switching means external to the oscillator cavity, a bandwidth-limited "tunable" pulse duration is achievable ranging from about 0.25 nsec to greater than 100 nsecs. An embodiment of the oscillator includes a gain medium, a Pockel cell, a quarterwave plate, and a polarizer, all within an optical cavity defined by two multiple-face resonant-reflecting etalons, the optical cavity being switched by shorting a biasing potential across the Pockel cell from its halfwave retardation value to ground.

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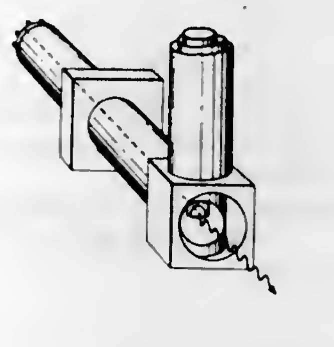
**3,757,250**

### ELECTRON BEAM LASER

**James R. Packard; Donald A. Campbell, both of St. Paul; William C. Tait, Oak Park Heights, and Gunther H. Diersen, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation-in-part of Ser. No. 599,576, Dec. 6, 1966, abandoned, and a continuation-in-part of Ser. No. 32,330, April 27, 1970, abandoned. This application June 1, 1970, Ser. No. 42,437**
**Int. Cl. H01s** *3/09, 3/18*

**U.S. Cl. 331—94.5** **12 Claims**



A longitudinal-direction laser. The laser device comprises a source of electrons and a light resonant cavity which includes a direct band-gap semiconductor crystal having a pair of spaced, opposing, smooth faces. When a beam of electrons of at least a predetermined energy and current density is impinged upon one of the crystal faces, laser emission produced within an active region of the crystal is emitted from at least one of the crystal faces in a direction generally longitudinal to the direction of the beam of electrons. When laser emission is produced, the active region depth is less than the crystal thickness in the direction normal to the opposing faces.

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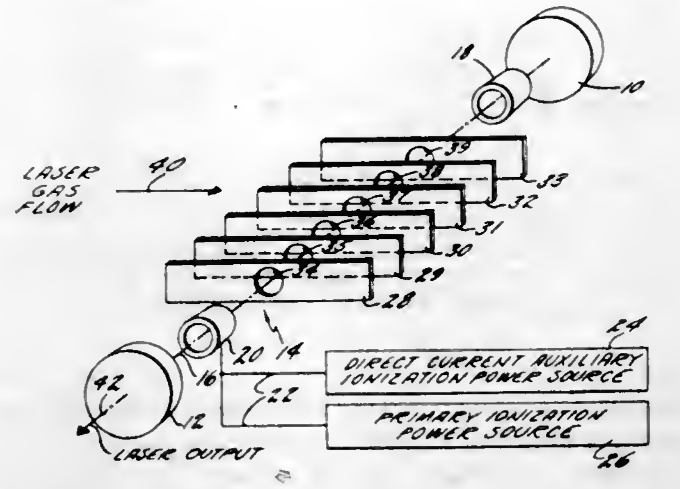
**3,757,251**

### DIRECT CURRENT AUXILIARY IONIZATION OF AN AXIALLY EXCITED FLOWING GAS LASER

**Carl J. Buczek, Manchester; Peter P. Chenausky, Farmington, and Robert J. Freiberg, South Windsor, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Filed July 21, 1971, Ser. No. 164,544**
**Int. Cl. H01s** *3/09, 3/10, 3/22*

**U.S. Cl. 331—94.5** **4 Claims**


18
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LASER GAS FLOW
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DIRECT CURRENT AUXILIARY IONIZATION POWER SOURCE
PRIMARY IONIZATION POWER SOURCE
26
LASER OUTPUT

A high efficiency electric discharge gas laser which is capable of high power pulses and high repetition rates is disclosed. A region of high electrical conductance is provided in a laser gas along the axis of the laser optical cavity by a low current auxiliary ionization discharge, and a high voltage, high current pulsed power source produces an electric plasma having a population inversion throughout the region. Fins are positioned in the cavity to confine the cross section of the plasma and to maintain the plasma around the cavity axis. In one configuration in which the gas flow is transverse to the optical axis, a magnetic field which is orthogonal to both the direction of gas flow and the optical axis is used to counteract the downstream bowing effect in the plasma caused by the gas flow. In a high pressure embodiment of the invention, multiple electric discharges are arranged in parallel along the axis of the laser to provide the necessary pumping of the laser gas.

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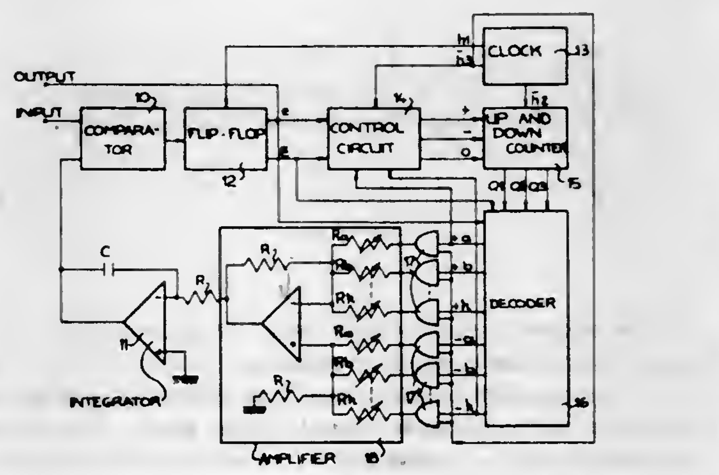
**3,757,252**

### DIGITAL COMPANDED DELTA MODULATOR

**Pierre-Andre Deschenes, Sherbrooke, Quebec, Canada; Marc Richetin, Toulouse, France, and Michel Villeret, Ottawa, Ontario, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Quebec, Canada**

**Filed Dec. 13, 1971, Ser. No. 207,437**
**Int. Cl. H03k** *13/22*

**U.S. Cl. 332—11 D** **7 Claims**



A digital companded delta modulator comprising a comparator having a first input connected to receive an input analog signal, a second input obtained from an integrator located in the conventional feedback loop of the delta modulator, and pulse generating means connected to the output of the comparator and responsive to a clock for generating a binary pulse of one polarity or the other as determined by the comparator. A binary up and down counter is connected to the pulse generating means through a control circuit which makes the decision as to whether an up count a down count or no count at all is required. The output of the counter is applied to a decoder for converting the binary output of the up and down counter into a number of decimal outputs. An amplifier having a corresponding number of values of gains is connected to the output of the decoder and is thus responsive to the level of the up and down counter for providing a predetermined gain into the feedback loop of the delta modulator. The integrator is connected to the output of the amplifier and its output is connected to the comparator which compares the output signal of the integrator with the input analog signal and generates a signal depending upon the difference between the two signals.

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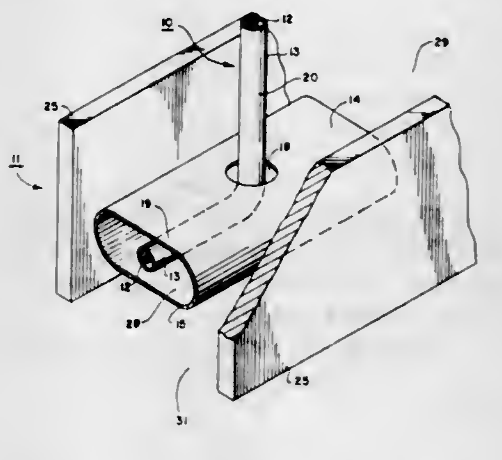
**3,757,253**

### MULTICHANNEL TRANSMISSION LINE STRUCTURE

**Vincent J. DeMarco, 720 4th St., El Cajon, Calif.**

**Filed Sept 29, 1972, Ser. No. 293,349. Substitute for Ser. No. 62,880, Aug. 11, 1970**
**Int. Cl. H01p** *5/12, 1/06, 5/12*

**U.S. Cl. 333—1** **12 Claims**



Disclosed is a structure for providing the convergence or divergence of two independent transmission lines intersecting one another at an angle wherein, at the intersection of the two transmission lines, one of the transmission lines has a section thereof which is of slab line configuration, the center conductor of the slab line configuration having an aperture therein through which passes the other transmission line, the other transmission line having a section which is coaxially disposed within the center conductor. As a specific application, a rotary joint assembly is disclosed wherein the two rotatable sections each include the recited structure.

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**3,757,254**

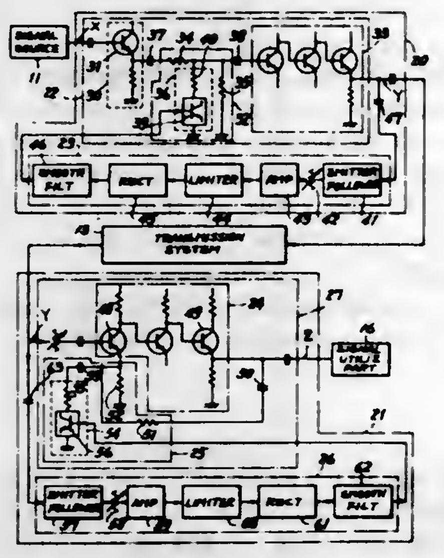
### NOISE REDUCTION SYSTEM AND APPARATUS USING A COMPRESSION AND EXPANSION SYSTEM

**Nobuaki Takahashi; Yukinobu Ishigaki, both of Yamato, and Yasuo Itoh, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan**

**Filed June 3, 1971, Ser. No. 149,687**
**Claims priority, application Japan, June 5, 1970, 45/48183**
**Int. Cl. H04b** *1/64*

**U.S. Cl. 333—14** **17 Claims**

A noise reduction system employs a compression and expansion system using a compressor and an expandor to reduce noise in a signal transmitted through a transmission system. The compressor side of the system comprises a compression circuit means provided in an open loop, through which the signal passes. A control circuit means generates a control voltage in accordance with the level of the output signal from the compression circuit means. This control voltage is applied to the compression circuit means, thereby to control compression ratio. The expandor side comprises an expansion circuit means which is provided in a negative feedback loop of a negative feedback amplifier. A control circuit means generates a control voltage in accordance with the level of the input signal to the negative feedback amplifier. This control voltage is applied to the expansion circuit means, thereby to control expansion ratio. The compressor and the expandor are so constructed that a coefficient $k$ of amplitude control characteristic of the compressor, and a feedback ratio $\beta$ of the expandor become equal to each other. The expansion apparatus can be constructed independently and used in the aforementioned system.



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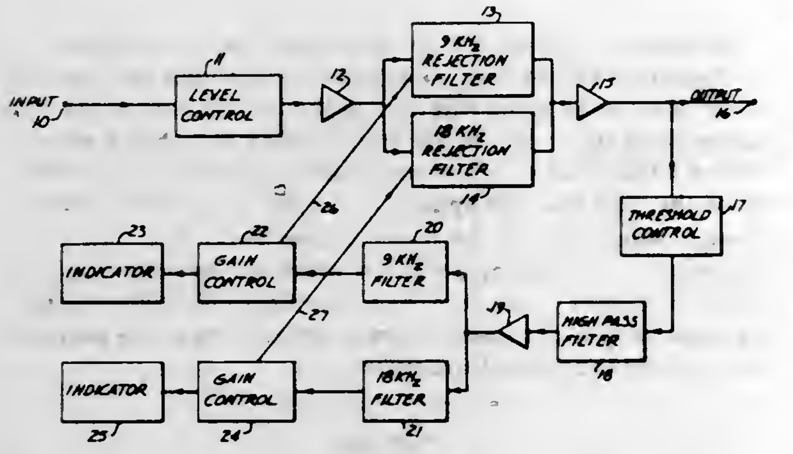
### 3,757,255
## VARIABLE FREQUENCY REJECTION FILTER HAVING LIGHT EMITTING AND LIGHT RESPONSIVE ELEMENTS

**John P. Jarvis, Northridge, Calif., assignor to Aero Service Corporation, Philadelphia, Pa.**

**Filed July 19, 1972, Ser. No. 273,109**
**Int. Cl. H03h** *7/10*

**U.S. Cl. 333—17** **18 Claims**



A variable frequency rejection filter is provided with an input adapted to be connected to a signal source and an output. A plurality of individual filters are provided, each having a tuned circuit tuned to a different center frequency. Each of the individual filters includes first and second impedance means connected between the input and the output. The tuned circuits are connected to the junction between the first and second impedance means. One of the impedance means is a variable impedance means, such as a radiation responsive resistor, and control means is provided which is responsive to a particular signal frequency to selectively control the impedance of one of the variable impedance means. For ecample, the control means may include a light emitting diode which emits radiation to impinge upon a respective radiation responsive resistor.

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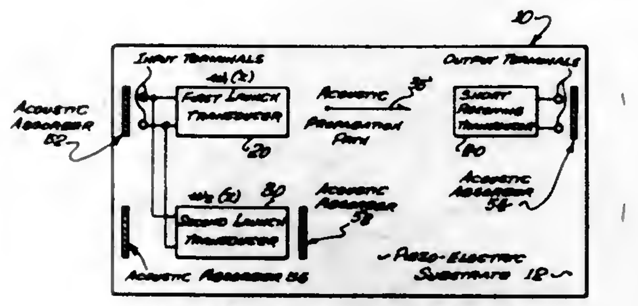
### 3,757,256
## SURFACE WAVE TRANSDUCERS WITH CANCELLATION OF SECONDARY RESPONSE

**Harper John Whitehouse, and Jeffrey M. Speiser, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy**

**Filed Aug. 2, 1971, Ser. No. 168,252**
**Int. Cl. H03h** *7/30, 9/00*

**U.S. Cl. 333—30 R** **9 Claims**



GENERAL TRANSVERSAL FILTER CONFIGURATION

A surface wave device having a desired impulse response, comprising a substrate capable of propagating surface waves, and an input, or launch, transducer pair, each transducer being disposed upon the substrate in a parallel relationship, and each transducer including a pair of sets of parallel, linear, interdigitated, electrode elements, each set of elements being connected to a common bus bar. One transducer of the input transducer pair has its parallel elements weighted in accordance with an arbitrary weighting function $w_1(x)$, while the other transducer of the input transducer pair has its parallel elements weighted in accordance with the function $w_2(x)$, the two functions being related by

$$W_1(f)^2 + W_2(f)^2 = \text{a constant},$$

wherein $W_1$, $W_2$, are the Fourier transforms of $w_1$, $w_2$, respectively. An output, or receive, transducer, aligned with one of the input transducers, also comprises a pair of sets of parallel, linear, interdigitated, electrode elements, each set of elements being connected to a common bus bar. Acoustic absorbers are disposed on the substrate, parallel to the elements of the transducers and between the transducers and the edges of the substrate.

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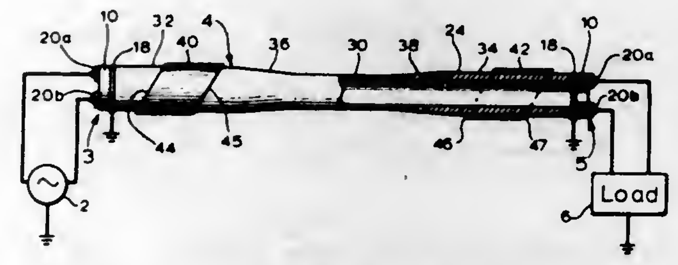
### 3,757,257
## ELECTROMECHANICAL ELASTIC WAVE DELAY LINE

**Roger W. Knitter, Hoffman Estates, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Dec. 3, 1971, Ser. No. 204,482**
**Int. Cl. H03h** *9/26, 9/30;* **H04b** *11/00*

**U.S. Cl. 333—30 R** **7 Claims**



An electromechanical elastic wave delay line useful, for example, in television signal processing circuitry, has an input transducer coupled to an output transducer by a delay body capable of propagating torsional elastic waves. The transducers each comprise a washer-like annular disc of ferroelectric material, diametrically opposed portions of which are electrically poled in opposing directions. Diametrically opposed electrodes are driven in push-pull to generate torsional elastic waves in the coupling body. The delay body is capable of transmitting torsional elastic waves at relatively high frequencies, for example 4 – 5 megahertz or higher. The delay body is shown in the form of a cylindrical tube having a section of reduced radial thickness for establishing a maximized cut-off frequency below which torsional elastic waves in non-zero order modes are incapable of being supported in the body. In another embodiment the body is shown as a rod having a necked down section for establishing the cut-off frequency of the body. Means for damping reflected waves and a method for adjusting the delay in the line are also disclosed.

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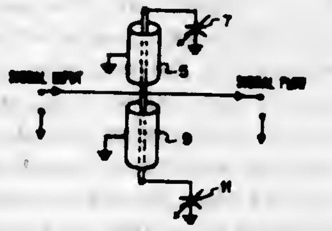
### 3,757,258
## HIGH FREQUENCY FILTER APPARATUS

**Richard F. Dillman, Lexington; James L. Larsen, Needham Heights, and Richard N. Tverdoch, Waltham, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Dec. 23, 1971, Ser. No. 211,483**
**Int. Cl. H03h** *7/10, 7/00*

**U.S. Cl. 333—73** **3 Claims**



An improved image-frequency rejection filter combines series resonant band-reject filtering at the image frequency with parallel resonant bandpass filtering at the carrier frequency.

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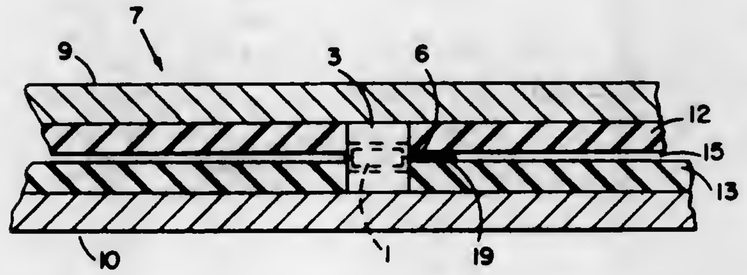
### 3,757,259
## NOVEL MOUNTING TECHNIQUE FOR GLASS-PACKAGE DIODES

**Robert J. Jones, Liverpool, and Robert C. Armani, North Syracuse, both of N.Y., assignors to the United States of America as represented by the Secretary of the Army**

**No Drawing. Filed Apr. 28, 1972, Ser. No. 248,373**
**Int. Cl. H01p** *1/00, 3/08*

**U.S. Cl. 333—84 M** **1 Claim**



A diode is mounted in a hole in a brass block and has one end soldered to the block. The other end of the diode is connected to the center conductor of a stripline. The brass block is in contact with the two ground planes of the stripline. Alternately the diode could be inserted through a hole in one of the ground planes and stripline boards to make contact with the center conductor. A ground contact plate would be affixed to the other side of the diode.

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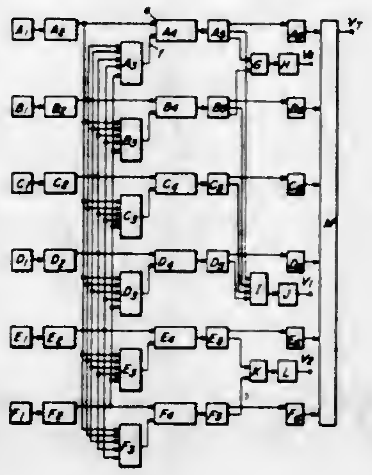
### 3,757,260
## STATION SELECTOR

**Osamu Fujita, Fujisawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Feb. 8, 1972, Ser. No. 224,433**
**Claims priority, application Japan, Feb. 9, 1971, 46/5758**
**Int. Cl. H03j** *5/08*

**U.S. Cl. 334—15** **6 Claims**



A simply operable station selector for television receivers and other communication units. It has a plurality of touch pieces corresponding to respective channels, and a desired channel may be tuned in by merely touching the corresponding touch piece with a finger.

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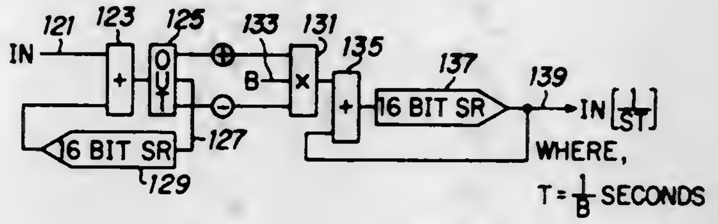
### 3,757,261
## INTEGRATION AND FILTRATION CIRCUIT APPARATUS

**Delaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.**

**Filed Feb. 11, 1972, Ser. No. 225,443**
**Int. Cl. G06f** *7/38, 15/34*

**U.S. Cl. 235—152** **21 Claims**



A digital word serial integrator circuit is disclosed which can be utilized as the basis for various types of filter circuits. The filter circuits all utilize serial digital input words and produce digital output words and in the process provide low and high pass filtration functions as well as multiplication, division, and square root functions.

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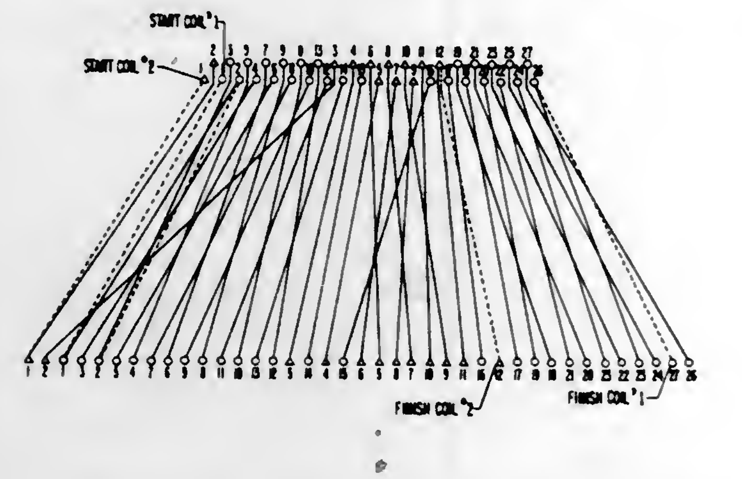
### 3,757,262
## TOROIDAL DEFLECTION YOKE HAVING CONDUCTORS WOUND IN FLYBACK MANNER

**Donald Paul Over, and Ira Foy Thompson, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.**

**Filed Feb. 28, 1972, Ser. No. 229,829**
**Int. Cl. H01f** *5/00*

**U.S. Cl. 335—213** **5 Claims**

The active field producing conductor turns on the inside generally cylindrical core surface of a multilayer toroidal deflection yoke are wound in one direction, e.g., clockwise. The return conductors on the outside of the core are wound in a flyback manner for enabling conductors to be placed in a second layer between the conductors of the first layer for forming a higher conductor distribution density for a first coil or for interleaving the conductors of a second coil between the conductors of the first coil. The two layers may thus be wound



over a large angular portion of the core without stopping the winding machine for the cutting or tying of conductors within each coil.

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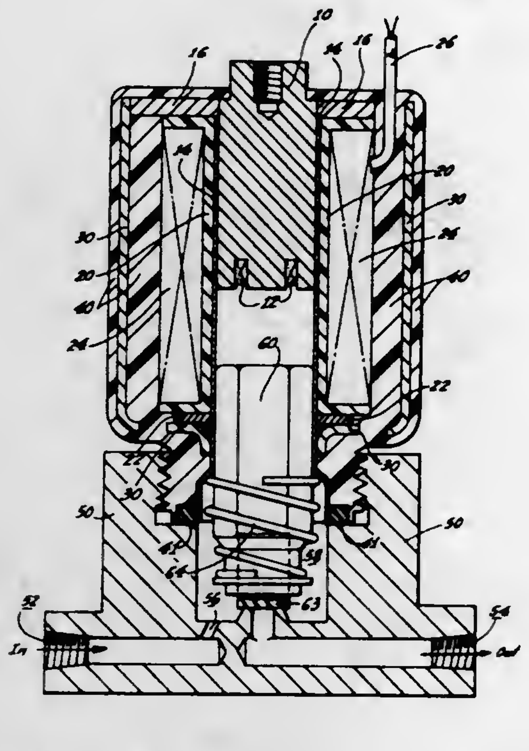
## 3,757,263
## SOLENOID VALVE OPERATOR

**Myrl J. Saarem, and Delbert L. Merriner, both of Carson City, Nev., assignors to Richdel, Inc., Carson City, Nev.**

**Filed July 24, 1972, Ser. No. 274,318**

**Int. Cl. H01f *7/08***

**U.S. Cl. 335—260** **3 Claims**



An improved solenoid valve operator is provided which is particularly suitable for use in conjunction with valves in vending machines for hot liquids, such as coffee, or the like. The valve operator of the invention includes a plastic molded casing which encloses the operating components of the solenoid operator, and which includes a tubular member that contains the core of the solenoid and the slidable plunger. The plastic casing defines a peripheral channel about the end of the tubular member, and an O-ring is received in the peripheral channel. The O-ring provides a seal between the plastic casing and the fluid controlled by the valve, so that only corrosion resistant and non-reactive materials are exposed to the fluid.

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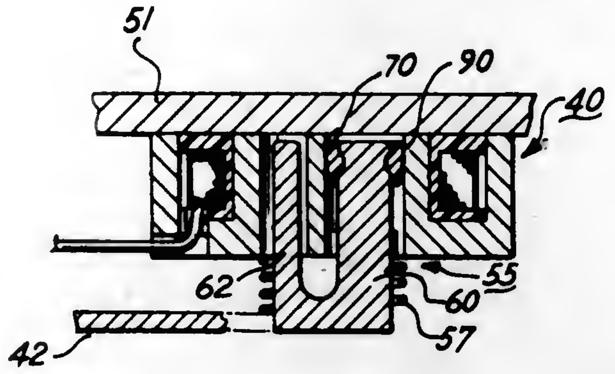
## 3,757,264
## ELECTROMAGNET OPERATING ARM RETAINING MEANS IN A VEHICLE BRAKE STRUCTURE

**Leroy K. Grove, 512 S. Merrifield Ave., Mishawaka, Ind.**

**Filed Nov. 10, 1971, Ser. No. 197,308**

**Int. Cl. H01f *7/08*; 336 *192***

**U.S. Cl. 335—281** **17 Claims**



An electromagnet assembly for use in vehicle brakes having an operating arm in which the magnet housing is held on said arm by an attachment and retaining means consisting of a pair of holes spaced from the axial center pole of the magnet and a pair of fingers on the operating arm extended into the holes in the center pole. A round plastic keeper means is attached to the outer end of the finger in the hole nearest the trailing edge of the operating face of the magnet and forms a force transmitting means between the magnet and the finger and arm. The other finger and holes serve as an anti-rotational means, and the hole having the keeper means is provided with either a pair of opposed shoulders or an annular shoulder near the end of the hole opposite the operating face of the magnet to provide a restriction for the keeper means to retain the magnet in place on the fingers.

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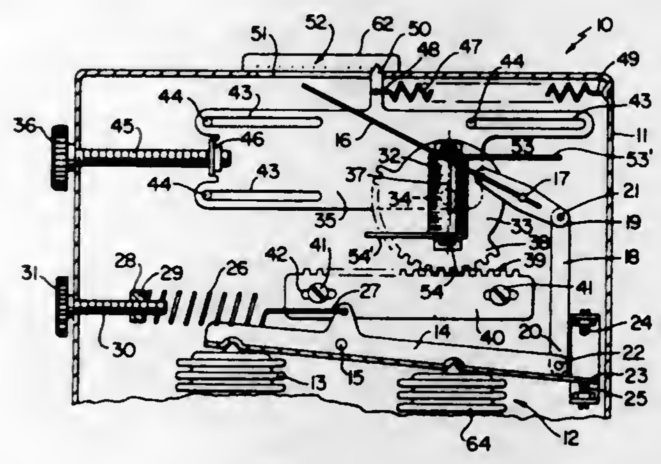
## 3,757,265
## PROPORTIONAL CONTROLLER AND PARTS THEREFOR OR THE LIKE

**William J. Russell, Malvern, Pa., assignor to Robertshaw Controls Company, Richmond, Va.**

**Filed Mar. 22, 1972, Ser. No. 236,881**

**Int. Cl. H01c *5/02***

**U.S. Cl. 338—150** **10 Claims**



A proportional controller having a potentiometer coil and a contact wiper movable across the coil from one longitudinal end thereof to the other longitudinal end thereof by a sensing device interconnected to the contact wiper and being adapted to move the contact wiper in relation to the condition being sensed thereby. Means are provided for adjusting the position of the potentiometer coil relative to the contact wiper in both a rotational direction and a straight line direction to produce a range change that is greater than when the potentiometer coil is just rotated about an axis passing transversely through the center of the longitudinal axis thereof.

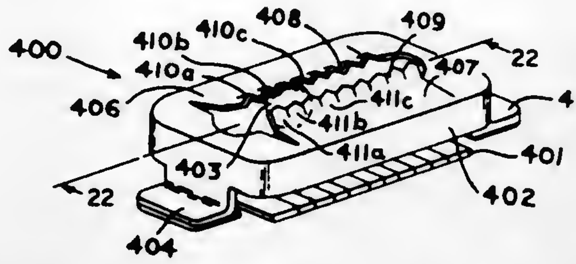
## 3,757,266
## VARIABLE ELECTRONIC COMPONENT WITH MOVABLE CONTACT MEANS

**Richard J. Newman, West Orange; Martin A. Mittler, Parsippany, and Martin J. Blickstein, West Caldwell, all of N.J., assignors to Voltronics Corporation, Hanover, N.J.**

**Division of Ser. No. 108,294, Jan. 21, 1971, Pat. No. 3,679,340. This application Mar. 6, 1972, Ser. No. 232,144**

**Int. Cl. H01c *9/02***

**U.S. Cl. 338—158** **13 Claims**



A variable electronic component having a plurality of unmounted coacting elements adaptable for attachment in subminiature electronic circuits on a supporting substrate includes, at least one conductive contact means connected to one side of the circuit and adjustable means independent of and in spaced relation to said contact means for operative coaction therewith. The adjustable means has at least one support member of conductive material connected to the other side of the circuit and at least one movable means in current conducting relation with and slidably or rotatably disposed on the support member for guided movement and engagement with the contact means. Means are provided to maintain the movable means in adjusted position of engagement with the contact means, and means disposed between the contact means and the movable means is provided to establish a desired impedance characteristic for said electronic component.

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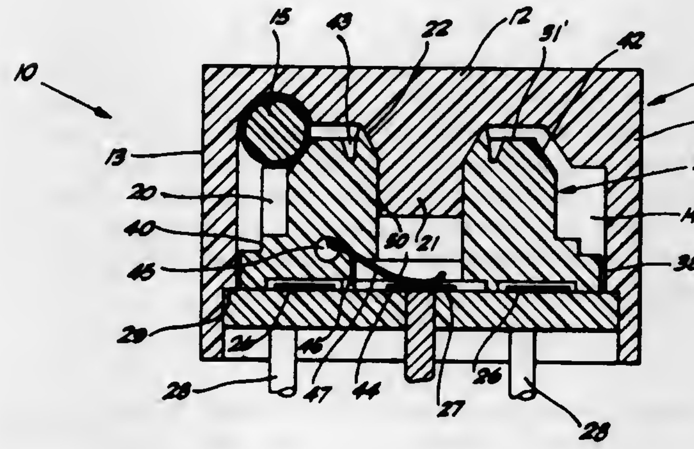
## 3,757,267
## VARIABLE RESISTANCE DEVICE WITH MULTIFUNCTION WIPER CARRIER

**George A. Gerstmeier, Tustin, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.**

**Filed July 28, 1972, Ser. No. 276,046**

**Int. Cl. H01c *9/02***

**U.S. Cl. 338—174** **9 Claims**



In a variable resistance device of the type including a housing enclosing a cavity in which an annular resistance element is supported on a nonconductive base member, a bearing post projecting into the cavity and defining an axis of rotation, a rotor member positioned within the housing and having top, bottom, and side surfaces and an axial bore for receipt of the bearing post, an electrically conductive wiper secured to the rotor member for rotation therewith and extending into electrically conductive engagement with the resistance element, and a worm screw journalled through a side wall of the housing for rotating the rotor member, the improvement wherein the rotor member is formed from a resilient material and has a slot extending laterally therethrough and inwardly from the bottom surface thereof, wherein the wiper member is substantially flat and extends through the slot in the rotor member, wherein the base member contacts the bottom surface of the rotor member, and wherein the bearing post has a beveled surface at the base thereof which contacts the wall of the rotor member bore, adjacent the top surface thereof, and thereby exerts an axial force on the rotor member to assure engagement between the bottom surface thereof and the base member, the axial force causing compression and deformation of the rotor member thereby closing the slot around the wiper member to firmly retain the wiper member therein. The rotor member has a plurality of gear teeth formed in the periphery thereof which engage the worm screw, the axial force on the rotor member assuring engagement between the gear teeth and the worm screw. The top surface of the rotor member has an arcuate groove formed therein, the groove partially absorbing the deformation of the rotor member and providing a degree of flexibility for the gear teeth.

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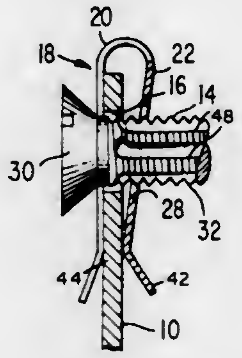
## 3,757,268
## SELF-GROUNDING RECEPTACLE

**John M. Genovese, Trenton, and Roland DiSabatino, Cherry Hill, both of N.J., assignors to Circle F Industries, Inc., Trenton, N.J.**

**Filed Nov. 4, 1971, Ser. No. 195,755**

**Int. Cl. H01r *3/06***

**U.S. Cl. 339—14 R** **8 Claims**



An electrical device is secured within an outlet box by means of a fastener passed through an opening in a mounting strap on the device and into the outlet box. A U-shaped metal grounding clip embraces an edge of the strap adjacent the opening therein and presents two spaced portions located on opposite faces of the strap in position to engage the fastener and establish an effective grounding connection between the electrical device and the outlet box through the mounting strap and fastener.

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## 3,757,269
## CABLE SHIELD CONNECTOR

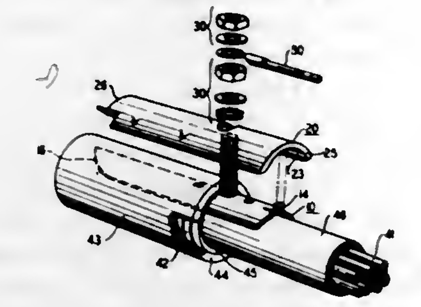
**Robert Garland Baumgartner, Baltimore, Md., and Harry James Graff, Somerset, N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.**

**Filed Sept. 16, 1971, Ser. No. 181,030**

**Int. Cl. H01r *3/06***

**U.S. Cl. 339—14 L** **8 Claims**

A cable shield connector for providing electrical shield continuity at splice points or terminals utilizes contoured plates between which the shield and plastic outer jacket of the cable section are clamped. The inner plate has an upstanding tang or tab on one end thereof and an upwardly protruding threaded stud spaced from the tab. The other end of the inner plate is slipped beneath the shield and an outer plate is mounted on the sud over the exterior of the plastic jacket. As the plates are forced toward each other, the outer plate first contacts the tab and tends to pivot thereabout tightly clamping the shield and jacket between the ends of the plates. The inner plate can have an insulating layer on the underside thereof to prevent shorting of the cable conductors to the cable shield if damage occurs to the conductor insulation.



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3,757,270

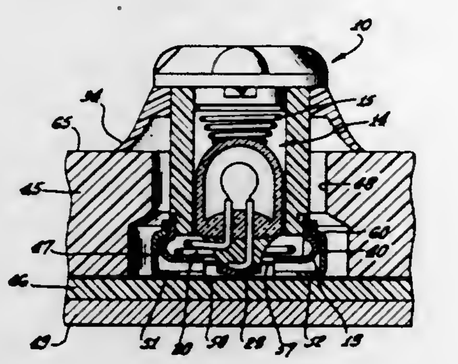
### LAMP ASSEMBLY FOR EDGE LIGHTED PANEL

**James N. Dupree, South El Monte, Calif., assignor to Dupree, Inc., El Monte, Calif.**

**Division of Ser. No. 55,905, July 17, 1970. This application Jan. 10, 1972, Ser. No. 216,852**

**Int. Cl. H01r** *33/46*; **H05k** *1/18*

**U.S. Cl. 339—17 D** **3 Claims**



A lamp with a bulb slidable within a housing. A spring member within the housing urging the bulb outward for engagement with a fixed contact when the lamp is placed in a socket, such as a metal ring mounted on a printed circuit board. A retainer on the housing for keeping the bulb in the housing and also providing a bayonet type base for mounting the lamp in a socket. A lamp with a spring loaded movable bulb for insertion and removal from the front surface of an edge lighted instrument panel.

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3,757,271

### INTEGRATED CIRCUIT PACKAGE

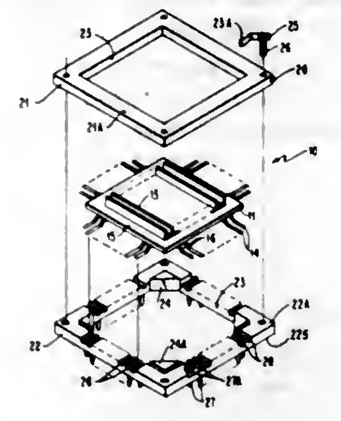
**Robert Louis Judge, Poughkeepsie, and Eugene Steven Pearson, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Oct. 4, 1971, Ser. No. 185,980**

**Int. Cl. H05k** *1/02*

**U.S. Cl. 339—17 CF** **5 Claims**

A package for a fragile integrated circuit module having radially extending leads, the package comprising a frame split into first and second frame members, the first frame member being superimposed of the second frame member. Support pads project inwardly from the corners of one of the frame members and are recessed below the upper surface of the frame for supporting the module thereon. Resilient clamps are superimposed of the pads and connected to the frame to embrace the module intermediate the pads and the clamps. A plurality of pins depend from the frame and the leads on the module are strain relieved and connected to the pin heads which pass through one of the frame members, the frame members being connected so that the point of connection between the lead and pin is covered by the other of the frames.



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3,757,272

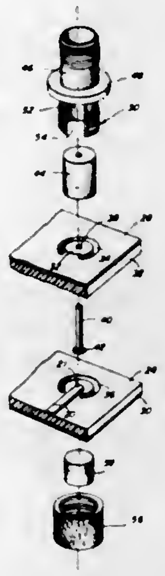
### STRIP TRANSMISSION LINE COUPLER

**Richard J. Laramee, Dedham; C. Joseph Hunt, Melrose, and Russell W. Hansen, Stoughton, all of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed July 12, 1972, Ser. No. 271,320**

**Int. Cl. H01p** *3/08*; **H05k** *1/10*

**U.S. Cl. 339—17 M** **10 Claims**



A coupling device for electrically connecting a strip transmission line to another transmission line, said device comprising a conductive shell having pressure means for forming electrically smooth connections with the ground planes of the strip transmission line and aperture means for permitting the center conductor of the strip transmission line to extend insulatingly into the shell, and a center pin symmetrically disposed in the shell and having means for electrically contacting the center conductor of the strip transmission line.

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3,757,273

### ADAPTOR FOR CURRENT COLLECTORS, FOR LIGHTS, ELECTRIC APPLIANCES OR THE LIKE

**Kurt Hesse, 38 Waterfohr, 4920 Lemgo-Lippe, Germany**

**Filed June 25, 1971, Ser. No. 156,820**

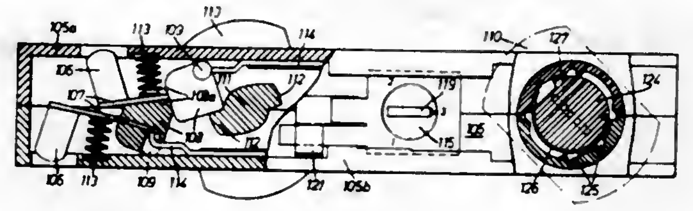
**Claims priority, application Austria, June 30, 1970, A 5894/70; Germany, Mar. 27, 1971, P 21 14 911.1**

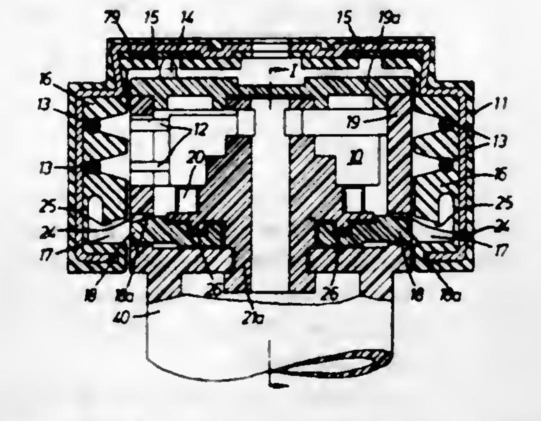
**Int. Cl. H01r** *9/00*

**U.S. Cl. 339—21 R** **10 Claims**

An adaptor for electric current consuming devices such as lights, electrical appliances or the like, which is shiftable and fixable on a current distributor rail, containing at least one

protective conductor which projects at the top (front) and before fastening the adaptor, can be brought into contact with a rail protective conductor, and locking parts which are mechanically movable in opposite directions to lateral walls of the rail, and are connectable by clamping and/or spring-operated manner to fastening portions of the current distributor rail, as well as at least two electrical conductors which, in depdendence upon locking parts, are movable in opposite directions to rail lateral walls to bring them into contact with the electrical current-carrying conductors of the current distributor rail.





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3,757,274

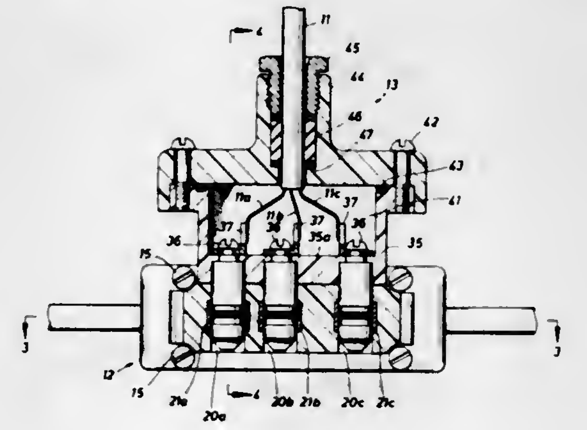
### FLUID PROOF ELECTRICAL CONNECTOR

**Gerald D. Hazelhurst, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.**

**Filed Aug. 31, 1971, Ser. No. 176,507**

**Int. Cl. H01r** *13/24, 13/58*

**U.S. Cl. 339—60 M** **9 Claims**



A plug and socket type connector is disclosed that provides a fluid proof electrical connection. The plug member includes a contact with seal members on each side that wipe the socket as the plug is pushed into the socket and seal the plug and socket contacts from the ambient fluid when the contacts are in engagement. The socket contact forms a portion of the wall of the socket opening. The portion of the plug contact that engages the socket contact is cylindrical. It has its longitudinal axis parallel to, but offset from the longitudinal axis of the seal members to force the seal members to be compressed on one side more than the other when the plug is pushed into the socket. This causes the seal members to exert a lateral resilient force that holds the plug contact in engagement with the socket contact.

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3,757,275

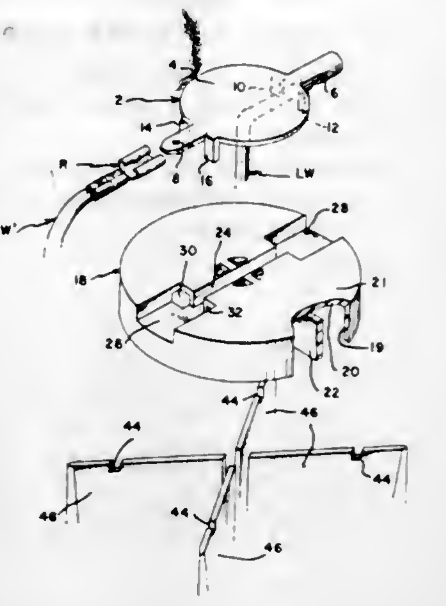
### BUTTON CONTACT

**Floyd Harold Renshaw, Jr., Hershey, Pa., assignor to Amp Incorporated, Harrisburg, Pa.**

**Filed Feb. 3, 1970, Ser. No. 8,204**

**Int. Cl. H01r** *11/22*

**U.S. Cl. 339—119 R** **6 Claims**



An electrical button contact member on a dielectric carrier member is disclosed. The button contact serves to couple a lead wire to an electrically-operated component such as a rocket. A tab member on the button contact insertably receives a terminal on another lead wire to short circuit the component. The button contact is assembled and clinched to the carrier member thereby forming an electrical connector assembly whereafter the assembly is snapped into place on the ends of a series of rocket fins. This assembly serves to hold the rocket fins in place, and after firing, the button contact and carrier member separate from the fins to allow the fins to move radially and guide the rocket.

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3,757,276

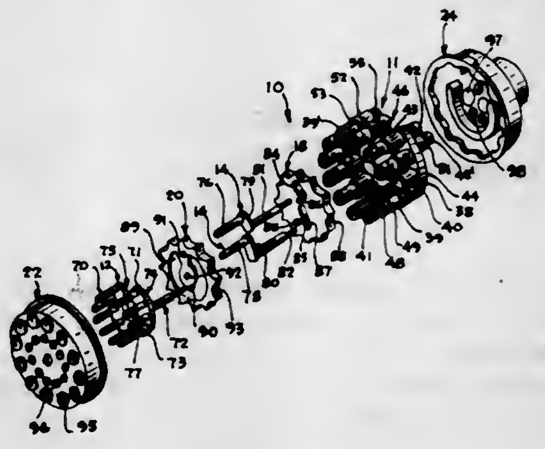
### CONNECTOR MODULE

**William A. Kailus, North Riverside, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.**

**Filed Sept. 7, 1971, Ser. No. 178,097**

**Int. Cl. H01r** *13/34*

**U.S. Cl. 339—143 R** **18 Claims**



A multi-connector bussing module for aircraft use at temperatures of 400°–500°F. including a plurality of two-contact connectors in which a plurality of protected inner contacts are interconnected by a hollow bus ring and protective outer contacts in association with the inner contacts are spacially separated around a hollow interior; an insulative body of high-temperature plastic extending in juxtaposition over the bus ring to the protective contacts; and a relatively thin metallic coating being adherently affixed to the insulative body to provide an electrically protective shield and also to interconnect the protective outer contacts of two or more connectors. The assembly of connectors and bus ring also forms an electrically protective enclosure around the hollow interior, shielding a plurality of one-contact connectors with two or more of the contacts being interconnected by an inner bus ring.

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### 3,757,277
### ELECTRICAL CONNECTOR

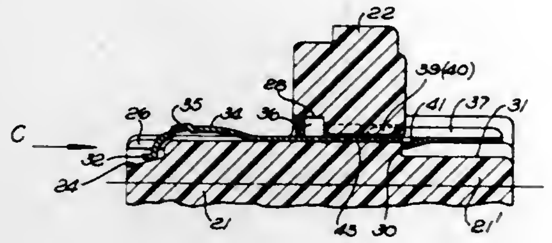
**Takahisa Yamanoue, and Yutaka Takeuchi, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan**

**Filed June 14, 1972, Ser. No. 262,440**

**Claims priority, application Japan, June 24, 1971, 46/45940**

**Int. Cl. H01r** *13/50, 9/06*

**U.S. Cl. 339—176 M** **14 Claims**



An electrical connector comprising electrical contacts and an insulator body for supporting the electrical contacts, a shank of each of electrical contacts which is supported in the supporting portion of the insulator body, comprises a flat plate portion and three wall members standing on and from the flat plate portion, which are inserted into the hole of the supporting member. The three wall members define a box opening at two sides by incorporating with a portion of the flat plate portion, the box portion being interference-fitted into the hole of the supporting portion and the remaining portion of the flat plate portion being loosely accomodated in the hole. Finger tabs are provided at opposite ends of the flat plate portion and is forced towards one another by the internal surface of the hole.

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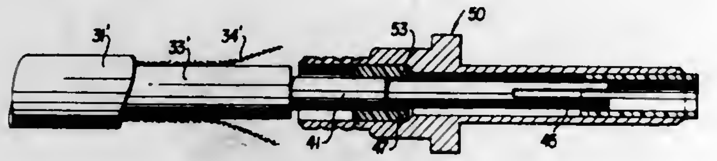
### 3,757,278
### SUBMINIATURE COAXIAL CONTACT

**William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**

**Filed Oct. 19, 1971, Ser. No. 190,507**

**Int. Cl. H01r** *17/06*

**U.S. Cl. 339—177 R** **2 Claims**



A subminiature coaxial contact is provided with a cavity in one end for receiving a center conductor of a small-size coaxial cable and has a dielectric sleeve movably positioned thereon being initially disposed intermediate the ends thereof. The contact is insertable into one end of a connector housing having a shoulder stop therein against which the dielectric sleeve registers so that upon continued insertion the dielectric sleeve is caused to slidably traverse the contact until it is positioned against the end of the coaxial cable insulating sheath. The dielectric sleeve thus may serve as a positioner or stop for use with a crimping tool so that crimping occurs on the extreme end of the contact whereby bending is at a minimum and also is operative to positively locate the contact in a predictably fixed position in the housing while simultaneously aligning the same diametrically in spaced relation within a small bore therein.

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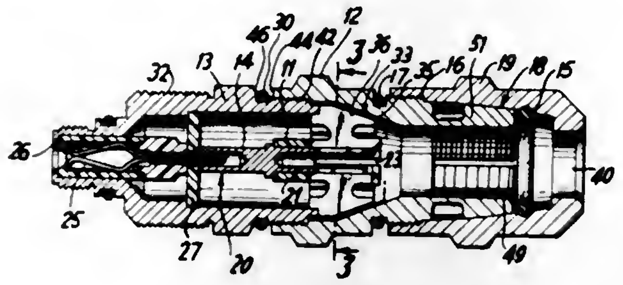
### 3,757,279
### ELECTRICAL CONNECTOR OPERABLE FOR DIVERSE COAXIAL CABLE CENTER CONDUCTOR DIAMETERS

**Eric Winston, Melrose Park, Pa., assignor to Jerrold Electronic Corporation, Philadelphia, Pa.**

**Filed May 15, 1972, Ser. No. 253,537**

**Int. Cl. H01r** *17/04*

**U.S. Cl. 339—177 R** **4 Claims**



An electrical connector for receiving the conductors of a coaxial cable comprises axially engaging housing members having tapered inner surfaces for selectively radially compressing interior connector elements which seize the coaxial cable center and outer conductors.

The composite connector structure for securing the cable center conductor includes plural, diverse axially oriented slots such that center conductors of varying sizes may be reliably accommodated, and such that the connector housing members may be fully engaged for any size center conductor to provide a reliable ground connection.

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### 3,757,280
### CONNECTING STRUCTURE FOR HELICALLY CORRUGATED TUBING

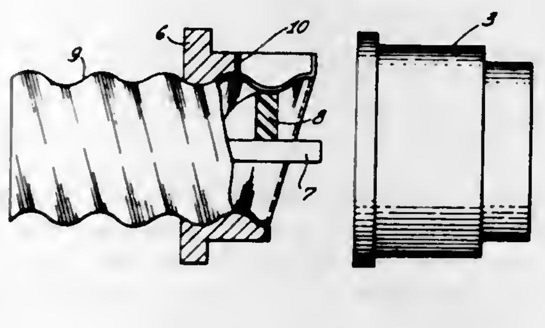
**Alfred Staschewski, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany**

**Filed May 24, 1972, Ser. No. 256,445**

**Claims priority, application Germany, May 29, 1971, P 21 26 871.3**

**Int. Cl. H01r** *17/04*

**U.S. Cl. 339—177 R** **3 Claims**



Connecting structure for helically corrugated tubing comprising an integral flange on the tube extending radially from along a crest line of the corrugation and following the helical corrugation of the tube. A coupling element with axially directed abutment surface having also helical configuration and matching the helical corrugation of the flange, and being placed into partial or complete abutment therewith.

### 3,757,281
### SCREWLESS ELECTRICAL QUICK-CONNECTION TERMINAL

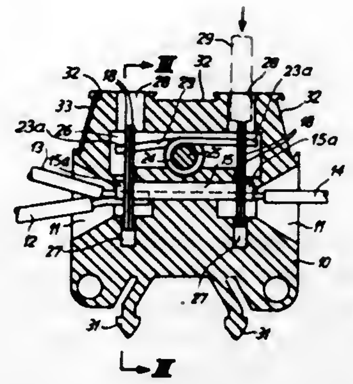
**Hans Woertz, Eulerstrasse, and Oskar Woertz, Riehen, both of Switzerland, assignors to Oskar Woertz, Jnh. H. & O. Woertz, Basel, Switzerland**

**Filed Mar. 22, 1972, Ser. No. 236,876**

**Claims priority, application Switzerland, Apr. 1, 1971, 4766/71**

**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—217 R** **4 Claims**



A screwless electrical quick-connection terminal comprising an insulated housing having at least one recess for the introduction of at least one electrical conductor. A contact element at least partially bounds this recess and is arranged in the insulated housing. At least one clamping slide having an opening is arranged displaceably transverse to the direction of introduction of the conductor into the recess. A spring cooperates with the clamping slide and strives to force such clamping slide into a position wherein the opening thereof is transversely displaced with regard to the cross-section of the recess, thus reducing the free width of said recess. The clamping slide comprises a plate member disposed at least approximately perpendicular to the conductor-introduction direction for said recess, with the contact element extending through the opening of such clamping slide-plate member. At least one edge of the opening of the clamping slide-plate member which extends parallel to the direction of displacement of such clamping slide-plate member is displaceably guided in a transverse groove of the contact element.

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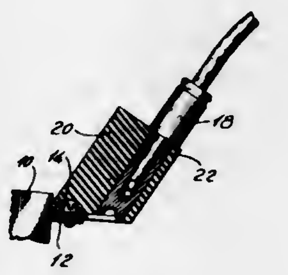
### 3,757,282
### BREAD-BOARDING TERMINAL

**Theodore Wildi, Quebec City, Quebec, Canada, assignor to Lab-Volt (Quebec) Limited, Quebec, Province of Quebec, Canada**

**Filed Dec. 3, 1971, Ser. No. 204,543**

**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—221 R** **4 Claims**



A bread-boarding terminal comprising a metallic jack adapted to be secured to the regular terminal of an electrical component and having a bore therein for receiving a plug, and an insulating member permanently secured to the metallic jack for shielding the exposed current carrying parts thus rendering the electrical component less hazardous and for making it impossible to remove the insulating member from the jack without destroying the terminal. An identifying number may be placed on the insulating member for identifying the terminal of the electrical component.

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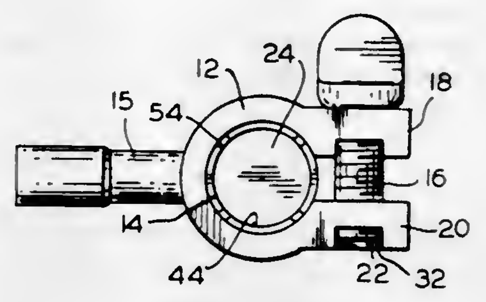
### 3,757,283
### ELECTRICAL CONNECTOR USING PLASTIC CLAMP

**Jerome Kelly, Portland, Oreg., assignor to North American Manufacturing, Inc., Portland, Oreg.**

**Filed Sept. 30, 1971, Ser. No. 185,265**

**Int. Cl. H01r** *11/26;* **F16g** *11/06*

**U.S. Cl. 339—230** **7 Claims**



A non-corrosive connector includes a lead antimony alloy connector member having a compressible sleeve fitting a terminal post of a storage battery and a wire receiving portion which can be crimped about such wire. The connector also includes a clamp member of molded plastic material having a split ring portion extending around the split sleeve and provided with adjacent end elements having aligned holes through which a clamping screw also made of molded plastic material extends. One of the end elements has internal threads molded during the molding of the clamp member including separate sets of half threads molded on axially contiguous wall portions of the hole in such element. The sets of half threads are displaced from each other axially of such hole and are on opposite sides of such hole. An opening in the side of the hole opposite each set of half threads enables mold members having complementary threads to be employed to mold the threads.

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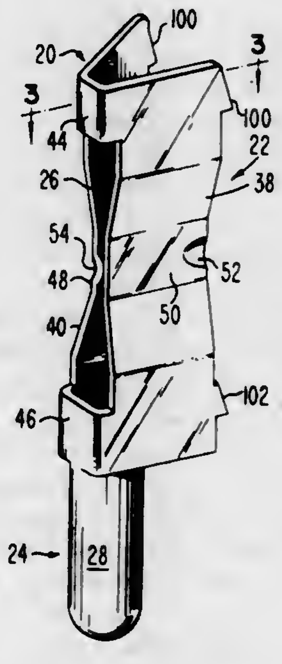
### 3,757,284
### SOCKET TYPE CONTACT TERMINAL

**William G. Klehm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Filed Apr. 3, 1972, Ser. No. 240,532**

**Int. Cl. H01r** *11/22*

**U.S. Cl. 339—258 R** **6 Claims**



A contact terminal of the socket type preferably formed from sheet metal stock in which the socket portion thereof is folded into channel formation to provide two side walls each similarly longitudinally bowed toward one another to bring their respective midsections into juxtaposition. Each side wall is dimpled in its midsection to form an inwardly directed protrusion which is in offset relation to the protrusion of the other side wall, the two protrusions extending across the space between the midsections and cooperating therewith to provide a constricted passage for receiving a contact member introduced therebetween. With this construction the gripping forces applied by the midsections of the two side walls are substantially greater than the forces opposing the introduction of a contact member therebetween, the gripping forces in the region of the midsections acting perpendicularly to the axial dimension of the socket and applying a squeezing pressure considerably greater than the force required to insert and withdraw the contact member, thereby preventing the latter from buckling when introduced thereinto.

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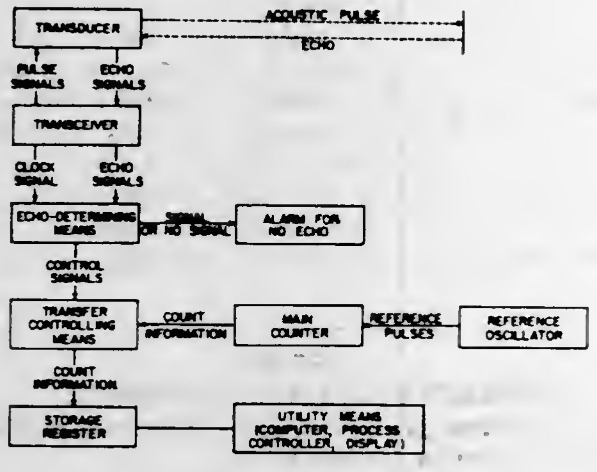
### 3,757,285
## ACOUSTIC RANGE MEASURING DEVICE
**Radford G. Ferre, 8254 Ashley Cir., Sandy, Utah**
**Filed July 22, 1971, Ser. No. 165,232**
**Int. Cl. G01s** *9/66*
**U.S. Cl. 340—1 C** **8 Claims**



An acoustic range measuring device, utilizing an electronic counter to determine the number of pulses from a reference oscillator that occur in the time interval between the transmitting and return of an acoustic pulse from a transducer is capable of direct connection to digital computers and digital controllers and is provided with logic circuits to automatically check validity of the count and with other logic circuits to provide an output signal indicative of the distance from the transducer to an obstruction (an object or a solid or liquid material) in the path of the acoustic pulse if valid information has been received, or to provide a signal indicating that valid information has not been received. The device can be provided with a second transducer and electronic circuitry to automatically compensate, by changing the frequency of the reference oscillator, for any changes in the acoustic pulse velocity that might occur due to changes in temperature, humidity, pressure, etc., in the medium. The device may also be provided with electronic circuitry for producing an alarm signal if the measured distance is not within a pre-set range. Further, the device may be provided with logic and electronic circuitry enabling it to sequentially operate a multiplicity of transducers, and to provide an output signal for each of the transducers.

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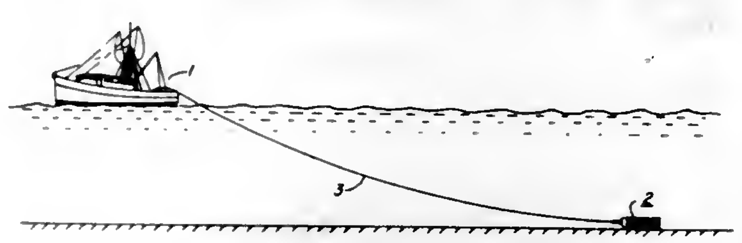
### 3,757,286
## APPARATUS FOR DETECTING AQUATIC ANIMALS
**Joseph D. Richard, 3613 Loquat Ave., Miami, Fla.**
**Filed Aug. 7, 1970, Ser. No. 61,900**
**Int. Cl. G01s** *9/70*
U.S. Cl. 340—3 T **8 Claims**



A method for detecting shrimp and certain other aquatic animals having specific motional responses when subjected to a pulsed electric field. An instrumented housing, suitable for towing along the sea bottom behind a powered vessel, includes an electrical pulse generator, a suitably spaced electrode array, and an ultrasonic Doppler detection system. Repetitive electrical pulses are discharged between the spaced electrodes as the vehicle is towed along the bottom. As shrimp and other susceptive aquatic animals on or near the sea bottom attempt to escape the influence of the pulsed electric field, their movements are detected by the ultrasonic Doppler system. Shrimp respond by a jumping movement during which relatively high velocities are achieved for brief periods of time. Fishes respond by swimming at moderate velocities. Doppler signals indicative of shrimp and fish are received in the towing vessel. The relatively high pitched Doppler signals caused by jumping shrimp are discriminated from the relatively lower pitched signals caused by fishes. The continuous indication of shrimp or other specific marine animals passing in close proximity to the towed vehicle provides a quantitative basis for evaluating their concentrations and probable catch rates.

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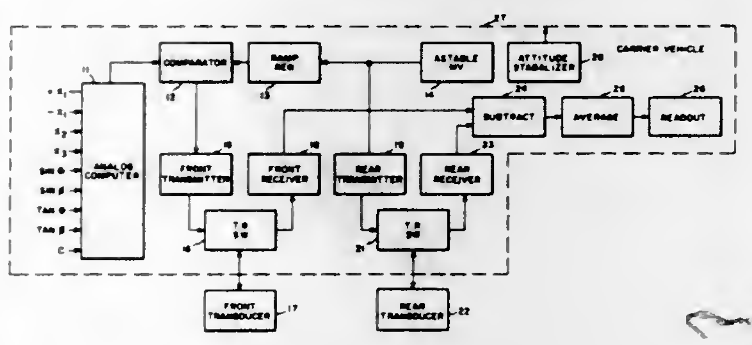
### 3,757,287
## SEA BOTTOM CLASSIFIER
**Jesse L. Bealor, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy**
**Filed Apr. 6, 1972, Ser. No. 241,634**
**Int. Cl. G01s** *9/66*
**U.S. Cl. 340—3 R** **18 Claims**



A sea bottom classifier is disclosed as including a first transmitter and transducer for broadcasting sonic signals with a predetermined directivity pattern toward the sea bottom at a given first grazing angle and a second transmitter and transducer for broadcasting sonic signals with a predetermined directivity pattern toward said sea bottom at a second grazing angle that is different from said first grazing angle. A pair of receivers receive the echoes of said sonic signals after they have been reflected from the sea bottom, and data processing and computer systems are employed to time the aforesaid first and second broadcasting of sonic signals in such manner that the echoes thereof are reflected from the same spot on said sea bottom and subsequently simultaneously received by said pair of receivers, regardless of the distance said transducers are from said sea bottom or the relative velocity therebetween. A subtract circuit and a signal averaging circuit are employed to smooth the output signals from said receivers, and a readout, preferably calibrated in terms of sea bottom hardness and composition, is employed to indicate and/or record the sea bottom characteristics being sampled at any given instant.

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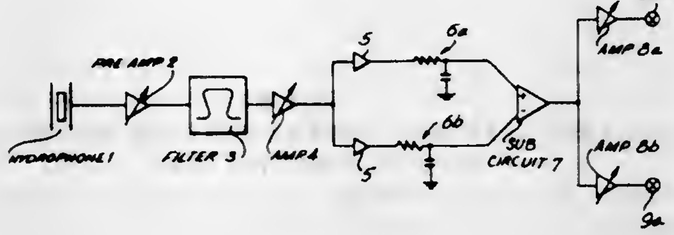
### 3,757,288
## CAVITATION DETECTOR
**Jean-Yves Jules Henri Morin, Toulon, France, assignor to Etat Francais, Paris, France**
**Filed July 16, 1971, Ser. No. 163,299**
**Claims priority, application France, July 17, 1970, 7026355**
**Int. Cl. H04b** *11/00*
**U.S. Cl. 340—5 R** **5 Claims**



To distinguish between cavitation and ambient noise, signals are passed to parallel integrator circuits having different time constants which circuits respectively integrate the ambient noise portion alone or in combination with the cavitation portion, the resulting signals being subtracted to obtain an indication of the presence of cavitation.

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### 3,757,289
**Patent Not Issued For This Number**

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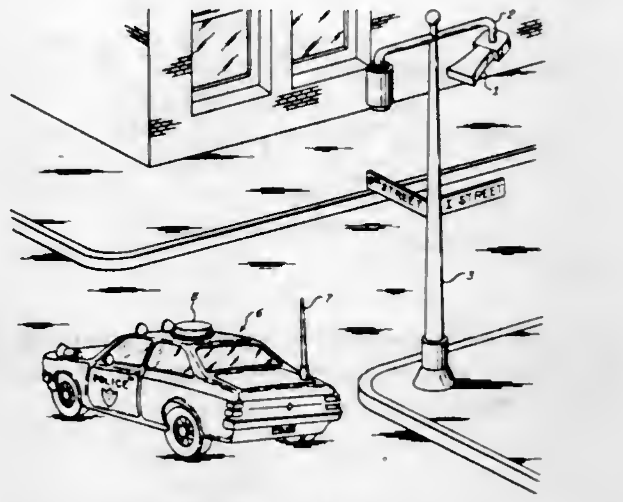
### 3,757,290
## AUTOMATIC VEHICLE MONITORING SYSTEM
**Gerald F. Ross, Lexington, Mass.; John J. Morrone, Rego Park, and William W. Bell, III, Sands Point, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.**
**Filed Mar. 12, 1971, Ser. No. 123,516**
**Int. Cl. G08g** *1/12*
**U.S. Cl. 340—23** **10 Claims**

A cooperative fleet vehicle location monitoring system utilizes low-energy-level coded impulse transmissions characterizing possible vehicle locations along a route to permit an impulse receiver aboard the cooperating vehicle to cause generation of coded transmissions receivable at a headquarters control location repeatedly identifying the vehicle and its location.



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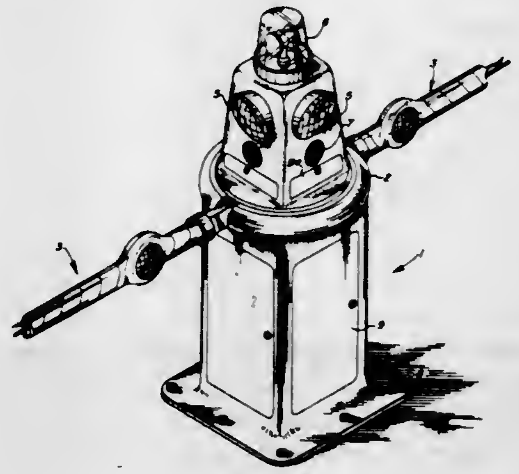
### 3,757,291
## TRAFFIC CONTROL DEVICE
**Glenford Lilly, 1728 W. Argon St., Mesa, Ariz.**
**Filed May 18, 1972, Ser. No. 254,562**
**Int. Cl. G08g** *1/095*
**U.S. Cl. 340—41 A** **11 Claims**



A traffic control device using a pair of movable arms, four signal lights, a rotating beacon, a siren and a plurality of flashing lights to provide normal traffic control or programable supplemental control, synchronized with the regular traffic lights or operable alone. The device can be either portable or fixed in position, and employs a built-in electronic siren which together with additional controls in emergency situations provides programable traffic control.

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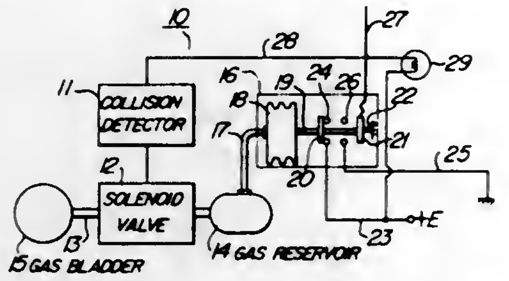
### 3,757,292
## SAFETY SYSTEM FOR VEHICLE DRIVER AND PASSENGERS
**Kazuo Sato, and Takami Aoyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan**
**Filed May 7, 1971, Ser. No. 141,333**
**Claims priority, application Japan, Dec. 5, 1970, 45/107832**
**Int. Cl. B60r** *21/03*
**U.S. Cl. 340—52 H** **17 Claims**

A safety system for vehicle driver and passengers includes a bladder or bladders expansible by gaseous pressure fed from a gas reservoir in the event of a collision to protect the driver and passengers. The system also includes an electric switch operable in response to the pressure drop in the gaseous pressure in the reservoir to break electrical connection between the electrical power source and wiring systems leading to various vehicle electrical components to prevent short-circuits in the wiring systems and to guard against fires in the event of such collision.



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### 3,757,293

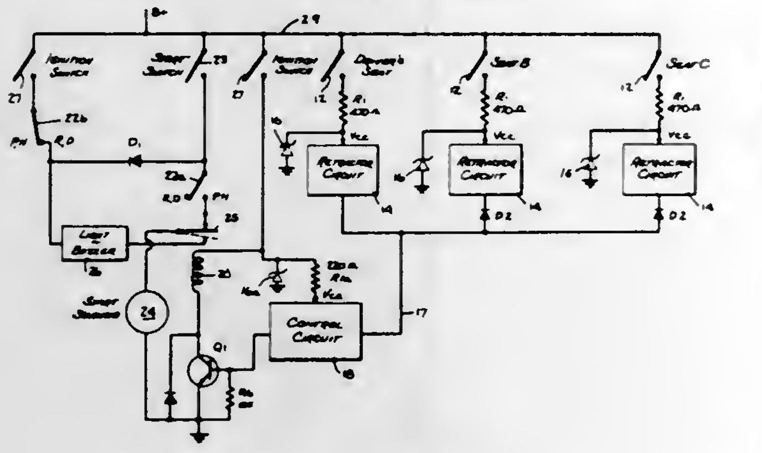
### SEAT BELT CONTROL SYSTEM

**Carl Mogens Petersen, III, Pontiac, Mich., assignor to Irvin Industries, Inc., Greenwich, Conn.**

**Filed May 31, 1972, Ser. No. 258,262**

**Int. Cl. B60r** *21/00*

**U.S. Cl. 340—52 E** **43 Claims**



An electronic system employing simple Nand gate logic to require that the driver and passenger be seated prior to buckling their seat belts. The system permits a three minute delay when the vehicle stalls so that the starter mechanism will not be disabled in an emergency. The system provides various other delays so that unnecessary warning signals will not be generated during a bumpy ride or during movement of the driver on his seat when the vehicle is in operation.

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### 3,757,294

### LOW TIRE PRESSURE INDICATING AND WARNING MEANS

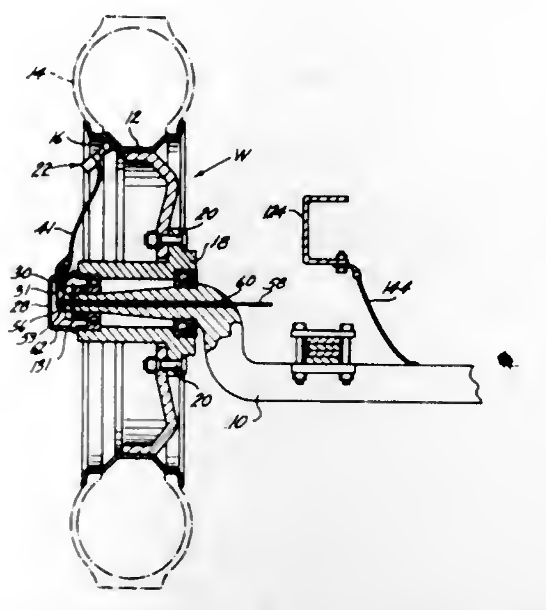
**Howard W. Schultz, 44672 Woodrow Way, Hemet, Calif.**

**Filed June 14, 1971, Ser. No. 152,581**

**Int. Cl. B60c** *23/02*

**U.S. Cl. 340—58** **10 Claims**

A system for giving warning of low trailer tire pressures to a tow vehicle driver. The parts of the installed system include a bank of signal lights, button contacts attached to the outer ends of the trailer axles, leaf contacts mounted within the dust caps of the trailer wheel hubs so as to bear against the button contacts at all times, tire pressure indicators which fit onto the trailer tire valve stems and have spring-loaded plungers movable between extended and retracted positions, and cap switches which fit over the outer ends of the indicators and have fixed and resiliently movable interior contacts biased to a normally closed position. The indicators are calibrated for predetermined tire pressures which urge the plungers to extended positions in which they hold the movable contacts away from the fixed contacts in the cap switches. The system is wired in circuit with the tow vehicle battery, and the tow vehicle and trailer frames, so that a drop in pressure in any trailer tire causes retraction of the plunger in the indicator on its valve stem, closure of the cap switch on the indicator and activation of one of the signal lights. This warns the driver of the low tire pressure and signals the location of the tire in need of attention. The trailer and tow vehicle frames, with the necessary conductor bridges, serve to provide a path of current flow between the cap switches and battery.



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### 3,757,295

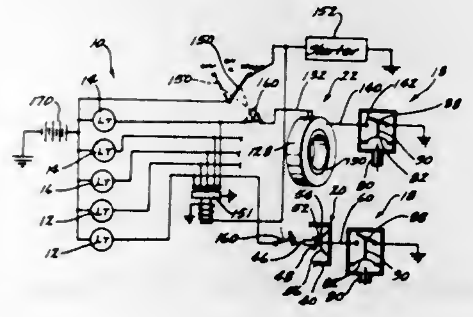
### TEST CIRCUIT FOR VEHICLE TIRE AIR PRESSURE MONITORING SYSTEM

**George C. Drown, Fort Dodge, Iowa, assignor to Leward M. Larson, Ft. Dodge, Iowa, a part interest**

**Continuation-in-part of Ser. No. 66,690, Aug. 25, 1970, Pat. No. 3,675,198. This application Apr. 17, 1972, Ser. No. 244,599**

**Int. Cl. B60c** *23/02*

**U.S. Cl. 340—58** **8 Claims**



A circuit is established which includes an air pressure sensing unit on the vehicle wheel and the air pressure signalling indicator in the vehicle. The test circuit also includes a resistor in parallel with the most remote component in the air pressure monitoring system, the air pressure sensing unit, whereby a small amount of current will flow sufficient to operate an amp meter but insufficient to register on the air pressure signalling indicator. A switching arrangement is provided for selectively and individually switching in and out each of the tire circuits for all wheels of the vehicle and also switching out the amp meter.

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### 3,757,296

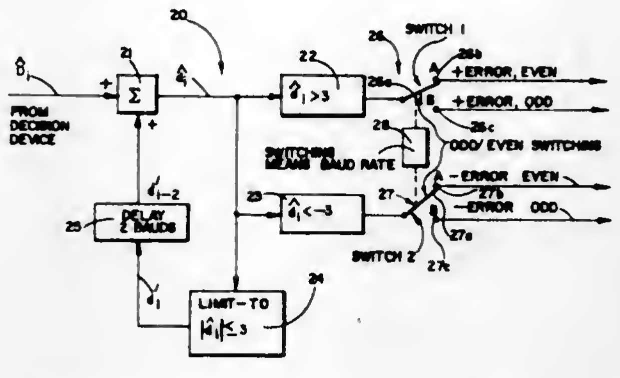
### DIGIT ERROR DETECTOR

**Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.**

**Filed Nov. 15, 1971, Ser. No. 198,871**

**Int. Cl. H04b** *1/66;* **G08c** *25/00*

**U.S. Cl. 340—146.1 AB** **13 Claims**



The present invention is a digit error detector for detecting errors in a partial response signalling system wherein digital data signals with an arbitrary number of levels are transmitted through a partial response channel at a baud rate and wherein the received digits have more possible values than the transmitted digits. The digit error detector utilizes a summing means having as an input the signals which are received and sampled by a receiver, which summing means sums these signals with prior received digit signals to provide a present received digit signal at any instant in time the present sampled signal is summed. The prior digit signals are obtained from a feedback means which is connected to the output of the summing means and which feedback means process the present received digit signal in terms of limiting the amplitude of the signal to the maximum amplitude of a possible received signal and by delaying the signal an even multiple of baud intervals before feeding the delayed digit signal back to an input of the summing means. Any errors in the digit signal are then processed around the loop and summed with the most recent signal to provide a signal having an amplitude level above the maximum permitted signal level, the occurrence of which corresponds to an error in the detected signals.

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### 3,757,297

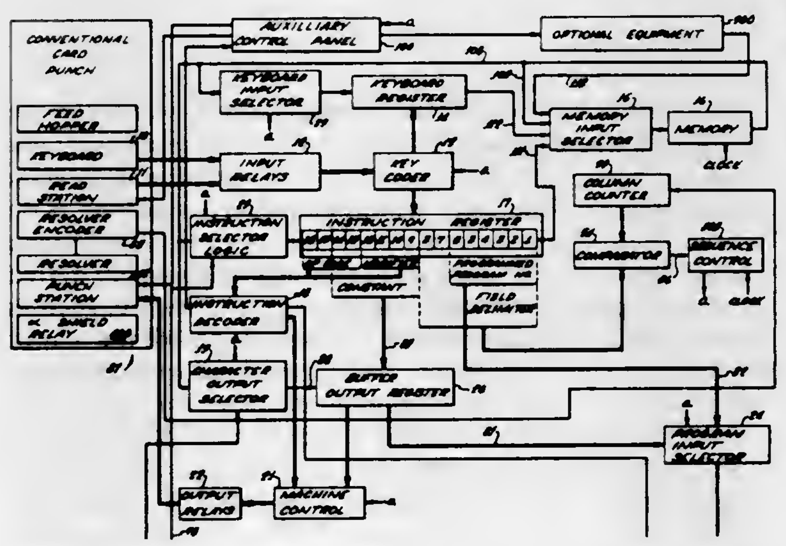
### BATCH TOTAL ACCUMULATOR FOR CARD PUNCH

**Daniel M. O'Brien, Tustin, and Clarence G. McCune, Balboa, both of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.**

**Filed Feb. 9, 1972, Ser. No. 224,782**

**Int. Cl. G06f** *11/02*

**U.S. Cl. 340—146.1 AB** **5 Claims**



Special instructions can be used to effect transfer between accumulator registers or algebraic addition of accumulated values to achieve a zero balance condition in the keying station without changing the existing form of the data on the punched card.

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### 3,757,298

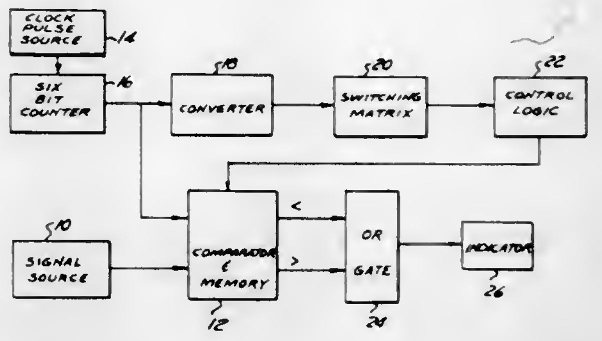
### DECIMAL LIMIT SET FOR A BINARY DIGITAL SIGNAL COMPARISON

**Gerald L. Tumbush, Xenia, Ohio, assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Aug. 14, 1972, Ser. No. 280,400**

**Int. Cl. G06f** *7/02*

**U.S. Cl. 340—146.2** **9 Claims**



An arrangement for providing an indication when the value of a varying binary digital signal is less than or greater than selectively set lower and upper decimal limits respectively. The arrangement includes a digital counter which is cyclically counted up, the contents of the counter being continuously read in binary form into a pair of one-of-eight converters, the outputs of which are in turn read into a switching matrix. The switching matrix outputs a signal state whenever the converter outputs equal either of a pair of decimal values set on a respective pair of switching matrix sliders corresponding to an upper and lower limit respectively. This signal state is used in conjunction with logic circuitry to gate the "less than" and "-greater than" outputs of a comparator in which the counter contents and the varying binary digital signal are compared so that the comparator output signal is gated out to an indicator driver circuit whenever the counter contents equal either of the upper or lower limits set by the pair of switching matrix sliders. This gating is controlled by the logic circuitry so that the "less than" output is gated when the counter contents equals the set lower limit and the "greater than" output gated when the counter contents equals the set upper limit to provide an output signal whenever the varying binary digital signal either declines below the set lower limit or increases above the upper limit.

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### 3,757,299

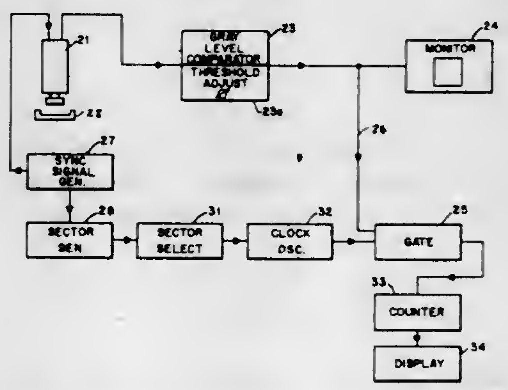
### METHOD AND APPARATUS FOR MEASURING THE SIZE OF ZONES OF INHIBITION IN AN ASSAY MEDIUM

**Russell C. Perry, Smithtown, N.Y., assignor to Artek Systems Corp., Farmingdale, N.Y.**

**Filed July 14, 1972, Ser. No. 271,987**

**Int. Cl. G06m** *11/04;* **G06r** *9/12*

**U.S. Cl. 340—146.3 AC** **18 Claims**



A pattern recognition and measuring system for zones of inhibition in a biological assay medium which scans and digitally quantizes the entire medium into pulses representing the zone area. A specific zone is selected and the number of pulses representing the zone selected are counted. In one embodiment the medium is divided into sectors and the pulses per sector are counted. In a second embodiment the longest horizontal chord perpendicularly crossing a vertical line through the center of the zone selected is determined as the diameter. In a third embodiment a horizontal chord through the presumed center of the zone selected is perpendicularly bisected and the perpendicular further bisected to locate the actual zone center. In a last embodiment a generated geometric shape is incrementally expanded at the presumed center until it intersects the perimeter of the zone selected. The presumed center is then shifted in accordance with the location of the intersection to locate the actual center. The geometric shape is again concentrically changed in size by increments until a predetermined number of coincident points occur with the zone perimeter.

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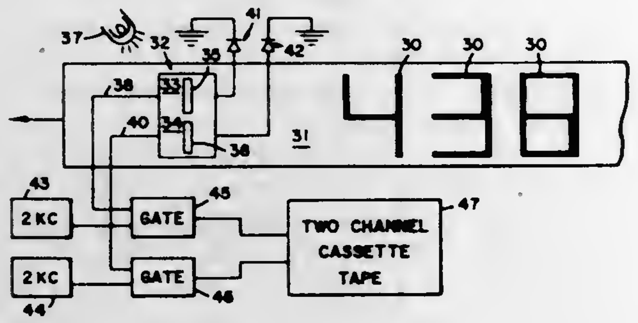
### 3,757,300
### AUTOMATED NUMERIC CODE READING AND RECORDING SYSTEM

**John J. Reilly, Jr., Orinda, Calif., assignor to Binary Systems, Inc., Orinda, Calif.**

**Filed Nov. 15, 1971, Ser. No. 198,880**
**Int. Cl. G06k** *9/18*
**U.S. Cl. 340—146.3 Z** **7 Claims**



A system for reading and recording a decimal numeric and alphabet code of the type in which each decimal digit or letter comprises four stations arranged in first and second pairs of aligned upper and lower stations with segments of different widths in selected ones of the stations. First and second sensors respectively scan the upper and lower stations of sequential characters generating separate outputs in two channels. Logic circuitry processes the outputs indicating the simultaneous occurrence or non-occurrence of segments in a pair of aligned upper and lower stations, and whether or not the upper segment is wider or not wider than any lower segment. A buffer storage stores such information about a first pair of upper and lower stations and the output from the buffer storage and the output from the logic circuitry for a second pair of aligned upper and lower stations following the first are coupled to a logic matrix to provide a binary output corresponding to the decimal digit or letter. A novel alphanumeric code or font suitable for both visual and machine reading and machine recording and coding is set forth.

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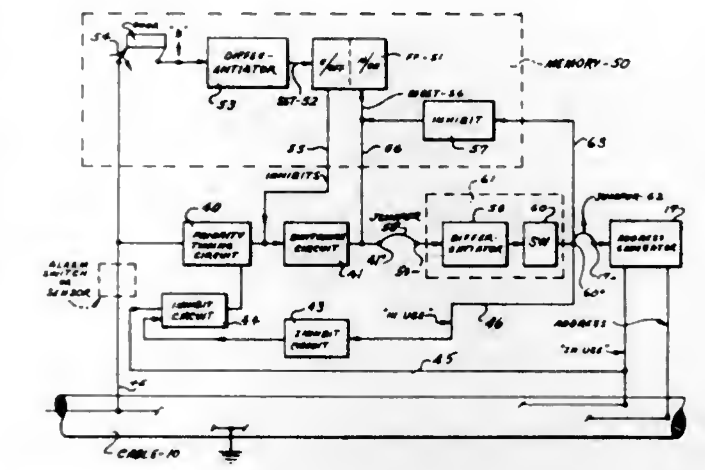
### 3,757,301
### SINGLE CABLE SIGNALING SYSTEM

**John F. Regan, Anaheim, and Robert A. Hedin, Yorba Linda, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio**

**Filed June 17, 1971, Ser. No. 154,090**
**Int. Cl. G08b** *25/00*
**U.S. Cl. 340—147 LP** **14 Claims**

A single cable signaling system adapted for recognizing the activation of a remote station coupled to the cable in an asynchronous fashion. Each station includes a transmitter so that when it is activated it will transmit signals along the cable including signals identifying the station location or address signals. The stations may be implemented to be manually or automatically activated or activated by means of an electrical key system. Each station may also include priority circuit means for controlling in a timed relationship the transmission of signals from a plurality of stations in a time overlapping relationship. To prevent the loss of information resulting from the quick generation of activation signals, a station may include a memory for recording the signal and transmitting it at a time when the cable is free. All of the signals transmitted along the cable are recorded or printed out.



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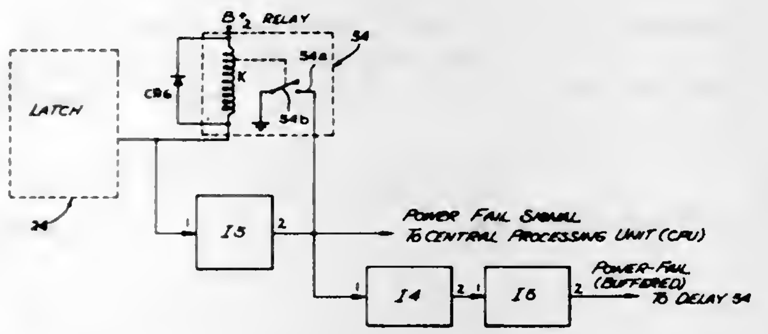
### 3,757,302
### RESPONSIVE POWER-FAIL DETECTION SYSTEM

**Gary L. Pollitt, Fountain Valley, Calif., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio**

**Filed Nov. 16, 1971, Ser. No. 199,188**
**Int. Cl. H02h** *7/20;* **H03k** *17/00*
**U.S. Cl. 340—147 R** **10 Claims**

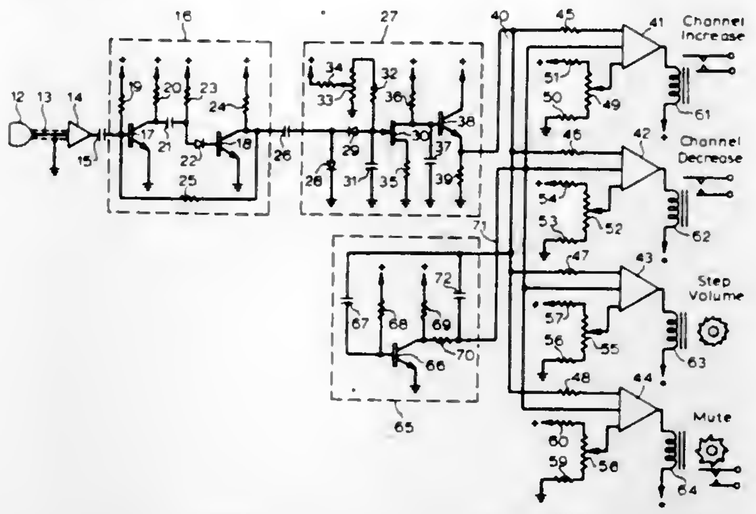


An electronic system which automatically monitors the amplitude of a single phase AC or DC power source and provides electrical signals whenever a power-fail condition is detected and, afterwards, whenever a power-recovery condition is detected. The electrical signals provided by the present invention are typically routed to an operating system which derives its primary power from the monitored power source, such as, for example, a digital computer. The signals enable the operating system to go through an orderly termination of its operation under a power-fail condition. In the case of a computer, a termination sequence may be initiated and data properly stored before power is shut-down and all operations cease. When a power-recovery condition is detected, the present invention provides electrical signals which enable the operating system to restart in a programmed manner. The present invention is comprised of a novel combination of electronic switches, logic circuits, latches, timing and delay circuits and a voltage comparator circuit.

### 3,757,303
### REMOTE CONTROL SYSTEM

**David A. Blass, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Apr. 19, 1972, Ser. No. 245,354**
**Int. Cl. H04q** *9/00*
**U.S. Cl. 340—148** **9 Claims**



A wireless remote control system for effecting a plurality of control functions to a television receiver or the like from a remote location utilizes a hand-held transmitter for generating an ultrasonic pressure wave signal at discrete function-indicative frequencies. Upon reception, the signal is converted to a series of constant-width constant-amplitude rectangular pulses by a monostable multivibrator circuit, and thence to a dc control voltage by a digital-to-analog converter circuit. A plurality of voltage-comparator elements, each corresponding to a selected one of the adjustment-functions, compares the dc control voltage to predetermined pre-set voltage levels to determine which of the adjustments is to be performed.

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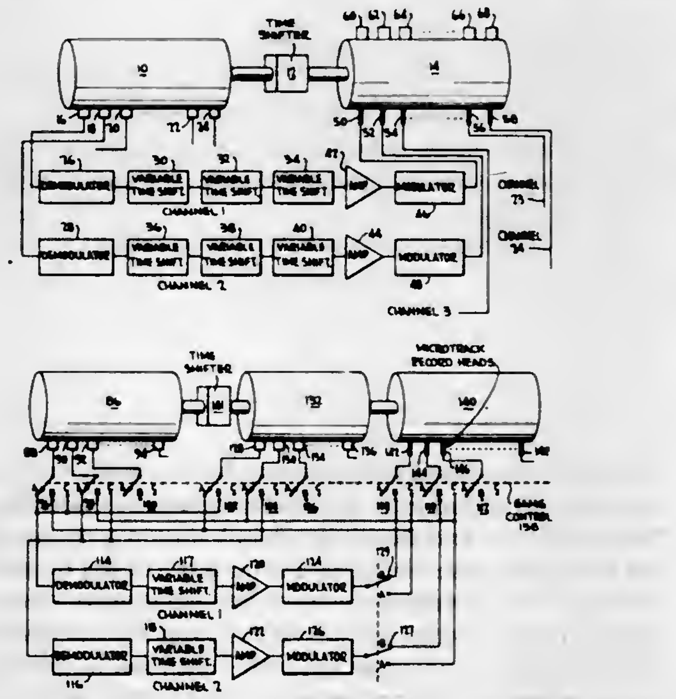
### 3,757,304
### METHOD FOR APPLYING MOVEOUT CORRECTIONS

**William H. Mayne, San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.**

**Continuation-in-part of Ser. No. 849,769, Aug. 13, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,039**
**Int. Cl. G01v** *1/36*
**U.S. Cl. 340—15.5 TD** **16 Claims**



Methods for applying time-variable corrections to seismic traces in order to decrease the inherent seismic signal frequency shift. A significant reduction in signal frequency shift is obtained by correcting the seismic traces to a common reference, distance or time. The distance reference is preferably at an appreciable distance from the source and is nearer the longest source-to-detector distances. The time reference is preferably less than the time on the far trace and may be selected in view of possible subsequent conversion of time to depth. Corrections can be made in a plurality of discrete steps rather than the conventional one-step correction to a source-to-detector distance equal to zero.

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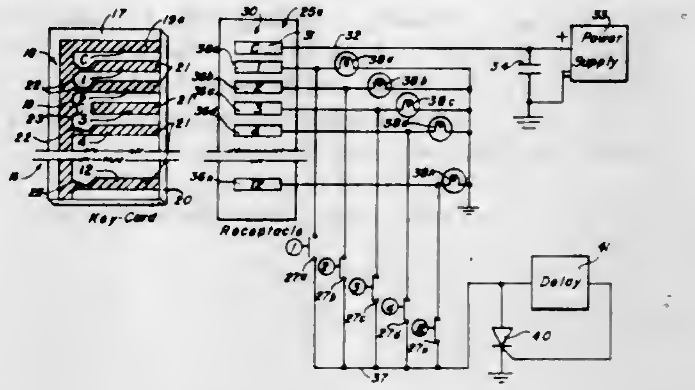
### 3,757,305
### METHOD AND APPARATUS FOR PRODUCING ENCODED ELECTRICAL KEYS

**Robert A. Hedin, San Pedro, Calif., assignor to R. B. Phinizy, Anaheim, Calif.**

**Continuation of Ser. No. 27,686, April 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 628,599, April 5, 1967, Pat. No. 3,544,769. This application Feb. 28, 1972, Ser. No. 230,052**
**Int. Cl. G11c** *17/00;* **H05k** *3/00*
**U.S. Cl. 340—164 R** **13 Claims**



A method and apparatus producing an encoded electrical key or key-card when utilizing a key or card blank on which there is an electrical circuit pattern having a common conductor or buss, and a plurality of terminals each connected to the buss by a fusible link. The encoding apparatus comprises a capacitor to be electrically connected to the common buss and charged by a power supply to a level sufficient to open-circuit one of the fusible links. Selection switch means control discharge of the capacitor through selected ones of the fusible links. The resultant pattern of open and closed-circuit fusible links offers a binary code permutation defining the coding of the key-card.

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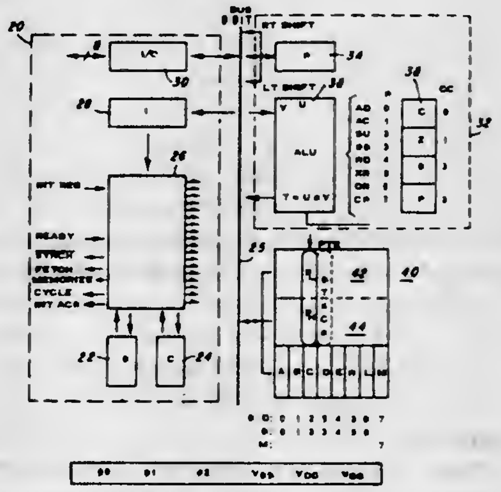
### 3,757,306
### COMPUTING SYSTEMS CPU

**Gary W. Boone, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Aug. 31, 1971, Ser. No. 176,668**
**Int. Cl. G06f** *7/00;* **H03k** *19/08*
**U.S. Cl. 340—172.5** **8 Claims**



A central processing unit (CPU) is utilized in combination with external random access or serial memory units. The CPU includes a parallel arithmetic logic unit (ALU), accumulator and file register, program and memory address register, and a 7 level program address stack. The parallel processor includes programmable logic arrays, shift registers, and random access memorieis combined monolithically on a single chip. The CPU is capable of addressing up to 65 kilobytes of memory, and has an instruction cycle time on the order of 10 microseconds. Interface ligic synchronizes operation of the CPU with the external memory. An 8-bit parallel bus interconnects the functional elements of the CPU. An external 8-bit bus is used to interconnect the external memory units with the CPU. Multiplexing techniques enable both input and output data to be transmitted over the same bus, simplifying design and improving reliability.

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## 3,757,307
## PROGRAM INTERRUPT FACILITIES IN DATA PROCESSING SYSTEMS

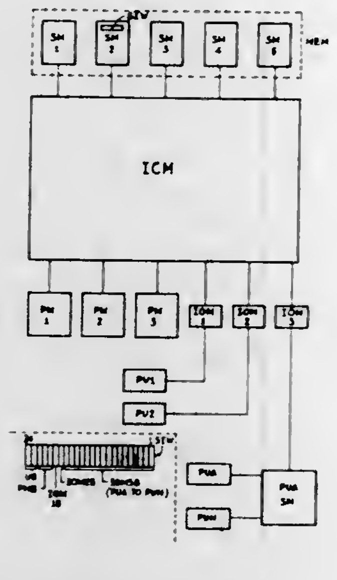
**David Cockburn Cosserat, London, S.W. 10; John Michael Cotton, Windsor, Berkshire; Michael O'Halloran, Maidenhead, Berkshire, and Frederick Mackay Trapnell, London, W. 11, all of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland**

**Filed Aug. 31, 1971, Ser. No. 176,464**

**Claims priority, application Great Britain, Sept. 2, 1970, 41,951/70**

**Int. Cl. G06f** *9/18*

**U.S. Cl. 340—172.5** **8 Claims**



An arrangement for providing a program interrupt facility for use in a modular data processing system which includes at least one processor module, a memory comprising at least one storage module, at least one peripheral unit and a communication medium providing intercommunication between the memory and the processor and a plurality of control programs. The memory includes a discrete common storage area for the storage of a plurality of system interrupt demand bits and the arrangement is such that a discrete system interrupt demand bit is marked when a processor or peripheral unit requires to generate a system interrupt and each processor module is adapted to periodically inhibit the operations or an object program and to interrogate the state of the system interrupt demand bits in the memory. Upon detection of a marked demand bit the interrogating processor is arranged to suspend the processing of the inhibited object program and to enter an interrupt handler program.

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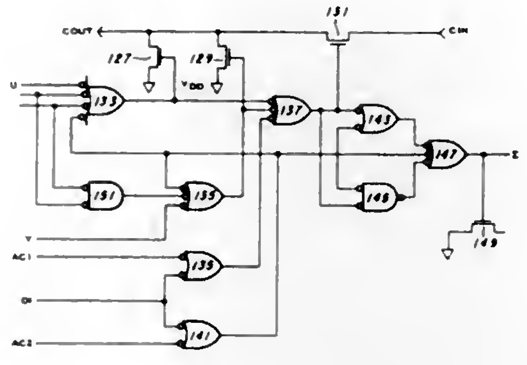
## 3,757,308
## DATA PROCESSOR

**Robert E. Fosdick, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Sept. 3, 1971, Ser. No. 177,735**

**Int. Cl. G06f** *7/385*

U.S. Cl. 340—172.5 **2 Claims**



A MOS data processor fabricated on a single MOS semiconductor chip. The logic, arithmetic and storage functions are fabricated on one semiconductor chip.

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## 3,757,309
## ENCODER DEVICE FOR RECORDING DATA ON A MAGNETIC TAPE

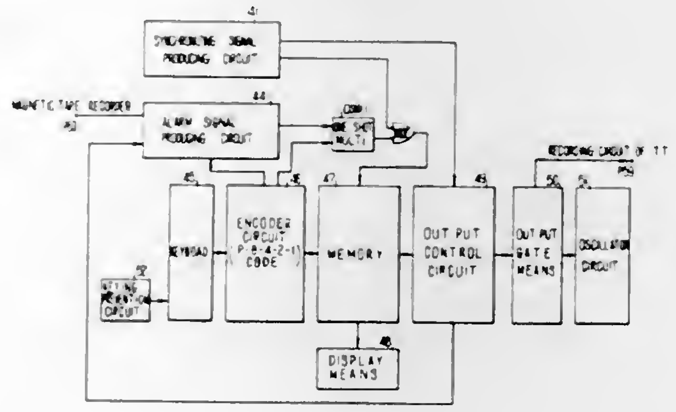
**Tsuneharu Hashizume, Suwa-gun, Nagano; Michihiko Sasaki, Okaya-shi, Nagano; Masanori Tatuno, Suwa-gun, Nagano; Toshiaki Demachi, Suwa-gun, Nagano; Osamu Hatakoshi, Suwa-shi, Nagano; Shigeru Miyauchi, Suwa-gun, Nagano, and Susumu Amemiya, Suwa-gun, Nagano, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Suma-gun, Nagano-ken, Japan**

**Filed Dec. 13, 1971, Ser. No. 207,210**

**Claims priority, application Japan, Dec. 14, 1970, 45/110382**

**Int. Cl. G06f** *1/00*

U.S. Cl. 340—172.5 **4 Claims**



In the device, data characters to be recorded on a magnetic tape are converted into decimal numbers in code form by an encoder circuit and stored in a block unit in a memory circuit, and the stored encoded data characters are fed by shift pulses produced by a synchronizing pulse producing circuit to an output control circuit where output gates of oscillators having oscillation frequencies set in accord with the weight of the encoded decimal numbers are controlled by the state of the bits of the data characters fed to this circuit, so that the data characters can be recorded serially and successively in the form of mixed frequency signal pulses including the frequencies in accord with the state of the bits for each character.

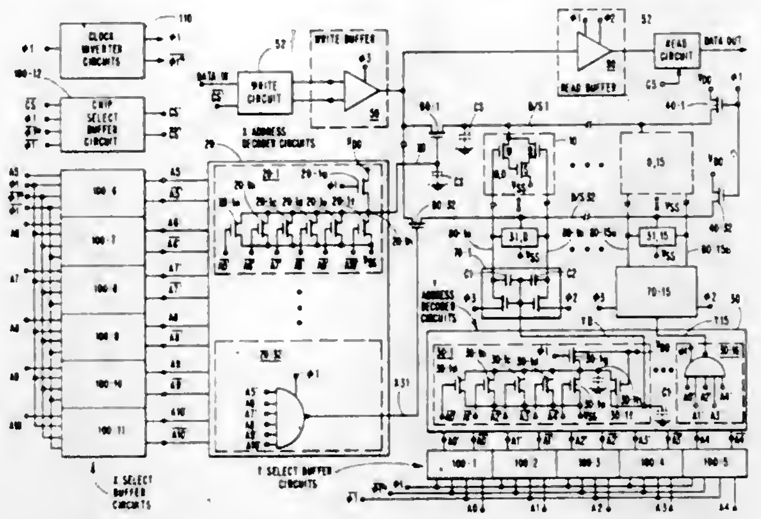
## 3,757,310
## MEMORY ADDRESS SELECTION APPARATUS INCLUDING ISOLATION CIRCUITS

**Brian F. Croxon, Peabody, Essex County, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.**

**Filed Jan. 3, 1972, Ser. No. 214,771**

**Int. Cl. G11c** *11/40;* **G06f** *3/00*

**U.S. Cl. 340—172.5** **24 Claims**



A semiconductor memory chip includes buffer circuits positioned between the input address lines applied to the chip and the decoder circuits coupled to the cells of the memory array. Each of the buffer circuits is arranged to translate low level logic address signals applied to its input terminal into a pair of high level complementary signals suitable for driving a pair of address selection lines applied to the input terminals of the decoder circuits. During a first interval of a memory cycle prior to address selection time, each buffer circuit is forced to a predetermined state. This forces each pair of address selection lines to a first state selected to enable each of the decoder circuits to be precharged to a first predetermined state during the first interval. Subsequently, during address selection time, a clocking signal conditions each of the buffer circuits to switch only one address selection line of each pair of lines from a first state to a second state in accordance with the state of the low level address information signal applied to its input terminal. This causes each of the decoder circuits which has one of its input terminals forced to a second state to discharge rapidly from the first predetermined state to a second predetermined state with only the addressed decoder circuits remaining at the first predetermined state.

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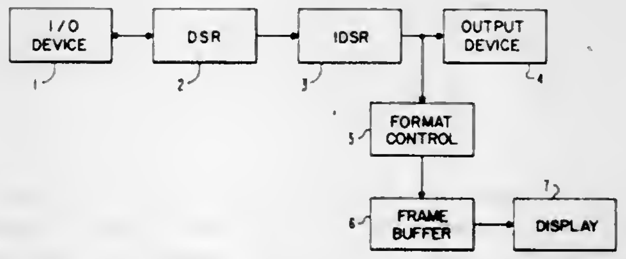
## 3,757,311
## SYSTEM FOR OUTPUTTING LINES ABOUT A POINT OF OPERATION

**James C. Byram, and James W. Toups, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 30, 1972, Ser. No. 239,482**

**Int. Cl. G06f** *3/14*

**U.S. Cl. 340—172.5** **11 Claims**



A system for obtaining a number of lines about an operating point for output purposes such as display. The system is comprised of an input/output (I/O) typewriter, an electronic dynamic shift register (DSR), an intermediate electronic dynamic shift register (IDSR), and a display controlled by format control logic and a frame buffer. The IDSR control logic controls codes input into the IDSR from the DSR data and control code memory. One of the control codes in the DSR data flow is an operation flag which defines the point of operation in the DSR. In order to obtain a number of lines surrounding the operation flag for output purposes, an IDSR of limited character capacity is used. The data and control codes making up the data flow in the DSR are transferred to the IDSR until sufficient text surrounding the operation flag is contained in the IDSR. Prior to output, excess data and control codes are removed from the IDSR data flow until only the data to be output remains in the IDSR. For example, if five lines are to be displayed with the operation flag positioned in the middle line, data is loaded into the IDSR until at least those five lines are obtained. Then the excess data and control codes are removed from the IDSR data flow. When exactly the data to be output remains, it is transferred to a display device.

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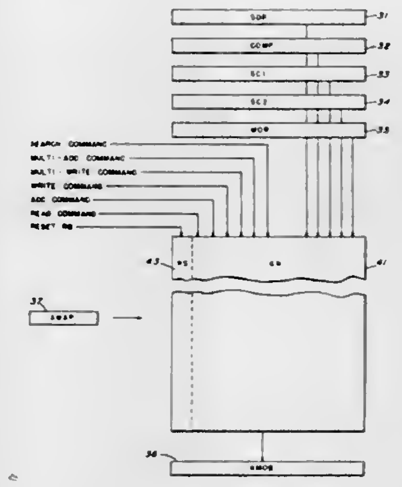
## 3,757,312
## GENERAL PURPOSE ASSOCIATIVE PROCESSOR

**John E. Shore, Washington, D.C., and Frank A. Polkinghorn, Jr., Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 9, 1970, Ser. No. 79,415**

**Int. Cl. G11c** *15/00*

**U.S. Cl. 340—173 AM** **1 Claim**



A solid state associative chip memory system including an array of structurally identical elements each of which contains an integral number of bits. The system is independent of the length of each data word and the total number of words since any required word length may be obtained by horizontally connecting the proper number of associative chips and any processor size may be obtained by vertically connecting associative words. The system provides an array processor which has a distributed (in memory) logic that is capable of processing information while remaining in memory and is capable of simultaneous operations for solving problems in real time.

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## 3,757,313
## DATA STORAGE WITH PREDETERMINED SETTABLE CONFIGURATION

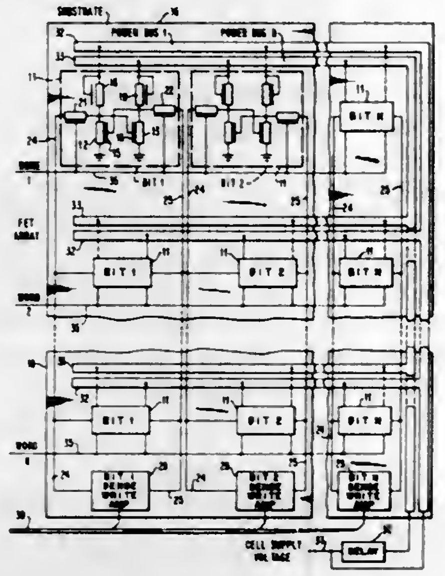
**Herbert W. Hines, and Leon C. Radzik, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 29, 1972, Ser. No. 267,730**

**Int. Cl. G11c** *11/40*

**U.S. Cl. 340—173 R** **6 Claims**

A random access memory matrix with word and bit access is modified to supply operating power in stages to set the memory to a preselected pattern. Each bit cell of the memory is powered by two power leads with each half of the cell connected to a different one of the leads. The supply of power to only one half of the cell will bias the circuits so that when the other half of the power supply is provided, the cell will always turn on in a predetermined configuration. Selection of one or another connection type for each bit cell will turn on the memory to give an initial load of preselected data.



Two additional configurations giving two or three selectively settable initial loadings are shown.

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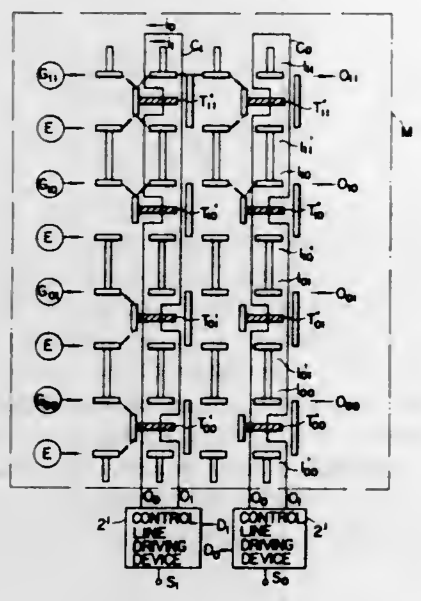
### 3,757,314
### MAGNETIC BUBBLE DECODER

**Noriyuki Homma, Kokubunji; Shigaru Yoshizawa, Kodaira, and Yoshihiko Noro, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Feb. 24, 1972, Ser. No. 228,898**
**Claims priority, application Japan, Feb. 24, 1971, 46/8647**
**Int. Cl. G11c *11/14***
**U.S. Cl. 340—174 TF** **14 Claims**



A magnetic bubble decoder employs forward magnetic bubble paths each forming a magnetic bubble shift loop, backward magnetic bubble paths, series switches disposed in the forward bubble paths, for straight advancing the magnetic bubbles and parallel switches, disposed in said forward bubble paths, for branching the magnetic bubbles from said forward paths to the backward paths. Control lines are provided for alternatively energizing the series and parallel switches to be operated in cooperation with each other with response to coded electrical signals applied to the control lines. A magnetic bubble output corresponding to the applied coded electrical signal is generated from the shift loop of a specific adress.

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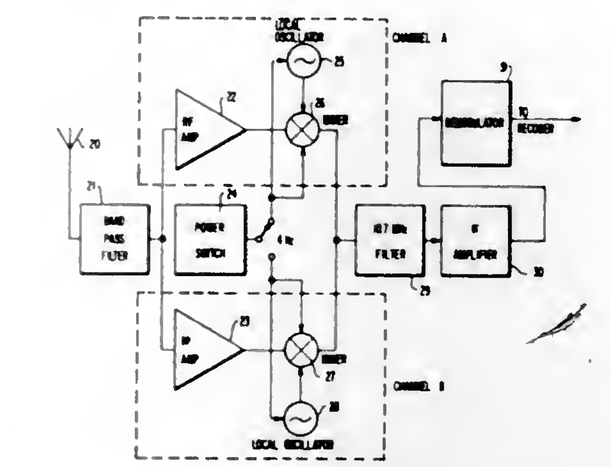
### 3,757,315
### DIVERSITY RF ALARM SYSTEM

**Jerry Linward Birchfield, Decatur, and Richard Wallace Moss, Marietta, both of Ga., assignors to Rollins Protective Services Company, Atlanta, Ga.**

**Filed Aug. 30, 1971, Ser. No. 176,058**
**Int. Cl. H04b *1/00, 7/02;* G08b *21/00***
**U.S. Cl. 340—224** **22 Claims**



An alarm system incorporating radio links between a plurality of remotely located alarm condition sensing units and a central receiving station. Each alarm condition sensing unit is comprised of at least one sensing means which is comprised of an alarm sensing element in combination with a frequency diversity radio transmitter means. The transmitter means of all of the sensing units transmit frequency diversity carrier signals having the same carrier frequencies but the carrier signals associated with different units have modulation signals of different frequency impressed thereon. At the receiving station a frequency diversity receiver means which has two channels and a means for switching therebetween demodulates the frequency diversity signals received. The demodulated signals pass to a plurality of pulse rate discriminators equal in number to the number of sensing units in the system. Each pulse rate discriminator is responsive to a different modulation signal to emit a different alarm output which alarm output indicates the sensing unit which has triggered. Each pulse rate discriminator means indicates whether a given modulation frequency is present or not by comparing the time between successive negative going zero crossings of the demodulated signal with the duration of a plurality of fixed length pulses.

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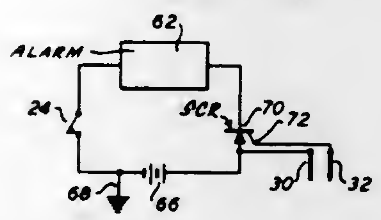
### 3,757,316
### ALARM ASSEMBLY COMBINED WITH CLEANOUT PLUG STRUCTURE

**Joseph Fiorenzo, 82 Saw Mill Rd., North Haledon, N.J.**

**Filed Feb. 23, 1972, Ser. No. 228,549**
**Int. Cl. G08b *21/00***
**U.S. Cl. 340—243** **5 Claims**



An alarm assembly for replacing the cleanout plug in a sewer outlet conduit. The assembly is a caplike structure dimensioned for replacing the said cleanout plug, and carries external threads adapted to mate with the threads in a cleanout opening at the sewer outlet. Water responsive means, such as a float or water activated probes, are mounted in the structure and arranged to sense presence of water at the end thereof facing inwardly of the sewer opening when the structure is emplaced at the sewer conduit.

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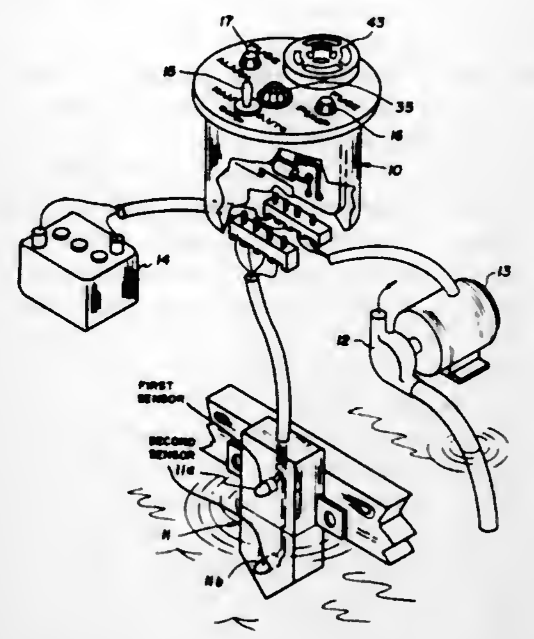
### 3,757,317
### LIQUID LEVEL SENSING AND CONTROL SYSTEM

**Alexander Kahn, Massapegua; Charles Kahn, St. James, and Warren Johannesen, West Islip, all of N.Y., assignors to U.S. Dynamics Corporation, Amityville, N.Y.**

**Filed Sept. 15, 1971, Ser. No. 180,613**
**Int. Cl. G08b *21/00***
**U.S. Cl. 340—244 R** **6 Claims**



Fluid sensing and control apparatus using solid state devices and capable of fluid sensing at spaced points to furnish output control signals to maintain fluid conditions within predefined limits. A feedback circuit between sensors is provided to minimize power consumption in quiescent periods and timed alarm-actuating signals are generated in the event control functions are not achieved.

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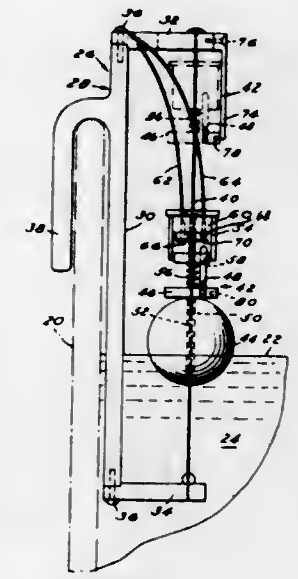
### 3,757,318
### SWIMMING POOL SAFETY DEVICE

**Bernard A. Brisson, Roseville, Mich., assignor to Brisson Development, Inc., Troy, Mich.**

**Continuation-in-part of Ser. No. 36,943, May 13, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,916**
**Int. Cl. G08b *21/00***
**U.S. Cl. 340—261** **13 Claims**



A safety device for a swimming pool including an alarm which is actuated in response to a wave in the pool generated by an object falling into the pool water. The device comprises a float freely slidable on a vertical rod partially submerged in the pool water, and a switch means carried by the float for actuation by sudden upward float movement caused by a pool wave. The mass of the switch means is sufficiently large in relation to the mass of the float so that it remains relatively stationary as the float bounces up on the wave because of the inertia of the switch means. Because the assembly is freely vertically movable on the rod, the device is operable without adjustmen irrespective of the fact that the water level in the pool may vary.

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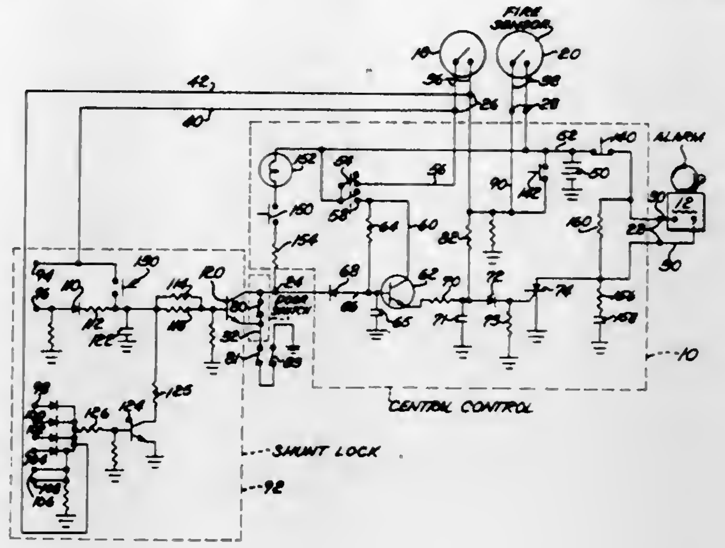
### 3,757,319
### SECURITY ALARM SYSTEM WITH BYPASS

**Robert Arnold Hedin, Yorba Linda, Calif., assignor to Eaton Corporation, Cleveland, Ohio**

**Filed Apr. 5, 1971, Ser. No. 131,197**
**Int. Cl. E05b *45/10;* G08b *13/00***
**U.S. Cl. 340—274 R** **5 Claims**



A battery operated alarm system including a more or less conventional closed circuit burglar alarm loop in which are sensors that may open the circuit so as to actuate a bell or other signaling device. In this system, a resistor limits the current passing in the normally closed loop, conserving battery power and also permitting further control of the loop by an electronic door lock. One of the sensors is a door switch that will be bypassed when a key is inserted into the lock, and there is a time delay holding the switch bypassed for a time that will permit a person to pass the door. The system also includes normally open circuit loops such as may be closed by operation of an electric floor mat, and one of those loops may be utilized for a fire sensor and will remain in operation at times when a switch has been actuated to place the other loops out of operation.

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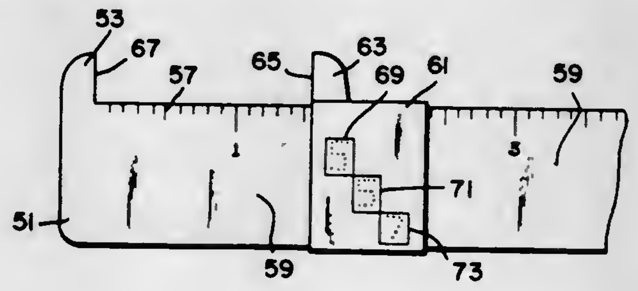
### 3,757,320
### OPTICAL DIGITAL MEASUREMENT READOUT

**Michael D. Heath, 20552 Wayne Avenue, Torrance, Calif.**

**Filed Feb. 22, 1971, Ser. No. 117,395**
**Int. Cl. G09f *9/30***
**U.S. Cl. 340—336** **16 Claims**



A readout system using a matrix optical system whereby a decoder member and an encoder member are operatively associated in a manner allowing parallel relative movement therebetween only along a uniform predetermined path whereby different ones of light transmissive areas in the encoder member, which are arranged in a basic matrix pattern but defining a series of information indicia, are made visible by this relative movement as light passes through only those light transmissive areas of the encoder which are aligned with light transmissive areas in the decoder member that are grouped in the basic matrix pattern.

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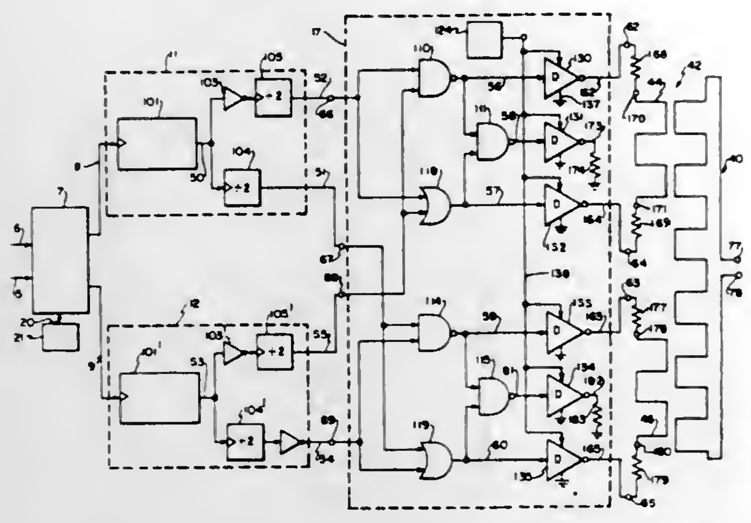
## 3,757,321
## TRANSDUCER DRIVE APPARATUS AND METHOD

**Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 225,729**

**Int. Cl. H03k** *13/02*

**U.S. Cl. 340—347 AD** **10 Claims**



Disclosed is a power drive circuit for driving loads such as the sine and cosine windings of a position-measuring transformer. The windings of the transformer are driven bilaterally by converter-controlled drive circuits with substantially constant magnitude currents in both directions for selected durations to produce pulse-width modulated signals. Unwanted signals due to undesired cross coupling between sine and cosine windings are avoided by providing a constant power drain from the power source which is connected in common to all of the drive circuits. To avoid the presence of undesired even harmonic signal components, the load is supplied with a bilateral current which is symmetrical over each cycle.

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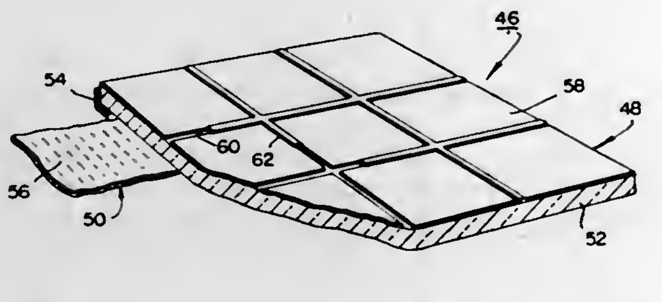
## 3,757,322
## TRANSPARENT TOUCH CONTROLLED INTERFACE WITH INTERREACTIVELY RELATED DISPLAY

**Harold Barkan; Edward D. Barkan, both of Ardsley, and Jerome Swartz, Stony Brook, Long Island, all of N.Y., assignors to Hall-Barkan Instruments, Inc., Tuckahoe, N.Y.**

**Filed Feb. 3, 1971, Ser. No. 112,148**

**Int. Cl. G08b** *5/36*

**U.S. Cl. 340—365 C** **18 Claims**



A transparent touch actuated interface with an interactively related display, in which the display is substantially fully covered by a solid state overlay, e.g., a keyboard, composed of one or more to-be-touched contact areas of electrically conductive transparent material electrically isolated from one another by transparent means and having leads extending from the contact areas to terminals connected by circuitry to a corresponding number of switches of which the areas constitute the activating elements. The switches control utilization mechanisms. The overlay and switches jointly constitute the interface. Each contact area is coextensive with a corresponding associated underlying area of the display so that the overlay and display are interreactively related and thus facilitate decision making. The leads preferably are transparent so that the entire overlay is effectively transparent and the display can be seen through it. The contact areas conjointly constitute a predominant portion of the overlay whereby to all intents and purposes each different area of the display has a different associated contact area. The nature of the display preferably is variable and may be static or kinetic, e.g., printed material or material presented on the face of a cathode ray tube or rear projection from a moving picture or slide projector or other graphic generating means. The contact areas may be transparent electrically conductive self-supporting plaques one surface of each of which is adapted to be touched, the plaques being separated by reaches of an insulating lattice. In a preferred form of the invention the contact areas are discrete thin films supported on the electrically non-conductive transparent substrate. The leads may be on either face of the substrate or embedded therein and preferably extend to the periphery of the substrate. Alternatively, the thin film areas may be mutually spaced and the leads located between the areas and covered by a preformed or an in situ formed lattice of transparent electrically non-conductive sheet material. Furthermore, the exposed surface of the overlay may be covered by a very thin electrically non-conductive film as a guard against humidity, chemical attack, physical damage and soiling. The contact areas are adapted to be touched by a person's fingers, although they also may be touched by a hand held implement, particularly, if it is desired to increase the contact density. The implement may include a visible indicating means. The interface is adapted to be connected to a utilization mechanism including a broad range of electrical devices such as computers, teaching machines, readouts, illuminating means to light up a selected portion or portions of the display, audio/visual apparatuses and playboard means. The configurations of the contact areas and of the overlay may be of various standard shapes and sizes or can be custom tailored to special installations, but, in general, a single overlay with a standard grid consisting, for instance, of rows and columns of contact areas is designed to be used interchangeably with different display.

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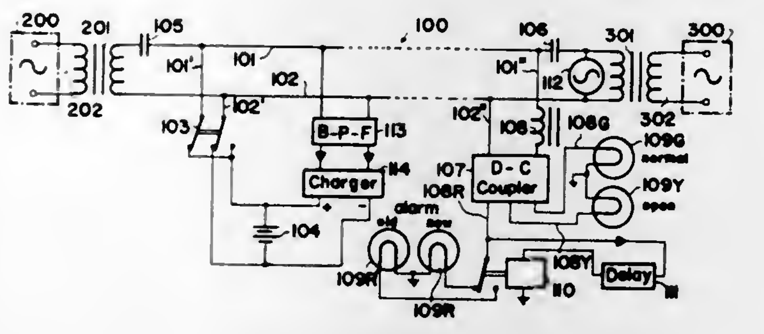
## 3,757,323
## D-C MONITORING SYSTEM USING TWO-WIRE TRANSMISSION LINES

**Robert H. Pintell, New City, N.Y., assignor to Interelectronics Corporation, Congers, N.Y.**

**Filed Jan. 12, 1971, Ser. No. 105,848**

**Int. Cl. G08b** *1/08*

**U.S. Cl. 340—416** **7 Claims**



A reversible d-c voltage impressed upon the conductors of a two-wire line at a supervised location is detected at a central station and transmitted via a d-c coupler to a load circuit with indicating lamps for normal operation (green), open circuit (yellow) and alarm condition (red). A recent alarm condition is indicated at a display panel by a flashing red light which subsequently changes to a steady glow, thereby facilitating the detection of new emergencies. The coupler may include a transformer with a primary-side oscillator, a dual magnetic amplifier, a differential amplifier, an electromagnetic sensor or a photoelectric transducer.

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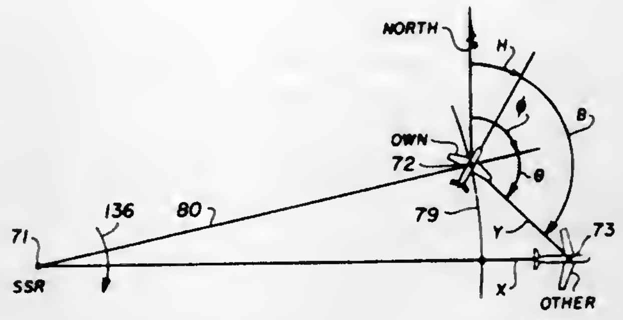
## 3,757,324
## PROXIMITY INDICATION WITH RANGE AND BEARING MEASUREMENTS

**George Barrett Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.**

**Filed Sept. 15, 1971, Ser. No. 180,578**

**Int. Cl. G01s** *9/56*

**U.S. Cl. 343—6.5 R** **3 Claims**



Proximity indication and evaluation for aircraft, using only the signals emitted by secondary surveillance radar and cooperating transponders, to detect intrusion in a monitored proximity volume and determine slant range and relative bearing to the intruder.

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## 3,757,325
## SAFETY DEVICE FOR VEHICLE PASSENGERS

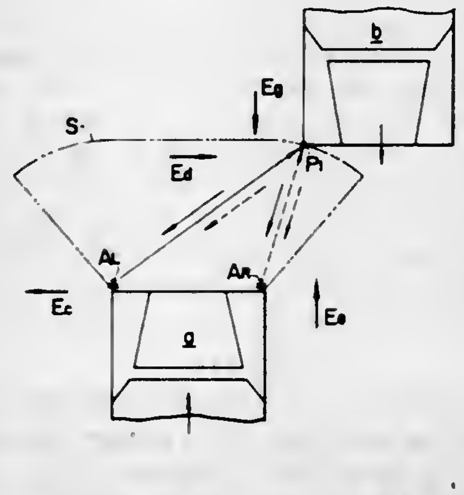
**Kazuo Sato, and Minoru Izawa, both of Toyota-shi, Japan, assignors to Toyota Jidasha Kogyo Kabushiki Kaisha, Toyota, Japan**

**Filed May 3, 1971, Ser. No. 139,353**

**Claims priority, application Japan, Dec. 18, 1970, 45/113116**

**Int. Cl. G01s** *9/44*

**U.S. Cl. 343—7 ED** **26 Claims**



The potential collision detecting system for vehicles disclosed includes two transmitter-receivers provided at both lateral sides of a vehicle. One transmitter-receiver radiates an electromagnetic wave having the same plane of polarization as that of the wave generated by a generator and another transmitter-receiver radiates an electromagnetic wave having a plane of polarization is turned 90 degrees from the first plane by means of a twist waveguide. When said electromagnetic waves are reflected from an obstacle, the reflected electromagnetic waves are returned along the same path as the radiated electromagnetic waves are picked up by both transmitter-receivers. Two separate Doppler signals are obtained through homodyne detection. An impending crash of a vehicle with another vehicle in its path is determined by calculating the ratio of electrical quantities proportional to the Doppler signals. Whether the relative speed between vehicles is within the range of critical speed or not is determined by obtaining the sum of voltages of the electrical quantities. Whether the relative distance between vehicles has come within the critical range or not is determined by obtaining the sum of the voltages proportional to the levels of the Doppler signals. When the results of said determination are all satisfied, a safety device for vehicle passengers is actuated.

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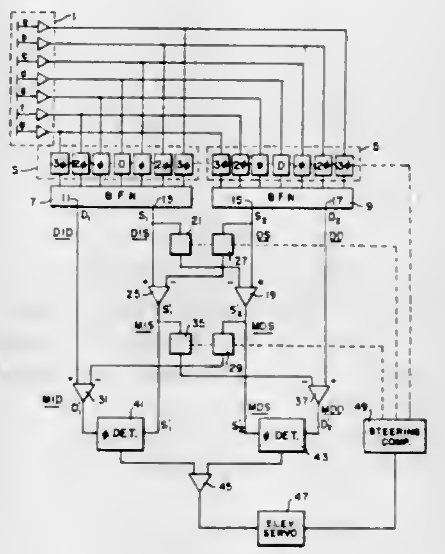
## 3,757,326
## LOW ANGLE TRACKING SYSTEM

**Warren D. White, Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Dec. 21, 1971, Ser. No. 210,331**

**Int. Cl. G01s** *9/22*

**U.S. Cl. 343—7 A** **27 Claims**



A radar array is aimed to receive a signal directly reflected from a target as well as an image signal reflected from the target and from the adjoining ground surface or sea surface. An ambiguity introduced in the direct signal by the image signal, is resolved by a system which includes independent steering means and beam forming networks to form sum and difference signals from the image and the direct signals. These signals are mixed by computer controlled mixing networks to provide modified sum and difference signals. When the antenna pointing angle coincides with the target elevation angle, the modified direct sum and difference signals are uncontaminated by the image signals and vice versa. A composite error signal is obtained from the modified signals whose polarity is an indication of the error of the pointing angle. This signal is used to drive the steering mechanism into alignment with the direct path where a zero or null error signal is produced corresponding to the correct elevation angle of the target.

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## 3,757,327
## RADAR PRESENCE DETECTION AT PRESELECTED RANGE

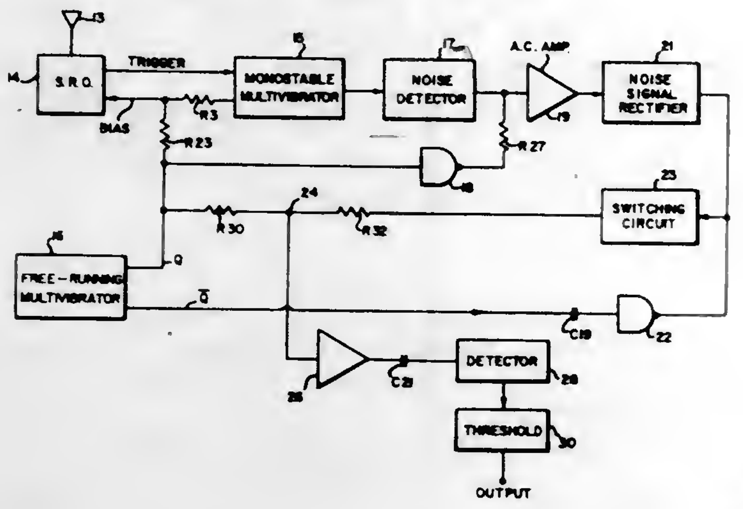
**Wallace F. Wiley, Jr., Prairie Village, Kans., assignor to Bonzer Inc., Overland Park, Kans.**

**Filed Dec. 29, 1971, Ser. No. 213,645**

**Int. Cl. G01s** *9/04*

**U.S. Cl. 343—7.5** **6 Claims**

The radar apparatus disclosed herein employs a superregenerative oscillator for detecting the presence of a target at a preselected range or distance. The bias signal which controls the nominal squeg period of the oscillator is repetitively switched between two levels corresponding to respective predetermined ranges. A reference signal is provided in synchronism with the switching. A reduction in the random noise generated by the oscillator is taken as indicative of the presence of a target at the preselected range corresponding to the squeg rate at which the oscillator is then operating. The reference signal and a signal representing the noise amplitude are combined such a way that a null is obtained when a target is present at the range corresponding to a predetermined one of the two squeg rates.



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### 3,757,328
### RADAR SYSTEMS

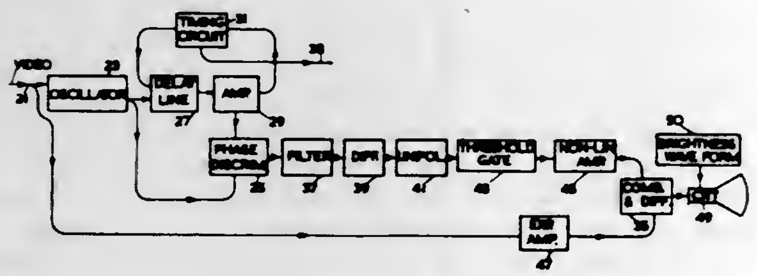
**Frederick Charles Goddard, Malvern, England, assignor to Minister of Aviation, in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Filed Dec. 28, 1964, Ser. No. 421,728**

**Claims priority, application Great Britain, Jan. 7, 1964, 788/64**

**Int. Cl. G01s** *7/20, 9/42*

**U.S. Cl. 343—7.7** **1 Claim**



1. Radar apparatus including a visual display, means for displaying on the visual display an image formed from elements of contrasting brightness and means for displaying radar returns from moving targets as relatively light elements and radar returns from stationary objects as relatively dark elements against a background of intermediate brightness.

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### 3,757,329
### SYSTEMS FOR MEASURING VELOCITIES OF MOVING BODIES

**Kazuo Sato, and Hisashi Watanabe, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan**

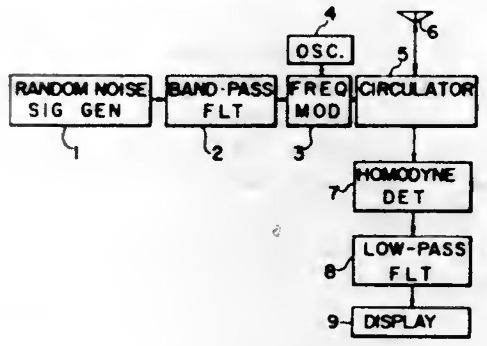
**Filed Mar. 1, 1971, Ser. No. 119,465**

**Claims priority, application Japan, July 23, 1970, 45/63976**

**Int. Cl. G01s** *9/44*

**U.S. Cl. 343—8** **10 Claims**

In the system disclosed a random noise signal frequency-modulates a Doppler radar. More specifically the relative velocity between moving bodies or between a moving body and a fixed object is measured by transmitting an undulatory signal toward the body and receiving the reflected wave whose frequency has been shifted by the Doppler effect. The Doppler signal is detected by a homodyne detection system using a portion of the transmission signal as a reference. The transmitted undulatory signal exhibits frequency-modulation generated by a random noise signal. A portion of the frequency modulated undulatory wave is used as a reference. The frequency modulation by the random noise prevents erroneous operation caused by interference between different transmitted undulatory signals.



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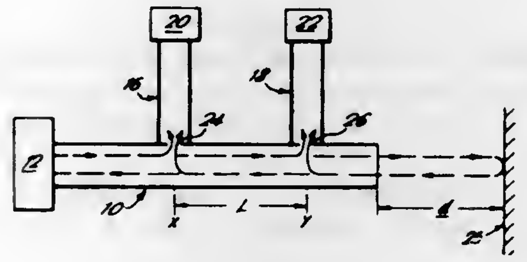
### 3,757,330
### MICROWAVE INTERFEROMETERS

**Eric Stanley Hotston, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England**

**Filed Nov. 29, 1971, Ser. No. 202,998**

**Int. Cl. G01s** *9/04*

**U.S. Cl. 343—12 R** **8 Claims**



This invention involves an interferometer arranged to measure the distance to a movable object. The interferometer includes a main wave guide for radiating electromagnetic waves towards the object and for receiving the electromagnetic wave after reflection from the object, and a secondary wave guide system, including detectors coupled to the main wave guide in order to receive components of both the radiated and reflected waves. By appropriate positioning of the coupling between main and secondary wave guides, detectors in the secondary wave guide system can readily determine the distance of an object.

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### 3,757,331
### PHASE-CODED PULSE COMPRESSION APPARATUS

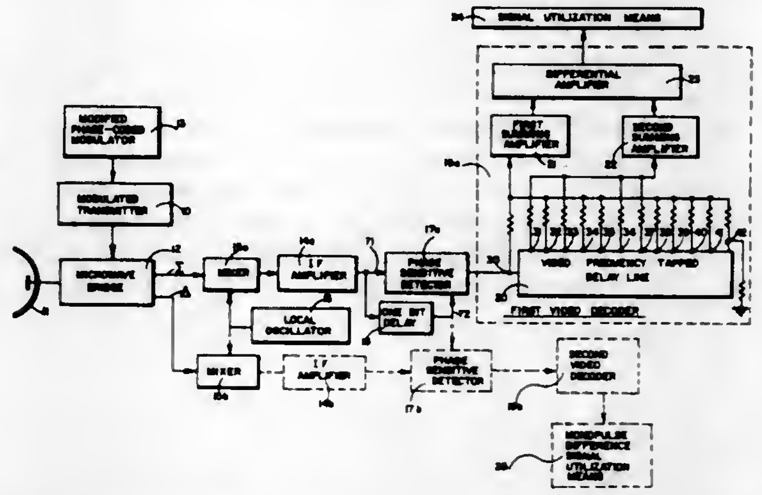
**James A. Moulton, Santa Ana, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.**

**Filed July 26, 1965, Ser. No. 474,821**

**Int. Cl. G01s** *9/22, 9/233*

**U.S. Cl. 343—16 M** **13 Claims**

Phase coded pulse compression apparatus for processing pulsed radar information, in which the transmitter employs a modified code which, when delayed by a seleted number of code bits and combined with the undelayed modified code, provides a desired code. The receiver employs a phase detector both inputs of which are responsive to the received echoes of the transmitted modified code, one of the inputs being delayed relative to the other by an amount corresponding to one code bit, to provide a video output having the desired code. A video pulse compression decoder, responsive to the desired code and coupled to the pase detector, effects the desired pulse compression.



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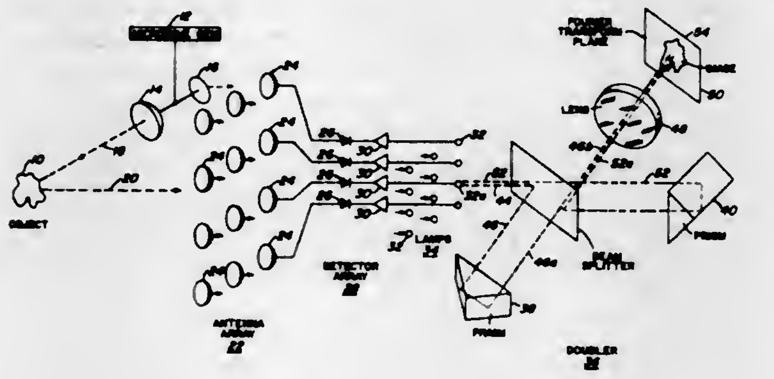
### 3,757,332
### HOLOGRAPHIC SYSTEM FORMING IMAGES IN REAL TIME BY USE OF NON-COHERENT VISIBLE LIGHT RECONSTRUCTION

**Gus P. Tricoles, San Diego, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.**

**Filed Dec. 28, 1971, Ser. No. 213,130**

**Int. Cl. G01s** *7/04*

**U.S. Cl. 343—17** **22 Claims**



A holographic system is described for forming visible images in real time using holograms sensed with microwave or acoustic waves. Coherent waves are received together with a coherent reference wave at a set of detectors in an antenna array to develop an interference fringe pattern. A visible luminous display of the fringes is produced on a reduced scale by light bulbs driven by the detectors; the light bulbs producing monochromatic, spatially non-coherent visible light. The light from the bulbs is passed through a beam splitter with a portion going through an inverting prism so as to produce an axially symmetric pair of the fringe patterns. A lens delivers the Fourier transform of the double fringes in its focal plane so as to produce a transform which provides the image.

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### 3,757,333
### RECEIVING ANTENNA SYSTEM

**Leo W. Procopio, Philadelphia, Pa., assignor to Philco Corporation, Philadelphia, Pa.**

**Filed Feb. 13, 1962, Ser. No. 173,612**

**Int. Cl. G01s** *3/74*; **H01q** *3/26, 15/08*

**U.S. Cl. 343—100 R** **10 Claims**

9. A receiving antenna system comprising a plurality of individual receiving elements distributed in a spherical array,

a like plurality of heterodyne mixers,

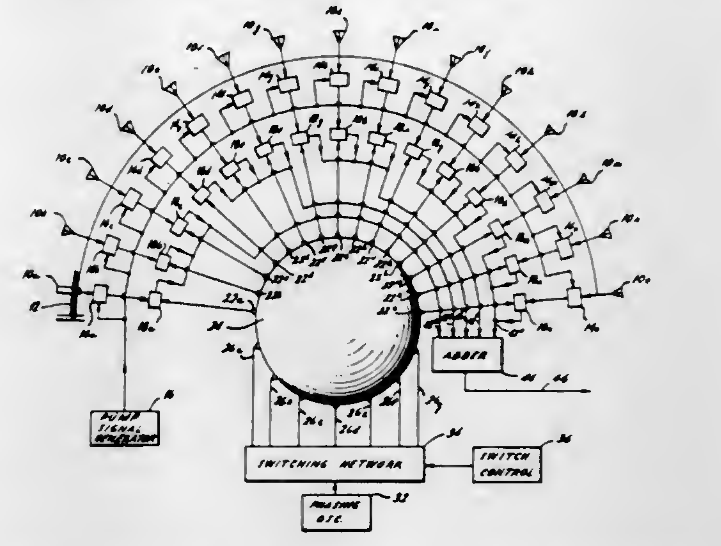
a plurality of parametric amplifiers, each of said parametric amplifiers coupling one of said individual receiving elements to a first input of a corresponding one of said heterodyne mixers, each of said parametric amplifiers being adapted to operate in the lower-sideband, up-conversion mode,

a pump signal generator,

means coupling said pump signal generator to each of said parametric amplifiers, said last-mentioned coupling means providing the same relative phase shift between said pump signal generator and each said parametric amplifiers,

a spherical Luneberg lens,

a plurality of energy pick-up means distributed over the surface of said lens, the distribution of said pick-up means on said lens corresponding to the distribution of said individual receiving elements on said array,



means connecting each of said energy pick-up means to a second input of the heterodyne mixer associated with the corresponding one of said individual receiving elements,

a plurality of feed horns distributed over a hemispherical area of said lens,

a phasing oscillator,

switching means controllable to connect said phasing oscillator to said energy feed horns one at a time in a selected sequence,

the ratio of the diameter of said Luneberg lens to the diameter of said spherical array being equal to the ratio of the frequency of the signal supplied by said individual receiving element to the frequency of the signal supplied by said phasing oscillator, and

means for combining the output signals of said heterodyne mixers.

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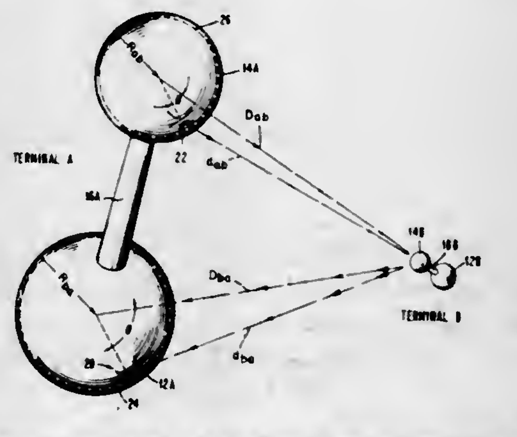
### 3,757,334
### STABILIZED COMMUNICATION AND CONTROL SYSTEM

**Herbert P. Raabe, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Feb. 29, 1968, Ser. No. 710,712**

**Int. Cl. G01s** *3/42*

**U.S. Cl. 343—100 TD** **17 Claims**



The disclosure provides a stabilized retrodirective oscillating loop or link for a channel of a communication and control system incorporating a pair of remotely located retrodirective antenna array terminals wherein the mechanical and electrical design parameters of the terminals and the circuits thereat contribute to frequency stabilization of the loop. Translational and rotational motions of the retrodirective terminals introduce frequency shifts into the communication channel between the pair of remotely located terminals. Doppler frequency shifts and local oscillator shifts are compensated by the electronic circuitry which stabilizes the retrodirective oscillating loop of the communication and control channel through voltage control of at least one local oscillator in each oscillating loop. The design of the retrodirective terminal separates the receive and transmit antenna elements from each other by placing them on separate spatial surfaces with identical geometrical shapes. Preferably, the two geometrical shapes are scaled in size in a ratio as the oscillation wavelengths being received and transmitted. The surfaces are rigidly interconnected by a communicating tubular member. The system permits high amplification and independent signal modulation in both directions between the antenna arrays at the remotely located terminals of the loop.

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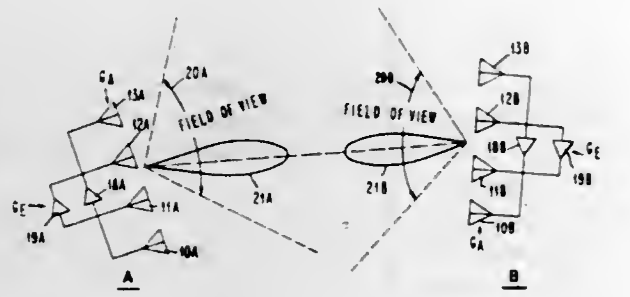
### 3,757,335
### COMMUNICATION AND CONTROL SYSTEM

**Elliot L. Gruenberg, Hartsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Feb. 29, 1968, Ser. No. 710,711**
**Int. Cl. G01s** ***3/42***
**U.S. Cl. 343—100 TD** **16 Claims**



A retrodirective oscillating loop for a communication and control channel is disclosed for the transmission and reception of radiant energy waveforms between remotely located terminals wherein each terminal has a retrodirective property with respect to the waveform propagation in the channel. It is demonstrated herein that two retrodirective communications repeaters or terminals form a retrodirective oscillating loop if the signal transmitted by one terminal is received, sufficiently amplified, and transmitted back by the second terminal and again received, sufficiently amplified, and transmitted by the first terminal while remaining stationary in time. This provides an important capability for two retrodirective antenna array terminals of a retrodirective oscillating loop of automatically steering toward each other when each terminal is within the field of view of the other terminal. When a retrodirective oscillating loop is established between two remotely located antenna array terminals of an electromagnetic radiation spectrum communication and control channel, a carrier oscillation is initiated from the noise spectrum present in the apertures of each array when the input aperture of each terminal is within the field of view of the output aperture of the other terminal.

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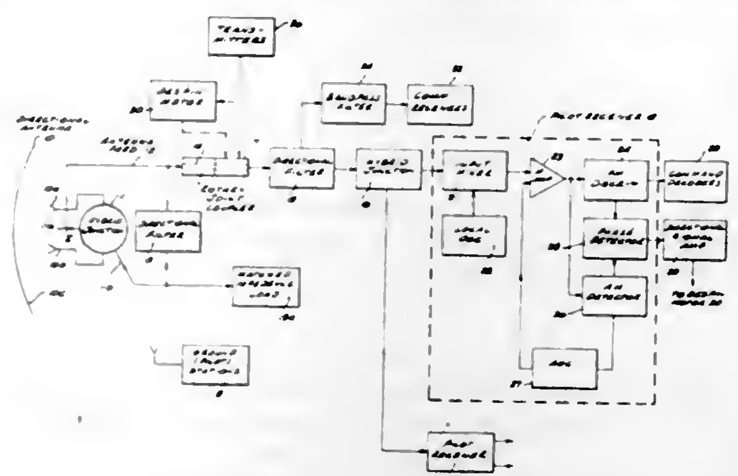
### 3,757,336
### ANTENNA DIRECTION CONTROL SYSTEM

**Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**
**Filed July 2, 1970, Ser. No. 51,872**
**Int. Cl. G01s** ***3/42***
**U.S. Cl. 343—100 ST** **13 Claims**

A satellite communications system comprises signal tracking for a directional antenna by detecting any directional error of the antenna relative to a pilot station, or predetermined offset angle therefrom, to provide phase modulated error signals which are combined with frequency modulated pilot signals radiated by the pilot station in order to pass composite error and pilot signals through a single receive channel including a rotary joint coupler connecting a spinning section and a despun antenna section of a spin-stabilized satellite. Any directional error of the despun antenna about the spin axis of a spinning satellite results in sum and difference signals being produced in the receive feeds of the antenna wherein the magnitude of the difference signal is proportional to the angle of deviation of the antenna pointing direction and the pilot station. The difference signal is phase modulated in an over-coupled, double-tuned, directional filter and combined with the sum signal to produce a composite signal which exhibits amplitude modulation in synchronism with the frequency modulation of the sum signal. The amplitude modulation index is proportional to the difference signal and hence the directional error; and the phase of the amplitude modulation relative to the phase of the frequency modulation indicates the sign of the error. After passing through the rotary coupler, the envelope of the AM signal is detected and compared in a phase detector, with a reference signal derived from the FM of the composite signal. The output of the phase detector is the directional error signal which provides a tracking signal for controlling a despin motor to correct the error in pointing of the antenna.



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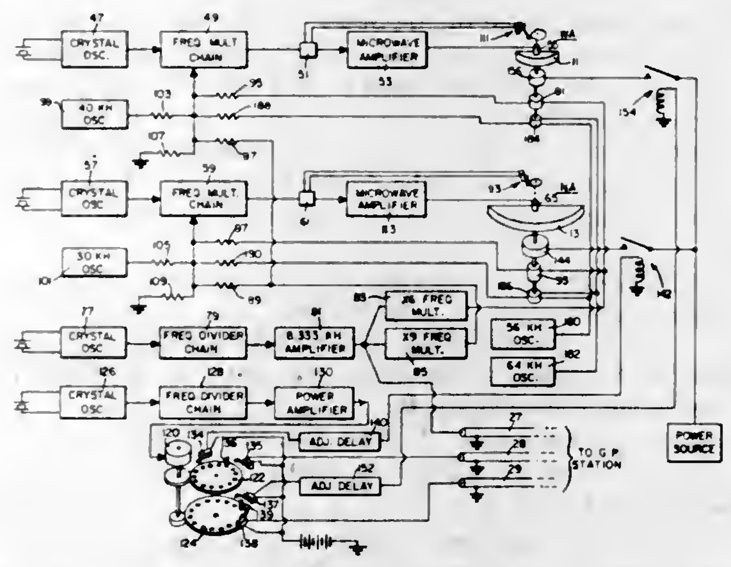
### 3,757,337
### AIRCRAFT INSTRUMENT LANDING SYSTEM

**George B. Litchford, 32 Cherry Lawn Ln., Northport, N.Y.**
**Filed Sept. 11, 1970, Ser. No. 71,402**
**Int. Cl. G01s** ***1/44***
**U.S. Cl. 343—106 R** **18 Claims**



Precision guidance of aircraft throughout a great volume of positions, and with spectrum economy, is achieved with coordinated scanning of coarse and fine coverage localizer antennas and coarse and fine glide-path antennas. The scan coordination is predetermined for sequential traversals of the useful scan sectors, microwave transmission through the several antennas being effected in the sequence of the scans. Each such transmission includes modulation not only in accordance with the antenna scan angle but also with the direction of movement in the scan sector. The aircraft receiver means detects the aircraft position by the detected modulation and/or reception timing of each directionally transmitted beam. General position is determinable from reception of the wide-angle (coarse) scanning beams. Precise guidance in the vicinity of a predetermined low-angle glide path is derivable from the beams transmitted through the narrow scan antennas.

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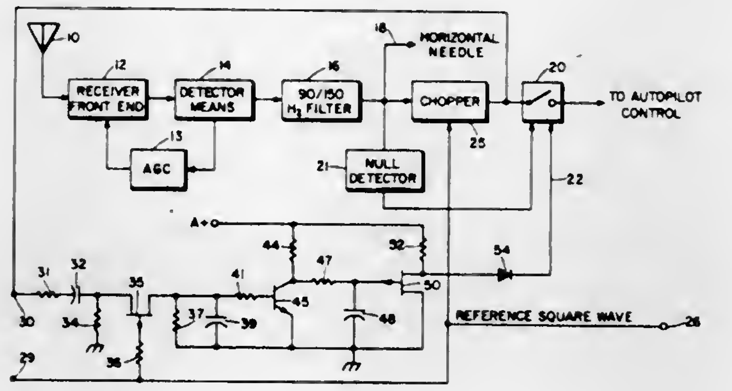
### 3,757,338
### GLIDE SLOPE LOCK-OUT NETWORK

**Henry F. Liebman, Lauderhill, Fla., assignor to The Bendix Corporation, Southfield, Mich.**
**Filed Feb. 5, 1971, Ser. No. 112,897**
**Int. Cl. G01s** ***1/18***
**U.S. Cl. 343—108 R** **3 Claims**



An improved glide slope receiver circuit prevents false acquisition of glide slope and insures that only a good and existing glide slope signal will arm the glide slope circuitry. A normally charged capacitor applies lock-out potential to the glide slope switching network. A reference square wave is applied to open a gate. Below glide slope signals are received out of phase with the reference and proceed through the gate to discharge the capacitor through a time constant network. Discharge of the capacitor releases the lock-out potential at the glide slope switching network, thus permitting the glide slope receiver to acquire the glide slope at a glide slope signal null.

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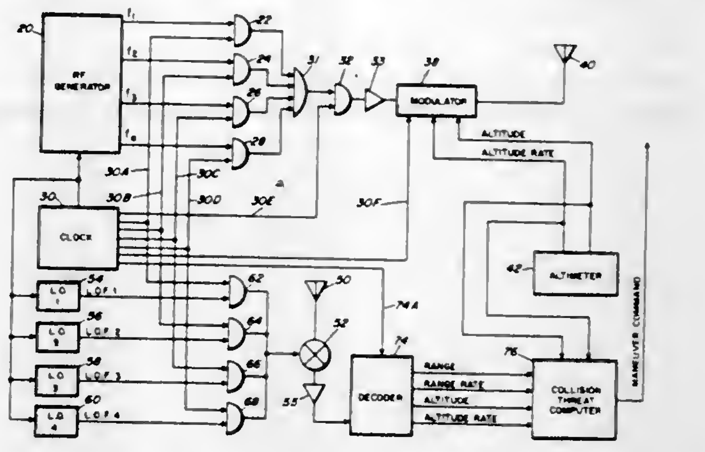
### 3,757,339
### FREQUENCY DIVERSITY TIME MULTIPLEX MEANS FOR INCREASING THE CAPACITY OF A COOPERATIVE COLLISION AVOIDANCE SYSTEM

**Wayne G. Shear, Pompano Beach, Fla., and Merlin E. Olmstead, Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.**
**Continuation of Ser. No. 694,239, Dec. 28, 1967, Pat. No. 3,551,884. This application Oct. 21, 1970, Ser. No. 82,645. The portion of the term of this patent subsequent to Dec. 29, 1987, has been disclaimed.**
**Int. Cl. G08g** ***5/04***
**U.S. Cl. 343—112 CA** **15 Claims**

A frequency diversity time multiplex means for increasing the capacity of a cooperative collision avoidance system wherein the carrier frequency of transmissions in adjacent time slots is varied stepwise on a predetermined schedule.



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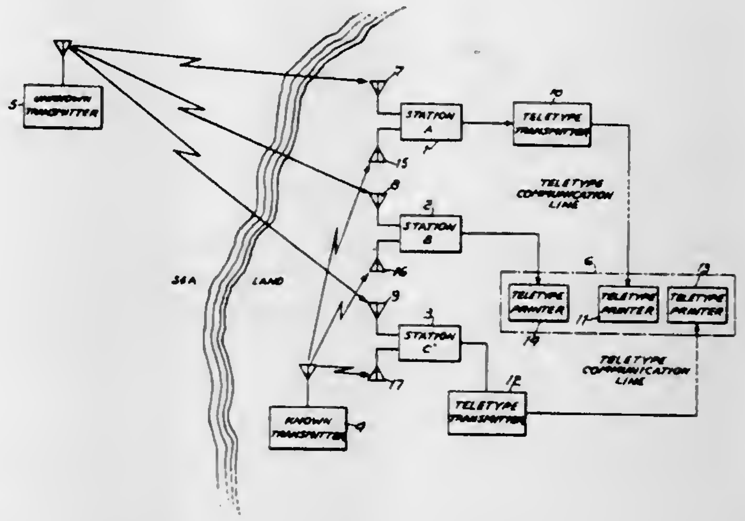
### 3,757,340
### RADIO LOCATION SYSTEM

**Mortimer Rogoff, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**
**Filed June 27, 1958, Ser. No. 745,222**
**Int. Cl. G01s** ***5/02***
**U.S. Cl. 343—112 R** **11 Claims**



1. A radio location system for locating the position of a radio transmitter comprising a plurality of spaced receiving stations and a comparing station, each receiving station having means for summing the arrival times of signals received from said radio transmitter, means for counting said received signals means for dividing said summation by said count to yield average arrival times and means for transmitting said average arrival times and said signal count to said comparing station.

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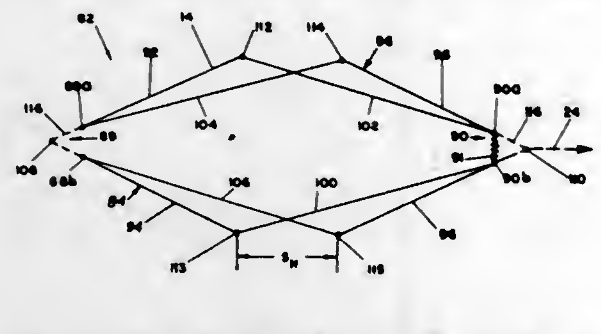
### 3,757,341
### LONG WIRE V-ANTENNA SYSTEM

**Arnold W. Gilbo, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.**
**Continuation of Ser. No. 665,111, Sept. 1, 1967, which is a continuation-in-part of Ser. No. 354,974, March 26, 1964, abandoned. This application May 12, 1969, Ser. No. 827,088**
**Int. Cl. H01q** ***11/06***
**U.S. Cl. 343—733** **17 Claims**

Long wire antenna arrays comprising combinations of V antennas have wide-band directive characteristics when the antennas are inclined above ground and spaced from each other to make side lobe nulls and peaks of the pattern of each V antenna substantially coincide with peaks and nulls, respectively, of the array factor. Pairs of V antennas can be connected end-to-end with their apexes at the extreme ends to form tandem-

V antennas, which can be arrayed with other tandem-V antennas. The arrayed antennas (V and tandem-V) are generally aligned laterally but offset from each other longitudinally and/or vertically.

Space-saving arrays of V and tandem-V antennas have corresponding apexes coincident in the lateral and longitudinal directions and have the intermediate connections of one antenna longitudinally spaced from the corresponding interconnections of the other antenna.



In other arrangements, V antennas having successively increasing apex angles are arrayed in circular sectors with all the V-antenna legs extending along radial paths from a common center.

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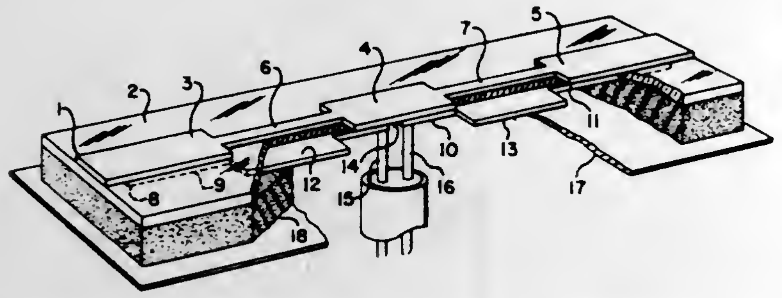
### 3,757,342
### SHEET ARRAY ANTENNA STRUCTURE

**Henry Jasik, Westbury; Robert Leonard Myslicki, Uniondale, and Ronald Myron Rudish, Commack, all of N.Y., assignors to Cutter-Hammer, Inc., Milwaukee, Wis.**

**Filed June 28, 1972, Ser. No. 267,161**

**Int. Cl. H01p** *3/08*

**U.S. Cl. 343—738** **5 Claims**



Arrays wherein the radiator elements act also as shield conductors of feed lines arranged to provide cophasal interconnection of the radiators without physical transpositions, particularly adaptable to fabrication by etched circuit techniques, as microstrip on the surfaces of a single dielectric substrate.

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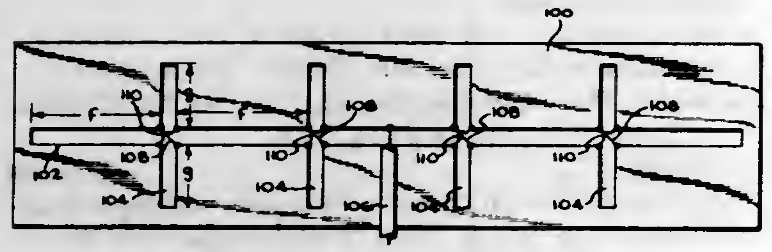
### 3,757,343
### SLOT ANTENNA ARRAY

**Richard D. Bogner, Roslyn, N.Y., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Oct. 12, 1970, Ser. No. 79,893**

**Int. Cl. H01q** *13/10*

**U.S. Cl. 343—770** **9 Claims**



An antenna, which may be used for signal transmission, comprises conductive means defining a slot therein having a longitudinal dimension. Various means may be provided in operative relation to the slot along said longitudinal dimension for causing all radiation from the antenna to be emitted only from sections of the slot of like field polarity without significantly affecting the phase velocity of the signals as they pass from the point of transmission line connection to all other points along the slot, so that the antenna functions as a plural slot array fed with only a single line.

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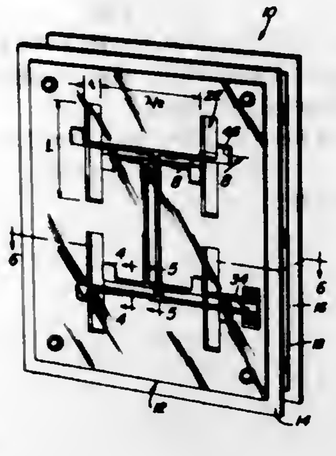
### 3,757,344
### SLOT ANTENNA HAVING CAPACITIVE COUPLING MEANS

**Eugene F. Pereda, 11621 Hughes Avenue, N.E., Albuquerque, N.M. 87112**

**Filed Sept. 3, 1971, Ser. No. 177,698**

**Int. Cl. H01q** *13/10*

**U.S. Cl. 343—770** **5 Claims**



An antenna of the type having a rectangular driven slot formed in a foil radiation plane is coupled at opposed longitudinal edges of the slot to signal feed lines by capacitors formed by plate enlargements at the ends of the feed lines dielectrically spaced from the foil in which the slot is formed.

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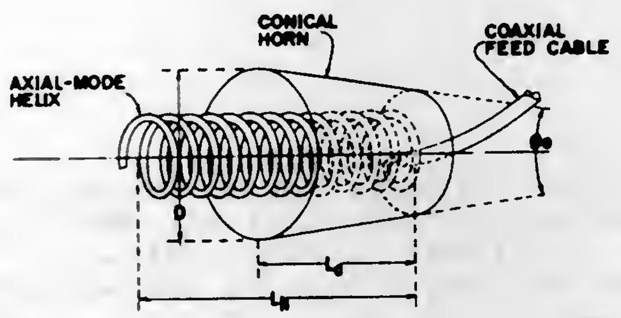
### 3,757,345
### SHIELDED END-FIRE ANTENNA

**Keith R. Carver, Lexington, Ky., assignor to The Ohio State University, Columbus, Ohio**

**Continuation of Ser. No. 694,139, Dec. 28, 1967, abandoned. This application Apr. 8, 1971, Ser. No. 132,570**

**Int. Cl. H01q** *1/36, 13/02*

**U.S. Cl. 343—786** **2 Claims**



The in ention is for an antenna comprising an end-fire radiator in a shielded structure. A specific case is an axial-mode helical antenna in a conical horn which produces a circularly polarized pencil beam with low sidelobe level over a 2-to-1 bandwidth with a gain in the order of four times that of a simple helix.

### 3,757,346
### PRINTING METHOD

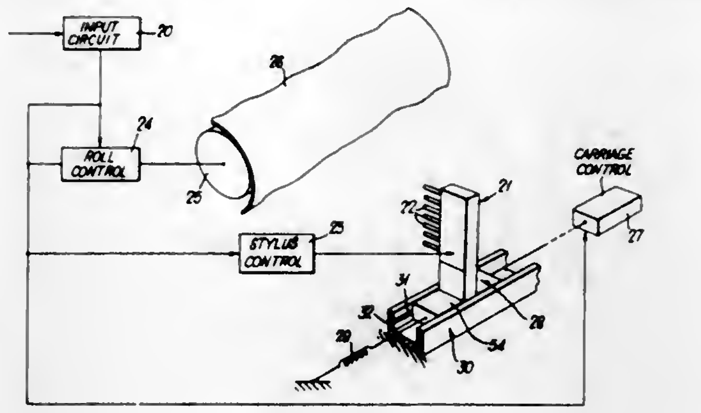
**Terence John Holland, Seaferd, England, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Oct. 5, 1972, Ser. No. 295,154**

**Claims priority, application Great Britain, Oct. 7, 1971, 46,705/71**

**Int. Cl. G06k** *15/10*

**U.S. Cl. 346—1** **3 Claims**



A method of printing mosaic characters which may be used in telegraphic printers, wherein a column of styli are employed twice at two different vertical locations to print a single column or partial column of dots. The number of individual styli and the actuators therefor are thus halved over those required in prior art stylus heads. The complexity and size of the styli and actuators make this a substantial advantage.

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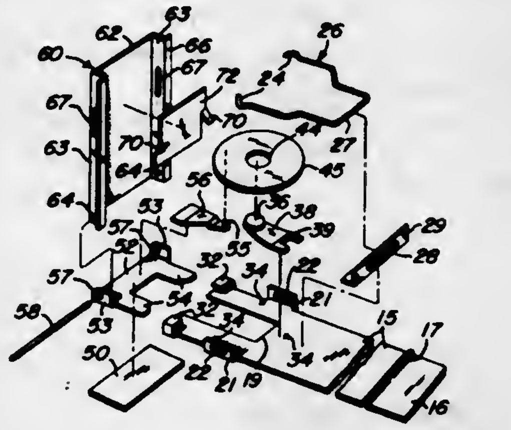
### 3,757,347
### INSTRUMENT FOR MECHANICALLY RECORDING STRAINS

**Thomas E. Endres, Kettering, Ohio, assignor to Technology Incorporated, Dayton, Ohio**

**Continuation-in-part of Ser. No. 169,927, Aug. 9, 1971. This application May 24, 1972, Ser. No. 256,344**

**Int. Cl. G01d** *15/02*

**U.S. Cl. 346—7** **18 Claims**



An annular recording target is rotatably supported by an element which is secured to a first base plate adapted to be attached to a member being monitored for strains. A recording stylus is supported in contact with the target by another spring element which is secured to a second base plate also adapted to be attached to the member being monitored. The stylus moves radially relative to the target in response to linear movement between the base plates, and an actuating mechanism rotates or indexes the target in response to relative linear movement between the base plates. The actuating mechanism includes diametrically opposed sets of inclined spring fingers which are supported by a cover member hinged to the second base plate and pivotable between an open position and a closed position overlying the target and the stylus. The cover member is retained in its closed position by a latch spring which also serves to retain the target on the support element until the cover member is closed. In a modification, the cover member is sealed to the base plates by a resilient foam material.

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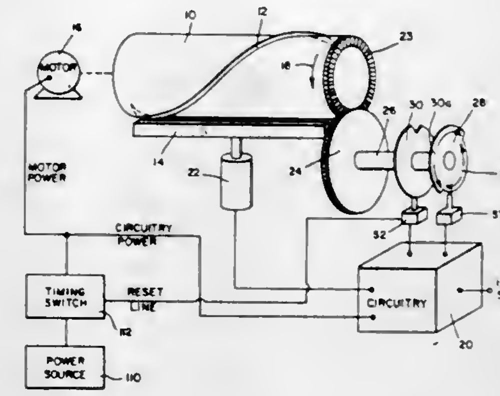
### 3,757,348
### MARKING SYSTEM FOR A STRIP CHART RECORDER

**Howard Sherman Hoopes, Bucks County, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.**

**Filed Aug. 11, 1972, Ser. No. 279,833**

**Int. Cl. G01d** *5/12*

**U.S. Cl. 346—33 R** **19 Claims**



In an analog recorder, a strip chart passes between a continuously rotating helical drum and a marking element extending parallel with the axis of drum rotation and perpendicular to the motion of the strip chart. During a first revolution of the drum, an analog input signal is applied to storage circuitry generating an output signal proportional to the magnitude of the input signal and the length of time the input signal is applied to the storage circuitry. During a second revolution of the drum, a reference signal is applied to the storage circuitry. When the output signal during the second revolution reaches a pre-determined level, the marking element is energized to produce a mark on the strip chart located at the junction of the helix on the drum and the marking element at that precise moment in time.

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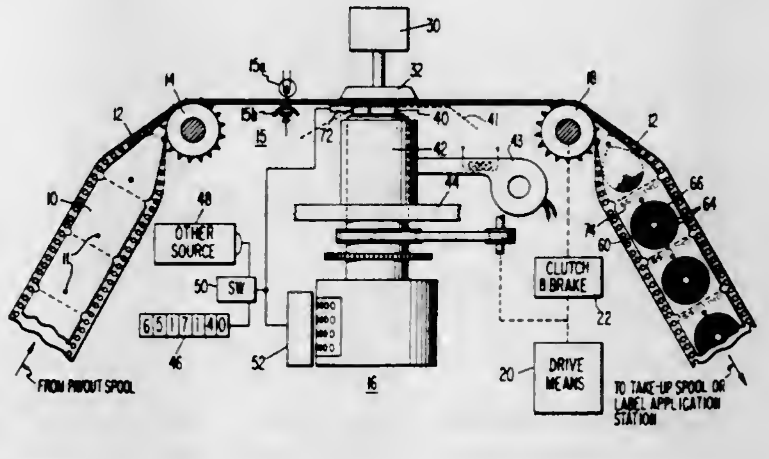
### 3,757,349
### LABEL WRITING APPARATUS

**Langdon Hollister Fulton, Wynnewood, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed Mar. 27, 1972, Ser. No. 238,241**

**Int. Cl. G01d** *1/00*

**U.S. Cl. 346—49** **8 Claims**



A rotatable assembly includes a plurality of writing devices which are selectably moveable into and out of writing position. As the assembly rotates, the writing devices in the writing position describe concentric patterns on a recording medium. The selective movement of the writing devices may be controlled by an array of sensing elements such as light sensors. These may be located on the assembly and may be selectively energized, as the assembly rotates, in response to a smaller stationary group of energy emitting elements located next to the assembly.

### 3,757,350
### RECORDING DEVICE HAVING SUPPLEMENTARY INFORMATION SCRIBING MEANS

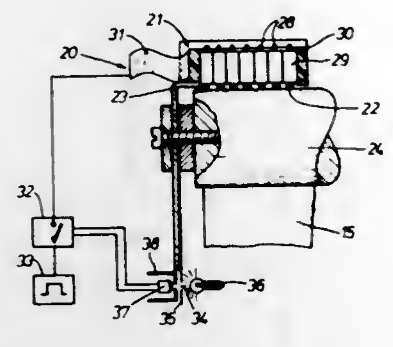
**Manfred Fliegner, Stuttgart; Peter Liermann, Moglingen, and Hans Bauerlen, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed June 12, 1972, Ser. No. 261,936**

**Claims priority, application Germany, June 11, 1971, P 21 28 861.9**

**Int. Cl. G01d** *9/28*

**U.S. Cl. 346—50** **20 Claims**



A record carrier is moved in a first direction and a recording electrode records on the advancing carrier information which represents measurements taken. A scribing head is located laterally spaced from the recording electrode and is movable in the direction of advancement of the carrier, being operable for producing on the advancing area indicia providing information of supplementary character. A method of recording this information is also disclosed.

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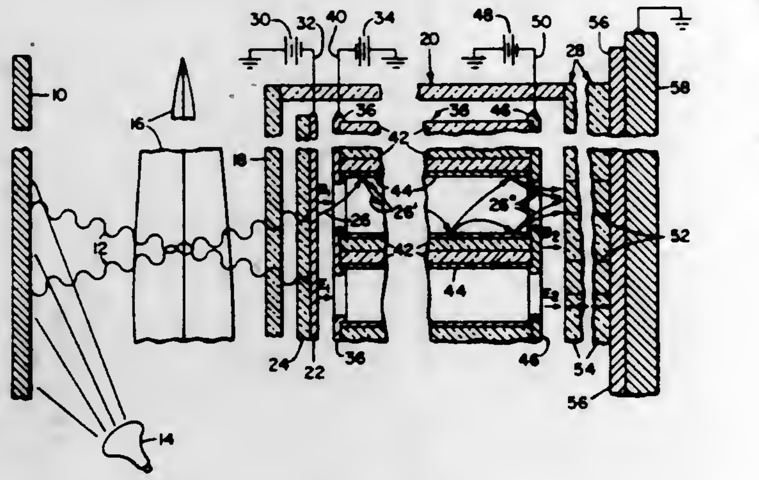
### 3,757,351
### HIGH SPEED ELECTOSTATIC PRINTING TUBE USING A MICROCHANNEL PLATE

**Robert A. Simms, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed Jan. 4, 1971, Ser. No. 103,487**

**Int. Cl. G01d** *15/06*; **G03g** *15/04*

**U.S. Cl. 346—74 P** **22 Claims**



Apparatus for converting a photon input image into an electron image, intensifying the electron image, and then depositing the electron image on a dielectric target medium as an electrostatic charge pattern which corresponds to the input image. The apparatus comprises means for providing a photon image, a photo-cathode to convert the photon image to an electron image, a microchannel plate which intercepts and provides electron multiplication of the electron image, and a multilead array which collects the multiplied electrons. The multiplied electrons are then transferred onto a dielectric target medium thereby disposing on the target an electrostatic charge pattern which corresponds to the input image and which may be developed and fixed by standard techniques.

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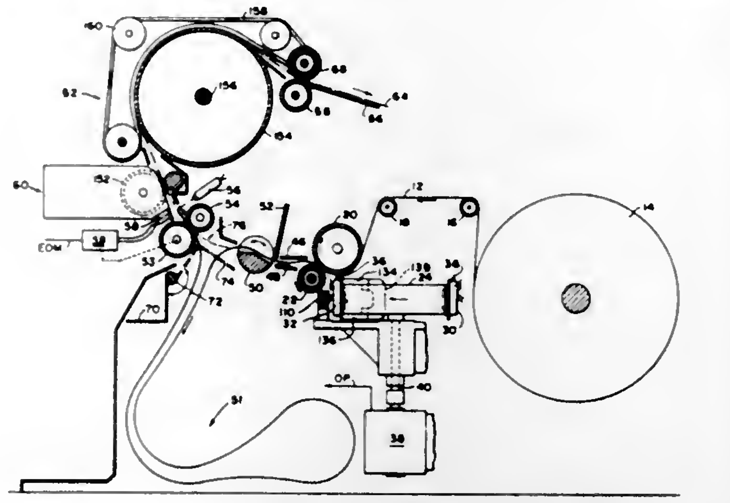
### 3,757,352
### DIGITALLY PULSED DIELECTRIC LINE SCAN RECORDER

**Richard D. Murray, Framingham; Peter F. Cone, Bedford; Allan B. Chertok, Cambridge, all of, and David Shaler, Madison, N.J., assignors to EG&G, Inc., Bedford, Mass.**

**Continuation of Ser. No. 18,669, March 11, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,872**

**Int. Cl. G03g** *15/22*

**U.S. Cl. 346—74 ES** **19 Claims**



A conductive paper web with a dielectric coating is fed over a writing roll where its surface receives image-defining electrostatic charges deposited by one of three pulsed line scan styluses bearing directly and successively upon it. The styluses are secured to an endless belt moving at constant velocity laterally of the web. The pulse stream for each line is accurately initiated as a function of stylus position and clocked from a rapid access storage by pulses mechanically synchronized with the belt drive. The latent image charged web is progressively festooned until a full sheet of video data is recorded, following which the web is severed and an image toning and fixing cycle is initiated to produce a hard copy.

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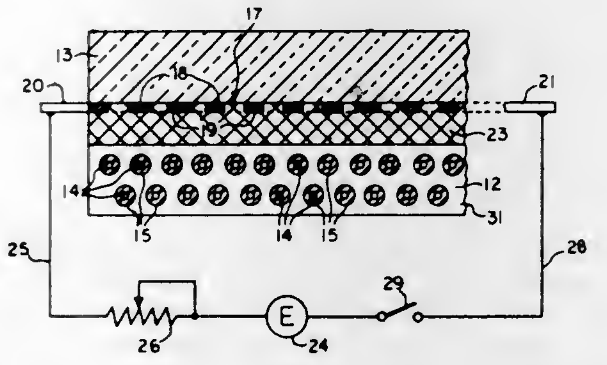
### 3,757,353
### INFORMATION RECORDING BY ARTICLE ORIENTATION

**Frederick J. Jeffers, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.**

**Filed Mar. 10, 1972, Ser. No. 233,650**

**Int. Cl. G01d** *15/12*

**U.S. Cl. 346—74 M** **25 Claims**



An information recording medium has magnetizable anisotropic particles located in a plurality of spaced first matrices which have a first state in which the particles are maintained substantially stationary and which are transformable into a second state in which the particles are mobile. A solid second matrix contains the first matrices for maintaining the first matrices in position while the first matrices are in the first state and while the first matrices are in the second state.

Information recording methods employing such media are also disclosed.

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# DESIGNS
## SEPTEMBER 4, 1973

### 228,264
### HARD SAFETY HAT

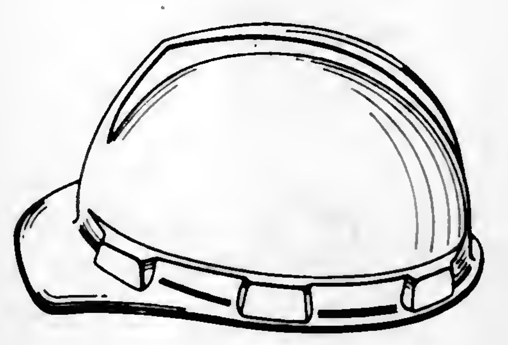
**Richard H. Potter, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

**Filed July 9, 1971, Ser. No. 161,414**

**Term of patent 14 years**

**Int. Cl. D2—***03*

**U.S. Cl. D2—231**



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### 228,265
### CLOG

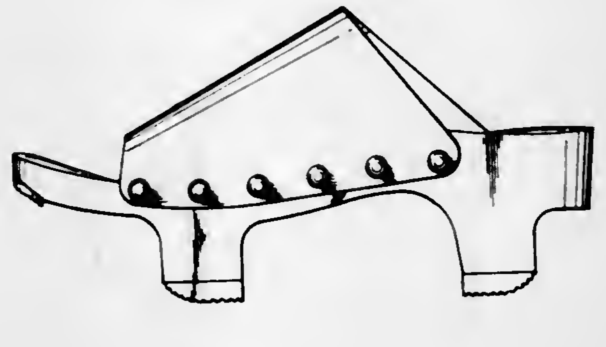
**Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.**

**Filed Mar. 22, 1972, Ser. No. 237,243**

**Term of patent 14 years**

**Int. Cl. D2—***04*

**U.S. Cl. D2—292**



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### 228,266
### CLOG

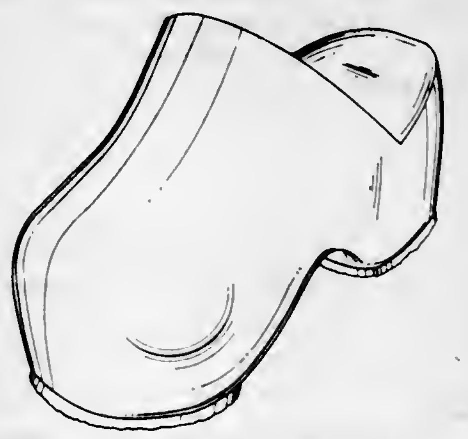
**Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.**

**Filed Apr. 12, 1972, Ser. No. 243,553**

**Term of patent 14 years**

**Int. Cl. D2—***04*

**U.S. Cl. D2—292**



### 228,267
### SHOE

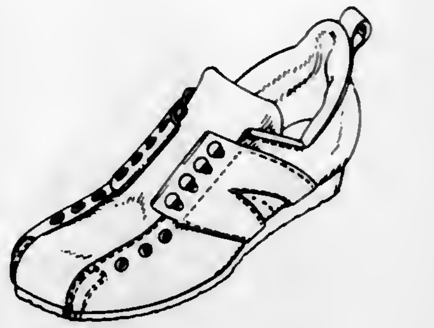
**Al Powers, Los Angeles, Calif., assignor to Nippon Rubber U.S.A. Corp., Los Angeles, Calif.**

**Filed Apr. 13, 1972, Ser. No. 243,929**

**Term of patent 14 years**

**Int. Cl. D2—***04*

**U.S. Cl. D2—309**



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### 228,268
### SWING

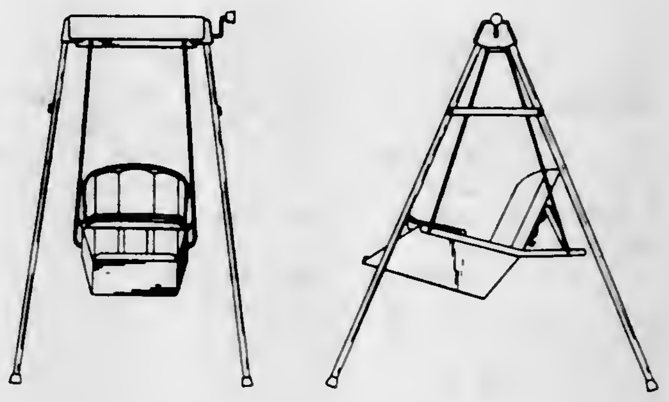
**David Saint, Elverson, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.**

**Filed Oct. 18, 1971, Ser. No. 190,427**

**Term of patent 14 years**

**Int. Cl. D6—***01*

**U.S. Cl. D6—10**



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### 228,269
### WATER BED FRAME

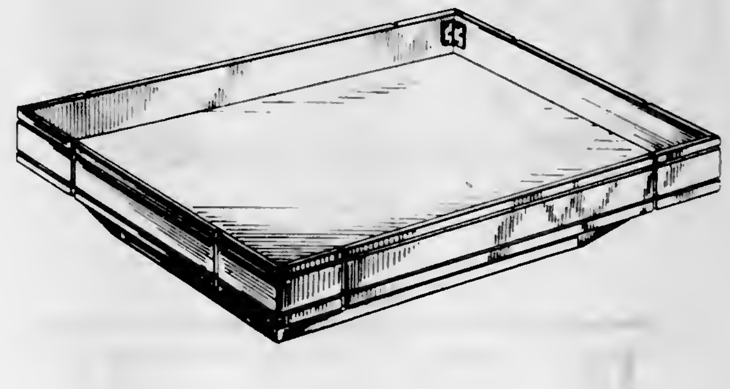
**David L. Berkel, 1540 Post Road, Stamford, Conn.**

**Filed Mar. 10, 1972, Ser. No. 233,864**

**Term of patent 14 years**

**Int. Cl. D6—***01*

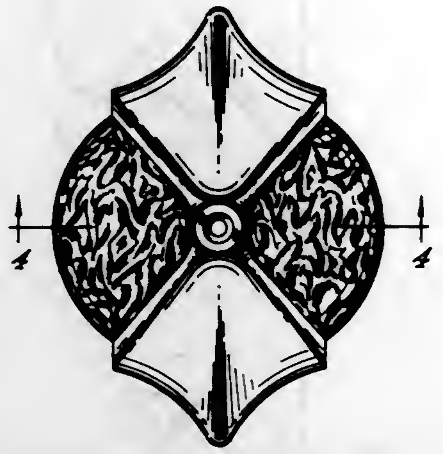
**U.S. Cl. D6—84**



### 228,270
### SUPPORTING POST

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,870
Term of patent 14 years
Int. Cl. D6—*99*

U.S. Cl. D6—86



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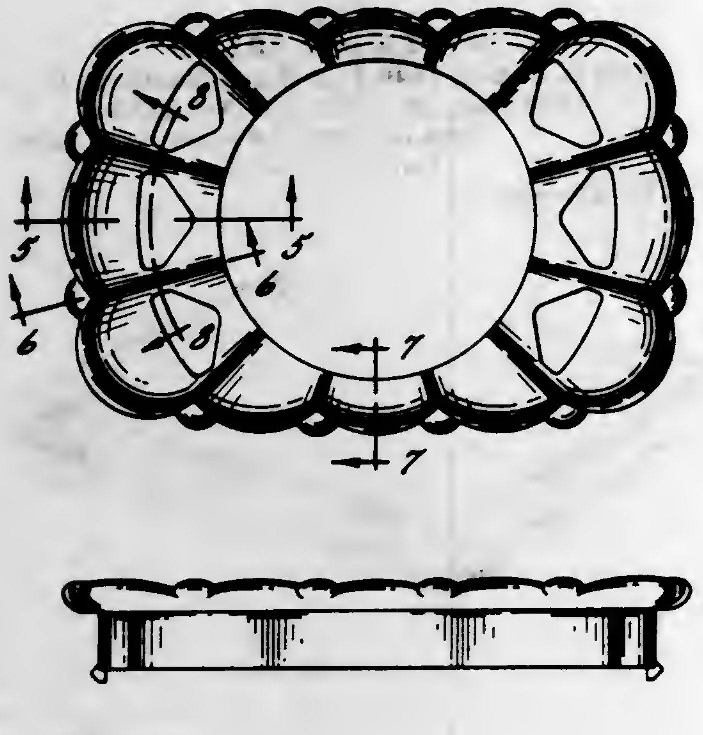
### 228,271
### COMBINED TOOTHBRUSH AND TUMBLER HOLDER

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Original design application June 1, 1971, Ser. No. 149,117, now design Patent No. 225,947, dated Jan. 16, 1973. Divided and this application Mar. 15, 1972, Ser. No. 235,094
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—92



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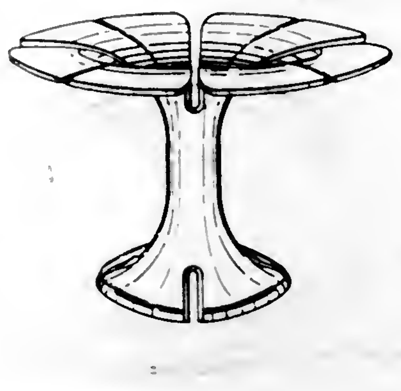
### 228,272
### FURNITURE PEDESTAL

Stanley H. Hutchinson, Sierra Madre, Calif., assignor to David E. Vaugh, Owosso, Mich.
Filed Mar. 22, 1971, Ser. No. 127,087
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—196



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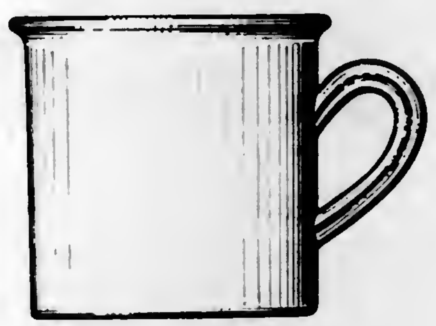
### 228,273
### CUP

Niels Refsgaard, Isboj Per Taastrup, Denmark, assignor to Dansk Designs Ltd., Mount Kisco, N.Y.
Filed Sept. 29, 1971, Ser. No. 184,971
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—9



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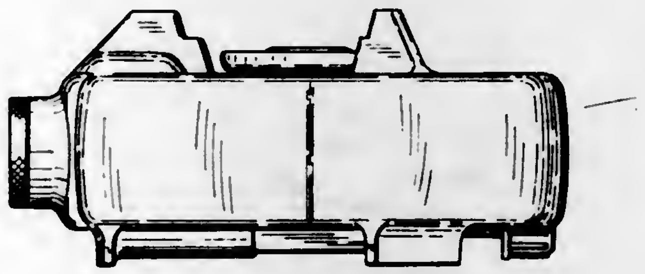
### 228,274
### PORTABLE VAPORIZED LIQUID FUEL COOKING STOVE

John F. Cross, Denver, Colo., assignor to United Bank of Denver National Association, Denver, Colo.
Filed Feb. 18, 1972, Ser. No. 227,700
Term of patent 14 years
Int. Cl. D7—*02*

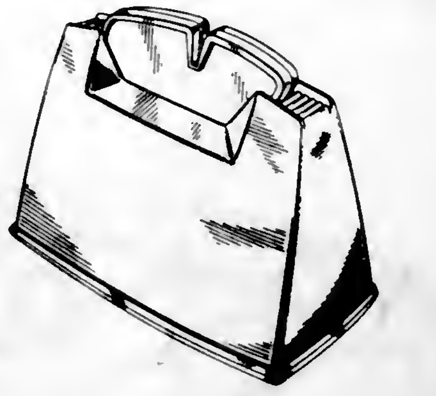
U.S. Cl. D7—110



### 228,275
### SELECTABLE KNIFE SHARPENER

Garry Kieves, 264 Rosalyn Road, Winnipeg 13, Manitoba, Canada
Filed Aug. 18, 1971, Ser. No. 172,961
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—93



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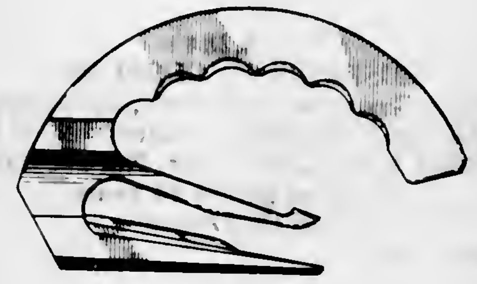
### 228,276
### TAPE CUTTING DEVICE

Charles A. Bolton, 440 Westridge Road, Crete, Nebr. 68333
Filed Nov. 22, 1971, Ser. No. 201,253
Term of patent 14 years
Int. Cl. D8—*03*

U.S. Cl. D8—98



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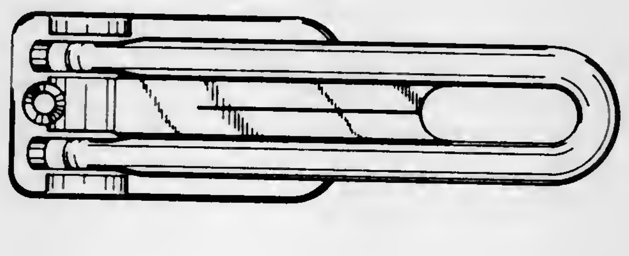
### 228,277
### HASP

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.
Filed May 8, 1972, Ser. No. 251,575
Term of patent 14 years
Int. Cl. D8—*07*

U.S. Cl. D8—124



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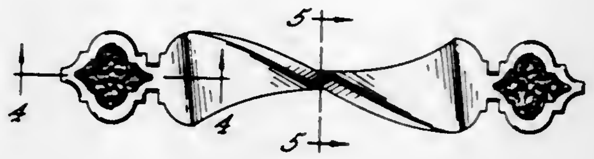
### 228,278
### PULL

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,919
Term of patent 14 years
Int. Cl. D8—*07*

U.S. Cl. D8—172



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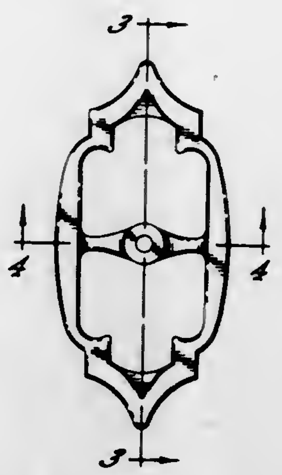
### 228,279
### ESCUTCHEON PLATE

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,869
Term of patent 14 years
Int. Cl. D8—*09*

U.S. Cl. D8—179



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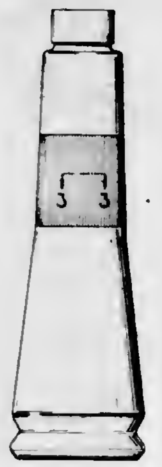
### 228,280
### BOTTLE

Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 3, 1972, Ser. No. 231,783
Term of patent 14 years
Int. Cl. D9—*01*

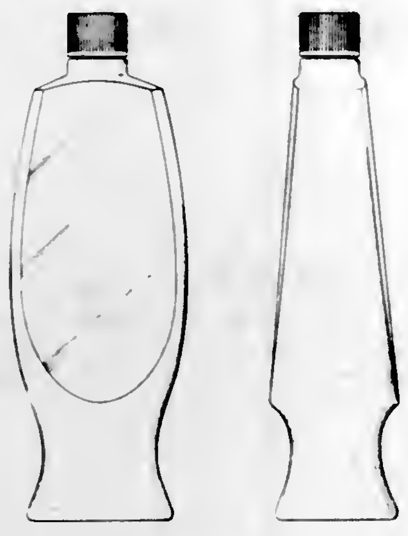
U.S. Cl. D9—125



### 228,281
### COMBINED BOTTLE AND CAP

Harold Clarence Hoffman, Naperville, Ill., assignor to
The Gillette Company, Boston, Mass.
Filed Feb. 7, 1972, Ser. No. 224,411
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—144



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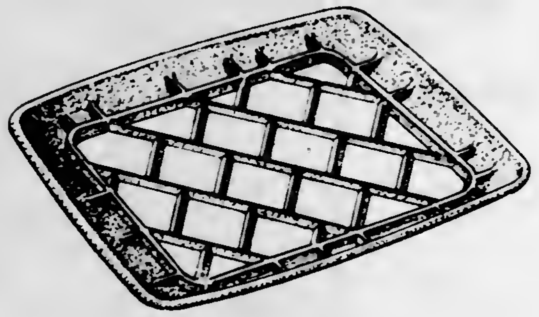
### 228,282
### MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.

Continuation-in-part of design application Ser. No. 110,371, Jan. 27, 1971. This application Mar. 29, 1972, Ser. No. 239,409

Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—219



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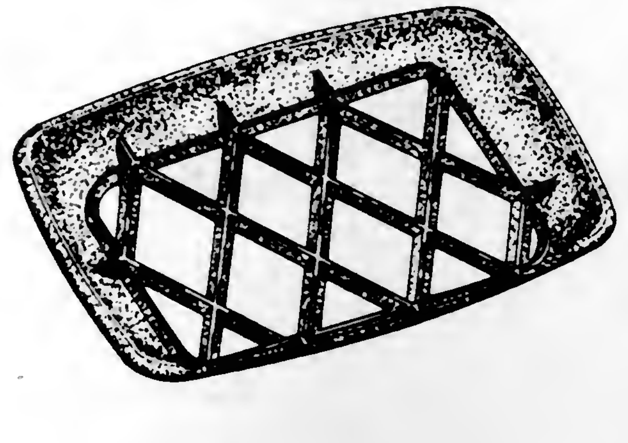
### 228,283
### MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.

Continuation-in-part of design application Ser. No. 110,365, Jan. 27, 1971. This application May 3, 1972, Ser. No. 250,106

Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—219



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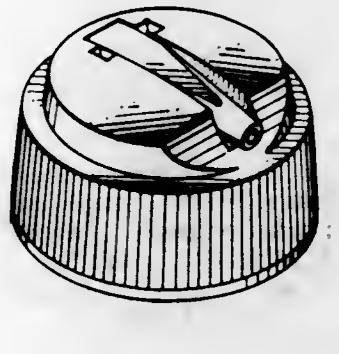
### 228,284
### DISPENSING CLOSURE

Bronislaus Gryncewicz, Lincoln, R.I., assignor to
Polytop Corporation, Slatersville, R.I.
Filed Apr. 13, 1972, Ser. No. 243,919
Term of patent 14 years
Int. Cl. D9—*99*

U.S. Cl. D9—275



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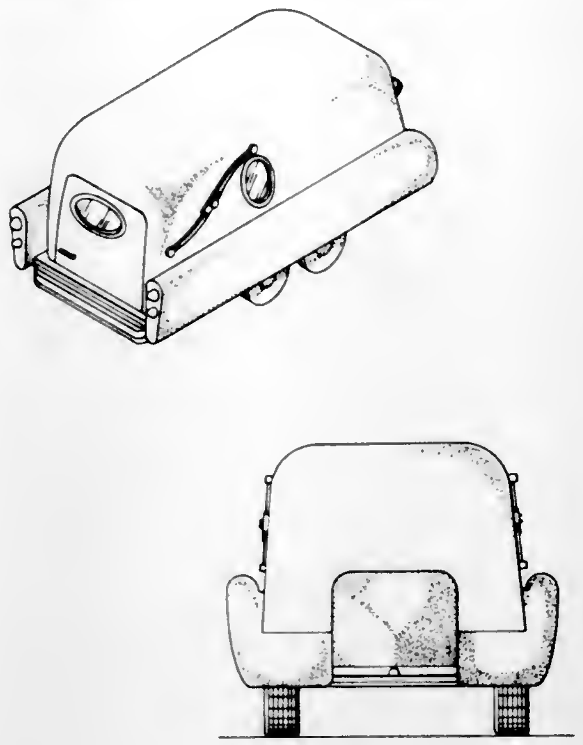
### 228,285
### HEARSE TRAILER

Alvin E. Gottschalk, 3840 S. Seneca,
Wichita, Kans. 67217
Filed Apr. 7, 1972, Ser. No. 242,276
Term of patent 14 years
Int. Cl. D12—*10*

U.S. Cl. D14—17



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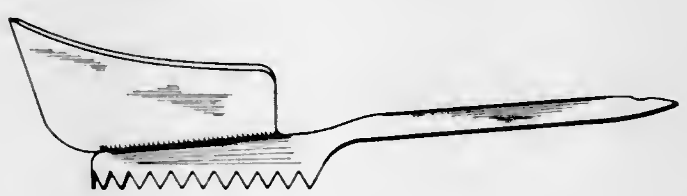
### 228,286
### FISH CLEANING TOOL

Harold H. Gilbert, 5102 Capitol Ave.,
Omaha, Nebr. 68132
Filed Feb. 1, 1972, Ser. No. 222,711
Term of patent 14 years
Int. Cl. D22—*05*

U.S. Cl. D22—31



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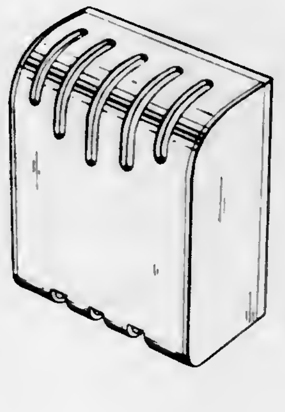
### 228,287
### ELECTRIC VAPORIZER

Hal F. Costello, Toledo, Ohio, assignor to
Coswell Products, Inc., Toledo, Ohio
Filed Feb. 8, 1972, Ser. No. 224,650
Term of patent 14 years
Int. Cl. D23—*99*

U.S. Cl. D23—148



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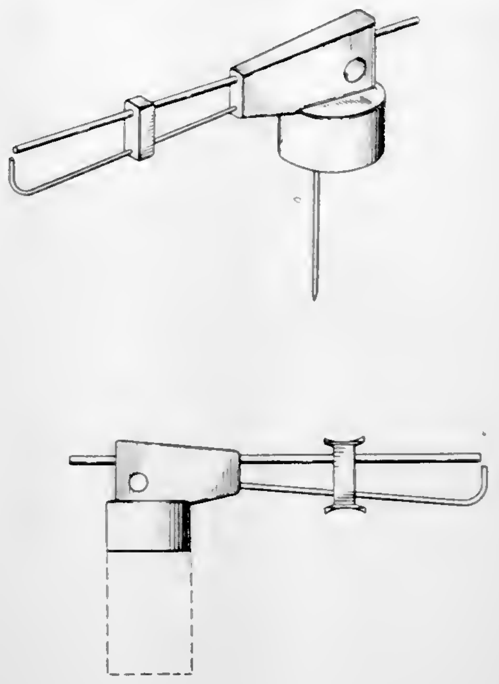
### 228,288
### ASPIRATOR UNIT

Anthony J. Nastus, 79 Loretta St.,
New Brunswick, N.J. 08902
Filed Jan. 18, 1971, Ser. No. 107,611
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—1 D



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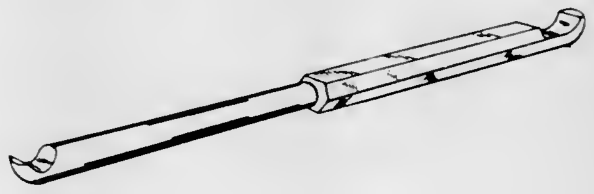
### 228,289
### DENTAL SPOON

William B. Dragan, R.F.D. Burr St.,
Fairfield, Conn. 06430
Filed Apr. 5, 1971, Ser. No. 131,566
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—1 D



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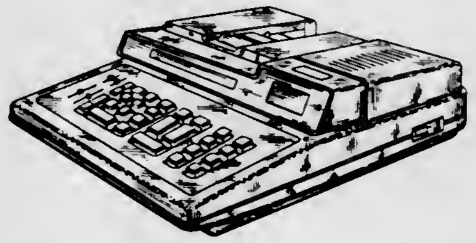
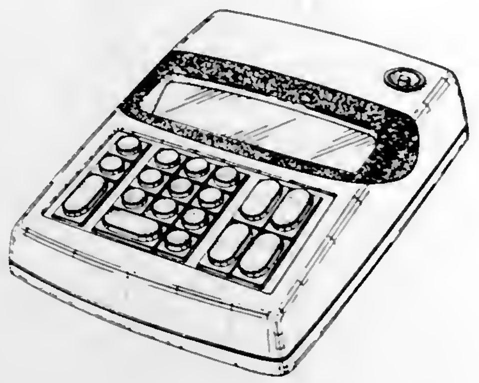
### 228,290
### ELECTRONIC CALCULATING MACHINE

Sigetoshi Hazama, Osaka, Japan, assignor to
Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 12, 1972, Ser. No. 217,426
Claims priority, application Japan July 19, 1971
Term of patent 14 years
Int. Cl. D14—*02*

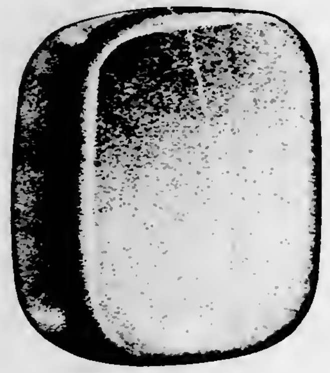
U.S. Cl. D26—5 C



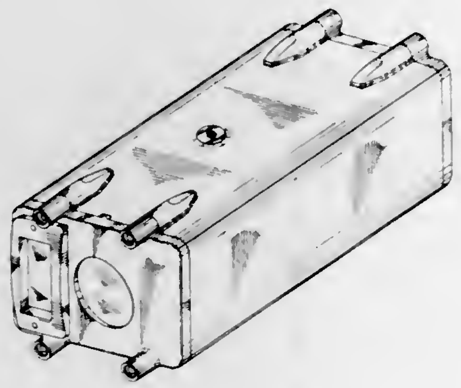
228,291
### CALCULATING MACHINE
Hisashi Maeda, No. 24, Imazato Yakushido, Nagaokacho, Otokuni-gun, Kyoto-fu, Japan, and Hironori Yoshikawa, No. 7–40, Higashikouri Shimmachi, Hirakatashi, Osaka-fu, Japan
Filed June 20, 1972, Ser. No. 264,572
Claims priority, application Japan Dec. 21, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



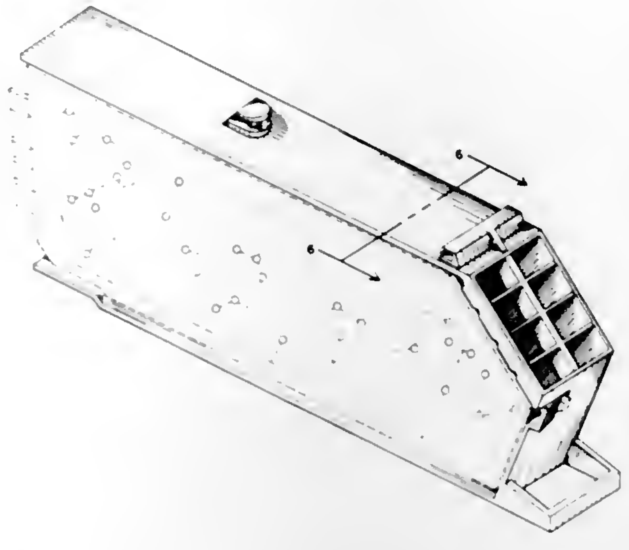
228,292
### HOUSING FOR TELEPHONE APPARATUS
Donald Michael Genaro, Haworth, and Daniel Wescoat Tyler, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed May 21, 1971, Ser. No. 145,988
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. 26—14 A

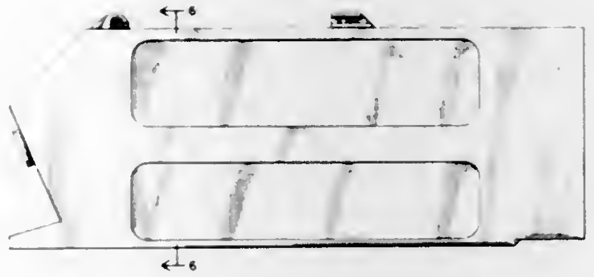


228,293
### DEVICE FOR INTERNALLY PHOTOGRAPHING PIPE
Benjamin P. Fisco, Jr., East Cleveland, Ohio, assignor to AAA Pipe Cleaning Corporation, Cleveland, Ohio
Filed Apr. 19, 1972, Ser. No. 245,683
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D26—14 G

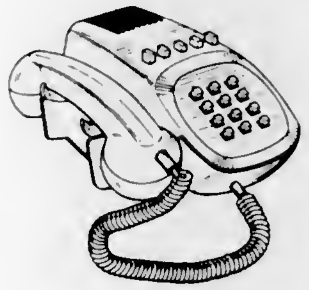


228,294
### SUBSCRIBER CARRIER CHANNEL UNIT COVER OR SIMILAR ARTICLE
Gene L. Stumpf, Belmont, and James R. Stewart, San Jose, Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed June 5, 1972, Ser. No. 260,065
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A





228,295
### TELEPHONE OR SIMILAR ARTICLE
Nobuji Nakamura, Tokyo, Japan, assignor to Kabushikikaisha Taikodenki Seisakusho, Tokyo, Japan
Filed July 21, 1972, Ser. No. 273,953
Claims priority, application Japan Feb. 5, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



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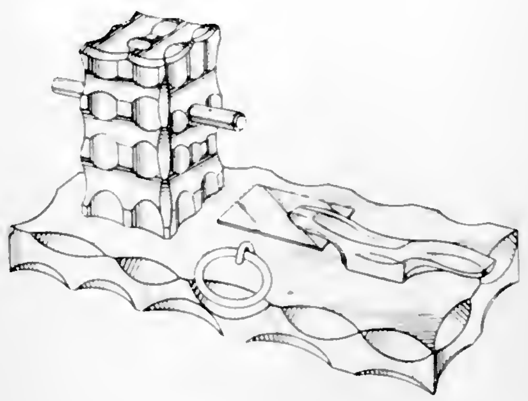
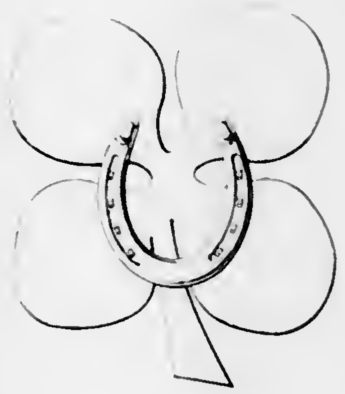
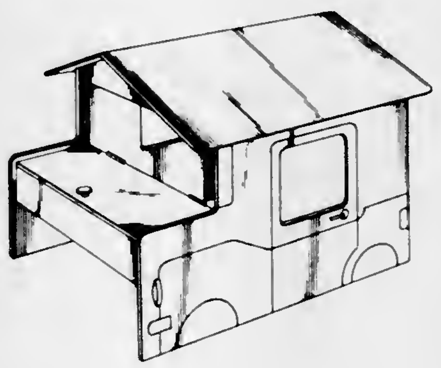
228,296
### TABLE ORNAMENT
David L. Mengler, 626 Algona Ave., Elgin, Ill. 60120
Filed Mar. 2, 1971, Ser. No. 120,381
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



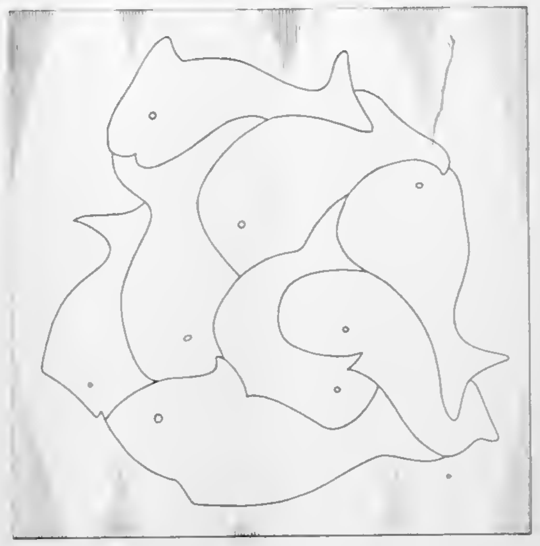
228,297
### PLAQUE
Katherine J. Mull, Bentonville, Ariz.
(6806 Spring Forest Drive, San Antonio, Tex. 78249)
Filed Oct. 26, 1971, Ser. No. 192,697
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



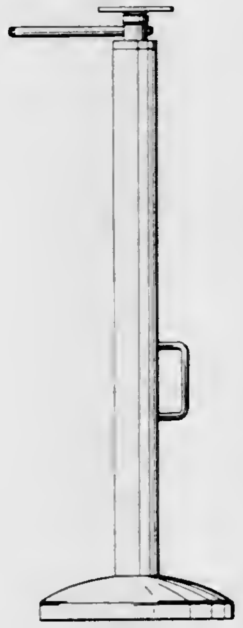
228,298
### COMBINED CHILDREN'S PLAYHOUSE AND TOY BOX
Clifford J. Moore, Wheaton, Md., assignor to Misterhouse Toys, Inc., Wheaton, Md.
Filed Nov. 23, 1971, Ser. No. 201,604
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AC



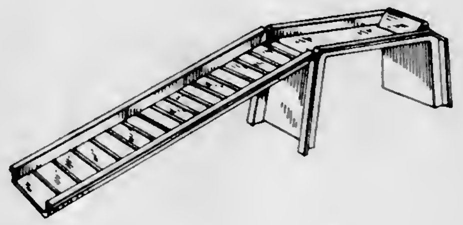
228,299
### JIGSAW PUZZLE
Margaret Jones, Methuen, Mass., assignor to Voltek, Inc., Burlington, Mass.
Filed June 1, 1972, Ser. No. 258,935
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



228,300
### TRAILER STABILIZING JACK
Robert B. Kearns, Shaker Heights, Ohio, assignor to Production Experts, Inc., Cleveland, Ohio
Filed Mar. 20, 1972, Ser. No. 236,576
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1 D



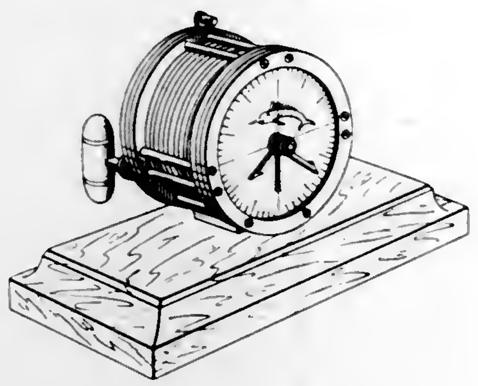
228,301
### VEHICLE RAMP
Philip L. Lundman, Milwaukee, Wis., assignor to Petersen Industries, Inc., Pewaukee, Wis.
Filed May 24, 1972, Ser. No. 256,626
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1 C



**228,302**

### CLOCK

Clarence E. Ingram and Louis T. Warriner, both of 777 N. Park Ave., Apt. 3, Pomona, Calif. 91767
Filed Sept. 30, 1971, Ser. No. 185,481
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 D



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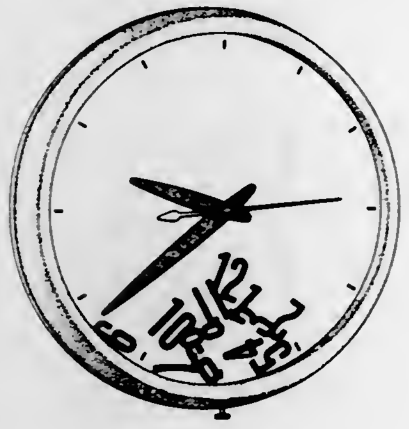
**228,303**

### CLOCK

Ronald B. Monroe, 532 W. 111th St., New York, N.Y. 10025
Filed May 8, 1972, Ser. No. 251,562
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



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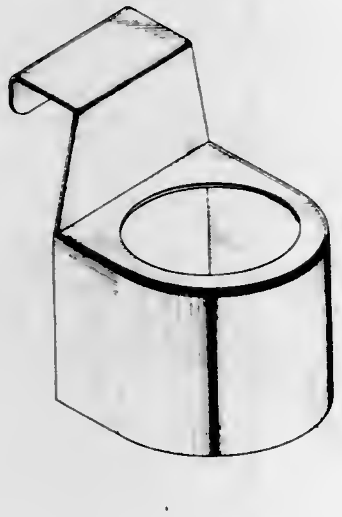
**228,304**

### CUP HOLDER OR THE LIKE

Wilford J. Lerew, 317 23rd Ave. N. 55411, and Kenneth T. Peckels, 1939 Fillmore St. NE. 55418, both of Minneapolis, Minn.
Filed Mar. 8, 1971, Ser. No. 122,275
Term of patent 3½ years
Int. Cl. D7—*99*
U.S. Cl. D44—21 A



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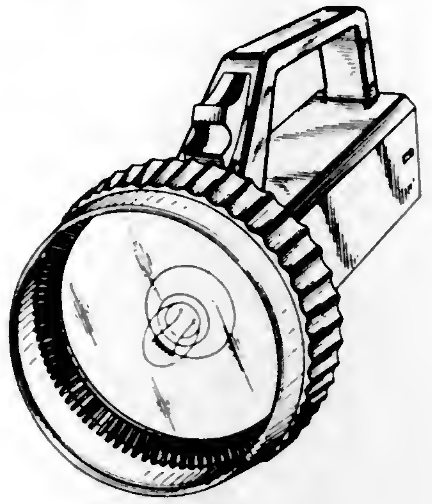
**228,305**

### LANTERN

Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed July 3, 1972, Ser. No. 268,577
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



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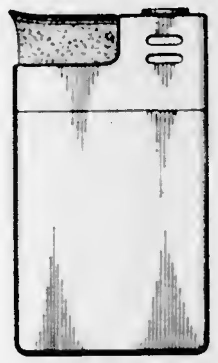
**228,306**

### POCKET LIGHTER

Dieter Rams, Konigstein, and Floran Seiffert, Glashutten, Taunus, Germany, assignors to Braun A.G., Frankfurt am Main, Germany
Filed Aug. 19, 1971, Ser. No. 173,357
Claims priority, application Germany Mar. 24, 1971
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



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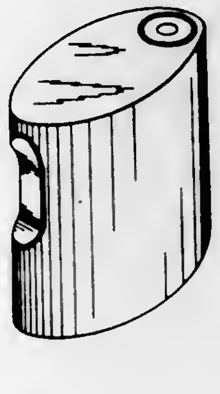
**228,307**

### TABLE LIGHTER

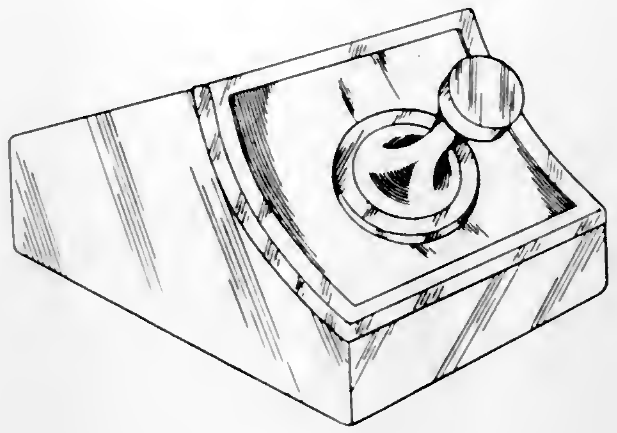
Dieter Rams, Konigstein, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of abandoned design applications Ser. No. 21,804, and Ser. No. 21,870, both dated Mar. 9, 1970. This application Aug. 19, 1971, Ser. No. 173,358
Claims priority, application Germany Sept. 11, 1969
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



**228,308**

### CIGARETTE LIGHTER

Samuel J. Koch, % Korex Industries, 821 Malcolm Road, Burlingame, Calif. 94010
Filed Dec. 23, 1971, Ser. No. 211,838
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



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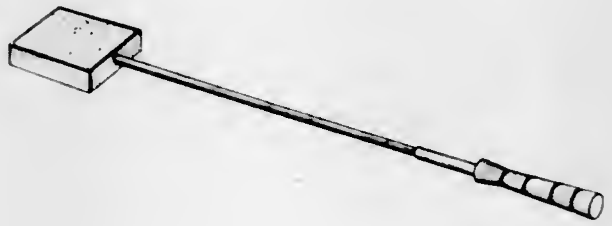
**228,309**

### CHARCOAL IGNITER FOR BARBEQUES

William Bruce Delamater, 9114 Valley View, Whittier, Calif. 90603
Filed Jan. 4, 1972, Ser. No. 215,449
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—27 C



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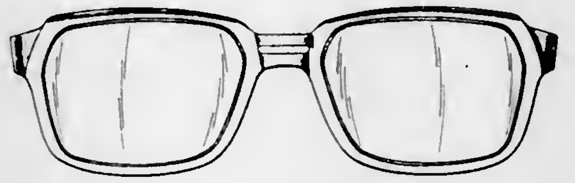
**228,310**

### PAIR OF SPECTACLES

Robert L. Shaw, Wilbraham, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 22, 1972, Ser. No. 237,231
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



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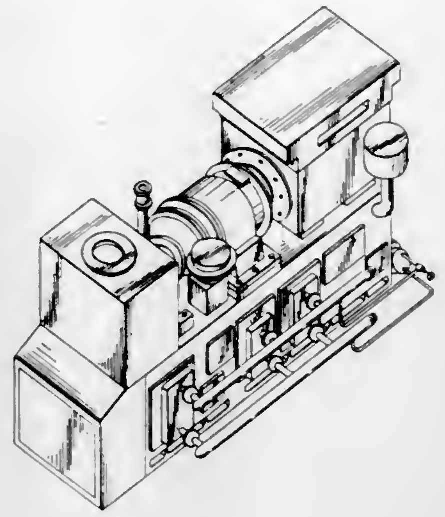
**228,311**

### COMBINED MULTI-STAGE CENTRIFUGAL COMPRESSOR AND MULTI-COOLER HOUSING FOR COMPRESSING AIR AND OTHER GASES

Zoltan P. Nyeste, Grand Island, Peter G. Wendt, Williamsville, and John K. Kilbane, East Aurora, N.Y., assignors to Worthington-CEI, Incorporated, Buffalo, N.Y.
Filed Apr. 24, 1972, Ser. No. 247,229
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. 65—1 A



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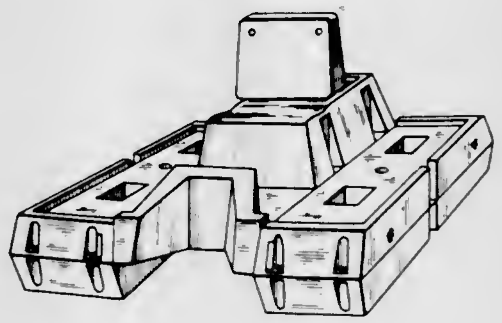
**228,312**

### PORTABLE BOAT

Jack M. Harmon, Ardmore, Okla., assignor to JacRaft, Inc., Ardmore, Okla.
Filed June 30, 1971, Ser. No. 158,659
Term of patent 7 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q



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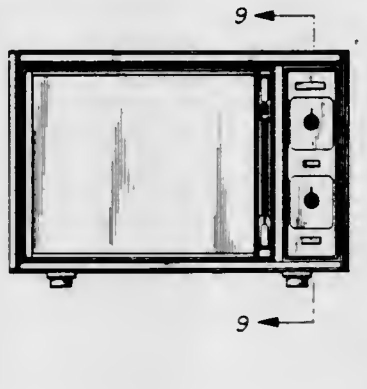
**228,313**

### ELECTRONIC COOKING RANGE

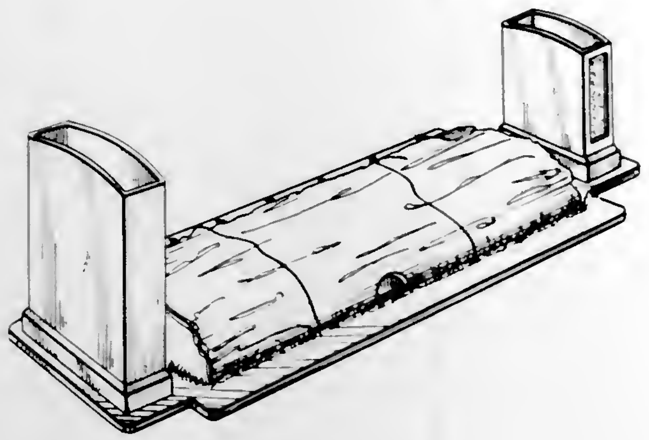
Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 29, 1972, Ser. No. 230,552
Claims priority, application Japan Oct. 5, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



### 228,314
### COMBINED CIGARETTE HOLDER, MATCH HOLDER AND ASH TRAY OR SIMILAR ARTICLE

Charles E. Arnold, P.O. Box 4104,
Louisville, Ky. 40204
Filed Dec. 30, 1970, Ser. No. 26,698
Term of patent 14 years
Int. Cl. D27—*03*

U.S. Cl. D85—2 P



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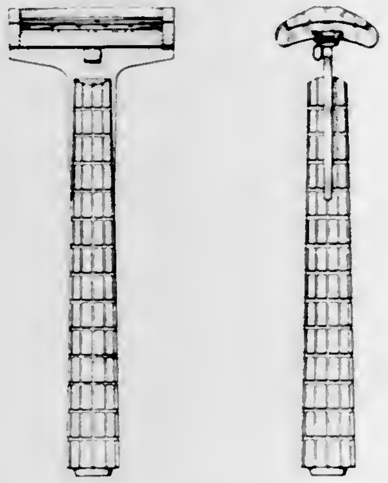
### 228,315
### SAFETY RAZOR

Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Sept. 1, 1972, Ser. No. 285,384
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3 A



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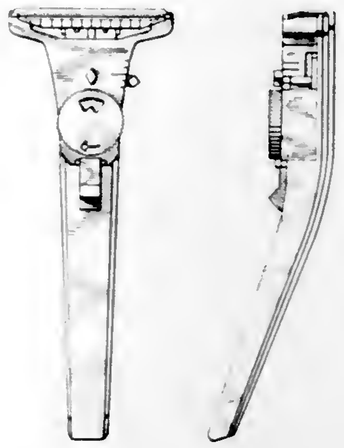
### 228,316
### SAFETY RAZOR

Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 24, 1972, Ser. No. 283,448
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3 A



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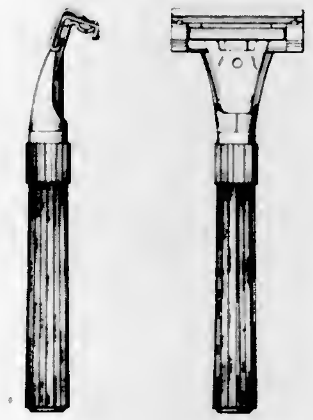
### 228,317
### SAFETY RAZOR

Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Sept. 11, 1972, Ser. No. 288,188
Term of patent 14 years
Int. Cl. 28—*03*

U.S. Cl. D95—3 A



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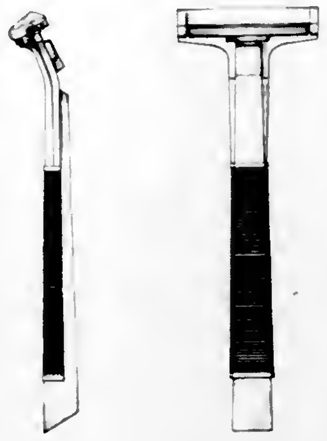
### SAFETY RAZOR

Martin Glaberson, Stratford, and George L. Schick, Trumbull, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Oct. 3, 1972, Ser. No. 294,751
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3 A



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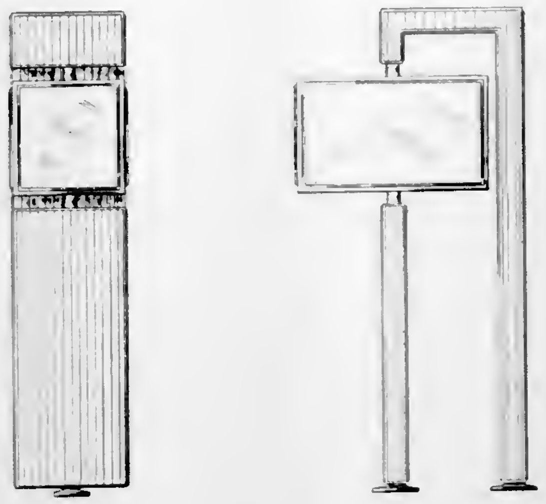
### ADVERTISING SIGN

Charles H. Winecoff, New York, N.Y., assignor to Burger Chef Systems, Inc., Indianapolis, Ind.
Filed Dec. 27, 1971, Ser. No. 212,875
Term of patent 14 years
Int. Cl. D20—*03*

U.S. Cl. D96—12 R



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- Adams, William John Campbell. Bagpipes. 3,756,112, Cl. 84-380.000.
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  - Pollitt, Gary L., 3,757,302.
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- Ahn, Junghi; Dewitt, David; Johnson, William S.; and Kleinfelder, Walter J., to International Business Machines Corporation. Proton enhanced diffusion methods. 3,756,862, Cl. 148-1.500.
- Ahroni, Lee: *See—*
  - Jeh, Chi-Sun, 3,756,046.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Hida, Takashi; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 3,756,209.
  - Kuwana, Kazutaka, 3,756,662.
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- Akeyoshi, Kazuyuki: *See—*
  - Furuuchi, Shigemasa; Akeyoshi, Kazuyuki; Okajima, Yasuharu; and Gotch, Yoshio, 3,756,196.
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  - Heth, Sherman C.; Akgulian, Sahag C.; Hoffmeyer, Knud H.; and Meyer, Dean A., 3,756,042.
- Aksu, Akin. Circuit board testing equipment. 3,757,219, Cl. 324-158.00f.
- Aktieselskabet Grindstedvaerket: *See—*
  - Nedenskov, Poul, 3,757,006.
- Akzona Incorporated: *See—*
  - Betty, Roy J., Jr.; and Nemeth, Harold C., 3,756,835.
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  - Draper, Ralph M., 3,756,532.
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  - Smrcka, Joseph G., 3,755,920.
- Aldinger, Ulrich, to Bosch, Robert, G.m.b.H. Pump pressure and flow volume regulating apparatus. 3,756,749, Cl. 417-220.000.
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  - Bloom, William M., 3,756,868.
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  - Markowitz, Jerome, 3,757,022.
- Allied Chemical Corporation: *See—*
  - Lewis, Donald J.; and Bishop, Robert J., 3,756,621.
  - Rauke, Donald G., 3,756,620.
  - Reiter, William M.; and Reventas, Algirdas A., 3,757,001.
- Allied Steel Products Corporation: *See—*
  - Dolhaine, Alfred W. J., 3,755,976.
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  - Hashizume, Tsuneharu; Sasaki, Michihiko; Tatuno, Masanori; Demachi, Toshiaki; Hatakoshi, Osaku; Miyauchi, Shigeru; and Amemiya, Susuma, 3,757,309.
- American Aniline Products, Inc.: *See—*
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  - Phillips, Roger, 3,756,782.
- American Hydrotherm Corporation: *See—*
  - Shah, Rajat R.; and Hasselriis, Floyd, 3,756,312.
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- Adams, William John Campbell. Bagpipes. 3,756,112, Cl. 84-380.000.
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Armstrong, Lowell; and Van Waes, Edward A., to Pillsbury Company, The. Single stage cutting system for fiber cans. 3,756,128, Cl. 93-80.000.
Arnemann, Gerhard. Apparatus for loading sacks onto pallets. 3,756,427, Cl. 214-60.00k.
Arnold, John E.: *See—*
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Asahi Glass Co., Ltd.: *See—*
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Auberry, Horace R.; and Liebscher, Anton, to Ro-Search, Incorporated. Shoes. 3,755,928, Cl. 36-14.000.
Aubry, Fernand Albert Joseph. Applicator for paste-like or semi-liquid products. 3,756,731, Cl. 401-122.000.
Aurich, Christoph W., to Gaston County Dyeing Machine Company. Honeycomb roll. 3,755,869, Cl. 29-121.00r.
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Bailey, Wesley T. Apparatus for processing resin. 3,756,518, Cl. 241-65.000.
Bajek, Walter A.; and McLaughlin, James H., to Universal Oil Products Company. Splitter column overhead. 3,756,921, Cl. 196-132.000.
Baker, Alan Anthony, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty, Government of the. Blade or vane for a gas turbine engine. 3,756,746, Cl. 416-230.000.
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Bartle, Peter, to Williams, Shelby, Industries, Inc. Stacking chair glider attachment. 3,755,853, Cl. 16-42.000.
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Beall, George H., to Corning Glass Works. Strontium fluormica glass-ceramics. 3,756,838, Cl. 106-39.600.
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Beers, Howard L. Apparatus for forming dowel-type joints. 3,756,635, Cl. 287-127.00r.
Beffa, Fabio, to Geigy, J. R., AG. Composite chromium-complex azo dyes. 3,756,771, Cl. 8-26.000.
Beliveau, Thomas J., to Du Pont de Nemours, E. I., and Company. Chloride $Ti0_2$ pigments suited for high solids, low viscosity slurries. 3,756,841, Cl. 106-300.000.
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Berger, Robert L., to Western Electric Company, Incorporated. Temperature compensated field effect transistor crystal oscillator. 3,757,245, Cl. 331-66.000.
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Bickford, John H., to Veeder Industries Inc. Fluid dispensing apparatus computing and/or preselecting system. 3,756,630, Cl. 235-151.340.
Bidiwala, Bash S., to Philco-Ford Corporation. Refrigerant drier. 3,755,994, Cl. 55-387.000.
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Bloom, William M., to Allegheny Ludlum Industries, Inc. Method of annealing steel coils moving through a furnace. 3,756,868, Cl. 148-112.000.
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Bobry, Stuart. Garment securer. 3,755,822, Cl. 2-271.000.
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Bogner, Richard D., to Ampex Corporation. Slot antenna array. 3,857,343, Cl. 343-770.000.
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Bonham, David C. Method of manufacturing a hairpiece. 3,756,879, Cl. 156-72.000.
Bonsky, Elmer C.; and Curtis, Lawrence A., to T.A.D. Avanti, Inc. Telephone answering instrument and system. 3,757,049, Cl. 179-6.00e.
Bontempi, Paolo. Keyboard musical instrument, more particularly for use as a toy. 3,756,114, Cl. 84-453.000.
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Bopp, Warren G.; and Nagel, William S., to Eaton Corporation. Hydrokinetic coupling. 3,756,028, Cl. 60-353.000.
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Boroky, Joseph Stephen; and Metcalfe, Kenneth Archibald. Chargeless method of producing image on photoconductive surface. 3,756,813, Cl. 96-1.0ly.
Borrelli, Nicholas F.; Kapron, Felix P.; and Keck, Donald B., to Corning Glass Works. Optical waveguide light modulator. 3,756,690, Cl. 350-151.000.
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  Espenschied, Helmut; Kadelbach, Volker; Rothfuss, Georg; Scheyhing, Hans; Mattes, Bernhard; Burkel, Rainer; Erben, Ernst; Hupfeld, Karl-Otto; and Weyer, Herbert, 3,756,358.
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  Wolfgramm, Hans-Jurgen, 3,756,274.
Bossen, David A.; Anderson, Eugene R.; and Dahlin, Erik B. Basis weight gauging apparatus, system and method. 3,757,122, Cl. 250-358.000.
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  Bickel, Hans; Mueller, Johannes; Bosshardt, Rolf; Peter, Heinrich; and Fechtig, Bruno, 3,757,013.
Bourgeois, Joseph F., to Amana Refrigeration, Inc. Trash compactor ram. 3,756,150, Cl. 100-229.00a.
Boussuges, Pierre, to Societe Pour l'Etude et de Developpement des Turbines Hydrauliques (Neyrpic-SFAC). Turbine-pumps. 3,756,739, Cl. 415-161.000.
Bowman-Shaw, George Neville, to Lancer Bass Limited. Side loader vehicles. 3,756,437, Cl. 214-75.00g.
Box, Theodor M. Integrally molded plastic louver frame and assembly thereof. 3,756,138, Cl. 98-40.0vm.
Boydman, Hyman P.: *See—*
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Braikeviich, Michael, to English Electric Company Limited, The. Axial water flow machines. 3,756,744, Cl. 416-189.000.
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Bray, Richard L. Snow skis for vehicle wheels. 3,756,615, Cl. 280-14.000.
Breiling, Hans Georg. Vaporizer ventilating line. 3,756,577, Cl. 261-63.000.
Breitschaft, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning. Process for the dyeing of polyethylene terephthalate granules. 3,756,981, Cl. 260-40.00r.
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Brewer, Howard E.; and McCorkindale, Kim E., to California Computer Products, Inc. Error correction for incremental plotter. 3,757,188, Cl. 318-632.000.
Brewer, Joseph A. Surveillance and crime-deterrent system. 3,757,039, Cl. 178-6.800.
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Briggs, Aubrey C., to Dravo Corporation. Material handling apparatus. 3,756,375, Cl. 198-88.000.
Brinkel, Hans; Derleth, Helmut; and Fischer, Hermann, to Kali-Chemie Aktiengesellschaft. Graphite-copper (II)-chloride intercalation carrier-catalyst combination. 3,756,962, Cl. 252-441.000.
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Brown, Lewis Judson; Lippy, Joseph Edmund, Jr.; and Payne, Herbert James, to Pennwalt Corporation. Method of preparing tin-free, chromium coated steel. 3,756,926, Cl. 204-29.000.
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- Burdick, Eugene A. Multi-purpose cutting tool 030/181.000. 3,755,894, Cl. .
- Burdick, Robert E., to Rolair Systems Inc. Replaceable air cushion device. 3,756,342, Cl. 180-124.000.
- Burgdorf, Jochen, to ITT Industries, Inc. Multi-circuit brake system. 3,756,660, Cl. 303-6.00r.
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- Busian, Vincent V., to General Electric Company. Method and means of assembling a dyamoelectric machine. 3,755,889, Cl. 29-596.000.
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- Caffrey, Terence, to Davey Compressor Company. Speed control for engine driven fluid compressor. 3,756,747, Cl. 417-34.000.
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- Campbell, Paul J. Machine tool tracer. 3,756,122, Cl. 90-62.00a.
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- Carbine, Joseph C., to Burroughs Corporation. Sheet feeding apparatus. 3,756,589, Cl. 271-51.000.
- Carbone, Frank J. Fingertip and fingerpad toughening and callusing device. 3,756,223, Cl. 128-26.000.
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- Carella, Richard F. Archery arrow vane. 3,756,602, Cl. 273-106.50c.
- Cargile, Neil H., Jr. Jack-up dredge. 3,755,932, Cl. 37-67.000.
- Carman, Robert L., Jr.; Steinmetz, Lloyd L.; and Johnson, Bertram C. Jr., to United States of America, Atomic Energy Commission. Q-switched-mode-locked laser oscillator. 3,757,249, Cl. 331-94.500.
- Carmichael, Charles J.; and Franklin, Albert G. Water disposal caisson and method of using same. 3,756,409, Cl. 210-104.000.
- Carmichael, Donald C.; and Chambers, Douglas L., to Battelle Memorial Institute. Coating apparatus. 3,756,193, Cl. 118-49.100.
- Carson, Ralph C., Jr.; and Lyons, James A., Jr., to United States of America, Navy. Aircrew escape system. 3,756,546, Cl. 244-138.00r.
- Carswell, John D., Jr.; and Gorman, George W., said Carswell assor. to Gow-Mac Instrument Company and said Gorman assor. to United States of America, Health, Education and Welfare. Gas analyzer apparatus. 3,756,069, Cl. 73-27.00r.
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- Chadwick, Ray F.; Kurko, Michael C.; and Corriveau, Joseph A., to Bendix Corporation, The. Nozzle for producing fluid cutting jet. 3,756,106, Cl. 83-177.000.
- Chalmers, Brian John; and Magureanu, Razvan Matei, to National Research Development Corporation. Synchronous electrical machines. 3,757,182, Cl. 318-186.000.
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- Chang, Catherine Teh-Lin, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions containing cyclic cis-a-dicarbonyl compounds and selected sensitizers. 3,756,827, Cl. 96-86.00p.
- Chang, Jaw-Kang: *See*—
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- Charpentier, Robert R., to High Voltage Engineering Corporation. Resistor assembly. 3,757,152, Cl. 313-63.000.
- Chartet, Andre, to Societe Anonyme des Usines Chausson. Furnace for the brazing in continue of parts made of aluminum mainly of heat exchangers moved in a continue motion. 3,756,489, Cl. 228-43.000.
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- Chittenden, Richard Marion; and Wilson, Earl David, to Abbot Laboratories. Irrigation solution administration system and reservoir therefor. 3,756,237, Cl. 128-227.000.
- Chittick, Donald E., 1/2 to Bales, William E. Slide projector specially adapted for self-teaching. 3,755,919, Cl. 35-9.00a.
- Christen, Jack P., to Outers Laboratories Inc. Archery bow with bow string silencer. 3,756,214, Cl. 124-23.000.
- Christensen, Elmer, to Black Clawson Company, The. Vibratory screening with a peripheral support base. 3,756,407, Cl. 209-332.000.
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- Clark, Reuben B., IV, to Fox Products Company. Animal operated watering device. 3,756,199, Cl. 119-72.500.
- Clark, Wilbur R., to Landis Tool Company, mesne. Diameter brake and locking device for a rotatable shaft. 3,756,354, Cl. 188-77.00r.
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  - Verhoeckx, Nicholaas Alphonsus Maria; Van Der Hoff, Herman; Vos, Cornelius Henricus Johannes; and Coenders, Johannes Wilhelmus, 3,757,044.
- Cogar Corporation: *See*—
  - Brown, William A.; Krolikowski, Walter F.; Maude, Roger F.; Reuter, James L.; and Sandhu, Jagtar S., 3,756,876.
  - Dhaka, Vir A., 3,757,127.
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- Cohen, Philip. Hand graphic symbol marking device. 3,756,153, Cl. 101-368.000.
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- Coleman, Martin R., to Lear Siegler, Inc. Trignometric segment discriminator. 3,757,100, Cl. 235-197.000.
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  - Fornoff, Louis Leonard; Collins, John Joseph; and Madigan, Charles Matthew, 3,755,989.
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  - Adey, John S., Jr.; Collins, John T.; and Cino, Peter M., 3,756,382.
- Collins Radio Company: *See*—
  - Riethmeier, William C., 3,756,087.
  - Sather, Delaine C., 3,757,261.
  - Stover, Harris A., 3,757,226.
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  - Santarelli, Salvatore P.; and Colombini, John, 3,756,548.
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  - Curtis, George F.; and Tatro, Henry J., Jr., 3,756,119.
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- Comandini, Robert August, to Johns-Manville Corporation. Method of solvating butyl rubbers. 3,756,978, Cl. 260-33.60a.
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  - Fernandes, John Henry, 3,756,761.
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- Commercial Electronics, Inc.: *See*—
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- Commissariat a l'Energie Atomique: *See*—
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  - Salvi, Antoine; and Chiron, Guy, 3,757,203.
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- Compagnie des Ateliers et Forges de la Loire (St. Chamond, Firminy, St. Etienne, Jacob Holtzer): *See*—
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- Compagnie des Compteurs: *See*—
  - Duwez, Raymond, 3,756,461.
- Compagnie Generale d'Automatisme: *See*—
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  - Simoudis, John C., 3,755,887.
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- Cote, Philip J. Disposable, vacuum cleaner bag. 3,755,993, Cl. 55-370.000.
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- Coult, John H. Friction-driven rotary cleaning apparatus having plural operating modes. 3,755,845, Cl. 15-79.000.
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- Coutin, Pierre Fernano, to Akan, R., & Cie. Aircraft load ejector. 3,756,545, Cl. 244-137.00r.
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  - Meyer, Gilbert R., 3,756,853.
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- Crane, Clayton H., to Robbins Company, The. Disc type center cutter for a boring machine. 3,756,332, Cl. 175-364.000.
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- Croslin, Michael E.; and Blackman, Carl R., to Grummann Data Systems Corporation. Dispensing apparatus having piston and cylinder dispensing assembly with stroke adjusting means. 3,756,292, Cl. 141-160.000.
- Croston, William Gordon, to International Technical Assistance. Container. 3,756,681, Cl. 312-351.000.
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- Cruthers, Ronald F., to United States of America, Navy. Method of making micro-fuses on a thin film circuitry panel. 3,756,887, Cl. 156-3.000.
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- Curtze, Edward W.: *See—*
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- Cutta, John J.; and Paget, Frederick W., to GTE Sylvania Incorporated. Sodium vapor lamp having improved starting means. 3,757,159, Cl. 315-47.000.
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  - Kraemer, Erich Henry, 3,757,238.
- Cvacho, Daniel S.; and Partyka, Edward S., to Reynolds Metals Company. Apparatus for and method of trimming containers. 3,756,103, Cl. 82-101.00r.
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- Dahl, Rolf, to Continental Tapes, Incorporated. Method of making high temperature polyurethane pressure-sensitive adhesive tape. 3,756,848, Cl. 117-122.00p.
- Dahlin, Erik B.: *See—*
  - Bossen, David A.; Anderson, Eugene R.; and Dahlin, Erik B., 3,757,122.
- Dahms, Harald. Method of determining $SO_2$ concentration. 3,756,923, Cl. 204-1.00t.
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- D'Amico, Paul M.; and Higgs, Roland W., to Honeywell Inc. Underwater acoustic device. 3,756,345, Cl. 181-33.00g.
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- Danielson, Arthur C., to Uniroyal, Inc. Solid vulcanizable rubber composition. 3,756,969, Cl. 260-3.000.
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- Davis, George B., Jr. Pushrod inclosure. 3,756,207, Cl. 123-90.380.
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  - Thaler, Sherwood S.; and Daynard, Richard F., 3,756,246.
- De Bakey, Michael E., to United States of America, Health, Education and Welfare. Artificial heart consisting of a biventricular pump with control mechanisms for total replacement of human heart. 3,755,825, Cl. 3-1.000.
- De Boer, Cyrus M. Electrolytic cleaning and corrosion-removal process. 3,756,931, Cl. 204-141.500.
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- De Marco, Vincent J. Multichannel transmission line structure. 3,757,253, Cl. 333-1.000.
- De Torre, Robert P., to PPG Industries, Inc. Method of removing trim from patterns. 3,756,482, Cl. 225-2.000.
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- De Young, Simon Arden, to Karg Machine Products, Inc. Spool holder drive mechanism. 3,756,117, Cl. 87-29.000.
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- Dean, Charles W. Means for storing aircraft. 3,756,419, Cl. 211-13.000.
- Dearborn, Henry Alexander. Snowshoe. 3,755,927, Cl. 36-2.5ab.
- Deaton, Irving Fransen, to CPC International Inc. Process for the production of non-hazing starch conversion syrups. 3,756,919, Cl. 195-31.00r.
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- DeLange, Robert Gerardus; Zijderveld, Jacobus Antonius; and Van Kuppevelt, Gerardus Antonius, to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer. Method for preparing hard metal based ontitanium carbide and wear resistant objects manufactured from this hard metal. 3,756,787, Cl. 29-182.800.
- DeLaughter, Henry L. Carpet and rug cleaning implement. 3,756,728, Cl. 401-140.000.
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- Deltech, Inc.: *See—*
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- Dickert, Joseph J., Jr., to Mobil Oil Corporation. Phosphorus derivatives of 4,4-disuccinimidobiphenyloxide and lubricant compositions containing same. 3,756,951, Cl. 252-46.700.
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- Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethane polyelectrolytes and process for preparing same. 3,756,992, Cl. 260-77.50q.
- Dieterich, Frank L. Potentiometer contact springs. 3,755,892, Cl. 29-630.0es.
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- Dillard, Paul A., to TRW Inc. Folding thin-film deployable panel structure. 3,756,858, Cl. 136-89.000.
- Dillman, Richard F.; Larsen, James L.; and Iverdoch, Richard N., to Hewlett Packard Company. High frequency filter apparatus. 3,757,258, Cl. 333-73.000.
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- Dixon, Harold G., to Sperry Rand Corporation. Digital filter. 3,757,233, Cl. 328-138.000.
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- Dohse, Ruthard, to Elektro-Thermit G.m.b.H. Closing device for rail gaps in the deflecting and frog areas. 3,757,113, Cl. 246-468.000.
- Dolby, Dale P., to Ampex Corporation. Reel-demountable cassette and reels for magnetic tape. 3,756,329, Cl. 179-100.20z.
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- Dolhaine, Alfred W. J., to Allied Steel Products Corporation. Prestructured building and panels therefor. 3,755,976, Cl. 52-93.000.
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- Donahue, William R., Jr., to Eaton Corporation. Dispenser assembly. 3,756,473, Cl. 222-129.200.
- Donaldson, George R., to Universal Oil Products Company. Simultaneous production of aromatic hydrocarbons and isobutanes. 3,756,940, Cl. 208-66.000.
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  - Anderson, Carl D., 3,756,626.
- Donner, Fredric Arno; and Kronholm, Tapio, to Oy Tampella AB. Stabilization fins for projectiles. 3,756,539, Cl. 244-3.240.
- Dorsey, Ted C. Wire wrap tool. 3,755,872, Cl. 29-203.00h.
- Dorst, Hans-Rudiger, to VEB Qualitats- und Edelstahl-Kombinat. Differential thermoelements. 3,757,206, Cl. 324-32.000.
- Dory, Jacques, to Realisations Ultrasoniques. Process and apparatus for analyzing materials by means of ultrasonic pulses, employing the transfer function characteristic of each obstacle. 3,756,071, Cl. 73-67.800.
- Doubleday, Max; Hoffman, Robert G.; and DeCaneva, Richard, to Harsco Corporation. Gang loop wall tie holding bolt. 3,756,555, Cl. 249-207.000.
- Douglas, Donald J. Swimming headgear. 3,755,819, Cl. 2-14.00w.
- Douglas, Hunter International N.V., mesne: *See—*
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- Dow Corning Corporation: *See—*
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- Draper, Ralph M., to Albany International Corporation. Collapsible dye tube. 3,756,531, Cl. 242-118.110.
- Draper, Ralph M., to Albany International Corporation. Collapsible dye tube. 3,756,532, Cl. 242-118.110.
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  - Mevissen, Ernst A., 3,756,584.
- Drown, George C., 1/2 to Larson, Leward M. Test circuit for vehicle tire air pressure monitoring system. 3,757,295, Cl. 340-58.000.
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  - Bauchwitz, Peter Siegbert, 3,756,970.
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  - Chang, Catherine Teh-Lin, 3,756,827.
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  - Gross, George Conrad, 3,756,908.
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- Duchateau, Georges Francois; and Dewulf, Paul Joseph, to Raffinerie Tirlemontoise. Method for drying crystallized sugar. 3,756,855, Cl. 127-63.000.
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- Dudovicz, Wesley V.: *See—*
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- Dunagan, Lawrence G. Integrated boat-trailer-camper apparatus. 3,755,838, Cl. 9-1.00t.
- Dunlap, Forrest, Jr.: *See—*
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- Dunn, John, to Peabody Engineering Corporation. Gas washing apparatus. 3,756,580, Cl. 261-123.000.
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- Dupree Inc.: *See—*
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- Dupree, James N., to Dupree Inc. Lamp assembly for edge lighted panel. 3,757,270, Cl. 339-17.00d.
- Dupy, Jerome M., to Olin Corporation. Process for scarfing weld beads. 3,755,884, Cl. 29-481.000.
- Durand Machine Company, Ltd.: *See—*
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- Dyad Systems, Inc.: *See—*
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- Dyal, Gilford E. Dispenser for pressurized containers. 3,756,512, Cl. 239-337.000.
- Dybvig, Philip M., to Philip Specialty Company. Furniture construction. 3,756,169, Cl. 108-150.000.
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- Eisele, Max; and Wilhelm, Gunter, to Siemens Aktiengesellschaft. Automotive vehicle equipped with an alternating-current drive. 3,756,335, Cl. 180-6.280.
- Eisele, Wolfgang; Nohe, Heinz; and Suter, Hubert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the manufacture of sebacic acid diesters of higher alcohols. 3,756,928, Cl. 204-59.00r.
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- Emerald Manufacturing Corporation: *See—*
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- Emery, Robert B. Method of improving flow of particulate material. 3,756,475, Cl. 222-195.000.
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- Endo, Masayuki: *See—*
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- Endres, Thomas E., to Technology Incorporated. Instrument for mechanically recording strains. 3,757,347, Cl. 346-7.000.
- Engebretsen, Einar O., to Hobart Manufacturing Company, The. Trash compactor and bag system. 3,756,144, Cl. 100-215.000.
- Engel, Karl-Heinz: *See—*
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- England, Forrest E.; and Gifford, Joseph H., to Westinghouse Electric Corporation. Solid state power supply activated by a pyrotechnic chain. 3,756,157, Cl. 102-70.20r.
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- Enody, Emil; Kovacs, Sandor; Gelanyi, Istvan; Kacsmarek, Bela; and Karoly, Bela, to Csavaripari Vallalat. Automatic quick press for manufacturing small-diameter short-shank bolts. 3,755,839, Cl. 10-13.000.
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- Erdmann, Hans, to Waldes Kohinoor, Inc. Hand-operated plier-like tools. 3,756,064, Cl. 72-410.000.
- Erie Development Company: *See—*
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- Erlichman, Irving, to Polaroid Corporation. Dual drive mechanism for moving a reflex mirror. 3,756,135, Cl. 95-42.000.
- Ernsberger, Fred M., to PPG Industries, Inc. Novel glass-ceramic article and water content crystallization process of making same. 3,756,798, Cl. 65-33.000.
- Errede, Louis A.: *See—*
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- Ersson, Ronnie; and Sander, Nils Borje Lennart. Clutch-release linkage automatic axially-acting slack adjuster. 3,756,361, Cl. 192-111.00a.
- Escott, Robert M., to Midland-Ross Corporation and Erie Development Company. Air flow control in shaft furnaces. 3,756,768, Cl. 432-17.000.
- Eskeli, Michael. Mixed fluid turbine. 3,756,021, Cl. 60-39.020.
- Espenschied, Helmut; Kadelbach, Volker; Rothfuss, Georg; Scheyhing, Hans; Mattes, Bernhard; Burkel, Rainer; Erben, Ernst; Hupfeld, Karl-Otto; and Weyer, Herbert, to Bosch, Robert, G.m.b.H. Interrelated controls for gearing, clutch, brakes and engine. 3,756358, Cl. 192-.090.
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- Felix, Ernst, to Zellweger A.G. Electronic monitoring apparatus and monitoring method for textile materials. 3,756,524, Cl. 242-36.000.
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- Fink, Werner: *See—*
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- Fiorenzo, Joseph. Alarm assembly combined with cleanout plug structure. 3,757,316, Cl. 340-243.000.
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  - Koon, Homer E., Jr., 3,755,951.
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- Fischer, Hermann: *See—*
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- Fleischer, Hans; Dickhauser, Klaus; and Bingemann, Wilhelm, to Kalle Aktiengesellschaft. Plastic pallet. 3,756,429, Cl. 214-10.50r.

- Fleming, Ronald F., to Lanier Electronic Laboratory, Inc. Recorder indexing apparatus with a cumulative indication of the amount of tape withdrawn from the supply reel. 3,757,057, Cl. 179-100.20r.
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- Fletcher, Ralph A.; and Oliver, Joseph R., to Fletcher, H. E., Co. Method for cutting stone with pressure operated means. 3,756,216, Cl. 125-23.00c.
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- Flohrs, Peter; Schafer, Horst; and Tovar, Theo, to SEMIKRON Gesellschaft fur Gleichrichterbau u Elecktronik mbH. Method of making semiconductor components. 3,755,882, Cl. 29-471.700.
- Florig, Albert J.: *See—*
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- Food Research & Equipment Company: *See—*
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- Ford, Peter T., to Shell Oil Company. Emulsified hydrocarbon fuels. 3,756,794, Cl. 44-51.000.
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- Forni, Lucio, to Societa' Italiana Resine S.p.A. Process for preparing a dimerization catalyst. 3,756,963, Cl. 252-447.000.
- Fornoff, Louis Leonard; Collins, John Joseph; and Madigan, Charles Matthew, to Union Carbide Corporation. Removal of mercury from gas streams. 3,755,989, Cl. 55-72.000.
- Forsee, Robert, to Steven Manufacturing Company. Kaleidoscope. 3,756,685, Cl. 350-5.000.
- Forster, Hans-Joachim; Katz, Klaus; and Lattner, Otto, to Daimler-Benz Aktiengesellschaft. Steering mechanism for vehicles. 3,756,125, Cl. 91-380.000.
- Fosdick, Robert E., to Texas Instruments, Incorporated. Data processor. 3,757,308, Cl. 340-172.500.
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  - Lacjak, Richard Andrew, 3,756,554.
- Foulkes, John D., to Telecommunication Engineering Corporation. Bipolar multiplexing circuit for telephone line selection. 3,757,056, Cl. 179-99.000.
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- Fox, Edward Coley, to RCA Corporation. Coarse pinhole array for recording inproned redundant holograms. 3,756,684, Cl. 259-34.000.
- Fox Products Company: *See—*
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- Franklin, Albert G.: *See—*
  - Carmichael, Charles J.; and Franklin, Albert G., 3,756,409.
- Frantzen, John J.; and Lund, Charles M., to Buckbee-Mears Companyc System suitable for controlling etching without the aid of an etchant resistant. 3,756,898, Cl. 156-345.000.
- Frazee, John Robert; Martin, Brian Read; and Brundrett, Charles Philipp, to Grace, W. R., & Co. Supported copper chromite catalyst. 3,756,964, Cl. 252-454.000.
- Fredd, John V.; and Tamplen, Jack W. Valves. 3,756,260, Cl. 137-1.000.
- Fredericks, Carl K., to Corlite Corporation. Cellular structure. 3,756,904, Cl. 161-49.000.
- Freeman, Maurice Frederick: *See—*
  - Grogono, Alan Walter; and Freeman, Maurice Frederick, 3,756,271.
- Freese, Howard W., to Diebold, Incorporated. Pneumatic tube carrier closure construction. 3,756,537, Cl. 243-35.000.
- Freiberg, Robert J.: *See—*
  - Buczek, Carl J.; Chenausky, Peter P.; and Freiberg, Robert J., 3,757,251.
- Frentrop, Arthur H., to Schlumberger Technology Corporation. Method for outgassing permanent magnets. 3,756,682, Cl. 316-19.000.
- Freska, Edward S.: *See—*
  - Danega, Robert E.; and Freska, Edward S., 3,755,939.
- Freudenberg, Carl: *See—*
  - Heling, Wilhelm, 3,756,907.
- Frey, Edmond F., Jr.; and Grove, Clinton S. Removably mountable arrow head and drill tap for making it. 3,756,601, Cl. 273-106.50b.
- Frey-Portner, Urs: *See—*
  - Koller, Hans; and Frey-Portner, Urs, 3,755,913.
- Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
  - Macrander, Karl, 3,756,446.
  - Muller, Dietrich; and Wulf, Heiner, 3,757,156.
- Friedman, Joshua. Dental pulp tester. 3,755,900, Cl. 32-40.00r.
- Frisch, Natalie A.; and Vallis, Hubert J. Shoe attachment for golfers. 3,755,929, Cl. 36-7.600.
- Frohbach, Hugh Finch; Macovski, Albert; and Rice, Philip Joseph, to RCA Corporation. Shadowing system for color encoding camera. 3,757,033, Cl. 178-5.4st.
- Frost, George E., to General Motors Corporation. Method of and means for engine operation with cylinders selectively unfueled. 3,756,205, Cl. 123-32.0ea.
- Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Method of preforming materials which work-harden. 3,756,061, Cl. 72-253.000.
- Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Tube cutter. 3,756,108, Cl. 83-193.000.
- Fuchslocher, Robert; and Worch, Herman R. Medical apparatus for insertion of medications and/or hygienic preparations into body openings and/or cavities. 3,756,240, Cl. 128-236.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Hayakawa, Yoshihide; and Satomura, Masato, 3,756,818.
  - Hayakawa, Yoshihide; and Satomura, Masato, 3,756,820.
  - Hayashi, Jun; Ohi, Reiichi; and Shishido, Tadao, 3,756,821.
  - Honjo, Satoru; and Miyatuka, Hajime, 3,756,843.
  - Ohkubo, Kinji; Noguchi, Junpei; and Masuda, Takao, 3,756,829.
  - Ohmura, Hirosha, 3,756,528.
  - Taguchi, Seiichi; Kido, Keishiro; Kimura, Akinori; Tomotsu, Takeshi; and Mizuki, Eiichi, 3,756,817.
  - Yoneyama, Masakazu; Yamamoto, Nobuo; and Endo, Koutaro, 3,756,828.
- Fujii, Yoshitsugu; and Oshimi, Tokuichi, to Sumitomo Shipbuilding & Machinery Co., Ltd. Process for treating waste water containing nitriles. 3,756,947, Cl. 210-11.000.
- Fujimori, Makoto: *See—*
  - Yoshimoto, Toshio; Fujimori, Makoto; Kaneko, Seiya; Takeda, Yukihisa; and Koyama, Haruo, 3,756,977.
- Fujita, Isamu; Yuneya, Tooru; and Deguchi, Shinichi, to Kanegafuchi Boseki Kabushiki Kaisha. Production of epsilon-caprolactam and O-acetyl cyclohexanone oxime. 3,757,007, Cl. 260-239.30a.
- Fujita, Mitsuo, to Victor Company of Japan, Ltd. Color video signal recording and reproducing system. 3,757,034, Cl. 178-5.4cd.
- Fujita, Osamu, to Matsushita Electric Industrial Co., Ltd. Station selector. 3,757,260, Cl. 334-15.000.
- Fujitsu Limited: *See—*
  - Inaba, Seiuemon; Shimizu, Kanryo; and Kojima, Toshio, 3,757,193.
- Fukuda, Kazuo: *See—*
  - Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Miki, Kenichi; Arima, Yasutaka; Hidaka, Mikio; Bando, Yasuo; Fukuda, Kazuo; and Sawazi, Masao, 3,756,965.
- Fulion, Langdon Hollister, to RCA Corporation. Label writing apparatus. 3,757,349, Cl. 346-49.000.
- Fulton, Robert L. Securing device. 3,756,642, Cl. 292-341.150.
- Funk, Clarence J., to United States of America, Navy. Pan and tilt underwater optical viewing system with adjustable source-receiver separation and zoom lenses. 3,757,042, Cl. 178-7.200.
- Fuqua, Norman L., to Cornelius Company, The. Method and apparatus for automatically terminating dispensing of beverage when supply is empty. 3,756,464, Cl. 222-57.000.
- Furukawa, Tadashi: *See—*
  - Ito, Miyaji; Umezawa, Masao; Furukawa, Tadashi; and Hirako, Hiroo, 3,756,530.
- Furuuchi, Shigemasa; Akeyoshi, Kazuyuki; Okajima, Yasuharu; and Gotch, Yoshio, to Asahi Glass Co., Ltd. Method of coating glass surfaces. 3,756,196, Cl. 118-401.000.
- Fusukawa Electric Co., Ltd., The: *See—*
  - Shiga, Shoji, 3,756,957.
- GAF Corporation: *See—*
  - Buchheim, Wayne J.; and Bonds, Wilford D., 3,756,974.
- Gallagher, James A.: *See—*
  - Zasadny, Ronald J.; Gallagher, James A.; and Trix, Herbert Phelps, 3,756,845.
- Gallagher, R. Dennis, to Maitlen & Benson, Inc. Holder for marking material. 3,756,727, Cl. 401-84.000.
- Galli, Richard Joseph: *See—*
  - Collins, Richard Howard; and Galli, Richard Joseph, 3,756,527.
- Galloway, Frederick M.; and Webster, Earle F., to Porter, H. K., Company, Inc. Manufacture of multi-layer articles by in situ polymerization of adhesive components. 3,756,890, Cl. 156-286.000.
- Gallus, Julius P.: *See—*
  - Holm, Leroy W.; and Gallus, Julius P., 3,756,319.
- Gandolfo, Peter F.; and Nilsen, Lornts B., to Hyster Company. Materials handling truck. 3,756,350, Cl. 187-9.000.

- Ganz & Co.: *See—*
  - Naf, Otto, 3,756,715.
- Ganz, Robert H. Shrink pack and method and apparatus for making the same. 3,756,395, Cl. 206-65.00s.
- Ganz, Robert H. Shrink pack construction and method. 3,756,397, Cl. 206-65.00s.
- Garcia, Thomas. Shears and scissors grinder. 3,755,971, Cl. 51-92.0bs.
- Gardiner, Charles W., to Itek Corporation. Optical image transfer apparatus. 3,756,696, Cl. 350-169.000.
- Gardiner, Frances R.: *See—*
  - Murray, Jerome L.; and Gardiner, Frances R., 3,756,230.
  - Murray, Jerome L.; and Gardiner, Frances R., 3,756,236.
- Gardner, Harry R.: *See—*
  - Becker, Herbert W., Jr.; and Gardner, Harry R., 3,756,494.
- Garishore, Ian S.: *See—*
  - Walters, John; and Garishore, Ian S., 3,755,962.
- Gartner Research & Development Co.: *See—*
  - Gartner, William Joseph, 3,756,413.
- Gartner, Robert. Screw drive. 3,756,092, Cl. 74-424.80a.
- Gartner, William Joseph, to Gartner Research & Development Co. Method and apparatus for making potable water. 3,756,413, Cl. 210-205.000.
- Gascon, Joseph, to Fabriques de Produits Chimiques de Thann et de Mulhouse. Zirconium pigments. 3,756,840, Cl. 106-299.000.
- Gaston County Dyeing Machine Company: *See—*
  - Aurich, Christoph W., 3,755,869.
- Gates Rubber Company, The: *See—*
  - Russ, Paul E., Sr., 3,756,668.
- Gawlick, Heinz: *See—*
  - Ratz, Heinz; Gawlick, Heinz; and Marondel, Gunther, 3,756,118.
- Gay, Archibald, to General Dynamics Corporation. Method and apparatus for coordinating propulsion in a single stage space flight. 3,756,024, Cl. 60-204.000.
- Gay, Clarence Russell, to Firestone Tire & Rubber Company, The. Flat band method of making radial tires. 3,756,883, Cl. 156-123.000.
- Geadkov, Jury Kupriyanovich: *See—*
  - Bukrinsky, Anatoly Matveevich; Geadkov, Jury Kupriyanovich; Kazakov, Vladimir Abramovich; Maximov, Leonid Pavlovich; Mironov, Viktor Nikolaevich; Khmelnitsky, Vladimir Alexandrovich; and Shabanov, Nikolai Nikolaevich, 3,756,915.
- Gearmatic Co., Ltd.: *See—*
  - Murray, John B. W.; Christison, Sommerville G.; and Bonar, William, 3,756,564.
- Geigy, J. R., AG: *See—*
  - Beffa, Fabio, 3,756,771.
- Geil, Fred G., to Westinghouse Electric Corporation. Method of testing modular electronic circuit. 3,755,888, Cl. 29-593.000.
- Geil, Fred G., to United States of America, Navy. Transducer array. 3,757,289, Cl. 340-9.000.
- Gelanyi, Istvan: *See—*
  - Enody, Emil; Kovacs, Sandor; Gelanyi, Istvan; Kacsmarek, Bela; and Karoly, Bela, 3,755,839.
- Gelenkwellenbau GmbH: *See—*
  - Kluh, Emil, 3,756,349.
- Gemco Electric Company: *See—*
  - Tenniswood, David M.; Arnold, John E.; Kaptur, Robert E.; Tonchev, Toncho G.; and Franke, Herbert J., 3,757,135.
- Geneco Inc.: *See—*
  - Michel, Georges Maurice, 3,756,900.
- General American Transportation Corporation: *See—*
  - Johnson, Edwin W., 3,756,640.
- General Control Corporation: *See—*
  - Kestler, Ralph, 3,755,904.
- General Dynamics Corporation: *See—*
  - Conti, Ronald J.; and Berry, Steven R., 3,757,078.
  - Gay, Archibald, 3,756,024.
  - Tricoles, Gus P., 3,757,332.
- General Electric Company: *See—*
  - Bailey, Ronald B., 3,757,197.
  - Busian, Vincent V., 3,755,889.
  - Keeney, Marvin F., Jr., 3,757,230.
  - La Forge, Richard A.; and Falls, Paul W., 3,755,868.
  - Pedersen, Niels Peder, 3,757,179.
  - Ryan, Paul T., 3,756,665.
  - Snyder, Paul V.; and Schultz, Willard F., 3,756,219.
- General Electric Corporation: *See—*
  - Saldi, Ideal T., 3,755,865.
- General Instrument Corporation: *See—*
  - Cohen, Burton E., 3,757,200.
- General Kinetics Incorporated: *See—*
  - King, Charles A.; Young, Herbert D.; and Walton, John F., 3,756,404.
- General Learning Corporation: *See—*
  - Kaulfuss, Robert; and Faulfuss, Willaim, 3,755,944.
- General Motors Corporation: *See—*
  - Frost, George E., 3,756,205.
  - Kuehl, Paul B., 3,756,210.
- Genovese, John M., to Circle F. Industries, Inc. Self-grounding receptacle. 3,757,268, Cl. 339-14.00r.
- Genta, Gerald, to Societe Anonyme de la Manufacture d'Horlogerie Audemars, Piguet & Co. Watch case. 3,756,017, Cl. 58-90.00r.
- Genta, Guido R., to American Aniline Products, Inc. Polyester materials dyed with styryl dyes. 3,756,778, Cl. 8-179.000.
- George, Donald K., to Graco Inc. Apparatus and method for a metering system. 3,756,456, Cl. 222-1.000.
- Georgi, Heinz W., to Ivac Corporation. Fluid flow control apparatus. 3,756,556, Cl. 251-7.000.
- Gerdino, Charles Christian, to Jones & Laughlin Steel Corporation. Method and apparatus for guiding continuously cast strip. 3,756,304, Cl. 164-87.000.
- Gerlach, Dieter; Bader, Erich; and Sibenhorn, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt. Process for the production of stable polyoxymethylene copolymers. 3,756,985, Cl. 260-67.0fp.
- Gerstenberger, Roland W., to Jensen Machinery Inc. Centering guide. 3,756,588, Cl. 271-49.000.
- Gerstmeier, George A., to Beckman Instruments, Inc. Variable resistance device with multifunction wiper carrier. 3,757,267, Cl. 338-174.000.
- Giallorenzi, Thomas G.; and Reilly, Michael H., to United Stated of America, Navy. Frequency selective optical isolator. 3,757,247, Cl. 331-94.500.
- Gibb, John, to Victaulic Company of America. Stud system of joining pipe and couplings for same. 3,756,629, Cl. 285-112.000.
- Gibbon, Enrique T.: *See—*
  - Fonseca, Marco A.; Gibbon, Enrique T.; and Gonzalle, Jose J., 3,756,270.
- Gibbons, Carl B.; Kerr, William C.; and Maddocks, Roger H., to Eastman Kodak Company. Web treatment apparatus and methods. 3,757,163, Cl. 317-2.00r.
- Gibbs, Raymond: *See—*
  - Backlund, John G.; and Gibbs, Raymond, 3,756,529.
- Gibson, Earl D., to North American Rockwell Corporation. Digit error detector. 3,757,296, Cl. 340-146.0ab.
- Gibson, Richard W.: *See—*
  - Brown, Arthur G.; Gibson, Richard W.; and Sirine, Gloria F., 3,757,004.
- Giebel, Buddy E.; and Nation, William H., to Union Camp Corporation. Box with five panel ends. 3,756,499, Cl. 229-34.00r.
- Giebel, Joseph L.: *See—*
  - Temple, Robert; Temple, Ernest E.; and Giebel, Joseph L., 3,755,837.
- Gifford, Joseph H.: *See—*
  - England, Forrest E.; and Gifford, Joseph H., 3,756,157.
- Giger, Adolf Josef, to Bell Telephone Laboratories, Incorporated. Phase locked loop with non-linear filter responsive to error signal amplitude. 3,757,244, Cl. 331-17.000.
- Gilbo, Arnold W., to Sanders Associates, Inc. Long wire V-antenna system. 3,757,341, Cl. 343-733.000.
- Gillette Company, The: *See—*
  - Samsing, Rolf A., 3,755,942.
  - Sastri, Aiyaswami Suryanarayan, 3,756,865.
- Gimlett, Gilbert Donald; and Hawthorne, Brian James, to British Railways Board. Railway wheel and axle assembly. 3,756,646, Cl. 295-43.000.
- Girard, Pierre; Lerouge, Claude P. H.; and Regnier, Marc A., to International Standard Electric Corporation. Regenerative repeater for PCM signals transmitted in the alternate polarity mode. 3,757,051, Cl. 179-15-ad.
- Girling Limited: *See—*
  - Camm, John James, 3,756,124.
  - Clifford, Stanley; and Hiscox, Leonard Ramsay, 3,757,166.
  - Nicholls, Lawrence George, 3,756,734.
- Gisler, Hans, to Marcel Boschung, Firma. Snow cutters. 3,755,931, Cl. 37-43.00e.
- Gitchel, Clinton L. Player piano with radio-controlled projection of lyrics. 3,756,716, Cl. 353-15.000.
- Gitlitz, Melvin H.: *See—*
  - Ventura, John J.; Gitlitz, Melvin H.; and Mackey, James, 3,756,989.
- Glanzstoff AG: *See—*
  - Jaeger, Friedrich; Koepp, Hans-Martin; Wiloth, Fritz; and Eismann, Rudolf, 3,756,990.
- Glasa, Stefan; and Westphal, Werner, to Koh-I-Noor Rapidograph, Inc., mesne. Tubular writing pen. 3,756,733, Cl. 401-259.000.
- Glasurit-Werke M. Winkelmann AG: *See—*
  - Hossenfelder, Klaus, 3,756,846.
- Globetrotter Communications, Inc., mesne: *See—*
  - Lukinac, Eugene M.; and Massa, Joseph N., 3,756,607.
- Gloeckler, Fred A., to Star Sprinkler Corporation of Florida. Flush type sprinkler. 3,756,321, Cl. 169-40.000.
- Glory Kogyo Kabushiki Kaisha: *See—*
  - Hatanaka, Yoshihio; Shigemori, Hideto; and Kitagami, Hisashi, 3,756,256.
- Gluck, Bruno Anthony, to Lever Brothers Company. Fabric softening compositions. 3,756,950, Cl. 252-8.750.
- Goddard, Frederick Charles, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation in Her Britannic Majesty Government of the. Radar systems. 3,757,328, Cl. 343-7.700.
- Goertzen, John, III; and Hargrave, Robert W. Pool vacuum system. 3,755,843, Cl. 15-1.700.
- Goethe, Robert L.; and Green, Robert R., to Crestmark Products Company Incorporated. Machine for cleaning paving cracks. 3,755,841, Cl. 15-334.000.
- Goff, James R., to Nelson, Robert T. Continuous bell elevator. 3,756,377, Cl. 198-140.000.
- Goff, Milton R., to Eastman Kodak Company. Film movement preventing means for still cameras. 3,756,134, Cl. 95-31.0fm.
- Gohrbandt, Wilhelm; Schulze, Jurgen; Hornle, Reinhold; and Schneider, Jurgen, to Bayer Aktiengesellschaft. Dyeing polyester

fiber with an aqueous preparation of 1-amino-4-hydroxy-2-(4-methylmercaptophenoxy)-anthraquinone and resultant composition. 3,756,77, Cl. 8-39.000.

Goicoechea, George Leandro, to Critical Care Systems, Inc. Humidifier and heater for delivered gases. 3,757,082, Cl. 219-271.000.

Golconda Corporation: *See—*
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Goldberg, Willi: *See—*
Keiner, Heinz; Richter, Helmut; Schafer, Wilhelm; and Goldberg, Willi, 3,756,534.

Golden West Broadcasters: *See—*
Hunter, E. Bruce, 3,757,139.

Goldenring, Ira: *See—*
Ingoldsby, Brian D., 3,757,058.

Goldfarb, Adolph E.: *See—*
Goldfarb, Adolph E.; and Soriano, Rene (said Soriano assor. to said), 3,756,603.

Goldfarb, Adolph E.; and Soriano, Rene, said Soriano assor. to said Goldfarb, Adolph E. Competitive bowling game. 3,756,603, Cl. 273-108.000.

Goldowsky, Michael. Liquid administration apparatus. 3,756,233, Cl. 128-214.00c.

Golke, Alfons: *See—*
Krafft, Erich; Missmahl, Bood; Pfeiffer, Hans; Golke, Alfons; and Weck, Karl Gustav, 3,756,059.

Gollinger, Wolfgang: *See—*
Adam, Fritz Gunter; and Gollinger, Wolfgang, 3,757,145.

Gommel, Dewey E. Engine. 3,756,206, Cl. 123-75.0cc.

Gonzalle, Jose J.: *See—*
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Goode, James K., Jr.: *See—*
Keck, Robert H.; Diehl, Werner K.; Kovich, Robert P.; and Goode, James K., Jr., 3,756,391.

Goodman, Dennis George, to Lucas, Joseph, (Industries) Limited. Method of making non-planar semi-conductor devices. 3,756,872, Cl. 148-187.000.

Goodridge, Harold M. Gyro-controlled motorcycle. 3,756,338, Cl. 180-30.000.

Goodwin, Frank R. Bowling grip exercise device. 3,756,594, Cl. 272-68.000.

Gordon Engineering Company: *See—*
Kaufman, David L., 3,757,214.

Gore, W. L., & Associates, Inc.: *See—*
Gore, Wilbert L., 3,756,004.

Gore, Wilbert L., to Gore, W. L., & Associates, Inc. Method and apparatus for insulating electrical conductors. 3,756,004, Cl. 57-11.000.

Gorman, George W.: *See—*
Carswell, John D., Jr.; and Gorman, George W., 3,756,069.

Gosswiller, Earl W., to Federal Sign and Signal Corporation. Modular housing system for emergency vehicle accessory controls. 3,756,677, Cl. 312-108.000.

Gotch, Yoshio: *See—*
Furuuchi, Shigemasa; Akeyoshi, Kazuyuki; Okajima, Yasuharu; and Gotch, Yoshio, 3,756,196.

Goto, Sugio, to Asahi Kasei Kabushiki Kaisha. Method and apparatus for on-line yarn quality control. 3,757,211, Cl. 324-61.00r.

Gotoh, Kenji; Yokota, Masato; and Uchida, Ken-Ichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust emission control device for internal combustion engines. 3,756,027, Cl. 60-323.000.

Gow-Mac Instrument Company: *See—*
Carswell, John D., Jr.; and Gorman, George W. (said Carswell assor. to), 3,756,069.

Grace, W. R., & Co.: *See—*
Frazee, John Robert; Martin, Brian Read; and Brundrett, Charles Philipp, 3,756,964.

Graco Inc.: *See—*
George, Donald K., 3,756,456.

Graczyk, Thadeus S., to Eastman Kodak Company. Ultrasonic perforating a sheet of film, paper or the like with chip removal. 3,756,880, Cl. 156-73.000.

Graff, Harry James: *See—*
Baumgartner, Robert Garland; and Graff, Harry James, 3,757,269.

Graff, Kurt; and Wijnhoven, Jan Mathijs Antoon, to Monroe Belgium N.V. Shock absorber and valve assembly. 3,756,357, Cl. 188-282.000.

Gramiglia, Frank: *See—*
Calabrese, Anthony; and Gramiglia, Frank, 3,756,226.

Granada, Richard Paul, to International Telephone and Telegraph Corporation. Sealing ring. 3,756,126, Cl. 92-38.000.

Grantley Company, The: *See—*
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Grashoff, Adolph W.: *See—*
Knecht, Hillery G.; and Grashoff, Adolph W., 3,757,109.

Grauso, Robert N.: *See—*
Morena, John J.; and Grauso, Robert N., 3,757,027.

Gravert, William H., to Marine Moisture Control Company, Inc. Emergency hand pump connection for hydraulically operated valves. 3,756,281, Cl. 137-625.480.

Gravina, Timothy J., to Westinghouse Brake and Signal Company, Limited. Dispensing control and/or monitoring apparatus. 3,756,463, Cl. 222-26.000.

Green, James R.; Parris, Ralph C.; and Fine, Arnold J., to Mattel, Inc. Package having dimpled blister. 3,756,398, Cl. 206-78.00b.

Green, Kenneth J.; deceased (by Green, Ralph; administrator), to Phillips Petroleum Company. Polymerization control in which a uniform rate of reaction is maintained. 3,756,993, Cl. 260-79.100.

Green, Ralph: *See—*
Green, Kenneth J., 3,756,993.

Green, Robert R.: *See—*
Goethe, Robert L.; and Green, Robert R., 3,755,841.

Greenberg, Bernard. Method of purifying sewage effluent and apparatus therefor. 3,756,933, Cl. 204-149.000.

Greene, Frederick C., to Shepherd Casters, Inc. Caster fastening retention. 3,755,852, Cl. 16-37.000.

Greenwald, Harry, to Kidde, Walter, & Company, Inc. Rotary coin meter. 3,756,366, Cl. 194-84.000.

Greer, James Edward, to Ronson Products, Ltd. Cigarette lighters. 3,756,766, Cl. 431-254.000.

Greif Bros. Corporation: *See—*
Becker, Herbert W., Jr.; and Gardner, Harry R., 3,756,494.

Greiner, Charles, and Company: *See—*
Calabrese, Anthony; and Gramiglia, Frank, 3,756,226.

Greiner Electronic AG: *See—*
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Gribova, Irina Alexandrovna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Elerdashvilli, Georgy Vasilievich, 3,756,982.

Grief, Herbert C. Tent camper. 3,756,648, Cl. 296-23.00b.

Griffin, Roger C., Jr.: *See—*
Mills, William R.; and Griffin, Roger C., Jr., 3,756,892.

Griffioen, William H.; and Dietrich, Janice I., to Sanitor Manufacturing Company. Dispenser. 3,756,453, Cl. 221-44.000.

Griggs, Allen L.: *See—*
Stepan, Alfred H.; Perkins, Robert J.; and Griggs, Allen L., 3,756,909.

Griner, Terry G.: *See—*
Mcavoy, John A.; Banka, Eugene F.; Griner, Terry G.; and Hagemann, Robert C., 3,757,048.

Grizzle, Clyde W. Apparatus for knitting and separating hosiery articles. 3,756,044, Cl. 66-147.000.

Groenhof, Eugene D.: *See—*
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Grogono, Alan Walter; and Freeman, Maurice Frederick, to East, H. G., & Company. Apparatus for delivering a predetermined volume of fluid at regular intervals. 3,756,271, Cl. 137-494.000.

Grolman, Bernard: *See—*
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Gross Cash Registers Limited: *See—*
Gross, Henry; and Gross, Samuel, 3,756,147.

Gross, George Conrad, to Du Pont de Nemours, E. I., and Company. Synthetic paper structures of aromatic polyamides. 3,756,908, Cl. 162-146.000.

Gross, Henry; and Gross, Samuel, to Gross Cash Registers Limited. Coil spring biased printing wheels. 3,756,147, Cl. 101-95.000.

Gross, Samuel: *See—*
Gross, Henry; and Gross, Samuel, 3,756,147.

Groswith, Charles T., III: *See—*
Abildgaard, William H.; and Groswith, Charles T., III, 3,756,625.

Grotnes Machine Works, Inc.: *See—*
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Grove, Clinton S.: *See—*
Frey, Edmond F., Jr.; and Grove, Clinton S., 3,756,601.

Grove, Leroy K. Operating arm retaining means in a vehicle brake structure. 3,757,264, Cl. 335-281.000.

Grubin, Henrich. Roller skates. 3,756,614, Cl. 280-11.220.

Gruenberg, Elliot L., to International Business Machines Corporation. Communication and control system. 3,757,335, Cl. 343-100.0td.

Grummann Data Systems Corporation: *See—*
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Grundmann, Volker R., to Litton Industrial Products, Inc. Tie bar sprocket mounting for injection-molding machine. 3,756,757, Cl. 425-192.000.

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Gundlach, Robert W., to Xerox Corporation. Electrophotographic process employing photoconductive materials of different dynamic ranges. 3,756,811, Cl. 96-1.0pc.

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Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsin, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; Solomko, Viktor Eliseevich; Reinburg, Alexandr Nironovich; and Yampolsky, Moisei Lvovich 3,756,328.

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Hancock, Warren D., to Hancock Laboratories Incorporated. Flexible stent for heart valve. 3,755,823, Cl. 3-1.000.

Hancox, Roger John, to Accles & Shelvoke Limited. Captive bolt firearm and magazine therefor. 3,755,949, Cl. 42-39.500.

Hand, Hi. Open-ended girdle. 3,756,247, Cl. 128-518.000.

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Hanke, David E., to Kimberly-Clark Corporation. Self-lubricating compound for use in hygenic and medical applications, and coated tampons and suppositories made therefrom. 3,756,238, Cl. 128-270.000.

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Hatanaka, Yoshihio; Shigemori, Hideto; and Kitagami, Hisashi, to Glory Kogyo Kabushiki Kaisha. Automatic money dispensing machine. 3,756,256, Cl. 133-4.000.

Hathorn, Roy C. Process and apparatus for separating molten metal from mixtures thereof with lighter materials. 3,756,806, Cl. 75-93.00r.

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Hayashi, Jun; Ohi, Reiichi; and Shishido, Tadao, to Fuji Photo Film Co., Ltd. Process for the formation of color photographic images. 3,756,821, Cl. 96-55.000.

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- Hazelhurst, Gerald D., to Mark Products, Inc. Fluid proof electrical connector. 3,757,274, Cl. 339-60.000.
- Hazen, Arthur L. Circuit connecting device. 3,757,223, Cl. 325-160.000.
- Heath, Michael D. Optical digital measurement readout. 3,757,320, Cl. 340-336.000.
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- Heikinheimo, Olli, to Plan-Sell Oy. Method and apparatus for trimming timber. 3,756,297, Cl. 144-312.000.
- Heilweil, Israel J.; and Leavitt, Richard I., to Mobil Oil Corporation. Process for inhibiting foaming. 3,756,918, Cl. 195-28.00r.
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- Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Jurischka, Hans-Dieter; and Bach, Hans, to Bayer Aktiengesellschaft. False-twist arrangement. 3,756,006, Cl. 57-77.400.
- Heling, Wilhelm, to Freudenberg, Carl. Production of perforated non-woven fibrous webs. 3,756,907, Cl. 162-114.000.
- Heller, Aaron. Flash-card educational aid for teaching sequences. 3,755,921, Cl. 35-22.00r.
- Hellerbach, Joseph; and Jaunin, Roland, to Hoffmann-La Roche Inc. 1-(Carboxyl-heteroalkyl)-1,4-benzodiazapine derivatives and processes for preparing same. 3,757,008, Cl. 260-239.30d.
- Hemeort, Heinz; Huster, Heinrich; and Heimeier, Franz, to Westfalia Separator AG. Process and plant for obtaining starch from crops. 3,756,854, Cl. 127-24.000.
- Hemmings, Keith Reginald, to British Leyland Truck and Bus Division Limited. Motor vehicle body structure. 3,756,647, Cl. 296-28.00a.
- Hendry, George O., to Cyclotron Corporation, The. Method and means for reducing the power density of an internal cyclotron beam. 3,757,237, Cl. 328-234.000.
- Henegesbach, Robert W. Valve. 3,756,273, Cl. 137-540.000.
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- Herzer, Jorge Abel; and Julia, Joseph R. Pre-fabricated shell structure. 3,755,975, Cl. 52-90.000.
- Hesee, Kurt. Adaptor for current collectors, for lights, electric appliances or the like. 3,757,273, Cl. 339-21.00r.
- Heth, Sherman C.; Akgulian, Sahag C.; Hoffmeyer, Knud H.; and Meyer, Dean A., to Jacobsen Manufacturing Company. Slip clutch with signal. 3,756,042, Cl. 64-30.00r.
- Hetterscheid, Wilhelmus Theodorus Hendrikus; and De Vries, Harry Rimmer, to U.S. Philips Corporation. Switching circuit transistor with a delayed turn on diode coupled to its emitter and base electrodes. 3,757,144, Cl. 307-300.000.
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Kaulfuss, Robert; and Faulfuss, Willaim, to General Learning Corporation. Display exhibit module. 3,755,944, Cl. 40-130.00r.
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Kearen, Cornelis H. J.; Krak, Hans; and Jeanno, Francis, to Shell Oil Company. Epoxy-imidazole adducts as curing agents for epoxy resins. 3,756,984, Cl. 260-47.0ec.
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Keiner, Heinz; Richter, Helmut; Schafer, Wilhelm; and Goldberg, Willi, to Leitz, Ernst, G.m.b.H. Film cartridge. 3,756,534, Cl. 242-194.000.
Keith, Clarence Henry, to American Standard, Inc. Heat exchange tube for use in a boiler and boiler incorporating the same. 3,756,202, Cl. 122-156.000.
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Kellems, David L. Apparatus for wrapping screw-type electrical terminals. 3,755,874, Cl. 29-203.00h.
Kelly, Jerome, to North American Manufacturing, Inc. Electrical connector using plastic clamp. 3,757,283, Cl. 339-250.000.
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Ketchum, Lynn D., to Kansas University Endowment Association, The. Electrically driven hand exerciser. 3,756,222, Cl. 128-26.000.
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Kimbell, Charles L. Total sulfur analyzer and method. 3,756,781, Cl. 23-230.00r.
Kimberly, William E., to Keithley Instruments, Inc. Amplifier and protection circuitry therefor. 3,757,243, Cl. 330-207.00p.
Kimberly-Clark Corporation: *See*—
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Kimura, Sachio; and Aoki, Yoshiaki, to Kabushiki Kaisha Copal. Device for generating time pulses. 3,756,016, Cl. 58-50.00r.
King, Charles A.; Young, Herbert D.; and Walton, John F., to General Kinetics Incorporated. Slurry defect detector. 3,756,404, Cl. 209-74.00r.
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Kislig, Renaldo Ernst. Suction cleaners suitable for use in swimming pools. 3,755,842, Cl. 15-1.700.
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Klehm, William G., Jr., to Burroughs Corporation. Vacuum-heat treatment of printed circuit boards. 3,755,890, Cl. 29-625.000.
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Klein, Heinrich; Pieper, Rudolf; and Hoffmann, Alfred, to Siemens Aktiengesellschaft. Structure for increasing the separation capacity of centrifugal force separators for steam drying. 3,755,996, Cl. 55-459.000.
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Kloppenstein, Glenn A. Retractable step. 3,756,678, Cl. 312-235.000.
Kluh, Emil, to Gelenkwellenbau GmbH. Valve for lubricating and venting machine parts subject to wear. 3,756,349, Cl. 184-105.00b.
Klynn, Herbert D. Motion picture viewer. 3,756,706, Cl. 352-129.000.
Knecht, Hillery G.; and Grashoff, Adolph W. Resilient lamp mounting device. 3,757,109, Cl. 240-90.000.
Knitter, Roger W., to Zenith Radio Corporation. Electromechanical elastic wave delay line. 3,757,257, Cl. 333-30.00r.
Knopp, Rolf A.: *See*—
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Kobayashi, Seiichi; Igarashi, Yoshikazu; and Morioka, Hiroaki, to Kuraray Co., Ltd. Aqueous transfer of dye from water soluble filament to water insoluble filament blended therewith. 3,756,770, Cl. 8-14.000.
Kobayashi, Yoshihiro; and Taguchi, Namio, to Teijin Limited. Treating agent for thermoplastic synthetic fibers. 3,756,972, Cl. 260-18.00s.
Kobryner, Herman H., to Arrow-Hart, Inc. Panelboard with mounting block securing stab-contacts. 3,757,170, Cl. 317-119.000.
Kocks, Friedrich: *See*—
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Koller, Hans; and Frey-Portner, Urs, to Buss A.G. Process and apparatus for continuous treatment of dusty, powdery and granular materials. 3,755,913, Cl. 34-10.000.
Kollitz, Gerhard. Spring clip device. 3,756,550, Cl. 248-206.00a.
Komnatny, Igor Pavlovich: *See*—
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Koon, Homer E., Jr., to Firearm Development, Inc. Bolt action rifle cocking piece and cover therefor. 3,755,947, Cl. 42-16.000.
Koon, Homer E., Jr., to Firearm Development, Inc. Trigger mechanism for firearms. 3,755,951, Cl. 42-69.00a.
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Kopelman, Bernard, to GTE Sylvania Incorporated. Sodium vapor lamp having a grooved alumina arc tube. 3,757,158, Cl. 315-47.000.
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Kostylev, Alexandr Dmitrievich: *See*—
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Krafft, Erich; Missmahl, Bood; Pfeiffer, Hans; Golke, Alfons; and Weck, Karl Gustav, to Kieserling, Th., & Albrecht. Wire finishing method and apparatus. 3,756,059, Cl. 72-203.000.
Krahn, Fernando. Kaleidoscopic game. 3,755,923, Cl. 35-27.000.
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Kreuzer, Friedrich. Apparatus for protecting data processing installations and the like from disturbances. 3,757,168, Cl. 317-16.000.
Krey, Winfried, to Varta Pertrix-Union Gesellschaft mit beschrankter Haftung. Galvanic cell employing cation exchange compound separator. 3,756,859, Cl. 136-107.000.
Krohn, Ivar T.; and Page, Geoffrey A., to Xerox Corporation. Manifold imaging process. 3,756,812, Cl. 96-1.00r.
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Kubo, Moritada; Asano, Kuniji; and Kusakabe, Takashi, to Tokyo Shibaura Electric Co., Ltd. Method and apparatus for controlling metal strip shape. 3,756,050, Cl. 72-9.000.
Kuehl, Guenther L.; and Depietro, Alfonso, to Guenther Systems, Inc. Cargo transporting conveyor apparatus. 3,756,378, Cl. 198-154.000.
Kuehl, Paul B., to General Motors Corporation. Exhaust gas recirculation control valve. 3,756,210, Cl. 123-119.00a.
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Kuramoto, Yoshio; and Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Exposure controlling device for photographic camera. 3,756,131, Cl. 95-10.0ct.
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Kurer, Peter Frank. Dentistry. 3,755,897, Cl. 32-2.000.
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Kurkinen, Martti, to Kymin Osakeyhtion Kymamns Aktiebolag. Paper machine drying cylinder block. 3,756,093, Cl. 74-417.000.
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Kuroda, Minoru, 1/2 to Nishizawa Shoji Co., Ltd. and 1/2 to Pilgrim Industries, Inc. Method of making a three-dimensional applique. 3,756,888, Cl. 156-220.000.
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Kurtin, Stephen L.; and Anthony, Michael P., to Keithley Instruments, Inc. Electrical test instrument. 3,757,216, Cl. 324-149.000.
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Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Process for the control of an antiskid braking system, and apparatus adapted for performing the same. 3,756,662, Cl. 303-218.000.
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Lacjak, Richard Andrew, to Foseco International Limited. Ingot mould haed boxes. 3,756,554, Cl. 249-202.000.
Laffont, Maurice, to Entreprise de Recherches et d'Activites Petrolieres (ELF). Immersion process for heavy underwater structures with particular applications for underwater oil tanks. 3,756,179, Cl. 114-.50t.
Lakin, Harold; Bristol, Thomas R.; and Rensch, William J., to Addressograph-Multigraph Corporation, mesne. Microfiche duplicating apparatus. 3,756,708, Cl. 355-27.000.
Lambert, Charles F., Jr., to Clayton & Lambert Manufacturing Company. Rotary sweep apparatus for drying wet grain. 3,755,917, Cl. 34-179.000.
Lamberti, Vincent, to Lever Brothers Company. Sulfosuccinate derivatives of carbohydrates as builders for detergent compositions. 3,756,966, Cl. 252-557.000.
Lancer Bass Limited: *See—*
Bowman-Shaw, George Neville, 3,756,437.
Land, Dick H. Golf game practicing machine. 3,756,606, Cl. 273-182.00r.
Landis, James E.: *See—*
McCann, George A.; Landis, James E.; and Kimbrell, Jimmie S., 3,757,055.
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Landwehr, Gunter, to Adler, Koch, AG. Thread cutting device for double stitch sewing machines. 3,756,177, Cl. 112-252.000.
Lang, Jerry M., to Care, Inc. Anti-pollution liquid waste burning incinerator. 3,756,170, Cl. 110-7.00r.
Lang, Kai, to Nuclear Data (Ireland) Limited. Counterbalanced stand for camera. 3,756,549, Cl. 248-123.000.
Langan, Marion J., to Avco Corporation. Band pass filter and detection circuit. 3,757,236, Cl. 328-167.000.
Langan, Marion J., to Avco Corporation. Direct current amplifier drift reduction method. 3,757,239, Cl. 330-9.000.
Langieri, Michael, Jr.; and Meyers, Michael, to Questor Corporation. Arithmetic teaching device. 3,755,924, Cl. 35-32.000.
Lanier Electronic Laboratory, Inc.: *See—*
Fleming, Ronald F., 3,757,057.
Lansing, Frederick J., to Schlegel Manufacturing Company, The. Weatherstrip assembly apparatus. 3,755,873, Cl. 29-202.500.
Laramee, Richard J.; Hunt, C. Joseph; and Hansen, Russell W., to Raytheon Company. Strip transmission line coupler. 3,757,272, Cl. 339-17.00m.
Larsen, James L.: *See—*
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Larson, Leward M.: *See—*
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Laszlo, Alexander L. Political science board game construction. 3,756,604, Cl. 273-134.0ad.
Lattner, Otto: *See—*
Forster, Hans-Joachim; Katz, Klaus; and Lattner, Otto, 3,756,125.
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Lauterbach, William E.: *See—*
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Lavaliee, Robert G.; and Grolman, Bernard, to American Optical Corporation. Non-contact tonometer. 3,756,073, Cl. 72-80.000.
Law, Kenneth J.; and Brown, Gordon R., to Parke, Davis & Company. Amplifier with long term, digitally-controlled D.C. clamping. 3,757,242, Cl. 330-127.000.
Laymon, Richard D. Mechanical muscle massager. 3,756,224, Cl. 128-57.000.
Le Blane, John R.: *See—*
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Le Fevre, Cecil W.: *See—*
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Coleman, Martin R., 3,757,100.
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Leavitt, Richard Irwin, to Mobil Oil Corporation. Method of isolating amino acid producing mutant microorganisms and mutants obtained therefrom. 3,756,916, Cl. 195-28.00r.
Lee, Raymond, Organization, Inc., The: *See—*
Spoerl, Hans, 3,755,956.
Lee, Wilfred J., to Clarkson Industries, Inc. Centrifugal pump with differential thermal expansion relief means. 3,756,738, Cl. 415-131.000.
Lee-Norse Company: *See—*
Bucelluni, Guido, 3,756,669.
Leeds & Northrup Company: *See—*
Hoopes, Howard Sherman, 3,757,348.
Lefever, Kenneth W.; and Campbell, Ronald J. Method and apparatus for transporting petroleum products through a frozen medium. 3,756,268, Cl. 137-340.000.
Lehmann, Roger, to Compagnie Generale d'Automatisme. System, method and apparatus for locating movable objects on a fixed path. 3,757,112, Cl. 246-122.00r.
Lehr, Sheila Berkley, to Sheila Berkley, Inc. Playground equipment. 3,756,593, Cl. 272-60.000.
Leiber, Heinz, to Teldix G.m.b.H. Hydraulic brake servo arrangement. 3,756,666, Cl. 303-10.000.
Leibowitz, Donald; Hoffman, Dorothy Morse; and Tams, Frederick James, III, to RCA Corporation. Method for controlling the composition of a deposited film. 3,756,847, Cl. 117-93.300.
Leifheit International Gunter Leifheit K.G., Firma: *See—*
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Leitz, Ernst, G.m.b.H.: *See—*
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Keiner, Heinz; Richter, Helmut; Schafer, Wilhelm; and Goldberg, Willi, 3,756,534.
Leitzer, Edward K., to Eastman Kodak Company. Color printer. 3,756,718, Cl. 355-32.000.
Lent, Ralph C., to Del Monte Corporation. Method and apparatus for handling articles. 3,756,368, Cl. 198-33.0ad.
Lepore, Anthony: *See—*
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Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine contraceptive device with large appendages. 3,756,228, Cl. 128-130.000.
Lerner, Robert, to Formulette Company, Inc. Infant dressing table. 3,756,680, Cl. 312-237.000.
Lerouge, Claude P. H.: *See—*
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Lettan, Richard H., to Eastman Kodak Company. Microfilm reader and multifunctional control means therefor. 3,756,709, Cl. 353-27.000.
Lever Brothers Company: *See—*
Gluck, Bruno Anthony, 3,756,950.
Huault, Jean, 3,756,394.
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Levin, Gilbert V.; and Topol, George J., to Biospherics Incorporated. Sewage treatment process. 3,756,946, Cl. 210-6.000.
Levy, Matthys P.: *See—*
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Lewis, Donald J.; and Bishop, Robert J., to Allied Chemical Corporation. Argon compressed gas supply. 3,756,621, Cl. 280-150.0ab.
Lewis, Jesse M., to Thermo-Chem Corporation. Tow hitch. 3,756,618, Cl. 280-489.000.
Lewis, Terence E., to Powerlite Devices Limited. Frangible lighting pole. 3,755,977, Cl. 52-98.000.
Leyland, Boris Nicholas; and Wood, Neil Frederick, to Imperial Chemical Industries Limited. Rubber-polyester compositions. 3,756,906, Cl. 161-231.000.
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Libbet, Albert H.; and Spencer, David R., to EG & G, Inc. Electrostatic recording method and apparatus. 3,757,036, Cl. 178-6.60r.
Licaia, William H., to United States of America, Navy. Self leveling system using periodic perturbations. 3,757,093, Cl. 235-150.100.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
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Liebman, Harmon L.; and Liebman, Shirley A., to Armstrong Cork Company. Poly(vinyl chloride) homopolymer particles obtained by freeze-drying. 3,756,967, Cl. 260-2.50b.
Liebman, Henry F., to Bendix Corporation, The. Glide slope lock-out network. 3,757,338, Cl. 343-108.00r.
Liebman, Shirley A.: *See—*
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Liebscher, Anton: *See—*
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Liebscher, Johannes, to Leifheit International Gunter Leifheit K.G., Firma. Brush. 3,755,847, Cl. 15-179.000.
Lien, Suei-Yuen Paul, to Western Electric Company, Incorporated. Centrifugal drum for growing crystal. 3,756,194, Cl. 118-52.000.
Liermann, Peter: *See—*
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Lilly, Glenford. Traffic control device. 3,757,291, Cl. 340-41.00a.
Limberger, Walter. Counter for working cycles. 3,756,711, Cl. 355-50.000.
Linde Aktiengesellschaft: *See—*
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Lindquist, John O.: *See—*
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Linz, Albert, to Bopparder Maschinenbaugesellschaft mbH (BOMAG). BiVibration tamper. 3,756,735, Cl. 404-133.000.
Lippy, Joseph Edmund, Jr.: *See—*
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Lipschutz, Paul, to Societe d'Exploitation des Brevets Meiman. Electric rotary switch. 3,757,062, Cl. 200-44.000.
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Litchford, George B. Aircraft instrument landing system. 3,757,337, Cl. 343-106.00r.
Litchford, George Barrett, to Litchstreet Co. Proximity indication with range and bearing measurements. 3,757,324, Cl. 343-6.50r.
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Lobdell, Donn D.: *See—*
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Lochridge, Joe C.; and Smith, Leif H., to Brown & Root, Inc. Method and apparatus for laying pipelines. 3,756,034, Cl. 61-72.300.
Lockheed Aircraft Corporation: *See—*
Weber, Kenneth E.; Wanamaker, John L.; and Ogne, Marshall L., 3,756,836.
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Locklar, Henry C.; Tao, Deh C.; and Tarver, Loyd E., Jr., to International Business Machines Corporation. Automatic toner concentration control system. 3,756,192, Cl. 118-7.000.
Long Island Oyster Farms, Inc.: *See—*
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Lord Corporation: *See—*
Bishop, Lester A., 3,756,551.
Love, Wesley. Thermoelectric generator. 3,757,146, Cl. 310-4.000.
Lowe, James U., Jr.: *See—*
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Lowe, William L.: *See—*
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Lowrey, Ernest C. Digger tooth and mounting therefor. 3,755,933, Cl. 37-142.00r.
Loy, Terrance M.: *See—*
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Loyd, Samuel Aston, Jr., to Acme Visible Records, Inc. Brake for manually operated rotary file. 3,756,356, Cl. 188-164.000.
Lubrizol Corporation, The: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
Goodman, Dennis George, 3,756,872.
Hill, William Frank, 3,757,198.
Lucas, Joseph G.; and Zuryr, John. Apparatus for an electrochemical milling process. 3,756,937, Cl. 204-224.00m.
Lucius, Harold D. Fish hood. 3,755,954, Cl. 43-43.160.
Luedi, Hans R.: *See—*
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Lukinac, Eugene M.; and Massa, Joseph N., to Globetrotter Communications, Inc., mesne. Golf ball having improved physical properties. 3,756,607, Cl. 273-218.000.
Lund, Charles M.: *See—*
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Lutts, Carlton G.; and Brennan, John W., to USM Corporation. Fabric pick-up mechanism. 3,756,587, Cl. 271-20.000.
Lyman, Frank, Jr., to Cambridge Thermionic Corporation. Stepping motor. 3,757,147, Cl. 310-49.000.
Lynott, John J.; and Stevens, Louis D., to International Business Machines Corporation. Continuous spiral, rotating head and disk video buffer system. 3,757,030, Cl. 179-100.20t.
Lyons, James A., Jr.: *See—*
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Mac Murray, James G., to Youngstown-Miller Corporation. Portable leak test instrument. 3,756,072, Cl. 73-40.500.
Mac Quilkin, Arthur E.; and Jensen, Hans, to Industrial Filter & Pump Mfg. Co. Filter leaf construction and method of making same. 3,756,417, Cl. 210-486.000.
Macidull, John C. Fruit harvesting apparatus. 3,756,001, Cl. 56-328.000.
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MacMaster, Malcolm D.; Henry, James; Morris, Herbert R.; and Schumacher, Neal P., to Emhart Corporation. Refrigerated display equipment. 3,756,038, Cl. 62-256.000.
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Macrander, Karl, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for transloading floating containers. 3,756,446, Cl. 214-15.00r.
Maddock, Bruce H., to Union Carbide Corporation. Thermoplastic material mixing. 3,756,574, Cl. 259-193.000.
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Maleski, Richard C. Arrow tip having replaceable cutting blades. 3,756,600, Cl. 273-106.50b.
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Mancke, Edgar B., to Bethlehem Steel Corporation. Method for simultaneously calcining and desulfurizing agglomerates of coal and/or coal derivatives. 3,756,791, Cl. 44-1.00r.
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Marcoux, Arthur, to McDonnell Douglas Corporation. Drill bushing system. 3,756,736, Cl. 408-14.000.
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- Mark, Andre. Pneumatic drier support structure. 3,755,914, Cl. 34-57.00a.
- Mark Products, Inc.: *See—*
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  - Hazelhurst, Gerald D., 3,757,274.
- Markakis, Michael J., to SCM Corporation. Magnetic recording and editing typewriter. 3,756,365, Cl. 197-1.00r.
- Markowitz, Jerome, to Allen Organ Company. Pitch articulation system for an electronic organ. 3,757,022, Cl. 84-1.250.
- Marks, Mortimer. Pliable mounting assembly for spectacles. 3,756,704, Cl. 351-60.000.
- Markwitz, Bernhard; and Pomp, Horst. Container for object slides. 3,756,393, Cl. 206-62.00r.
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- Martin, Robert L. Mailable disposable viewer. 3,756,699, Cl. 350-350.000.
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- Matsuda, Masao, to Matsushita Electric Industrial Co., Ltd. Device for stopping a rotating member at a predetermined angular position. 3,757,232, Cl. 328-74.000.
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- Mattingley, Dennis Byron, to Flymo Scoiete Anonyme. Lawn mower. 3,756,336, Cl. 180-19.00r.
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- Maugweiler, Gottfried, to Swiss Aluminum Ltd. Apparatus for compacting carbon bodies. 3,756,762, Cl. 425-25.00b.
- Mauron, Gerard, to Automobiles Peugeot and Regie Nationale des Usines Renault. Device for interlocking two elements which are relatively slidable. 3,756,094, Cl. 74-527.000.
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- McAlister, Roy E. Continuous casting apparatus with temperature control. 3,756,306, Cl. 164-283.000.
- McAlister, Theodore J., Jr.: *See—*
  - McAlister, Roy E.; and McAlister, Theodore J., Jr., 3,756,086.
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- McBride, Donald W., to Hallmark Cards Incorporated. Finishing roll for extruded plastic sheet. 3,756,760, Cl. 425-363.000.
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- McCarthy, Jack N. Electric light device. 3,757,105, Cl. 240-10.00r.
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  - Clemett, Edwin F., Jr., 3,757,061.
  - Perkins, Jimmie G., 3,756,655.
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  - O'Brien, Daniel M.; and McCune, Clarence G., 3,757,297.
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- McDonnell Douglas Corporation: *See—*
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  - Bader, Howard E., 3,756,544.
  - Marcoux, Arthur, 3,756,736.
  - Smatko, Joseph S., 3,756,857.
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- McDougall, Franklin M.: *See—*
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  - Hulette, Roger Leon; and Stupp, Robert J., 3,756,369.
- McElroy, Jerry T., to Automation Industries, Inc. Ultrasonic inspection device. 3,756,070, Cl. 73-67.80r.
- McEwen, Thomas A.; and Nelson, Stanley L. Vehicle license plate holder. 3,755,945, Cl. 40-29.000.
- McGahey, Dean C.; and Vest, Eugene W., to Texaco Inc. Gasoline vapor recovery system. 3,756,291, Cl. 141-45.000.
- McGlothlin, Charles J. Ferrule lock. 3,756,634, Cl. 287-119.00r.
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- McIsaac, Donald N. Irrigation and frost preventation method and apparatus. 3,755,961, Cl. 47-2.000.
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- McPhaul, Margaret L. Towel holder. 3,755,858, Cl. 24-73.00r.
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  - Mecca, Vito M., 3,756,002.
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  - Tonkowich, William; and Medvitz, John A., 3,756,341.
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  - Mella, Robert A.; and Wood, Donald N., 3,756,090.
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  - Hopkins, Paul Donald; and Menzl, Roland L., 3,756,943.
- Mercier, Joseph A., to Eastman Kodak Company. Apparatus for coating a continuous web. 3,756,195, Cl. 118-126.000.
- Merola, Anthony, to Amerola Products Corporation. High-velocity swaging. 3,756,062, Cl. 72-352.000.
- Merriner, Delbert L.: *See—*
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- Mertens, Johann, to Nuclear Waste Systems Company. Apparatus for removal of stored material from storage containers. 3,756,372, Cl. 198-64.000.
- Meshberg, Philip. Automatic periodic dispenser. 3,756,465, Cl. 222-61.000.
- Mesiah, Raymond N., to FMC Corporation. Process for chlorinating cyanuric acid. 3,757,018, Cl. 260-248.00c.
- Messera, Dominic; and Messera, Louis R. Emergency escape ladder. 3,756,347, Cl. 182-95.000.
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- Metabowerke K.G. Closs, Rauch & Schizler: *See—*
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- Meyer, Gilbert R., to CPC International Inc. Process for the production of non-hazing starch conversion syrups. 3,756,853, Cl. 127-38.000.
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- Meyers, George Leroy; and Belke, Paul James, to American Can Company. Method of skip applying adhesive to a carton panel. 3,756,842, Cl. 117-11.000.
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- Michel, Walter. Tarpaulin cover and mounting frame for open truck bodies. 3,756,650, Cl. 296-137.00c.
- Michellone, Giancarlo, to Fiat Societa per Azioni. Anti-skid braking system for towed vehicles. 3,756,661, Cl. 303-7.000.
- Micro Motors, Inc.: *See—*
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- Mihalcheon, Arthur. Spiral spring counterbalance unit. 3,756,585, Cl. 267-156.000.
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- Milazzo, Frank M., to International Telephone and Telegraph Corporation. Stabilization arrangement for communication buoys. 3,755,836, Cl. 9-8.000.
- Millard, Darry John, to Adwest Engineering Limited. Power-assisted rack-and-pinion steering mechanism for motor vehicles. 3,756,340, Cl. 180-79.20r.
- Miller, Harold C., to Super-Cut, Inc. Method of forming a peripheral grinding wheel. 3,756,796, Cl. 51-293.000.
- Miller, Henry F., to Uniroyal, Inc. Positive power transmission system. 3,756,091, Cl. 74-231.00c.
- Miller, Roy W.; and Shaver, William R., to Pullman Incorporated. Running board mounting bracket arrangement. 3,756,164, Cl. 105-457.000.
- Miller, Stephen H., to Eastman Kodak Company. Anti-friction disk for strip material cartridge. 3,756,535, Cl. 242-197.000.
- Miller, Timothy W., to Bethlehem Steel Corporation. Calculator for controlling basic oxygen steelmaking. 3,757,092, Cl. 235-74.000.
- Mills, George J.; and Brown, Gary G., to Northrop Corporation. Filimentary-plastic composite laminate. 3,756,905, Cl. 161-60.000.
- Mills, William R.; and Griffin, Roger C., Jr., to Reynolds Metals Company. Laminate and method of making same. 3,756,892, Cl. 156-323.000.
- Milovancevic, Slavko. Vehicular drift indicator-speedmeter. 3,756,077, Cl. 73-187.000.
- Minchhoff, Paul Joseph, to AMP Incorporated. Method and apparatus for connecting a tap to a pipeline. 3,756,261, Cl. 137-15.000.
- Mine Safety Appliances Company: *See—*
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- Minerd, Timothy M.; and Houston, Robert D., to Xerox Corporation. Method and apparatus for selectively enabling a remote receiver. 3,757,032, Cl. 178-4.10r.
- Minks, Floyd M. Power supply regulator. 3,757,199, Cl. 322-28.000.
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  - Bradshaw, Thomas I., 3,755,958.
  - Bughholz, Allan C., 3,756,849.
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  - Sinclair, Robert A.; and Errede, Louis A., 3,756,819.
  - Stepan, Alfred H.; Perkins, Robert J.; and Griggs, Allen L., 3,756,909.
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- Minolta Camera Co., Ltd.: *See—*
  - Nanba, Yasuhiro; Sahara, Masayoshi; and Yada, Kintaro, 3,756,130.
- Minolta Camera Kabushiki Kaisha: *See—*
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- Mishcon, Lester, to Singer Company, The. Yarn tension controllers and slub catchers. 3,755,864, Cl. 28-64.000.
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Moczall, Kurt, to Siemens Aktiengesellschaft. Device for blocking a conduit. 3,756,286, Cl. 138-94.300.
Moehrmann, Karlheinz, to Siemens Aktiengesellschaft. Automatic equalizer system for phase-modulated data signals. 3,757,221, Cl. 325-42.000.
Mogaki, Tadahisa; and Takanaka, Akira, to Nitto Kohki Company Limited, mesne. Portable sander. 3,755,972, Cl. 51-170.0mt.
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Moody, Dwight L.; and Troglione, Vincent R., to Moody Aquamatic Systems, Inc. Sewage disposal effluent purifier. 3,756,410, Cl. 210-139.000.
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Morena, John J.; and Grauso, Robert N., to Martin, C. F., & Co. Snare drum and improved snare wire therefor. 3,757,027, Cl. 84-416.000.
Moret, Michel Antoine Cesar; Bergman, Manfred; Jousson, Pierre Jean; and Mira, Jean, to Wood Institute for Industrial Research & Distribution. Method and apparatus for the practice of oral hygiene using a plurality of pulsated liquid jets. 3,756,225, Cl. 18-66.000.
Morgenstern, David. Filtered cigarettes. 3,756,250, Cl. 131-10.300.
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Morris, Herbert R.: *See—*
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Morrone, John J.: *See—*
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Mulberry, Lorence H. Over-all locking device for caps. 3,756,047, Cl. 70-164.000.
Muller, Albert, to Contraves AG. Bistable controllable flip-flop circuit. 3,757,143, Cl. 307-291.000.
Muller, Dietrich; and Wulf, Heiner, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Video signal brightness control circuit arrangement. 3,757,156, Cl. 315-30.000.
Muller, Karl-Heinz; and Rindfleisch, Volker, to Siemens Aktiengesellschaft. Arrangement for the magnification adjustment of an electron microscope. 3,757,117, Cl. 250-396.000.
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Munt, Hartwig, to Siemens Aktiengesellschaft. Method for producing small contacts of uniform thickness for thick-film circuits. 3,757,075, Cl. 219-121.0cm.
Muraoka, Hisashi; Ohashi, Taizo; and Yasui, Toshiko, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing a semiconductor integrated circuit isolated by dielectric material. 3,756,877, Cl. 156-17.000.
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Murphy, John Brian, to Bissett-Berman Corporation, The. Thermal pollution monitoring device. 3,757,229, Cl. 328-1.000.
Murphy, John Michael, to Explosives and Chemical Products Limited. Resinous cartridges for securing fixing elements. 3,756,388, Cl. 206-47.00a.
Murray, Jerome L.; and Gardiner, Frances R. Hygienic douche system. 3,756,230, Cl. 128-225.000.
Murray, Jerome L.; and Gardiner, Frances R. Hygenic douche system. 3,756,236, Cl. 128-225.000.
Murray, John B. W.; Christison, Sommerville G.; and Bonar, William, to Gearmatic Co., Ltd. Power control winch. 3,756,564, Cl. 254-187.00r.
Murray, Richard D.; Cone, Peter F.; Chertok, Allan B.; and Shaler, David, to EG & G, Inc. Digitally pulsed dielectric line scan recorder. 3,757,352, Cl. 346-74.0es.
Musch, Bernard E.; and Lobdell, Donn D., to Hewlett-Packard Company. Keyboard actuating mechanism with particular feel and contact mechanisms. 3,757,068, Cl. 200-159.00r.
Mutrie, Charles B. Toothbrush for arthritics. 3,755,848, Cl. 15-184.000.
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Naegele, Erich O.; Petkovsek, Richard J.; Sekse, Iorkjell; and Sevilla, Ernesto G., to Cogar Corporation. Tape travel guiding apparatus. 3,756,610, Cl. 275-4.00r.
Naf, Otto, to Ganz & Co. Tape recorder with control device for a slide projector. 3,756,715, Cl. 353-15.000.
Nagaki, Katsuyuki. Electrician's knife. 3,755,893, Cl. 30-154.000.
Nagati, Rashed N., to Pennsylvania Engineering Corporation. Molten metal vessel suspension system. 3,756,583, Cl. 266-36.00p.
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Nakagawa, Jihei, to Olympus Optical Company, Limited. Planapochromatic objective lens systems for use in microscopes. 3,756,698, Cl. 350-220.000.
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Nalle, George S., Jr. Plastic mesh bag, method, and apparatus. 3,756,300, Cl. 150-1.700.
Nanba, Yasuhiro; Sahara, Masayoshi; and Yada, Kintaro, to Minolta Camera Co., Ltd. Exposure time control device in a through the lens type single reflex camera. 3,756,130, Cl. 95-10.0ct.
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Chalmers, Brian John; and Magureanu, Razvan Matei, 3,757,182.
Nebell, Hans Georg Tidemann, to A/S Ardal og Sunndal Verk. Conductor arrangement for compensating detrimental magnetic influence on a row of pots from another in plants for producing metal, for instance aluminum, by electrolytic reduction. 3,756,938, Cl. 24-243.00m.
Nedenskov, Poul, to Aktieselskabet Grindstedvaerket. Process for the production of 5-phenyl-1,4-benzodiazepines. 3,757,006, Cl. 260-239.0bd.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer: *See—*
DeLange, Robert Gerardus; Zijderveld, Jacobus Antonius; and Van Kuppevelt, Gerardus Antonius, 3,756,787.
Negishi, Naoki: *See—*
Saito, Shinroku; Okada, Yukihiko; and Negishi, Naoki, 3,756,511.
Negre, Robert Numa Paul, to Pont-A-Mousson S.A. Sealing means for a machine for centrifugally casting pipes and a machine including said sealing means. 3,756,307, Cl. 164-297.000.
Neil, Peter C., to Standard Oil Company (Indiana). Apparatus for counting and separating nested articles of manufacture. 3,756,371, Cl. 198-40.000.
Nelson, Robert J. Sunglasses containing embedded louver means. 3,756,703, Cl. 351-45.000.
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Goff, James R., 3,756,377.
Nelson, Stanley L.: *See—*
McEwen, Thomas A.; and Nelson, Stanley L., 3,755,945.
Nelson, William B., Jr. Component assembler and method. 3,755,871, Cl. 29-200.00a.
Nemeth, Harold C.: *See—*
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Netteland, Loyal G., to A-T-O Inc. Gas generator assembly. 3,756,785, Cl. 23-281.000.
Neumaier, Alfons: *See—*
Kunhe, Gerhard; and Neumaier, Alfons, 3,756,991.
Neuman, August. Fishhook holding system. 3,755,957, Cl. 43-57.50r.
Neumann, Herbert: *See—*
Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Jurischka, Hans-Dieter; and Bach, Hans, 3,756,006.
Neuroth, Norbert, to JENAer Glaswerk Schott & Gen. Method for beam heating of glass. 3,756,799, Cl. 65-18.000.
Neuwelt, Robert T., to Instrumentation Laboratory, Inc. Electrochemical electrode structure. 3,756,936, Cl. 204-195.00f.
New Jersey Machine Corporation: *See—*
Von Hofe, George W.; and Wolff, Edwin K., 3,756,899.
New York Toy Corporation: *See—*
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Newman, Joseph L.: *See—*
Shelton, Winston L.; and Newman, Joseph L., 3,756,308.
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., to Voltronics Corporation. Variable electronic component with movable contact means. 3,757,266, Cl. 338-158.000.
Newton, William J.: *See—*
Castro, Rodulfo; Newton, William J.; and Toscano, Esteban J., 3,755,861.
Nicholls, Lawrence George, to Girling Limited. Sockets for ball and socket joints. 3,756,734, Cl. 403-14.000.
Nieland, Arnold A.: *See—*
Spatz, Donald Dean; and Nieland, Arnold A., 3,756,408.
Nilsen, Lornts B.: *See—*
Gandolfo, Peter F.; and Nilsen, Lornts B., 3,756,350.
Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing rods or wire of compound material having non-circular cross-section by hydrostatic extrusion. 3,756,054, Cl. 72-60.000.
Nilsson, Lars Konrad, to Telefonaktiebolaget L M Ericsson. Apparatus for the detection of rectangular pulses. 3,757,132, Cl. 307-106.000.
Nippon Carbon Co., Ltd.: *See—*
Takeuchi, Haruo; Okamoto, Yoichiro; Kurosaki, Shigehiko; and Nakamoto, Kikuo, 3,756,925.
Nippon Carbon Company, Limited: *See—*
Kanemaru, Toyonosuke; Yamazoe, Hiroshi; and Ichikawa, Hiroshi, 3,756,911.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
Nakamura, Soichi, 3,756,697.
Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 3,756,754.
Nippon Steel Corporation: *See—*
Kammori, Ohiko; and Taguchi, Ismau, 3,756,400.
Nishimura, Izuhiko; and Shimoi, Akio, to Kabushiki Kaisha Suwa Seikosha. Time correcting device for electronic timepieces. 3,756,011, Cl. 58-23.00r.
Nishiyama, Klizo; Hiraiwa, Takeo; and Iwata, Koshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Composite foundry core. 3,756,309, Cl. 164-369.000.
Nishizawa Shoji Co., Ltd.: *See—*
Kuroda, Minoru, 3,756,888.
Nissan Motor Company, Limited: *See—*
Mizote, Masanori, 3,757,050.
Toda, Yoshio; Konno, Mitsutaka; and Makajima, Masao, 3,756,208.
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Nitterl, Ludwig: *See—*
Nitterl, Ludwig; and Ehlers, Karsten (said Ehlers assor. to), 3,756,510.
Nitterl, Ludwig; and Ehlers, Karsten, said Ehlers assor. to Nitterl, Ludwig. Means for heating windshield washer fluid. 3,756,510, Cl. 239-129.000.
Nitto Kohki Company Limited, mesne: *See—*
Mogaki, Tadahisa; and Takanaka, Akira, 3,755,972.
Nitz, Rolf-Eberhard: *See—*
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Noguchi, Koichi: *See—*
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Noguchi, Koichi; and Saburi, Masao, said Saburi assor. to said Noguchi, Koichi. Sanitary napkins disposable in water closet bowl with the use of alkaline agent. 3,756,232, Cl. 128-240.00r.
Noguchi, Masanori: *See—*
Yamasaki, Hiroo; and Noguchi, Masanori, 3,756,078.
Nohe, Heinz: *See—*
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Noiman, Klaus: *See—*
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Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Redundant speed control for brushless hall effect motor. 3,757,183, Cl. 318-254.000.
Noon, Ivor G.: *See—*
Stinson, Herman B., Jr.; and Noon, Ivor G., 3,757,024.
Nordfalt, Kjell Torsten, to Procter & Gamble Company, The. Bleaching process and composition. 3,756,775, Cl. 8-111.000.
Nordling, Homer G. Attachment for connecting a stern drive unit and an auxiliary outboard motor. 3,756,186, Cl. 115-18.00r.
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Noren, Tore H.; and Federight, George J. Silverware sorting and polarizing machine. 3,756,403, Cl. 209-73.000.
Noro, Yoshiko: *See—*
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North American Manufacturing, Inc.: *See—*
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North American Rockwell Corporation: *See—*
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Pilipovich, Donald; Maya, Walter; and Wilson, Richard D., 3,756,780.
North Electric Company: *See—*
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Northcutt, Michael B. Tool for removing an orthodontic onlay that has been cemented to the front surface of a tooth. 3,755,902, Cl. 32-66.000.
Northrop Corporation: *See—*
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Norwood, Eugene R., to Norwood Marking and Equipment Co., Inc. Imprinter. 3,756,146, Cl. 101-44.000.
Norwood Marking and Equipment Co., Inc.: *See—*
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Nourse, Jack T., to Hy-Wind, Inc., mesne. Hydraulically operated window unit. 3,755,967, Cl. 49-360.000.
Novak, Frank A.; Schreiber, Kenneth T.; and Doleus, Anthony H., to Ardac/USA Incorporated. Change dispensing apparatus. 3,756,363, Cl. 194-4.00c.
November, Milton H., to International Telephone and Telegraph Corporation. Turbine flowmeter. 3,756,079, Cl. 73-231.00r.
Novotny, Charles J.: *See—*
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Nuclear Data (Ireland) Limited: *See—*
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- Nuclear Waste Systems Company: *See—*
  - Mertens, Johann, 3,756,372.
- NUKEM, Nuklear-Chemie und- Metallurgie Gesellschaft mit beschrankter Haftung: *See—*
  - Tillessen, Ulrich; Engel, Karl-Heinz; Pirk, Hans; Hackstein, Karl-Gerhard; and Habermann, Dietger, 3,756,786.
- N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal": *See—*
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- Oak Electro/Netics Corporation: *See—*
  - Bockholt, Karl H., 3,756,364.
- Oberbury, Francis G., to International Standard Electric Corporation. Single sideband generator employing a plurality of cyclically switched shorting diodes controlling a transmission line electrical length. 3,757,222, Cl. 325-137.000.
- Oberender, Frederick G.; Patmore, Edwin L.; and Reed, David D., to Texaco Inc. Synthetic aircraft turbine oil. 3,756,952, Cl. 252-47.500.
- O'Brien, Daniel M.; and McCune, Clarence G., to California Computer Products, Inc. Batch total accumulator for card punch. 3,757,297, Cl. 340-146.10a.
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  - Ten Haaf, Johannes Josephus; and Heuts, Louis Bernard, 3,756,823.
  - van Megen, Hubertus J.; and Janssen, Willem P. H. A., 3,756,488.
- Ochiai, Takeshi: *See—*
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- O'Connor, Sean J.: *See—*
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- O'Donnell, John F., Jr.: *See—*
  - Jannery, George E.; O'Donnell, John F., Jr.; and Parks, Herman David, 3,757,038.
- Oehlmann, Hermann, to Kalle Aktiengesellschaft. End wall for containers. 3,756,392, Cl. 206-59.00e.
- Ogawa, Francis T., to Honeywell Inc. Adapter circuit for use with auto exposure camera. 3,756,132, Cl. 95-10.0ce.
- Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Switch actuating mechanism responsive to opening and closing of a door. 3,757,064, Cl. 200-61.640.
- Ogne, Marshall L.: *See—*
  - Weber, Kenneth E.; Wanamaker, John L.; and Ogne, Marshall L., 3,756,836.
- O'Halloran, Michael: *See—*
  - Cosserat, David Cockburn; Cotton, John Michael; O'Halloran, Michael; and Trapnell, Frederick Mackay, 3,757,307.
- Ohashi, Taizo: *See—*
  - Muraoka, Hisashi; Ohashi, Taizo; and Yasui, Toshiko, 3,756,877.
- Ohdan, Kyoji: *See—*
  - Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Miki, Kenichi; Arima, Yasutaka; Hidaka, Mikio; Bando, Yasuo; Fukuda, Kazuo; and Sawazi, Masao, 3,756,965.
- Ohi, Reiichi: *See—*
  - Hayashi, Jun; Ohi, Reiichi; and Shishido, Tadao, 3,756,821.
- Ohio State University, The, mesne: *See—*
  - Carver, Keith R., 3,757,345.
- Ohisu, Ikuo: *See—*
  - Asano, Hiroaki; and Ohisu, Ikuo, 3,755,909.
- Ohkubo, Kinji; Noguchi, Junpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Thermally developable light-sensitive elements. 3,756,829, Cl. 96-114.100.
- Ohlhausen, William T. Tick eradicator. 3,756,200, Cl. 119-156.000.
- Ohlson, Gunnar F., to International Telephone and Telegraph Corporation. Function generator. 3,757,234, Cl. 328-142.000.
- Ohlsson, Fall Johan Olof William, to Sandco Limited, mesne. Insert for cutting of steel, cast iron or similar material. 3,755,866, Cl. 29-95.00c.
- Ohmura, Hirosha, to Fuji Photo Film Co., Ltd. Roll film for double magazine. 3,756,528, Cl. 242-74.000.
- Okada, Kazdo; and Ando, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Optical tracking apparatus. 3,757,125, Cl. 250-202.000.
- Okada, Yukihiko: *See—*
  - Saito, Shinroku; Okada, Yukihiko; and Negishi, Naoki, 3,756,511.
- Okagami, Akio: *See—*
  - Ishiguro, Tadashi; Okagami, Akio; and Matsuoka, Seiichi, 3,756,944.
- Okajima, Yasuharu: *See—*
  - Furuuchi, Shigemasa; Akeyoshi, Kazuyuki; Okajima, Yasuharu; and Gotch, Yoshio, 3,756,196.
- Okamoto, Yoichiro: *See—*
  - Takeuchi, Haruo; Okamoto, Yoichiro; Kurosaki, Shigehiko; and Nakamoto, Kikuo, 3,756,925.
- Okano, Yokio: *See—*
  - Mino, Masayuki; and Okano, Yokio, 3,756,695.
- Okita, Tetsuo; and Inagawa, Junji, to Sony Corporation. Apparatus for automatically eliminating the influence of the earth's magnetic field on color television receivers. 3,757,154, Cl. 315-8.000.
- Okugawa, Toshimune: *See—*
  - Suzuki, Ziro; Agata, Masaji; and Okugawa, Toshimune, 3,756,113.
- Okui, Seiichi. Fluid control valve. 3,756,558, Cl. 251-282.000.
- Okuyama, Yasushi; Takano, Sho; and Suzuki, Ryokuya, to Sumitomo Metal Mining Company. Earth drilling apparatus. 3,756,331, Cl. 175-258.000.
- Olah, Emery E., to Motorola, Inc. Dial pointer driver assembly for radio receiver. 3,756,191, Cl. 116-124.10r.
- Olin Corporation: *See—*
  - Dupy, Jerome M., 3,755,884.
- Olinkraft, Inc.: *See—*
  - Hudson, Doyle R., 3,755,986.
- Oliphant, Benjamin M. Fish lure. 3,755,952, Cl. 43-42.370.
- Oliver, Joseph R.: *See—*
  - Fletcher, Ralph A.; and Oliver, Joseph R., 3,756,216.
- Oliverio, Anthony Daniel; and Ward, Marvin Levi, to Keithley Instruments, Inc. Electrical testing instrument structure. 3,757,218, Cl. 324-156.000.
- Ollivier, Louis A., to Veriflo Corporation. Ventilator. 3,756,229, Cl. 128-145.800.
- Olmstead, Merlin E.: *See—*
  - Shear, Wayne G.; and Olmstead, Merlin E., 3,757,339.
- Olympus Optical Co., Ltd.: *See—*
  - Sato, Masaaki, 3,756,609.
- Olympus Optical Company, Limited: *See—*
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- Omark Industries, Inc.: *See—*
  - Chaney, Arlen L., 3,756,387.
  - Edgerton, John L., 3,755,997.
- O'Neill, Jerry G.; Loy, Terrance M.; and Swanson, Harry Roger, to Data Instruments Company. Automatic cassette changer. 3,756,608, Cl. 274-4.00f.
- Onishi, Akira: *See—*
  - Watanabe, Hiroshi; Sadachi, Masato; Nakamura, Yoshimitsu; and Onishi, Akira, 3,756,971.
- Oostdik, Dennis, to Hoerner-Waldorf Corporation. Cushioning divider. 3,756,496, Cl. 229-15.000.
- Optical Research and Development Corporation: *See—*
  - Humphrey, William E., 3,756,686.
- Orazi, Paolo. Aircraft. 3,756,541, Cl. 244-39.000.
- Ormaechea, Jose Joaquin Aguirre. Method of producing lead-bearing steel. 3,756,805, Cl. 75-58.000.
- Ornstein, Jacob L.: *See—*
  - White, Sheldon S.; Ty, Henry; Ornstein, Jacob L.; Dudovicz, Wesley V.; Dubuc, Rene A.; and Clark, Joseph E., 3,755,881.
- Ornstein, Jacob L., to Texas Instruments, Incorporated. Composite thermostat material. 3,756,790, Cl. 29-195.500.
- Orthman, Henry K., to Orthman Manufacturing Inc. Tool bar clamp. 3,756,327, Cl. 172-697.000.
- Orthman Manufacturing Inc.: *See—*
  - Orthman, Henry K., 3,756,327.
- Orthopedic Equipment Company, Inc.: *See—*
  - Smythe, Walter J., 3,756,239.
- Osborn, Robert H., to Hercules Incorporated. Electrically conducting elastomers and electrical members embodying the same. 3,757,088, Cl. 219-553.000.
- Osborne, William L., to Marlin Firearms Company, The. Folding rear sight for rifles. 3,755,910, Cl. 33-255.000.
- Osenbruggen, Cornelis Van; and Van Der Veeke, Adriaan Abraham, to U.S. Philips Corporation. Constant-current-density method of machining a work-piece by means of spark erosion. 3,757,073, Cl. 219-69.00c.
- Oshimi, Tokuichi: *See—*
  - Fujii, Yoshitsugu; and Oshimi, Tokuichi, 3,756,947.
- Osmonics, Inc.: *See—*
  - Spatz, Donald Dean; and Nieland, Arnold A., 3,756,408.
- Ostenssen, Sture, to Fashion Tress, Inc. Pre-curled wig and method. 3,756,254, Cl. 132-5.000.
- Ostring, Bert S.; and Chura, Nick. Rotatable display stand. 3,756,422, Cl. 211-163.000.
- Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Electrophoretic display device. 3,756,693, Cl. 350-160.00r.
- Outers Laboratories Inc.: *See—*
  - Christen, Jack P., 3,756,214.
- Ouw, Willem Bian Gwan; and Johnson, Albert Lester, to Long Island Oyster Farms, Inc. Method for opening shell fish. 3,755,855, Cl. 17-48.000.
- Over, Donald Paul; and Thompson, Ira Foy, to RCA Corporation. Toroidal deflection yoke having conductors wound in flyback manner. 3,757,262, Cl. 335-213.000.
- Overmyer, Robert C.; and Scheel, John R., to Hawley Manufacturing Corporation. Exhaust and charging hood for tilting furnace. 3,756,582, Cl. 266-1.500.
- Owens Illinois, Inc.: *See—*
  - Sponseller, Harold P., 3,756,573.
- Owens-Corning Fiberglas Corporation: *See—*
  - Smith, Roy E., 3,756,893.
- Oxy Metal Finishing Corporation, mesne: *See—*
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- Oy Tampella AB: *See—*
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- Ozawa, Tsutomu, to Hitachi, Ltd. Vernier chopper controlling device. 3,757,186, Cl. 318-514.000.
- Packard, James R.; Campbell, Donald A.; Tait, William C.; and Dierssen, Gunther H., to Minnesota Mining and Manufacturing Company. Electron beam laser. 3,757,250, Cl. 331-94.500.
- Page, Geoffrey A.: *See—*
  - Krohn, Ivar T.; and Page, Geoffrey A., 3,756,812.
- Paget, Frederick W.: *See—*
  - Cutta, John J.; and Paget, Frederick W., 3,757,159.
- Paige, Richard E., to APL Corporation. Carrier bag with integrally formed handle. 3,756,503, Cl. 229-52.00b.

- Palazzetti, Mario, to Fiat Societa per Azioni. Combined threshold detector and multivibrator circuit. 3,757,142, Cl. 307-273.000.
- Palitex Project-Company G.m.b.H.: *See—*
  - Fink, Heinz, 3,755,849.
- Palmer, Gerald G.: *See—*
  - Kim, Chang Soo; and Palmer, Gerald G., 3,757,175.
- Palmer, William H.: *See—*
  - Pugh, Donald W.; Spomer, Roland J.; Wolfenberger, Charles J.; Palmer, William H.; and Horney, Robert W., 3,756,996.
- Palsson, Sven Gunnar; and Janocha, Jan Bertil, to Isabergs Verkstads AB. Circuit arrangements for supplying an alternating current potential to a load. 3,757,141, Cl. 307-252.00n.
- Pantazi, Spiros G., to Schwamb Corporation, The. Demountable partition assembly. 3,755,979, Cl. 52-204.000.
- Panusch, Erwin, to Kaiser Aluminum & Chemical Corporation. Deicer composition. 3,756,956, Cl. 252-70.000.
- Park Ohio Industries, Inc.: *See—*
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- Park-Ohio Industries, Inc.: *See—*
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  - Kasper, Robert J.; and Killian, William H., 3,757,074.
- Parke, Davis & Company: *See—*
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  - Weyers, Hogo Jozef, 3,756,759.
- Parker, Charles C.; Polleys, Rhodes W.; and Vranka, Joseph S., to International Business Machines Corporation. Method and manufacturing magnetic alloy particles having selective coercivity. 3,756,866, Cl. 148-105.000.
- Parker, Leon, to Hitco. Acoustical panel. 3,756,346, Cl. 181-33.00g.
- Parkhani, Chandrakant: *See—*
  - Pentz, Howard L.; Parkhani, Chandrakant; and Majeron, Frank, 3,756,418.
- Parks, Herman David: *See—*
  - Jannery, George E.; O'Donnell, John F., Jr.; and Parks, Herman David, 3,757,038.
- Parquet, Donald James, to Deere & Company. Spool valve lands having spherically-curved sealing surfaces. 3,756,280, Cl. 137-625.250.
- Parr, William Geoffrey. Blade sharpening devices. 3,755,970, Cl. 51-58.000.
- Parris, Ralph C.: *See—*
  - Green, James R.; Parris, Ralph C.; and Fine, Arnold J., 3,756,398.
- Parris, Warren M.; and Hunter, Donald B., to Titanium Metals Corporation of America. High temperature titanium alloy. 3,756,810, Cl. 75-175.500.
- Parrot, Dale W. Grain storage bin construction. 3,755,918, Cl. 34-236.000.
- Partyka, Edward S.: *See—*
  - Cvacho, Daniel S.; and Partyka, Edward S., 3,756,103.
- Pasold, Gunter, to Veb Kombinat Rolotron. Aperture aberration reducing device. 3,756,691, Cl. 350-157.000.
- Pastura, Albino: *See—*
  - Junghahnel, Rudolf; and Pastura, Albino, 3,756,960.
- Patience, Donald, to Kendall Company, The. Radiopaque abdominal pack. 3,756,241, Cl. 128-296.000.
- Patmore, Edwin L.: *See—*
  - Oberender, Frederick G.; Patmore, Edwin L.; and Reed, David D., 3,756,952.
- Patrick William A., to Polyvend, Inc. Merchandise dispensing module having cooperating hook and tab article support. 3,756,455, Cl. 221-85.000.
- Patycola, Edward A. Control apparatus for gas burners. 3,756,221, Cl. 126-360.00r.
- Paulsen, John D.: *See—*
  - Evans, John S., Jr.; and Paulsen, John D., 3,756,431.
- Pawlek, Rudolf: *See—*
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- Pax, Francis J.; and Pax, John C., to Pax Machine Works, Inc. Part collector and mechanism therefor. 3,756,107, Cl. 83-165.000.
- Pax, John C.: *See—*
  - Pax, Francis J.; and Pax, John C., 3,756,107.
- Pax Machine Works, Inc.: *See—*
  - Pax, Francis J.; and Pax, John C., 3,756,107.
- Payne, Herbert James: *See—*
  - Brown, Lewis Judson; Lippy, Joseph Edmund, Jr.; and Payne, Herbert James, 3,756,926.
- Payne, Richard Steven; and Scavuzzo, Robert John, to Bell Telephone Laboratories, Incorporated. Bipolar transistors and method of manufacture. 3,756,861, Cl. 148-1.500.
- Peabody Engineering Corporation: *See—*
  - Arnold, Orland M., 3,756,515.
  - Dunn, John, 3,756,580.
- Pearce, John H., to Cornelius Company, The. Vending machine having sequential actuation of dispensing. 3,756,362, Cl. 194-10.000.
- Pearson, David B., to Weston Instruments, Inc. Meter and method of calibration. 3,757,217, Cl. 324-151.00r.
- Pearson, Eugene Steven: *See—*
  - Judge, Robert Louis; and Pearson, Eugene Steven, 3,757,271.
- Pearson, Nils Olof: *See—*
  - Abbott, Franklin Paul; and Pearson, Nils Olof, 3,756,954.
- Peasley, Curtiss M. Battery powered light fixture. 3,757,107, Cl. 240-10.60r.
- Pechi, Louis L., to Precision Design Corporation. Multiple selective single tape cartridge drive from a constant drive mechanism. 3,756,487, Cl. 226-110.000.
- Pedersen, Niels Peder, to General Electric Company. Voltage control of an A.C. drive system during motor starting. 3,757,179, Cl. 318-85.000.
- Pell, Richard B.; Churchill, Steven T.; and Seeley, William, to Delta Communications Corporation. Time multiplexed sampled data telephone system. 3,757,053, Cl. 179-18.00j.
- Pelorex Corporation: *See—*
  - Rait, Joseph M.; and Ruesenberg, James H., 3,755,985.
- Pennsylvania Engineering Corporation: *See—*
  - Nagati, Rashed N., 3,756,583.
- Pennwalt Corporation: *See—*
  - Brown, Lewis Judson; Lippy, Joseph Edmund, Jr.; and Payne, Herbert James, 3,756,926.
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  - Ezell, Emory L., 3,756,036.
  - Fenska, Edward E., 3,756,405.
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- Rack, David. Multiple-plant substrate body. 3,755,964, Cl. 47-37.000.
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- Rice, Henry T. M. Boat trailer. 3,755,834, Cl. 9-1.00t.
- Rice, Herbert L.; Cizek, Arthur; and Thaemar, Marvin O., to Magna Corporation, mesne. Acrylic composition for water treatment and process for making same. 3,756,257, Cl. 134-3.000.
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- Riggs, Jerry W.; and Stiner, Roy E., to Continental Industries, Inc. Coupling apparatus for pipe. 3,756,632, Cl. 285-250.000.
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  - Howarth, Roger E.; McGuigan, William M.; and Murday, David A., 3,756,123.
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- Rolair Systems Inc.: *See—*
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- Roll Forming Corporation: *See—*
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- Rollins Protective Services Company: *See—*
  - Birchfield, Jerry Linward; and Moss, Richard Wallace, 3,757,315.
- Rombusch, Konrad: *See—*
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- Rosen, Harold A., to Hughes Aircraft Company. Antenna direction control system. 3,757,336, Cl. 343-100.0st.
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  - Ventres, Romeo J.; Duchesneau, Eugene A., Jr.; and Rosis, Constantine, 3,756,979.
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- Rowland, Stanley P.: *See—*
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- Roy, Robert, to Colt Industries Operating Corporation, mesne. Combination action spring guide and buffer for automatic pistol. 3,756,121, Cl. 89-196.000.
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- Roze, Albert; Fencl, Vernon R.; and Luedi, Hans R., to Grotnes Machine Works, Inc. Shrink forming apparatus with axial run-out tooling. 3,756,063, Cl. 72-356.000.
- Ruben, Samuel. Tantalum capacitor. 3,757,172, Cl. 317-230.000.
- Rubin, Herbert, to New York Toy Corporation. Doll carriage. 3,756,333, Cl. 180-1.00e.
- Rucinski, Roland R., to Bell & Howell Company. Slip clutch. 3,756,325, Cl. 172-70.140.
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  - Blubaugh, Robert L.; Ruckle, Robert A.; and Watts, Hubert J., 3,755,905.
- Rudder, Joel: *See—*
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  - Jasik, Henry; Myslicki, Robert Leonard; and Rudish, Ronald Myron, 3,757,342.
- Rudle, August, to Bizerba-Werke Wilhelm Kraut KG. Pulsator for milking machines. 3,756,198, Cl. 119-14.360.
- Ruesenberg, James H.: *See—*
  - Rait, Joseph M.; and Ruesenberg, James H., 3,755,985.
- Ruhl, Charles A. L.; Meyer, Edward; and Chatterjea, Probin K., to International Harvester Company. Hydrostatic transmission control with hydraulic follow-up. 3,756,030, Cl. 60-487.000.
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  - Hoegerle, Karl; Vogel, Christian; and Rumpf, Jurg, 3,756,803.
- Russ, Paul E., Sr., to Gates Rubber Company, The. Endless track. 3,756,668, Cl. 305-35.0eb.
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- Russell, Wayne B., Jr. Operator safety oriented earth auger. 3,756,330, Cl. 175-203.000.
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- Ryan, Paul T., to General Electric Company. Control apparatus for application of automatic air brake systems. 3,756,665, Cl. 303-81.000.
- Ryan, Robert J., to RCA Corporation. Multilayer circuit board techniques. 3,756,891, Cl. 156-309.000.
- Rydberg, Rudolph C. Drag scoop and line for retrieval of golf balls from water hazards. 3,756,644, Cl. 294-66.00r.
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  - Noguchi, Koichi; and Saburi, Masao, 3,756,232.
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- Sager, Joseph A. Emergency traction splint. 3,756,227, Cl. 128-85.000.
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- Sakai, Hideo, to Tomy Kabushiki Kaisha. Pulley block with brake. 3,756,565, Cl. 254-192.000.
- Sakakibara, Naoji: *See—*
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- Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Apex seal for rotary piston engine. 3,756,754, Cl. 418-113.000.
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- Saldi, Ideal T., to General Electric Corporation. Mesh-reinforced sec target for camera tubes. 3,755,865, Cl. 29-25.170.
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- Samczyk, Casimir S.; and Bielik, Paul G., to Bell & Howell Company. Sealing means for copying machine developer trough. 3,756,136, Cl. 95-89.00r.
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- Samsonite Corporation: *See—*
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- Sandler, Karl. Trashrack cleaner with self-driven cleaning unit. 3,755,846, Cl. 15-93.00r.
- Sandoz Ltd.: *See—*
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- Santarelli, Salvatore P.; and Colombini, John; deceased (by Sergolia, Peter; executor). Trash bag cart with adjustable bag holder. 3,756,548, Cl. 248-98.000.
- Sanwa Tetsuki Kougiyou Kabushiki Kaisha: *See—*
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- Saotome, Kunihiko: *See—*
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- Sapp, William C., Sr. Dolly block. 3,756,616, Cl. 280-79.100.
- Sapper, Richard F., to Italora S.p.A. Alarm clock case made of two sections of which one is the means for stopping the alarm bell. 3,756,009, Cl. 58-21.150.
- Sarkes Trazian, Inc.: *See—*
  - Weigel, Morton L., 3,757,227.
- Sasaki, Michihiko: *See—*
  - Hashizume, Tsuneharu; Sasaki, Michihiko; Tatuno, Masanori; Demachi, Toshiaki; Hatakoshi, Osaku; Miyauchi, Shigeru; and Amemiya, Susuma, 3,757,309.
- Sasaki, Shoji, to Sanwa Tetsuki Kougiyou Kabushiki Kaisha. Weight screw rod type damper. 3,756,351, Cl. 188-1.00b.
- Sasguri, Kyoji: *See—*
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- Sastri, Aiyaswami Suryanarayan, to Gillette Company, The. Novel razor blades and process for making same. 3,756,865, Cl. 148-12.000.
- Sather, Delaine C., to Collins Radio Company. Integration and filtration circuit apparatus. 3,757,261, Cl. 235-152.000.
- Sato, Kazuo; and Aoyama, Takami, to Toyota Jidosha Kogyo Kabushiki Kaisha. Safety system for vehicle driver and passengers. 3,757,292, Cl. 340-52.00h.
- Sato, Kazuo; and Izawa, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Safety device for vehicle passengers. 3,757,325, Cl. 343-7.0ed.
- Sato, Kazuo; and Watanable, Hisahi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Systems for measuring velocities of moving bodies. 3,757,329, Cl. 343-8.000.
- Sato, Masaaki, to Olympus Optical Co., Ltd. Apparatus for automatically operating a selected one of a plurality of pipe cassettes. 3,756,609, Cl. 274-4.00f.
- Sato, Toshihiko: *See—*
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  - Hayakawa, Yoshihide; and Satomura, Masato, 3,756,820.
- Sattler, Patricia Ann. Disposable bedpan pillow. 3,755,828, Cl. 4-113.000.
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- Sawazi, Masao: *See—*
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- Saxe, Robert L., to Research Frontiers Incorporated. Method and apparatus for increasing optical density ratios of light valves. 3,756,700, Cl. 350-267.000.
- Sayler, William H.: *See—*
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- Scardiglia, Frank; and Hokama, Takeo, to Velsicol Chemical Corporation. Copolymers and preparational method therefor. 3,757,000, Cl. 260-88.20c.
- Scavuzzo, Robert John: *See—*
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- Scheetz, Robert J.; and Sobota, Stephen M., Jr., to Philco-Ford Corporation. Conformal coating process to improve package reliability in adverse environments. 3,756,852, Cl. 117-212.000.
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- Schirmer, Gunter; Fauser, Edwin; and Steinke, Leo, to Bosch, Robert, G.m.b.H. Arrangements for electronically determining and adjusting the ignition time of an internal combustion engine. 3,756,212, Cl. 123-148.00e.
- Schirmer, Gunter, to Bosch, Robert, G.m.b.H. Device for measuring camber and caster of vehicle wheels. 3,756,724, Cl. 356-155.000.
- Schlegel Manufacturing Company, The: *See—*
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- Schlein, Herbert N.; and Young, Richard W., to Polaroid Corporation. Photographic color-diffusion transfer units which utilize neutralizing layer comprising a watersoluble polymeric acid and a water soluble binder. 3,756,815, Cl. 96-3.000.
- Schlessel, Joseph. Printed-board and similar transmission-line structure for reducing interference. 3,757,028, Cl. 174-33.000.
- Schlitz, Erwin: *See—*
  - Fink, Werner; and Schlitz, Erwin, 3,756,663.
- Schlitz, Erwin; and Fink, Werner, to ITT Industries, Inc. Vehicle brake system. 3,756,664, Cl. 303-21.00f.
- Schlumberger Technology Corporation: *See—*
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- Schmalfeld, Paul; and Rammler, Roland, to Metallgesellschaft Aktiengesellschaft. Mixing nozzles for carbonizing fine grain fuels in a fluidized bed. 3,756,922, Cl. 202-121.000.
- Schmid, Hans-Rudolf: *See—*
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- Schmid, Horst: *See—*
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- Schmidt, Carl W. Building panels. 3,755,982, Cl. 52-295.000.
- Schmidt-Hatting, Wolfgang; Pawlek, Rudolf; and Taufenecker, Rudolf, to Swiss Aluminium Ltd. Method of operating an aluminum oxide reduction cell. 3,756,929, Cl. 204-67.000.
- Schmitt, Jerry C., to King Radio Corporation. Method and apparatus for computing ground speed in area navigation computers. 3,757,094, Cl. 235-150.200.
- Schnedler, Paul E.: *See—*
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- Schneider, Jurgen: *See—*
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- Schoenfelder, Norman E. Home appliance with hanger rack. 3,756,679, Cl. 312-237.000.
- Schonbrun, David M. Snowshoe harness. 3,755,926, Cl. 36-2.5ab.
- Schonstedt, Erick O. Compensation for misalignment of magnetic sensors. 3,757,209, Cl. 324-43.00g.
- Schraeder, Gordon A. Wet towel dispenser. 3,756,483, Cl. 225-52.000.
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- Schroeder, Robert J.; and Comfort, Samuel T., to Allis-Chalmers Corporation. Power steering and control therefor. 3,756,337, Cl. 180-19.00s.
- Schulte, Rudolf R. Flow control system for physiological drainage. 3,756,243, Cl. 128-350.00v.
- Schultz, Howard W. Low tire pressure indicating and warning means. 3,757,294, Cl. 340-58.000.

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- Schumacher, William Ludlow, to AMP Incorporated. Subminiature coaxial contact. 3,757,278, Cl. 339-177.00r.
- Schuplin, Jerome T., to Fastway Fasteners, Inc. Plastic rivet. 3,756,115, Cl. 85-5.00r.
- Schuplin, Jerome T., to Fastway Fasteners, Inc. Plastic nut or grommet. 3,756,116, Cl. 85-80.000.
- Schuster, Ernst, to Dynamit Nobel Aktiengesellschaft. Bottom wad for cartridge cases, especially shot cartridge cases. 3,756,156, Cl. 102-43.00p.
- Schwamb Corporation, The: *See—*
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- SCM Corporation: *See—*
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- Scott, Donald D., to Johns Hopkins University, The. Photochromic protective eye shield lens. 3,756,692, Cl. 350-160.00p.
- Scott Paper Company: *See—*
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- Sealy, Incorporated: *See—*
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- Seguin, Pierre, to Chavanoz S.A. Process and apparatus for forming novelty effect yarns. 3,756,005, Cl. 57-34.00r.
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- Selke, William A.; and Kulick, Russell J., to Kimberly-Clark Corporation. Smokable article having internal air passageway. 3,756,249, Cl. 131-9.000.
- SEMIKRON Gesellschaft fur Gleichrichterbau u Elecktronik mbH: *See—*
  - Flohrs, Peter; Schafer, Horst; and Tovar, Theo, 3,755,882.
- Semotan, Zinovia. Lamp for providing daylight effect. 3,757,101, Cl. 240-1.100.
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- Seo, Kiyokazu; Hayashi, Yoshihiro; Hoshino, Tunekichi; and Masuda, Funiyoshi, to Toyoto Jidosha Kogyo Kabushiki Kaisha, Kabushiki Kaisha Tokai Rika Denki Seisakusho and Hoshino Kogyo Kabushiki Kaisha. Webbing for use in seat belts. 3,756,288, Cl. 139-383.0r.
- Sergeev, Vladimir Alexandrovich: *See—*
  - Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Elerdashvilli, Georgy Vasilievich, 3,756,982.
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- Shah, Rajat R.; and Hasselriis, Floyd, to American Hydrotherm Corporation. Heat transfer system for a continuous lead extruder. 3,756,312, Cl. 165-26.000.
- Shaler, David: *See—*
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- Sharp, John R., to Polaroid Corporation. Photographic film handling cassette. 3,756,707, Cl. 352-130.000.
- Sharp Kabushiki Kaisha: *See—*
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- Shaver, William R.: *See—*
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- Shaw, Harry N., to Golconda Corporation. Single cycle filler and dispensing valve. 3,756,277, Cl. 137-614.200.
- Shear, Wayne G.; and Olmstead, Merlin E., to Bendix Corporation, The. Frequency diversity time multiplex means for increasing the capacity of a cooperative collision avoidance system. 3,757,339, Cl. 343-112.0ca.
- Sheila Berkley, Inc.: *See—*
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- Shell, Harold E.: *See—*
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- Shell Oil Company: *See—*
  - Boor, John, Jr., 3,756,968.
  - Ford, Peter T., 3,756,794.
  - Kearen, Cornelis H. J.; Krak, Hans; and Jeanno, Francis, 3,756,984.
  - McCormick, Karl; and Tvedt, Thorwald John, 3,757,235.
  - Robinson, Isaac C. H., 3,756,793.
  - Smith, Noyes D.; Jr., 3,756,683.
  - Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,756,315.
- Shelley, Meville Leslie, to Redifon Limited. Slip ring electrical connections. 3,757,190, Cl. 318-625.000.
- Shelton, Winston L.; and Newman, Joseph L., to Quik-Die, Inc. Manufacturing sheet-cutting female dies apparatus. 3,756,308, Cl. 164-338.000.
- Shepherd Casters, Inc.: *See—*
  - Greene, Frederick C., 3,755,852.
- Shiboya, Hiroya: *See—*
  - Moriyama, Inao; Takigawa, Tomoshi; and Shiboya, Hiroya, 3,756,491.
- Shields, John; and Dunn, Lyman D., to Marlan Company. Label laminating machine. 3,756,897, Cl. 156-517.000.
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- Shigemasa, Junichiro; Sakurai, Takeshi; and Tani, Zenpei, to Sharp Kabushiki Kaisha. Light emitting four layer semiconductor device. 3,757,174, Cl. 317-235.00r.
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  - Hatanaka, Yoshihio; Shigemori, Hideto; and Kitagami, Hisashi, 3,756,256.
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  - Inaba, Seiuemon; Shimizu, Kanryo; and Kojima, Toshio, 3,757,193.
- Shimoi, Akio: *See—*
  - Nishimura, Izuhiko; and Shimoi, Akio, 3,756,011.
- Shin, Ishuk; and Richards, John R., to Dynasciences Corporation. Dual gyro mechanically coupled image motion compensator having nonlinear damping means. 3,756,687, Cl. 350-16.000.
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  - Hayashi, Jun; Ohi, Reiichi; and Shishido, Tadao, 3,756,821.
- Shitikov, Valentin Kuzmich: *See—*
  - Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Elerdashvilli, Georgy Vasilievich, 3,756,982.
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  - Iizumi, Tomomitsu, 3,756,348.
- Shore, John E.; and Polkinghorn, Frank A., Jr., to United States of America, Navy. General purpose associative processor. 3,757,312, Cl. 340-173.0am.
- Shorrock, Stanley. Machine for making a tufted carpet. 3,756,173, Cl. 112-79.0ff.
- Short, Oliver Alton, to Du Pont de Nemours, E. I., and Company. Alloy metalizations. 3,756,834, Cl. 106-1.000.
- Shriner, Donald R.: *See—*
  - McLean, Byron R.; Shriner, Donald R.; and Swan, John C., 3,757,084.
- Shugart, Henry Lester. Reel capping apparatus. 3,756,894, Cl. 156-443.000.
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  - Gerlach, Dieter; Bader, Erich; and Sibenhorn, Wolfgang, 3,756,985.
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  - Brunner, Julius; and Kuhnlein, Hans, 3,757,185.
  - Eisele, Max; and Wilhelm, Gunter, 3,756,335.
  - Klein, Heinrich; Pieper, Rudolf; and Hoffmann, Alfred, 3,755,996.
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  - Moehrmann, Karlheinz, 3,757,221.
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  - Munt, Hartwig, 3,757,075.
  - Stut, Hans, 3,757,071.
  - Touchy, Wolfgang, 3,756,955.
- Siepmann, Walter, to Vogt, Eugen. Valve housing and method of making the same. 3,756,560, Cl. 251-367.000.
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- Simmons, Jack L., to S & S Machinery Company, Inc. Convertible vehicle with flange and rubber tired wheels. 3,756,163, Cl. 105-215.00c.
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  - McCaughan, Daniel Vincent; Simms, Douglas Leon; Tolk, Norman Henry; and White, Clark Woody, 3,757,119.
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- Simms, James S. Tensioning devices. 3,755,880, Cl. 29-452.000.
- Simoneaux, Curtis J. Magnetic hair clip holder. 3,755,857, Cl. 24-3.00a.
- Simoudis, John C., to Continental Can Company, Inc. Method of making cobalt alloy steel composite article. 3,755,887, Cl. 29-498.000.
- Simpson, John William; and Mayo, Arthur John, to Dickinson, John, & Co., Limited. Manufacture of envelopes. 3,756,127, Cl. 93-63.00m.
- Simpson, Lee S. Grate. 3,756,218, Cl. 126-121.000.
- Sims, Robert A., to Corning Glass Works. High speed electrostatic printing tube with a microchannel plate. 3,757,351, Cl. 346-74.00p.
- Sinclair, Robert A.; and Errede, Louis A., to Minnesota Mining and Manufacturing Company. Photographic mordants. 3,756,819, Cl. 96-48.00r.
- Singer Company, The: *See—*
  - Bennett, William S.; Collier, Albert F.; and Taylor, Arthur Roger, 3,757,040.
  - Mishcon, Lester, 3,755,864.
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- Skala, George F., to Environment-One Corporation. Portable photographic atmospheric particle detector. 3,756,720, Cl. 356-37.000.
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- Skillen, William Russell; and Dews, Thomas Kenneth, to Somerville Industries Limited. Box top closure. 3,756,501, Cl. 229-44.00r.
- Sklaroof, Morton, to Honeywell Inc. Isolated two-wire signal transmitter. 3,757,195, Cl. 321-2.000.
- Sloan, Albert E.: *See—*
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- Sloan, Crawford J., to Dunlap, Forrest, Jr. Reclining chair and mechanism therefor. 3,756,651, Cl. 297-85.000.
- Slominski, Walter V., to Hoover Ball and Bearing Company and Sealy, Incorporated. Box spring frame. 3,755,833, Cl. 5-247.000.
- Small, James G., to Massachusetts Institute of Technology. Pulsed gas laser. 3,757,248, Cl. 331-94.500.
- Smatko, Joseph S., to McDonnell Douglas Corporation. Substantially non-gassing alkali resistant battery separator and method of production. 3,756,857, Cl. 136-30.000.
- Smith, Donald W. Shot gun shells. 3,756,155, Cl. 102-42.00r.
- Smith, Glenn S.: *See—*
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- Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, to Savin Business Machines Corporation. Apparatus for heating copy paper for electrostatic copiers. 3,757,081, Cl. 219-216.000.
- Smith, James M.: *See—*
  - Fedorko, Francis A.; Kantner, Donald J.; Metzler, Franklin A.; and Smith, James M., 3,757,224.
- Smith, Joseph E., to Wolverine-Pentronix, Inc. Boat steering and reversing system. 3,756,188, Cl. 115-35.000.
- Smith, Leif H.: *See—*
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- Smith, Millard F.: *See—*
  - Smith, Millard F.; and Anusauckas, Anthony V. (said Anusauckas assor. to said), 3,756,031.
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- Smith, Noyes D., Jr., to Shell Oil Company. Hologram image-space scalling. 3,756,683, Cl. 350-3.500.
- Smith, Randlow: *See—*
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- Smith, Roy E., to Owens-Corning Fiberglas Corporation. Nonwoven structure and method and apparatus for producing it. 3,756,893, Cl. 156-440.000.
- Smith, Theodore M. Quick change spindle adapter with two-piece nut assembly. 3,756,737, Cl. 408-239.000.
- Smith, Wayne D. Deep root feeder and tree irrigater. 3,755,966, Cl. 47-48.500.
- Smiths Industries Limited: *See—*
  - Bernard, Dominic Paul Edmund, 3,757,087.
- Smrcka, Joseph G., to Alderson Research Laboratories, Inc. Leg for a test dummy. 3,755,920, Cl. 35-17.000.
- Smythe, Walter J., to Orthopedic Equipment Company, Inc. Inflatable tourniquet. 3,756,239, Cl. 128-327.000.
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- Snyder, James J.: *See—*
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- Snyder, Paul V.; and Schultz, Willard F., to General Electric Company. Electric oven toaster door mechanism. 3,756,219, Cl. 126-191.000.
- Snyder, Richard N. Safety detonator. 3,756,154, Cl. 102-28.00r.
- Snyder, Stephen L.; and Mathews, Robert A., Jr. Manually released refining control. 3,756,547, Cl. 244-152.000.
- Soboleski, Thadeus J., to Pyramid Plastics, Inc. Lamp shade and method of making the same. 3,757,110, Cl. 240-108.00a.
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- Societe d'Exploitation des Brevets Meiman: *See—*
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- Solari, Ray L. Hanger clip. 3,755,859, Cl. 24-84.00b.
- Solinas, Ludovico, to Riva Calzoni S.p.A. Sluicegate structure. 3,756,032, Cl. 61-25.000.
- Solomko, Viktor Eliseevich: *See—*
  - Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsin, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; Solomko, Viktor Eliseevich; Reinburg, Alexandr Nironovich; and Yampolsky, Moisei Lvovich 3,756,328.
- Solomon, Nathan L. Hair curler. 3,756,255, Cl. 132-40.000.
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- Sparkler Manufacturing Company: *See—*
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- Spatz, Donald Dean; and Nieland, Arnold A., to Osmonics, Inc. Separation system. 3,756,408, Cl. 210-96.000.
- Spatz, Walter B., to Spatz Corporation. Fluent material dispenser having ooze prevention means. 3,756,730, Cl. 401-174.000.
- Speakman, Peter Roscoe Hartley; and Stewart, David Geoffrey, to Procter & Gamble Company, The. Bleaching process and composition. 3,756,776, Cl. 8-111.000.
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- Speck, Willy; and Speck, Walter. Centrifugal pump having structure for cooling and lubricating a seal. 3,756,742, Cl. 415-175.000.
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  - Morrow, William J.; and Davenport, James M., 3,756,262.
  - Ross, Gerald F.; Morrone, John J.; and Bell, William W., III, 3,757,290.
  - Soree, Richard A.; and Rafuse, Mary Jane, 3,756,694.
- Spinello, Ronald P. Anti-misting attachment for dental mirrors. 3,755,903, Cl. 32-69.000.
- Spoerl, Hans, 20% to Lee, Raymond, Organization, Inc., The. Live bait dispenser. 3,755,956, Cl. 43-55.000.
- Spomer, Roland J.: *See—*
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- Squire Ties Ltd., Inc.: *See—*
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- St. Clair, Theodore A., to Textron, Inc. Threaded connection. 3,756,628, Cl. 285-52.000.
- Staab, Marion P. Rear crankschaft seal remover. 3,755,875, Cl. 29-240.000.
- Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katherina; heiress-at-law); Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, said Beyerle, said Nitz, said Schraven assors. to Cassella Farbwerke Mainkur Aktiengesellschaft. 3-(Alha-substituted amino-beta-alkoxybenzoxypropyl)-6,7- or 6,7,8-alkoxy-1,2,3-benzotriazine-4 (3H)-ones. 3,757,019, Cl. 260-248.0as.
- Stachel, Ingeburg Lydia Katherina: *See—*
  - Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,757,019.
- Stahl, Roland Edgar, to Du Pont de Nemours, E. I., and Company. Dispersion for water-repellent coatings. 3,756,973, Cl. 260-28.50r.
- Stahlwerke Peine-Salzgitter AG: *See—*
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- State for Defence, The Secretary of: *See—*
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- Steetley (Mfg.) Ltd.: *See—*
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- Stein, Nathan; and Jones, Lloyd G., to Mobil Oil Corporation. Well completion in friable sands. 3,756,318, Cl. 166-278.000.
- Steinbock, Fred C., to Kendall Company, The. Display tray. 3,756,385, Cl. 206-44.00r.
- Steinke, Leo: *See—*
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- Steltz, Douglas C., to Portec, Inc. Power-operated tail gate and a packer plate for refuse dump trucks. 3,756,438, Cl. 214-83.300.
- Stenner, Gustav H. Peristaltic pump. 3,756,752, Cl. 417-477.000.
- Stepan, Alfred H.; Perkins, Robert J.; and Griggs, Allen L., to Minnesota Mining and Manufacturing Company. Waterlaid leather substitute sheet and method for preparing the sheet. 3,756,909, Cl. 162-151.000.
- Sternad, William A. Railroad car handling and classification apparatus. 3,756,159, Cl. 104-48.000.
- Sterner, Russell L.; and Lowe, William L., to Kidde, Walter, & Company, Inc., mesne. Safe load control system for telescopic crane booms. 3,757,066, Cl. 200-87.00r.
- Stetter, Karl; and Korbanka, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of oxidation products of ethylene polymers. 3,756,999, Cl. 260-88.250.
- Steuernagel, Walter, to Metallgesellschaft Aktiengesellschaft. Collector electrode for electrostatic precipitator. 3,755,991, Cl. 55-112.000.
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- Stewart, James Edward. Mailing tube. 3,756,497, Cl. 229-22.000.
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- Stinson, Herman B., Jr.; and Noon, Ivor G. Musical instrument. 3,757,024, Cl. 84-1.170.
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- Stone, Charles W., to Zimmerman, D. W., Mfg. Inc. Apparatus for handling objects. 3,756,563, Cl. 254-168.000.
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- Story, Laurence A., to SCM (Canada) Ltd. Anti-stain treatment for lumber in transit. 3,756,850, Cl. 117-147.000.
- Story, Laurence A., to SCM (Canada) Ltd. Composition for anti-stain treatment for lumber in transit. 3,756,975, Cl. 260-29.60r.
- Stover, Harris A., to Collins Radio Company. Digital means for improving the signal to noise ratio of repetitive morse code-type signals. 3,757,226, Cl. 325-323.000.
- Stoy, Franz, to Metabowerke K.G. Closs, Rauch & Schizler. Method and apparatus for treating of workpieces. 3,755,969, Cl. 51-32.000.
- Straub, Roy H.: *See—*
  - Cleland, Keith B.; and Straub, Roy H., 3,756,290.
- Strickland, Alvah T.; and Lindquist, John O., to United States of America, Navy. Deep submergence container lid seal. 3,756,180, Cl. 114-16.00r.
- Strub, Rene, to Brown-Boveri Sulzer Turbomachinery Ltd. Stuffing box for a rotating shaft. 3,756,673, Cl. 308-36.300.
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- Stut, Hans, to Siemens Aktiengesellschaft. Method for crucible free zone melting. 3,757,071, Cl. 219-10.430.
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- Subler, Bruce M., to Crown Controls Corporation. Speed controller for an electric vehicle. 3,757,180, Cl. 318-139.000.
- Suda, Seiji, to Hitachi, Ltd. Fuel injection system for internal combustion engines. 3,756,204, Cl. 123-32.0ea.
- Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsin, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; Solomko, Viktor Eliseevich; Reinburg, Alexandr Nironovich; and Yampolsky, Moisei Lvovich Pneumatically operated impact-action self-propelled mechanism. 3,756,328, Cl. 173-91.000.
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- Sullivan, Charles I., to Polaroid Corporation. Photographic film units including a layer comprising an aqueous film-forming polymer dispersion. 3,756,816, Cl. 96-3.000.
- Sullivan, Edward F. Apparatus for machining a split engine ring and similar workpieces. 3,756,099, Cl. 82-2.700.
- Sullivan, Herbert W., to Skiatron Electronics & Television Corporation, mesne. Interrogated transponder system. 3,757,035, Cl. 178-6.000.
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  - Aguet, Emile, 3,756,029.
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- Summerfield, William F., to Mattel, Inc. Reciprocating valveless pump. 3,756,750, Cl. 417-241.000.
- Sun Olin Chemical Company: *See—*
  - Artz, Ernest, 3,756,266.
- Sundstrum, Stratton W.: *See—*
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- Super-Cut, Inc.: *See—*
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- Swanson, Harry Roger: *See—*
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- Swartz, Jerome: *See—*
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- Taguchi, Seiichi; Kido, Keishiro; Kimura, Akinori; Tomotsu, Takeshi; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Method for correction of color images. 3,756,817, Cl. 96-12.000.
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- Thiele, Ernst. Valveless oscillating displacement pump. 3,756,748, Cl. 417-158.000.
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- Refsgaard, Niels, to Dansk Designs Ltd. Cup. 228,273, 9–4–73, Cl. D7—9.
- **Reifers, Richard F., and K. D. Bixler, to Diamond Inter-**
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  - Cross, John F. 228,274.
- Vaugh, David E. : *See*—
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  - Glaberson, Martin. 228,315.
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  - Nyeste, Zoltan P., Wendt, and Kilbane. 228,311.
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# CLASSIFICATION OF PATENTS

## ISSUED SEPTEMBER 4, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

| | |
|---|---|
| **CLASS 2** | |
| 14W | 3,755,819 |
| 18 | 3,755,820 |
| 153 | 3,755,821 |
| 271 | 3,755,822 |
| **CLASS 3** | |
| 1 | 3,755,823 |
| | 3,755,824 |
| | 3,755,825 |
| **CLASS 4** | |
| | 3,755,826 |
| 10 | 3,755,827 |
| 113 | 3,755,828 |
| 172 | 3,755,829 |
| 177 | 3,755,830 |
| **CLASS 5** | |
| 2 | 3,755,831 |
| | 3,755,832 |
| 247 | 3,755,833 |
| **CLASS 6** | |
| 39.66 | 3,756,020 |
| **CLASS 8** | |
| 14 | 3,756,770 |
| 26 | 3,756,771 |
| 39 | 3,756,772 |
| 111 | 3,756,774 |
| | 3,756,775 |
| | 3,756,776 |
| 173 | 3,756,773 |
| 179 | 3,756,778 |
| 188 | 3,756,777 |
| **CLASS 9** | |
| 1T | 3,755,834 |
| | 3,755,835 |
| | 3,755,838 |
| 8 | 3,755,836 |
| 8.3R | 3,755,837 |
| **CLASS 10** | |
| 13 | 3,755,839 |
| **CLASS 13** | |
| 6 | 3,757,020 |
| 12 | 3,757,021 |
| **CLASS 15** | |
| 1 | 3,755,840 |
| 1.7 | 3,755,842 |
| | 3,755,843 |
| 8 | 3,757,154 |
| 21D | 3,755,844 |
| 79 | 3,755,845 |
| 93R | 3,755,846 |
| 179 | 3,755,847 |
| 184 | 3,755,848 |
| 308 | 3,755,849 |
| 320 | 3,755,850 |
| 334 | 3,755,841 |
| 346 | 3,755,851 |
| **CLASS 16** | |
| 37 | 3,755,852 |
| 42 | 3,755,853 |
| **CLASS 17** | |
| 11 | 3,755,854 |
| 48 | 3,755,855 |
| **CLASS 19** | |
| 156.3 | 3,755,856 |
| **CLASS 23** | |
| 230PC | 3,756,781 |
| 230B | 3,756,782 |
| 230R | 3,756,779 |
| 253R | 3,756,783 |
| 259.1 | 3,756,784 |
| 281 | 3,756,785 |
| **CLASS 24** | |
| 3A | 3,755,857 |
| 73R | 3,755,858 |
| 84B | 3,755,859 |
| 243R | 3,755,860 |
| **CLASS 26** | |
| 54 | 3,755,861 |
| 57R | 3,755,862 |
| **CLASS 28** | |
| 4R | 3,755,863 |
| 64 | 3,755,864 |
| **CLASS 29** | |
| 25.17 | 3,755,865 |
| 95C | 3,755,866 |
| 95.1R | 3,755,867 |
| 96R | 3,755,868 |
| 121R | 3,755,869 |
| 148.4S | 3,755,870 |
| 182.8 | 3,756,787 |
| 194 | 3,756,788 |
| | 3,756,789 |
| 195.5 | 3,756,790 |
| 200A | 3,755,871 |
| 202.5 | 3,755,873 |
| 203H | 3,755,872 |
| | 3,755,874 |
| 240 | 3,755,875 |
| 401 | 3,755,876 |
| | 3,755,877 |
| 408 | 3,755,879 |
| | 3,755,979 |
| 452 | 3,755,880 |
| 456 | 3,755,878 |
| 471.3 | 3,755,881 |
| 471.7 | 3,755,882 |
| 476.5 | 3,755,883 |
| 481 | 3,755,884 |
| 494 | 3,755,885 |
| 496 | 3,755,886 |
| 498 | 3,755,887 |
| 593 | 3,755,888 |
| 596 | 3,755,889 |
| 625 | 3,755,890 |
| 628 | 3,755,891 |
| 630ES | 3,755,892 |
| **CLASS 30** | |
| 154 | 3,755,893 |
| 181 | 3,755,894 |
| 326 | 3,755,895 |
| 372 | 3,755,896 |
| **CLASS 32** | |
| 2 | 3,755,897 |
| 8 | 3,755,898 |
| 22 | 3,755,899 |
| 40R | 3,755,900 |
| 43 | 3,755,901 |
| 66 | 3,755,902 |
| 69 | 3,755,903 |
| **CLASS 33** | |
| 18R | 3,755,904 |
| 143L | 3,755,909 |
| 172R | 3,755,906 |
| 174L | 3,755,907 |
| 178F | 3,755,908 |
| 255 | 3,755,910 |
| 286 | 3,755,905 |
| **CLASS 34** | |
| 1 | 3,755,911 |
| 10 | 3,755,912 |
| | 3,755,913 |
| 57A | 3,755,914 |
| 95 | 3,755,915 |
| 105 | 3,755,916 |
| 179 | 3,755,917 |
| 236 | 3,755,918 |
| **CLASS 35** | |
| 9A | 3,755,919 |
| 17 | 3,755,920 |
| 22R | 3,755,921 |
| | 3,755,922 |
| 27 | 3,755,923 |
| 32 | 3,755,924 |
| 49 | 3,755,925 |
| **CLASS 36** | |
| 2.5AB | 3,755,926 |
| | 3,755,927 |
| 7.6 | 3,755,929 |
| 14 | 3,755,928 |
| **CLASS 37** | |
| 10 | 3,755,930 |
| 43E | 3,755,931 |
| 67 | 3,755,932 |
| 142R | 3,755,933 |
| **CLASS 40** | |
| 2F | 3,755,934 |
| 2.2 | 3,755,935 |
| 33 | 3,755,936 |
| 70R | 3,755,939 |
| 78.15 | 3,755,937 |
| 102 | 3,755,938 |
| 107 | 3,755,940 |
| 109 | 3,755,941 |
| 124.1 | 3,755,942 |
| 130D | 3,755,943 |
| 130R | 3,755,944 |
| 209 | 3,755,945 |
| **CLASS 42** | |
| 1R | 3,755,946 |
| 16 | 3,755,947 |
| 17 | 3,755,948 |
| 39.5 | 3,755,949 |
| 68 | 3,755,950 |
| 69A | 3,755,951 |
| **CLASS 43** | |
| 42.37 | 3,755,952 |
| 43.11 | 3,755,953 |
| 43.13 | 3,755,955 |
| 43.16 | 3,755,954 |
| 55 | 3,755,956 |
| 57.5R | 3,755,957 |
| 114 | 3,755,958 |
| **CLASS 44** | |
| 1R | 3,756,791 |
| | 3,756,792 |
| 51 | 3,756,794 |
| 62 | 3,756,793 |
| 72 | 3,756,795 |
| **CLASS 46** | |
| 23 | 3,755,959 |
| 118 | 3,755,960 |
| 244A | 3,755,963 |
| **CLASS 47** | |
| 2 | 3,755,961 |
| 27 | 3,755,965 |
| 34 | 3,755,962 |
| 37 | 3,755,964 |
| 48.5 | 3,755,966 |
| **CLASS 49** | |
| 360 | 3,755,967 |
| 488 | 3,755,968 |
| **CLASS 51** | |
| 32 | 3,755,969 |
| 58 | 3,755,970 |
| 92BS | 3,755,971 |
| 170MT | 3,755,972 |
| 293 | 3,756,796 |
| **CLASS 52** | |
| 73 | 3,755,973 |
| | 3,755,974 |
| 90 | 3,755,975 |
| 93 | 3,755,976 |
| 98 | 3,755,977 |
| 127 | 3,755,978 |
| 184 | 3,755,981 |
| 235 | 3,755,980 |
| 295 | 3,755,982 |
| 326 | 3,755,983 |
| 473 | 3,755,988 |
| **CLASS 53** | |
| 7 | 3,755,985 |
| 52 | 3,755,984 |
| 296 | 3,755,987 |
| 378 | 3,755,986 |
| **CLASS 55** | |
| 72 | 3,755,989 |
| 93 | 3,755,990 |
| 112 | 3,755,991 |
| 296 | 3,755,992 |
| 370 | 3,755,993 |
| 387 | 3,755,994 |
| 459 | 3,755,996 |
| 481 | 3,755,995 |
| **CLASS 56** | |
| 244 | 3,755,997 |
| 255 | 3,755,998 |
| 295 | 3,755,999 |
| 299 | 3,756,000 |
| 328 | 3,756,001 |
| 330 | 3,756,002 |
| 344 | 3,756,003 |
| **CLASS 57** | |
| 11 | 3,756,004 |
| 34R | 3,756,005 |
| 58.91 | 3,756,007 |
| 77.4 | 3,756,006 |
| 139 | 3,756,008 |
| **CLASS 58** | |
| 21.15 | 3,756,009 |
| 23R | 3,756,010 |
| 23 | 3,756,011 |
| 24A | 3,756,012 |
| 28R | 3,756,014 |
| 42.5 | 3,756,015 |
| 50R | 3,756,013 |
| | 3,756,016 |
| 90R | 3,756,017 |
| **CLASS 60** | |
| 24 | 3,756,018 |
| 39.02 | 3,756,021 |
| 39.16R | 3,756,019 |
| 39.18B | 3,756,029 |
| 59R | 3,756,022 |
| 106 | 3,756,023 |
| 204 | 3,756,024 |
| 226R | 3,756,026 |
| 255 | 3,756,025 |
| 323 | 3,756,027 |
| 353 | 3,756,028 |
| 487 | 3,756,030 |
| **CLASS 61** | |
| 1F | 3,756,031 |
| 25 | 3,756,032 |
| 46.5 | 3,756,033 |
| 72.3 | 3,756,034 |
| **CLASS 62** | |
| 22 | 3,756,035 |
| 28 | 3,756,036 |
| 156 | 3,756,037 |
| 256 | 3,756,038 |
| 262 | 3,756,039 |
| 314 | 3,756,040 |
| 354 | 3,756,041 |
| **CLASS 64** | |
| 30R | 3,756,042 |
| **CLASS 65** | |
| 18 | 3,756,799 |
| 25A | 3,756,797 |
| 33 | 3,756,798 |
| 156 | 3,756,800 |
| **CLASS 66** | |
| 84R | 3,756,043 |
| 147 | 3,756,044 |
| **CLASS 68** | |
| 189 | 3,756,045 |
| **CLASS 70** | |
| 25 | 3,756,046 |
| 164 | 3,756,047 |
| 233 | 3,756,048 |
| 363 | 3,756,049 |
| **CLASS 71** | |
| 65 | 3,756,801 |
| 71 | 3,756,802 |
| 93 | 3,756,803 |
| **CLASS 72** | |
| 9 | 3,756,050 |
| 23 | 3,756,051 |
| 42 | 3,756,052 |
| 46 | 3,756,053 |
| 60 | 3,756,054 |
| 71 | 3,756,055 |
| 164 | 3,756,056 |
| 181 | 3,756,057 |
| 203 | 3,756,059 |
| 205 | 3,756,060 |
| 253 | 3,756,061 |
| 352 | 3,756,062 |
| 356 | 3,756,063 |
| 389 | 3,756,058 |
| 410 | 3,756,064 |
| 453 | 3,756,065 |
| **CLASS 73** | |
| 6 | 3,756,066 |
| 15R | 3,756,067 |
| 23 | 3,756,068 |
| 27R | 3,756,069 |
| 40.5 | 3,756,072 |
| 67.8R | 3,756,070 |
| 67.8 | 3,756,071 |
| 80 | 3,756,073 |
| 99 | 3,756,074 |
| 144 | 3,756,075 |
| 151 | 3,756,076 |
| 187 | 3,756,077 |
| 194B | 3,756,078 |
| 231R | 3,756,079 |
| 290R | 3,756,080 |
| 336.5 | 3,756,081 |
| 354 | 3,756,082 |
| 368.3 | 3,756,083 |
| 379 | 3,756,084 |
| 407R | 3,756,085 |
| **CLASS 74** | |
| 84 | 3,756,086 |
| 89.15 | 3,756,087 |
| 89.17 | 3,756,088 |
| 96 | 3,756,089 |
| 130 | 3,756,090 |
| 231C | 3,756,091 |
| 417 | 3,756,093 |
| 424.8A | 3,756,092 |
| 527 | 3,756,094 |
| 801 | 3,756,095 |
| **CLASS 75** | |
| 25 | 3,756,804 |
| 58 | 3,756,805 |
| 93R | 3,756,806 |
| 125 | 3,756,807 |
| 128B | 3,756,808 |
| 134F | 3,756,809 |
| 175.5 | 3,756,810 |
| **CLASS 81** | |
| 13 | 3,756,096 |
| 15.8 | 3,756,097 |
| **CLASS 82** | |
| 2R | 3,756,098 |
| 2.7 | 3,756,099 |
| 4C | 3,756,100 |
| 34R | 3,756,101 |
| 40R | 3,756,102 |
| 101R | 3,756,103 |
| **CLASS 83** | |
| 8 | 3,756,104 |
| 14 | 3,756,105 |
| 165 | 3,756,107 |
| 177 | 3,756,106 |
| 193 | 3,756,108 |
| 255 | 3,756,109 |
| 522 | 3,756,110 |
| 651.1 | 3,756,111 |
| **CLASS 84** | |
| 1.11 | 3,757,023 |
| 1.17 | 3,757,024 |
| 1.25 | 3,757,022 |
| 236 | 3,757,026 |
| 377 | 3,757,025 |
| 380 | 3,756,112 |
| 416 | 3,757,027 |
| 438 | 3,756,113 |
| 453 | 3,756,114 |
| **CLASS 85** | |
| 5R | 3,756,115 |
| 80 | 3,756,116 |
| **CLASS 87** | |
| 29 | 3,756,117 |
| **CLASS 89** | |
| 33R | 3,756,118 |
| | 3,756,119 |
| 163 | 3,756,120 |
| 196 | 3,756,121 |
| **CLASS 90** | |
| 62A | 3,756,122 |
| **CLASS 91** | |
| 171 | 3,756,123 |
| 369B | 3,756,124 |
| 380 | 3,756,125 |
| **CLASS 92** | |
| 38 | 3,756,126 |
| **CLASS 93** | |
| 63M | 3,756,127 |
| 80 | 3,756,128 |
| **CLASS 95** | |
| 1R | 3,756,129 |
| 10CE | 3,756,132 |
| 10CT | 3,756,130 |
| | 3,756,131 |
| 19 | 3,756,133 |
| 31FM | 3,756,134 |
| 42 | 3,756,135 |
| 89R | 3,756,136 |
| **CLASS 96** | |
| 1LY | 3,756,813 |
| 1PC | 3,756,811 |
| 1R | 3,756,812 |
| 3 | 3,756,814 |
| | 3,756,815 |
| | 3,756,816 |
| 12 | 3,756,817 |
| 48R | 3,756,818 |
| | 3,756,819 |
| | 3,756,820 |
| 55 | 3,756,821 |
| | 3,756,822 |
| 75 | 3,756,823 |
| 76R | 3,756,824 |
| | 3,756,825 |
| 86P | 3,756,827 |
| 86 | 3,756,826 |
| 87A | 3,756,828 |
| 114.1 | 3,756,829 |
| 132 | 3,756,830 |
| **CLASS 98** | |
| 1 | 3,756,137 |
| 40VM | 3,756,138 |
| **CLASS 99** | |
| 54 | 3,756,831 |
| 90HP | 3,756,832 |
| 140R | 3,756,833 |
| 323.5 | 3,756,139 |
| 339 | 3,756,140 |
| 348 | 3,756,141 |
| **CLASS 100** | |
| 37 | 3,756,142 |
| 53 | 3,756,143 |
| 215 | 3,756,144 |
| 229A | 3,756,150 |
| 232 | 3,756,231 |
| 269R | 3,756,145 |
| **CLASS 101** | |
| 44 | 3,756,146 |
| 95 | 3,756,147 |
| 99 | 3,756,148 |
| 228 | 3,756,149 |
| 269 | 3,756,151 |
| 350 | 3,756,152 |
| 368 | 3,756,153 |
| 426 | 3,756,165 |
| **CLASS 102** | |
| 28R | 3,756,154 |
| 42R | 3,756,155 |
| 43P | 3,756,156 |
| 70.2R | 3,756,157 |
| 91 | 3,756,158 |
| **CLASS 104** | |
| 48 | 3,756,159 |
| 113 | 3,756,160 |
| **CLASS 105** | |
| 1A | 3,756,161 |
| 197D | 3,756,162 |
| 215C | 3,756,163 |
| 457 | 3,756,164 |
| **CLASS 106** | |
| 1 | 3,756,834 |
| 11 | 3,756,835 |
| 14 | 3,756,836 |
| | 3,756,837 |
| 39.6 | 3,756,838 |
| 75 | 3,756,839 |
| 299 | 3,756,840 |
| 300 | 3,756,841 |
| **CLASS 108** | |
| 6 | 3,756,166 |
| 51 | 3,756,167 |
| 111 | 3,756,168 |
| 150 | 3,756,169 |
| **CLASS 110** | |
| 7R | 3,756,170 |
| 8R | 3,756,171 |
| 99 | 3,756,172 |
| **CLASS 112** | |
| 79FF | 3,756,173 |
| 127 | 3,756,174 |
| 128 | 3,756,175 |
| 241 | 3,756,176 |

| | |
|---|---|
| 252 | 3,756,177 |
| 266 | 3,756,178 |
| **CLASS 114** | |
| .5T | 3,756,179 |
| 16R | 3,756,180 |
| 20R | 3,756,181 |
| 132 | 3,756,182 |
| 235R | 3,756,183 |
| | 3,756,184 |
| **CLASS 115** | |
| 12R | 3,756,185 |
| 18R | 3,756,186 |
| 28 | 3,756,187 |
| 35 | 3,756,188 |
| 70 | 3,756,189 |
| **CLASS 116** | |
| 34R | 3,756,190 |
| 124.1R | 3,756,191 |
| **CLASS 117** | |
| 11 | 3,756,842 |
| 34 | 3,756,843 |
| 64R | 3,756,844 |
| 72 | 3,756,845 |
| 75 | 3,756,846 |
| 93.3 | 3,756,847 |
| 122P | 3,756,848 |
| 131 | 3,756,849 |
| 147 | 3,756,850 |
| 201 | 3,756,851 |
| 212 | 3,756,852 |
| **CLASS 118** | |
| 7 | 3,756,192 |
| 49.1 | 3,756,193 |
| 52 | 3,756,194 |
| 126 | 3,756,195 |
| 401 | 3,756,196 |
| **CLASS 119** | |
| 3 | 3,756,197 |
| 14.36 | 3,756,198 |
| 72.5 | 3,756,199 |
| 156 | 3,756,200 |
| **CLASS 121** | |
| 256 | 3,756,252 |
| **CLASS 122** | |
| 2 | 3,756,201 |
| 156 | 3,756,202 |
| **CLASS 123** | |
| 32EA | 3,756,204 |
| | 3,756,205 |
| 75CC | 3,756,206 |
| 90.38 | 3,756,207 |
| 97B | 3,756,208 |
| 103A | 3,756,209 |
| 119A | 3,756,210 |
| 119R | 3,756,211 |
| 148E | 3,756,212 |
| 179L | 3,756,213 |
| **CLASS 124** | |
| 23 | 3,756,214 |
| 30A | 3,756,215 |
| **CLASS 125** | |
| 23C | 3,756,216 |
| **CLASS 126** | |
| 37R | 3,756,217 |
| 121 | 3,756,218 |
| 191 | 3,756,219 |
| 350 | 3,756,220 |
| 360R | 3,756,221 |
| **CLASS 127** | |
| 24 | 3,756,854 |
| 38 | 3,756,853 |
| 63 | 3,756,855 |
| **CLASS 128** | |
| 6.6A | 3,757,037 |
| 26 | 3,756,222 |
| | 3,756,223 |
| 57 | 3,756,224 |
| 66 | 3,756,225 |
| 75 | 3,756,226 |
| 85 | 3,756,227 |
| 130 | 3,756,228 |
| 145.8 | 3,756,229 |
| 214C | 3,756,233 |
| 214R | 3,756,234 |
| 221 | 3,756,235 |
| 225 | 3,756,230 |
| | 3,756,236 |
| 227 | 3,756,237 |
| 236 | 3,756,240 |
| 270 | 3,756,238 |
| 290R | 3,756,232 |
| 296 | 3,756,241 |
| 327 | 3,756,239 |
| 333 | 3,756,242 |
| 350V | 3,756,243 |
| 351 | 3,756,244 |
| 419P | 3,756,245 |
| 419R | 3,756,246 |
| 518 | 3,756,247 |
| **CLASS 130** | |
| 27JT | 3,756,248 |
| **CLASS 131** | |
| 9 | 3,756,249 |
| 10.3 | 3,756,250 |
| 187 | 3,756,251 |
| 267 | 3,756,253 |
| **CLASS 132** | |
| 5 | 3,756,254 |
| 40 | 3,756,255 |
| **CLASS 133** | |
| 4 | 3,756,256 |
| **CLASS 134** | |
| 3 | 3,756,257 |
| **CLASS 135** | |
| 22 | 3,756,258 |
| 47 | 3,756,259 |
| **CLASS 136** | |
| 6FS | 3,756,856 |
| 30 | 3,756,857 |
| 89 | 3,756,858 |
| 107 | 3,756,859 |
| 120FC | 3,756,860 |
| **CLASS 137** | |
| 1 | 3,756,260 |
| 15 | 3,756,261 |
| 38 | 3,756,262 |
| 88 | 3,756,263 |
| 116.3 | 3,756,264 |
| 143 | 3,756,265 |
| 203 | 3,756,266 |
| 318 | 3,756,267 |
| 340 | 3,756,268 |
| 446 | 3,756,269 |
| 480 | 3,756,270 |
| 494 | 3,756,271 |
| 498 | 3,756,272 |
| 540 | 3,756,273 |
| 561R | 3,756,274 |
| 590 | 3,756,275 |
| 597 | 3,756,276 |
| 614.2 | 3,756,277 |
| 625.21 | 3,756,279 |
| 625.25 | 3,756,280 |
| 625.48 | 3,756,281 |
| 625.63 | 3,756,278 |
| 625.64 | 3,756,282 |
| 630.15 | 3,756,283 |
| 636 | 3,756,284 |
| 810 | 3,756,285 |
| **CLASS 138** | |
| 92 | 3,756,287 |
| 94.3 | 3,756,286 |
| **CLASS 139** | |
| 383R | 3,756,288 |
| **CLASS 140** | |
| 2 | 3,756,289 |
| **CLASS 141** | |
| 5 | 3,756,290 |
| 45 | 3,756,291 |
| 160 | 3,756,292 |
| 388 | 3,756,293 |
| 392 | 3,756,294 |
| **CLASS 144** | |
| 3R | 3,756,295 |
| 253 | 3,756,296 |
| 312 | 3,756,297 |
| **CLASS 145** | |
| 108R | 3,756,298 |
| **CLASS 148** | |
| 1.5 | 3,756,861 |
| | 3,756,862 |
| 1.6 | 3,756,863 |
| 6.14R | 3,756,864 |
| 12 | 3,756,865 |
| 105 | 3,756,866 |
| 111 | 3,756,867 |
| 112 | 3,756,868 |
| 143 | 3,756,869 |
| 150 | 3,756,870 |
| 153 | 3,756,871 |
| 187 | 3,756,872 |
| | 3,756,873 |
| **CLASS 149** | |
| 19 | 3,756,874 |
| **CLASS 150** | |
| .5 | 3,756,299 |
| 1.7 | 3,756,300 |
| **CLASS 152** | |
| 225 | 3,756,301 |
| **CLASS 156** | |
| 3 | 3,756,887 |
| 11 | 3,756,875 |
| 17 | 3,756,876 |
| | 3,756,877 |
| 70 | 3,756,878 |
| 72 | 3,756,879 |
| 73 | 3,756,880 |
| 108 | 3,756,881 |
| 111 | 3,756,882 |
| 123 | 3,756,883 |
| 145 | 3,756,884 |
| 148 | 3,756,885 |
| 166 | 3,756,886 |
| | 3,756,910 |
| 220 | 3,756,888 |
| 253 | 3,756,889 |
| 257 | 3,756,895 |
| 286 | 3,756,890 |
| 309 | 3,756,891 |
| 323 | 3,756,892 |
| 345 | 3,756,898 |
| 440 | 3,756,893 |
| 443 | 3,756,894 |
| 495 | 3,756,896 |
| 517 | 3,756,897 |
| 521 | 3,756,899 |
| 580 | 3,756,900 |
| **CLASS 160** | |
| 23 | 3,756,302 |
| **CLASS 161** | |
| 6 | 3,756,901 |
| 39 | 3,756,902 |
| 49 | 3,756,904 |
| 60 | 3,756,905 |
| 168 | 3,756,911 |
| 231 | 3,756,906 |
| **CLASS 162** | |
| 114 | 3,756,907 |
| 146 | 3,756,908 |
| 151 | 3,756,909 |
| 183 | 3,756,913 |
| 255 | 3,756,912 |
| **CLASS 164** | |
| 79 | 3,756,303 |
| 87 | 3,756,304 |
| 281 | 3,756,305 |
| 283 | 3,756,306 |
| 297 | 3,756,307 |
| 338 | 3,756,308 |
| 369 | 3,756,309 |
| **CLASS 165** | |
| 4 | 3,756,310 |
| 21 | 3,756,311 |
| 26 | 3,756,312 |
| 39 | 3,756,903 |
| 106 | 3,756,313 |
| **CLASS 166** | |
| 65 | 3,756,314 |
| 132 | 3,756,316 |
| 254 | 3,756,317 |
| 276 | 3,756,315 |
| 278 | 3,756,318 |
| 304 | 3,756,319 |
| **CLASS 169** | |
| 2R | 3,756,320 |
| 40 | 3,756,321 |
| **CLASS 171** | |
| 5 | 3,756,322 |
| **CLASS 172** | |
| 22 | 3,756,323 |
| 40 | 3,756,324 |
| 298 | 3,756,326 |
| 464 | 3,756,203 |
| 697 | 3,756,327 |
| **CLASS 173** | |
| 91 | 3,756,328 |
| **CLASS 174** | |
| 33 | 3,757,028 |
| 36 | 3,757,029 |
| 138F | 3,757,031 |
| **CLASS 175** | |
| 203 | 3,756,330 |
| 258 | 3,756,331 |
| 364 | 3,756,332 |
| **CLASS 176** | |
| 19 | 3,756,915 |
| 32 | 3,756,914 |
| **CLASS 178** | |
| 4.1R | 3,757,032 |
| 5.4CD | 3,757,034 |
| 5.4ST | 3,757,033 |
| 6 | 3,757,035 |
| 6.6R | 3,757,036 |
| 6.8 | 3,757,038 |
| | 3,757,039 |
| | 3,757,040 |
| 7.2 | 3,757,041 |
| | 3,757,042 |
| 7.5R | 3,757,043 |
| 69.5TV | 3,757,044 |
| 101 | 3,757,045 |
| **CLASS 179** | |
| 1GQ | 3,757,047 |
| 1G | 3,757,046 |
| 2DP | 3,757,048 |
| 6E | 3,757,049 |
| 15AD | 3,757,051 |
| 15AL | 3,757,050 |
| 16F | 3,757,052 |
| 18J | 3,757,053 |
| 90B | 3,757,054 |
| 90D | 3,757,055 |
| 99 | 3,757,056 |
| 100.2RE | 3,757,058 |
| 100.2R | 3,757,057 |
| 100.2T | 3,757,030 |
| 100.2Z | 3,756,329 |
| **CLASS 180** | |
| 1E | 3,756,333 |
| 5R | 3,756,334 |
| 6.28 | 3,756,335 |
| 19R | 3,756,336 |
| 19S | 3,756,337 |
| 30 | 3,756,338 |
| 79.2R | 3,756,340 |
| 82C | 3,756,339 |
| 114 | 3,756,341 |
| 124 | 3,756,342 |
| 127 | 3,756,343 |
| **CLASS 181** | |
| 5NP | 3,756,344 |
| 33G | 3,756,345 |
| | 3,756,346 |
| **CLASS 182** | |
| 95 | 3,756,347 |
| **CLASS 184** | |
| 55A | 3,756,348 |
| 105B | 3,756,349 |
| **CLASS 187** | |
| 9 | 3,756,350 |
| **CLASS 188** | |
| 1B | 3,756,351 |
| 18A | 3,756,352 |
| 72.3 | 3,756,353 |
| 77R | 3,756,354 |
| 138 | 3,756,355 |
| 164 | 3,756,356 |
| 282 | 3,756,357 |
| 352 | 3,756,367 |
| **CLASS 191** | |
| 29 | 3,757,059 |
| **CLASS 192** | |
| .09 | 3,756,358 |
| 16 | 3,756,359 |
| 48.3 | 3,756,360 |
| 70.14 | 3,756,325 |
| 111A | 3,756,361 |
| **CLASS 194** | |
| 4C | 3,756,363 |
| 10 | 3,756,362 |
| | 3,756,364 |
| 84 | 3,756,366 |
| **CLASS 195** | |
| 28R | 3,756,916 |
| | 3,756,917 |
| | 3,756,918 |
| 31R | 3,756,919 |
| 127 | 3,756,920 |
| **CLASS 196** | |
| 132 | 3,756,921 |
| **CLASS 197** | |
| 1R | 3,756,365 |
| **CLASS 198** | |
| 33AD | 3,756,368 |
| 36 | 3,756,369 |
| 37 | 3,756,370 |
| 40 | 3,756,371 |
| 64 | 3,756,372 |
| 75 | 3,756,373 |
| 78 | 3,756,374 |
| 88 | 3,756,375 |
| 127R | 3,756,376 |
| 140 | 3,756,377 |
| 154 | 3,756,378 |
| 174 | 3,756,379 |
| 184 | 3,756,380 |
| 185 | 3,756,381 |
| 198 | 3,756,382 |
| **CLASS 200** | |
| 16C | 3,757,060 |
| 19A | 3,757,061 |
| 44 | 3,757,062 |
| 51.07 | 3,757,063 |
| 61.64 | 3,757,064 |
| 82R | 3,757,066 |
| 85A | 3,757,065 |
| | 3,757,067 |
| 159R | 3,757,068 |
| 166J | 3,757,069 |
| **CLASS 202** | |
| 121 | 3,756,922 |
| **CLASS 203** | |
| 44R | 3,756,385 |
| **CLASS 204** | |
| 1T | 3,756,923 |
| 15 | 3,756,924 |
| 16 | 3,756,925 |
| 29 | 3,756,926 |
| 43T | 3,756,927 |
| 59R | 3,756,928 |
| 67 | 3,756,929 |
| 129 | 3,756,930 |
| 141.5 | 3,756,931 |
| 149 | 3,756,932 |
| | 3,756,933 |
| 162R | 3,756,934 |
| 181 | 3,756,935 |
| 195F | 3,756,936 |
| 224M | 3,756,937 |
| 243M | 3,756,938 |
| 298 | 3,756,939 |
| **CLASS 206** | |
| 1R | 3,756,383 |
| 3 | 3,756,387 |
| 42 | 3,756,384 |
| 47A | 3,756,386 |
| | 3,756,388 |
| | 3,756,389 |
| | 3,756,390 |
| 56DF | 3,756,391 |
| 59E | 3,756,392 |
| 62R | 3,756,393 |
| 65C | 3,756,394 |
| 65S | 3,756,395 |
| | 3,756,397 |
| 65 | 3,756,396 |
| 78B | 3,756,398 |
| 80A | 3,756,399 |
| **CLASS 207** | |
| 332 | 3,756,407 |
| **CLASS 208** | |
| 25 | 3,756,945 |
| 66 | 3,756,940 |
| 135 | 3,756,941 |
| 137 | 3,756,942 |
| 143 | 3,756,943 |
| 217 | 3,756,944 |
| **CLASS 209** | |
| 1 | 3,756,400 |
| 39 | 3,756,401 |
| 73 | 3,756,402 |
| | 3,756,403 |
| 74R | 3,756,404 |
| 99 | 3,756,405 |
| 291 | 3,756,406 |
| **CLASS 210** | |
| 6 | 3,756,946 |
| 11 | 3,756,947 |
| 36 | 3,756,948 |
| 96 | 3,756,408 |
| 104 | 3,756,409 |
| 139 | 3,756,410 |
| 179 | 3,756,411 |
| 180 | 3,756,412 |
| 205 | 3,756,413 |
| 242 | 3,756,414 |
| 401 | 3,756,415 |
| 408 | 3,756,416 |
| 486 | 3,756,417 |
| 525 | 3,756,418 |
| **CLASS 211** | |
| 13 | 3,756,419 |
| 60SK | 3,756,420 |
| 163 | 3,756,421 |
| | 3,756,422 |
| **CLASS 212** | |
| 39R | 3,756,423 |
| 145 | 3,756,424 |
| **CLASS 213** | |
| 134AD | 3,756,604 |
| **CLASS 214** | |
| 1BB | 3,756,425 |
| 1P | 3,756,426 |
| 6DK | 3,756,427 |
| 6B | 3,756,428 |
| 10.5R | 3,756,429 |
| 15R | 3,756,446 |
| 16.1CF | 3,756,432 |
| 16.4A | 3,756,433 |
| 17B | 3,756,434 |
| | 3,756,435 |
| 19 | 3,756,430 |
| 41 | 3,756,436 |
| 75G | 3,756,437 |
| 83.1 | 3,756,431 |
| 83.3 | 3,756,438 |
| 84 | 3,756,439 |
| 85 | 3,756,440 |
| 314 | 3,756,442 |
| 506 | 3,756,443 |
| **CLASS 215** | |
| 9 | 3,756,444 |
| | 3,756,445 |
| **CLASS 219** | |
| 10.41 | 3,757,072 |
| 10.43 | 3,757,071 |
| 10.55 | 3,757,070 |
| 10.77 | 3,757,074 |
| 69C | 3,757,073 |
| 121EB | 3,757,076 |
| 121LM | 3,757,075 |
| 121L | 3,757,077 |
| | 3,757,078 |
| 137 | 3,757,079 |
| 161 | 3,757,080 |
| 216 | 3,757,081 |
| 271 | 3,757,082 |
| 356 | 3,757,083 |
| 413 | 3,757,084 |
| 523 | 3,757,085 |
| 528 | 3,757,086 |
| 549 | 3,757,087 |
| 553 | 3,757,088 |
| **CLASS 220** | |
| 3.3 | 3,756,447 |
| 23.83 | 3,756,462 |
| 53 | 3,756,448 |
| 54 | 3,756,449 |
| 85P | 3,756,450 |
| 96 | 3,756,451 |
| **CLASS 221** | |
| 1 | 3,756,452 |
| 41 | 3,756,453 |
| 46 | 3,756,454 |
| 85 | 3,756,455 |
| **CLASS 222** | |
| 1 | 3,756,456 |
| | 3,756,457 |
| | 3,756,458 |
| | 3,756,459 |
| | 3,756,460 |
| 20 | 3,756,461 |
| 26 | 3,756,463 |
| 57 | 3,756,464 |
| 61 | 3,756,465 |
| 63 | 3,756,466 |
| 78 | 3,756,467 |
| 105 | 3,756,469 |
| 129 | 3,756,470 |
| 129.2 | 3,756,473 |
| 156 | 3,756,471 |
| 189 | 3,756,472 |
| 193 | 3,756,474 |
| 195 | 3,756,475 |
| 386.5 | 3,756,476 |
| 402.22 | 3,756,477 |
| 420 | 3,756,478 |
| 437 | 3,756,479 |
| 484 | 3,756,480 |
| **CLASS 224** | |
| 42.42A | 3,756,481 |
| **CLASS 225** | |
| 2 | 3,756,482 |
| 52 | 3,756,483 |
| 97 | 3,756,484 |
| **CLASS 226** | |
| 44 | 3,756,485 |
| 67 | 3,756,491 |
| 97 | 3,756,486 |
| 110 | 3,756,487 |
| 119 | 3,756,488 |
| **CLASS 228** | |
| 43 | 3,756,489 |
| 46 | 3,756,490 |
| **CLASS 229** | |
| 2.5 | 3,756,492 |
| 5.5 | 3,756,493 |
| 14BL | 3,756,495 |
| 14B | 3,756,494 |
| 15 | 3,756,496 |
| 22 | 3,756,497 |
| 23C | 3,756,498 |
| 34R | 3,756,499 |
| 37R | 3,756,500 |
| 44R | 3,756,501 |
| 51D | 3,756,502 |
| 52B | 3,756,503 |
| 76 | 3,756,504 |
| 80 | 3,756,468 |
| **CLASS 233** | |
| 3 | 3,756,505 |
| **CLASS 235** | |
| 61.11E | 3,757,090 |
| | 3,757,091 |
| 61.7B | 3,757,089 |
| 74 | 3,757,092 |
| 95R | 3,756,506 |
| 150.1 | 3,757,093 |
| 150.2 | 3,757,094 |
| 151.11 | 3,757,095 |
| 151.34 | 3,756,630 |
| 152 | 3,757,096 |
| | 3,757,261 |
| 159 | 3,757,097 |
| 175 | 3,757,098 |
| 194 | 3,757,099 |
| 197 | 3,757,100 |
| **CLASS 238** | |
| 2 | 3,756,507 |
| 17 | 3,756,508 |
| **CLASS 239** | |
| 129 | 3,756,510 |
| 132.3 | 3,756,511 |
| 337 | 3,756,512 |
| | 3,756,513 |
| | 3,756,514 |
| 524 | 3,756,515 |
| 539 | 3,756,516 |
| 675 | 3,756,509 |

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| | |
|---|---|
| **CLASS 240** | |
| 1.1 | 3,757,101 |
| 2R | 3,757,102 |
| 4.2 | 3,757,103 |
| 7.5 | 3,757,104 |
| 10R | 3,757,105 |
| | 3,757,106 |
| 10.6R | 3,757,107 |
| 46.59 | 3,757,108 |
| 90 | 3,757,109 |
| 108A | 3,757,110 |
| 152 | 3,757,111 |
| **CLASS 241** | |
| 56 | 3,756,517 |
| 65 | 3,756,518 |
| 73 | 3,756,519 |
| 99 | 3,756,520 |
| **CLASS 242** | |
| 7.17 | 3,756,522 |
| 36 | 3,756,524 |
| 46.6 | 3,756,523 |
| 55.19A | 3,756,525 |
| 56R | 3,756,526 |
| 56.2 | 3,756,527 |
| 74 | 3,756,528 |
| 118.11 | 3,756,531 |
| | 3,756,532 |
| 118.2 | 3,756,530 |
| 156.2 | 3,756,533 |
| 194 | 3,756,534 |
| 197 | 3,756,535 |
| 200 | 3,756,521 |
| **CLASS 243** | |
| 19 | 3,756,536 |
| 35 | 3,756,537 |
| **CLASS 244** | |
| 3.16 | 3,756,538 |
| 3.24 | 3,756,539 |
| 35R | 3,756,540 |
| 39 | 3,756,541 |
| 42CC | 3,756,542 |
| 77D | 3,756,543 |
| 87 | 3,756,529 |
| 137R | 3,756,544 |
| | 3,756,545 |
| 138R | 3,756,546 |
| 152 | 3,756,547 |
| **CLASS 246** | |
| 122R | 3,757,112 |
| 468 | 3,757,113 |
| **CLASS 248** | |
| 98 | 3,756,548 |
| 123 | 3,756,549 |
| 206A | 3,756,550 |
| 358R | 3,756,551 |
| 399 | 3,756,552 |
| **CLASS 249** | |
| 142 | 3,756,553 |
| 202 | 3,756,554 |
| 207 | 3,756,555 |
| **CLASS 250** | |
| 201 | 3,757,124 |
| 202 | 3,757,125 |
| 209 | 3,757,126 |
| 227 | 3,757,127 |
| 231SE | 3,757,128 |
| 251 | 3,757,114 |
| 294 | 3,757,115 |
| 299 | 3,757,116 |
| 304 | 3,757,119 |
| 316 | 3,757,121 |
| 338 | 3,757,123 |
| 358 | 3,757,122 |
| 396 | 3,757,117 |
| | 3,757,120 |
| 439 | 3,757,129 |
| 446 | 3,757,118 |
| **CLASS 251** | |
| 7 | 3,756,556 |
| 45 | 3,756,557 |
| 282 | 3,756,558 |
| 335 | 3,756,559 |
| 367 | 3,756,560 |
| **CLASS 252** | |
| 8.55B | 3,756,949 |
| 8.75 | 3,756,950 |
| 46.7 | 3,756,951 |
| 47.5 | 3,756,952 |
| 49.6 | 3,756,953 |
| 55 | 3,756,954 |
| 62.3GA | 3,756,955 |
| 70 | 3,756,956 |
| 79.4 | 3,756,957 |
| 313S | 3,756,958 |
| 336 | 3,756,959 |
| 404 | 3,756,960 |
| 419 | 3,756,961 |
| 441 | 3,756,962 |
| 447 | 3,756,963 |
| 454 | 3,756,964 |
| 467 | 3,756,965 |
| 557 | 3,756,966 |
| **CLASS 254** | |
| 4R | 3,756,561 |
| 29R | 3,756,562 |
| 168 | 3,756,563 |
| 187R | 3,756,564 |
| 192 | 3,756,565 |
| **CLASS 256** | |
| 10 | 3,756,566 |
| 21 | 3,756,567 |
| 59 | 3,756,568 |
| **CLASS 259** | |
| 4 | 3,756,569 |
| 6 | 3,756,570 |
| 60 | 3,756,571 |
| 177A | 3,756,572 |
| 192 | 3,756,573 |
| 193 | 3,756,574 |
| **CLASS 260** | |
| 2A | 3,756,968 |
| 2.5AC | 3,756,970 |
| 2.5B | 3,756,967 |
| 3 | 3,756,969 |
| 17.3 | 3,756,971 |
| 18S | 3,756,972 |
| 28.5R | 3,756,973 |
| 29.6R | 3,756,975 |
| 29.7PT | 3,756,976 |
| 29.7H | 3,756,974 |
| 33.6AQ | 3,756,977 |
| 33.6A | 3,756,978 |
| 34.2 | 3,756,979 |
| 38 | 3,756,980 |
| 40R | 3,756,981 |
| 41R | 3,756,982 |
| 45.85A | 3,756,983 |
| 47EC | 3,756,984 |
| 67FP | 3,756,985 |
| 75M | 3,756,986 |
| | 3,756,988 |
| | 3,756,990 |
| 75R | 3,756,987 |
| | 3,756,989 |
| 77.5Q | 3,756,992 |
| 78UA | 3,756,991 |
| 79.1 | 3,756,993 |
| 82.1 | 3,756,994 |
| 85.3R | 3,756,995 |
| 87.3 | 3,756,996 |
| 88.2C | 3,757,000 |
| 88.2R | 3,756,998 |
| 88.2S | 3,756,997 |
| | 3,756,999 |
| 92.8W | 3,757,001 |
| 94.9DA | 3,757,002 |
| 112.5 | 3,757,003 |
| 117 | 3,757,004 |
| 122 | 3,757,005 |
| 239BD | 3,757,006 |
| 239.3A | 3,757,007 |
| 239.3D | 3,757,008 |
| 239.55R | 3,757,009 |
| 240B | 3,757,010 |
| 240.9 | 3,757,011 |
| 243C | 3,757,012 |
| | 3,757,013 |
| | 3,757,014 |
| | 3,757,015 |
| 247.2B | 3,757,016 |
| 247.5B | 3,757,017 |
| 248AS | 3,757,019 |
| 248C | 3,757,018 |
| **CLASS 261** | |
| 1 | 3,756,575 |
| 35 | 3,756,576 |
| 63 | 3,756,577 |
| 91 | 3,756,578 |
| 92 | 3,756,579 |
| 123 | 3,756,580 |
| **CLASS 264** | |
| 205 | 3,756,441 |
| **CLASS 266** | |
| 13 | 3,756,584 |
| 15 | 3,756,582 |
| 36P | 3,756,583 |
| **CLASS 267** | |
| 156 | 3,756,585 |
| **CLASS 271** | |
| 9 | 3,756,586 |
| 20 | 3,756,587 |
| 49 | 3,756,588 |
| 51 | 3,756,589 |
| 54 | 3,756,590 |
| 69 | 3,756,591 |
| **CLASS 272** | |
| 57R | 3,756,592 |
| 60 | 3,756,593 |
| 68 | 3,756,594 |
| 70 | 3,756,595 |
| 70.1 | 3,756,596 |
| 81 | 3,756,597 |
| **CLASS 273** | |
| 38 | 3,756,598 |
| 102.1C | 3,756,599 |
| 106.5B | 3,756,600 |
| | 3,756,601 |
| 106.5C | 3,756,602 |
| 108 | 3,756,603 |
| 141A | 3,756,605 |
| 182R | 3,756,606 |
| 218 | 3,756,607 |
| **CLASS 274** | |
| 4F | 3,756,608 |
| | 3,756,609 |
| 4R | 3,756,610 |
| **CLASS 277** | |
| 194 | 3,756,611 |
| **CLASS 279** | |
| 41A | 3,756,612 |
| **CLASS 280** | |
| 8 | 3,756,613 |
| 11.22 | 3,756,614 |
| 14 | 3,756,615 |
| 79.1 | 3,756,616 |
| 104 | 3,756,619 |
| 150AB | 3,756,617 |
| | 3,756,620 |
| | 3,756,621 |
| 166 | 3,756,622 |
| 289 | 3,756,623 |
| 423R | 3,756,624 |
| 489 | 3,756,618 |
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| 25 | 3,756,625 |
| 47 | 3,756,626 |
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| 38 | 3,756,627 |
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| 52 | 3,756,628 |
| 112 | 3,756,629 |
| 230 | 3,756,631 |
| 250 | 3,756,632 |
| **CLASS 287** | |
| 103R | 3,756,633 |
| 119R | 3,756,634 |
| 127R | 3,756,635 |
| 189.36H | 3,756,636 |
| 189.36M | 3,756,637 |
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| 17 | 3,756,638 |
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| 40 | 3,757,130 |
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| 179 | 3,756,639 |
| 256.75 | 3,756,640 |
| 258 | 3,756,641 |
| 341.15 | 3,756,642 |
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| 86 | 3,756,643 |
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| 66R | 3,756,644 |
| 116 | 3,756,645 |
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| 43 | 3,756,646 |
| **CLASS 296** | |
| 23B | 3,756,648 |
| 23R | 3,756,649 |
| 28A | 3,756,647 |
| 137C | 3,756,650 |
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| 192 | 3,756,652 |
| 195 | 3,756,653 |
| 345 | 3,756,654 |
| 379 | 3,756,655 |
| 440 | 3,756,657 |
| 446 | 3,756,656 |
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| 15 | 3,756,659 |
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| 6R | 3,756,660 |
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| 10 | 3,756,666 |
| 21BE | 3,756,663 |
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| 21P | 3,756,662 |
| 81 | 3,756,665 |
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| 24 | 3,756,667 |
| 35EB | 3,756,668 |
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| 106 | 3,757,132 |
| 116 | 3,757,133 |
| 118 | 3,757,134 |
| 139 | 3,757,135 |
| 229 | 3,757,136 |
| 235R | 3,757,137 |
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| 252M | 3,757,140 |
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| 273 | 3,757,142 |
| 291 | 3,757,143 |
| 300 | 3,757,144 |
| 304 | 3,757,145 |
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| 3.9 | 3,756,669 |
| 6R | 3,756,670 |
| 15 | 3,756,671 |
| 26 | 3,756,672 |
| 36.3 | 3,756,673 |
| 121 | 3,756,674 |
| 184 | 3,756,675 |
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| 4 | 3,757,146 |
| 49 | 3,757,147 |
| 81 | 3,757,148 |
| 114 | 3,757,149 |
| 181 | 3,757,150 |
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| 8 | 3,756,676 |
| 108 | 3,756,677 |
| 235 | 3,756,678 |
| 237 | 3,756,679 |
| | 3,756,680 |
| 351 | 3,756,681 |
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| 63 | 3,757,152 |
| 325 | 3,757,153 |
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| 30 | 3,757,156 |
| 39 | 3,757,157 |
| 47 | 3,757,158 |
| | 3,757,159 |
| 169TV | 3,757,160 |
| 276D | 3,757,161 |
| | 3,757,162 |
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| 19 | 3,756,682 |
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| 2R | 3,757,163 |
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| 16 | 3,757,168 |
| 18R | 3,757,169 |
| 119 | 3,757,170 |
| 157 | 3,757,171 |
| 230 | 3,757,172 |
| 234R | 3,757,173 |
| | 3,757,175 |
| 235R | 3,757,174 |
| | 3,757,176 |
| 258 | 3,757,177 |
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| 71 | 3,757,178 |
| 85 | 3,757,179 |
| 139 | 3,757,180 |
| 150 | 3,757,181 |
| 186 | 3,757,182 |
| 231 | 3,757,184 |
| 254 | 3,757,183 |
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| 514 | 3,757,186 |
| 562 | 3,757,187 |
| 625 | 3,757,190 |
| 632 | 3,757,188 |
| 634 | 3,757,189 |
| 685 | 3,757,191 |
| 696 | 3,757,192 |
| | 3,757,193 |
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| **CLASS 321** | |
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| 45C | 3,757,197 |
| 45R | 3,757,196 |
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| 8 | 3,757,200 |
| 11D | 3,757,252 |
| 44R | 3,757,201 |
| 45 | 3,757,202 |
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| .5R | 3,757,204 |
| 4 | 3,757,203 |
| 28R | 3,757,207 |
| 32 | 3,757,206 |
| 34TK | 3,757,208 |
| 43G | 3,757,209 |
| 61R | 3,757,210 |
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| 65R | 3,757,212 |
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| 83Q | 3,757,214 |
| 146 | 3,757,215 |
| 149 | 3,757,216 |
| 151R | 3,757,217 |
| 156 | 3,757,218 |
| 158F | 3,757,219 |
| 303R | 3,757,205 |
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| 137 | 3,757,222 |
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| 167 | 3,757,236 |
| 234 | 3,757,237 |
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| 207P | 3,757,243 |
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| 94.5 | 3,757,246 |
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| | 3,757,251 |
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| 14 | 3,757,254 |
| 17 | 3,757,255 |
| 30R | 3,757,256 |
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| 84M | 3,757,259 |
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| 260 | 3,757,263 |
| 281 | 3,757,264 |
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| 158 | 3,757,266 |
| 174 | 3,757,267 |
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| 17M | 3,757,272 |
| 21R | 3,757,273 |
| 60 | 3,757,274 |
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| 143R | 3,757,276 |
| 176M | 3,757,277 |
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| 3T | 3,757,286 |
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| 9 | 3,757,289 |
| 15.5TD | 3,757,304 |
| 23 | 3,757,290 |
| 41A | 3,757,291 |
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| 244R | 3,757,317 |
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| 347AD | 3,757,321 |
| 365C | 3,757,322 |
| 416 | 3,757,323 |
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| 7.5 | 3,757,327 |
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| 733 | 3,757,341 |
| 738 | 3,757,342 |
| 770 | 3,757,343 |
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| 786 | 3,757,345 |
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| 1 | 3,757,346 |
| 7 | 3,757,347 |
| 33R | 3,757,348 |
| 49 | 3,757,349 |
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| 74ES | 3,757,352 |
| 74M | 3,757,353 |
| 74P | 3,757,351 |
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| 3.5 | 3,756,683 |
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| 5 | 3,756,685 |
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| 96WG | 3,756,688 |
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| 202 | 3,756,697 |
| 220 | 3,756,698 |
| 250 | 3,756,699 |
| 267 | 3,756,700 |
| 288 | 3,756,701 |
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| 45 | 3,756,703 |
| 60 | 3,756,704 |
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| 27 | 3,756,714 |
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| 129 | 3,756,706 |
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| 15 | 3,756,715 |
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| 21 | 3,756,717 |
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| 27 | 3,756,708 |
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# PATENT NOTICES

## Certificates of Correction for the Week of Sept. 11, 1973

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## Disclaimers

3,401,824.—*John Wilson Rouse,* Ramsey, N.J. FULL-OPEN CAN. Patent dated Sept. 17, 1968. Disclaimer filed Aug. 1, 1973, by the assignee, *American Can Company.*

Hereby enters this disclaimer to claims 1, 2, 6 and 7 of said patent.

3,478,132.—*Clarence L. Randolph,* Ashland, Ohio. GOLF BALL COMPRISING AN ELASTOMER DISPERSION OF HIGH MOLECULAR WEIGHT POLYETHYLENE. Patent dated Nov. 11, 1969. Disclaimer filed July 30, 1973, by the assignee, *Eagle Rubber Co., Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,681,355.—*Stephan Guttmann,* Allschwil, and *Rene Huhuenin,* Reinach, Basel-Land, Switzerland. ERGONARCARNINES. Patent dated Aug. 1, 1972. Disclaimer filed May 22, 1972, by the assignee, *Sandoz Ltd.* (*also known as Sandoz A.G.*).

Hereby disclaims the portion of the term of the patent subsequent to May 30, 1989.

3,682,900.—*Peter Liechti,* Binningen, *Erwin Maeder,* Aesch, Basel-Land, *Leonardo Guglielmetti,* Birsfelden, and *Adolf Emil Siegrist,* Basel, Switzerland. STILBENE DERIVATIVES. Patent dated Aug. 8, 1972. Disclaimer filed Dec. 20, 1971, by the assignee, *Ciba-Geigy A.G.*

Hereby disclaims the portion of the term of the patent subsequent to May 4, 1988.

3,688,780.—*Herbert L. Everroad,* Denver, Colo. AIR FILTER CLEANING METHOD. Patent dated Sept. 5, 1972. Disclaimer filed July 24, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Nov. 16, 1988.

3,699,663.—*Robert R. Candor* and *James T. Candor,* Dayton, Ohio. METHOD AND APPARATUS FOR TREATING SHEET-LIKE MATERIAL WITH FLUID. Patent dated Oct. 24, 1972. Disclaimer filed Apr. 26, 1972, by the inventors.

Hereby disclaims the portion of the term of the patent subsequent to July 13, 1988.

3,706,650.—*Steve Eisner,* Schenectady, N.Y. CONTOUR ACTIVATING DEVICE. Patent dated Dec. 19, 1972. Disclaimer filed May 26, 1972, by the assignee, *Norton Company.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 9, 1988.

3,711,509.—*Karl-Heinz Weber,* Gau-Algesheim, *Karl Zeile* and *Peter Danneberg,* Ingelheim (Rhine), *Rolf Giesemann,* Bingen, and *Karl Heinz Hauptmann,* deceased, late of Ingelheim (Rhine), Germany, by *Maria Hauptmann,* heir, Bonn (Rhine), Germany. 5-PHENYL-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES. Patent dated Jan. 16, 1973. Disclaimer filed Sept. 18, 1972, by the assignee, *Boehringer Ingelheim G.m.b.H.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 14, 1989.

3,712,075.—*Michael John Stapley Smith,* Boars Hill, *John Henry Wilson,* Stockport, *Bryan Reginald Parr,* Sale, England. APPARATUS FOR PERFORMING THE IMMISCIBLE REFRIGERANT FREEZE PROCESS FOR PURIFYING WATER. Patent dated Jan. 23, 1973. Disclaimer filed Aug. 9, 1973, by the assignee, *United Kingdom Atomic Energy Authority.*

Hereby enters this disclaimer to claims 1, 6, 10, 11 and 12 of said patent.

3,716,658.—*Michael I. Rackman,* Brooklyn, N.Y. LIQUID-CRYSTAL TELEVISION DISPLAY SYSTEM. Patent dated Feb. 13, 1973. Disclaimer filed Sept. 26, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to May 19, 1987.

3,733,269.—*Jan W. Gooch,* Russellville, Ark. PROCESS FOR COAGULATING AND AGGLOMERATING PARTICULATE MATERIAL WITHIN A LIQUID MEDIA. Patent dated May 15, 1973. Disclaimer filed Apr. 25, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to June 22, 1988.

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3,661,166. FLUID LOGIC CONTROL SYSTEM. R. W. Watson, Garlock, Inc., Division St., Palmyra, N.Y., 14522.

3,721,395. TOWEL RACK FOR VEHICLES. Rufus Nipes. Correspondence to: Mason Fenwick & Lawrence, Suite 310, 1730 Rhode Island Ave., Washington, D.C., 20036.

3,727,086. MOTOR WITH RELATIVELY ROTATABLE STATOR AND ROTOR FOR SPEED CONTROL. Hazel Cherwink, 1515 Fowler Creek Road, Sonoma, Calif., 95476.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3-chome, Chiyoda-ku, Toyko 100, Japan.

3,733,985. CAMERA FILM IMAGING DEVICE. Lester Gordon, 10 Louise St., Lewiston, Maine.

3,735,346. SECURITY SYSTEM FOR A VEHICLE. Ralph W. Fox. Correspondence to: Evelyn M. Sommer, 156 E. 52nd St., New York, N.Y., 10022.

3,736,779. LOCK. Eugene L. Pratt, School Lane House #1036, 5450 Wissahickon Ave., Philadelphia, Pa., 19144.

3,737,970. TORSION BAR ADJUSTING TOOL. Harold G. Tracey, 14414 Minock St., Detroit, Mich. 48223.

3,740,874. SNOW CLEARERS. Marcel Boschung. Correpondence to: Bovard & Cie, Optingenstrasse 16, CH–3000 Bern 25, Switzerland.

The following 2 patents are offered by: Cecil J. Krow, P.O. Box 264, Ralston, Okla., 74650.

3,509,408. REMOVABLE RENEWABLE ELECTRODE SPARK PLUG.
3,725,715. .090 INCH FIRE SPARK PLUG.

The following 12 patents are offered by Martin J. Devine, with correspondence to be directed to: Woodcock, Washburn, Kurtz & Mackieqics, 1831. The Fidelity Bldg., 123 S. Broad St., Philadelphia, Pa., 19109.

2,969,263. LUBRICATED ANTI-FRICTION BEARINGS.
2,969,264. LUBRICATED ANTI-FRICTION BEARINGS
2,978,793. METHOD OF LUBRICATING ANTI-FRICTION BEARINGS.
2,978,794. METHOD OF LUBRICATING ANTI-FRICTION BEARINGS WITH BONDED LUBRICANT FILMS.
2,978,795. METHOD OF LUBRICATING ANTI-FRICTION BEARINGS WITH BONDED FILM LUBRICANTS.
2,980,987. METHOD OF LUBRICATING ANTI-FRICTION BEARINGS.
3,001,887. ANTI-FRICTION BEARINGS LUBRICATED WITH BONDED LUBRICANT FILM.
3,001,888. LUBRICATED ANTI-FRICTION BEARINGS.
3,079,204. LUBRICATED BEARINGS. (Offered under nonexclusive licenses only on reasonable terms and conditions.)
3,194,759. LUBRICATED BEARING ASSEMBLIES.
3,198,735. SOLID LUBRICANT COMPOSITION AND METHOD FOR LUBRICATING ANTI-FRICTION BEARING STRUCTURES.
3,211,502. LUBRICATED BEARING ASSEMBLY.

General Electric Company is prepared to grant non-exclusive licenses under the following 11 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to Division Patent Counsel. Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,737,759. STATIC SWITCH INCLUDING SURGE SUPPRESSING MEANS.

Applications for license under the following 10 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company. Appliance Park, Louisville, Ky., 40225.

3,578,279. RESILIENT MOUNTING MEANS.
3,679,282. METHOD AND STRUCTURE FOR CUSHIONING THE OPERATION OF A MOVABLE RACK IN A DISHWASHER.
3,724,236. REFRIGERATOR EVAPORATOR.
3,726,580. RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET.
3,726,581. RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET.
3,731,496. PHOTOELECTRIC ICE LEVEL SENSOR.
3,732,646. REFRIGERATOR DOOR CONSTRUCTION.
3,733,841. REFRIGERATOR TEMPERATURE CONTROL.
3,739,597. APPARATUS FOR ADDING MOISTURE TO AIR.
3,743,454. ROTARY COMPRESSOR.

General Motors Corporation is prepared to grant non-exclusive license under the following 6 patents upon reasonable terms.

Application for license may be addressed to the Director, Patent Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,567,331. VARIABLE VANE CASCADES.
3,572,969. TURBOMACHINE ROTOR.
3,575,066. TRANSMISSION.
3,575,522. TURBINE COOLING.
3,575,528. TURBINE ROTOR COOLING.
3,575,720. INSULATOR MEANS FOR LITHIUM-CHLORINE HIGH TEMPERATURE BATTERY.

FMC Corporation is prepared to grant licenses under the following 30 patents.

Inquiries respecting licenses should be directed to: FMC Corporation, Patent and Licensing Department, Marcus Hook, Pa., 19061.

3,518,720. APPARATUS FOR MAKING NET-LIKE STRUCTURES.
3,525,785. METHOD FOR EXTRUDING WOVEN NET-LIKE STRUCTURES.
3,550,202. APPARATUS FOR EXTRUDING WOVEN NET-LIKE STRUCTURES.
3,551,286. METHOD AND APPARATUS FOR THE MANUFACTURE OF NET-LIKE MATERIALS.
3,557,271. MANUFACTURE OF NET-LIKE MATERIALS BY EXTRUSION.
3,562,046. METHOD AND APPARATUS FOR MAKING NET-LIKE STRUCTURES.
3,577,587. APPARATUS FOR MAKING RETICULATED STRUCTURES.
3,579,729. APPARATUS FOR EXTRUDING NET-LIKE STRUCTURES.
3,584,102. METHOD FOR MAKING NET-LIKE STRUCTURES.
3,584,341. APPARATUS FOR MAKING NET-LIKE STRUCTURES.
3,591,892. APPARATUS FOR MAKING NET STRUCTURES.
3,591,894. APPARATUS FOR MAKING NET STRUCTURES.
3,592,718. DIFFERENTIALLY BONDED NET-LIKE STRUCTURES.
3,600,751. APPARATUS FOR EXTRUSION OF INTERLACED WEBS.
3,601,850. APPARATUS FOR MAKING NET-LIKE STRUCTURES OF CURVED CONSTRUCTION.
3,613,161. APPARATUS FOR CONTINUOUSLY EXTRUDING NET-LIKE STRUCTURES COMPOSED OF TWISTED MULTIFILAMENT YARNS.
3,621,528. APPARATUS FOR EXTRUDING NET-LIKE FABRICS.
3,627,868. METHOD FOR CONTINUOUSLY EXTRUDING NET-LIKE STRUCTURES.
3,630,117. METHOD AND APPARATUS FOR MAKING NET-LIKE STRUCTURES FROM PREFORMED STRANDS.
3,632,714. METHOD FOR MAKING NET-LIKE STRUCTURES.
3,649,142. APPARATUS FOR EXTRUDING NET-LIKE STRUCTURES.
3,654,029. APPARATUS FOR MAKING NET-LIKE STRUCTURES.
3,654,031. APPARATUS FOR MAKING EXTRUDED NETS HAVING INTEGRAL STRAND JUNCTIONS.
3,683,059. METHOD FOR MAKING RETICULATED STRUCTURES.
3,686,380. METHOD FOR MAKING NET STRUCTURES.
3,686,381. METHOD FOR MAKING NET STRUCTURES.
3,686,382. METHOD FOR MAKING NET-LIKE STRUCTURES OF CURVED CONSTRUCTION.
3,689,617. METHOD FOR EXTRUSION OF INTERLACED WEBS.

3,709,969. METHOD FOR CONTINUOUSLY EXTRUDING NET-LIKE STRUCTURES COMPOSED OF TWISTED MULTIFILAMENT YARNS.

3,713,924. MANUFACTURE OF EXTRUDED NETS HAVING INTEGRAL STRAND JUNCTIONS.

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RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 42 patents upon reasonable terms and conditions.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

D. 227,785. ENCLOSURE FOR A RADIO OR TELEVISION ANTENNA.

D. 227,902. INDOOR ANTENNA OR SIMILAR ARTICLE.

Re. 27,694. SEMICONDUCTOR LASER PRODUCING LIGHT AT TWO WAVELENGTHS SIMULTANEOUSLY.

Re. 27,698. GANGED RING MAGNETS FOR COORDINATED CONTROL OF A PLURALITY OF BEAMS.

3,743,376. HOLOGRAPHIC BEAM COUPLER.

3,743,507. RECORDING OF A CONTINUOUS TONE FOCUSED IMAGE ON A DIFFRACTION GRATING.

3,743,586. METHOD OF MAKING A COLOR ENCODING FILTER ASSEMBLY.

3,743,764. ELECTRONIC PHASE SHIFTING APPARATUS.

3,743,824. CARRY RIPPLE NETWORK FOR CONDITIONAL SUM ADDER.

3,743,923. REFERENCE VOLTAGE GENERATOR AND REGULATOR.

3,743,944. AUTOMATIC TUNING CONTROL CIRCUITS.

3,743,960. CIRCUIT FOR DRIVING FREQUENCY STANDARD SUCH AS TUNING FORK.

3,743,974. ANTENNA MATCHING NETWORK UTILIZING AN ADJUSTABLE HIGH-POWER INDUCTOR.

3,744,696. RECORDING WEB GUIDE APPARATUS.

3,745,039. ELECTROLESS COBALT PLATING BATH AND PROCESS.

3,745,072. SEMICONDUCTOR DEVICE FABRICATION.

3,745,426. INSULATED GATE FIELD-EFFECT TRANSISTOR WITH VARIABLE GAIN.

3,745,564. SWITCHABLE ACOUSTIC SURFACE WAVE DEVICE.

3,745,586. LASER WRITING.

3,745,647. FABRICATION OF SEMICONDUCTOR DEVICES.

3,746,231. AUTOMATIC WEAR COMPENSATING MECHANISM.

3,746,783. SHUTTERLESS PLAYBACK DEVICE FOR HOLOGRAPHIC MOTION PICTURE RECORD PRESSINGS.

3,746,873. ANTI-CONDENSATION DEVICE FOR INFRARED DETECTOR.

3,746,883. CHARGE TRANSFER CIRCUITS.

3,746,904. CATHODE-RAY TUBE INCLUDING A GLASS ENVELOPE WITH TWO SPACED EXTERNAL CONDUCTIVE COATING AND A CONNECTING STRIP OF A THIRD EXTERNAL CONDUCTIVE COATING THEREON.

3,747,016. SEMICONDUCTOR INJECTION LASER.

3,747,044. MICROWAVE INTEGRATED CIRCUIT (MIC) GROUND PLANE CONNECTOR.

3,747,075. ELECTRO-OPTICAL STORAGE DEVICE.

3,747,081. MAGNETIC DRUM HEAD MOUNT.

3,748,408. TRACKING CONTROL FOR RECORDER-REPRODUCER SYSTEMS WITH THE CONTROL TRANSDUCER LOCATED AT THE NEUTRAL POINT OF THE TAPE STRETCH.

3,748,525. VERTICAL CONVERGENCE CIRCUITS UTILIZING POSITIVE FEEDBACK FOR STABILIZATION.

3,748,591. ILLUMINATION ACTIVATED TRANSISTOR RELAXATION OSCILLATOR.

3,748,975. APPARATUS FOR AND METHOD OF CORRECTING A DEFECTIVE PHOTOMASK.

3,749,383. APPARATUS FOR PROCESSING SEMICONDUCTOR DEVICES.

3,749,469. REDUNDANT FRAUNHOFER RECORDING SYSTEM.

3,749,614. FABRICATION OF SEMICONDUCTOR DEVICES.

3,749,658. METHOD OF FABRICATING TRANSPARENT CONDUCTORS.

3,749,966. HIGH VOLTAGE HOLD DOWN CIRCUIT FOR HORIZONTAL DEFLECTION CIRCUIT.

3,749,984. ELECTROACOUSTIC SEMICONDUCTOR DEVICE EMPLOYING AN IGFET.

3,749,985. HIGH FREQUENCY INSULATED GATE FIELD EFFECT TRANSISTOR FOR WIDE FREQUENCY BAND OPERATION.

3,750,118. MAGNETIC CORE MEMORY PLANE CONSTRUCTION.

3,750,138. HOME TELEVISION RECEIVER MODIFIED TO OPERATE AS VIDEO TERMINAL.

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# PATENT EXAMINING CORPS

## WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF AUGUST 18, 1973

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director<br>Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 5-30-72 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director<br>Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 8-01-72 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director<br>Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 7-06-72 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director<br>Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 6-01-72 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director<br>Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 3-24-72 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director<br>Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 1-10-73 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director<br>Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 11-13-72 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director<br>Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 10-02-72 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director<br>Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 5-15-72 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director<br>Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 11-27-72 |
| DESIGNS, GROUP 290—R. L. CAMPBELL, Director<br>Industrial Arts; Household, Personal and Fine Arts. | 12-09-71 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director<br>Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 11-02-72 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director<br>Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 7-05-72 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director<br>Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 10-24-72 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director<br>Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 9-25-72 |
| MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director<br>Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 9-01-72 |

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**Expiration of patents:** The patents within the range of numbers indicated below expire during September 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

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|---|---|
| Patents | Numbers 2,761,142 to 2,764,757, inclusive |
| Plant Patents | Numbers 1,509 to 1,521, inclusive |

# DEFENSIVE PUBLICATIONS

## PUBLISHED SEPTEMBER 11, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

### T914,001
### POWDER COATING PROCESS

**Peter M. Grant, Hemlock Park 37663, and Herbert R. Lyon, 128 Dahlia 37664, both of Kingsport, Tenn.**
**Filed Feb. 23, 1972, Ser. No. 228,760**
**Int. Cl. B05b** *5/02;* **B44d** *1/094*
**U.S. Cl. 117—17**
**No Drawing. 8 Pages Specification**

Disclosed is a process for powder coating electrically nonconductive substrates, which can withstand a temperature within the range of about 375° F. to about 500° F. without deforming, charring, and the like, in selected areas. Suitable substrates are fabrics, paper products, glass, ceramics, thermosetting resins such as phenolics, ureaformaldehyde and ureamelamine resins, thermosetting polyesters and crystalline linear polyesters such as polyethylene terephthalate. In this process a grounded, electrically conductive, shaped coating is formed on a portion of the area of the side of an electrically nonconductive, heatable substrate. Both the coated portion of the side and a portion of the remaining area of the side are then contacted with charged polymer particles and the charged polymer particles adhere only to the electrically conductive shaped coating and not to the remaining area of the side of the substrate. The coated portion of the side is then heated to form the polymer particles into a coating which is fused to the grounded, electrically conductive shaped coating and in the same shape as grounded, electrically conductive shaped coating. The polymer particles can be comprised of cellulose ester, polyolefin, polyester or mixtures thereof. In one particularly advantageous embodiment the polymer can be composed of a mixture of poly (1,4 - cyclohexylenedimethylene terephthalate/isophthalate) and cellulose acetate butyrate.

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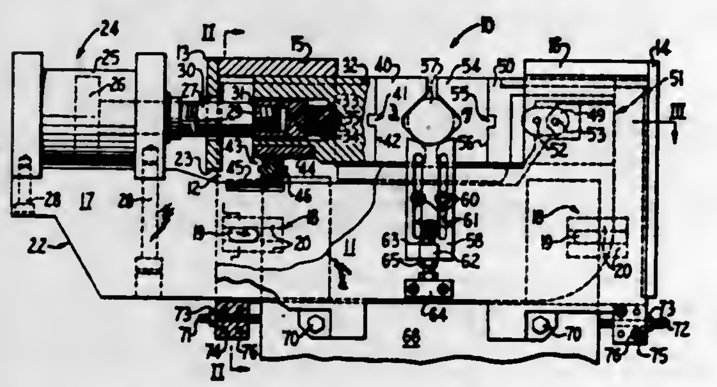
### T914,002
### WORKPIECE HOLDING FIXTURE

**Douglas G. K. Franks, 6516 N. University, Apt. 1301, Peoria, Ill. 61614**
**Filed Mar. 13, 1972, Ser. No. 234,072**
**Int. Cl. B25b** *1/18*
**U.S. Cl. 269—20**
**3 Sheets Drawing. 8 Pages Specification**



A fixture for securely holding a nonrotatable workpiece in a machine is provided having a housing and a pair of holding and clamping jaws which are movably supported for simultaneous movement toward or away from the workpiece in response to the activation of a double-acting fluid motor such as a hydraulic motor interconnecting the jaws. A timing device in the form of a pinion in simultaneous engagement with a rack on each jaw ensures synchronous movement of the jaws toward and away from each other in response, respectively, to extension and retraction of a rod of the motor by means of a piston movable within a cylinder of the motor. A pair of workpiece-supporting plates are vertically adjustably mounted by cap screws for positioning and supporting the workpiece for subsequent clamping by the jaws.

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### T914,003
### FLEXIBLE, EPOXY-COATED DIELECTRIC

**Richard Winthrop Bradt, Jr., Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**Continuation of application Ser. No. 76,976, Sept. 30, 1970. This application May 22, 1972, Ser. No. 255,698**
**Int. Cl. B32b** *27/08*
**U.S. Cl. 117—138.8 F**
**No Drawing. 10 Pages Specification**

A dielectric of a flexible film base of a polyester or a polyamide coated on at least one side with a polyepoxide cured with an anhydride and optionally containing an inorganic filler such as talc. This dielectric is particularly useful for high temperature applications in insulating coils in electric motors, e.g. slot liners and phase liners, and for use as a base in preparing printed circuits.

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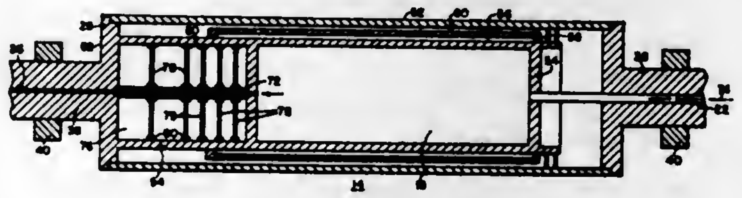
### T914,004
### FLUID-COOLED ROTATING MEMBER WITH IMPROVED COOLANT EXHAUST STRUCTURE SUITABLE FOR SUPERCONDUCTING DYNAMOELECTRIC MACHINERY

**Donald C. Litz, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed June 15, 1972, Ser. No. 263,039**
**Int. Cl. H02k** *9/00*
**U.S. Cl. 310—52**
**1 Sheet Drawing. 9 Pages Specification**



In a fluid-cooled rotating member, such as a dynamoelectric machine rotor with superconducting windings, the fluid exhaust is used to cool structural members connecting ambient and cool zones in order to minimize heat flow to the cold elements. The coolant in the exhaust structure is confined to a path along the axis of rotation. This avoids radial coolant flow paths and radially displaced coolant flow paths in order to eliminate convection currents. The axially located coolant conduit **72** is surrounded by and spaced from a supporting sleeve **54** with a plurality of thermally conductive members **78, 79** extending between the coolant conduit and the supporting sleeve through an evacuated volume at axially spaced intervals.

### T914,005
### COATING COMPOSITIONS

**Charles H. Coney, 2008 Canterbury 37660, and Glenna E. Burnett, 1701 John B. Dennis Bypass, Apt. 16 37664, both of Kingsport, Tenn.**
**Filed Sept. 1, 1972, Ser. No. 285,788**
**Int. Cl. C08b** *21/08*
**U.S. Cl. 260—15**
**No Drawing. 6 Pages Specification**

Liquid coating composition comprising a cellulose ester of at least one monocarboxylic acid having 2 to 4 carbon atoms, a urea formaldehyde or melamine compound, a silicone compound and acid catalyst is disclosed. This composition is applied in solution and is thermosetting. When cured, it provides a release coating which also imparts scuff resistance, heat resistance, water resistance and chemical resistance to the coated substrate. The cellulose ester and urea formaldehyde are present in major proportions, while the silicone compound and acid catalyst are present in minor quantities.

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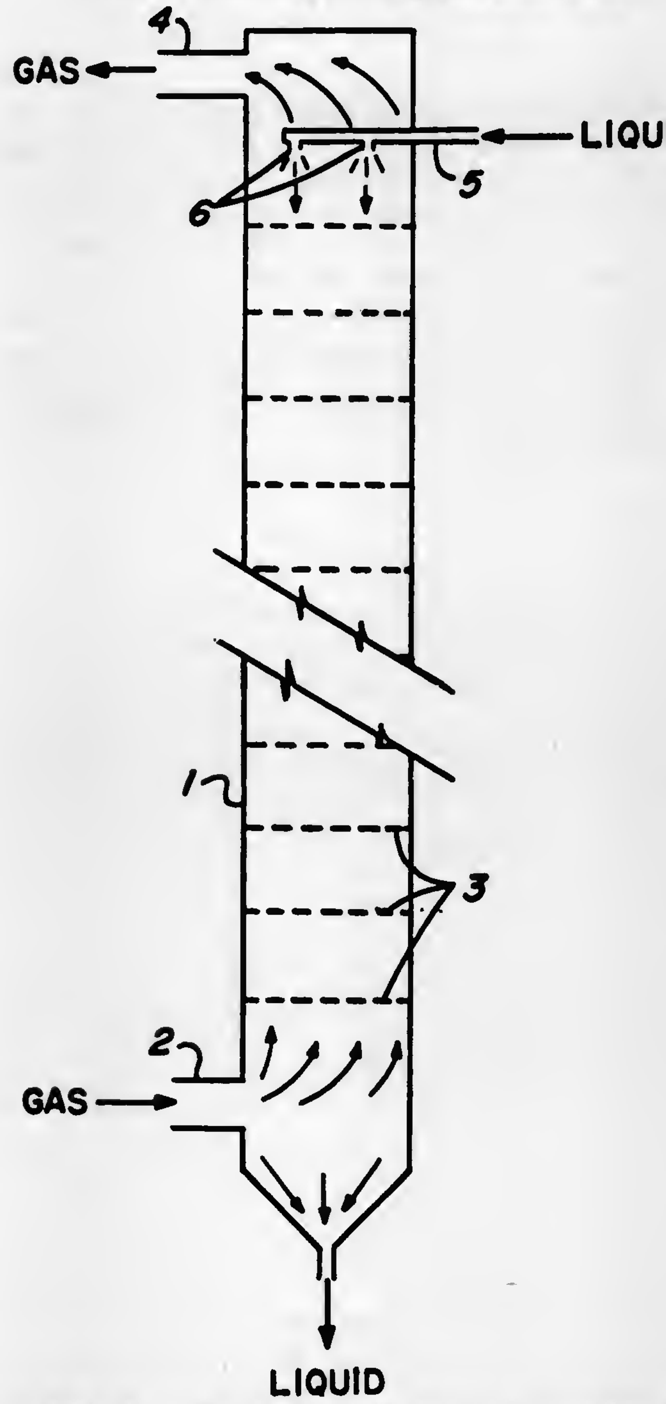
### T914,006
### MULTIGRID SCRUBBER FOR GAS-LIQUID STREAMS

**Phebus C. Williamson, Rte. 7, Russellville, Ala. 35653, and Neal D. Moore, 76 Lynn Brook Circle, Chattanooga, Tenn. 37415**
**Filed Sept. 14, 1972, Ser. No. 289,074**
**Int. Cl. B01d** *53/14*
**U.S. Cl. 55—73**
**3 Sheets Drawing. 10 Pages Specification**



Means and methods for mass transfer from a gas stream to a liquid or a slurry stream by countercurrent contact in a vertical scrubber shell having a plurality of horizontally arranged grids. The purpose of the grids is to obtain intimate mixing of the two countercurrent streams to effect the desired mass transfer. Experience has shown that the grid packing has advantages over both the conventional fixed-bed scrubbers and the mobile-bed scrubbers. The multiple-grid scrubber is operational without excessive pressure drops at gas velocities up to and exceeding 1100 feet per minute, a significant velocity increase over the 500-foot-per-minute limit for the fixed-packing scrubber because of flooding and the 750-foot-per-minute operational limit because of excessive pressure drop for the mobile-packing scrubber. In addition to the increased gas velocity, the multiple-grid scrubber does not have the added disadvantage of sphere erosion experienced with the mobile-bed scrubbers.

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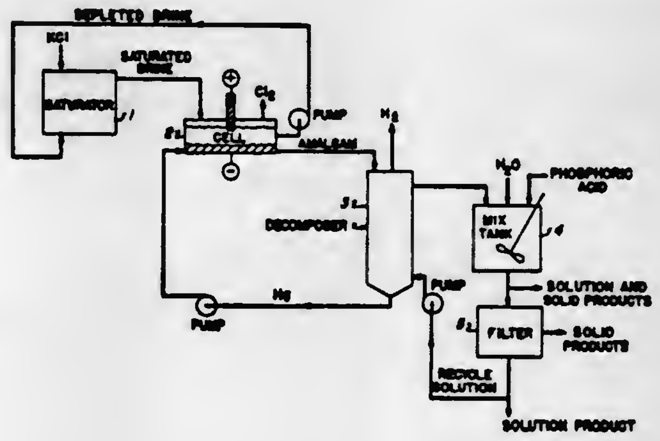
### T914,007
### PRODUCTION OF CHLORIDE-FREE POTASSIUM PHOSPHATES

**Travis P. Hignett, 704 Wilson Dam Circle, Sheffield, Ala. 35660, and Anthony J. Smith, 710 Prospect St., Florence, Ala. 35630**
**Filed Oct. 10, 1972, Ser. No. 296,296**
**Int. Cl. C05b** *7/00*
**U.S. Cl. 71—34**
**5 Sheets Drawing. 17 Pages Specification**



A process for the production of chlorine, hydrogen, and high analysis chloride-free potassium orthophosphate and potassium polyphosphate fertilizers. Saturated potassium chloride brine and mercury are pumped into a mercury cell where the brine is electrolyzed to produce chlorine at the anode and potassium amalgam at the mercury cathode. Water and either orthophosphoric or polyphosphoric acid solution are fed to the decomposer unit where the amalgam is subsequently stripped of potassium in the production of hydrogen gas and potassium phosphate solution, solids, or solution with solids. Decomposition is effected with or without short-circuiting elements in the decomposer. The spent brine is resaturated with solid potassium chloride. The resaturated brine and the mercury recovered from the decomposed amalgam are recycled to the electrolysis cell. Stable potassium polyphosphate solutions as concentrated as 70 percent in plant food

$$(P_2O_5\% + K_2O\%)$$

are proposed; a concentration of 62 percent plant food was attained in a stable potassium polyphosphate solution with a pH of 7.67 and a density of 1.740 g./ml. at 25° C.

### T914,008

### REACTING UNSATURATED DICARBOXYLIC ACIDS, ANHYDRIDES AND ESTERS THEREOF WITH POLYETHYLENE

**Richard L. McConnell, 421 Manderley Road, and Willis C. Wooten, Jr., 521 Lakewood Road, both of Kingsport, Tenn. 37660**

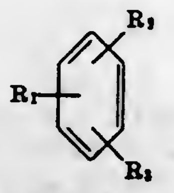
**Continuation of application Ser. No. 105,634, Jan. 11, 1971. This application Oct. 12, 1972, Ser. No. 297,155**

**Int. Cl. C08f** *27/00*

**U.S. Cl. 260—78.4 D**

**No Drawing. 20 Pages Specification**

A process for the preparation of a modified polyethylene composition comprising reacting polyethylene with an unsaturated polycarboxylic acid, anhydride or ester thereof in the presence of a free radical and a solvent having the formula



wherein each of $R_1$, $R_2$ and $R_3$ is hydrogen, alkyl having 1–10 carbon atoms, chlorine, bromine, bromoalkyl having 1–10 carbon atoms and 1–3 bromine atoms, chloroalkyl having 1–10 carbon atoms and 1–3 chlorine atoms, and products thereof. These modified polyethylenes are substantially non-crosslinked, have saponification numbers of at least 6 and are useful as adhesives, emulsifiable products, and coating materials.

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### T914,009

### STABILIZATION OF POLYMERS FOR WIRE AND CABLE APPLICATIONS

**Wade H. Brown, 307 W. 90th St., New York, N.Y. 10034; and Joseph M. Farber, 28 Braddock Court; and Peter P. Klemchuk, 148 Upland Road, both of Yorktown Heights, N.Y. 10598**

**Filed Dec. 4, 1972, Ser. No. 312,079**

**Int. Cl. C08f** *45/58*

**U.S. Cl. 260—45.85 B**

**No Drawing. 40 Pages Specification**

Polyolefin compositions, protected against metal induced oxidation such as incurred by copper, contain as the stabilizer system therefor a phenol antioxidant, a nitrogenous metal deactivator and a thiodiacid ester synergist. Exemplary of such compounds are pentaerythritol tetrakis-[3 - (3′,5′ - di-t.butyl-4′-hydroxyphenyl)propionate], 2,2′-thiodiethanol di-β-(3,5-di-t-butyl - 4 - hydroxylphenyl)propionate, oxanilide, N,N′-di-acetyladipic acid dihydrazide and dilauryl thiodipropionate.

Their improved oxidation resistivity renders them particularly suitable for wire and cable insulation.

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### T914,010

### NONMETALLIC PLASTIC AND GLASS FIBER TOASTER PACKAGE

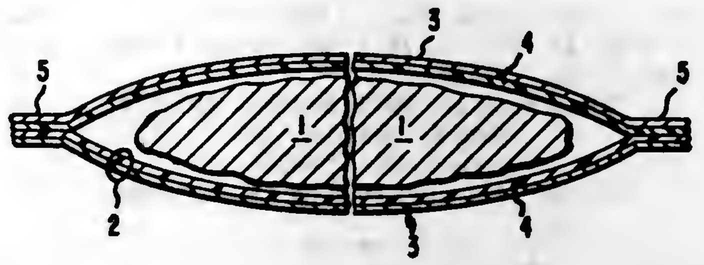
**William L. Hamilton, Wilmington, Del., and William E. Lindsey, Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Continuation of abandoned application Ser. No. 189,814, Oct. 18, 1971. This application May 4, 1973, Ser. No. 357,090**

**Int. Cl. B65b** *25/22*

**U.S. Cl. 99—171 H**

**1 Sheet Drawing. 7 Pages Specification**



An oil and heat resistant food package for use in a toaster comprising a pouch and a food article in said pouch. The pouch is prepared from two sheets of laminate 2, the laminate being composed of a glass fiber material 3 and a polysulfone layer 4, the polysulfone surfaces of the two sheets being bonded together around the perimeter 5. The glass fiber material used consists essentially of silica glass in the form of a sheet material such as paper, cloth, felt, nonwoven fabric or scrim. The polysulfone can be applied to the glass sheet as a separate film layer or as a coating.

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# REISSUES

## SEPTEMBER 11, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

### 27,747

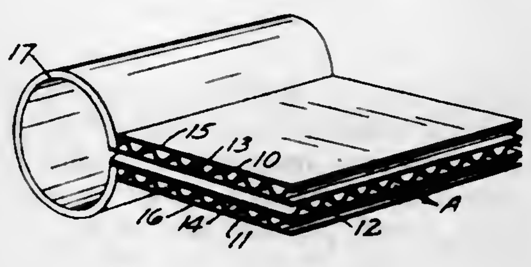
### STRUCTURAL ARTICLES AND METHOD OF MAKING

**James R. Johnson, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Original No. 3,444,925, dated May 20, 1969, Ser. No. 331,649, Dec. 17, 1963, which is a continuation of abandoned application Ser. No. 26,372, May 2, 1960, which is a continuation-in-part of abandoned application Ser. No. 746,263, July 2, 1958, which in turn is a continuation-in-part of Ser. No. 657,503, May 7, 1957. Application for reissue May 17, 1971, Ser. No. 143,868**

**Int. Cl. F28f** *3/00*

**U.S. Cl. 165—166** **25 Claims**



*Ceramic articles of generally honeycomb structure essentially free of any demarcation line at nodes are provided together with processes for forming such articles by firing green structures having temporary bonds at nodes where sheets are in contact.*

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### 27,748

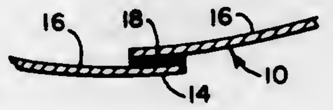
### METALLIC STRUCTURES

**Dwight E. Peerman and Leonard R. Vertnik, Minneapolis, and Edgar R. Rogier, Hopkins, Minn., assignors to General Mills, Inc.**

**Original No. 3,550,806, dated Dec. 29, 1970, Ser. No. 552,980, May 25, 1966. Application for reissue Dec. 16, 1971, Ser. No. 208,581**

**Int. Cl. B65d** *7/34;* **C09j** *5/00*

**U.S. Cl. 220—81** **6 Claims**



A metallic structure, particularly a metallic container or can, having lap seams in contrast to conventional hooked seams. The lap seam is bonded with polymeric fat acid polyamides wherein the polymeric fat acid has a dimeric fat acid content greater than 90 percent by weight and preferably greater than 95 percent by weight.

### 27,749

### METHOD OF MAKING SOFTENED FABRICS

**Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.**

**No Drawing. Original No. 3,379,091, dated Apr. 23, 1968, Ser. No. 366,187, May 8, 1964, which is a continuation-in-part of Ser. No. 220,085, Aug. 28, 1962, Ser. No. 230,284, Oct. 12, 1962, Ser. No. 312,328, Sept. 30, 1963, and Ser. No. 323,891, Nov. 15, 1963. Application for reissue Aug. 17 1970, Ser. No. 64,584**

**Int. Cl. D04c** *1/06*

**U.S. Cl. 87—1** **4 Claims**

1. A method of fabricating a pliable [material] *polyester thread* comprising the steps of providing a drafted filament[s], hot-stretching said drafted filament to reduce the elastic memory thereof, and subsequently [interlacing] *braiding* a plurality of said hot-stretched filaments into a composite [material] *thread.*

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### 27,750

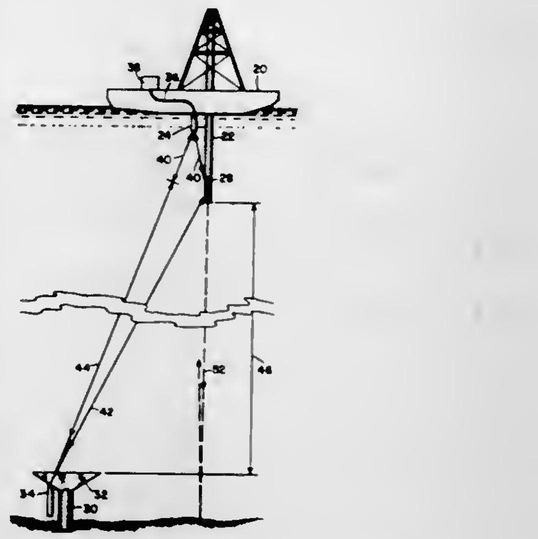
### UNDERWATER GUIDANCE METHOD AND APPARATUS

**Charles K. Daniels, Weston, and John P. McCarthy, Cohasset, Mass., assignors to EG&G International, Inc., Bedford, Mass.**

**Original No. 3,458,853, dated July 29, 1969, Ser. No. 659,186, Aug. 8, 1967. Application for reissue Sept. 8, 1970, Ser. No. 70,603**

**Int. Cl. G01s** *7/52, 9/66*

**U.S. Cl. 340—3 R** **13 Claims**



Method and apparatus for guiding equipment, such as a drill string or blow-out preventer stack, from an ocean platform to a submarine wellhead, including producing at the equipment first acoustical pulses which radiate toward the platform and wellhead; producing at the wellhead second acoustical pulses in response to first acoustical pulses received from the equipment, the second acoustical pulses being radiated toward the platform; receiving the first and second acoustical pulses at the platform; measuring the time difference of arrival at the platform of the first and second acoustical pulses; maneuvering the platform until this time difference becomes a minimum; lowering the equipment when this time difference is a minimum; directively reflecting a portion of the first acoustical pulses from the wellhead back toward the equipment and toward the platform as reflected acoustical pulses; receiving part of the reflected acoustical pulses at the platform; maneuvering the platform until the amplitude of the received reflected acoustical pulses becomes a maximum; and lowering the equipment into the wellhead when the amplitude of the received reflected acoustical pulses is a maximum.

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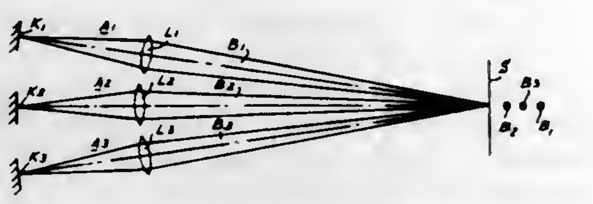
### 27,751
## CATHODE RAY TUBE FOCUSING AND CONVERGING SYSTEM

**Susumu Yoshida and Akio Ohgoshi, Tokyo, Senri Miyaoka, Fujisawa, and Yoshiharu Katagiri, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan**
**Original No. 3,448,316, dated June 3, 1969, Ser. No. 697,414, Jan. 12, 1968. Application for reissue Oct. 13, 1971, Ser. No. 188,847**
**Int. Cl. H01j** *29/56, 31/20*
**U.S. Cl. 313—69 C** **32 Claims**



A color picture tube or other cathode ray tube employing a plurality of electron beams includes a single electron gun having one or more cathodes emitting electrons formed into the plurality of beams which are made to converge or cross each other substantially at the optical center of an electrostatic focusing lens by which the beams are focused on the electron-receiving screen of the tube, whereby to avoid spherical aberration and/or coma. When the beams focused on the electron-receiving screen are all to converge at a common point on such screen, an electrostatic or magnetic deflection device acts on those beams which diverge after passing through the lens-like focusing system.

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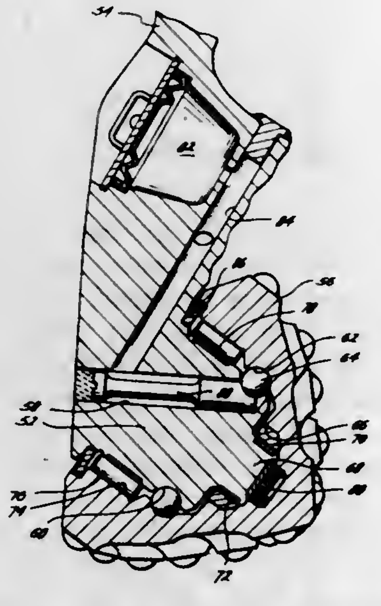
### 27,752
## FRICTION BEARING

**James L. Hickernell, London, England, assignor to G. W. Murphy Industries, Inc., Houston, Tex.**
**Original No. 3,480,341, dated Nov. 25, 1969, Ser. No. 675,424, Oct. 16, 1967. Application for reissue Nov. 8, 1971, Ser. No. 196,454**
**Int. Cl. F16c** *33/12*
**U.S. Cl. 308—8.2** **9 Claims**



An improved friction bearing which in its preferred form is applied to a conical cutter-type earth boring drill bit and includes a sintered tungsten carbide bushing held in compression by the cutter, the tungsten carbide particles before sintering have a size range of 0.8 to 6 microns, the bushing engaging a tungsten carbide bearing surface on the shaft, the tungsten carbide particles forming said surface initially having a size of minus 30 mesh with a substantial portion of the particles having a size of minus 40 mesh. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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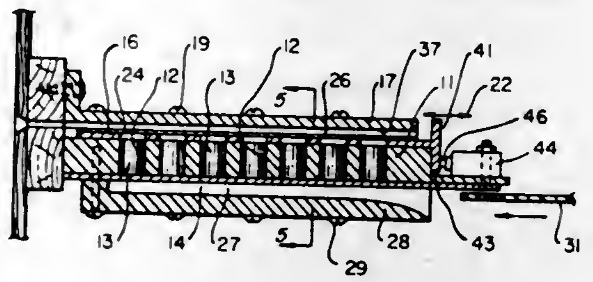
### 27,753
## MAGNETICALLY OPERATED MECHANISM AND MAGNETIC CARD

**Bruce S. Sedley, Larkspur, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.**
**Original No. 3,444,711, dated May 20, 1969, Ser. No. 592,006, Nov. 4, 1966. Application for reissue June 19, 1972, Ser. No. 263,870**
**Int. Cl. E05b** *47/00*
**U.S. Cl. 70—276** **7 Claims**



A magnetically operated mechanism which includes a lock plate and magnet block mounted for relative movement with respect to one another. A plurality of locking pins in the form of magnets carried by the magnet block and in the locked position serving to lock the magnet block and lock plate so that they cannot move relative to one another. Said mechanism being unlocked by means of a card having magnetic spots at selected areas whereby to permit relative movement of the magnet block and lock plate to operate associated apparatus.

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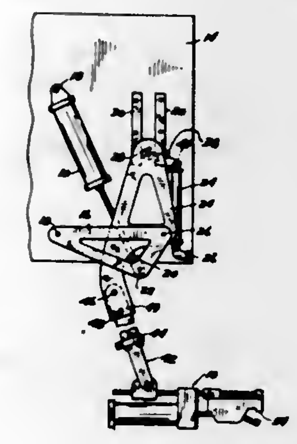
### 27,754
## FLAT PATH EXTRACTOR

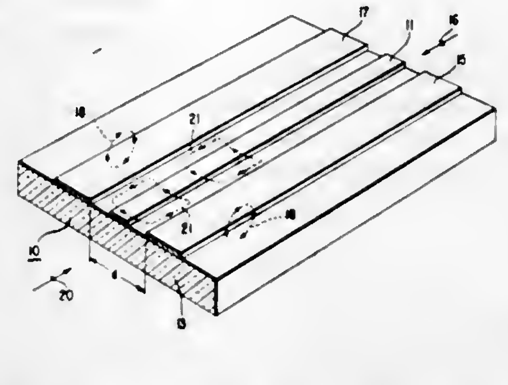
**Edward H. Rofe, 2781 Acorn Road, Bloomfield Hills, Mich. 48013**
**Original No. 3,387,717, dated June 11, 1968, Ser. No. 494,740, Oct. 11, 1965. Application for reissue June 8, 1970, Ser. No. 44,668**
**Int. Cl. B23q** *7/04*
**U.S. Cl. 214—1 BD** **10 Claims**



*An improved work handling device for presses having a desired flat work handling arm path and simple actuating mechanism including a single acting hydraulic snubber adapted to provide no resistance over the major portion of the upward arm stroke, a cushioning or resistance stop at the end of the upward stroke, no resistance in the initial accelerating portion of the down stroke, and with cushioned controlled descent thru the remaining major portion of the down stroke.*

### 27,755
## SURFACE STRIP TRANSMISSION LINE AND MICROWAVE DEVICES USING SAME

**Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation**
**Original No. 3,560,893, dated Feb. 2, 1971, Ser. No. 787,349, Dec. 27, 1968. Application for reissue Oct. 14, 1971, Ser. No. 189,242**
**Int. Cl. H01p** *3/08*
**U.S. Cl. 333—24.1** **17 Claims**



A desirable transmission line configuration is described wherein a narrow strip-like conductor and a wider ground conductor are arranged in an adjacent, parallel and coplanar relationship on one surface of a dielectric substrate. Also described herein are many new types of microwave devices such as isolators, phase shifters, couplers, etc. which use this type of transmission line configuration.

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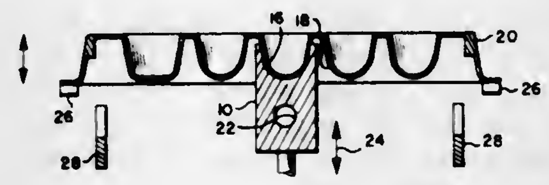
### 27,756
## AUTOMATED INCUBATION APPARATUS

**Donald N. Martin, Whittier, Calif., assignor to Beckman Instruments, Inc.**
**Original No. 3,556,731, dated Jan. 19, 1971, Ser. No. 699,569, June 22, 1968. Application for reissue June 29, 1971, Ser. No. 158,644**
**Int. Cl. G01n** *1/00*
**U.S. Cl. 23—253 R** **9 Claims**



An incubator for use in automated chemical analyzer systems having the form of a serrated block of aluminum or the like, each serration or tooth being hollowed out and having an inner surface into which the outer surface of a capsule cup is adapted to fit snugly, the aluminum block containing a heater controlled by a thermoswitch and serving by contact with the capsule cup to heat liquid contained in the cup for the incubation thereof, the block being mounted for vertical movement and adapted to be brought up to engage around the cup of the capsule.

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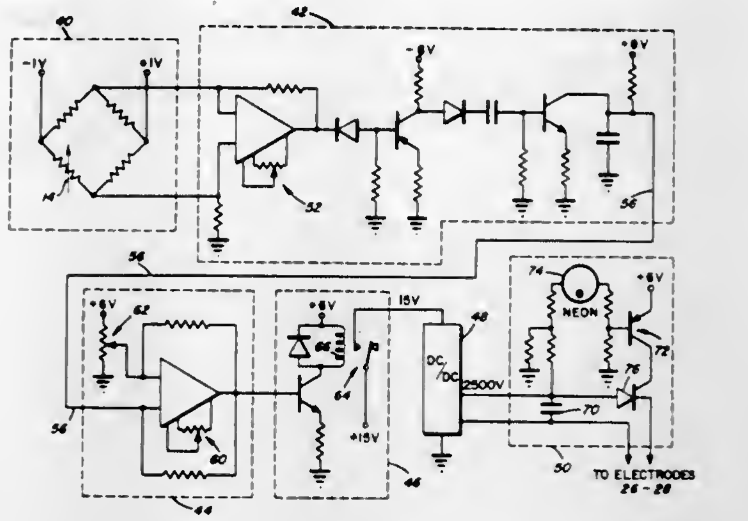
### 27,757
## STANDBY DEFIBRILLATOR AND METHOD OF OPERATION

**Mieczyslaw Mirowski, Rte. 3, Velvet Valley Way, Owings Mills, Md. 21117**
**Original No. 3,614,955, dated Oct. 26, 1971, Ser. No. 9,935, Feb. 9, 1970. Application for reissue Feb. 25, 1972, Ser. No. 229,592**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 D** **6 Claims**

A method and means for automatically defibrillating a malfunctioning heart. With the present invention, the heart function is continuously monitored. When the function becomes abnormal, the malfunctioning heart is automatically shocked by a voltage of substantial size. If the heart does not return to its normal functions after a given interval, then it is again shocked. Normal heart activity ensures that the shocking mechanism remains inert.



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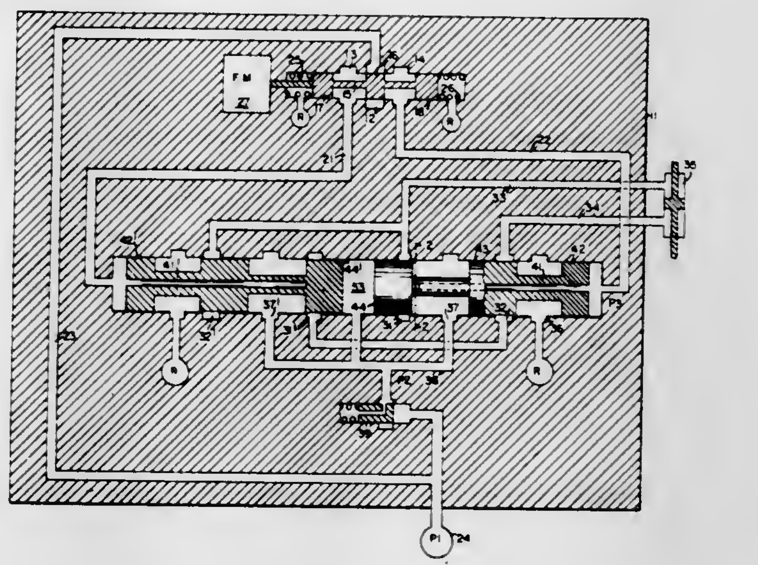
### 27,758
## FLUID FLOW CONTROL VALVE

**James Otto Byers, Racine, Wis., assignor to Sanders Associates, Inc., Nashua, N.H.**
**Original No. 3,561,488, dated Feb. 9, 1971, Ser. No. 838,062, July 1, 1969. Application for reissue Oct. 24, 1972, Ser. No. 300,013**
**Int. Cl. F16k** *11/07*
**U.S. Cl. 137—625.62** **34 Claims**



A two-stage fluid flow control valve is described in which the rate of flow of fluid to the load depends solely on the input signal and is independent of load pressure. The second stage spool and housing are formed so that upon movement of the spool in response to fluid pressure from the first stage, two different-sized passageways are opened simultaneously to the load conduit. The smaller communicates with the *fluid pressure from the first stage while the larger communicates with the* second-stage fluid pressure source. Analysis shows that this results in a fixed flow rate for each value of input signal.

# PATENTS

## GRANTED SEPTEMER 11, 1973

## GENERAL AND MECHANICAL

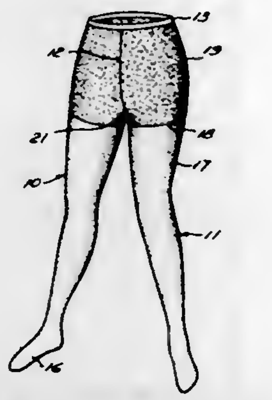
### 3,757,354
### PANTYHOSE CONSTRUCTION

**Robert J. Moody, Franklin, N.H., assignor to Scott & Williams, Inc., Laconia, N.H.**

**Filed Jan. 27, 1972, Ser. No. 221,374**

**Int. Cl. A41b** *9/04*

**U.S. Cl. 2—224 R** **10 Claims**



A pantyhose garment of various constructions includes at least in a portion of the panty adjacent the crotch and preferably throughout the panty a terry stitch structure on either the outside or inside of the garment. The terry construction prevents runs and laddering adjacent the crotch and also provides softness, absorbency and opacity wherever it is used.

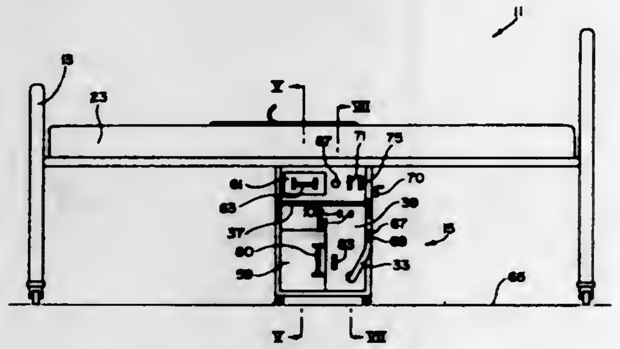
### 3,757,355
### PORTABLE BODY WASTE COLLECTING SYSTEM

**Ralph Y. Allen, and Judd F. Allen, 107 Fifth Ave., both of Cleveland, Miss., assignors to said Judd F. Allen, by said Ralph Y. Allen**

**Filed Sept. 9, 1971, Ser. No. 179,062**

**Int. Cl. E03d** *13/00*; **A61g** *9/00, 7/02*

**U.S. Cl. 4—110** **2 Claims**



A system intended to be wheeled beneath a hospital bed for collecting and temporarily storing body waste materials excreted by a person confined to the bed. The system includes a cart having cabinet structure thereon which encloses the apparatus supported on the cart. The mattress of the bed is provided with an aperture that receives a drain pipe which communicates with a disposable waste receptacle supported by the cart. A chamber communicated with the drain pipe is positioned on the upper side of the mattress for engaging the obvious areas of the confined person to initially collect the excreted materials and direct them into the drain pipe. The chamber may be fixedly attached to the lower torso of the confined person so that even though his consciousness or body waste emitting system may be impaired, the likelihood of soiling his gown and/or bed linens is obviated. A flapper valve is positioned within the drain pipe to minimize offensive odors and which opens by the weight of the excreted materials, thus allowing passage thereof to the receptacle. A reservoir is mounted on the cart and contains a quantity of temperature-controlled water having an antiseptic therein. A nozzle communicates with the reservoir and may be controllably directed by hospital personnel to cleanse or flush the chamber and the areas of the confined person which may have come in contact with the excreted materials. The system preferably includes an audio alarm device that is activated when the receptacle is full to assure timely replacement thereof.

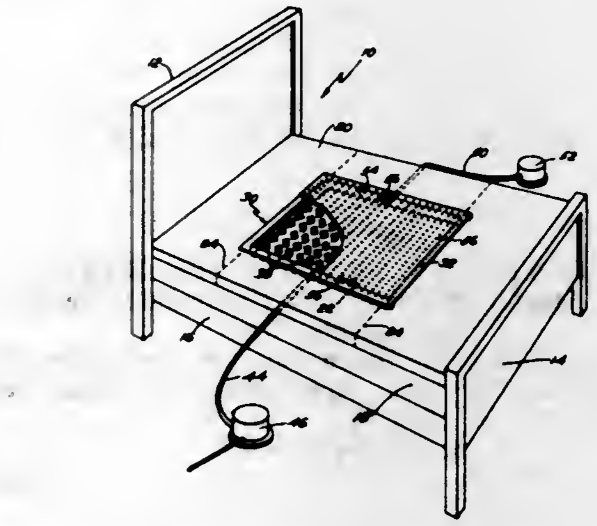
### 3,757,356
### THERAPEUTIC BED PAN

**Harry Freeman, Halliwell Dr., Slatersville, R.I.**

**Filed July 13, 1972, Ser. No. 271,290**

**Int. Cl. A61g** *9/00*

**U.S. Cl. 4—112** **10 Claims**



A device for preventing bed sores having a bed pan and a foam pad. The foam pad normally rests upon the top of a bed mattress and has a central portion cut away to matingly receive the bed pan. The bed pan has a bottom wall with vertical walls extending upwardly around the periphery of the bottom wall. Outwardly extending lips are formed around the periphery of the vertical walls and these seat into a recess around the top of the opening so that they lie flush with the top of the foam pad. A plurality of laterally spaced hollow platforms extend upwardly from the bottom wall with the space between the platforms forming drain channels. An air intake nozzle is connected to one of the vertical walls of the bed pan and it in turn is connected to a source of air and oxygen under pressure whose mixture can be controlled. A drain nozzle is also connected to one of the sides of the bed pan adjacent the bottom thereof and it in turn is connected to a vacuum exhaust pump. A perforated cover is removably supported on top of the bed pan.

### 3,757,357
### LIQUID BODY WASTE DISPOSAL SYSTEM

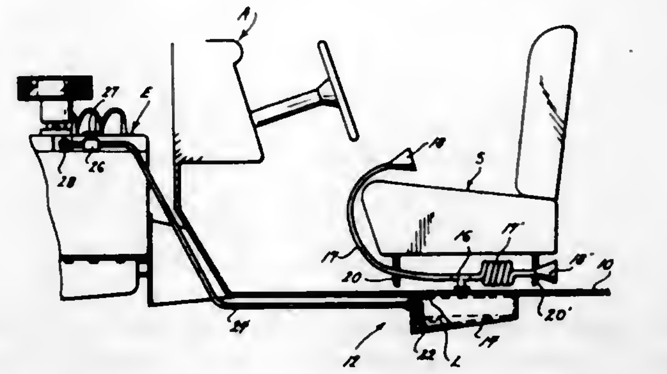
**Edward Howard Smith, 57 Elizabeth St., St. Charles, Mo.**

**Filed Jan. 11, 1971, Ser. No. 105,181**

**Int. Cl. B60r** *15/04*

**U.S. Cl. 4—114** **1 Claim**

A Body Waste Disposal (liquid) System which makes disposition of the fluid by burning in the combustion chamber of the associated internal combustion Engine. It consists of a receptacle, small reservoir, metering valve and connecting hose. The vaccuum in the intake manifold of the Engine draws the fluid into the Combustion chamber where it is burned by the heat of combustion of the fuel.



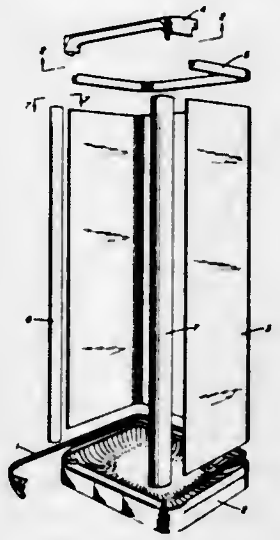
### 3,757,358
### FREE-STANDING SHOWER

**James Edwards Chisholm, Safety Harbor, Fla.; Clark Thomas Hicks, Ft. Thomas, Ky., and Anthony Buonaura, Baldwinsville, N.Y., assignors to Formica Corporation, Cincinnati, Ohio**

**Filed Apr. 24, 1972, Ser. No. 246,618**

**Int. Cl. A47k** *3/22, 3/23*

**U.S. Cl. 4—146** **34 Claims**



A shower stall comprising a receptor, a one-piece, three-sided wall surround, a one-piece molded header and a pair of elongated stile members, is disclosed.

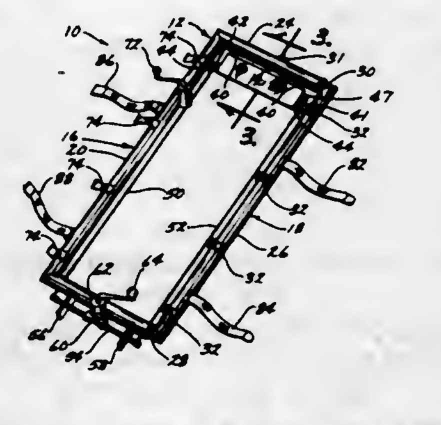
### 3,757,359
### LITTER DEVICE

**Gerald E. Stellman, R.R. No. 3, Adel, Iowa**

**Continuation-in-part of Ser. No. 52,022, July 2, 1970, Pat. No. 3,639,926. This application Apr. 21, 1971, Ser. No. 135,908**

**Int. Cl. A61g** *1/02, 7/10*

**U.S. Cl. 5—81** **9 Claims**



A litter device comprising a frame means having opposite side members and opposite end members and having a rectangular flexible sheet member supported thereon. The sheet member is initially secured at one end thereof to one end of the frame means and is pulled beneath the person by means of a winch means or the like operatively connected to the other end of the frame means and having a cable means extending to the sheet member. After the sheet member has been pulled beneath the person, one side of the sheet member is secured to one side of the frame means. The other side of the sheet member is then connected to a tensioning means mounted on the other side member to enable the sheet member to be drawn to a taut condition between the side members of the frame. A strap means is provided on the frame means for maintaining the person on the sheet member for transportation purposes.

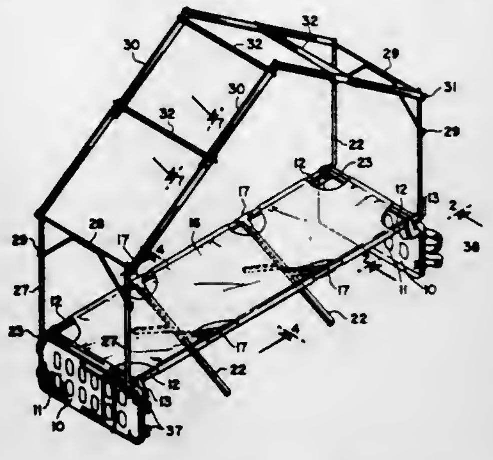
### 3,757,360
### PORTABLE FOLDABLE COT

**James A. Wescott, 33 E. 70th St., New York, N.Y.**

**Filed Aug. 16, 1971, Ser. No. 171,931**

**Int. Cl. A47c** *29/00*

**U.S. Cl. 5—113** **12 Claims**



A portable, folding cot in which a pair of rectangular-shaped support members, which support the ends of the cot, may be pivotably coupled together at one end and secured at the other end to provide a transportation enclosure for the structural members comprising the cot. A plurality of elongated rigid support members, T-shaped coupling members, and X-shaped legs are joined together to support the cot, in conjunction with the end members, during use. A tent supporting structure may be provided, if desired.

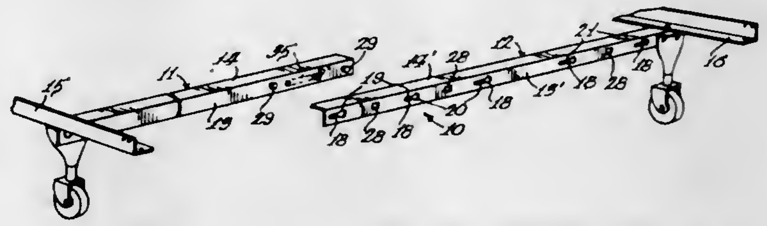
### 3,757,361
### ADJUSTABLE BED FRAME MEMBER

**George M. Harris, and Wilbert E. Behnke, both of Chicago, Ill., assignors to Harris-Hub Company, Inc., Harvey, Ill.**

**Filed Mar. 7, 1972, Ser. No. 232,474**

**Int. Cl. A47c** *19/00*

**U.S. Cl. 5—184** **7 Claims**



An improved adjustable cross frame member for use in a bed frame having side frame members and another such adjustable cross frame member. The improved member is comprised of first and second elongate L-shaped elements having mutually perpendicular legs. The first element is provided with a plurality of pairs of longitudinally spaced keyhole shaped slots in one leg, each slot having a narrow portion and an enlarged portion, and the second element is provided with a pair of rivets on the corresponding leg, longitudinally spaced to match the slot spacing. The rivets have an enlarged head and a narrow shank portion matching the corresponding slot portions in width so that upon positioning the elements in leg abutting engagement and longitudinally moving the elements relative to each other, the rivets are positioned in the narrow slot portions and hold the elements together positively. In order to lock the elements longitudinally in this position, the first element includes position defining apertures between each pair of slots, and the second element includes a releasable resilient member having a detent between the rivet pair which engages a position defining aperture when the rivets become positioned in the narrow slot portions.

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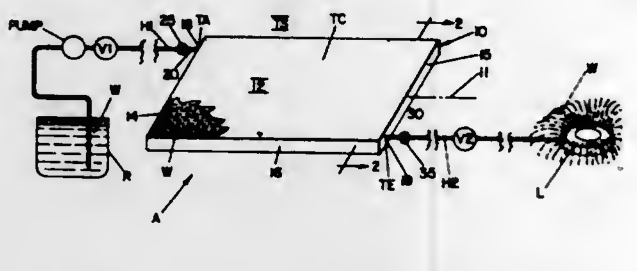
### 3,757,362
## LIQUID-COOLED UNDERLYING SUPPORT FOR THE HUMAN BODY

**Calvin E. Bowlin, 7124 N. 65th Ave., and Anthony E. Dombrowski, 9903 Broadmoor Dr., both of Omaha, Nebr.**
**Filed Aug. 30, 1971, Ser. No. 175,823**
**Int. Cl. A47c** *27/08, 23/00*
**U.S. Cl. 5—348 WB** **7 Claims**



There is described herein cushions, mattresses, and other weight-bearing underlying supports for the human body that generally comprise a liquid-impervious hollow housing adapted to be stably interposed between the human body and a suitable substructure together with means for providing a continuous flow of water or other liquid-coolant through the hollow housing whereby the temperature at the housing upper-side can be maintained well below that of atmospheric or other ambient temperature thereby providing a cooling effect upon a human subject resting against the housing thermally-conductive upper-side.

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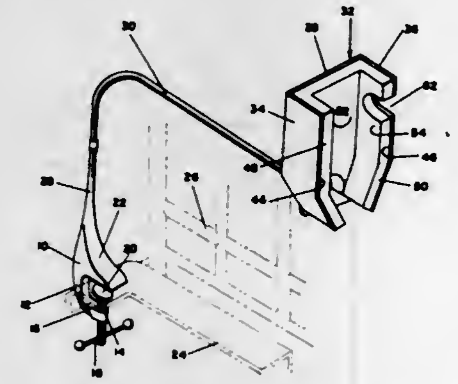
### 3,757,363
## PATIENT COMMUNICATOR SUPPORT

**Joseph E. Langlais, 1614 E. Hudson Dr., Tempe, Ariz.**
**Filed Sept. 10, 1970, Ser. No. 71,276**
**Int. Cl. A47c** *21/00*
**U.S. Cl. 5—317 R** **1 Claim**



A patient communicator support having clamp means adapted to be clamped onto a hospital bed or other patient's bed, and having a bendable arm holding a cradle for supporting a communication instrument in various adjusted positions, and in juxtaposition relative to the patient and according to his desire; the cradle of the invention having a pair of spaced apart walls to which are secured respective layers of compressible material adapted frictionally to engage opposite sides of a communication instrument.

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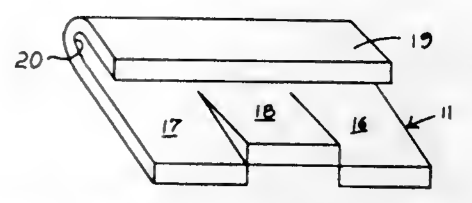
### 3,757,364
## SLEEPING PILLOW

**John Charles Downing, 231 Edna St., San Francisco, Calif.**
**Filed Mar. 31, 1972, Ser. No. 240,004**
**Int. Cl. A47g** *9/00*
**U.S. Cl. 5—338** **5 Claims**

A two level dual firmness pillow construction which intrinsically affords effective support for maintaining optimum head and neck posture while sleeping on the back or either side of the body and which reduces to a minimum the liklihood of muscle spasms, stiffness or pain about the head, neck and shoulders, or decreased blood circulation as a result of sleeping or reclining.



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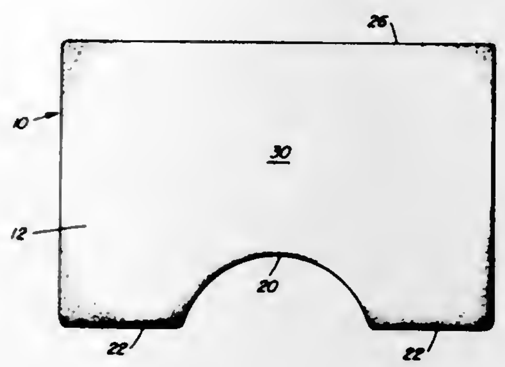
### 3,757,365
## THERAPEUTIC PILLOW

**Murray Kretchmer, 2025 N.E. 164th St., North Miami Beach, Fla.**
**Filed Jan. 10, 1972, Ser. No. 216,560**
**Int. Cl. A47g** *9/00*
**U.S. Cl. 5—338** **2 Claims**



This pillow is a flat substantially rectangular block of material that is more resilient on its upper top layer and is less resilient on its lowermost layer. It is substantially rectangular overall, but has a cutout in at least one of the longer rectangular sides, although this cutout may be repeated in the opposite rectangular side. The cutout is substantially circular, more or less, and is not greater than a semi-circle, although it may be somewhat less than a semi-circle, the cutout serving to receive the sleeper's shoulder with the attached arm extendable beyond the pillow and not subject to any pressure from the pillow, being entirely free thereof, and, of course, free of any pressure from the sleeper's head. The thickness of the pillow is such that the sleeper's head is supported in a horizontal position, with the neck and windpipe free of any bends. As a result, breathing is freer than with a conventional pillow, where the arm is often extended under the pillow attempting to hold the head horizontal, in which it often fails, but such does succeed in restricting the blood flow in the arm, leading to a condition strongly resembling bursitis in pain and restriction of arm movement, a painful condition not easily remedied.

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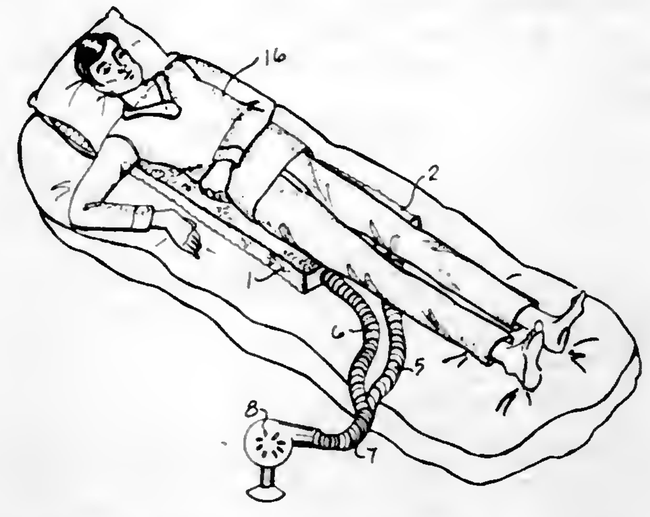
### 3,757,366
## CUSHION FOR PREVENTING AND ALLEVIATING BEDSORES

**William S. Sacher, 1022 Rambler Ave., Pottstown, Pa.**
**Filed Aug. 18, 1971, Ser. No. 172,819**
**Int. Cl. A47c** *27/08, 7/14*
**U.S. Cl. 5—347** **12 Claims**

Cushions and cushion arrangements for preventing and alleviating bedsores comprising a cushion structure including a

casing having a porous upper portion of artificial sheepskin or similar material, a resilient cushion within the casing, means for supplying temperature-controlled air to the casing, and means within the casing for directing the air so as to cause it to pass through the porous upper portion of the casing, over substantially the entire area thereof, into contact with the body of the user.



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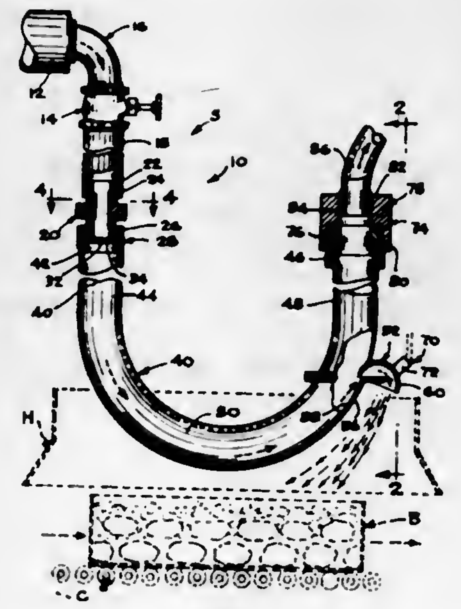
### 3,757,367
## METHOD FOR CARBON DIOXIDE SNOW SEPARATION

**Ronald F. Campbell, Oak Lawn, Ill., assignor to Chemetron Corporation, Chicago, Ill.**
**Filed Feb. 8, 1971, Ser. No. 113,489**
**Int. Cl. F25j** *1/00, 3/00*
**U.S. Cl. 62—10** **16 Claims**



Improved method and apparatus for separating carbon dioxide snow from a mixture of carbon dioxide snow and vapor, without reference to gravity, in order to deliver carbon dioxide snow and vapor each at a substantial rate of flow.

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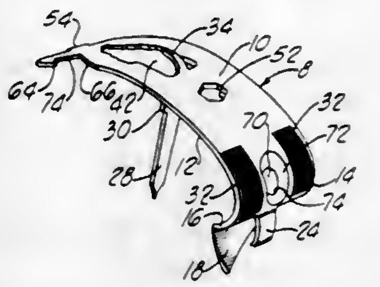
### 3,757,368
## COMBINATION HOUSEHOLD IMPLEMENT

**Clarence E. Thompson, 29322 Whitley Collins Dr., Palos Verdes, Calif.**
**Filed June 9, 1971, Ser. No. 151,279**
**Int. Cl. B67b** *7/44;* **B25l** *1/00*
**U.S. Cl. 7—14.25** **11 Claims**

A multi-purpose implement comprising a curved body adapted to fit the hand when partially closed, one end of which is provided with a can top pouring aperture forming element, an intermediate portion which comprises an air hole piercing element, the can top being punctured by downward pressure of the hand of the user over the can or other container, as distinguished from upward levering hand action, the body of the implement being provided with means for engaging a finger ring worn by the user to assist in holding the implement, the air hole punch being struck from the body and providing an aperture with opposed parallel edges providing a



wrench for nuts and bolts, other portions of the implement including bull-noser means, crimped bottle top remover means, cord cutting means, screw driver means, and square or hexagonal nut manipulating means, all of which are within the thickness of the strip of metal comprising the body.

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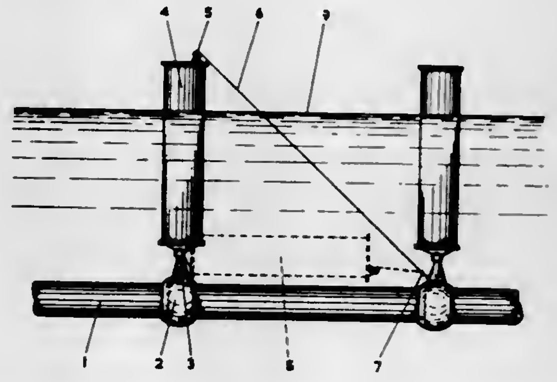
### 3,757,369
## PIPELINE WITH FLOATS

**Johannes Bertus Laarman, Zwijndrecht, Netherlands, assignor to N.V. Industrieele Handelscombinatie, Holland, Rotterdam, Netherlands**
**Filed Jan. 17, 1972, Ser. No. 218,207**
**Claims priority, application Netherlands, Jan. 18, 1971, 7100651**
**Int. Cl. B63c** *7/08;* **B63b** *21/52*
**U.S. Cl. 9—8 R** **6 Claims**



A pipeline is supported in the water by slender upright floats that are articulated to the pipeline. Each float carries a waterproof winch at its upper end that is connected by a cable to a point on the pipeline at least as far away from the associated float as the height of the associated float. When the winch is operated, the float is drawn down toward a horizontal position thereby to raise the pipeline.

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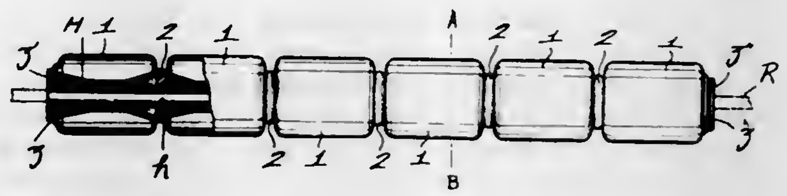
### 3,757,370
## ROPE AND FLOAT ASSEMBLY FOR USE AS A COURSE DEMARCATION LINE IN A SWIMMING POOL

**Hisao Seno, and Fushi Seno, both of No. 31-14, Shinmachi 2-chome, Setagaya-ku, Tokyo, Japan**
**Filed May 10, 1972, Ser. No. 251,981**
**Int. Cl. B63b** *51/02;* **E04h** *3/19*
**U.S. Cl. 9—8 R** **2 Claims**



A rope and float assembly for use as a course demarcation line in a swimming pool comprising a rope, a synthetic resin sleeve disposed about said rope, a plurality of hollow cylindrical synthetic resin float members disposed about said sleeve with annular synthetic resin spacers interposed therebetween. The float members have tapered center openings and the spacers also have center openings. The smmalest diameter of the float member center openings and the inner diameter of the spacers are larger than the outer diameter of the sleeve so that the float members can individually move about the sleeve in response to movements of water currents in the swimming pool.

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3,757,371

### SURVIVAL OR LIKE PACKS PARTICULARLY SUITABLE FOR AIRMEN

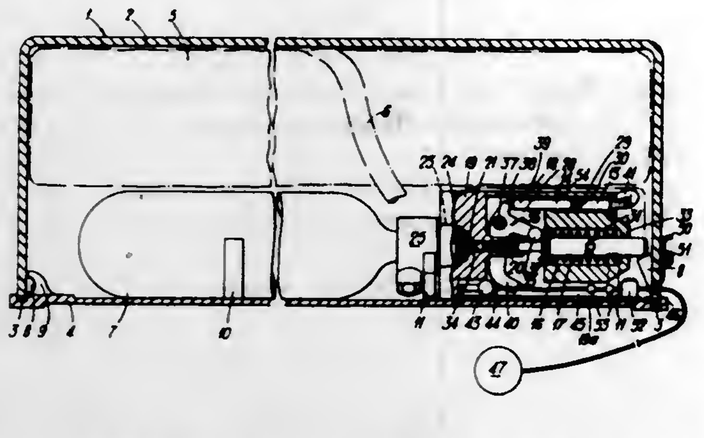
**James Martin, Southlands Manor, Southlands Rd., Near Uxbridge, England**

**Filed Nov. 24, 1971, Ser. No. 201,838**

**Claims priority, application Great Britain, Dec. 21, 1970, 60,682/70**

**Int. Cl. B63c** *9/16, 9/24*

**U.S. Cl. 9—316** **3 Claims**



An openable survival pack particularly suitable for an ejection seat and suitable for housing an inflatable article, the pack comprising a hollow body; a closure therefor; and means for automatically releasing fastening means on said pack on entry of the pack into water, optional means also being provided when desired for causing automatic inflation of the article housed by the body on release of said fastening means.

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3,757,372

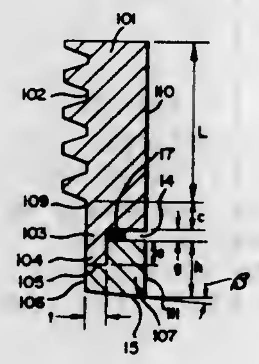
### METHOD OF FORMING A NUT

**Norman C. Dahl, 78 Irving Pl., New York, N.Y., and Joseph A. Tabor, 100 Midland Ave., Port Chester, N.Y.**

**Filed Feb. 3, 1972, Ser. No. 223,156**

**Int. Cl. B21d** *53/24*

**U.S. Cl. 10—86 R** **10 Claims**



A method is described for assembling a nut having an external groove on its wrenching surface from two separately formed parts. A first internally threaded part has an extending sleeve-like portion of reduced diameter. The second part has an internal cylindrical groove. The sleeve is pressed into the second part being received within the groove. The parts when assembled define an annular external groove on the wrenching surface of the sleeve. Separately forming the parts and then assembling eliminates machining the external groove and lowers the cost of the nut.

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3,757,373

### APPARATUS FOR CEMENTING TOGETHER CUT-TO-SIZE SHANK UPPER MATERIAL

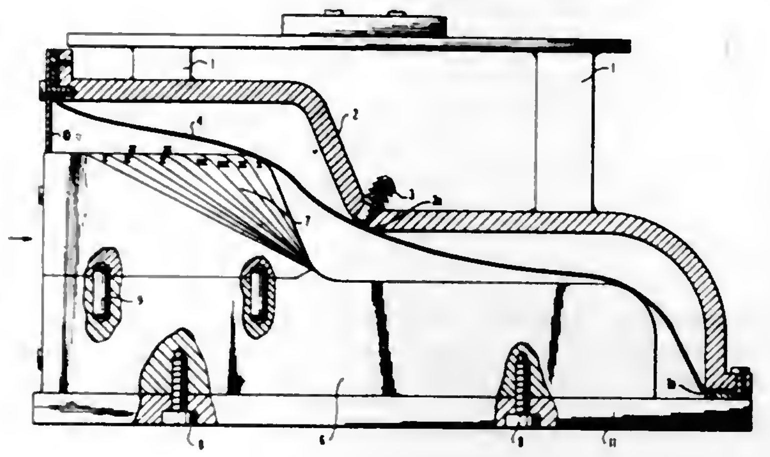
**Erich Betke, Troisdorf-Spich, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**

**Filed Sept. 30, 1971, Ser. No. 185,057**

**Claims priority, application Germany, Sept. 30, 1970, P 20 48 021.1**

**Int. Cl. A43d** *11/00*

**U.S. Cl. 12—52** **10 Claims**



An apparatus for bonding a shoe lining with a shank upper material, one of which is provided with a pressure-activated adhesive cement, which comprises bottom mold means for supporting the lining and shank material to be bonded; an upper mold means having an air intake means and an elastic means secured to said upper mold to define a chamber in communication with said air intake means, said chamber being expanded by introducing air through said intake means to press the elastic means against the shoe lining and shank material to effect bonding therebetween.

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3,757,374

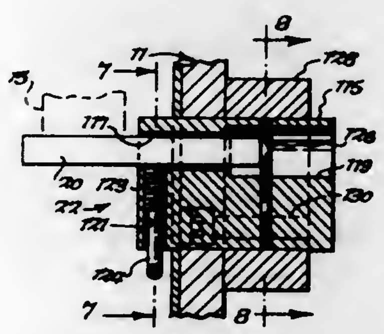
### MAGNETIC TAPE CLEANER

**John Y. Baskin, North Tonawanda; Miles D. Bender, East Amherst; Robert D. Daugherty, North Tonawanda, all of N.Y.; Charles L. Fontana, Levittown, Pa., and Samuel G. Johnson, Snyder, N.Y., assignors to Syncom Incorporated, Buffalo, N.Y.**

**Filed June 21, 1972, Ser. No. 264,819**

**Int. Cl. B08b** *1/02;* **G11b** *5/00*

**U.S. Cl. 15—93 R** **7 Claims**



Apparatus for cleaning magnetic tape wherein tape is transported from a supply reel into scraping or wiping contact with the edge of a blade and then onto a take-up reel. The blade has a plurality of cutting edges and a length at least twice the width of the tape to be cleaned. A portion of the blade is releasably held in a chamber of a blade holding member in a manner exposing a portion of the blade length at least equal to the width of the tape. The blade holding member, in turn, is selectively rotatably connected in the apparatus so that each of the blade edges can be used in succession. When all the exposed edges of the blade have been used, it is removed from the holder and reinserted with the previously unexposed portion ready for use thereby doubling the useful blade life. Each tape reel is held on the apparatus by a hub assembly having an expander which is urged radially outwardly by an axially movable clamping means into firm contact with a surface of the reel center opening thereby compensating for different size openings of various reels.

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3,757,375

### OBSTRUCTION REMOVAL APPARATUS

**Martin Strom, 261-01 69th Ave., Floral Park, L.I., N.Y.**

**Filed Aug. 18, 1971, Ser. No. 172,749**

**Int. Cl. B08b** *9/02*

**U.S. Cl. 15—104.3 SN** **34 Claims**

A device for extracting obstructions from confined spaces includes a flexible outer shaft movable relative to an inner central member. The central member is attached to the outer shaft and in a first embodiment, contains one or more teeth or claws. Upon insertion of the device into an obstructed space, the claws are retracted inside the shaft for easy passage past the obstruction. During withdrawal of the device from the space, the claws become extended beyond the outer shaft, thereby facilitating positive engagement of the obstruction. In an alternative embodiment, the claws are replaced by one or more sections of the outer shaft having longitudinal slits or striations. During insertion of the device, the slitted sections are expanded longitudinally, narrowing these sections for easy passage into the pipe. During withdrawal, the sections are longitudinally compressed, resulting in their radial expansion or bellowing, and enabling engagement of the obstruction.

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3,757,376

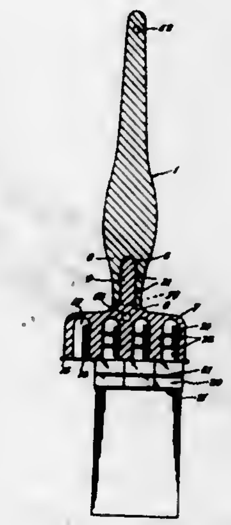
### TOOL

**James Eric Coombes, 135 Wardrew Rd., Exeter, Devon, England**

**Filed Nov. 17, 1971, Ser. No. 199,673**

**Int. Cl. A46b** *7/04*

**U.S. Cl. 15—202** **6 Claims**



A paint brush is composed of several parts removably attached to one another, being a handle, a stock and one or a plurality of brush head units. Sockets and spigots which form an interference fit in the socket are used to join the parts. In particular the handle has a socket into which a spigot on a stock is pushed and spigots on the brush head units are pushed into sockets at the other end of the stock to form a brush of conventional shape. Stocks are provided with different numbers of sockets to receive different numbers of brush head units to make up brushes of different sizes as desired. Brush head units are replaceable individually after wear.

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3,757,377

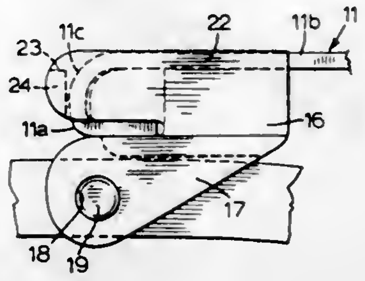
### WINDSHIELD WIPER CLIP ASSEMBLIES

**George Hayhurst, Oakville, Ontario, Canada, assignor to Tridon Limited, Burlington, Ontario, Canada**

**Filed Oct. 26, 1971, Ser. No. 192,426**

**Int. Cl. B60s** *1/40*

**U.S. Cl. 15—250.32** **3 Claims**



A windshield wiper clip assembly for mounting a windshield wiper on to a wiper arm of shepherds crook configuration comprises a body of U-shape side cross-section which is closely embraced by the crook-shaped end, with outwardly-extending side walls forming a groove in which the arm lies. The side walls have facing projections which are spread apart when the arm is pressed into the groove and spring back behind it to retain it on the body, the projections having cam-faces inclined to facilitate this spreading apart. The assembly may be mounted on the wiper backing member by a saddle-shaped portion having bores which engage cooperating pivot pins on the backing member.

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3,757,378

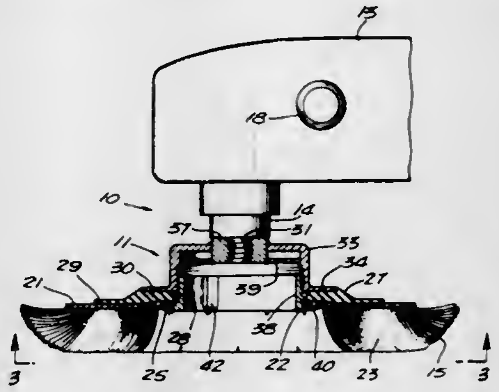
### BUFFING MACHINE WITH CENTERLESS BUFFER PAD

**Orval W. Wakefield, Cypress, Calif., assignor to Pit-Bar Manufacturing Company, Los Angeles, Calif.**

**Filed June 23, 1971, Ser. No. 155,713**

**Int. Cl. B24b** *29/00*

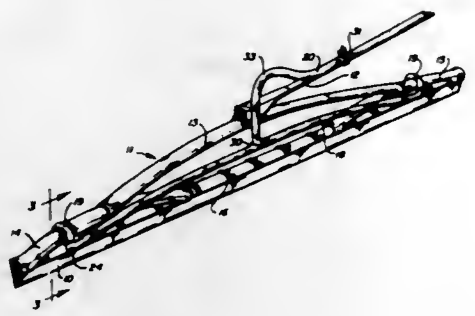
**U.S. Cl. 15—230.19** **3 Claims**



A buffing machine is disclosed for driving a buffer pad constructed with a central cutout portion. A mounting unit for the pad includes a cup shaped member provided with a mouth corresponding in size to the central cutout portion of the buffer pad. The cup shaped member provides for supporting the buffer pad on a backup plate and for connecting the mounting unit to a rotating driving spindle while maintaining a recessed clearance in the central portion of the buffer pad. The structure thus enables the rotating buffer pad to be moved during a buffing operation over a concave contoured surface such that the surface extends into the central cutout portion of the pad without touching the recessed surface of the cup shaped member or the end of the driving spindle connected thereto.

### 3,757,379
## WINDSHIELD CLEANING APPARATUS

**Robert D. Benson, 2521 Cedar St., White Bear, Minn.**
**Filed Mar. 13, 1972, Ser. No. 234,270**
**Int. Cl. B60s** *1/48*
**U.S. Cl. 15—250.04** **9 Claims**



This new windshield cleaning apparatus is employed in an environment comprising an elongated wiper blade, and a wiper blade supporting assembly including an arched yoke structure connected to an oscillating wiper arm. The apparatus includes a windshield spraying washer, means for mounting the washer for oscillation with the blade supporting assembly, and flexible conduit means connecting the washer to a source of washing liquid. The windshiled spraying washer consists essentially of a resiliently flexible plastic tube which is arched comparably to the arching of the yoke structure of the blade supporting assembly. An inverted U-clip is attached to each end of the plastic tube, preferably as a unitary or integral appendage thereto. Each U-clip is removably clip-attached to the yoke structure to hold the arched tube in a substantially parallel laterally juxtaposed relationship to the yoke structure, for flexing therewith. Apertures in the tube direct wash fluid toward the windshield as oscillation and flexing of the entire assembly takes place.

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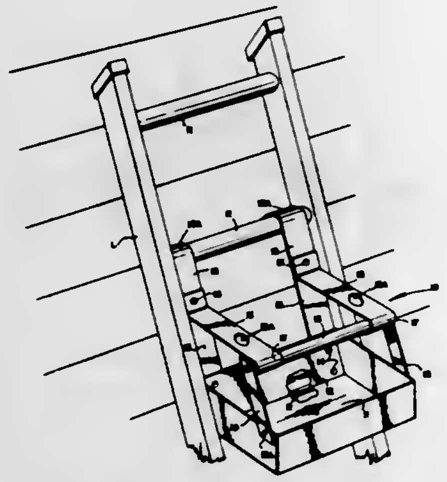
### 3,757,380
## PAINT TRAY

**Benjamin L. Jackson, 1878 Charnelton St., Eugene, Oreg.**
**Filed Oct. 29, 1971, Ser. No. 193,775**
**Int. Cl. B44d** *3/14*
**U.S. Cl. 15—257.05** **4 Claims**



A paint tray for suspended attachment to a ladder in a manner locating the tray in a substantially level position. Handle structure is provided enabling one handed carrying of the tray to and from its ladder position in a horizontal position with little risk of spillage. Apertures within the handle structure of the tray permit carrying of one or more brushes or roller-type paint applicators on the paint tray.

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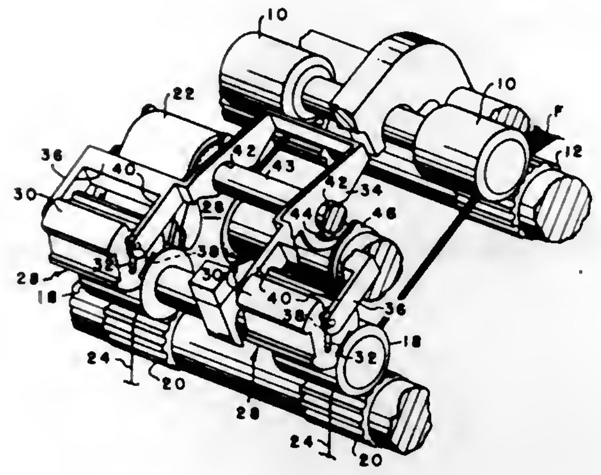
### 3,757,381
## DRAFTING SYSTEM

**Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.**
**Division of Ser. No. 170,189, Sept. 8, 1971. This application June 23, 1972, Ser. No. 265,713**
**Int. Cl. D01h** *5/62*
**U.S. Cl. 15—256.51** **6 Claims**



An intermittently actuated scraper member for one of the front rolls of a drafting system to scrape lint from such roll to prevent the accumulation of lint, trash, etc., thereon, thereby eliminating the cause of lap ups on such roll.

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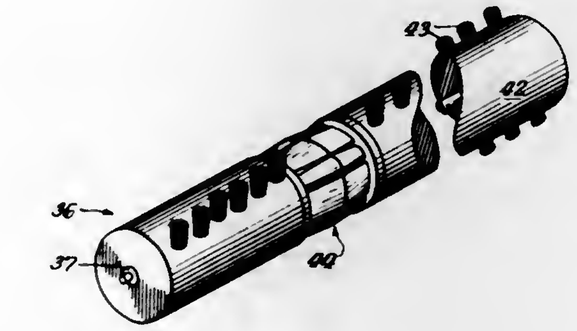
### 3,757,382
## BELT DRIVE ASSEMBLY

**Joseph F. Brooks, and Harold W. Schaefer, both of Bloomington, Ill., assignors to National Union Electric Corporation, Stamford, Conn.**
**Division of Ser. No. 32,844, April 29, 1970, Pat. No. 3,682,010. This application Apr. 21, 1972, Ser. No. 246,169**
**Int. Cl. A47l** *5/10*
**U.S. Cl. 15—389** **8 Claims**



This disclosure deals with a belt drive assembly for use in suction cleaner. The assembly includes a drive pulley connected to be driven by a drive motor, a driven pulley connected to a rotatable brush roll, and a belt connecting the two pulleys. The outer surface of the driven pulley is divided into high friction portions and low friction portions, the belt exerting a tractive effort only on the high friction portions. The high and low friction portions are proportioned to obtain a driving relationship with the belt under normal load conditions on the brush roll but to slip under overload conditions.

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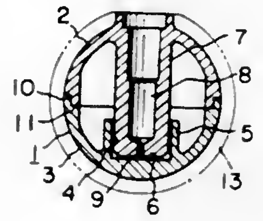
### 3,757,383
## HOLLOW SPHERE-LIKE STRUCTURES

**Shuichiro Iiyoshi, 14-22, 5-chome, Higashi-Shinkoiwa, Katsushika-ku, Tokyo, Japan, assignor to Yugen Kaisha Tiyoshi Seisakusho, Tokyo-to, Japan**
**Filed Jan. 11, 1972, Ser. No. 217,051**
**Claims priority, application Japan, Jan. 14, 1971, 46/641; May 7, 1971, 46/36161; June 14, 1971, 46/49700**
**Int. Cl. A47b** *91/00*
**U.S. Cl. 16—45** **11 Claims**



A first hollow semisphere having therein a cup-like part with a socket and a second hollow semisphere having therein a hollow journal cylinder for receiving an axle are joined together along their peripheral rims to form a hollow spherical structure, one end of the journal cylinder, which is integrally formed with the second semisphere, being fitted in the socket of the first semisphere, and a passageway is provided to communicate the hollow interior of the structure with the journal bore. This spherical structure may be used as it is or it may be enveloped in an outer layer to form a hollow spherical article such as a spherical wheel in a caster.

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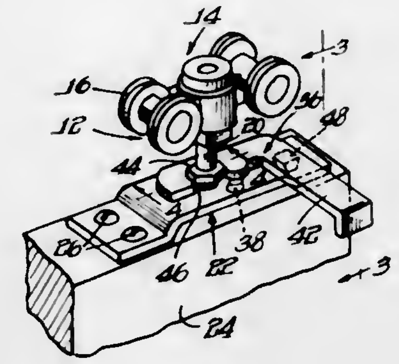
### 3,757,384
## HANGER DEVICE

**Robert E. Rusch, Woodbury, N.Y., assignor to Lawrence Brothers, Inc., Sterling, Ill.**
**Continuation of Ser. No. 883,937, Dec. 10, 1969, abandoned. This application Feb. 3, 1972, Ser. No. 223,232**
**Int. Cl. A47h** *15/06*
**U.S. Cl. 16—97** **10 Claims**



This invention relates generally to hanger devices for suspending door panels and the like, and more particularly to the combination with a hanger structure of a manually shiftable latch device to facilitate attachment and detachment of a top-hung door panel. The present application discloses a hanger device of the type which includes a carriage movable within an upper track and having means in the form of a depending pin for accommodating a complementary fitting attached to the upper margin of the door panel. The fitting attached to the upper edge of the panel includes an open-ended slot for receiving the lower extremity of the above-mentioned carriage pin. A pivotally supported latch member, when in one shifted position permits lateral insertion of the carriage pin within the open-ended slot, and when in another shifted position prevents lateral movement or dislodgement of the pin from the slot. This latch device includes a member projecting of the door which may be manually manipulated to move the latch member between the two above-mentioned positions.

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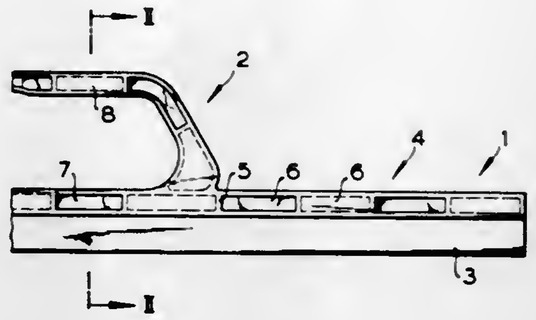
### 3,757,385
## CARRIER BAG HANDLES OF THERMOPLASTIC MATERIAL PREFERABLY MADE BY AN INJECTION MOULDING PROCESS

**August Schwarzkopf, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany**
**Filed May 18, 1971, Ser. No. 144,487**
**Claims priority, application Germany, May 27, 1970, P 20 25 888.2**
**Int. Cl. A47b** *95/02*
**U.S. Cl. 16—110** **4 Claims**



An injection-moulded carrier bag handle comprises a bar for securing to a carrier bag and an integral bowed hand grip defining a hand hole. The margin of the bar adjacent the hand grip is formed with a plurality of longitudinally aligned channels of U section which have their ends separated by transverse webs and their open mouths facing in alternately opposite directions towards the sides of the bar.

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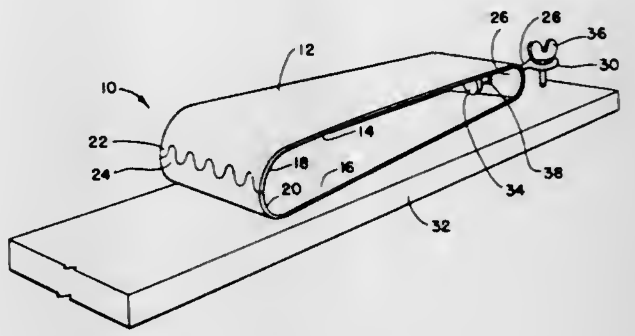
### 3,757,386
## HOLDER FOR FISH CLEANING

**Douglas W. Murray, 2028 Russell Ave., Baltimore, Md.**
**Filed Feb. 4, 1972, Ser. No. 223,679**
**Int. Cl. A22c** *25/00*
**U.S. Cl. 17—70** **4 Claims**



A fish holder and positioner especially adapted for scaling operations, gutting, beheading and the like and for easy, thorough cleaning thereafter, through provision of opposed, toothed jaws integral with a unitary body composed of a handle-shaped, single compressed loop of flat spring material narrower than the jaws holding the jaws in normally closed position, with the looped end of the body having a special swivel attachment to a board or the like. In use, extra pressure can be applied to the jaws by squeezing the handle or by pressure applied to force the jaws or handle against the surface to which mounted; the handle is flared to provide access for easy separation to release the grip of the jaws and the teeth of the jaws are specially shaped to avoid severing.

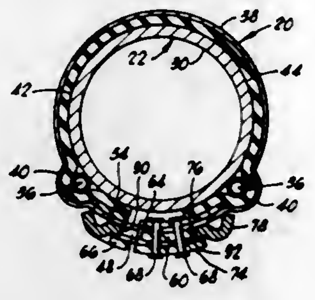
### 3,757,387
### APPARATUS FOR SECURING SMALL DIAMETER CONDUIT TO A LARGER DIAMETER TUBING STRING OR THE LIKE

**Roy E. Bush, and Harold R. Beattie, both of New Orleans, La., assignors to Continental Oil Company, Ponca City, Okla.**

**Filed Dec. 17, 1971, Ser. No. 209,292**

**Int. Cl. B65d** *63/08*

**U.S. Cl. 24—81 CC** **13 Claims**



An apparatus for securing one or more small diameter conduits to a larger diameter tubing string in an oil well and comprising a metal band encircling the tubing string and the conduit with a wedge-type lock for securing the opposite ends of the band together thereby securing the conduit to the tubing string. One or more conduit receiving corrugations are formed in the band. In one form, the apparatus includes a rubber liner interposed between the band and the tubing string. In another form, dimples are formed in the band to engage the tubing string. In yet another form, the band is divided into two segments connected by a hinge. In still another form, two separate band segments are connected by two wedge-type locks.

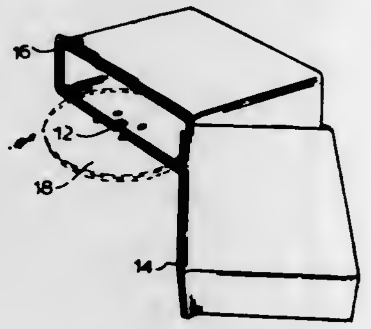
### 3,757,388
### GARMENT HANDLING

**Andrew Blazej Marian Wolny, 44 Berryhedge Ln., Winshill, Burton-on-Trent, England**

**Filed Apr. 17, 1972, Ser. No. 244,733**

**Int. Cl. A44b** *1/16*

**U.S. Cl. 24—113 MP** **5 Claims**



To prevent damage to buttons and like attachments on garments during operations such as dry-cleaning, there is disclosed a protective capsule having two hinged sections which may be fastened together to define a closed cavity around a button. There is also disclosed a releasable catch having a resilient snap action and being so configured as to reduce the possibility of accidental unfastening.

### 3,757,389
### SHEET INTERCONNECTING DEVICE

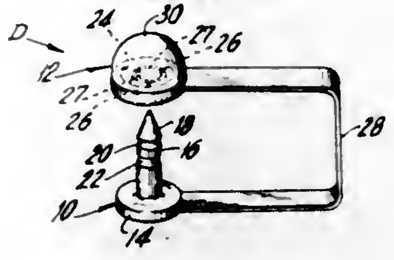
**Lawrence Wiland, 144-15 41st Ave., Flushing, N.Y.**

**Filed Sept. 25, 1972, Ser. No. 291,733**

**Int. Cl. A44b** *9/00, 17/00*

**U.S. Cl. 24—150 R** **4 Claims**

A device for interconnecting sheets of paper, plastic film, cloth or the like. The device includes a first member which has a shaft with a tapered head at one end and a broad base at the other. The head is adapted to penetrate the sheets. The device further includes an annular second member with resilient inwardly extending gripping means, so that when the second member is slipped down the shaft, which has penetrated several sheets, and punched holes therethrough with the second member acting as an anvil and the first member acting as a punch, the gripping means engages the shaft, thereby coupling the two members while holding the sheets on the shaft pressed between the second member and the base of the first member. The ends of a yoke are permanently connected to the two members in order to maintain them as a unit, even when the members are not coupled.



### 3,757,390
### ANCHORAGE ASSEMBLY FOR PRESTRESSING CABLES

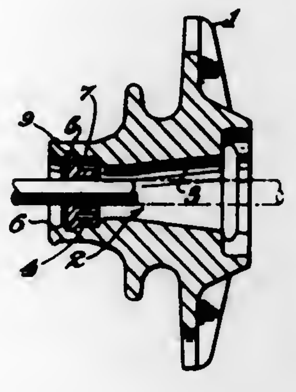
**Hugh Jeremy Willis Edwards, 20 Matthew Arnold Close, Cobham, Surrey, England**

**Filed Oct. 9, 1970, Ser. No. 79,495**

**Claims priority, application Great Britain, Oct. 16, 1969, 50,977/69**

**Int. Cl. F16g** *11/04*

**U.S. Cl. 24—126** **6 Claims**



An anchorage assembly for use in the prestressing of a cable which comprises an anchorage member having a bore adapted to receive and retain said cable, and an internal annular recess to co-act with an annular projection formed on a flexible insert provided to seal the annular space between said cable and the periphery of said bore. The flexible insert may be radially split or may be capable of being radially split.

### 3,757,391
### SLIDE FASTENER OF THE INVISIBLE TYPE

**Eric Engel Cuckson, Penrith, and Arthur Llewelyn Jones, Glenbrook, both of New South Wales, Australia, assignors to Scovill Manufacturing Company, Waterbury, Conn.**

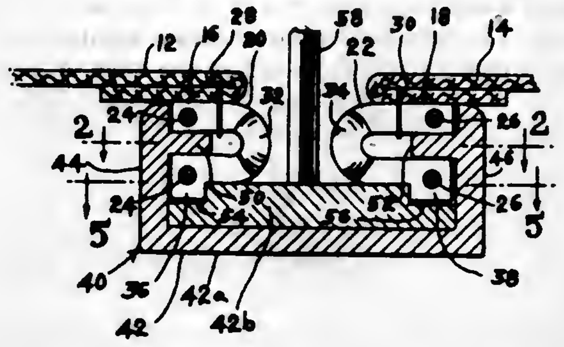
**Filed May 30, 1972, Ser. No. 257,946**

**Int. Cl. A44b** *19/32, 19/04*

**U.S. Cl. 24—205.1 R** **8 Claims**

Slide fastener slider has groove means cooperating with flanges on individual slide fastener elements to hold the lines

of fastener elements away from the slider pull, obviating wear. Additionally, slider is held in place on fastener elements by its engagement in outward openings of U-shaped fastener elements avoiding contact of slider with fabric, also obviating wear.



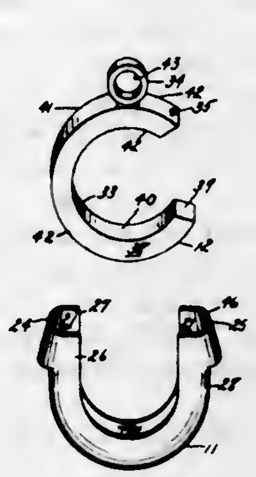
### 3,757,392
### JEWELRY CATCH

**Boris Shteinshleifer, 40 Elizabeth St., New York, N.Y.**

**Filed Jan. 5, 1972, Ser. No. 215,580**

**Int. Cl. A44b** *19/00*

**U.S. Cl. 24—238** **2 Claims**



A jewelry catch of arcuate type made entirely from stampings from precious metal sheet stock. Relying upon the natural resiliency of the stock material, no spring is required to maintain the device in closed condition, whereby the entire device may consist of two relatively moveable parts. A first part includes a hollow arcuate tube, the free ends of which define an interstice therebetween. Each end is provided with a manually engageable projection. A second part is of solid arcuate configuration, and is slidably disposed within the first part. The second part includes a loop member secured to one surface thereof which projects outwardly of the main body portion thereof and is located in the above mentioned interstice, so that the second part may be moved within the first part by squeezing the loop member and one of the projecting tabs. Means is provided for wedging the second element with respect to the first element when the device is in closed condition to prevent loss of an engaged end of a string or chain.

### 3,757,393
### TOY BUILDING ELEMENT CONSTRUCTIONS

**Josef Bucheli, Busenhardstrasse 1066, Herrliberg, Switzerland**

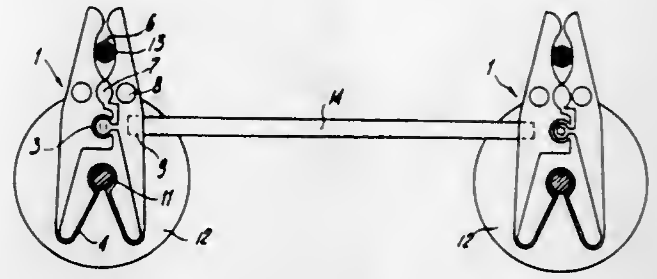
**Filed May 13, 1971, Ser. No. 143,152**

**Claims priority, application Switzerland, May 15, 1970, 7359/70; Apr. 1, 1971, 4769/71**

**Int. Cl. A44b** *21/00*

**U.S. Cl. 24—252 CP** **4 Claims**

A set of elements for constructing toy devices includes a basic clothes-pin type part or clamping element which comprises first and second arms which are pivoted together by a ball-shaped formation on one which extends into a socket formation on the other end which are held together in a pivoted formation. A V-shaped spring is formed inwardly between one of the common ends of the adjacent arms and the opposite ends form clamping jaws. The clamping element includes at least one opening at each arm to permit passage of a rod-shaped structural element therethrough, and in addition, the V-shaped spring part is formed with a round apex to facilitate engagement over a similar rod-shaped element at this location. The clamping jaws may be sprung open to engage over a rod-shaped member or similar structural element. Advantageously the arms each includes an opening in a side or an end or top face or both so that they may be connected to a rod-shaped member on the side, ends or top. If desired, the ball-shaped projection on one of the arms can be lifted out of the socket-shaped part of the arm so that the arms are held spread apart by the V-shaped spring connecting their one ends. A very large number of interengagement possibilities may be obtained with the basic structures combined with one or more additional type toy building structures.



### 3,757,394
### HOSE CLIPS

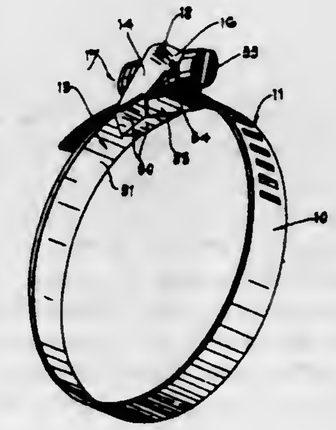
**David Lilley Turner, Coventry, England, assignor to National Research Development Corporation, London, England**

**Filed Dec. 9, 1970, Ser. No. 96,478**

**Claims priority, application Great Britain, Dec. 10, 1969, 60,202/69. The portion of the term of this patent subsequent to Sept. 19, 1988, has been disclaimed.**

**Int. Cl. B65d** *63/00*

**U.S. Cl. 24—281** **9 Claims**



A band clip includes a rotatably mounted screw which meshes wormwise with a threaded portion of the band. The screw is provided with a frusto-conical portion and the mounting for the screw presents an inclined surface which cooperates with the frusto-conical portion in such a way that, when the band is in an operative condition, co-action between the frusto-conical portion and the inclined surface biases the screw into engagement with the threaded portion of the band.

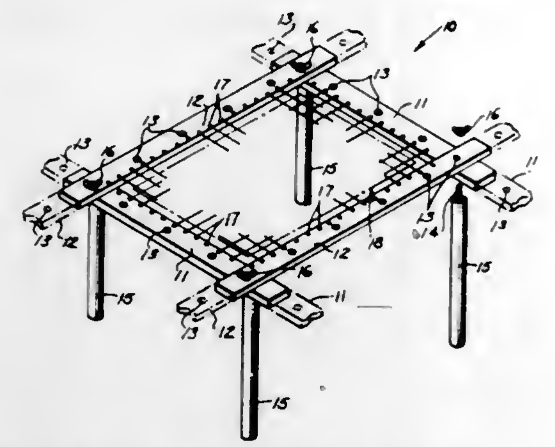
### 3,757,395
### QUILTING AND BEADING FRAME

**Juanita Edna Nepon, 21640-12 Mile Rd., St. Clair Shores, Mich.**

**Filed Mar. 1, 1972, Ser. No. 230,587**

**Int. Cl. D06c** *3/08*

**U.S. Cl. 28—15** **1 Claim**



A frame device for quilting and lace beading. This device consists primarily of elongated strip members which are fastened to leg members, the strips being adjustable so as to form a square or rectangular frame for hand weaving and the like.

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### 3,757,396
### PRODUCTION APPARATUS FOR NUCLEAR REACTOR FUEL RODS

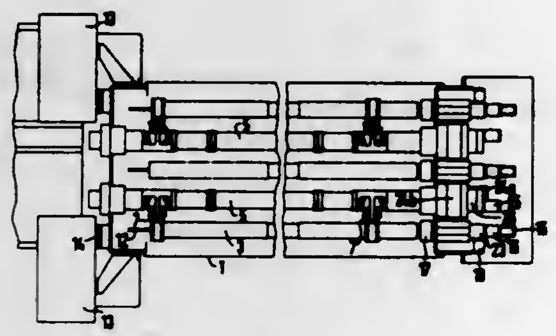
**Werner Lohrbach, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany**

**Filed Aug. 18, 1971, Ser. No. 172,659**

**Claims priority, application Germany, Aug. 19, 1970, P 20 41 089.3**

**Int. Cl. G21c** *21/00;* **B23p** *25/00*

**U.S. Cl. 29—33 T** **5 Claims**



When machining, filling and cleansing casing tubes in the production of reactor fuel rods, the latter are disposed in a closed container and held therein in support tubes. Individual processing equipment is located at one face of the container while, at the other face thereof, a rotary shaft provided with grippers, drives for displacing the support tubes into the individual processing position and drives of clamping devices for the support tubes are provided. Consequently, only parts having a smooth surface and being relatively easy to decontaminate are present in the interior of the container.

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### 3,757,397
### CUTTING TOOLS

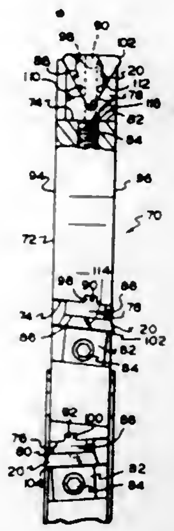
**Harold W. Lindsay, 2480 N.W. Vaugh, Portland, Oreg.**

**Continuation-in-part of Ser. No. 885,199, Dec. 15, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,117**

**Int. Cl. B26d** *1/12*

**U.S. Cl. 29—105 A** **1 Claim**

A cutting tool for use with replaceable carbide cutting inserts includes a head in which a recess is formed with a generally longitudinally extending portion disposed inwardly from the work-facing surface of the tool and a generally transversely extending portion disposed perpendicularly to the first named portion. A nest is removably disposed within the recess and includes a seat formed in one of its longitudinally extending surfaces. The nest further comprises a keying lug extending generally transversely from either one edge of or the central portion of the other of its longitudinally extending surfaces, which lug is received in the generally transversely extending portion of the recess. A replaceable carbide cutting insert is disposed within the seat such that at least one cutting edge extends outwardly of the cutter body. The seat serves accurately to locate the insert with respect to the nest and to hold the same therein. The lug serves accurately to locate the nest within the recess and to lock the nest to the cutter body.



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### 3,757,398
### SQUEEZING ROLL

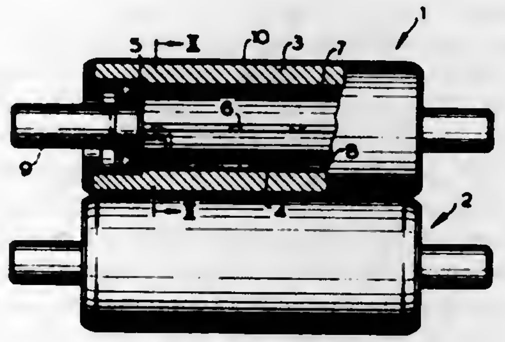
**Peter T. Urban, Meerbusch-Osterath, Germany, assignor to Edward Kusters Maschinenfabrik, Krefeld, Germany**

**Filed Apr. 22, 1971, Ser. No. 136,316**

**Claims priority, application Germany, Apr. 23, 1970, P 20 19 708.4**

**Int. Cl. B21b** *13/02*

**U.S. Cl. 29—116 AD** **2 Claims**



This disclosure relates to a device for passing webs through rolls to remove or squeeze liquid from the webs. The rolls are made with a covering of a thin layer of a synthetic material. For example, a roll having a 1 to 5 mm layer of polyurethane is useful for squeezing and dewatering textile webs.

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### 3,757,399
### ROLLER FOR REMOVING FOLDS FROM MATERIAL IN FILM OR WEB FORM

**Pierre J. Hanssen, Schweighouse, France, assignor to P. Hanssen & Cie S.A., Bas-Rhin, France**

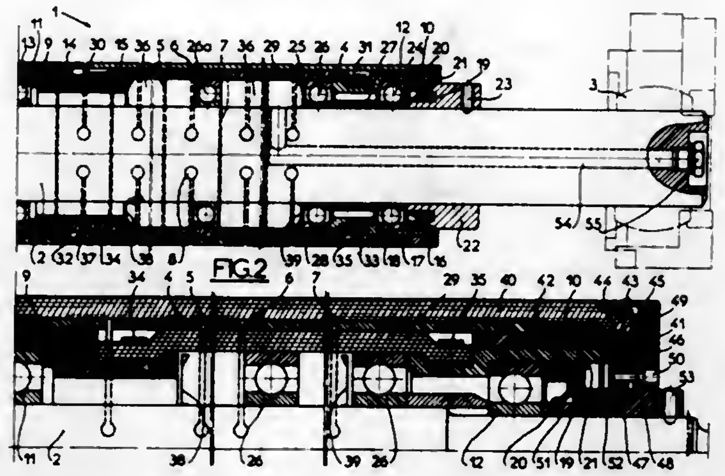
**Filed Dec. 7, 1971, Ser. No. 205,525**

**Claims priority, application France, Dec. 16, 1970, 7045930**

**Int. Cl. B21b** *13/02*

**U.S. Cl. 29—116 R** **8 Claims**

A roller for removing folds from web material has an outer tube part mounted at each extremity by end bearings on a central curved shaft. An oil-resistant elastic polymer sleeve spaced from but surrounding the shaft has an outer surface applied against the inner surface of the tube part. The inner surface of the sleeve is applied against the outer races of ball bearings disposed at intervals along the shaft between the end bearings. Opposite ends of the sleeve are clamped to the end bearing, and the space between the sleeve and shaft contains lubricating oil.



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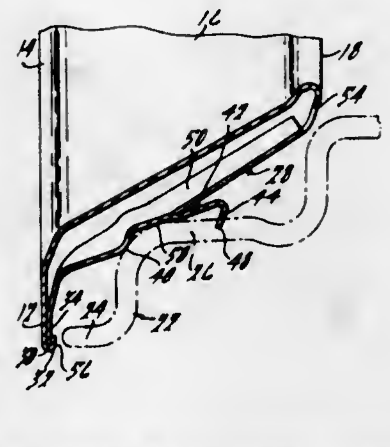
### 3,757,400
### METHOD OF MANUFACTURE OF VEHICLE WHEEL TRIM

**Hans R. Beisch, Essex County, Canada, assignor to Sargent Industries of Michigan, Inc., Ypsilanti, Mich.**

**Filed May 24, 1971, Ser. No. 146,082**

**Int. Cl. B21d** *53/26;* **B21k** *1/28, 1/42*

**U.S. Cl. 29—159 A** **19 Claims**



This disclosure pertains to a novel method of manufacturing trim rings generally comprising the steps of providing a plurality of circular blanks, forming the outer portion of each said blank into an approximate trim ring configuration, forming wheel retention means on the inner portion of each said blank,forming each said inner portion into a shape complementary to the configuration of each said outer portion, and securing each said inner portion to one of said outer portions. Also disclosed is a novel trim ring structure incorporating improved locating and retention means.

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### 3,757,401
### METHOD OF MANUFACTURING VEHICLE WHEEL TRIM

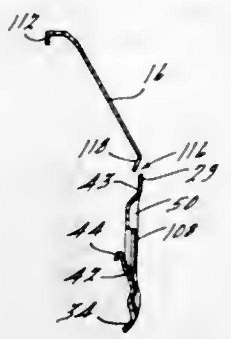
**Hans R. Beisch, Amherstburg, Ontario, Canada, and William C. Trute, Grosse Pointe Shores, Mich., assignors to Sargent Industries of Michigan, Inc., Ypsilanti, Mich.**

**Filed Mar. 31, 1972, Ser. No. 240,182**

**Int. Cl. B21d** *53/26;* **B21k** *1/28*

**U.S. Cl. 29—159 A** **43 Claims**

This disclosure pertains to an improved method of manufacturing trim rings for automotive wheels from a single blank of material utilizing the normally-scrapped center portion thereof, such method comprising forming the outer peripheral portion of the blank into a shape approximating that of a trim ring, forming the inner peripheral portion into retention means, separating the two portions and reassembling them into a trim ring assembly. Also disclosed in a novel trim ring.



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### 3,757,402
### MEANS FOR LINKING SEPARABLE FASTERNERS

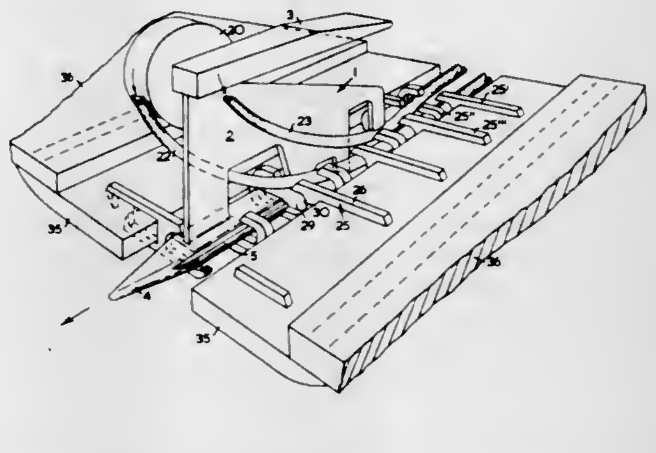
**James Haythornthwaite, and Joseph A. Fardeau, both of Joliette, Quebec, Canada, assignors to Scapa Dryers (Canada) Ltd., Joliette, Quebec, Canada**

**Filed July 22, 1971, Ser. No. 165,145**

**Claims priority, application Canada, July 27, 1970, 089214**

**Int. Cl. B25b** *27/00*

**U.S. Cl. 29—235** **3 Claims**



This invention relates to a novel means for connecting the ends of sheet material, particularly paper-making felts and fabrics, and includes a slider having means on its body which force one or more cables through throats and into slots formed in a plurality of separable fastener elements on the felt to maintain them in mutually cooperating relationship. The invention also relates to a method of connecting the fasteners when employing the slider as well as to a fastener element per se.

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### 3,757,403
### METHOD OF INSERTING NUCLEAR FUEL RODS IN GRID ASSEMBLY

**Melvin L. Bielberg, Pittsburgh, Pa., assignor to Atlantic Richfield Company, New York, N.Y.**

**Filed Apr. 29, 1971, Ser. No. 138,781**

**Int. Cl. B23p** *17/00*

**U.S. Cl. 29—424** **11 Claims**

A method of inserting metal alloy clad nuclear fuel rods in a fuel rod spacer grid assembly without scratching the clad material comprising forming a hoarfrost-like coating on said rods before inserting them in the assembly.

### 3,757,404

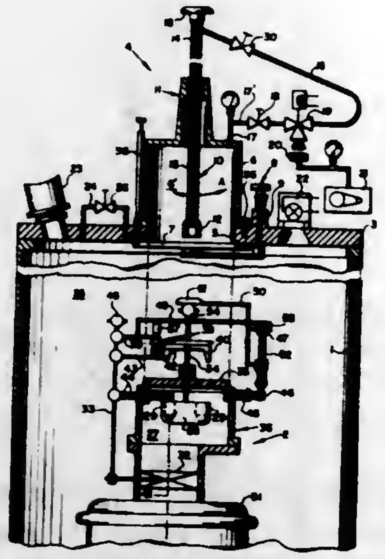
### PROCESS AND MEANS FOR REPLACEMENT OF COMPONENTS AND/OR OPERATING MEDIA IN ENCAPSULATED INSTALLATIONS

**Jacky Bill, Birsfelden, Near Basle, Switzerland, assignor to Emil Haefely & cie AG, Basle, Switzerland**

**Filed Nov. 25, 1970, Ser. No. 92,825**

**Int. Cl. B23p** *19/00, 19/04*

**U.S. Cl. 29—200 D** **9 Claims**



An encapsulated installation comprises

a. an airlock for the uptake of components for the installation, which airlock is sealable from an encapsulated space of the installation, and from the surroundings,

b. a manipulating means extending into the air lock and operable from the surrounding,

c. a removable pressure-tight separating means operable from the surroundings and located between the airlock and the encapsulated space,

d. means for evacuating the air lock, and for achieving pressure equalisation between the airlock and the surroundings and

e. means for equalising the pressure between the airlock and the encapsulated space. A process is provided using the installation to replace elements of the apparatus installed in the encapsulated space.

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### 3,757,405

### DEVICE FOR ADJUSTING THE POSITION OF A MOLD FOR CONTINUOUS CASTING IN A STAND

**Johannes Kurth, Duisburg-Buchholz; Josef Glaser, Angermund, and Wilhelm Ferdrowitz, Duisburg-Rahm, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**

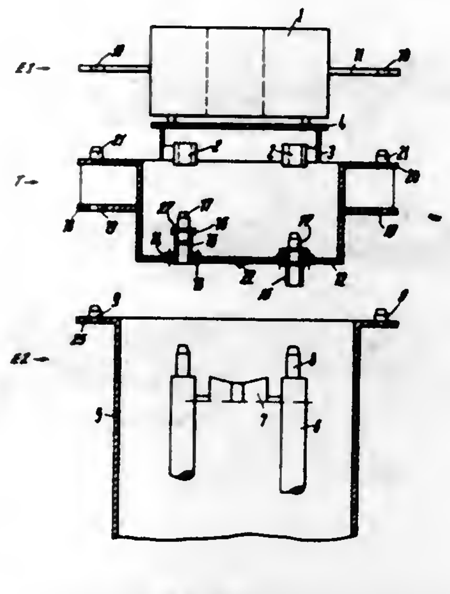
**Filed Apr. 3, 1972, Ser. No. 240,658**

**Claims priority, application Germany, Apr. 6, 1971, P 21 17 760.6**

**Int. Cl. B23p** *19/00*

**U.S. Cl. 29—200 P** **5 Claims**

Apparatus for adjusting the connections to be made between a mold for continuous casting and particular guide elements of a casting support stand, while mold and stand are disconnected. A plate having apertures corresponding in location to the position of the particular guide elements; laterally adjustable sleeve elements in the apertures, the sleeve elements adapted for securing in a particular position. An indexing tube in each sleeve element adapted for up and down sliding in the respective sleeve element, and having inner dimensions for receiving a guide element when the plate is particularly placed on the stand; and indexing pins placeable in parts into the indexing tubes and projecting therefrom, for simulating the relative position of the guide elements and permitting adjusting of connecting elements on the mold in particular relation to each other as established by the indexing pins as placed, for the connecting elements to assume position relation as needed for respectively receiving the guide elements when the mold is mounted to the stand.



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### 3,757,406

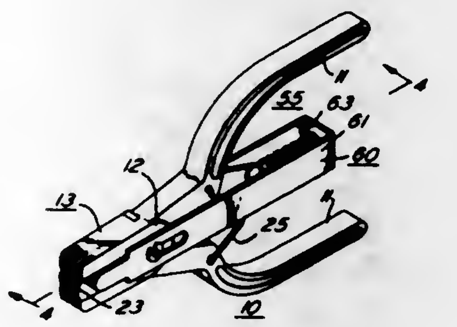
### TOOL FOR REMOVING AND INSERTING MODULES

**William Bezar, Philadelphia, Pa., assignor to Techni-Tool, Inc., Philadelphia, Pa.**

**Filed July 24, 1972, Ser. No. 274,564**

**Int. Cl. H01r** *43/00*; **B25b** *7/00, 7/02*

**U.S. Cl. 29—203 H** **6 Claims**



A tool for removing and inserting modules comprising a pair of opposing jaws having a recess in which the module is clampingly held. The jaws each have a plurality of aligned teeth forming slots which communicate with the recess. The teeth are spaced so that they fit into spaces between the leads of the module. The tool includes an insertion assembly having a driving section and a component engaging section. The engaging section is disposed between the jaws and on the side of the module opposite the teeth. When the driving section is depressed, the engaging section forces the module against the teeth thereby opening the jaws and inserting the module into a circuit board or multiple contact block.

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### 3,757,407

### MAGAZINE HOLDING A MULTIPLE NUMBER OF SCREWS TO BE USED WTH AN ELECTRIC DRILL

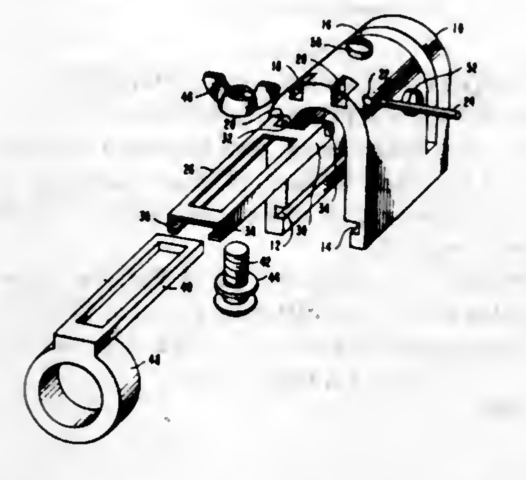
**Russell Paul Bomar, 16321 Londelius, Sepulveda, Calif.**

**Filed Mar. 2, 1972, Ser. No. 231,222**

**Int. Cl. B23q** *7/10*; **B23p** *19/04*

**U.S. Cl. 29—212 R** **8 Claims**

This invention relates to a cartridge or magazine holding a multiple number of screws to be used in connection with an electric drill having a screw driver type blade so that the operator may insert a multiple number of screws without having to place each screw individually into place prior to use of the drill.



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### 3,757,408

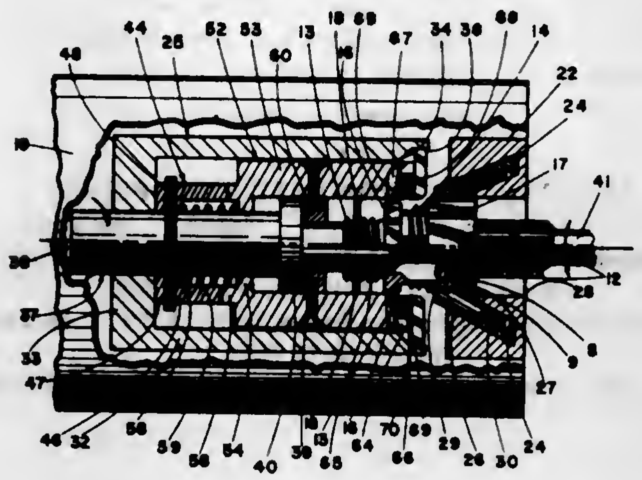
### TOOL FOR ASSEMBLING A CONNECTOR ASSEMBLY

**Sami Shemtov, Central Islip, N.Y., assignor to Electrical Fitting Corporation, East Farmingdale, N.Y.**

**Filed Mar. 28, 1972, Ser. No. 238,807**

**Int. Cl. B23p** *19/06*

**U.S. Cl. 29—237** **13 Claims**



A power tool for tightening a connector on an electrical conduit and includes a first stationary chuck having spring contracted first jaws and a driven second chuck having spring expanded second jaws axially spaced from the first jaws and spring biased toward the first jaws to expand them. The second chuck is positioned in a housing and the second jaws cooperate with a cam surface on the housing inside face so that the advance of the second chuck contracts the second jaws and the second chuck is connected by a torque limiting clutch to a drive shaft and is provided with an inside shoulder. By inserting the connector and conduit into the tool, any inner ferrule or sleeve is threaded onto the convolutions of the conduit inner surface so as to fully engage the conduit and the end of the connector pushes the second chuck rearwardly when the gland nut and body flats register with the first and second jaws respectively to close the jaws and to engage the clutch.

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### 3,757,409

### IMPACT TOOL

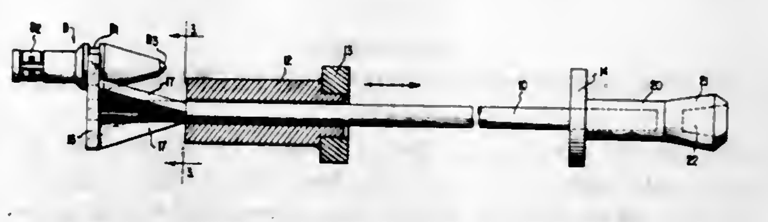
**James C. Flanigan, P. O. Box 405, Haywood, W. Va.**

**Filed Nov. 30, 1971, Ser. No. 203,319**

**Int. Cl. B23p** *19/04*

**U.S. Cl. 29—254** **2 Claims**

An impact tool including a rod, a weight slidable on the rod, a stop on the rod and means at each end for engaging an element, whereby movement of the weight striking the stop will impart a pulling force of an element secured to one end of the rod and will impart a pushing force to a similar element engaged by the other end of the rod.



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### 3,757,410

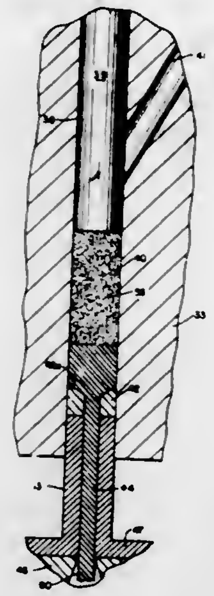
### METHOD AND APPARATUS FOR EXTRUDING METAL POWDER TO PRODUCE A CONTINUOUS ROD

**Edward S. Roberts, New York, N.Y., assignor to Treadwell Corporation, New York, N.Y.**

**Filed Jan. 27, 1971, Ser. No. 110,236**

**Int. Cl. B22f** *3/24*

**U.S. Cl. 29—420.5** **8 Claims**



There is disclosed an apparatus for the continuous extrusion of copper rod from copper powder in a manner which prevents harmful deterioration of the compacting cylinder and requires the expenditure of less power to operate.

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### 3,757,411

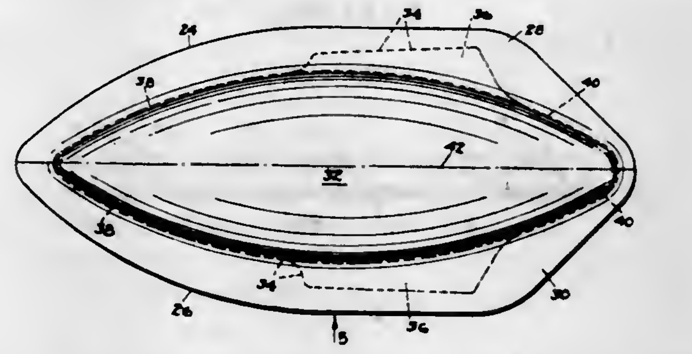
### MANUFACTURE OF DEEP, NARROW, HOLLOW ARTICLES

**Franklyn G. Umholtz, Box 16, Shutesbury, Mass.; Donald E. Scott, R.F.D. 3, Juggler Meadow Rd., Amherst, Mass., and James M. Douglas, Star Rt. No. 1, Montague, Mass.**

**Filed Nov. 4, 1971, Ser. No. 195,668**

**Int. Cl. B63b** *3/06*

**U.S. Cl. 29—416** **1 Claim**



Deep, narrow, hollow articles are made of metal by explosive forming a shallow vessel, trimming the sheet to the desired shape at the edges thereof, dividing it, reorienting the divided members so that the flanges of the formed sheet which were opposite each other, are now in juxtaposition, and joining the contacting edges from end to end thereof.

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### 3,757,412
### LANTHANIDE ISOPROPOXIDES AND PREPARATION OF SAME

**Khodabakhsh Mazdiyasni, Xenia; Leanne M. Brown, Brookville, and Charles T. Lynch, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Filed Oct. 20, 1971, Ser. No. 191,127**
**Int. Cl. C07f** *5/00*
**U.S. Cl. 260—429.2** **13 Claims**

A process for preparing alkoxides of the lanthanide elements, such as lanthanum, cerium, praseodymium and neodymium, in high yields and at increased reaction rates, is provided by reacting a lanthanide element with isopropyl alcohol in the presence of a catalytic amount of mercuric iodide or a mixture of mercuric chloride and mercuric acetate.

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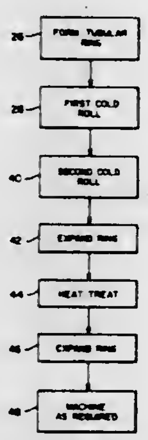
### 3,757,413
### METHOD OF MANUFACTURING SEALING RINGS

**Darrel W. Craik, Escondido, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.**

**Filed Apr. 7, 1972, Ser. No. 241,977**
**Int. Cl. B23p** *13/04*
**U.S. Cl. 29—557** **5 Claims**



A method of manufacturing sealing rings or the like is disclosed in which the U-shaped cross-section is formed by two successive cold rolling steps. Thinning of the rings at the points of curvature is eliminated by forcing metal to cold flow from the flanges downward into the curved portion of the sealing ring.

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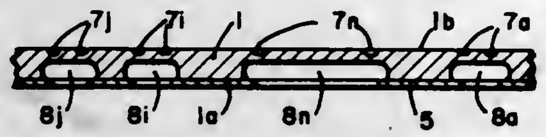
### 3,757,414
### METHOD FOR BATCH FABRICATING SEMICONDUCTOR DEVICES

**Hans W. Keller, Excelsior, Minn., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Mar. 26, 1971, Ser. No. 128,420**
**Int. Cl. B01j** *17/00*
**U.S. Cl. 29—580** **16 Claims**



A method for batch fabricating semiconductor stress sensors having the semiconductor material diaphragm rigidly joined to a support flange made of the same semiconducting material. Two processed silicon slices, one to form diaphragms and the other to form support flanges, are rigidly joined. The joined slices are then partitioned to form individual stress sensors.

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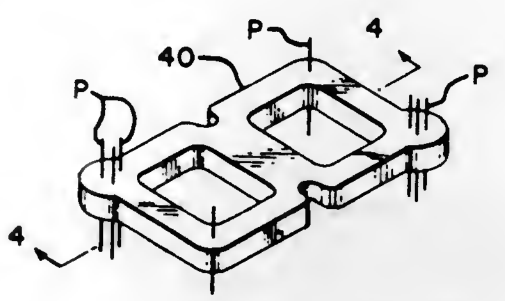
### 3,757,415
### METHOD OF MAKING A MONOLITHIC MULTIAPERTURE CORE DEVICE

**William Baird Fritz, Harrisburg; Neil Harrison Sanders, Carlisle; Emerson Marshall Reyner, II, Harrisburg, and Harry Alvin Fox, Jr., Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.**

**Division of Ser. No. 7,333, Jan. 15, 1970, Pat. No. 3,683,494, which is a division of Ser. No. 601,500, Dec. 13, 1966, Pat. No. 3,506,973. This application May 26, 1972, Ser. No. 257,210**
**Int. Cl. H01f** *7/06*
**U.S. Cl. 29—604** **1 Claim**



This disclosure relates a method of forming wired magnetic core devices wherein a plurality of apertures are formed in a leg of a magnetic core of insulating magnetic material, conductive wires are placed in said apertures, said core is fired, and leads are connected to said wires to provide multiple turns about said leg.

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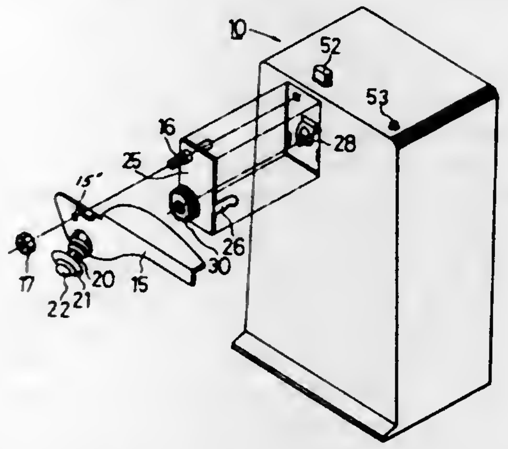
### 3,757,416
### ELECTRICALLY POWERED CAN OPENER

**Osamu Yamamoto, Nagoya, Japan, assignor to Kabushikikaisha Aichidenkikosakusho, Aichi-ken, Japan**

**Filed Sept. 29, 1971, Ser. No. 184,808**
**Claims priority, application Japan, Apr. 24, 1971, 46/26881**
**Int. Cl. B67b** *7/38*
**U.S. Cl. 30—4 R** **5 Claims**

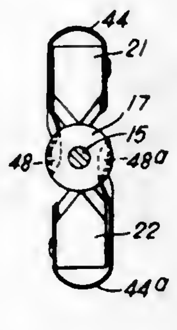


An electrically powered can opener including a base mounted detachably on the upright front member of the can opener housing, a cutter base carrying rotatably a rotary cutter and having a pivotal shaft, said pivotal shaft being extending through said base and supported by said upright front member for rotation and ready removal, said base and cutter base being unified by said pivotal shaft, a feed wheel holder fitted rotatably withing a loose aperture formed in said base, a driving shaft disposed in said housing for axially separable connection with said feed wheel holder through said front member and a latching member provided in said housing for precluding separation of said base from said housing and for permitting operation from the exterior of said housing.

### 3,757,417
### CUTTER

**Donald Stanley Savage, St. Albans, and Paul Edward Prosser, London, both of England, assignors to Aerpat A.G., Zug, Switzerland**

**Filed June 28, 1971, Ser. No. 157,506**
**Claims priority, application Great Britain, July 2, 1970, 32172/70**
**Int. Cl. B26b** *17/04*
**U.S. Cl. 30—179** **1 Claim**



A cutter suitable for cutting, for example, swaged-on metal collars of lockbolts to facilitate removal of the lockbolts has two blades movable to bring their cutting edges together to cut a collar beteen them, and has resilient guides attached to the blades for guiding the blades to cut a collar or other workpiece symmetrically.

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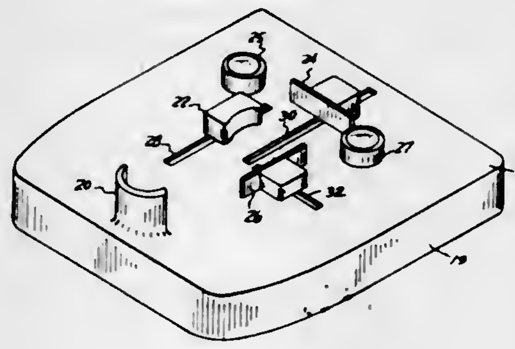
### 3,757,418
### DIGITAL FOOT MEASURING INSTRUMENT

**Ariel Stiebel, Bloomfield Hills, Mich., assignor to Radex Corporation, Detroit, Mich.**

**Filed Apr. 14, 1971, Ser. No. 133,825**
**Int. Cl. A43d** *1/02*
**U.S. Cl. 33—3 C** **9 Claims**

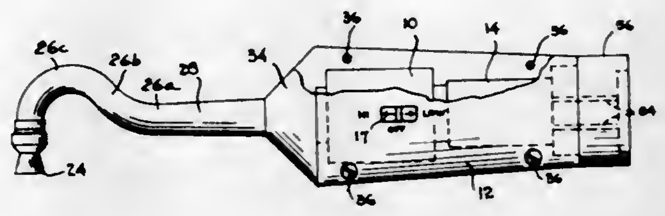


A device for measuring and exhibiting the shoe size corresponding to the length and width of a human foot which comprises a first slide adapted to be placed in alignment with the toe end of the foot and a second slide associated with the first slide and adapted to be placed in alignment with the ball of the foot. Each of the two slides has fixed to it a different scalar shoe size chart. A pair of apertures are positioned above the charts to exhibit a pair of shoe sizes as they are registered on the charts in the final moved position of the slides with the larger size indicating the appropriate shoe length size. A separate width determining slide is operatively associated and cooperable with both the aforesaid slides to provide the proper lateral movement of the two charts providing the appropriate shoe width size.

### 3,757,419
### PORTABLE TOOTH CLEANER

**Billy C. Hopkins, P.O. Box 817, Quincy, Calif.**

**Filed Nov. 8, 1971, Ser. No. 196,562**
**Int. Cl. A61c** *3/06*
**U.S. Cl. 32—59** **12 Claims**



A hand-held, motor driven cleaning cup, wherein torque is delivered from the motor to the cup by a flexible torsion cable to allow the axis of rotation of the cup to be substantially at a right angle to the spin axis of the motor.

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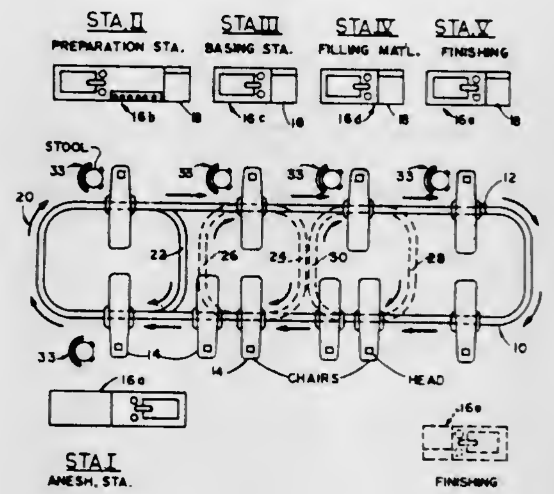
### 3,757,420
### DENTAL OPERATIVE SYSTEM

**Ralph H. Silverman, 7701 Arcadia, Morton Grove, Ill.**

**Filed Aug. 25, 1971, Ser. No. 174,602**
**Int. Cl. A61c** *19/02*
**U.S. Cl. 32—22** **9 Claims**



A dental operative system includes a plurality of mobile dental chairs for carrying patients along a path past dental treatment stations provided in spaced relation about the path. Dental personnel at each station provide a preplanned phase of dental treatment to a patient transported to the station. Controls are provided to direct the movement of the dental chairs along the path to subsequent stations upon completion of each phase of the treatment.

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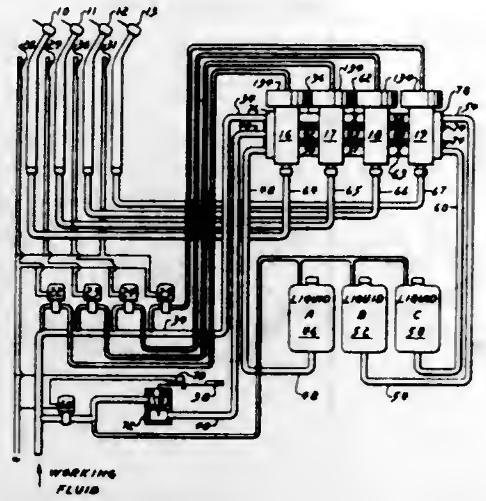
### 3,757,421
### VALVE AND SYSTEM FOR DENTAL APPARATUS

**Donald E. Kraft, 928 Winona Blvd., Rochester, N.Y.**

**Continuation-in-part of Ser. No. 367,294, May 14, 1964, Pat. No. 3,533,445. This application May 6, 1970, Ser. No. 35,005**
**Int. Cl. A61c** *19/02*
**U.S. Cl. 32—22** **4 Claims**

A valve of the spool type, and a fluid flow system controlled by one or more of the valves. The valve is intended primarily for use with dental equipment and includes a spool having intersecting radial and axial passages, with a conical throttle member within the axial passage for controlling the rate of fluid flow into the axial passage from the radial passage. The valve body includes by-passes through the bore in which the spool is seated so that several of the valves may be arranged in banks without the need for separate manifolding.



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## ERRATUM

For Class 33—3 see:
Patent No. 3,757,418

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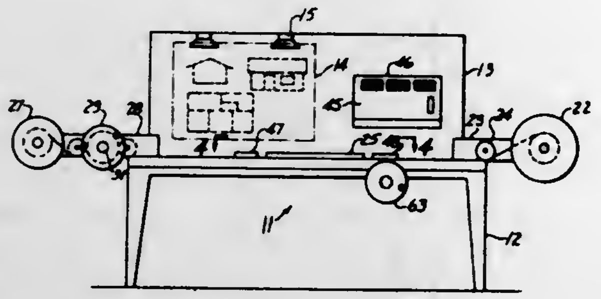
### 3,757,422
### DEVICE FOR MARKING LOCATIONS OF STRUCTURAL ELEMENTS

**Donald V. Frydenberg, Arlington, Tex., assignor to Clary Corporation, San Gabriel, Calif.**
**Filed May 3, 1971, Ser. No. 139,732**
**Int. Cl. B43l** *13/02*
**U.S. Cl. 33—76 R** **3 Claims**



A device for marking wall panel stud locations on a pair of tapes to be later transferred to plate members forming part of a wall panel comprising a table having means for guiding the tapes endwise under a stationary templet, the latter having marker guide slots spaced along the path of the tapes at different distances depending upon the dimensions of different stud assemblies or other components of the wall panel. The tapes are advanced different amounts in accordance with different dimensions given on an architectural drawing. Combinations of lights are lit by closing appropriate switches to indicate the appropriate marker slots to be used for different stud assemblies, etc.. Movable templets are provided at opposite ends of the stationary templet and are adjustable predetermined amounts relative to the stationary templet to enable marking of door and window jambs, etc., in accordance with the dimensions of windows and doors to be installed.

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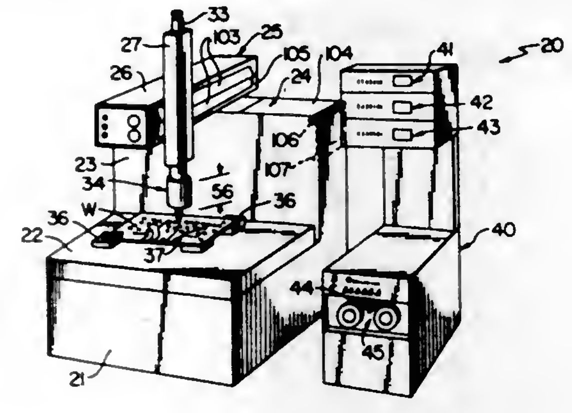
### 3,757,423
### MEASURING APPARATUS

**Heinrich J. Wieg, Dayton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.**
**Filed Oct. 19, 1970, Ser. No. 81,992**
**Int. Cl. G01d** *5/00;* **G01b** *3/28*
U.S. Cl. 33—174 R **10 Claims**



A machine for and method of providing dimensional measurements are provided and such machine has a carrier which is freely movable substantially in one plane and the carrier supports an elongated support for movement transverse such plane. The elongated support carries a gaging device at its lower end which enables rapid positioning of the carrier and support upon engagement thereof against an associated workpiece. The device has an outer housing and a shaft which is supported for precisely controlled telescoping movement within such housing and the shaft is provided with a gaging probe at its outer end. The shaft and gaging probe have a mass and combined length which is small compared to the mass and length of the elongated support enabling rapid retraction of the gaging probe against an associated stop using inexpensive retractable means comprising such device. The small mass of the shaft and probe also assure that the probe may be yieldingly urged by associated urging means against an associated workpiece with a precisely controlled force to thereby assure such workpiece will not be damaged.

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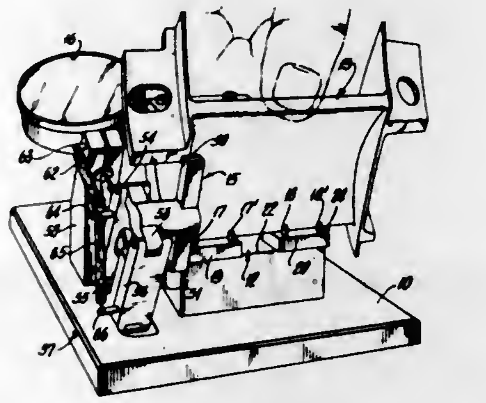
### 3,757,424
### CLASSIFICATION GAGE FOR TURBINE VANES

**Edward C. Palmenberg, Nanuet, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.**
**Filed Nov. 5, 1970, Ser. No. 87,059**
**Int. Cl. G01b** *5/20*
U.S. Cl. 33—174 C **13 Claims**



The invention contemplates a gage for vane-class measurement, in which the vane is oriented in space, and in which class is determined by a single angular measurement. The angular measurement is taken about a longitudinal axis which may be considered to be substantially the trailing-edge gage line, and said measurement is made between (a) a radial strobe through substantially the mid-point of the airfoil gage line (along the convex surface of the blade of the vane) and (b) a radial strobe parallel to the orientation of one of the abutment edges of a buttress forming part of the vane. Various structural features enable simple and rapid one-handed manipulation of each successive vane into gaging position, so that the angular (class-indicating) measurement is fully repeatable for a given vane, and so that small and minor local anomalies in surface fidelity are substantially eliminated, i.e., they are not effective in degrading the reliability of the measurement.

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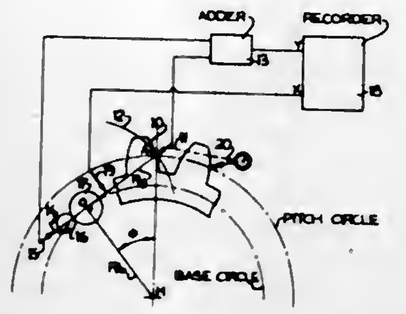
### 3,757,425
### APPARATUS FOR TESTING THE PROFILE AND THE PITCH OF INVOLUTE GEAR TEETH

**Gratien Bouillon, 2571 Boul, Laurier, Quebec; Georges Tordion, 833 de Maure, Ste.-Foy, Quebec, and Gilles Tremblay, 810 Painchaud, Quebec, Quebec, all of Canada**
**Filed Dec. 1, 1970, Ser. No. 94,103**
**Int. Cl. G01b** *7/28*
**U.S. Cl. 33—179.5 D** **13 Claims**



An apparatus for testing simultaneously the profile and the pitch of an involute straight or helical gear tooth including means for pivoting an electrical gauge head contacting the involute gear tooth about a pivot point common to the base circle of the gear and a line tangent to such base circle and intersecting the pitch circle of said gear on the surface of the gear tooth being measured, thus causing the electrical gauge head to generate a first signal proportional to the difference between the actual profile of the involute gear tooth under test and the segment of a circle traced about the pivot point. Means are provided for generating a second signal proportional to the difference between the theoretical profile of the involute gear tooth and the segment of the circle traced about the pivot point. The above-mentioned first signal is subtracted from the second signal to provide a signal representing the true deviation of the profile of the involute gear tooth from the theoretical profile of the gear tooth.

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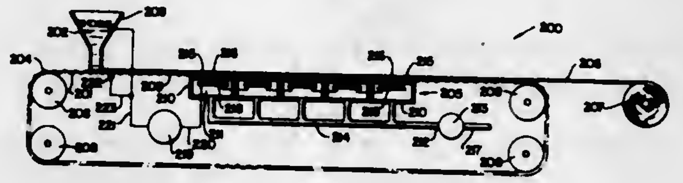
### 3,757,426
### LIQUID REMOVING METHOD

**Robert R. Candor, 5940 Munger Rd., Miami Township, Ohio, and James T. Candor, 5440 Cynthia, Washington Township, Dayton, Ohio**
**Division of Ser. No. 842,807, July 7, 1969, Pat. No. 3,667,130. This application Nov. 18, 1971, Ser. No. 200,255**
**Int. Cl. F26b** *3/34*
**U.S. Cl. 34—1** **23 Claims**



This disclosure relates to a laundry apparatus, paper making apparatus or the like wherein the moisture or liquid in the wet laundry, food materials, paper slurry or the like, disposed therein is removed by an electrostatic means that provides a differential in the potential of the moisutre in the laundry, food materials, paper slurry or the like and an electrode means for the moisture to tend to cause the moisture to leave the laundry, food materials, paper slurry or the like and move toward the electrode means. Such electrode means can comprise a suction nozzle which tends to draw a large volume of air through the laundry, food materials, paper slurry or the like adjacent thereto to also tend to direct the moisture from the laundry, food materials, paper slurry or the like toward the electrode means.

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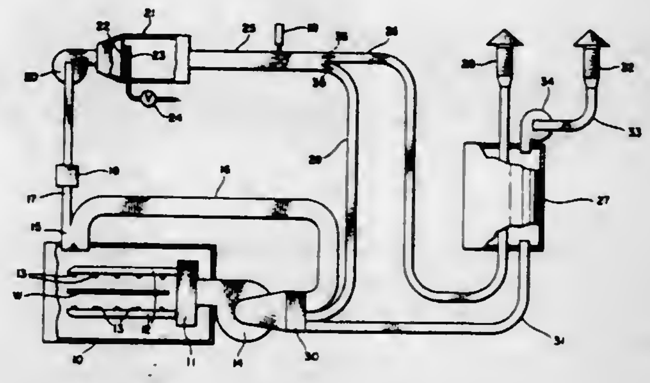
### 3,757,427
### METHOD AND APPARATUS FOR DRYING SOLVENTS

**Dwight Martin Wilkinson, Rocky River, Ohio, assignor to B & K Machinery International Limited, Malton, Ontario, Canada**
**Filed Oct. 6, 1971, Ser. No. 187,101**
**Claims priority, application Canada, Oct. 30, 1970, 96469**
**Int. Cl. F26b** *3/00*
**U.S. Cl. 34—32** **8 Claims**



A method of drying a solvent type coating on a surface, by heating the coating within an oven by a hot gaseous medium and in which the gases within the oven are continuously exhausted, and the effluent gases leaving the oven are then separated into two streams, namely, a recycle stream and an oxidation stream, and in which the oxidation stream is then passed through an oxidizer where the solvent vapours in the oxidation stream are then oxidized by burning or by catalytic action. The recycle stream of untreated effluent gases is then recycled directly into the oven once more without passing through the oxidizer at all. The combustion gases leaving the oxidizer are then separated into two streams, and one stream is vented to atmosphere. The other stream, namely a return stream, is then passed into the oven again together with the recycle stream of unburnt effluent gases. Sufficient fresh air is drawn into the system, preferably through a heat exchanger heated by the waste combustion gases, and such additional make-up air is then passed directly into the oven, where it mixes with the incoming return stream of combustion gases, and the incoming recycle stream of unburnt effluent gases to maintain the desired process temperature. The specification also discloses apparatus suitable for the practising of the method.

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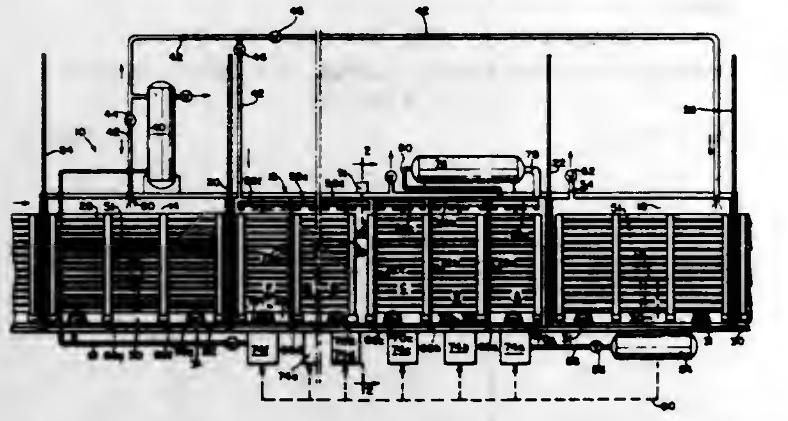
### 3,757,428
### METHOD AND APPARATUS FOR DRYING LUMBER

**Donald A. Runciman, 15221-15th St., Seattle, Wash.**
**Filed June 28, 1972, Ser. No. 267,132**
**Int. Cl. F26b** *3/04*
**U.S. Cl. 34—9.5** **23 Claims**

A method and apparatus for drying stacked lumber by solvent extraction, said apparatus including an elongate chamber through which stacked batches of lumber to be dried are moved. The elongate chamber includes a first compartment in which a stacked batch of lumber is steamed. A second longitudinally adjacent compartment wherein a liquid mixture of a solvent and water near its boiling point wets the stacked lumber in the presence of a vapor mixture of steam and solvent such that the solvent in the liquid phase replaces water within the lumber. As the stacked lumber is moved through this second compartment both the liquid and vapor phases in contact with the lumber have progressively greater solvent contents. The wetting liquid flows progressively through a series of weirs counter the direction of lumber movement, while the vapor moves between the stacked lumber in the direction opposite liquid flow and in this manner, the solvent drying the lumber is itself distilled within the chamber. A condenser adjacent the exit end of the second compartment withdraws vapor having a high solvent content from the compartment and returns solvent condensed therefrom to the dry wood end of the compartment where it is again used to wet the lumber. A third compartment is provided longitudinally adjacent the second compartment wherein the stacked lumber is subjected to steam or a steam and air combination to remove a desired percentage of solvent in the wood to produde substantially dry lumber.



A method of drying lumber by solvent extraction including the steps of steam conditioning wood for drying; wetting the lumber to be dried with a substantially closed chamber with a water-solvent liquid mixture maintained at or near its boiling point; increasing the solvent content of the liquid mixture such that solvent replaces substantially all of the moisture in said lumber; simultaneously distilling the solvent within the substantially close chamber; and raising the temperature of the lumber to drive off the solvent therein to produce substantially dry lumber.

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### 3,757,429

### WIG DRYER

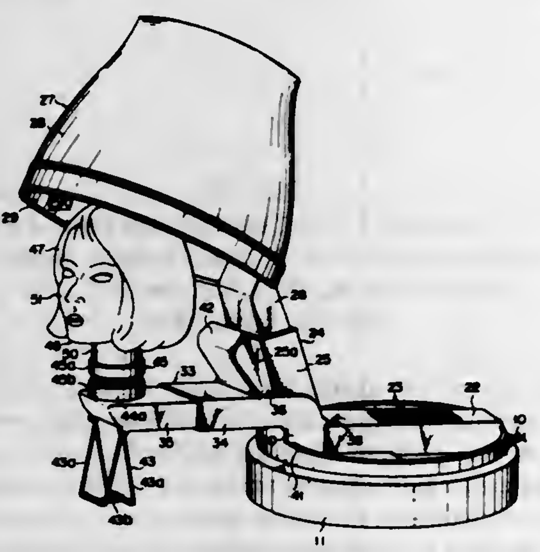
**Shouji Sumino, Mizuho-ku, Nagoya-shi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Mizuho-ku, Nagoya-shi, Japan**

**Filed Dec. 22, 1971, Ser. No. 210,735**

**Claims priority, application Japan, Apr. 10, 1971, 46/27425; Apr. 10, 1971, 46/27426; Apr. 10, 1971, 46/27427; Apr. 10, 1971, 46/27428**

**Int. Cl. A45d *20/24***

**U.S. Cl. 34—103** **10 Claims**



A wig dryer comprising a blower-heater unit, a wig supporting block having an air chamber therein and apertures through which the air chamber communicates with the outside of the block, a telescopic flue assembly for connecting the air chamber with the blower-heater unit, a hood having the inner shell perforated with apertures and adapted to cover the wig supporting block, another telescopic flue assembly for connecting the air chamber provided in the hood with the blow-heater unit, wherein the flue assemblies are made alternatively to communicate with the blow-heater unit thereby to dry a wet wig put on the block and set the hair of a wig.

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### 3,757,430

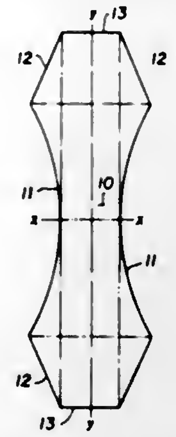
### FLEXIBLE MODULE

**Robert MacBride, 41 Glen Byron Ave., Nyack, N.Y.**

**Filed Apr. 18, 1972, Ser. No. 245,128**

**Int. Cl. G09b *25/04***

**U.S. Cl. 35—16** **5 Claims**



A flexible module for the construction of three dimensional hollow objects, consisting of a flat sheet of semi-rigid elastic material, the edges of which may be joined to the edges of forms of similar shape, by means of coupling pins or integral clips. The form of each module is symetrical about both horizontal and vertical axes, being characterized along the longitudinal axis by a middle section and an end section. The middle section is formed of sides in the form of concave arcs, with the end sections consisting of straight converging sides which approach each other as the sides approach the end of the module. Modules are joined together by joining the edge of one straight side to the similar edge of another unit.

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### 3,757,431

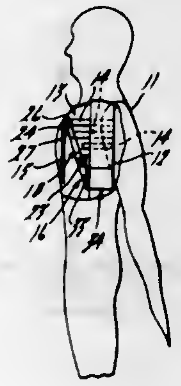
### CRASH DUMMY CHEST STRUCTURE

**Roger P. Daniel, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Dec. 6, 1972, Ser. No. 312,769**

**Int. Cl. G09b *23/32***

**U.S. Cl. 35—17** **9 Claims**



An impact damping means is provided for the chest structure of an anthropomorphic dummy. The load-deflection of the chest structure is hydraulically controlled through a lever arm arrangement reacting on a viscous damping means.

### 3,757,432

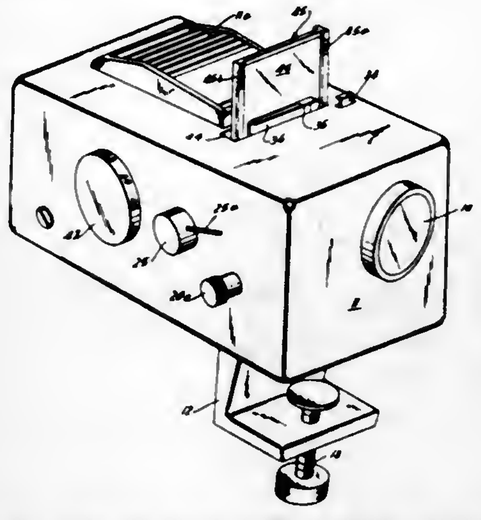
### CONTROLLED READING DEVICE

**Stanford E. Taylor, Hawk Dr., Lloyd Harbor, N.Y.**

**Filed June 1, 1972, Ser. No. 258,612**

**Int. Cl. G09b *17/04***

**U.S. Cl. 35—35 B** **16 Claims**



A controlled reading method and apparatus useful in improving a person's ability to view and to comprehend reading material in line by line sequence wherein each line is unveiled and occluded to view in segments in the direction of reading from the beginning of the line to the end of the line with the beginning and central segments being scanned and occluded at controlled rates of speed which may be related to the person's reading ability and with the beginning segment being unveiled at a relatively more rapid rate and the terminal segment being occluded at a relatively more rapid rate whereby the transition from the end of each line to the beginning of the succeeding line is more rapid and a relatively greater length of reading material is more rapidly exposed at the beginning of the next line to facilitate recognition. The unveiling scanning and occluding of the segments of the line may be accomplished by means of a movable mask or shutter with an aperture shiftable with respect to each line so as to scan the line from beginning to end with the said aperture being in the form of an elongated or helical slot arranged at an angle with respect to the length axis of the line to be scanned with the initial portion of the slot being disposed in a downward direction and the terminal portion in an upward direction with respect to the axis of the line and with the leading and trailing edges of the central segment of the slot and the trailing edge of the initial segment of the slot being disposed at relatively greater angles to said length axis of the line than the remaining edges of the slot and with the trailing edge of the terminal segment and the leading edge of the initial segment of the slot being disposed at a relatively lesser angle to the length axis of the line. The lines of reading material may be formed on a film strip mounted on a stick slide having ratchet-like notches formed along the sides of the slide and advanced line by line by means of mechanism actuated by operation of the shutter. Various controls are provided whereby the reading range can be varied, the film stopped at any line, moved backwards to repeat a line, or advanced manually, or lines of material can be projected tachistoscopically.

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### 3,757,433

### APPARATUS FOR FORMING AND DISPLAYING WORDS OR NUMERALS OR A SERIES OF NUMERALS AND SYMBOLS

**John Joseph Robinson, 24 Ardee Rd., and Frederick Hibbert, 9 Broadgate, both of Preston, Lancaster, England**

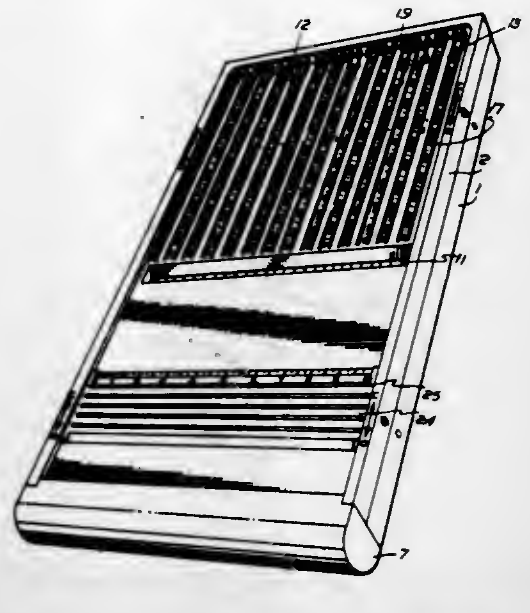
**Filed Oct. 18, 1971, Ser. No. 189,911**

**Claims priority, application Great Britain, Oct. 23, 1970, 50,401/70**

**Int. Cl. G09b *1/28***

**U.S. Cl. 35—75** **7 Claims**

Apparatus for displaying letters, numerals and symbols for teaching educational subjects comprising a frame formed in two substantially identical sections mounted one above the other and formed with a plurality of parallel longitudinal slots in one half of each section, identical columns of letters, numerals and symbols being inscribed on the lands between the slots, and slider strips mounted to slide between the sections in the slots movement of each strip bringing the letters, numeral or symbol selected on one section into a transverse window slot in the frame to enable, by the selection of the required letters, numerals or symbols, words, sentences or mathematical expressions to be displayed in the window slot, the ends of the strips remote from the selected letter, numeral or symbol sliding into the end of the frame remote from the longitudinal slots.



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### 3,757,434

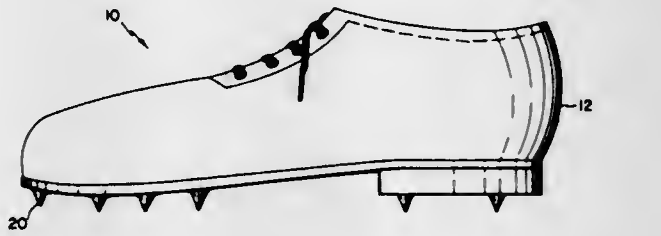
### GOLF SHOE CLEAT AND SUPPORT THEREFOR

**Edward H. Granger, Jr., Abington, Mass., assignor to F. C. Phillips, Inc., Stoughton, Mass.**

**Division of Ser. No. 56,467, July 20, 1970, Pat. No. 3,685,175. This application Aug. 9, 1971, Ser. No. 170,361**

**Int. Cl. A43b**

**U.S. Cl. 36—2.5 AH** **8 Claims**



A golf shoe having a plurality of extending cleats embedded in its bottom and fixed to an integral plate having V-shaped grooves, the apex of each of the grooves defining a hinge. The plate profile corresponds substantially to the shoe bottom profile. Each of the cleats includes a circular head and an axially extending socket having a tapered core concentric therewith and crimped therein, the tip of the core projecting from the socket.

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### 3,757,435

### BIASED TENSIONED INSOLE MEMBER FOR BOOTS OR SHOES

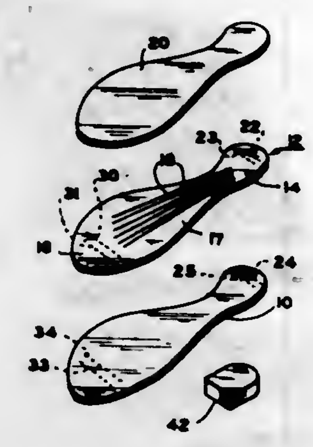
**Boris Schwartz, 400 Park Ave., Paterson, N.J.**

**Filed Mar. 21, 1972, Ser. No. 236,772**

**Int. Cl. A43b *13/12***

**U.S. Cl. 36—30 R** **8 Claims**

This invention pertains to a rubber insole member which preferably has its mid-length longitudinally slit to provide a grouping of side-by-side tension members. This tensioning insole member is attached in a stretched condition at or near the toe and heel of the outer sole and between this outer sole and the covering inner sole is retained so as to be in a tunnel-like manner. With this shoe or boot mounted on the foot of the wearer in the usual manner, as the wearer walks or runs the bending of the lower sole from its tensioned "at rest" condition during the striding motion causes the tensioned strips of the rubber member to be further stretched to store energy which is released as the stride is completed and the sole of the shoe or boot returns to its substantially flat "at rest" or normal condition.



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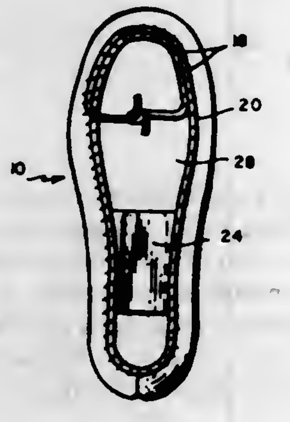
**3,757,436**

### APPARATUS PROVIDED WITH LASTING TABS AND METHOD OF LASTING

**Julius G. Winkler, Lexington, and Pasquale Corazzini, Watertown, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass.**

**Filed Dec. 4, 1972, Ser. No. 311,771**
**Int. Cl. A43b** *23/00;* **A43d** *21/00*
**U.S. Cl. 36—46.5** **13 Claims**



A method of string lasting a shoe upper and providing an upper with a lasting string at its lower edge by means of which the lower edge is adapted to be drawn inwardly against the bottom of a last or form preparatory to injection molding of an outsole thereto and with lasting extensions at the lower edge, one at each side in the region of the shank for drawing the upper at the shank inwardly across the bottom of the last or form to conform the upper to the last or form at the shank.

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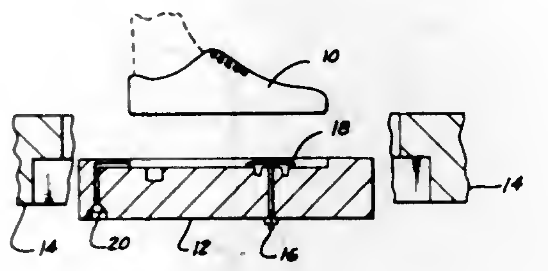
**3,757,437**

### SHOE AND METHOD OF MAKING SAME

**Bruce M. Cameron, 5220 Travis, Houston, Tex.**

**Filed July 19, 1971, Ser. No. 163,671**
**Int. Cl. A43b** *23/28;* **A43d** *9/00*
**U.S. Cl. 36—59 R** **15 Claims**



A shoe having an upper and a sole molded thereon with a disc molded in and rotatable in said sole and having a ground-engaging pad secured thereto and the method of coating the disc with a releasing agent, supporting the disc in the sole mold together with the upper so that the injection of sole material forms a sole bonded to the upper with the disc molded therein but because of the releasing agent is rotatable. This abstract is not to be construed in any way to define or limit the invention set forth below.

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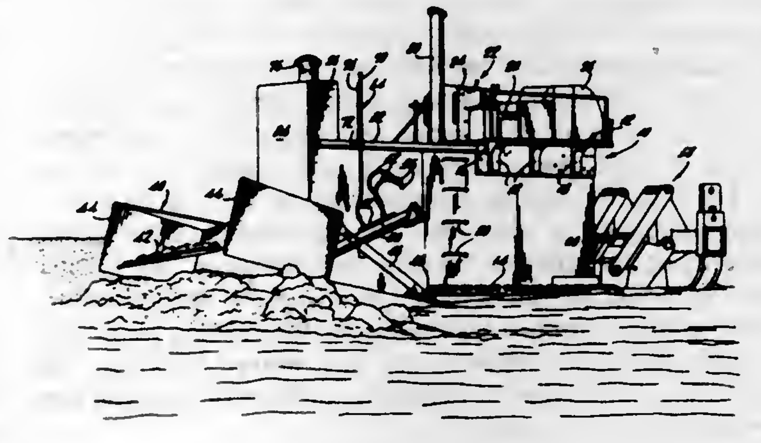
**3,757,438**

### BULLDOZER FOR UNDERWATER OPERATIONS

**Mark Yoshio Watase, 1605 Kanalui St., Honolulu, Hawaii**

**Filed Dec. 9, 1970, Ser. No. 96,408**
**Int. Cl. E02f** *5/00*
**U.S. Cl. 37—54** **1 Claim**



A bulldozer adapted to carry out operations on ground which is submerged beneath water. The existing frame and belly guard of a conventional bulldozer are interconnected so as to form a watertight enclosure in which the engine and additional components are housed. At the upper part of the enclosure is a support for the operator and the various controls are accessible to the operator at the upper part of the enclosure. All liquid-holding tanks are located at an elevation sufficiently high to prevent flooding thereof, and the intake and exhaust of the engine also extend to an elevation high enough to maintain them out of water in which the entire bulldozer is situated during underwater operations.

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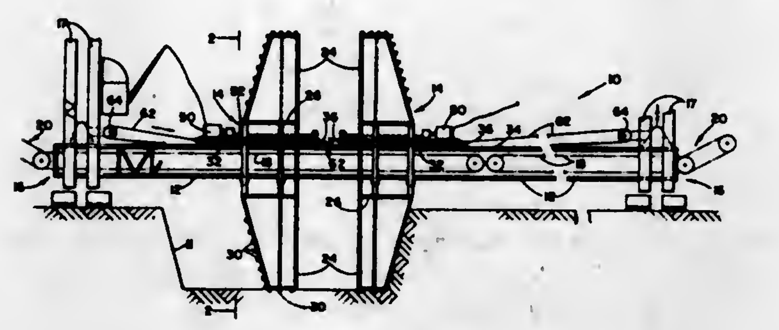
**3,757,439**

### METHOD OF EXCAVATING TRENCHES OF CONSIDERABLE WIDTH

**David Khaitovitch, 114-1 Rehove Avraham Stern, Jerusalem, Israel**

**Continuation-in-part of Ser. No. 28,184, April 13, 1970, which is a continuation of Ser. No. 698,741, Jan. 18, 1968, abandoned. This application Dec. 22, 1971, Ser. No. 211,007**
**Int. Cl. E02f** *3/24*
**U.S. Cl. 37—195** **4 Claims**



Earth excavating apparatus and method, the apparatus having an elongate horizontally disposed supporting arrangement including a girder, said arrangement having means for effecting horizontal movement of the entire arrangement and vertical movement of said girder. Two or more excavating units are slidably mounted on the said girder for longitudinal movement therealong, whereby upon horizontal movement of said support arrangement and longitudinal movement of said excavating units relative to said girder, a trench or excavation of considerable width may be effected. A support member further includes conveying apparatus so that the excavating material may be removed and transported to the ends of said supporting arrangement.

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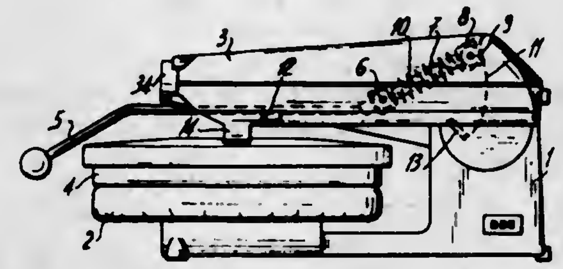
**3,757,440**

### IRONING PRESS

**Marcel Fresard, Petit-Lancy, and Antonio Jimenez, Meyrin-Geneva, both of Switzerland, assignors to Mefina S. A., Fribourg, Switzerland**

**Filed Dec. 8, 1972, Ser. No. 313,440**
**Claims priority, application Switzerland, Feb. 24, 1972, 2630/72**
**Int. Cl. D06f** *71/00*
**U.S. Cl. 38—17** **6 Claims**



An ironing press of the type wherein the stationary ironing board is heated by a heating plate lowered onto it by an arm pivotally secured to the press body. To allow freedom of movement in all directions of the heating plate with reference to the ironing board, there is associated with a central multidirectional pivotal connection between the heating plate and the carrier arm, an elastic connection constituted by coaxially bored bosses raised on the plate, the bores in said bosses being engaged by pivots elastically fitted on the carrier arm at points lying with the pivotal connection on a line parallel with the pivotal axis between the heating plate and the carrier arm.

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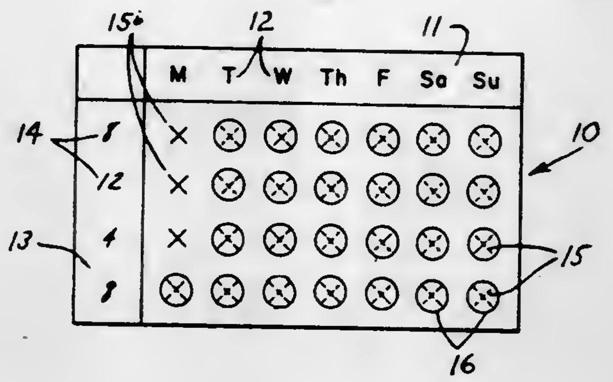
**3,757,441**

### MEANS FOR RECORDING MEDICINAL DOSAGES

**Michel M. Baustin, 5469 Kings Highway, Brooklyn, N.Y.**

**Division of Ser. No. 63,179, Aug. 12, 1970, Pat. No. 3,675,620. This application Nov. 17, 1971, Ser. No. 199,428**
**Int. Cl. A44c** *3/00*
**U.S. Cl. 40—2 R** **1 Claim**



A means for keeping a record of the times at which medicinal dosages are taken in which indicia to record such dosage are arranged in columns and rows opposite the times at which the dosages are to be taken.

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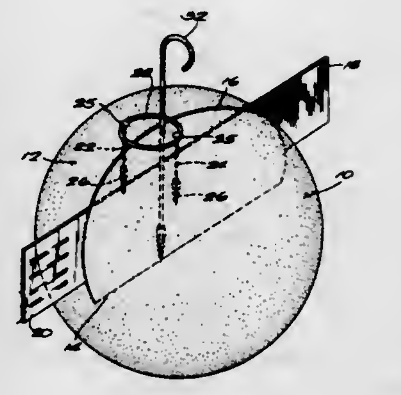
**3,757,442**

### DISPLAY HOLDER

**Walter F. Cook, P.O. Box 125, Ft. Atkinson, Wis.**

**Filed Aug. 3, 1972, Ser. No. 277,728**
**Int. Cl. G09f** *7/22*
**U.S. Cl. 40—128** **2 Claims**



A holder for a display such as advertising, price information or tinsel for a Christmas tree includes a sponge rubber body which can be spherical and which has a slit for receiving the display. The display is firmly secured in the slit by clamping means which can include pins in the sponge rubber body on each side of the slit and a ring which is slipped over the pins when the side walls of the slit are compressed to retain the walls in compression on the display.

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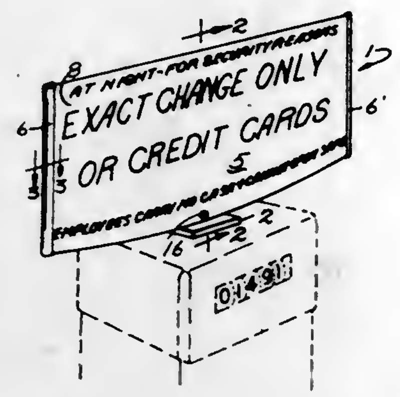
**3,757,443**

### SIGN

**Harmon B. Miller, III, 3821 N. Stratford Rd., N.E., Atlanta, Ga.; Bill Fernander, 3288 Balmoral Dr., Chamblee, Ga., and Larry Hanson, Box 70, Fort Valley, Ga.**

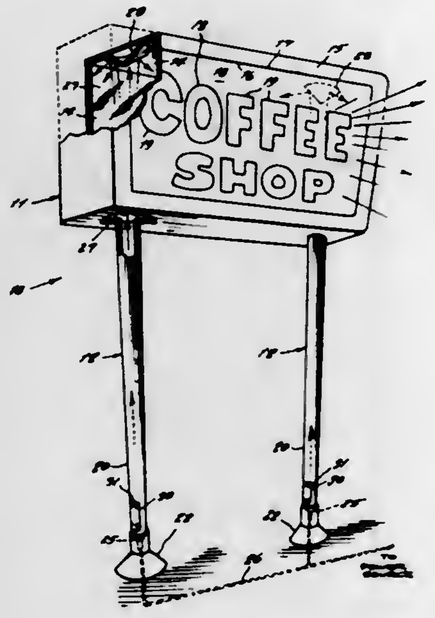
**Filed Apr. 3, 1972, Ser. No. 240,515**
**Int. Cl. G09f** *01/10, 07/12*
**U.S. Cl. 40—125 H** **13 Claims**

A sign comprising two facing rectangular boards which abut at their tops and ends but are bowed apart at the midpoint of their bottoms. A short block is connected to the bottoms of the respective panels at the middle and is adhered to a surface. The contour of the panels provides increased wind resistance.



## 3,757,444
## TRANSFER LIGHT SIGN

**Kenneth L. Magoto, Rt. 1, Box 11, Versailles, Ohio**
**Filed Jan. 5, 1972, Ser. No. 215,477**
**Int. Cl. G09f** *13/14*
**U.S. Cl. 40—130 B** **1 Claim**

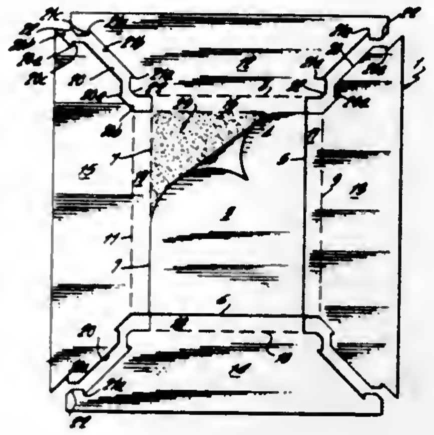


An improved advertising sign of large size such as is used for restaurants, shopping centers and gas stations, and which usually is located high up so to be visible far down a highway; the sign having its illuminating lamps in its base or near the ground where they can be more easily serviced or replaced in case of burning out, the light rays from the lamps being carried upwardly to the sign through reflection on light refractive surfaces.

## 3,757,445
## COLLAPSIBLE PICTURE FRAME

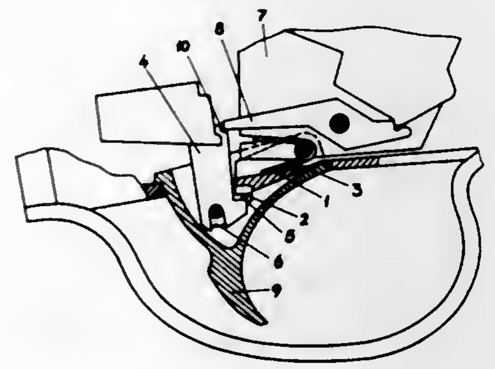
**Daisy D. Stilwell, 127 E. 64th St., New York, N.Y.**
**Filed July 21, 1971, Ser. No. 164,628**
**Int. Cl. G09f** *1/12*
**U.S. Cl. 40—154** **6 Claims**

A collapsible picture frame has a central panel for displaying a picture and is defined by four fold lines, a rectangular panel integrally connected with the central panel, one side of each rectangular panel being provided by one of said fold lines, and four trapezoidal panels, each integrally connected through another fold line to a rectangular panel. Cut-out portions at each corner of the picture frame provide mating notched tabs and notched openings along adjacent nonparallel sides of the trapezoidal panels, whereby when the picture frame is erected the rectangular panels are substantially perpendicular to the central panel and the trapezoidal panels are locked together and lie flat or flare outwardly.



## 3,757,446
## FIRING MECHANISM FOR HUNTING FIRE ARM WITH TWO BARRELS

**Erkki Vesamaa, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland**
**Filed Mar. 15, 1971, Ser. No. 124,248**
**Int. Cl. F41c** *19/00*
**U.S. Cl. 42—42 R** **1 Claim**



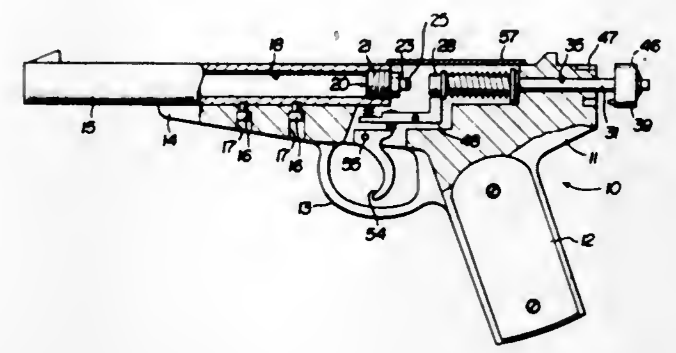
A firing mechanism for a hunting gun having two barrels includes a change-over device connected with the trigger, so that the user can select which of the two barrels shall be fired first. A laterally movable pendulum prevents double firing. It is connected with a change-over stud which can move it laterally and which is located inside the trigger. A change-over lever is carried by the same shaft as the trigger. A single spring presses the catch of the pendulum and the catch of the change-over lever against each other to return the trigger into its starting position and move the pendulum for release of the other sear.

## 3,757,447
## MUZZLE LOADING FIREARM

**Robert W. Rowe, 840 Palm Tree Ave., Harbor Heights, Fla.**
**Filed Jan. 6, 1972, Ser. No. 215,769**
**Int. Cl. F41c** *3/00, 7/00*
**U.S. Cl. 42—51** **2 Claims**

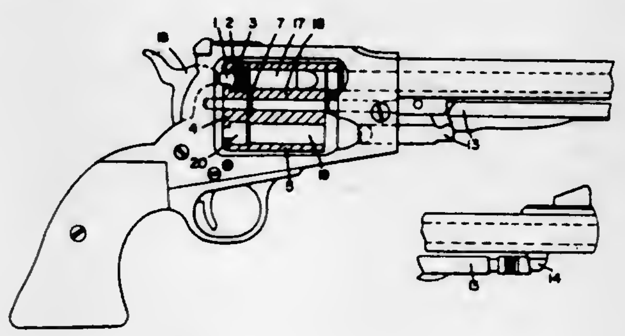
A muzzle loading firearm having a frame upon which is mounted a centrally bored barrel with a centrally bored plug threadedly fitted into and plugging the breech or rear end of the barrel, with the plug having a rearwardly extending nipple portion over which a cup-shaped percussion cap is placed. An axially movable spring loaded bolt, aligned with the axes of the barrel and plug bores and nipple, has an anvil end arranged to impact against the cap upon actuation of a trigger mechanism,

for firing the charge loaded within the barrel through its muzzle. The bolt is locked against axial movement by a safety mechanism, including a rotatable knob, mounted upon the rear end of the bolt, with the knob having a forwardly extending spacer pin arranged to selectively abut a portion on the frame to prevent forward movement of the bolt or to align with and fit into a frame recess of sufficient depth to receive the pin when the bolt moves forwardly against the cap. An openable flash shield normally covers the plug nipple and bolt anvil portions.



## 3,757,448
## VICTOR REVOLVER CYLINDER ADAPTER

**Victor Petrucci, 894 Marsh St., San Luis Obispo, Calif.**
**Filed Dec. 3, 1971, Ser. No. 176,184**
**Int. Cl. F41c** *1/00*
**U.S. Cl. 42—59** **1 Claim**

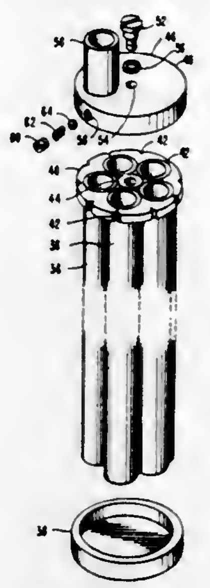


A cap and ball revolver can become choresome when it is repeatedly loaded and shot in the original fashion. To accomplish ease of handling and use, a replacement cylinder is installed which allows the cap and ball revolver to fire the standard center-firing ammunition. The replacement cylinder is divided into two pieces — the back plate which houses the firing pin, and the main cylinder section.

## 3,757,449
## DEVICE FOR LOADING SHELLS

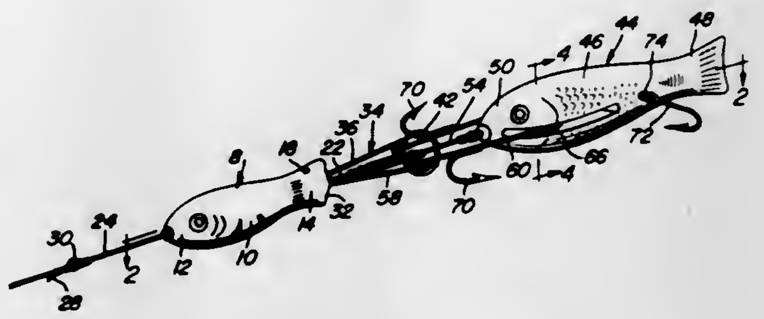
**Willard R. Schindler, 10815 Amestoy Ave., Granada Hills, Calif.**
**Filed Feb. 22, 1972, Ser. No. 227,986**
**Int. Cl. F42b** *39/06*
**U.S. Cl. 42—87** **3 Claims**

A loading device having a series of elongated tubes each of which is adapted to hold a number of shells or cartridges. The tubes are disposed in a circular arrangement and a rotatable end cap having a hole therein is rotated to align the hole with each separate tube wherein the shells can be loaded into the tube or discharged into the firearm by means of gravity.



## 3,757,450
## FISH LURE

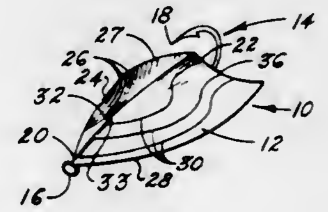
**Antero Martinez, and Estrella Martinez, both of 3430 E. 4th Ave., Hialeah, Fla.**
**Filed Apr. 10, 1972, Ser. No. 242,375**
**Int. Cl. A01k** *85/00*
**U.S. Cl. 43—35** **3 Claims**



A fish impaling and trapping lure embodying interconnected plugs; namely, a forward auxiliary plug providing a small bait or minnow and a complemental rearward main plug representing a larger bait or minnow in pursuit of the smaller minnow. Both plugs are cooperatively linked by a pull responsive shaft or rod means carried in part by the small plug with its rear end portion joined to a second rod or shaft whose rear end is fastened to the nose of the second larger plug. The body and head portions of the main plug are equipped with trapping and impaling hooks carried by resilient spring-connected fingers having free forward ends releasably connected to a keeper ring fixed on the rearward diverging ends of a V-shaped yoke fixed to the rear end of the small minnow.

## 3,757,451
## FISH LURE

**Herbert Cottle, 2902 Sixth Ave. S.W., Huntsville, Ala.**
**Filed Sept. 16, 1971, Ser. No. 181,178**
**Int. Cl. A01k** *85/00*
**U.S. Cl. 43—42.1** **8 Claims**



A fishing lure consisting of a fish hook and a triangular lure body covering the shank of the hook and in which one side of the top surface of the lure body is contoured to sweep upward near the rear of the lure body whereas the opposite side is not so contoured. This assymetry causes the lure to be flipped over if the top side of the lure should become face downward in the water and the lure pulled through the water. This causes the lure to be generally maintained with the hook portion upward and thus less likely to be caught in debris.

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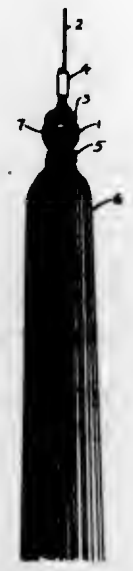
### 3,757,452
### FISHING DEVICE

**George S. Parker, P.O. Box 38, Kailua, Kona, Hawaii**
**Filed Mar. 29, 1971, Ser. No. 128,895**
**Int. Cl. A01k** *85/08*
**U.S. Cl. 43—42.25** **11 Claims**



A tassle made from thousands of minute but strong fibers has the tassle head attached to a leader and when used at the end of a fish line in co-operation with or even in the absence of a lure head, live bait or spinner this tassle serves to attract fish. When the fish touches the tassle the rough texture of the fish exterior becomes sufficiently adhered to the fibers to allow the fisherman using this device only and without hooks to pull the fish in.

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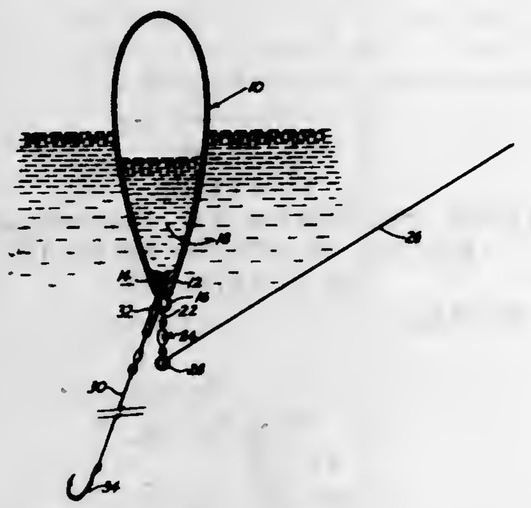
### 3,757,453
### FISHING LINE FLOAT

**John J. Therres, 7993 Atlantic Ave., White City, Oreg.**
**Filed Dec. 7, 1971, Ser. No. 205,691**
**Int. Cl. A01k** *91/02*
**U.S. Cl. 43—43.14** **2 Claims**



A fishing line float is provided which, when properly combined with a line and leader can be cast to unprecedented distances. The float comprises a hollow, normally sealed shell of raindrop or cigar-shaped design. It is loaded with a determined quantity of water, insufficient to fill the shell but sufficient to fill a substantial portion of it. The float shell is designed to have the leader and line connected to its pointed end. The float shell is desirably composed of a transparent, deformable, infrangible, but elastic plastic material which has the advantage that it does not shatter when the float is caused accidentally to hit a tree, boulder or other hard object, and which has the further advantage that the float is adapted to be used as a squeeze bottle under appropriate conditions, for sucking a determined quantity of water into the float shell for loading purposes. The float has the further desirable characteristic that the line and leader trail during casting but extend downward in the water, so that tangling of line and leader are avoided.

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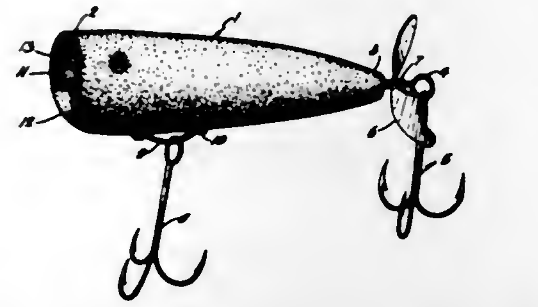
### 3,757,454
### TOP-WATER FISHING PLUG

**Robert G. Shurley, P.O. Box 223, Meadville, Miss.**
**Filed Nov. 16, 1971, Ser. No. 199,145**
**Int. Cl. A01k** *85/00*
**U.S. Cl. 43—42.16** **2 Claims**



A tapered, elongated top-water plug, equipped with a tail spinner, provides two alternative actions, depending upon line pull applied. The upper portion of the nose of the plug is forwardly concave, while the lower portion is substantially convex and slants downwardly and rearwardly. When pulled gently, the concave portion of the nose remains above water and the plug glides smoothly, with the tail spinner operating. When pulled with a slight jerk, the concave nose portion is pulled suddenly into the water, causing the abrupt noise and water commotion characteristic of "plunker" type plugs.

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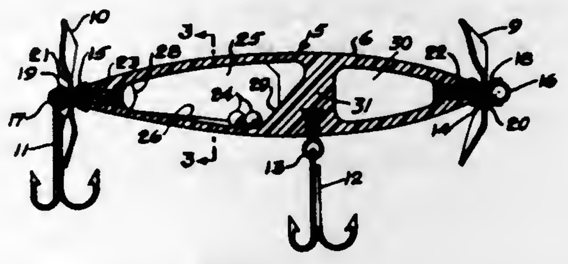
### 3,757,455
### FISHING LURE

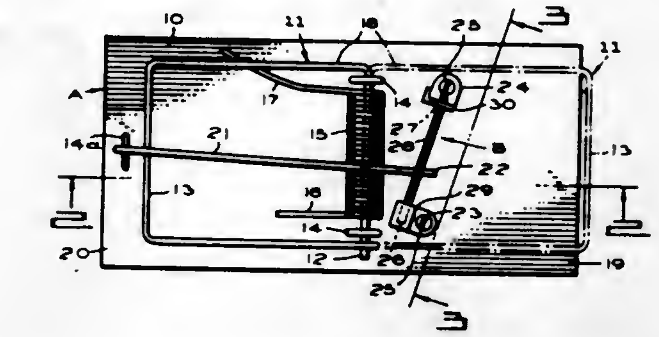
**James W. Strader, Tallahassee, Fla., assignor to Capt. Jim Strader, Inc., Fort Lauderdale, Fla.**
**Continuation of Ser. No. 843,354, July 22, 1969, abandoned. This application June 9, 1971, Ser. No. 151,543**
**Int. Cl. A01k** *85/00*
**U.S. Cl. 43—42.14** **2 Claims**



A fishing lure having a spinner on the front end and a spinner on the rear end with each spinner formed so it will rotate in the same direction as the other spinner and means for varying the frictional hold on the spinners to vary the spin of each spinner so as to vary the rocking motion of the spinner in the water in order to flash the light-reflecting eyes and to produce a sound by causing the balls to move within the body of the lure and the balls to hit one another.

### 3,757,456
### TRIGGER AND BAIT ARRANGEMENT FOR MOUSE TRAP

**Joseph A. Lucci, 3833 Beresford St., San Mateo, Calif.**
**Filed July 11, 1972, Ser. No. 270,864**
**Int. Cl. A01m**
**U.S. Cl. 43—81** **4 Claims**



A trigger and bait arrangement for a mouse trap wherein a pair of spaced brackets are fixed to a base of the trap, one on each lateral side of a forwardly extending latching lever that is utilized for holding a swingably mounted bail in set position, one of the brackets defining a socket and the other bracket being fashioned with a slot, and an elongated edible trigger is adapted to overlie a free tip of the lever when the trap is set, with one end of the trigger being inserted into the socket and its other end is inserted into the slot, whereby the trap will be sprung when a mouse, or the like, nibbles through the trigger or withdraws the latter from the slot. The trigger extends diagonally relative to the length of the base when it is supported by the brackets, whereby the free tip of the lever may be moved laterally into a position to underlie the trigger when setting the trap.

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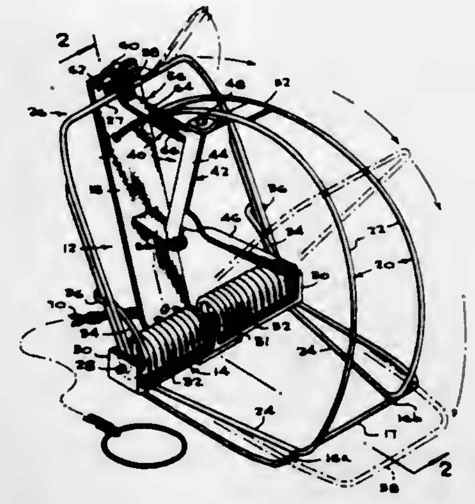
### 3,757,457
### HUMANE ANIMAL TRAP

**Andrew M. Martin, Rt. 4, Box 71, Milford, Del.**
**Filed July 13, 1972, Ser. No. 271,386**
**Int. Cl. A01k** *23/00*
**U.S. Cl. 43—81** **16 Claims**



An improved humane animal trap having an obtusely angular frame of which one leg thereof more particularly forms a base which stabilizes the trap in its use condition. One of its two jaws is of large arcuate form with opposite end portions connecting it in a fixed manner to opposite end portions of said frame to form a generally circular animal entry opening therewith. The movable inverted U-shaped jaw is pivotally connected at its free leg ends to said frame and is spring biased toward its closed condition with the bight portion of the U-shaped jaw being arcuately movable outwardly adjacent the arcuate portion of the fixed jaw, and movable in a plane transverse to the direction of entry into the trap. The trap embodies a self-centering triggering and latch mechanism which includes an angular shaped trigger pivotally mounted on the frame and fixed jaw members and oriented at one side of the entry opening. The trigger has an upper portion slideably engageable in overlaying relation to a jaw-cocking latch member. The trigger is also provided with a trigger finger projecting into the entry opening to be moved by the animal upon entering the trap. The self-centering triggering and latch arrangement is more humane, being such that the animal while engaging the trigger must move a substantial distance into the trap, with attendant substantial relative sliding movement occurring between the trigger and latch before the latch is freed to release the spring-biased movable jaw, which then moves in the direction of the ground supported base frame portion, thereby precluding a tendency to overturn the trap which otherwise would tend to occur by a reverse direction travel of the jaw.

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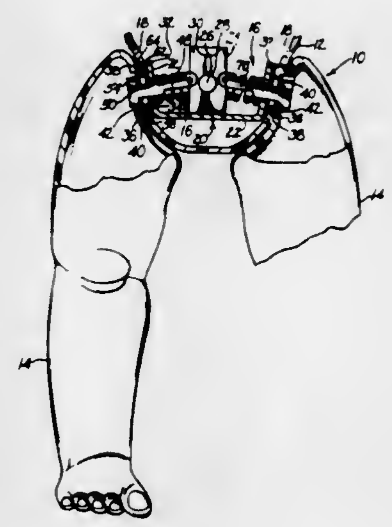
### 3,757,458
### DOLL LEG CONNECTOR

**Herbert Thorn, Flushing, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.**
**Filed Sept. 27, 1971, Ser. No. 183,897**
**Int. Cl. A63h** *3/20*
**U.S. Cl. 46—161** **3 Claims**



A limb connector mechanism is provided for use in a toy doll having a torso and a limb including an opening at one end thereof defined by an outwardly extending peripheral flange and rim formed at the free end of the flange. The connector mechanism includes a limb mounting frame secured in the torso and a flat disk or washer inside the limb positioned against the inner surface of the rim. A cap is positioned over the limb opening between the rim and the frame and has a peripheral flange portion, surrounding the limb flange, and keyed thereto in a predetermined position with respect to the limb. The cap, disk, and frame have aligned apertures therein and a connecting member having an enlarged head portion inside the limb, adjacent the disk, includes an elongated stem portion extending through the aligned apertures, with a shoulder facing the limb at its free end. A helical compression spring surrounds the stem and has one end thereof engaged against the frame and the other end thereof engaged against the shoulder to urge the disk and frame towards each other, to hold the rim and cap therebetween, so that the limb is rotatably connected to the frame and torso.

### 3,757,459

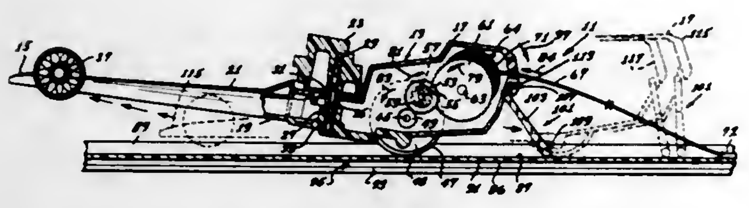
### POWERED DRAGSTER HAVING LATERAL STABILITY COACTING WITH TRACK

**Gordon H. Buck, 3784 Newton St., Torrance, Calif.; Joseph H. Bales, 9922 Garrett Cir., Huntington Beach, Calif., and Brian S. Prodger, 5002 Newton St., Torrance, Calif.**

**Filed Dec. 20, 1971, Ser. No. 209,794**

**Int. Cl. A63h** *17/00, 18/08*

**U.S. Cl. 46—202** **6 Claims**



A powered toy vehicle resembling a high performance dragster racing machine both as to appearance and as to performance utilizes a trailing member which contacts the running surface and registers with the sidewalls of a vehicle track to provide lateral stability to the vehicle when its front wheels rise above the running surface.

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### 3,757,460

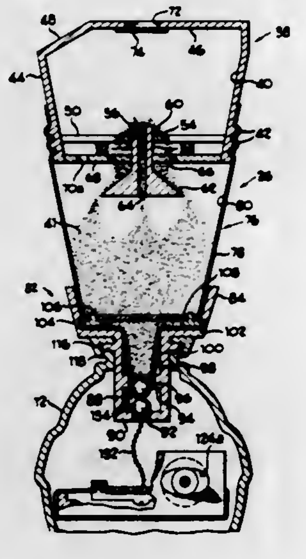
### DOLL HAVING COLLAPSIBLE TORSO PORTION WITH FLUENT MATERIAL THEREIN

**Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.**

**Filed Dec. 30, 1971, Ser. No. 214,075**

**Int. Cl. A63h** *29/12, 3/40*

**U.S. Cl. 46—41** **6 Claims**



A doll which is intended to simulate the motions of going to sleep characterized by a two-part torso, one part of which is made of a yieldable material. The doll also has a head with eyelid structure which is movable to close the doll eyes. Fluent material, preferably in the form of sand, is provided in the interior of the doll and may be fed from the lower portion of the doll to the upper portion of the doll, following which the material will be metered slowly back to the lower portion of the doll during which the doll body will appear to slowly collapse and the eyelid structure will close, simulating the function of going to sleep.

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### 3,757,461

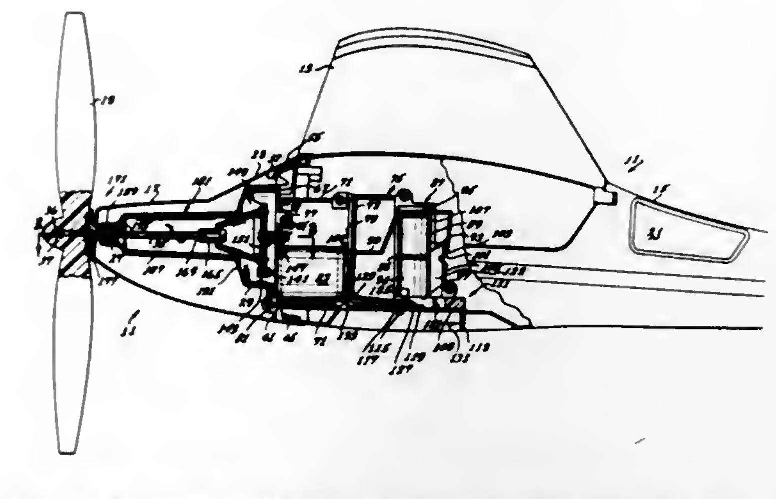
### IMPACT-DAMAGE-RESISTANT, PROPELLER-DRIVEN TOY

**Richard S. Chang, Rolling Hills Estates; William A. Staats, Torrance; Denis V. Bosley, Palos Verdes Peninsula, and Toshio Yamasaki, Gardena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.**

**Filed Aug. 7, 1972, Ser. No. 278,507**

**Int. Cl. A63h** *27/00, 33/26*

**U.S. Cl. 46—243 AV** **20 Claims**



An impact-damage-resistant nose construction for use with propeller driven flying toy aircraft, the nose construction including an energy absorber connected to the fuselage and including a portion which is positioned between the propeller and the power plant with a movable coupling connecting a propeller shaft to the power plant so that the propeller may move axially relative to the power plant when the energy absorber is deformed by an impact.

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### 3,757,462

### SYSTEM FOR SAFELY LOWERING AN ELECTRIC MODEL PLANE

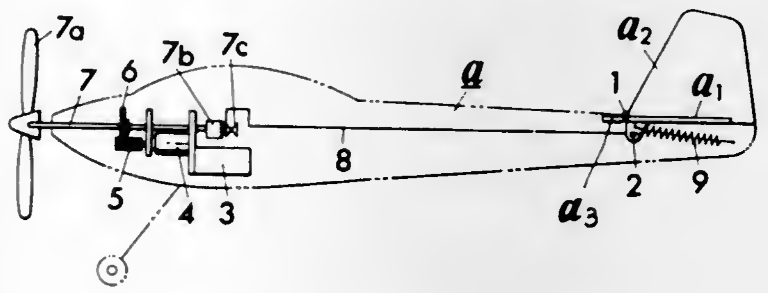
**Kenichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba, Japan**

**Filed July 14, 1972, Ser. No. 271,647**

**Claims priority, application Japan, July 14, 1971, 46/52312**

**Int. Cl. A63h** *33/26, 27/00*

**U.S. Cl. 46—243 AV** **5 Claims**



A system for safely lowering an electric model plane of the free flight type which comprises a connecting means for connecting a propeller shaft with a tail assembly pivotally mounted on the tail portion of the plane and a spring means associated with said tail assembly. While the plane keeps flying, the connecting means is pulled forward by the propeller shaft due to a propelling movement against a spring force of said spring means thereby to hold the tail assembly in the normal horizontal flight position. When the propeller ceases to rotate through an exhaustion of a battery etc., the propeller is pushed back by a wind pressure accompanied by retraction of the connecting means thereby to urge the tail assembly to turn into an upwardly slanting position by the force of the spring means. Thus, the plane can go down in a vertical direction maintaining a substantially horizontal position thereof. Therefore, it is possible to enjoy a flight of the plane in a limited space and to prevent the plane from being lost in an ascending air current or bump.

Further, the present system requires no setting mechanism nor remote control and can perform the operation automatically and securely.

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### 3,757,463

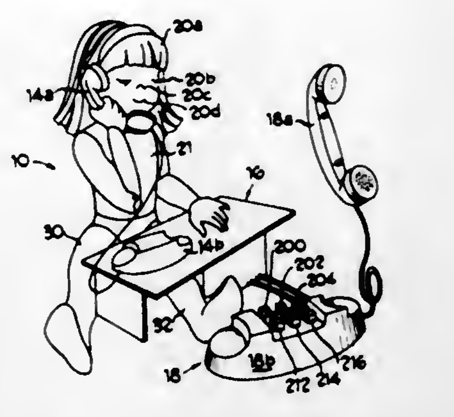
### DOLL WITH MOVABLE PART FOR COACTION WITH MOVABLE PART OF ACCESSORY

**Jeffrey D. Breslow, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignor to Marvin Glass & Associates, Chicago, Ill.**

**Filed Feb. 22, 1972, Ser. No. 228,142**

**Int. Cl. A63h** *13/00, 5/00*

**U.S. Cl. 46—118** **6 Claims**



A doll and associated telephone accessory for the doll and for a participant for simulating response by the doll to a telephone call, characterized by the provision of fluid conduits and piston-like bellows associated with the telephone and doll component connected with the conduits for movement of components of the doll and actuation of the doll telephone responsive to depression of buttons on the participant's telephone.

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### 3,757,464

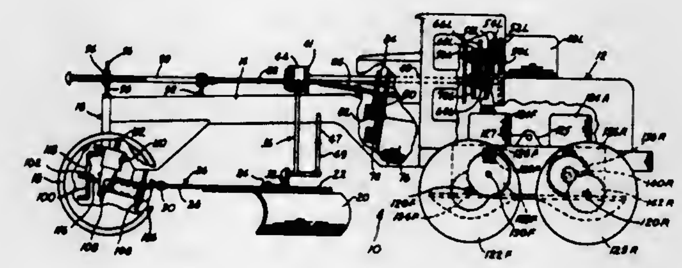
### TOY ROAD GRADER

**Robert A. Gagnon, Star Rt. 2, Box 944, Trail, Oreg.**

**Filed May 30, 1972, Ser. No. 258,113**

**Int. Cl. A63h** *33/26*

**U.S. Cl. 46—244 A** **11 Claims**



A toy electrical road grader is provided which is adapted to be operated by remote control from a portable electrical power supply and switch unit. The toy includes several reversible electric motors, one for turning a pair of front wheels to the right or left in unison for steering purposes, two for operating traction wheels forward simultaneously or backward simultaneously, and two for adjusting the height and the slope of a scraper blade.

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### 3,757,465

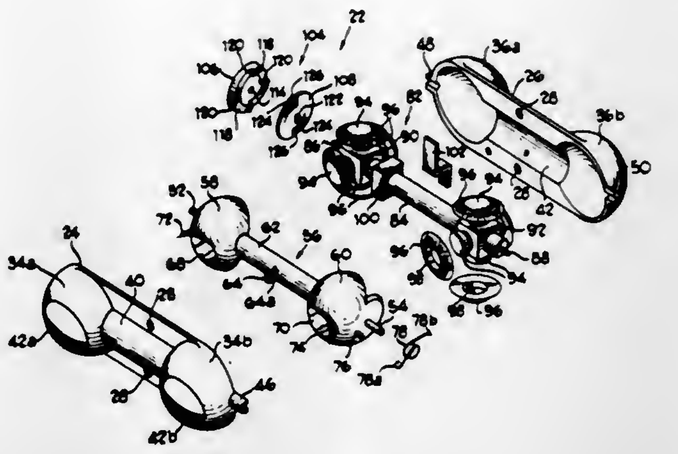
### DOLL

**Gordon A. Barlow, Evanston, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.**

**Filed Dec. 30, 1971, Ser. No. 213,895**

**Int. Cl. A63h** *11/00*

**U.S. Cl. 46—135 R** **8 Claims**



An animated doll having the ability to change eye colors, characterized by the provision of a rotatable indexable spindle in the doll having plural pairs of eye of different colors thereon, and eyelid means associated with the spindle for closing the eye opening during rotation of the spindle to present a new set of eyes to view.

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### 3,757,466

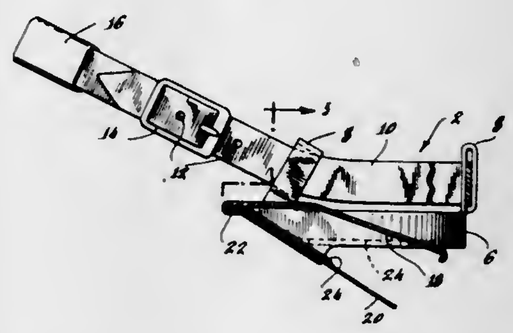
### NOISE MAKER TO BE WORN ON THE FOOT

**George P. Strelakos, 25 Peak St., Stamford, Conn.**

**Filed Mar. 24, 1973, Ser. No. 127,720**

**Int. Cl. A63h** *5/00*

**U.S. Cl. 46—175** **2 Claims**



A noise maker having a heel well with a leaf spring containing housing attached to it. The spring is of the type producing a sound upon being bent and extends beyond the underside of the heel well. The noise maker is worn on the heel portion of the shoe of a child and held secure by an ankle strap. Upon walking a sound is produced as a result of the spring being compressed and released due to contact with the ground.

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### 3,757,467

### MOVING DEVICE FOR DOLLS

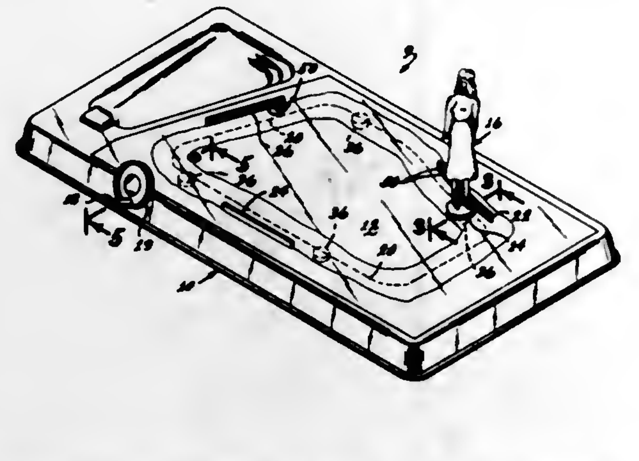
**Emil H. Von Winckelmann, Van Nuys, Calif., assignor to Mattel, Inc., Hawthorne, Calif.**

**Filed Oct. 12, 1971, Ser. No. 188,282**

**Int. Cl. A63h** *33/26*

**U.S. Cl. 46—240** **2 Claims**

A stage which moves magnetically attractable doll carriers along a prescribed path and occasionally rotates them to display all sides of dolls on the carriers. The stage includes a belt with notches extending beneath the path to be followed by a carrier, and magnets loosely held in the notches to be pulled with the belt. The carriers have gear teeth on their periphery and the stage has several racks located along the carrier path to engage and rotate the carriers as they move along the path. Each rack is located a distance from the center of the belt path, which is much less than the radius of the carrier, so that magnetic forces act like a spring urging the carrier sidewardly into firm engagement with the rack.



### 3,757,468
### SEEDLING GROWER AND METHOD OF PLANTING SEEDLING CULTIVATED IN THE SEEDLING GROWER

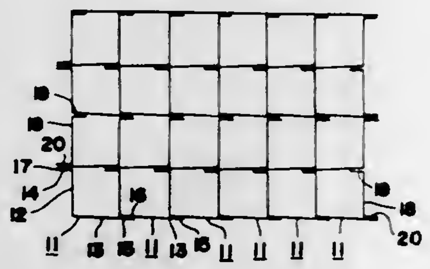
**Atsushi Shirouzu, Sapporo City, Hokkaido, Japan, assignor to Kabushiki Kaisha Circle Tekkogo, Takikawa City, Japan**

**Filed Jan. 25, 1971, Ser. No. 109,360**

**Claims priority, application Japan, Feb. 2, 1970, 45/8578; July 21, 1970, 45/63717; Feb. 24, 1970, 45/15700; July 8, 1970, 45/59193; July 8, 1970, 45/59195**

**Int. Cl. B31d** *5/04;* **A01g** *9/02*

**U.S. Cl. 47—34.13** **2 Claims**



A seedling grower and a method of planting seedling cultivated in the seedling grower are disclosed. Said seedling grower is characterized by comprising a plurality of cells arranged in lattice form and formed by adhesively bonding together wall members made of a material such as paper, being collapsible when not in use and being able to be stretched into a spread lattice form from the collapsed state. Each of said cells is adapted to contain earth and cultivate a seedling therein.

### 3,757,469
### PLANT WATERING AND FERTILIZING DEVICE

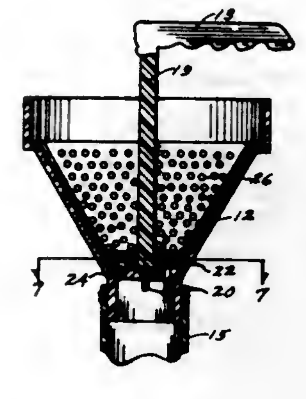
**Charles T. Smith, 401 Alleghaney Ave., Towson, Md., and Irvin B. Ady, Sharon Acres Rd., Forest Hill, Md.**

**Continuation of Ser. No. 14,258, Feb. 24, 1970. This application Mar. 1, 1972, Ser. No. 230,859**

**Int. Cl. A01g** *29/00*

**U.S. Cl. 47—48.5** **1 Claim**

An irrigating and feeding device for plants having a reservoir member for holding a supply of water, a controlled flow seepage device for location adjacent the root system of the plant or plants to be treated and a conduit or fluid conductor connected between the reservoir and seepage device for conducting the fluid in the reservoir to the seepage device. The seepage device may contain material of high moisture retention qualities and a soluble fertilizing agent for feeding the plants.



### 3,757,470
### APPARATUS FOR HYDROPONIC CULTIVATION UTILIZING CATION EXCHANGER

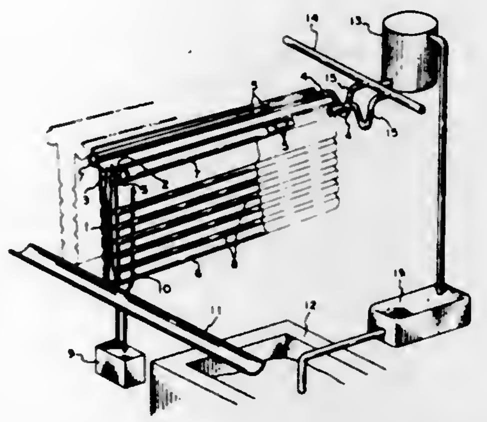
**Takatsugu Shimamoto, 590 Osaka-fu, Ishizu-Kita-machi, 64-banchi, Sakai, and Yasumasa Kato, 386 Nagano-ken, Midorigaoka 1-chome, 25-ban, Ueda, both of Japan**

**Filed Dec. 3, 1971, Ser. No. 204,456**

**Claims priority, application Japan, Aug. 18, 1971, 46/44056**

**Int. Cl. A01g** *31/02*

**U.S. Cl. 47—1.2** **13 Claims**



An apparatus for hydroponic cultivation of plants based on the principle of establishing contact between the root of a plant suspended and held in position and a screen having cation exchangeability, supplying nutrient solution to the screen allowing the nutrient solution to flow down along the screen while ensuring sufficient contact of the root with the nutrient solution and air, allowing the iron component in the nutrient solution to be absorbed by the screen in the form of ions through cation exchange so as to prevent the shortage of iron compound supply for the plant, thereby preventing the decay of the root and ensuring the sufficient supply of iron component to the root.

### 3,757,471
### CURTAIN WALL SAFETY PANEL

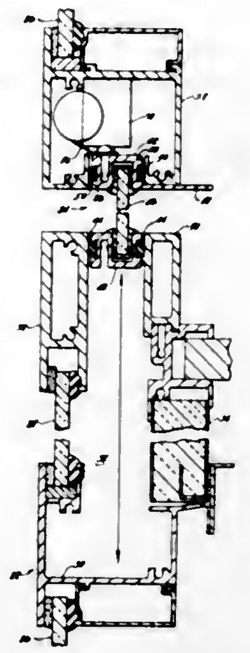
**John S. Dougherty, Miami, Fla., assignor to Allied Products Corporation, Chicago, Ill.**

**Filed Nov. 9, 1971, Ser. No. 197,013**

**Int. Cl. E05f** *15/20*

**U.S. Cl. 49—2** **2 Claims**

A safety curtain wall panel in a building is disclosed which includes a safety sash normally held in a closed position by a latch but which is automatically moved to an open position with respect to the panel when a sensing device detects an undesired atmosphere in the building. By this means smoke or heat detected will cause the sash to open permitting the building to be ventilated.



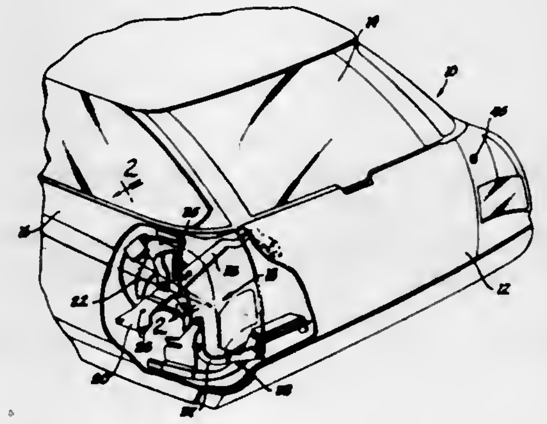
### 3,757,472
### SYSTEM INCLUDING BI-DIRECTIONAL DRIVE MECHANISM WITH REVERSE DRIVE LIMIT

**Deno J. Rogakos, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed July 21, 1971, Ser. No. 164,711**

**Int. Cl. E05f** *15/12*

**U.S. Cl. 49—40** **4 Claims**



A stationwagon vehicle body has a tailgate movable in an arcuate path between a lowered open position and a raised closed position. The tailgate is power actuated through a bi-directional drive mechanism which allows manual closing of the tailgate but prevents its manual opening.

### 3,757,473
### INTEGRAL PREFINISHED WOOD BASE DOOR AND SPLIT JAMB ASSEMBLY

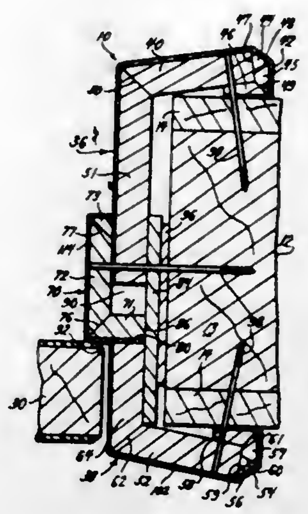
**William L. Mundy, St. Louis, Mo., assignor to Permaneer Corporation, Maryland Heights, Mo.**

**Filed Jan. 3, 1972, Ser. No. 215,172**

**Int. Cl. E06b** *1/10*

**U.S. Cl. 49—380** **7 Claims**

This invention relates to a door and jamb assembly and more particularly to one of a split, tongue and groove, jamb construction having a prefinished wood base. The jamb assembly includes male and female sections joined in a tongue and groove fashion for adaptability to various wall thicknesses, and each having a casing member and jamb member, and the female section having a doorstop, formed integrally for assembly as a one-piece unit. The entire jamb assembly is prefinished in vinyl, and the door is prehung on the female section.



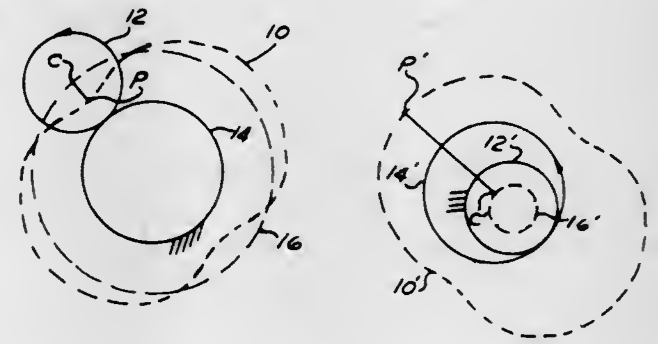
### 3,757,474
### CURVED SURFACE GENERATOR

**Harry Pedersen, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.**

**Filed Sept. 15, 1971, Ser. No. 180,585**

**Int. Cl. B24b** *7/04*

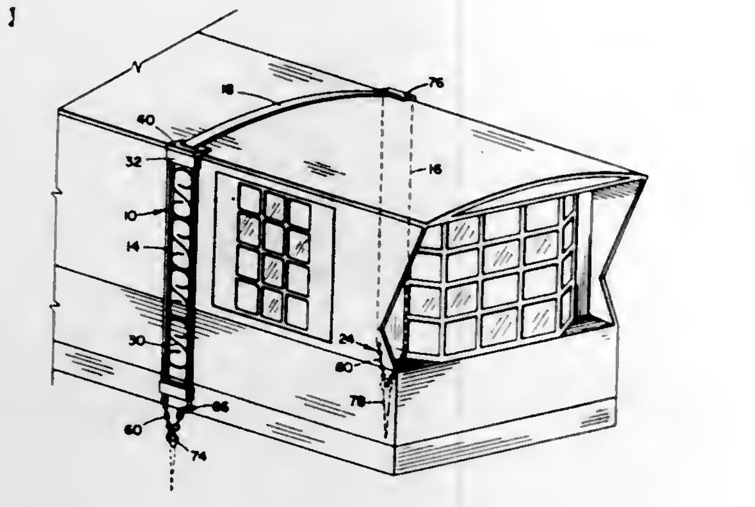
**U.S. Cl. 51—33 W** **27 Claims**



Apparatus for generating complex curved surfaces such as the epitrochoidal bores of rotary combustion engines, e.g., "-Wankel" engines. A workpiece is, in effect, fixed to a first imaginary cylinder which is rolled about the inner circumference of a larger second cylinder. A cylindrical cutting tool is positioned to contact the workpiece along a predetermined machining line which is parallel to the axes of the two imaginary cylinders, the machining line also being fixed relative to the larger of the two cylinders and outside of its outer circumference. The relative movement of the tool and workpiece causes the machining line to generate an eiptrochoidal surface on the workpiece, and this generated surface is maintained theroretically exact by maintaining the axis for the cylindrical cutting surface of the tool in a plane passing through the machining line and through the line of instantaneous tangency between the two imaginary cylinders as the smaller cylinder rolls relatively about the inner circumference of the larger cylinder. This combination of complex relative movements is provided by a relatively simple machine format which includes a drive mechanism utilizing three separately driven rotating gear members. The two members which simulate the rotation of the " imaginary" generating gears are concentrically mounted and do not intermesh or otherwise run relatively around the circumferences of each other, and all three drive gears rotate about axes which remain substantially fixed relative to each other at all times during machine operation.

### 3,757,475
### SAFETY ANCHOR SYSTEM FOR MOBILE HOMES

**Lloyd G. Hackworth, P. O. Box 133, Red Fork Station, Tulsa, Okla.**
**Filed Mar. 3, 1972, Ser. No. 231,609**
**Int. Cl. E04d** *1/34*
**U.S. Cl. 52—23** **5 Claims**



A safety anchor system for mobile homes comprising a pair of vertically disposed elongated ornamental side braces positioned one on each side of the mobile home, a roof strap bracket rigidly secured to the top of each side brace, an elongated strap positioned across the roof of the mobile home and having each end thereof secured to the roof strap brackets and adjustable anchor means secured to the bottom of each side brace for anchoring the system to the ground thereby placing substantially all of the loading on the roof plating strong points of the mobile home.

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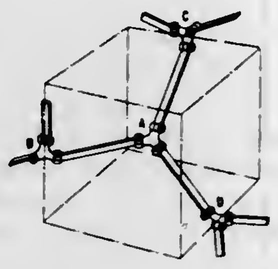
### 3,757,476
### EXPANDABLE SPACE-FRAMES

**Alan H. Schoen, Valencia, Calif., assignor to National Aeronautics and Space Administration, Washington, D.C.**
**Filed Dec. 17, 1970, Ser. No. 99,198**
**Int. Cl. E04h** *12/18*
**U.S. Cl. 52—646** **1 Claim**



Expandable space-frames having essentially infinite periodicity limited only by practical considerations, are described. Each expandable space-frame comprises a plurality of hinge joint assemblies having arms that extend outwardly in predetermined symmetrically related directions from a central or vertex point. The outer ends of the arms form one part of a hinge joint. Each expandable space-frame also comprises a plurality of struts. The outer ends of the struts form the other part of the hinged joint. The struts interconnect the plurality of hinge joint assemblies so that an essentially infinite periodic space-frame is formed. By rotating all of the hinge joints in synchronism, the thusly formed space-frames can be expanded or collapsed. Three-dimensional as well as two-dimensional space-frames of this general nature are described.

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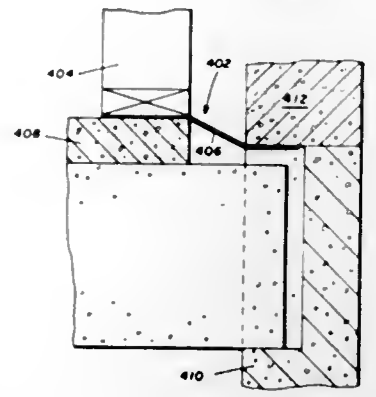
### 3,757,477
### FIRE BARRIER SYSTEM FOR MULTI-FAMILY DWELLINGS

**Raymond L. McCrillis; Walter T. Fuller, both of Littleton; Richard H. Dixon, Lakewood, and John F. Oldani, Littleton, all of Colo., assignors to Marcor Housing Systems, Incorporated, Denver, Colo.**
**Filed Mar. 1, 1972, Ser. No. 230,825**
**Int. Cl. E04b** *1/94*
**U.S. Cl. 52—79** **9 Claims**



In a dwelling construction system, a multi-story, multi-family building comprises prestressed concrete pallets which are supported between load bearing walls to form the floors and the ceilings of individual dwellings. Each dwelling includes a service core comprising an enclosure formed on one of the pallets and complete mechanicals for the dwelling. The service cores are fabricated by mass production techniques and are subsequently transported to the building site for installation. In some instances the service core comprises a complete dwelling, in which case the enclosure of the service core may form the exterior walls and the roof of the dwelling.

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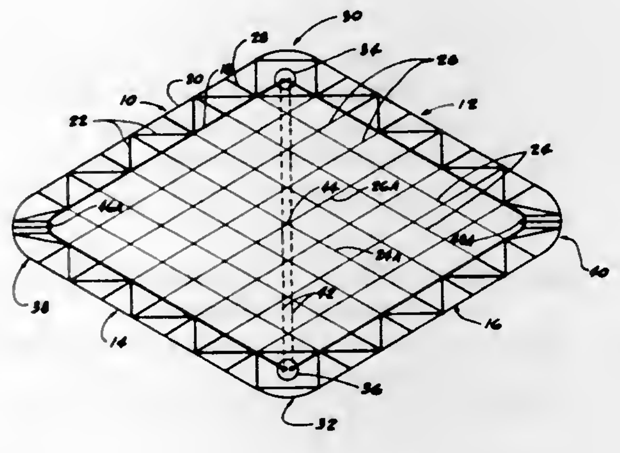
### 3,757,478
### LIGHTWEIGHT HYPERBOLIC PARABOLOID ROOF STRUCTURE

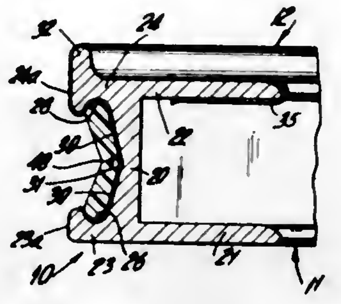
**Eugene F. Pryor, 621 Fenimore Rd., Mamaroneck, N.Y.**
**Filed Apr. 4, 1972, Ser. No. 241,021**
**Int. Cl. E04b** *1/32*
**U.S. Cl. 52—80** **14 Claims**



The roof structure comprises at least one hyperbolic paraboloid formed by structural tension members stretched between bending stress resistant structural boundary members. The boundary members forming the edge members of the roof comprise thin trusses.

### 3,757,479
### MIRROR

**Eugene Martinez, Irvington, N.Y., assignor to Kamar Products, Inc., Irvington-on-Hudson, N.Y.**
**Filed Dec. 27, 1971, Ser. No. 212,066**
**Int. Cl. A47g** *1/00*
**U.S. Cl. 52—222** **10 Claims**



This mirror comprises a frame with an external continuous groove having opposed side undercuts. A flexible strip presses a flexible reflective sheet into the groove to hold said sheet in stretched condition on the frame to provide a smoth mirror surface. The flexible strip is normally of inverted V-shape, with wings that can be pressed down and toward each other to reduce the overall width of the strip to enable the strip to easily enter the groove, and press the reflective sheet into the groove. When the outer edges of the wings of the strip are in the groove, the apex of the strip is pressed down to invert its shape from inverted V-shape to V-shape to tightly press the mirror sheet into the undercuts. The top of the apex of the normal inverted V-shaped strip has a longitudinal slot to limit the inversion of the strip from inverted V-shape to V-shape as the slot closes.

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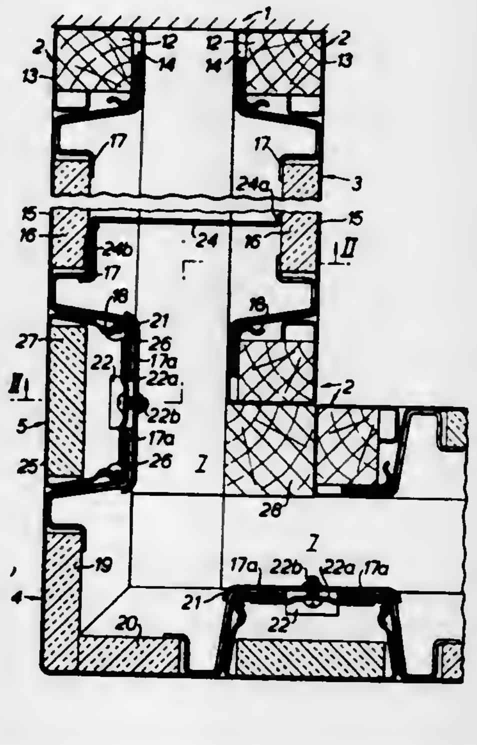
### 3,757,480
### PARTITIONS

**William Charles Trevor Young, Dagenham, England, assignor to Redpath Dorman Long Limited, London, England**
**Filed Nov. 8, 1971, Ser. No. 196,576**
**Claims priority, application Great Britain, Nov. 12, 1970, 53,952/70**
**Int. Cl. E04b** *2/28*
**U.S. Cl. 52—241** **8 Claims**



A building panel for a walling or partitioning system, the panel comprising a metal sheet, a board of thermally and acoustically insulating material adhering to the sheet; and metal strips which additionally support the board, the strips being secured along the edges of the sheet adjacent the ends of the board and overlapping said ends, the edges of the panel defining looped sprung sections for engaging adjacent members of the system.

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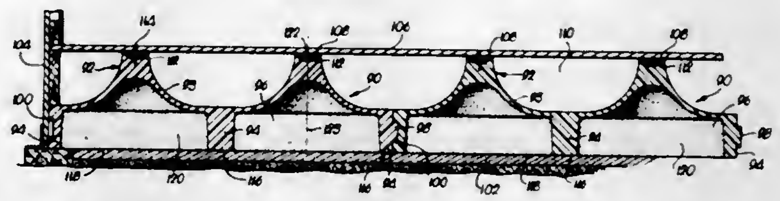
### 3,757,481
### MONOLITHIC STRUCTURAL MEMBER AND SYSTEMS THEREFOR

**Jerald Paul Skinner, 220 W. 33rd St., Topeka, Kans.**
**Continuation-in-part of Ser. No. 861,009, Sept. 25, 1969. This application Sept. 18, 1970, Ser. No. 73,345**
**Int. Cl. E04c** *1/00;* **E04b** *1/16*
**U.S. Cl. 52—265** **11 Claims**



A structural member suitable for diverse applications including foundation and ceiling systems comprises a lightweight, monolithic body particularly strong in compression and preferably composed of a synthetic resin that may be readily shaped by vacuum forming, expansion molding or other suitable techniques. Aligned rows of hollow, tapered support elements project from a uniform lattice and present spaced, load-supporting surfaces. In a foundation or ceiling system, the lattice is the base of the body and the load-supporting surfaces define the mounting centers for the overlying floor or roof. Accordingly, the base of the body presents a grid of surfaces on its underside at the mouths of the cavities formed by the hollow support elements. In a foundation system, the base grid directly overlies a pad of sand, silt or gravel chips to seal each individual cavity and thereby trap air therein to establish air pockets of resistance to load. A single chamber is formed beneath the overlying floor between the upstanding support elements to provide a network of intercommunicating mechanical chases which also serves as a duct for heating and air-conditioning. One embodiment of the member is specially shaped to spread a nonuniformly applied load throughout its body.

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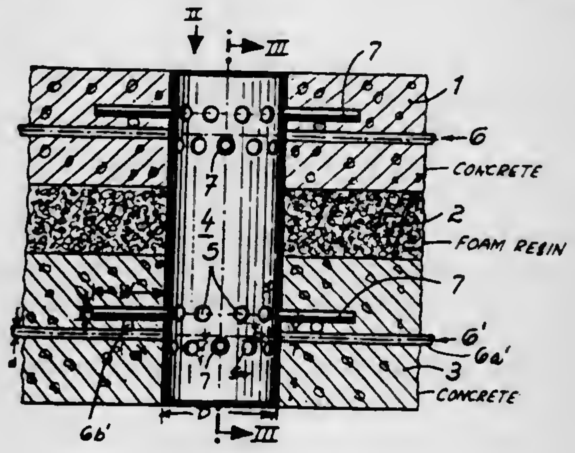
### 3,757,482
### SANDWICH SLAB CONSTRUCTION AND ANCHOR THEREFOR

**Ernst Haeussler, Grashofstr 47, 43 Essen-Bredeney, Germany**
**Filed Feb. 22, 1971, Ser. No. 117,673**
**Claims priority, application Germany, Feb. 24, 1970, P 20 08 402.0**
**Int. Cl. E04b** *2/28*
**U.S. Cl. 52—405** **6 Claims**



A sandwich-slab structure has a front concrete plate and a rear concrete plate which are generally coextensive and sandwich a layer of insulating material, e.g., a sheet or plate of foamed synthetic resin, between them. The layer of insulation is traversed by a plurality of connectors or anchors in the form of tubules or sleeves having opposite ends received in the concrete plates and provided with transverse formations for anchoring the sleeve in each concrete plate, preferably by engagement with a reinforcing mat.

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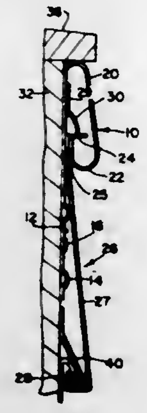
### 3,757,483
### SILL TRIM STRIP AND PANEL SIDING

**Richard L. Torbett, Akron, Ohio, assignor to Alsco Anaconda, Inc., Akron, Ohio**

**Filed Aug. 13, 1971, Ser. No. 171,539**

**Int. Cl. E04d** *1/34*

**U.S. Cl. 52—522** **3 Claims**



A trim strip for use with metal wall siding to retain a piece of siding or other member below a window sill or other projecting member in a building. The trim strip is formed of sheet metal and has a substantially flat body portion and a lip portion which is bent from the upper edge of the body portion in substantially V or U-shaped relation to the body portion and which terminates in an edge portion which is curled upwardly between the body portion and the lip. The trim strip is secured to the wall below the lower surface of the sill or other projecting member. A conventional piece of metallic siding is trimmed to the desired height to fit below the sill and has a series of outwardly projecting lugs or fingers formed along its upper edge to engage the trim strip and float with relation thereto.

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### 3,757,484
### AUTOMATED BRICKLAYING DEVICE

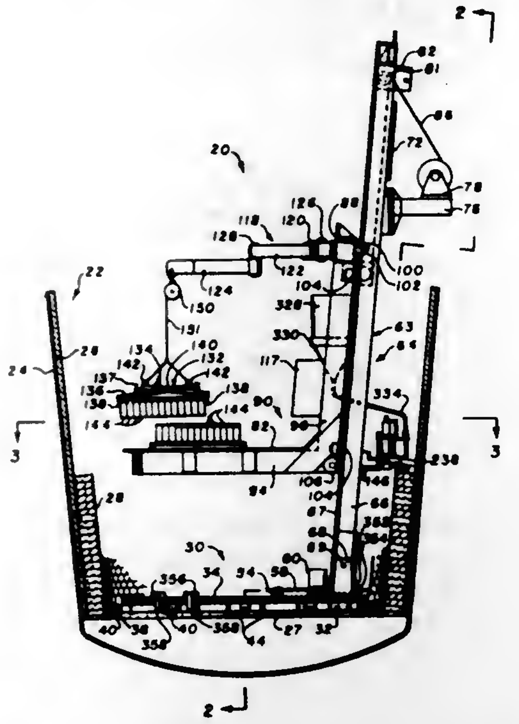
**Ronald Eugene Williamson, Hammondsville; Sidney Clark Porter, Jr., East Liverpool, both of Ohio, and Kenneth Frederic Shotting, Coraopolis, Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.**

**Filed May 15, 1972, Ser. No. 253,546**

**Int. Cl. E04g** *21/22;* **B65g** *37/00*

**U.S. Cl. 52—749** **34 Claims**

An automated bricklaying device for laying out the refractory brick lining of a metal pouring ladle having an upright frame means mounted on a mounting means for traversing the interior circumference of the ladle. A platform means, which has a delivery means mounted thereon for reciprocal lateral movement, is carried by the upright frame means for substantially vertical movement within the ladle. The delivery means continuously delivers a series of refractory bricks in turn to the circumference of the ladle to be set as the lining thereof. A positioning and indexing means properly positions each brick in turn in the lining as it is delivered from the delivery means. The positioning and indexing means additionally serves to index the upright frame means to a proper position for placement of the next succeeding brick in the lining. A vertical guidance means on the delivery means provides vertical elevational control of the platform means relative to the built up lining.



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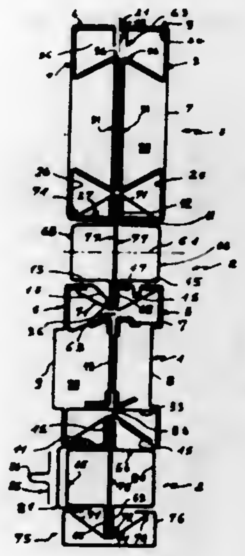
### 3,757,485
### LIGHTWEIGHT COMPOSITE BUILDING CONSTRUCTION

**Rene Vincens, Ancourt Par Neuville Les Dieppe, France, assignor to Societe d'Etude et de Promotion d'Entreprises**

**Filed Oct. 4, 1971, Ser. No. 186,188**

**Int. Cl. A47f** *5/00*

**U.S. Cl. 52—731** **14 Claims**



Lightweight composite structures, mostly of profiled sheet metal, comprising a main joist formed from two outer sheaths interconnected by rigidifying bridges. Each sheath comprises a web with end flanges, the end flanges of one sheath being directed towards the flanges of the other sheath. Each mutually opposed pair of flanges are spaced apart to provide a slot providing access to a housing within the joist and defined by the bridge and the sheaths. The bridges also provide the means whereby the main joist and other similar joists and accessories may be interconnected to produce frameworks, divisions, walls, partitions, ceilings, shelving, articles of furniture and the like, for industrial and private use.

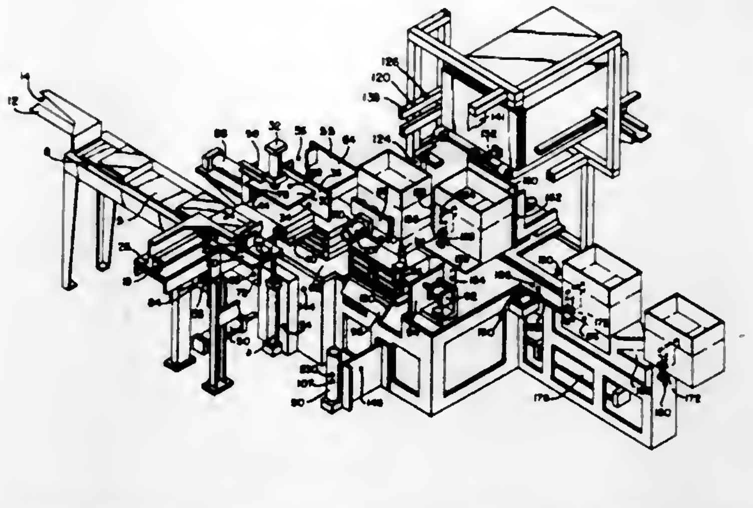
### 3,757,486
### APPARATUS FOR PACKING OBJECTS IN A CARTON

**Ludwig J. Feurston, and Frederick F. Koehn, both of Box 715, Sheboygan, Wis.**

**Filed Feb. 10, 1972, Ser. No. 225,086**

**Int. Cl. B65b** *35/50, 43/30, 43/42*

**U.S. Cl. 53—162** **21 Claims**



Apparatus for packing a plurality of objects, such as, reams of paper, in a carton which, includes; means for moving a single layer of the objects onto a retractable elevator plate; means for lowering the elevator plate the height of one layer of objects: first transfer means for transferring a pre-determined stack of the objects from the elevator plate to another plate, where two sides of the stack of objects are squared by the first transfer means and a backup plate; second transfer means for moving the objects onto a cartoning plate; retractable stop plate means positioned on the opposite side of the second transfer means and together with the second transfer means adapted to square the other two sides of the object; means for removing a folded carton from a carton rack and simultaneously breaking the carton to form it into a generally tubular configuration with top and bottom flaps open; means for lowering the carton over the stack of objects; means for breaking one flap of the carton outwardly and means for spreading the opposite two corners of the bottom flaps, thereby causing the other three flaps to open outwardly and to form a funnel with the first mentioned flap as the carton is lowered over the stack of objects; means for applying glue to two of the bottom flaps; and means for folding the bottom flaps. Means are also provided for adding a flat filler to the bottom of the stack of objects prior to cartoning and means are provided for detecting the height of the stack of objects in the carton, determining the number of flat fillers necessary to fill the carton and filling the carton with the determined number of fillers.

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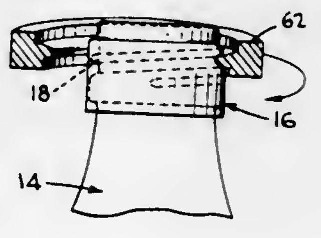
### 3,757,487
### THREAD FORMING CAPPING HEAD

**Frederick E. Fauth, Baltimore, Md., assignor to American Bottlers Equipment Company, Baltimore, Md.**

**Filed Dec. 30, 1971, Ser. No. 214,173**

**Int. Cl. B65b** *7/28;* **B67b** *3/18*

**U.S. Cl. 53—334** **9 Claims**



A novel capping head is disclosed for effecting the thread forming of a generally cylindrical closure cap disposed over male threads about an open neck portion of a container such as a bottle. The capping head comprises an annular or ring-like roller having an internal diameter greater than the external diameter of the closure cap. The annular roller is mounted within a housing and is initially selectively positioned about the closure cap such that the roller encircles the cap. The housing is then tilted from its central axis such that the inner periphery of the annular roller therein contacts the closure cap. Rotation of the housing in a conical eccentric manner effects eccentric movement of the annular roller about and relative to the closure cap such that the inner periphery of the roller deformably engages the outer periphery of the closure cap and forms threads therein.

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### 3,757,488
### GAS REMOVAL METHOD AND COMPOSITION

**Robert R. Austin, Pasadena, and Arthur Leonard Vincent, Monrovia, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.**

**Division of Ser. No. 188,540, Oct. 12, 1971, abandoned, Continuation-in-part of Ser. No. 137,994, April 27, 1971, abandoned. This application Dec. 5, 1972, Ser. No. 312,293**

**Int. Cl. B01d** *53/16*

**U.S. Cl. 55—73** **8 Claims**

A selective method of removing sulfur dioxide from flue gases or the like containing both sulfur dioxide and hydrogen sulfide without removing the hydrogen sulfide by bubbling the flue gas through about a 5–95 percent solution of an organic acid and an alkali metal salt of the said acid. The acid is selected from the group of: citric malic, lactic, succinic, ascorbic and tartaric. The acid is preferably citric and the alkali metal is preferably potassium. The ratio of the weight of the salt to that of the acid may be within the range of about 1*s*: 2*a* to 6*s*: 1*a* as such as is needed to make the solution pH between about 4.0 and 6.0, where *s* and *a* are one mole each of said salt and said acid, respectively. The said ratio preferably is 5*s*:1*a* or the pH is preferably 5.7.

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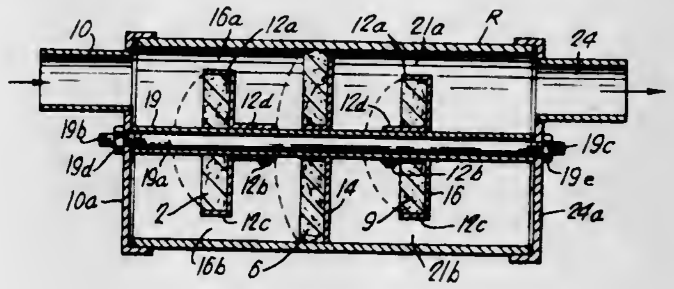
### 3,757,489
### POLLUTION CONTROL

**John Evanshen, Montreal, Quebec, Canada, assignor to Teep Toxic Control Ltd., Montreal, Quebec, Canada**

**Filed Dec. 4, 1970, Ser. No. 95,016**

**Int. Cl. B01d** *53/04*

**U.S. Cl. 55—74** **6 Claims**



Environment pollutants are treated by bringing them into contact with polyvinylpyrrolidone. Preferably, this substance is in a composition with a carrier material, preferably vermiculite. The composition may contain a nitrate of sulphate of copper or silver. Desirably, the composition is in the form of a self-supporting plaque which can form part of a pollution-controlling device. A preferred use of the invention is in treating gases resulting from the combustion of fuel containing pollutants. Devices are disclosed in which exhaust gases go through a passage in which they contact successive baffle members surfaced with pollutant-arresting material.

### 3,757,490
### CHROMATOGRAPHIC ADSORBENTS
**James C. N. Ma, 138 B Boundry St., Kowloon, Hong Kong**
**Filed June 7, 1971, Ser. No. 150,849**
**Int. Cl. B01d** *15/08*
**U.S. Cl. 55—67** **19 Claims**

Improved chromatographic separations are achieved with solid-liquid chromatography by employing particles of a specified particle size distribution, whereby the large to small size particle weight ratio is defined as having 70 to 90 parts of coarse particles, wherein at least 90 weight percent of the particles have diameters within 10 percent of the average diameter, and 10 to 30 parts of fine particles, the average diameter being 10 to 20 percent of the average diameter of the coarse particles, and having at least 50 weight percent of the particles within 50 percent of the average diameter of the fine particles.

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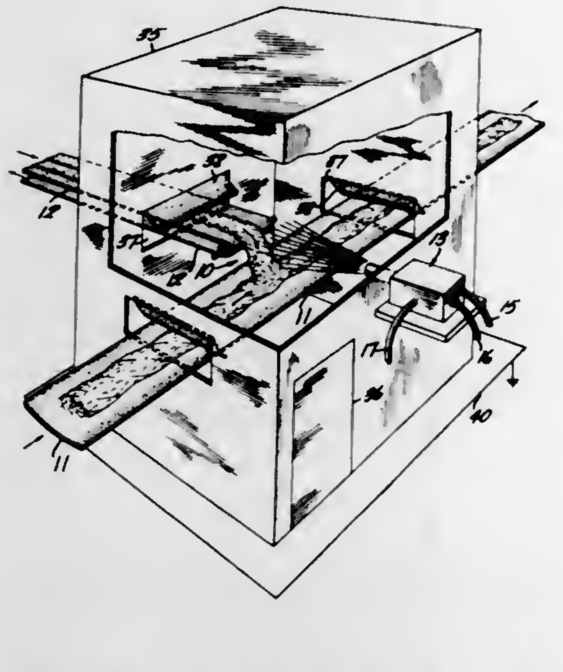
### 3,757,491
### APPARATUS FOR SUPPRESSING AIRBORNE PARTICLES
**Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Inc., Livingston, N.J.**
**Filed Nov. 5, 1970, Ser. No. 87,235**
**Int. Cl. B03c** *3/00*
**U.S. Cl. 55—107** **1 Claim**



Electrogasdynamic apparatus for suppressing airborne particles, dust or the like, by a distribution of charged, minute liquid droplets throughout the zone contaminated by the airborne particles. Passage through a corona discharge region charges the droplets, which then are passed through a channel to the contaminated zone. There, a space charge field is established. As they continue to be forced through the channel, the charged droplets decelerate under the influence of an axial field gradient. An electrogasdynamic exchange occurs, by which the droplets exchange kinetic energy for electrical potential. The droplets disperse, passing among the contaminant particles, attracting, being attracted to, and charging contaminant particles. Now having an associated electrical charge, the particles move to nearby surfaces. An enclosure about the contaminated location reduces the spread of airborne particles and adds additional collection surface area. In mining, dust is suppressed at mine product transfer points, or the dust control apparatus is mounted on a continuous mining machine effectively to isolate the machine's operator station from locations of greatest dust concentration.

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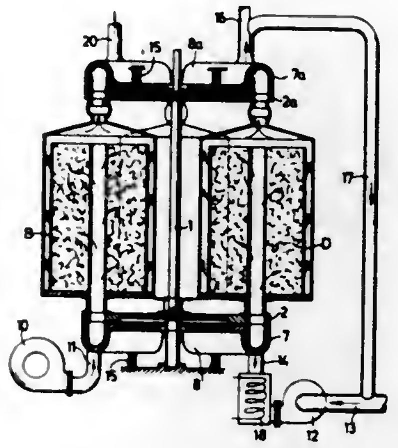
### 3,757,492
### ADSORBER METHOD AND APPARATUS
**Roderich W. Graff, Kollwitzweg 19, Darmstadt-Arheilgen, Germany**
**Filed May 20, 1971, Ser. No. 145,312**
**Claims priority, application Germany, May 23, 1970, P 20 25 205.5**
**Int. Cl. B01d** *53/06*
**U.S. Cl. 55—181** **3 Claims**



An adsorption medium is confined in at least two discrete chambers. A stream of water vapor is passed through one of the chambers for a predetermined time and thereupon through the other of the chambers. A stream of heated gas is passed through the first chamber after flow of the stream of water vapor therethrough has terminated, in order to regenerate the adsorbing medium in the first chamber. During part of the time for which the stream of heated gas is passed through the first chamber, some of the gas issuing from the first chamber is recirculated into the regenerating circuit and/or supplied to the second chamber subsequent to termination of the flow of the stream of water vapor therethrough.

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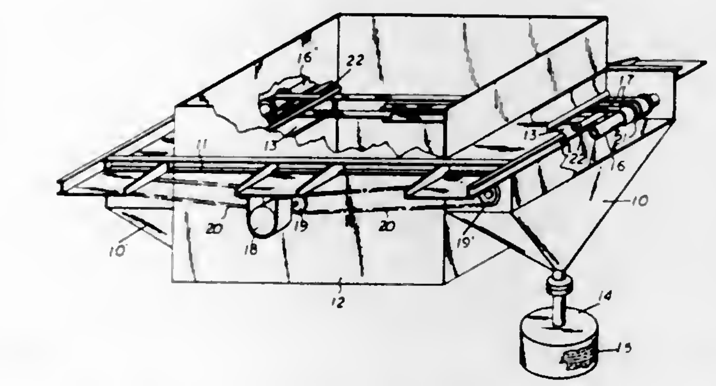
### 3,757,493
### DE-MISTER DEVICE
**Robert A. Johnston, Monroe; Daniel Docherty, Fairfield, and Robert L. Arrington, Trumbull, all of Conn., assignors to Caledon Engineering, Inc., Fairfield, Conn.**
**Filed June 8, 1972, Ser. No. 261,034**
**Int. Cl. B01d** *46/22*
**U.S. Cl. 55—242** **1 Claim**



De-mister device comprising essentially one or more belts of open mesh or open weave material, resistant to the corrosion and temperature conditions of its operating environment, supported by a pair of power-driven pulleys or rollers respectively journaled in a pair of receptacles, supported by a framework to connect, through lateral openings with corresponding openings on opposite sides of a duct or stack, the belts passing through said openings across the duct or stack with their flat sides facing the direction of flow of particle-laden gases passing through the duct or stack; and a manifold or lance within each receptacle, extending parallel to each pulley or roller — e.g., between the two lengths of belt supported by the pulleys — adapted to direct pressurized jets of air, steam or other fluid against the belts to remove particulate material accumulated on the belts and direct it toward the base of the receptacle. Preferably, one length of belt between the pulleys is reversed by passage over a guide bar between the pulley and the adjacent opening to the duct or stack so as to maintain a 180° twist between the roller and the guide bar — such twist being thus maintained at both ends of the length of belt if the belt itself includes no twist, and at one end if the belt itself includes a twist so as to constitute it a Moebius surface. In this way, the same surface of the two lengths of belt between the supporting pulleys or rollers face the oncoming gas stream in the duct or stack.

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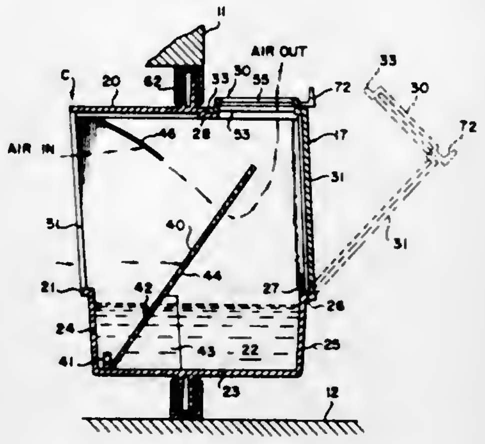
### 3,757,494
### AIR PURIFIER AND HUMIDIFIER
**Henry P. C. Keuls, New York, N.Y., assignor to Luxair Inc., New York, N.Y.**
**Filed May 19, 1972, Ser. No. 254,929**
**Int. Cl. B01d** *45/10*
**U.S. Cl. 55—234** **9 Claims**



A window-mounted air purifier and humidifier is provided, comprising a two-part casing or housing, one of which parts has a wall for inlet of external air and is formed at its lower end with a well portion for containing a supply of water and for holding a partially submerged air scrubber or wick. Desired paths of flow of air entering the device are facilitated by a depending vane directed toward the wick. The other part of the casing serves as a closure and constitutes a portion of the top wall and a portion of the front wall of the casing. Means are formed on the exterior of the casing to enable it to be mounted on the window sill in a position such that not more than about one-half of its depth protrudes into the interior of the room.

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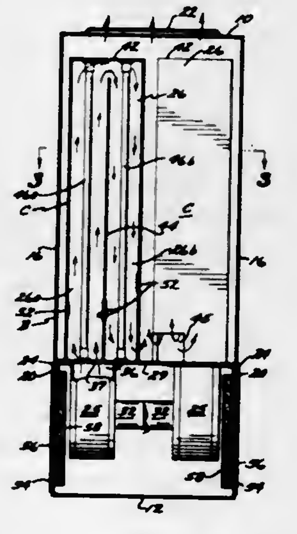
### 3,757,495
### PORTABLE AIR PURIFIER
**William E. Sievers, 5140 Vista Hermosa, Long Beach, Calif.**
**Filed Dec. 30, 1971, Ser. No. 213,957**
**Int. Cl. B01d** *25/02*
**U.S. Cl. 55—279** **9 Claims**



A unit, either stationary or portable, that recycles the air within a room or other interior area to concurrently subject the air to filtering treatment to remove entrained solid particles, gases, oxidants associated with smog and other vapors, as well as to the action of germicidal ultra violet light in order to destroy contagious and infectious, airborne micro-organisms such as bacteria, staphylococcus, hepititus, virus and other harmful, viable organisms that may be present in the air.

Solid particulate matter that is removed from the air by the unit includes dust, pollens, fungi, molds, lint and the like. Reactive gases and vapors that are removed from the air as it flows through the unit include the oxidants associated with smog, unburned hydrocarbons, ozone, tobacco odors, smoke and other materials in vapor form that are harmful to human health, including traces of mercury in vapor form existing in the air.

The unit is particularly adapted for use in any interior area wherein contaminated air effects health, whether human or animal, such as in doctors' and dentists' offices, examining and waiting rooms, hospital areas, including operating rooms, contagious wards, patient burn rooms, nurseries, food preparation quarters, morgues, or any other of the many areas in which disease may be spread by airborne means. The same holds true as to animal hospitals, veterinarians' waiting rooms, operating rooms and the like.

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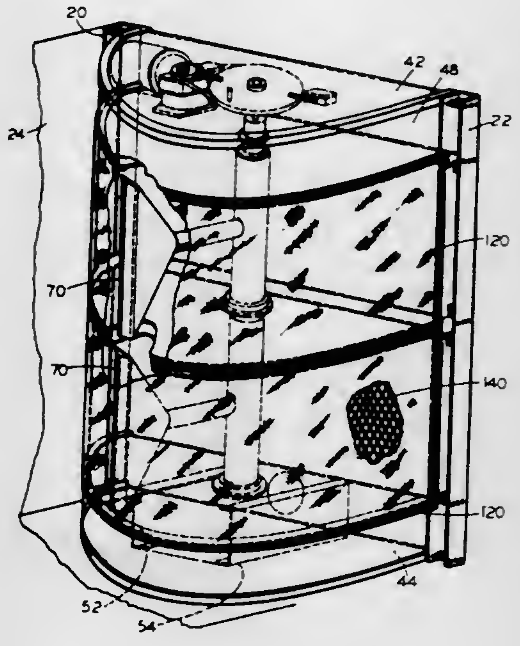
### 3,757,496
### APPARATUS FOR COLLECTING FILTERED AIRBORNE
**Arthur Henry Berg, Central Square, N.Y., assignor to Cambridge Filter Corporation, Syracuse, N.Y.**
**Continuation-in-part of Ser. No. 103,461, Jan. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 791,266, Jan. 15, 1969, abandoned. This application July 13, 1972, Ser. No. 271,381**
**Int. Cl. B01d** *46/02*
**U.S. Cl. 55—293** **16 Claims**



Apparatus for collecting filtered airborne solid particles employing a rectangular section of filtering screen affixed to arcuate and vertical frame members to present a semi-cylindrical surfaced filtering screen arranged in the path of flow of air a suction nozzle having an orifice reciprocally movable about an axis concentric with the axis of the arcuate members and screen, means for applying suction to remove from the concave side of the screen solid particles deposited thereon, means for periodically oscillating the nozzle over substantially the entire arcuate length of the filter screen, optional means to stop the oscillation midway across the screen, and a perforate semi-cylindrical support shell disposed on the outside of the screen.

### 3,757,490
### CHROMATOGRAPHIC ADSORBENTS
**James C. N. Ma, 138 B Boundry St., Kowloon, Hong Kong**
**Filed June 7, 1971, Ser. No. 150,849**
**Int. Cl. B01d** *15/08*
**U.S. Cl. 55—67** **19 Claims**

Improved chromatographic separations are achieved with solid-liquid chromatography by employing particles of a specified particle size distribution, whereby the large to small size particle weight ratio is defined as having 70 to 90 parts of coarse particles, wherein at least 90 weight percent of the particles have diameters within 10 percent of the average diameter, and 10 to 30 parts of fine particles, the average diameter being 10 to 20 percent of the average diameter of the coarse particles, and having at least 50 weight percent of the particles within 50 percent of the average diameter of the fine particles.

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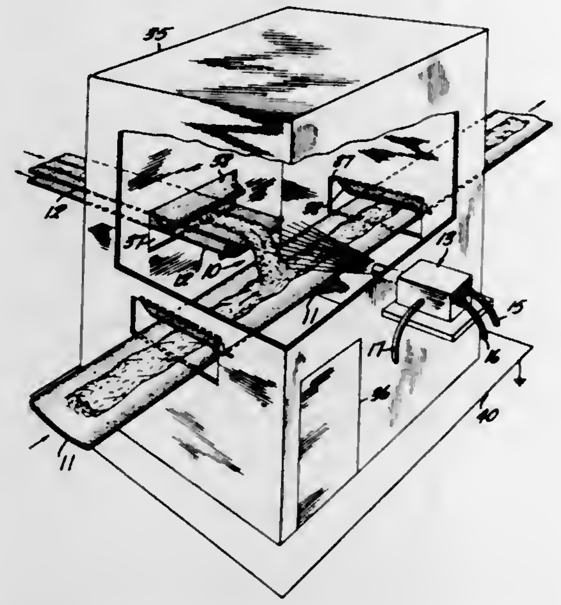
### 3,757,491
### APPARATUS FOR SUPPRESSING AIRBORNE PARTICLES
**Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Inc., Livingston, N.J.**
**Filed Nov. 5, 1970, Ser. No. 87,235**
**Int. Cl. B03c** *3/00*
**U.S. Cl. 55—107** **1 Claim**



Electrogasdynamic apparatus for suppressing airborne particles, dust or the like, by a distribution of charged, minute liquid droplets throughout the zone contaminated by the airborne particles. Passage through a corona discharge region charges the droplets, which then are passed through a channel to the contaminated zone. There, a space charge field is established. As they continue to be forced through the channel, the charged droplets decelerate under the influence of an axial field gradient. An electrogasdynamic exchange occurs, by which the droplets exchange kinetic energy for electrical potential. The droplets disperse, passing among the contaminant particles, attracting, being attracted to, and charging contaminant particles. Now having an associated electrical charge, the particles move to nearby surfaces. An enclosure about the contaminated location reduces the spread of airborne particles and adds additional collection surface area. In mining, dust is suppressed at mine product transfer points, or the dust control apparatus is mounted on a continuous mining machine effectively to isolate the machine's operator station from locations of greatest dust concentration.

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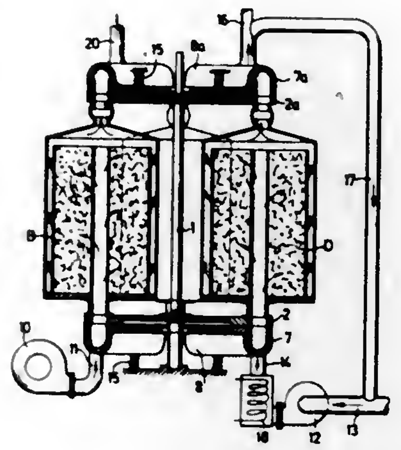
### 3,757,492
### ADSORBER METHOD AND APPARATUS
**Roderich W. Graff, Kollwitzweg 19, Darmstadt-Arheilgen, Germany**
**Filed May 20, 1971, Ser. No. 145,312**
**Claims priority, application Germany, May 23, 1970, P 20 25 205.5**
**Int. Cl. B01d** *53/06*
**U.S. Cl. 55—181** **3 Claims**



An adsorption medium is confined in at least two discrete chambers. A stream of water vapor is passed through one of the chambers for a predetermined time and thereupon through the other of the chambers. A stream of heated gas is passed through the first chamber after flow of the stream of water vapor therethrough has terminated, in order to regenerate the adsorbing medium in the first chamber. During part of the time for which the stream of heated gas is passed through the first chamber, some of the gas issuing from the first chamber is recirculated into the regenerating circuit and/or supplied to the second chamber subsequent to termination of the flow of the stream of water vapor therethrough.

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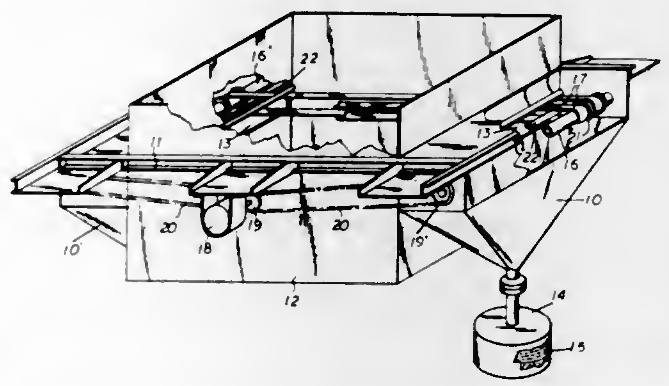
### 3,757,493
### DE-MISTER DEVICE
**Robert A. Johnston, Monroe; Daniel Docherty, Fairfield, and Robert L. Arrington, Trumbull, all of Conn., assignors to Caledon Engineering, Inc., Fairfield, Conn.**
**Filed June 8, 1972, Ser. No. 261,034**
**Int. Cl. B01d** *46/22*
**U.S. Cl. 55—242** **1 Claim**



De-mister device comprising essentially one or more belts of open mesh or open weave material, resistant to the corrosion and temperature conditions of its operating environment, supported by a pair of power-driven pulleys or rollers respectively journaled in a pair of receptacles, supported by a framework to connect, through lateral openings with corresponding openings on opposite sides of a duct or stack, the belts passing through said openings across the duct or stack with their flat sides facing the direction of flow of particle-laden gases passing through the duct or stack; and a manifold or lance within each receptacle, extending parallel to each pulley or roller — e.g., between the two lengths of belt supported by the pulleys — adapted to direct pressurized jets of air, steam or other fluid against the belts to remove particulate material accumulated on the belts and direct it toward the base of the receptacle. Preferably, one length of belt between the pulleys is reversed by passage over a guide bar between the pulley and the adjacent opening to the duct or stack so as to maintain a 180° twist between the roller and the guide bar — such twist being thus maintained at both ends of the length of belt if the belt itself includes no twist, and at one end if the belt itself includes a twist so as to constitute it a Moebius surface. In this way, the same surface of the two lengths of belt between the supporting pulleys or rollers face the oncoming gas stream in the duct or stack.

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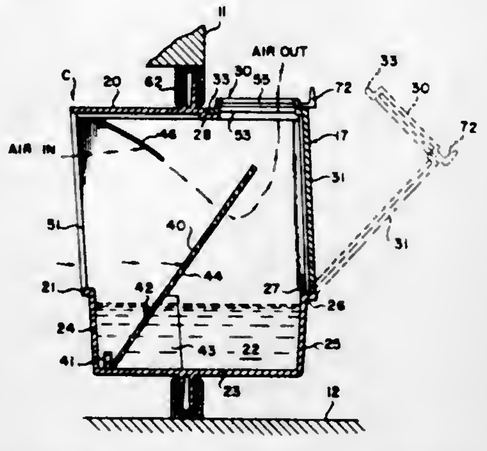
### 3,757,494
### AIR PURIFIER AND HUMIDIFIER
**Henry P. C. Keuls, New York, N.Y., assignor to Luxair Inc., New York, N.Y.**
**Filed May 19, 1972, Ser. No. 254,929**
**Int. Cl. B01d** *45/10*
**U.S. Cl. 55—234** **9 Claims**



A window-mounted air purifier and humidifier is provided, comprising a two-part casing or housing, one of which parts has a wall for inlet of external air and is formed at its lower end with a well portion for containing a supply of water and for holding a partially submerged air scrubber or wick. Desired paths of flow of air entering the device are facilitated by a depending vane directed toward the wick. The other part of the casing serves as a closure and constitutes a portion of the top wall and a portion of the front wall of the casing. Means are formed on the exterior of the casing to enable it to be mounted on the window sill in a position such that not more than about one-half of its depth protrudes into the interior of the room.

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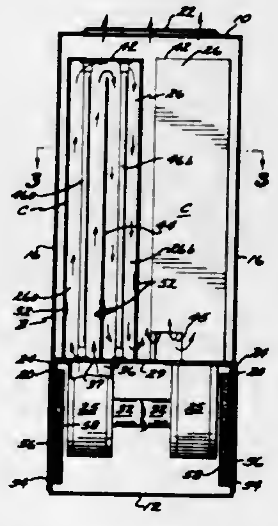
### 3,757,495
### PORTABLE AIR PURIFIER
**William E. Sievers, 5140 Vista Hermosa, Long Beach, Calif.**
**Filed Dec. 30, 1971, Ser. No. 213,957**
**Int. Cl. B01d** *25/02*
**U.S. Cl. 55—279** **9 Claims**



A unit, either stationary or portable, that recycles the air within a room or other interior area to concurrently subject the air to filtering treatment to remove entrained solid particles, gases, oxidants associated with smog and other vapors, as well as to the action of germicidal ultra violet light in order to destroy contagious and infectious, airborne micro-organisms such as bacteria, staphylococcus, hepititus, virus and other harmful, viable organisms that may be present in the air.

Solid particulate matter that is removed from the air by the unit includes dust, pollens, fungi, molds, lint and the like. Reactive gases and vapors that are removed from the air as it flows through the unit include the oxidants associated with smog, unburned hydrocarbons, ozone, tobacco odors, smoke and other materials in vapor form that are harmful to human health, including traces of mercury in vapor form existing in the air.

The unit is particularly adapted for use in any interior area wherein contaminated air effects health, whether human or animal, such as in doctors' and dentists' offices, examining and waiting rooms, hospital areas, including operating rooms, contagious wards, patient burn rooms, nurseries, food preparation quarters, morgues, or any other of the many areas in which disease may be spread by airborne means. The same holds true as to animal hospitals, veterinarians' waiting rooms, operating rooms and the like.

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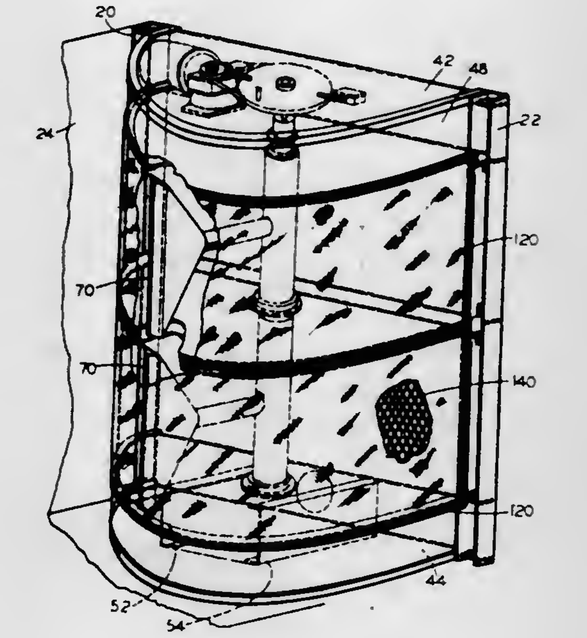
### 3,757,496
### APPARATUS FOR COLLECTING FILTERED AIRBORNE
**Arthur Henry Berg, Central Square, N.Y., assignor to Cambridge Filter Corporation, Syracuse, N.Y.**
**Continuation-in-part of Ser. No. 103,461, Jan. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 791,266, Jan. 15, 1969, abandoned. This application July 13, 1972, Ser. No. 271,381**
**Int. Cl. B01d** *46/02*
**U.S. Cl. 55—293** **16 Claims**

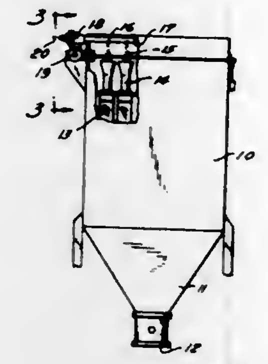


Apparatus for collecting filtered airborne solid particles employing a rectangular section of filtering screen affixed to arcuate and vertical frame members to present a semi-cylindrical surfaced filtering screen arranged in the path of flow of air a suction nozzle having an orifice reciprocally movable about an axis concentric with the axis of the arcuate members and screen, means for applying suction to remove from the concave side of the screen solid particles deposited thereon, means for periodically oscillating the nozzle over substantially the entire arcuate length of the filter screen, optional means to stop the oscillation midway across the screen, and a perforate semi-cylindrical support shell disposed on the outside of the screen.

### 3,757,497
### CONTROL VALVE FOR PULSE JET TYPE FILTER APPARATUS

**Frank M. Ray, Chicago, Ill., assignor to The Slick Corporation, New York, N.Y.**

**Filed Mar. 16, 1972, Ser. No. 235,374**
**Int. Cl. B01d** *46/04*
**U.S. Cl. 55—302** **6 Claims**



A control valve for pulse jet type filter apparatus has a header supplying compressed air to the control valve through a port formed in the header. A blowpipe is disposed over filter bags of the filter apparatus and has aligned nozzles for periodically directing pulse air into the filter bags for removing accumulated dust. The control valve is positioned between the header and the blowpipe for periodically allowing a pulse of air to pass from the header into the blowpipe. The control valve has an internal header passage communicating with the header and an internal blowpipe passage communicating with the blowpipe. A diaphragm is disposed in a passage between the header and blowpipe passages allowing pulse air to flow periodically from the header to the blowpipe. A manually operated isolator valve is advantageously provided and has a disk movable into a position to stop the flow of air from the header into the internal header passage of the control valve. The disk is mounted on one end of a stem slidably mounted within the valve body and the other end of the stem extends from the valve body for manual operation of the isolator valve.

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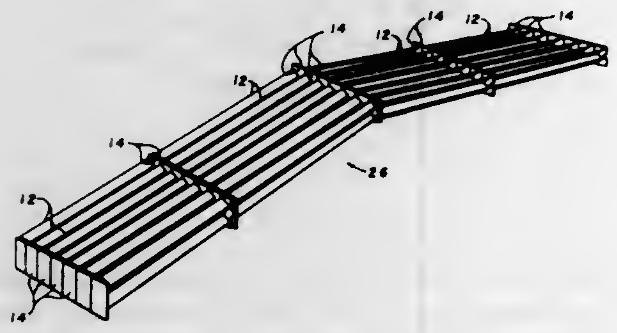
### 3,757,498
### DEMISTER VANE ASSEMBLY

**William B. Hurlbut, Sr., East Hartford; Preston D. Liebig, West Hartford, and Peter G. Maurin, Newington, all of Conn., assignors to Combustion Engineering Inc., Windsor, Conn.**

**Filed Aug. 5, 1971, Ser. No. 169,393**
**Int. Cl. B01d** *45/00*
**U.S. Cl. 55—440** **6 Claims**



A demister vane assembly particularly resistant to corrosion and capable of interchangeable organization into a multiplicity of area and geometrical configuration arrangements. The demister vane assembly is formed in a standardized shape of a reinforced plastic capable of withstanding the thermal and chemical environment of a wet scrubber system. The standardized shape is a flow diverting surface preferably formed as a Z-shaped vane having end platforms angled approximately 60° to the longitudinal axis of the vane, the platforms having lap joint shoulders and self-fixturing segments. By means of the standardized shape, the vanes may be arranged, both end to end as well as side by side, to yield any desired demister area and geometrical configuration.

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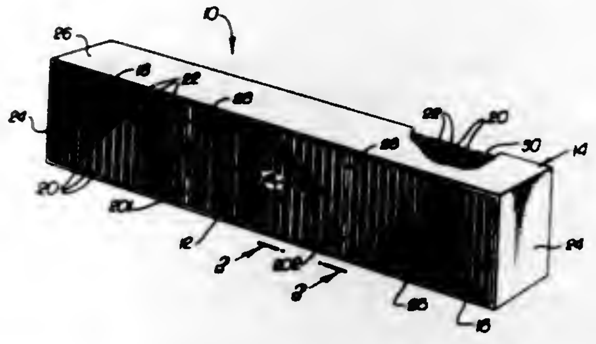
### 3,757,499
### STIFFENED ABSOLUTE FILTER PACK

**Robert D. Scott, West Covina, Calif., assignor to Hepa Corporation, South El Monte, Calif.**

**Filed Nov. 4, 1971, Ser. No. 195,732**
**Int. Cl. B01d** *27/08*
**U.S. Cl. 55—500** **6 Claims**



An absolute filter pack in which a thin wall plastic frame is used with a filter element. Additional support is provided intermediate the filter element ends by support members inserted in place of the usual spacers, whereby the fiberglass web filter is continuous across the frame opening and relatively more filter area is made available and seal points are reduced in comparison with subdivided filter packs.

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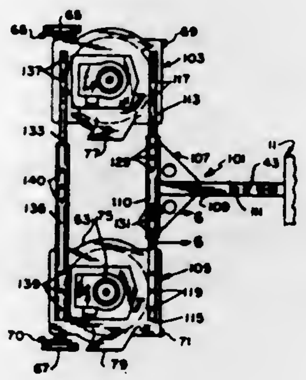
### 3,757,500
### MULTIPLE UNIT LAWNMOWER CONSTRUCTION

**Marnie C. Averitt, 107 Westdale Court, Timonium, Md.**

**Filed Oct. 12, 1971, Ser. No. 188,267**
**Int. Cl. A01d** *75/30*
**U.S. Cl. 56—6** **5 Claims**



A powered lawnmower comprising a powered tractor having a trailing mower assembly hitched thereto. The trailing assembly includes a frame detachably hitched to the tractor and having a plurality of rotary mower units secured thereto. In one embodiment, these mower units are positioned so that their cutting swaths overlap slightly with the cutting swath of a rotary mower unit supported upon the tractor. In another embodiment, the trailing assembly includes a plurality of rotary mower units which define a continuous cutting swath. In both embodiments, the mower units on the trailing assembly are powered independently of the tractor. In addition, the trailing assembly is vertically adjustable for different cutting heights, and the trailing mower units may be laterally adjustable for different cutting widths.

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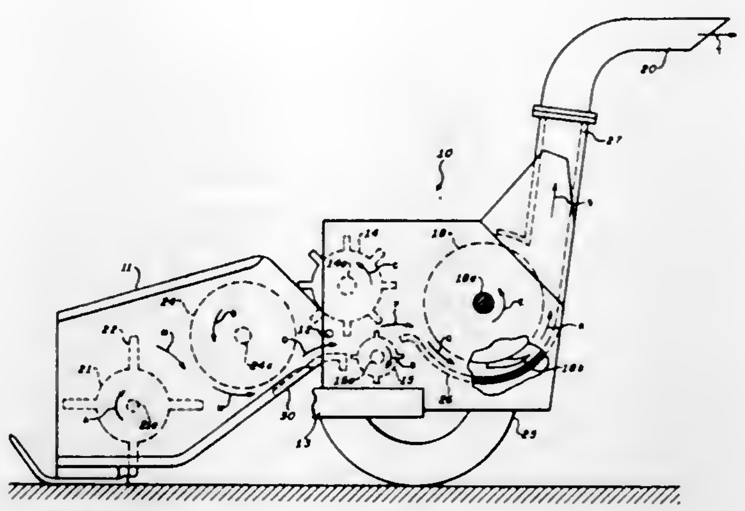
### 3,757,501
### STATIC MAGNETIC FIELD METAL DETECTOR

**Clarence Leonard Bennett, Jr., Groton; Joseph D. DeLorenzo, Sudbury, and Hubert R. Durling, Jr., Lancaster, all of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.**

**Filed Oct. 29, 1971, Ser. No. 193,846**
**Int. Cl. A01d** *69/10*
**U.S. Cl. 56—10.2** **12 Claims**



A static magnetic field detector senses the passage of ferrous or magnetic objects, employing a balanced pick up coil configuration providing substantial self-cancellation of spurious background signals. The pick up coils are disposed in a uniform static magnetic field and are cooperatively effective to sense the presence of such objects with respect to an extended passage way by reacting to the field distortion caused by the object to produce an alarm or control signal. Further reduction of the effects of spurious background signals is afforded by novel means for processing the signals generated within the detector coils providing filtering and threshold functions. An adaptive threshold control circuit provides automatic adjustment of the threshold level of object detection.

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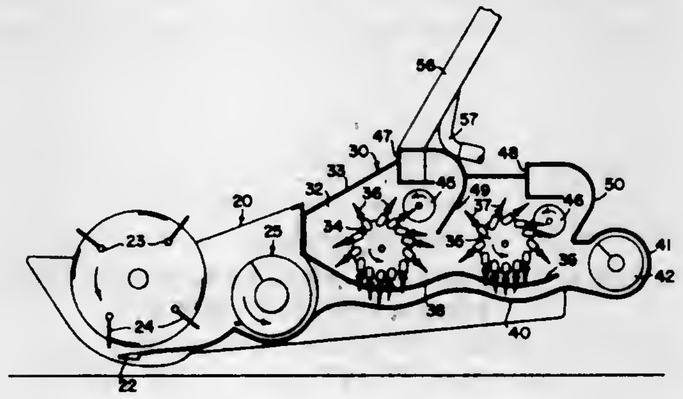
### 3,757,502
### COTTON HARVESTER

**Arthur Lowell Hubbard, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Mar. 11, 1971, Ser. No. 123,249**
**Int. Cl. A01d** *45/18*
**U.S. Cl. 56—28** **14 Claims**



A cotton harvester having a forward cotton harvesting mechanism that feeds cotton to a central fore-and-aft extending housing in which there is provided a rotatable horizontal transverse drum that has radially extending spindles that contact and retain cotton bolls on the plants as they pass through the housing.

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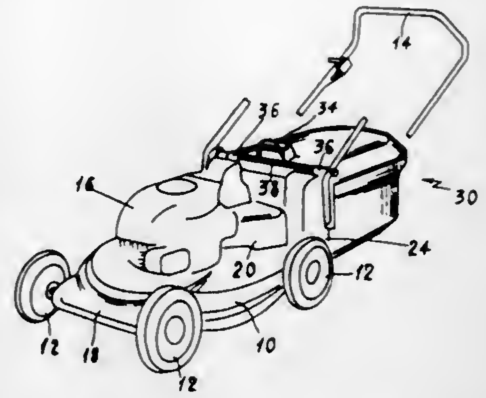
### 3,757,503
### LAWNMOWER AND GRASS COLLECTOR

**Theodore Soldavini, 2 Via Trento Cassano d. adda, Milano, Italy**

**Filed May 4, 1972, Ser. No. 250,271**
**Claims priority, application Italy, May 10, 1971, 24312 A/71**
**Int. Cl. A01d** *35/22*
**U.S. Cl. 56—202** **10 Claims**



The specification describes a lawnmower having a motor driven grass cutting and centrifuging rotor operating into an open-bottom casing having an outlet passage for blowing cut grass and mulch carrying air into a collecting box. The collector box has an open face greater than the outlet of the passage and amply circumscribing the same. Screen means are located in the area of said open face obout said outlet for holding back the grass from the air flow reversed in said collector and passing through said screen means, and downwardly deviated and open passages are provided downstream of said screen means in said area for deviating and exhausting on the ground the air and mulch escaping from the collector.

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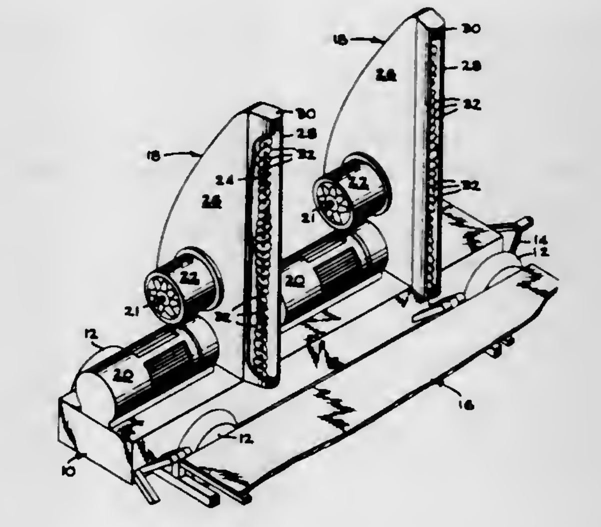
### 3,757,504
### HARVESTING APPARATUS

**Glen E. Rauth, 1918 Stonehurst Rd., Winter Park, Fla.**

**Division of Ser. No. 803,770, March 3, 1969, Pat. No. 3,568,417. This application Sept. 21, 1970, Ser. No. 73,920**
**Int. Cl. A01g** *19/08*
**U.S. Cl. 56—328 R** **5 Claims**



A fruit harvesting apparatus is provided to direct continuously swerving air at fruit trees in converging currents from two air discharge openings. The air is discharged so that as it gets further away from its source and loses energy, it is superimposed on other swerving air to re-establish the failing energy of the individual air currents and increase the harvesting effectiveness of the apparatus. The swerving air effect is accomplished through the use of wobble air vanes mounted in the air discharge openings of the apparatus, and they serve to deflect the discharged air in a swerving manner, to cause wafting of the limbs in a generally elliptical pattern resulting in the abscission of fruit from the tree.

### 3,757,505

### APPARATUS FOR CHANGING THE RELATIVE POSITION OF THE CONDUCTORS DURING THE MANUFACTURE OF A TELECOMMUNICATION CABLE

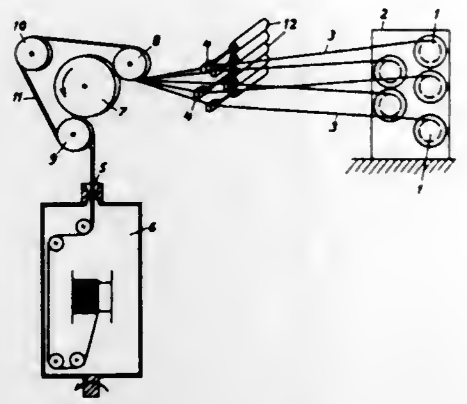
**Torsten Otto Neovius, Saltsjobaden, and Karl-Erik Svensson, Hagersten, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden**

**Filed Feb. 10, 1971, Ser. No. 114,292**

**Claims priority, application Sweden, Feb. 25, 1970, 2416/70**

**Int. Cl. H01b** *11/04*

**U.S. Cl. 57—34 R** **2 Claims**



There is disclosed a device for varying the relative locations of stranded wires in a cable during the manufacture of such cable comprises a plurality of wire guides, one for each wire, for guiding the wires as the same are fed into a wire twisting machine. The wire guides are independently movable between two limit positions extending across the generally parallel travel path of the wires so that each of the wires can be guided in any selected position relative to the position of the other wires in the cable.

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### 3,757,506

### APPARATUS FOR THE SPINNING OF STAPLE FIBERS IN A RINGLESS MANNER

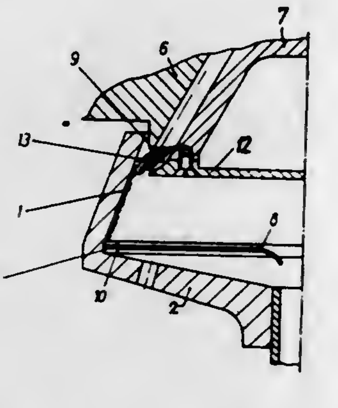
**Gerhard Kutscher, and Rolf Wehling, both of Bremen, Germany, assignors to Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Feb. 8, 1972, Ser. No. 224,545**

**Claims priority, application Germany, Mar. 10, 1971, P 21 11 402.3**

**Int. Cl. D01h** *1/12*

**U.S. Cl. 57—58.95** **8 Claims**



An apparatus for use in connection with the spinning of staple fibers in a ringless manner, in which the fibers withdrawn from a sliver by an opening-up roller are by means of a centrifugal disc at the bottom of said roller conveyed and directed upon an inlet wall portion of a spinning turbine.

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### 3,757,507

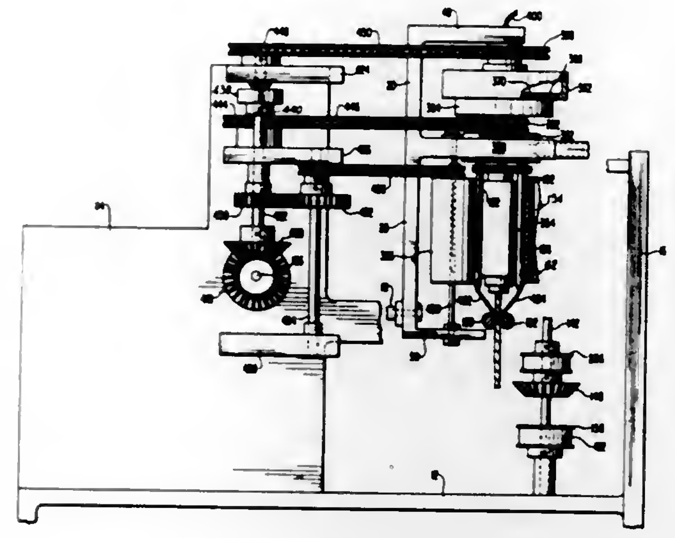
### OPEN END ROVING, SPINNING, AND SPINNING AND TWISTING METHODS

**Daniel W. Maxham, Rt. 3, Austell, Ga.**

**Division of Ser. No. 883,226, Dec. 8, 1969, Pat. No. 3,555,802, which is a continuation-in-part of Ser. No. 788,216, Dec. 31, 1968, Pat. No. 3,488,935. This application Oct. 7, 1970, Ser. No. 78,958**

**Int. Cl. D02g** *3/00*

**U.S. Cl. 57—156** **3 Claims**



An open end roving, spinning, and spinning and twisting machine in which a twist belt or twist drum or twist drums cooperates with an elongate twist needle along the length of which drafted lengths of fibrous material are delivered sequentially so that the fibrous material will be loaded and wound upon the twist needle and then passed to delivery rolls for removing the fibrous material as a continuous length from the twist needle while imparting twist thereto. The twist needle is sandwiched between the rotating twist drums or the twist belt and a rotating twist drum having individual sectors which longitudinally reciprocate and help in feeding the fibrous material from the twist needle. The twist needle may be hollow so as to receive and pass a roving, yarn or the like which is integrated into the final product. A single twist needle or plurality of twist needles may be used, mounted in a circular pattern around the circumference of the twist drum and sequentially indexed to be engaged with the twist belt or twist drum or drums while a drafted length of fibrous material is fed thereto. In this fashion a multi-ply yarn may be obtained. The central twist drum contains a hollow central shaft which permits the feeding of a yarn or other materials through the center of the central drum thereby permitting the building of a large multi-ply yarn.

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### 3,757,508

### CLOCK WITH SPACED-APART FREE-FORM TIME-INDICATING ELEMENTS

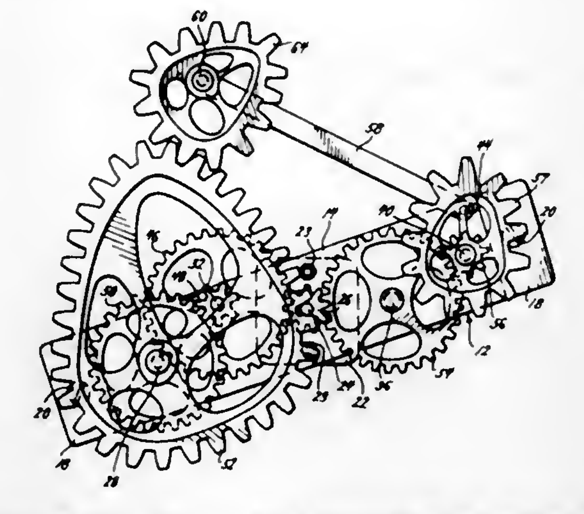
**Norbert G. Marklin, 1045 Baden, St. Louis, Mo.**

**Filed Mar. 27, 1972, Ser. No. 238,329**

**Int. Cl. G04b** *45/02, 19/02*

**U.S. Cl. 58—2** **12 Claims**

The minute-indicating element and the hour-indicating element of a clock are irregularly shaped and are distinctively different from each other. The centers of area of those time-indicating elements are mounted eccentrically on fixed pivots; and those fixed pivots are spaced apart a distance greater than the sum of the radii of the most-eccentric portions of those time-indicating elements. Those most-eccentric portions approach, but cannot overlap, each other's path; but those most-eccentric portions recurrently overlap and expose portions of the gears of the clock. The hour-indicating element recurrently raises and lowers an arm, and thereby recurrently changes the aesthetic appearance of the clock.



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### 3,757,509

### CHRONOGRAPH TIMEPIECE USING DIGITAL DISPLAY

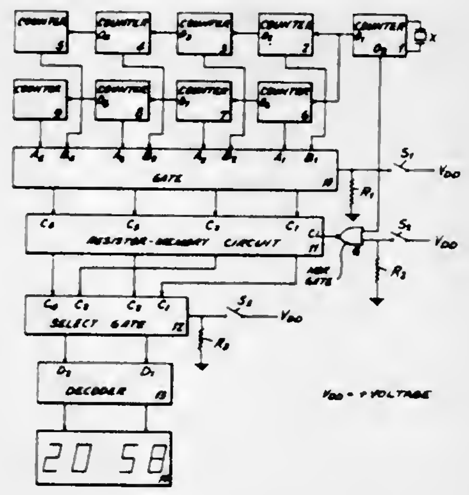
**Kinji Fujita, Suwa-gun, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

**Filed Mar. 7, 1972, Ser. No. 232,468**

**Claims priority, application Japan, Mar. 8, 1971, 46/11984**

**Int. Cl. G04c** *3/00;* **G04f** *3/06*

**U.S. Cl. 58—23 R** **2 Claims**



A chronograph timepiece using digital display in an electronic chronograph watch in which digital display is effected by a liquid or solid state display device, wherein the time of day is measured by a watch mechanism and a time period is measured by a chronograph mechanism and these are memorized in a resistor device. The memorized time and time period are selectively displayed in the display device.

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### 3,757,510

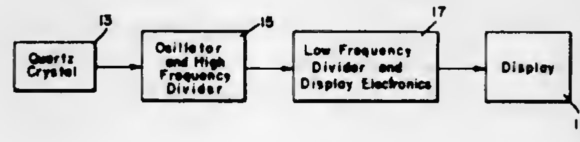
### HIGH FREQUENCY ELECTRONIC WATCH WITH LOW POWER DISSIPATION

**Hans G. Dill, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed July 3, 1972, Ser. No. 268,291**

**Int. Cl. G04c** *3/00;* **G04b** *19/30*

**U.S. Cl. 58—23 R** **3 Claims**


13
Quartz Crystal
15
Oscillator and High Frequency Divider
17
Low Frequency Divider and Display Electronics
Display
19

An extremely thin and small electronic watch made possible by a crystal oscillating in the megahertz range and coupled to the display of the watch through two frequency dividers having basically different characteristics.

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### 3,757,511

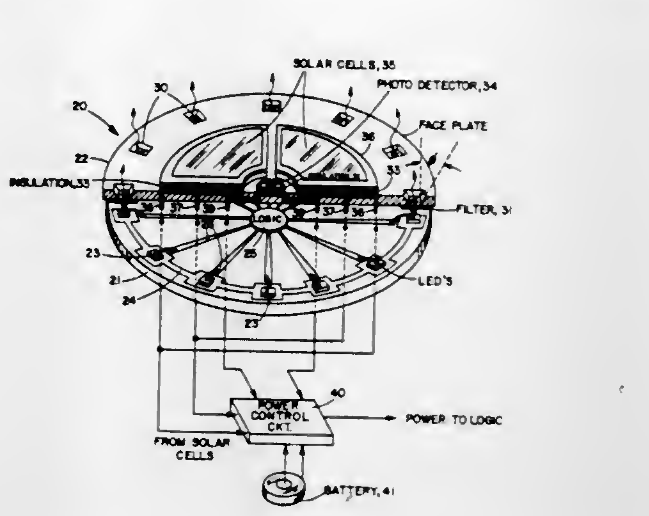
### LIGHT EMITTING DIODE DISPLAY FOR ELECTRONIC TIMEPIECE

**Ronald R. Burgess, Phoenix; Michael G. Coleman, Tempe, and Lawrence A. Grenon, Phoenix, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.**

**Filed May 17, 1971, Ser. No. 143,837**

**Int. Cl. G04c** *3/00;* **G04b** *19/06*

**U.S. Cl. 58—50 R** **27 Claims**



There is disclosed a light emitting diode timepiee display in which the output of the light emitting diode display is controlled with respect to ambient lighting conditions so as to provide the maximum amount of contrast with a minimum amount of power consumption. The contrast between the light emitted by the light emitting diodes and the ambient light in the immediate vicinity of the timepiece is enhanced by the use of absorption type filters, truncated pyramid type apertures in the display cover plate and a control circuit which adjusts the intensity of the output of the light emitting diodes to the ambient light conditions. Thereis further provided a series of solar cells on the face of the display, which recharge the timepiece batteries during ultra-high ambient light conditions and which supply additional power to the light emitting diodes during high ambient lighting conditions so as to increase the output of the light emitting diodes. This enhances the contrast of the diodes during high ambient lighting conditions while at the same time providing an additional source of power in parallel with that of the timepiece battery so as to increase the effective lifetime of the battery. Power distribution between the solar cells and the battery is controlled by the aforementioned control circuit. In addition, the control circuit varies the power available to the light emitting diodes such that in low ambient lighting conditions a lesser amount of power is delivered to the light emitting diodes while in high ambient lighting conditions, a larger amount of power is delivered to the diodes. In this manner the aforementioned contrast is kept constant and at that level which corresponds to the minimum level necessary for ready visibility. In addition, several structural embodiments are shown, all of which contribute to the enhancement of the light output of the light emitting diodes, the enhancement of display contrast, low power consumption, ease of fabrication, and mechanical stability of the final product.

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### 3,757,512

### WATERTIGHT PUSHER

**Conrad Zellweger, Chene-Bougeries, Switzerland, assignor to Waldman Corporation, Parsippany, N.J.**

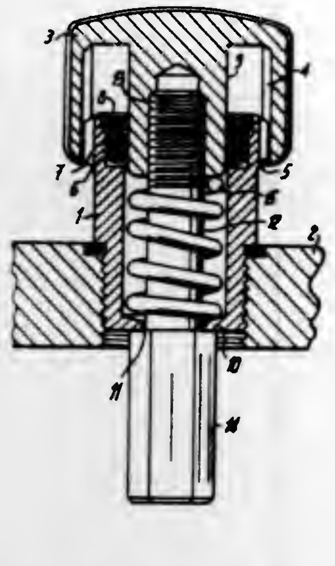
**Filed May 5, 1972, Ser. No. 250,789**

**Claims priority, application Switzerland, May 24, 1971, 7528/71; June 17, 1971, 8847/71**

**Int. Cl. G04b** *37/08*

**U.S. Cl. 58—90 B** **12 Claims**

A watertight pusher device for watches or the like employs a tube baving means for connection to the case of a watch, a spring mounted pusher head secured to the tube for sliding movement axially on the tube, and a screw member in threaded connection with the pusher head. The screw member has an inner head which extends out of the tube, the inner head having a diameter or dimension to provide a shoulder for engagement with the adjoining end of the tube. The pusher device is made to be useful for a range of watch cases having different wall thicknesses by providing the inner head with a non-circular outer surface adapted for mating engagement with a tool to rotate the screw member. The inner head has a length sufficient to allow it to be shortened without the loss of a sufficient area of purchase to enable rotation of the screw member. Also, the pusher head of the device is provided with a non-circular outer surface adapted for mating engagement with a tool so that the pusher head and the tube to which it is connected may be rotated.



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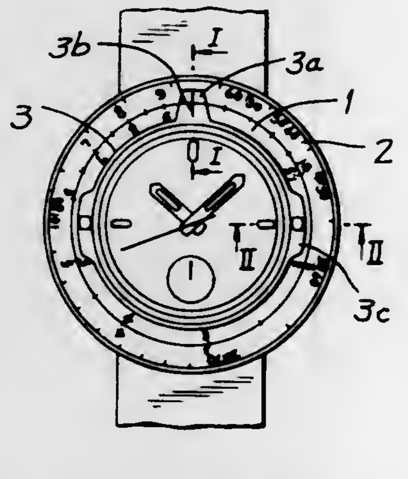
### 3,757,513
## CURSOR RING FOR A WRIST WATCH
**Ikuo Tokunaga, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

**Filed Oct. 15, 1971, Ser. No. 189,666**

**Claims priority application Japan, Oct. 16, 1970, 45/102396**

**Int. Cl. G04b** *37/12*; **G06g** *3/00*

**U.S. Cl. 58—152 R** **8 Claims**



A wrist watch having a cursor ring rotatably mounted thereon, said cursor being formed with a first laterally projecting portion having a cursor line thereon for setting scales on said watch, and a second projecting portion for manual engagement for the selective rotation and positioning of the cursor ring. A bezel having graduations on its surface may be rotatably mounted relative to a fixed graduated circle on said watch with the first projecting portion of the cursor ring in overlapping relation therewith.

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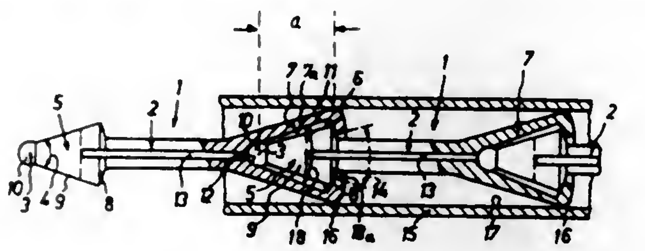
### 3,757,514
## UNIVERSAL LINK CHAIN
**Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland**

**Filed Apr. 24, 1972, Ser. No. 246,712**

**Claims priority, application Switzerland, Apr. 30, 1971, 6435/71**

**U.S. Cl. 59—78** **12 Claims**



A universal or ball pivot-link chain composed of chain link elements, each such link element possessing at one end a swivel or ball pivot body mounted at the other end of the directly neighboring chain link element. The swivel or ball pivot body comprises two concentric spherical bearing surfaces possessing different radii of curvature, the bearing surface with the smaller radius of curvature being located forwardly of the bearing surface with the largest radius of curvature in the direction of such neighboring link element.

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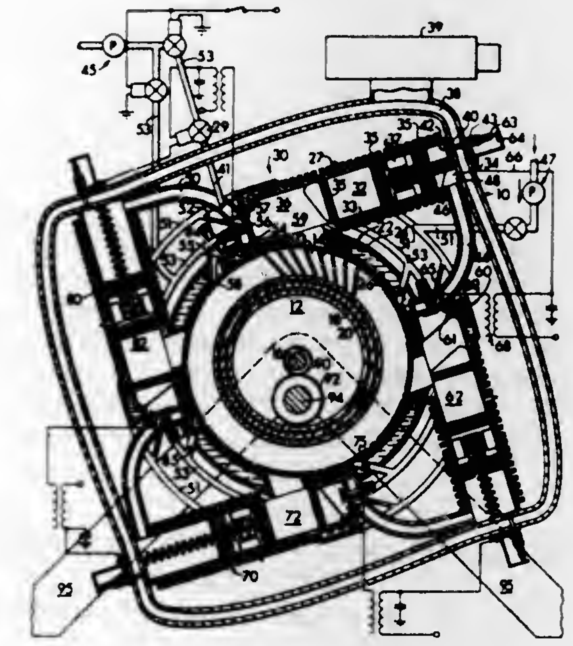
### 3,757,515
## AUTOCOMBINE ENGINE
**George S. Pais, 52 Harris St., Peabody, Mass.**

**Filed July 6, 1972, Ser. No. 269,448**

**Int. Cl. F02b** *37/04*

**U.S. Cl. 60—13 F** **10 Claims**



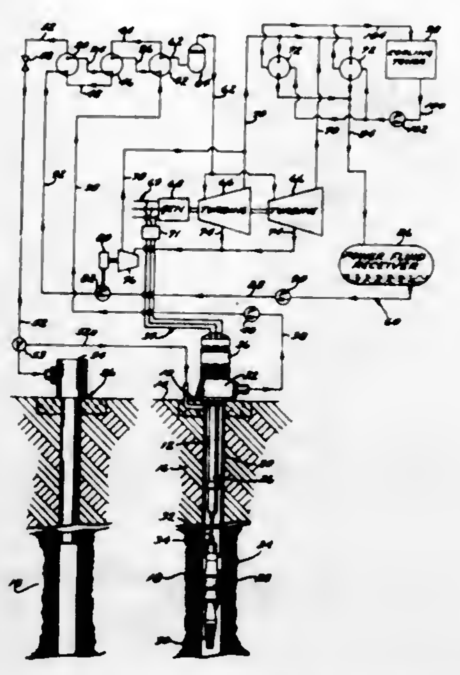
A piston drive combustion engine is provided wherein the pistons are reciprocated by the force of combustion in combination with a helical spring. A compressed air-fuel mixture is ignited in the combustion chamber which explodes and drives a piston rearward while simultaneously expelling a blast of gases at the vanes of a turbine wheel spinning the same. The rearward stroke of the piston drives a compressed air-fuel mixture into the next succeeding combustion chamber to recommence the combustion cycle therein and provide an automatic sequence fluid piston drive turbine engine.

### 3,757,516
## GEOTHERMAL ENERGY SYSTEM
**Barkman C. McCabe, Los Angeles, Calif., assignor to Magma Energy Inc., Los Angeles, Calif.**

**Continuation-in-part of Ser. No. 114,212, Feb. 10, 1971, abandoned. This application Sept. 14, 1971, Ser. No. 180,342**

**Int. Cl. F03g** *7/00*

**U.S. Cl. 60—26** **42 Claims**



Method and apparatus for the nonpolluting generation of electrical power by the economic utilization of geothermal energy that is accessible through widespread sources of regenerative geothermal hot water. A well provides access to a geothermal hot water source having a temperature substantially above the flash point for atmospheric pressure, this hot water being conducted through heat exchangers wherein its heat energy is transferred to a power fluid employed in a closed Rankine heat engine cycle to generate electrical power, the water then being injected back into the aquifer. The geothermal hot water is pressurized by deep well pump means to a discharge pressure above its saturated vapor pressure for the source temperature, and a pressure gradient above the saturated vapor pressure is maintained through the heat exchangers, whereby the hot water is restrained from flashing into steam throughout its circuit, thereby avoiding any substantial temperature drop between the source and the heat exchangers and preventing release of any substantial mineral deposits at any point in the circuit. The very small expenditure of power required for such pressurization produces a large increase in total plant power output and efficiency by, among other things, (1) providing a top temperature power fluid Rankine cycle, (2) avoiding fouling of the well and surface equipment with mineral deposits, (3) deriving power from all of the geothermal fluid rather than just a stream fraction thereof, (4) allowing use of a power fluid that is particularly efficient in the available temperature range, and (5) avoiding degeneration of the power fluid source and ecological damage by returning the geothermal fluid to the aquifer.

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### 3,757,517
## POWER-GENERATING PLANT USING A COMBINED GAS- AND STEAM-TURBINE CYCLE
**Georges Alfred Rigollot, 66 Avenue Henri Martin, Paris, France**

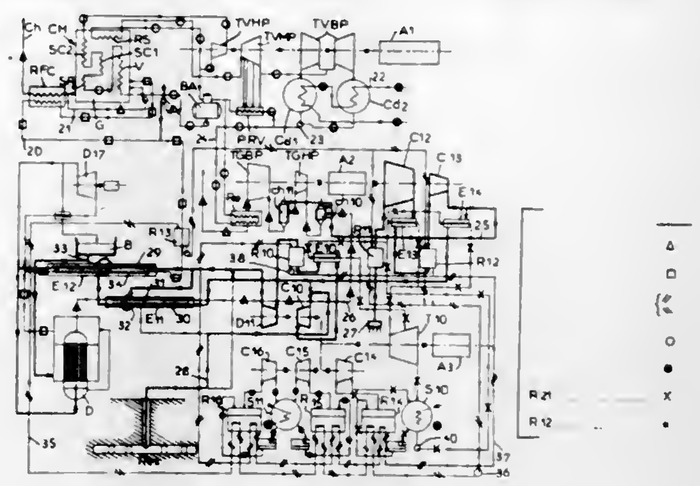
**Filed Feb. 15, 1972, Ser. No. 226,553**

**Claims priority, application France, Feb. 16, 1971, 7105195**

**Int. Cl. F02c** *1/04*

**U.S. Cl. 60—39.18 R** **7 Claims**

Power-generating plant using a combined gas- and steam-turbine cycle. The plant comprises a reservoir in which cold air under pressure is stored during off-peak hours for being used during peak-hours to supply, in parallel with compressors, the gas turbine of the plant. A liquefaction and distillation unit is used on the supplying air circuit with a view to supply the steam boiler with air enriched with oxygen and the gas turbine with a mixture of air and nitrogen.



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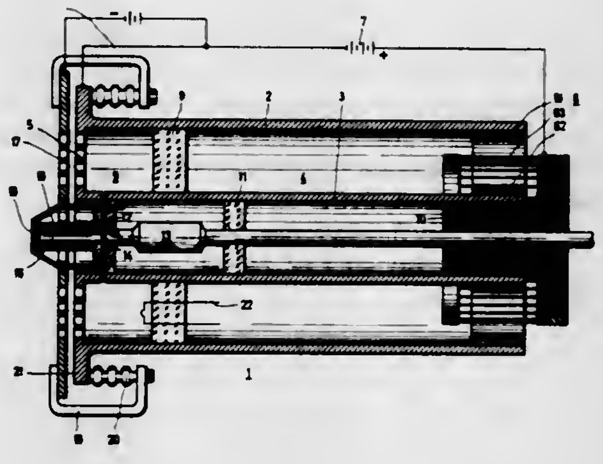
### 3,757,518
## ION ENGINE
**Alfred Bahr, Munich, Germany, assignor to Messerschmitt-Bolkow Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany**

**Filed Oct. 20, 1971, Ser. No. 190,981**

**Claims priority, application Germany, Nov. 3, 1970, P 20 53 929.1**

**Int. Cl. F03h** *1/00*

**U.S. Cl. 60—202** **13 Claims**



An ion engine has a propellant supply system, means, including a high frequency generator, for the ionization of the electrically neutral propellant present in gaseous form in a discharge chamber closed off by a perforated bottom, an acceleration electrode, and means for the neutralization of the accelerated ion beam. The discharge chamber forms part of a high frequency resonator with the perforated bottom closing off one end of this resonator and with the resonator generating a standing electric wave having a node at the bottom. The resonator is a λ/4 resonator, where λ is the wave length of the electric wave, and the high frequency generator is arranged inside the resonator at the end opposite the bottom. The high frequency generator preferably is a disk seal triode or a Farnsworth tube.

### 3,757,519
## ELECTRONIC CIRCUIT ARRANGEMENT FOR CONTROLLING AN EXHAUST GAS DECONTAMINATOR

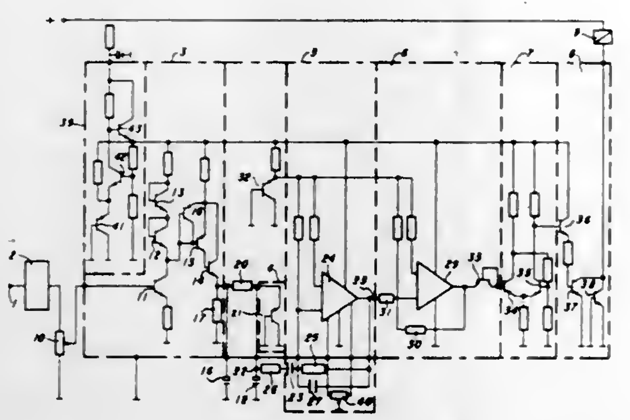
**Wolfgang Kave Graewert, Wendlingen, Germany, assignor to Texas Instruments Incoporated, Dallas, Tex.**

**Filed Dec. 6, 1971, Ser. No. 205,182**

**Claims priority, application Germany, Dec. 5, 1970, P 20 59 951.3**

**Int. Cl. F01n** *3/08*

**U.S. Cl. 60—286** **6 Claims**



A control circuit arrangement for an exhaust gas decontaminator is provided. A voltage generating circuit produces a voltage indicative of the recurrence frequency of the ignition pulses up to a desired limit engine speed, and a differentiating stage provides from the voltage generator signal a voltage to a threshold switch indicative of the engine acceleration. The threshold voltage output signal controls operation of the exhaust gas decontaminator.

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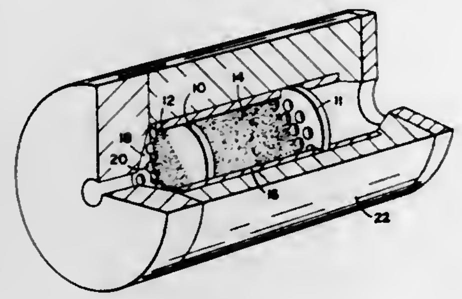
### 3,757,520
## CATALYTIC GAS GENERATION USING A HYDRAZINE WITH AN OXIDIZER ON AN INERT SUBSTRATE

**James A. Murfree, Jr., Huntsville; Billy J. Sandlin, Athens, and William A. Duncan, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed July 5, 1967, Ser. No. 651,654**

**Int. Cl. C06d** *5/10*

**U.S. Cl. 60—219** **7 Claims**



A gas generation scheme in which an inert porous support material, substrate or carrier, is heated sufficiently to maintain decomposition of a liquid monopropellant by a hypergolic or spontaneous exothermic reaction between the liquid monopropellant and a suitable oxidizing agent.

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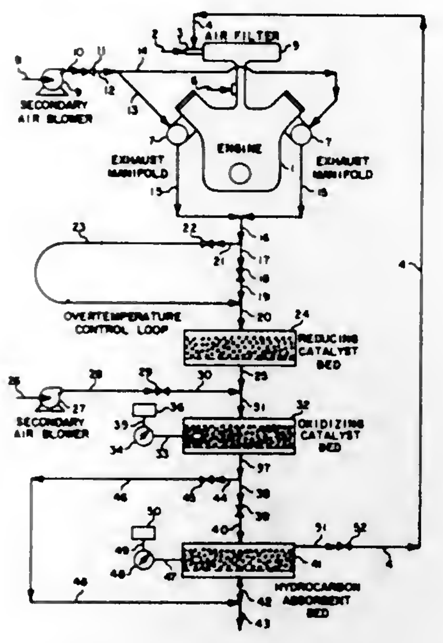
### 3,757,521
## INTEGRATED ENGINE EXHAUST EMISSION CONTROL SYSTEM

**John F. Tourtellotte, Westfield; John S. Negra, Plainfield; Abe Warshaw, Matawan, and John F. Villiers-Fisher, Kendall Park, all of N.J., assignors to Chemical Construction Corporation, New York, N.Y.**

**Filed Apr. 27, 1971, Ser. No. 137,830**

**Int. Cl. F02b** *75/10;* **F01n** *3/14*

**U.S. Cl. 60—274** **20 Claims**



An integrated method for controlling and preventing the emission of noxious components in engine exhaust during all the various phases of the engine operating cycle, such as startup, normal operation, overload, and when the engine exhaust gas is at an abnormally elevated temperature.

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### 3,757,522
## DEVICES FOR PRE-VAPORISING LIQUID FUEL

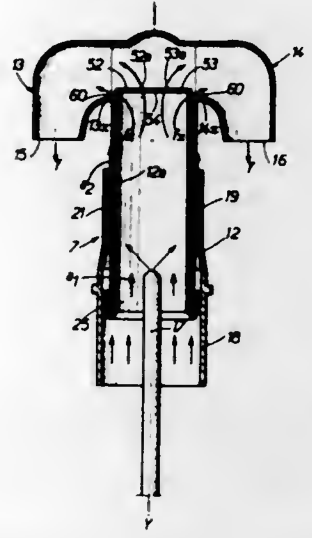
**Jacques Emile Jules Caruel, Dammarie-les-Lys; Bernard Andre Cantaloube, Chennevieres; Guy Daniel Stora, Melun; Jean Robert Bedue, Creteil; Philippe Marc Denis Gastebois, Melun, and Herve Alain Quillevere, Issy-les-Moulineaux, all of France, assignors to Societe Nationale D'Etude et De Construction De Moteurs D'Aviation, Paris, France**

**Filed July 13, 1972, Ser. No. 271,235**

**Claims priority, application France, July 16, 1971, 7126107; Apr. 28, 1972, 7215409**

**Int. Cl. F02g** *3/00*

**U.S. Cl. 60—39.71** **6 Claims**



A device for pre-vaporising liquid fuel, designed for application for a combustion system comprising a combustion chamber, a liquid fuel source and a source of combustion agent such as air, said pre-vaporisation device comprising, projecting into the combustion chamber, a hollow structure having a general T-shape and made up of a body which constitutes the leg of the T and is connected to said liquid fuel and combustion agent sources, and two transverse arms connected to said body of the hollow structure and terminating, in each case, in a discharge orifice which opens into the combustion chamber and through which, in operation, there escapes a flow made up of a mixture of combustion agent and fuel in an at least partially vaporised state, in which said body of the hollow structure is partially closed off, in the neighbourhood of the armpits where the transverse arms join the body of the hollow structure, by a thin-walled diaphragm in the form of two thin partitions each presenting a sharp edge disposed towards the axis of said body and towards, the similar sharp edge belonging to the particular other partition, said partitions between said mutually opposite edges defining a restricted flow passage through which the body of the hollow structure communicates with each of said transverse arms.

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### 3,757,523
## HYDRAULIC JACKS

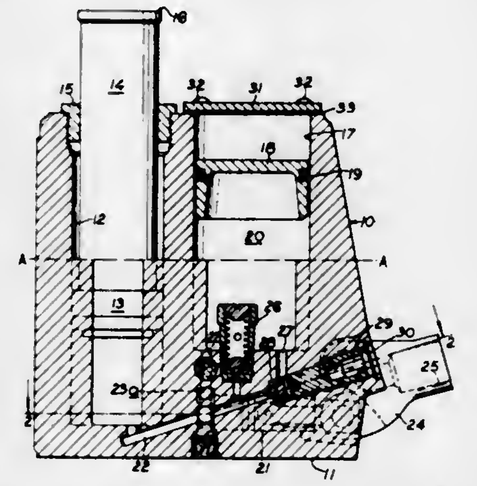
**Harold Frederick Resuggan, Birmingham, Handsworth, England, assignor to Webley & Scott Limited, Birmingham, England**

**Continuation-in-part of Ser. No. 3,903, Jan. 19, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,923**

**Claims priority, application Great Britain, Feb. 8, 1969, 6030/69**

**Int. Cl. F15b** *15/18, 1/06*

**U.S. Cl. 60—477** **10 Claims**



A general purpose hydraulic jack comprises a piston and cylinder ram, a manually operable pump, and a variable volume reservoir for hydraulic liquid defined between one end of a cylindrical chamber and a freely movable piston in low friction low inertia sliding engagement in the chamber, the other end of the chamber being vented to atmosphere to enable said volume to vary as fluid is drawn from or returned to the reservoir in response solely to pressure differentials created in the chamber by operation of the jack. Absence of an air space directly adjoining the liquid and the free piston construction of the reservoir avoids contamination of the liquid and permits the jack to be used reliably under a wide range of adverse conditions and in any operating position.

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### 3,757,524
## MULTIPLE SPEED HYDRAULIC GEAR MOTOR DRIVEN GEAR UNIT

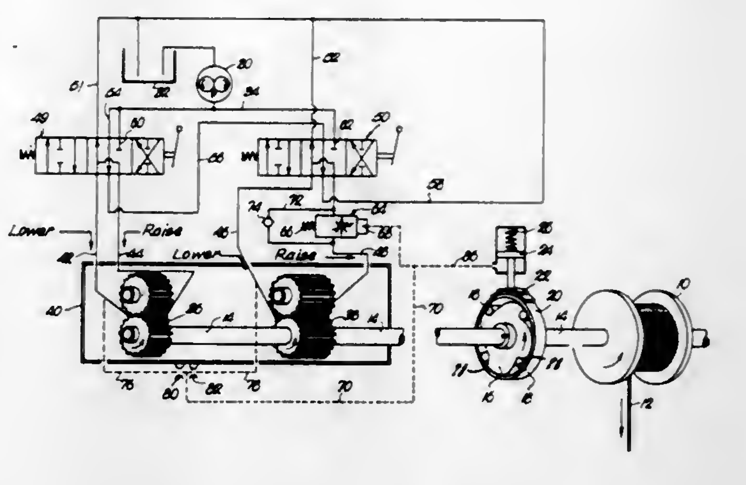
**Weston R. Poyner, Kansas City, Mo.; Richard J. Stallbaumer, Lenexa, and Wade A. Eskridge, Olathe, both of Kans., assignors to A. B. Chance, Company, Centralia, Mo.**

**Filed Feb. 17, 1972, Ser. No. 227,054**

**Int. Cl. F16h** *39/48, 39/52*

**U.S. Cl. 60—483** **16 Claims**

A multiple-speed hydraulic drive transmission for power winches or the like which incorporates a pair of unequal, fixed displacement hydraulic motors for tandemly driving the winch at different speeds in response to delivery of motive fluid to either one or both of the motors. A single, pressure responsive fluid flow control valve in the discharge duct associated with the larger motor normally prevents exhaust flow therefrom, and is responsive to the pressure of motive fluid presented to either or both of the hydraulic drive motors to move to a position permitting exhaust flow as long as winch speed is not excessive, so that the single control valve limits winch speed in all operational stages of the transmission.



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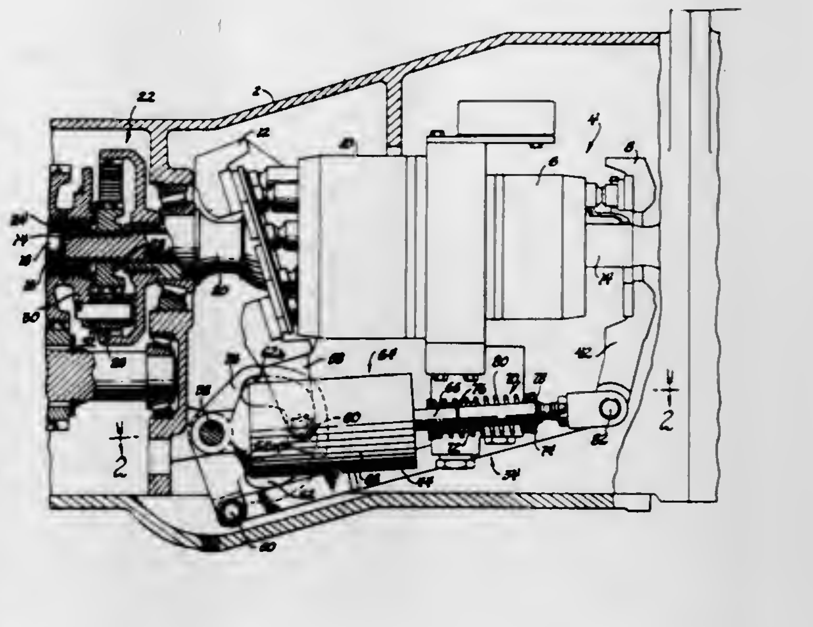
### 3,757,525
## HYDROSTATIC TRANSMISSION

**Allan C. Rusch, Livonia, and John Bubak, Warren, both of Mich., assignors to Massey-Ferguson, Inc., Detroit, Mich.**

**Filed Nov. 1, 1971, Ser. No. 194,106**

**Int. Cl. F16h** *39/46*

**U.S. Cl. 60—492** **7 Claims**



A hydrostatic transmission including a variable capacity pump controlled by an adjustable swash plate and a variable motor driven by the pump and controlled by an adjustable swash plate. Mechanical motion transmitting means connects the pump and motor swash plates for causing movement of one of the swash plates at a predetermined variable rate so that a single hydraulic piston and cylinder unit can adjust both swash plates simultaneously.

### 3,757,526
### FLOATING BOOM STRUCTURES

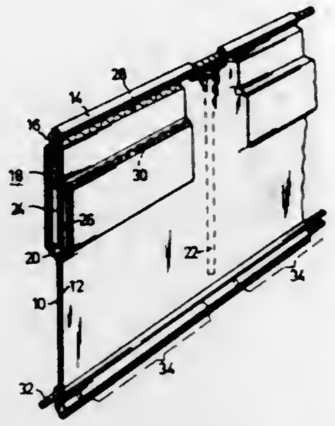
**Erik Johan Larsson, Gamleby, Sweden, assignor to Barracudaverken AB, Gamleby, Sweden**

**Filed Oct. 30, 1972, Ser. No. 301,720**

**Claims priority, application Sweden, Nov. 4, 1971, 14097/71**

**Int. Cl. E02b** *15/04*

**U.S. Cl. 61—1 F** **7 Claims**



An oil boom comprising an elongate screen of plastics foil material provided with buoyant bodies and weights to hold the boom in a substantially vertical position when afloat in the water, with a portion of the upper edge portion of the boom above the surface of said water. The boom comprises two superimposed sheets of plastics foil material which are welded together at a number of sequentially arranged points in the longitudinal direction of the boom to form substantially rectangular closed pockets located on the upper half of the boom in its position of use. Each pocket contains one filling body which extends the pocket to form a buoyant body of requisite buoyancy, said filling body being constructed of corrugated cardboard.

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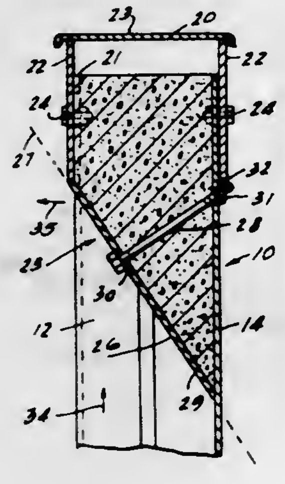
### 3,757,527
### WAVE DEFLECTING DEVICE FOR A SEA WALL

**Daniel Franklin Keller, Wilmette, Ill., assignor to Keller-Dee Research and Development Corp., Northbrook, Ill.**

**Filed Feb. 14, 1972, Ser. No. 226,053**

**Int. Cl. E02b** *3/20*

**U.S. Cl. 61—49** **13 Claims**



A wave deflecting device for use on a sea wall which has an undulating surface of vertically extending ridges and trough-like depressions characterized by a plate being disposed in each of the troughs on a plane extending between a horizontal plane and a vertical plane to block and to deflect an upward flow of water in the trough back to the body of water. Preferably the plate is used with a sea wall which is formed of sheet metal pilings which wall has a cap at the upper edge of the wall and has a filling material such as concrete disposed between the cap and the plates. In one embodiment the plate is provided with edge portions diverging from one end which conform to the diverging side walls of the trough and is provided with lateral portions along the edge portion to extend into the lateral portions of the trough. Another embodiment of the invention provides lateral extending portions at the other end to overlie portions of the adjacent ridges to deflect water that is moving upwardly along the ridges back to the body of water.

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### 3,757,528
### METHOD FOR PRODUCING A BEARING PILE OF REINFORCED CONCRETE

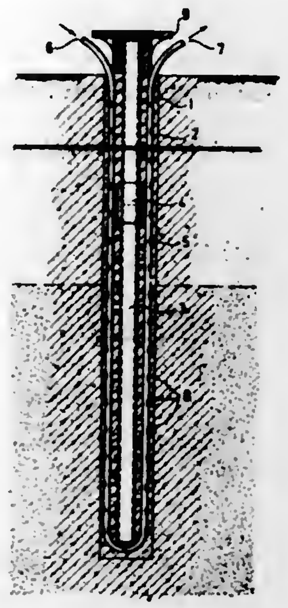
**Ulrich Finsterwalder, Munich-Obermenzing; Klemens Finsterwalder, Socking near Starnberg, and Thomas F. Herbst, Munich, all of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany**

**Filed Sept. 18, 1972, Ser. No. 289,879**

**Claims priority, application Germany, Sept. 21, 1971, P 21 47 051.9**

**Int. Cl. E02d** *5/62, 5/80*

**U.S. Cl. 61—53.62** **6 Claims**



Method for producing a bearing pile of steel reinforced concrete in a bore hole where armoring is placed in the bore hole which is filled with hardening material such as concrete and where the armoring is a steel pressure element of compact, particularly round cross-section provided with profiling on its surface to increase the adhesion between the filling material and where after setting, but prior to hardening the filling material is impregnated with cement sludge or grouting through an apertured conduit that is disposed between the steel pressure member and the wall of the bore hole.

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### 3,757,529
### WIRE AND TAPE LAYING MACHINE EMPLOYING OSCILLATORY TRENCHING BLADE AND OSCILLATORY FEED DEVICE

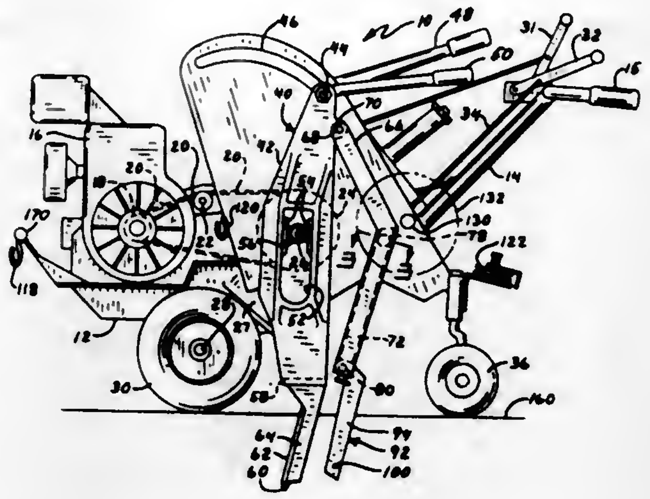
**William C. Kaercher, Jr., Minneapolis, Minn., assignor to Jacobsen Manufacturing Company, Minneapolis, Minn.**

**Filed Apr. 4, 1972, Ser. No. 241,000**

**Int. Cl. E02f** *5/02*; **F16l** *1/00*

**U.S. Cl. 61—72.6** **15 Claims**

A self-propelled machine has a pair of main arms pivotally mounted at their upper ends and eccentric means for oscillating these arms forwardly and rearwardly as the machine traverses the ground. A cross member extends between the lower ends of the arms and supports a blade having a knife edge for cutting a slit or trench in the ground so that the blade is oscillated directly by the main arms and through the same angle as these arms. A pair of auxiliary arms are oscillated at a lesser amplitude than the main arms, the auxiliary arms also having a cross member extending between the lower ends thereof. The last-mentioned cross member supports a feed device. In one form, the device feeds a flexible wire to be embedded in the ground. In a somewhat modified form, the device feeds a flexible tape.



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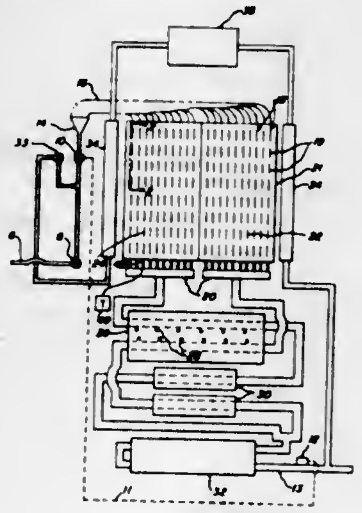
### 3,757,530
### COOLING SYSTEM FOR DATA PROCESSING APPARATUS

**Michael A. Doyle, Blaine; Roger W. Cree, Stillwater, and Richard C. Keller, St. Paul, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.**

**Filed Apr. 12, 1972, Ser. No. 243,141**

**Int. Cl. F25b** *5/00*

**U.S. Cl. 62—117** **4 Claims**



A refrigeration system is provided for an electronic computer in which a plurality of parallel refrigeration lines are derived from a single source of liquified refrigerant and in which each of the parallel refrigeration lines passes through a plurality of cold plates over which the computer logic modules are adapted to fit. Partially gaseous and partially liquid refrigerant is recombined from the parallel refrigeration lines at a manifold and passes through additional elements of the computer assembly, such as power supply devices, where it becomes superheated and is returned to the source of refrigerant. Refrigerant flow in the individual parallel channels need not be exactly balanced, but a rough balance of refrigerant flow may be obtained by providing additional heat to a parallel channel having adequate cooling reserve capacity, as measured by liquid refrigerant flow in its output, so as to increase the cooling load on the entire system thereby causing increased refrigerant flow through a channel having insufficient cooling capacity as measured by low volume or no volume of liquified refrigerant in its output.

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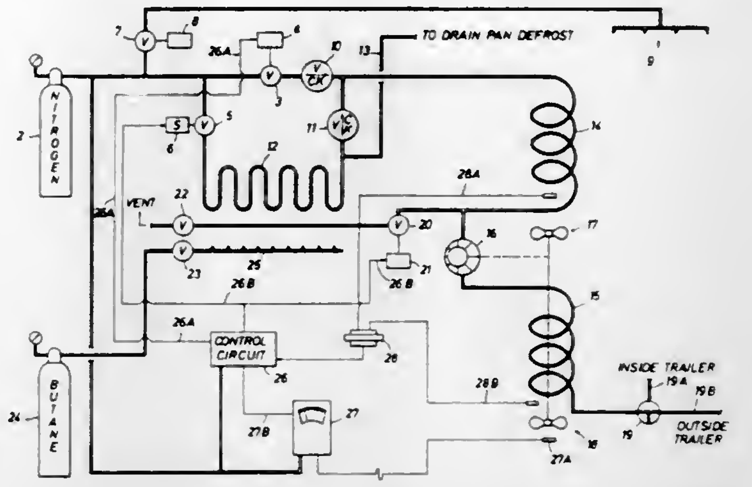
### 3,757,531
### REFRIGERATION APPARATUS EMPLOYING LIQUIFIED GAS

**Paul M. Gement, Jr., P.O. Box 10593, 4 Knox Rd., New Orleans, La.**

**Filed July 9, 1971, Ser. No. 161,258**

**Int. Cl. F25d** *21/06*

**U.S. Cl. 62—156** **16 Claims**



Refrigeration apparatus is provided which is motivated by the vaporization of liquified nitrogen or the like. In particular, nitrogen vapor is introduced into a primary heat exchange coil at a high vapor pressure, conducted from the primary coil at a lower pressure through a pneumatic motor, and thereafter through a secondary heat exchange coil from which it is vented. The pressure drops across the two coils will chill the coils, and blowers are driven by the motor to circulate the atmosphere to be cooled over the coils. Defrosting means is included for automatically re-routing the liquefied nitrogen intake stream through a heater whenever ice accumulates on the coils in an excessive amount or ambient temperature drops below the temperature sought to be maintained.

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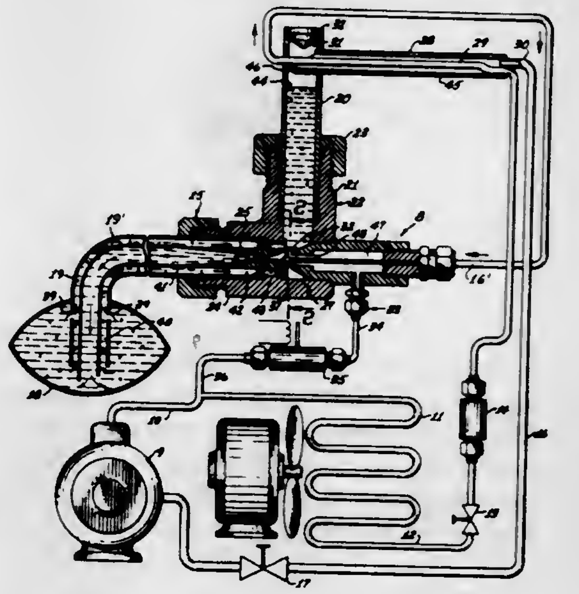
### 3,757,532
### REFRIGERANT METERING SYSTEM

**Paul H. Brandt, 5202 E. Flower St., Phoenix, Ariz.**

**Filed July 28, 1971, Ser. No. 166,748**

**Int. Cl. F25b** *47/00*

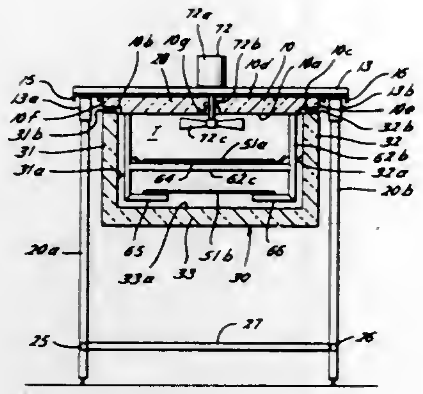
**U.S. Cl. 62—278** **3 Claims**



An improved injector type refrigerant metering device for use in place of standard thermostatic or automatic expansion valves, high or low side floats, capillary tube metering devices or any other conventional method of metering liquid refrigerant from the high side to the low side of a compression type refrigeration system.

### 3,757,533
### CRYOGENIC FREEZER UNIT

**James T. Kent, 730 Post Oak, Houston, Tex.**
**Filed Feb. 14, 1972, Ser. No. 225,949**
**Int. Cl. F28g** *15/08*
**U.S. Cl. 62—303** **12 Claims**



A tunnel-type cryogenic freezing unit for freezing articles such as food which includes first and second housing sections which form a tunnel through which a conveyor moves the food, exposing means to move the second housing section away from the first housing section to expose the inside of the unit for ease in cleaning or otherwise maintaining the unit, and a accumulator means to collect any unused sprayed cryogenic liquid so that the food is again subjected to the freezing action of the liquid.

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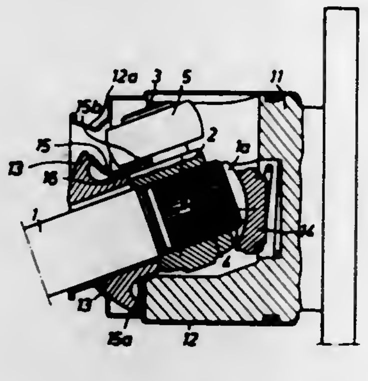
### 3,757,534
### UNIVERSAL JOINTS

**Michel Orain, Conflans Saint-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France**
**Filed Mar. 13, 1972, Ser. No. 234,218**
**Claims priority, application France, Apr. 6, 1971, 7112160**
**Int. Cl. F16d** *3/06*
**U.S. Cl. 64—8** **3 Claims**



A tripod or three arm constant velocity universal joint of the type joining a driving shaft and a driven shaft and comprising a tripod member with three laterally extending arms with rollers mounted thereon and a socket member including grooves adapted to receive the rollers for relative displacement therein. An annular member is provided for urging the rollers towards or away from the axis of the shaft on which the tripod member is mounted. The annular may be provided on one side or both of the axes of the rollers along the longitudinal axis of the shaft on which the tripod member is mounted. The annular member preferably engages the lateral surface of each of the rollers perpendicular to the axis thereof and facing the shaft, that is, nearest to the shaft. The annular member is not fixed to the tripod member nor to a retaining member which may be provided and which is fixed relative to the tripod member.

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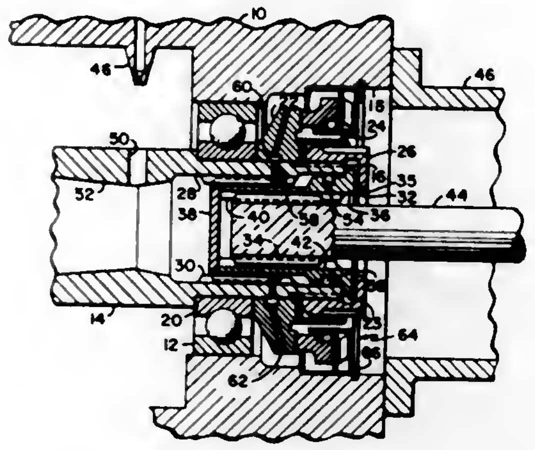
### 3,757,535
### DRIVE ASSEMBLY WITH COMPENSATION FOR MISALIGNMENT

**Wolfgang J. Stein, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.**
**Filed Nov. 3, 1971, Ser. No. 195,206**
**Int. Cl. F16d** *3/46*
**U.S. Cl. 64—9 R** **13 Claims**



A drive shaft has a bore formed at its outer facing end. An annular adapter element has a series of external splines which interfit with internal splines in the bore of the drive shaft. The adapter element has a bore with internal splines that interfit with external splines on a driven shaft received in the adapter bore. The internal splines between the drive shaft and the external splines on the adapter element are lubricated so that the adapter element rocks preferentially relative to the drive shaft to compensate for angular misalignment. The adapter element is retained relative to the driven shaft and a seal is provided between them so that the driven shaft may be removed without exposing the lubrication system for the spline. In another form an elongated tubular element is placed between the adapter and the drive shaft to compensate for both parallel and angular misalignment.

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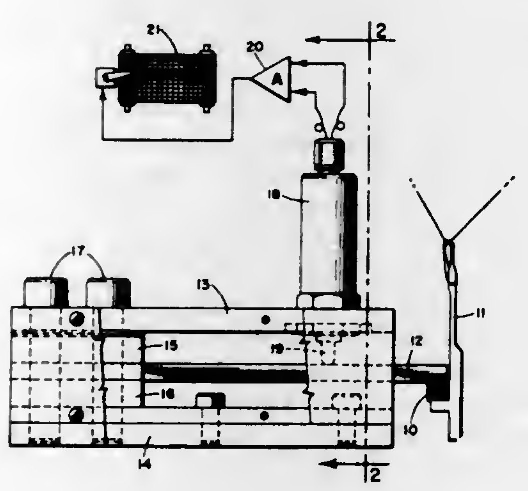
### 3,757,536
### METHOD AND APPARATUS FOR DETERMINING THE KNITABILITY OF YARNS

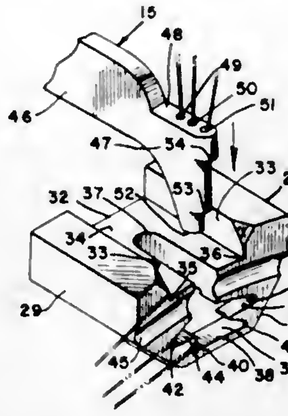
**Jefferson Lyle Claiborne, Chattanooga, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.**
**Filed Mar. 16, 1970, Ser. No. 19,819**
**Int. Cl. D04b** *1/00, 15/32, 15/44*
**U.S. Cl. 66—1 R** **4 Claims**



This invention mounts the stitch cam of a tubular knitting machine on a tongue and measures the strain of the tongue as a function of the load imposed on the stitch cam by the yarn coming into the machine to be knit. Tension of the yarn running to the machine is controlled and monitored.

### 3,757,537
### KNITTING MACHINE

**Orin R. York, 404 Royal Oak Ave., High Point, N.C.**
**Filed Feb. 23, 1971, Ser. No. 118,024**
**Int. Cl. D04b** *9/12, 9/18, 9/06, 15/58*
**U.S. Cl. 66—9 R** **9 Claims**



A cylindrical knitting machine having a dial and cap for rib knitting, the machine being provided with means for feeding three yarns simultaneously to the cylinder needles in plating relation, which means includes a throat plate having three vertically spaced feed ledges with notches at the sides, the ledges being symmetrical about the central vertical plane of the throat plate. The throat plate is centrally slotted to allow the entrance of a yarn finger having three yarn guides with outlets at three vertically spaced levels to position a yarn outlet just above each of the ledges of the throat plate. The machine will plain knit the three yarns in plated relation, or with one of the outer yarns forming terry loops.

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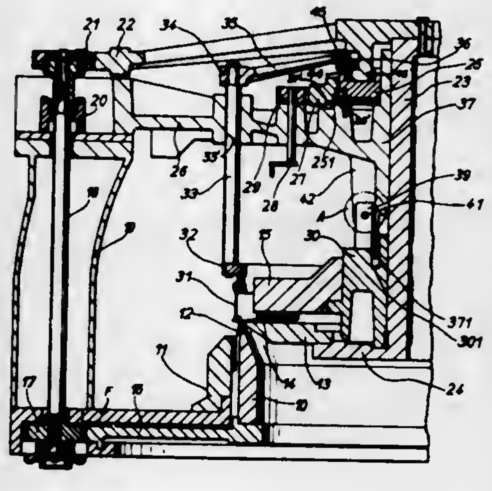
### 3,757,538
### MULTI-SYSTEM CIRCULAR KNITTING MACHINE WITH NEEDLE CYLINDER AND DISC PLATE

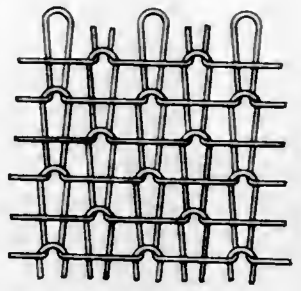
**Johann Martinetz, Hechingen, Germany, assignor to Firma Meyer & Cie, Tailfingen/Wuerttemberg, Germany**
**Filed Aug. 14, 1970, Ser. No. 63,826**
**Int. Cl. D04b** *9/06, 15/54*
**U.S. Cl. 66—19** **5 Claims**



A multi-system circular knitting machine with a needle cylinder and a disc plate, the cylinder and plate being adjustable toward and away from each other. The disc plate acts as a needle holder, there being a common supporting ring for the threaded guides of all knitting systems. The common supporting ring is connected to the upper part of the device so that it is shifted when the disc plate and the connected disc plate cam holder are shifted relative to the needle cylinder, but remains unchanged relative to the needle cylinder when the retarded sinking of the disc plate cam holder toward the cylinder cam holder is carried out.

### 3,757,539
### STOCKING WITH TWO PLY TOE

**John J. Millar, Laconia, N.H., assignor to Scott & Williams Inc., Laconia, N.H.**
**Division of Ser. No. 752,937, Aug. 15, 1968, Pat. No. 3,685,321. This application Dec. 17, 1970, Ser. No. 99,157**
**Int. Cl. D04b** *9/54, 9/56*
**U.S. Cl. 66—173** **3 Claims**



A circular hosiery knitting machine in which the toe is closed by twisting on the machine. The stocking is knitted in the normal direction, starting with an inturned double welt in the usual manner. Going into the toe, heavier yarns are introduced with circular knitting using two feeds, and loops are transferred onto the dial jack and held during subsequent knitting of the toe, with the needles alternately knitting and welting during knitting of the toe portion. At the completion of the toe knitting, the dial is allowed to rotate one revolution with respect to the body to introduce a twist between the dial loops and the needles. After the twisting has been done, the loops are transferred onto the needles and knitted in, after which additional fabric courses defining a tab are knitted with an anti-ravel structure, and the stocking is pressed off.

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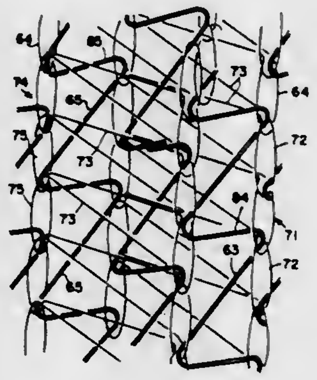
### 3,757,540
### DOUBLE FACED WARP KNIT FABRIC AND APPARATUS AND METHOD FOR MAKING SAME

**George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.**
**Filed Dec. 30, 1970, Ser. No. 102,628**
**Int. Cl. D04b** *23/08*
**U.S. Cl. 66—192** **7 Claims**



A double faced warp knit fabric is made on a double needle bar warp knitting machine having a common guide bar and common chain stitch thread forming chain stitches on one needle bar and then on the other needle bar in each successive course of each pair of opposite wales of each opposite face to bind and unite the two knit structures into a unitary double faced fabric. The common chain stitch thread may also be looped coursewise around adjacent chain stitches in adjacent wales to not only serve as the body yarn for both faces but to also serve as the weft portions of a simulated weave, in cooperation with a pair of inlaid warp yarns in each knit structure.

### 3,757,541
### STRINGER FOUNDATION FOR SLIDE FASTENER

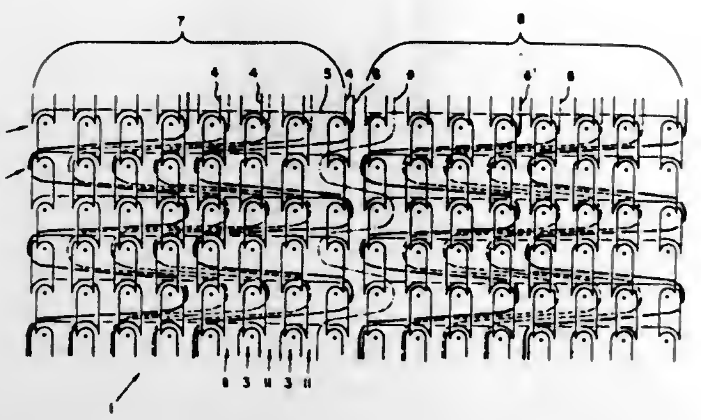
**Alfons Frohlich; Marie-Luise Cappel, both of Essen, and Ernst Stubiger, Giessen, all of Germany, assignors to Optic-Holding A.G., Glarus/Schweiz, Germany**

**Filed Oct. 20, 1970, Ser. No. 82,323**

**Claims priority, application Germany, Apr. 4, 1970, P 20 16 139.1**

**Int. Cl. D04b** *23/12, 21/16;* **A44b** *19/00*

**U.S. Cl. 66—193** **5 Claims**



A stringer foundation for a slide fastener has a pair of parallel tapes which have been simultaneously formed on a warp-knitting machine with a connecting filament joining their confronting edges. Each tape is formed by a plurality of warp chains laterally interconnected by laid-in weft filaments which span at least three of the wales formed by the chains. The connecting filament can be tensioned tighter than either the warp or weft filaments to form openings adjacent the edge wale. The connecting filament is adapted to be removed after mounting of the coupling elements.

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### 3,757,542
### FLOAT VALVE FOR DRY WASHING MACHINES

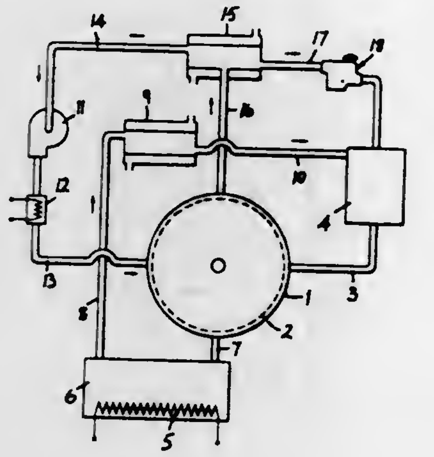
**Poerio Carpigiani, Anzola Emilia, Bologna, Italy**

**Filed Nov. 19, 1971, Ser. No. 200,340**

**Claims priority, application Italy, Nov. 28, 1970, 13059 A/70**

**Int. Cl. D06f** *33/02, 43/08*

**U.S. Cl. 68—12 R** **2 Claims**



A program controlled dry cleaning machine employing low boiling point solvents, and comprising a cleaning chamber, a solvent feeding tank, a soiled solvent still connected to a first solvent vapor condenser, a drying circuit comprising means for circulating hot air through the cleaning chamber and through a second solvent vapor condenser, the said vapor condensers being connected to the solvent feeding tank. The switching from one step to the following of the washing program is controlled on a time basis. A flowmeter is provided for sensing the flow of the solvent from said second condenser to the feeding tank, for controlling the duration of the drying step as a function of said flow.

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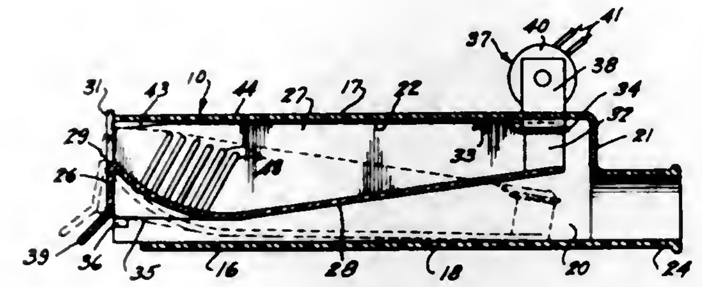
### 3,757,543
### COMBINATION DETERGENT DISPENSER AND MANUAL FILTER

**Albert T. Braga, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.**

**Filed Aug. 30, 1971, Ser. No. 175,959**

**Int. Cl. D06f** *39/02, 39/10*

**U.S. Cl. 68—17 R** **10 Claims**



A dispensing device adapted for use in a washing machine having a liquid circulation system for selectively dispensing a washing agent into the liquid of the circulation system. The dispensing device includes a housing which is connected in the circulation system of the washing machine and which preferably acts as a discharge for circulating the liquid back to the tub of the machine. A tray for holding the laundry agent or additive is removably received in the housing and is movable between a bypass position withdrawn from the flow of the circulating liquid and a dispensing position with the tray in the path of the circulating liquid to flush the agent contained therein into the machine. When inserted in the device, the tray is held by a permanent magnet in the bypass position until an electromagnetic force overcomes the magnetic forces of a permanet magnet to release the tray and enable a spring to bias the tray to the dispensing position. In one embodiment of the invention, the tray includes a filtering means comprising upstanding fingers to filter the washing liquid as it is passing across the tray to be discharged into the washing machine.

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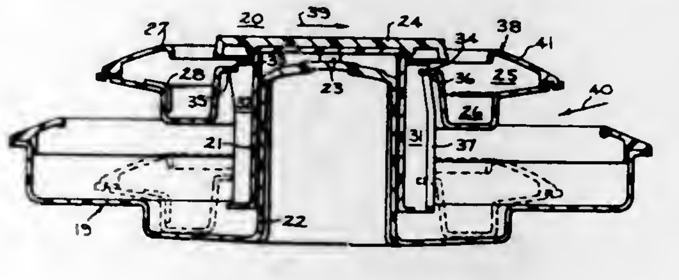
### 3,757,544
### CENTRIFUGALLY RESPONSIVE DISPENSER FOR WASHING MACHINE

**Eugene G. Olthuis, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Sept. 20, 1971, Ser. No. 181,947**

**Int. Cl. D06f** *39/02*

**U.S. Cl. 68—17 A** **7 Claims**



An agitator mounted dispenser of detergent or the like for a recirculation type automatic washing machine. A slightly unbalanced detergent compartment is held out of the flow of recirculating water by a support having mating ramp surfaces between the detergent compartment and the agitator mount. The ramp incline extends upwardly and outwardly in a radial direction from the agitator. During agitation, the centripetal force of the ramp holds the compartment on the support but during high speed rotation the centrifugal forces on the unbalanced compartment cause the compartment to ride up over the ramp support and drop down into the path of the recirculating water flow.

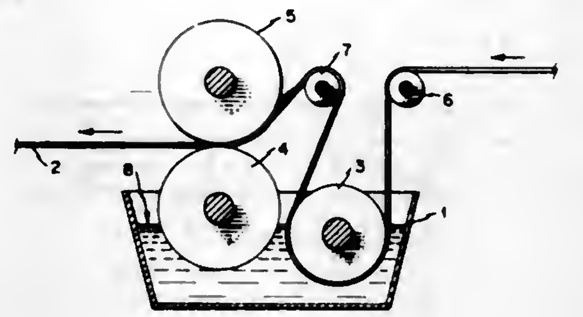
### 3,757,545
### PADDING APPARATUS WITH ANTI-FLOWBACK GUIDE

**Campbell P. Laney, Jr., Cheraw; William Thomas White, Patrick, and Harry L. Mercer, Cheraw, both of S.C., assignors to J. P. Stevens & Co. Inc., New York, N.Y.**

**Filed Oct. 19, 1971, Ser. No. 190,493**

**Int. Cl. B05c** *3/178, 3/18*

**U.S. Cl. 68—43** **5 Claims**



A padder with padding box, dip roll or kiss roll and padder rolls is provided with an additional roll over which the fabric moves and which is located above the nip of the padder rolls so that the fabric slopes down to the nip. This prevents pad liquor which accumulates as a pool just before the nip of the padder rolls from running down the fabric, which can cause off-shading, color variations and the like. The position of the anti-flowback roll is not critical and it can cause fabric to lead down to the padder roll nip through angles varying from 1° to as much as 355°, with 30° to 45° being a preferable range.

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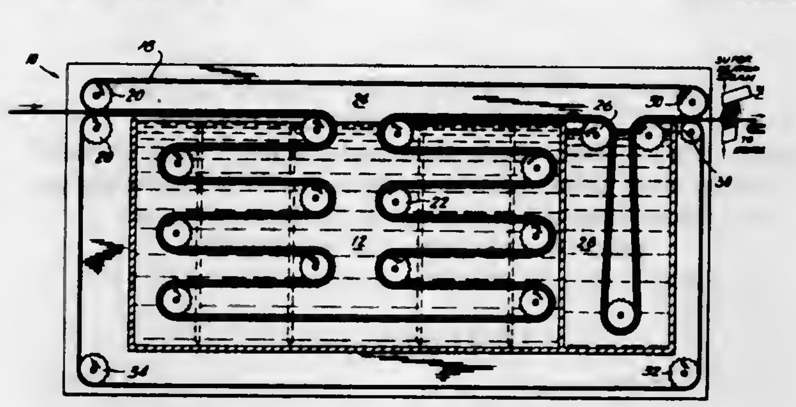
### 3,757,546
### COMMERCIAL LAUNDERING APPARATUS

**Abe D. Ross, 9275 A-Burton Way, Los Angeles, Calif.**

**Filed Nov. 10, 1971, Ser. No. 197,725**

**Int. Cl. B05c** *3/132;* **D06f** *15/00, 39/00*

**U.S. Cl. 68—44** **15 Claims**



In commercial laundering apparatus, an article to be cleaned is carried between a pair of flexible belts which are trained over a plurality of rollers with the articles carried by the belts passing through a washing solution held in a tank. Movement means are provided in the laundering apparatus to provide a brushing and flushing motion for the article to be cleaned to enhance the laundering process. These movement means cause the belts to move transverse to the direction of movement between the rollers, the transverse movement being both perpendicular to the plane formed by the belts and coplanar therewith.

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### 3,757,547
### KNOCK-OFF DEVICE

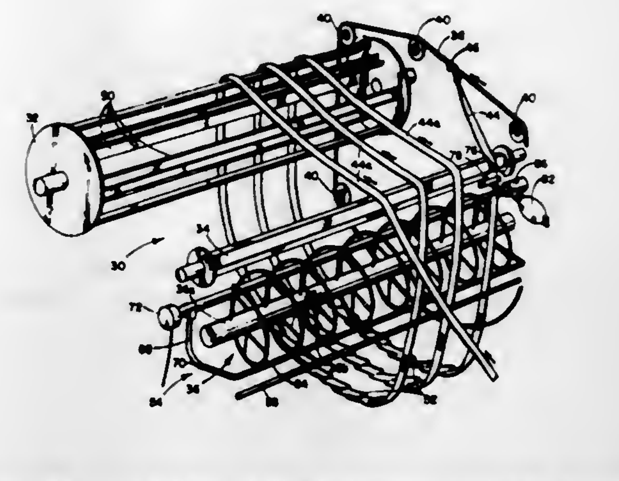
**John Orlick, Athol, Mass., assignor to Rodney Hunt Company, Orange, Mass.**

**Filed June 12, 1972, Ser. No. 261,981**

**Int. Cl. D06f** *43/08;* **G11b** *15/28*

**U.S. Cl. 68—176** **6 Claims**

This disclosure relates generally to equipment for subjecting fabric in rope or strand form to a liquid treatment, wherein a rotating helical guide is employed as part of a motor driven transport system to carry the fabric through a bath of treatment liquid while maintaining the fabric in a helical arrangement of spaced convolutions. The disclosure embraces a knock-off device for protecting the helical guide from damage that might otherwise be caused by knots, tangles or tautness in the fabric. The knock-off device preferably includes a pair of



laterally spaced elongated guide members between which the fabric is passed before passing over the helical guide. A knot, tangle, or tautness in the fabric will cause one of the guide members to be pivotally displaced. A switch is actuated in response to pivotal displacement of said one guide member to interrupt operation of the motor driven transport system until such time as the knot, tangle or tautness has been eliminated.

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### 3,757,548
### TEXTILE TREATMENT APPARATUS

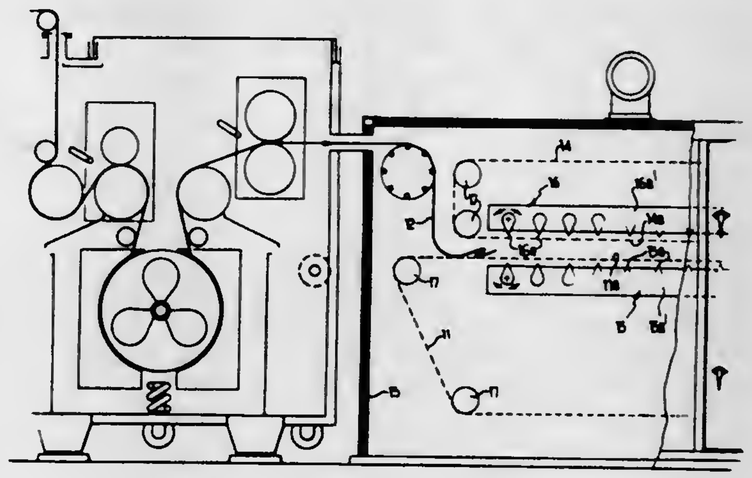
**Robert Alan Collinge, Rochdale, England, assignor to F. Smith & Company (Whitworth) Limited, Whitworth, Rockdale, Lancashire, England**

**Filed Apr. 24, 1972, Ser. No. 246,937**

**Claims priority, application Great Britain, Feb. 18, 1972, 7,751/72**

**Int. Cl. B05c** *9/04*

**U.S. Cl. 68—205 R** **7 Claims**

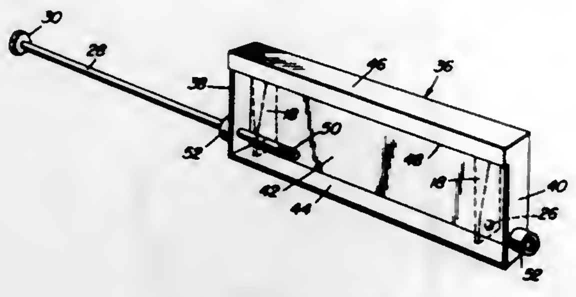


Apparatus for treating textile fabric in knitted or woven form for effecting relaxation thereof. An openwork conveyor structure supports and conveys the fabric under treatment. An abutment means of openwork construction is arranged in spaced opposed disposition relative to the conveyor structure. First and second treatment medium feed means are arranged in opposed disposition and are adapted to apply a treatment medium to the fabric. There is relative movement between the first and second treatment medium feed means in the feed direction of the conveyor structure to provide, at least periodically, oppositely directed displacement to the fabric at successive locations in the feed direction.

**3,757,549**

### OUTBOARD MOTOR CLAMP SCREW LOCK

**Carson Mullis, Jr., 2071 SW 68th Way, Miramar, Fla.**
**Filed Apr. 28, 1972, Ser. No. 248,435**
**Int. Cl. G05b** *73/00*; **G05g** *5/00*; **F16b** *41/00*
**U.S. Cl. 70—232** **7 Claims**



This is a device for locking an outboard motor on the transom of a boat so as to make it extremely difficult, if not impossible, for a thief to steal the outboard motor from the boat transom. Outboard motors are usually mounted on the boat transom by having a pair of spaced apart C-clamps secured over the transom. With this device, an elongated housing consisting of a tough metal strong box, partly open in its real wall, is hung over the clamping screw handles, the handles having alignable transverse apertures therethrough, and a tough metal bolt is extended through apertures in the confronting and side walls of the strong box and through the aligned apertures in the clamp screw handle ends. A tough metal lock nut is threaded on at least one end of the bolt, a key being needed and used to unlock the nut before it can be unthreaded. The nut is of the same type that is used for locking demountable automobile wheels on their hubs to prevent theft thereof. The tough metal of the bolt and nut, and also the strong box, is such as is used in the metal walls of a safe or vault. To increase the security, the bolt head and the lock nut may also be countersunk within a guard ring extending externally of the confronting end walls or, for maximum security, a guard thimble is countersunk with the confronting end walls, thus making it impossible to get access thereto with a bolt cutter or hacksaw or other burgler tool.

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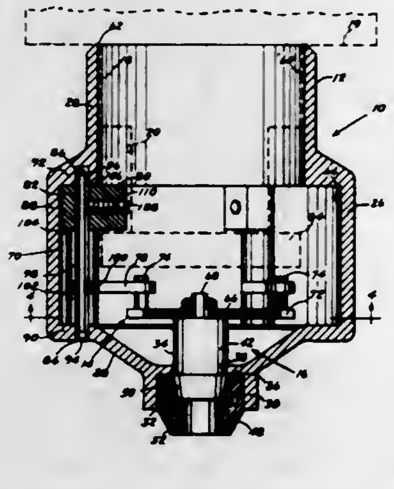
**3,757,550**

### THEFT PREVENTION DEVICE FOR TRAILERS

**Allan J. Kayser, 345 S. Race St., Denver, Colo.**
**Filed Nov. 8, 1971, Ser. No. 196,561**
**Int. Cl. F16b** *41/00*
**U.S. Cl. 70—232** **8 Claims**



A theft prevention device adapted to be locked onto the coupling pin of a trailer to prevent theft of the trailer includes a housing adapted to fit over the coupling pin and a control mechanism within the housing which is activated to positively secure and lock the device on the coupling pin by locking members pivotal into a recessed portion on the coupling pin.

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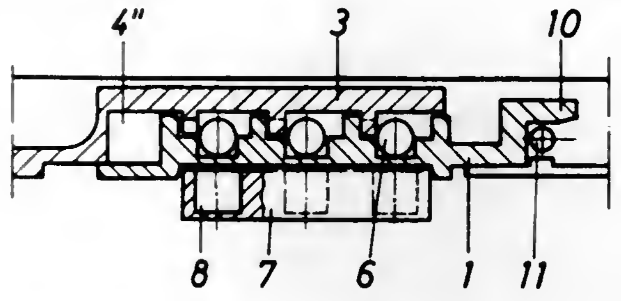
**3,757,551**

### MAGNETIC LOCK WITH RELATIVELY SLIDABLE ELEMENTS

**Horst Willach, Ruppichteroth/Bezirk Koln, Germany, assignor to Humwil-Werke Hugo Willach & Sohne, Koln, Germany**
**Filed Oct. 4, 1971, Ser. No. 186,035**
**Claims priority, application Germany, Nov. 12, 1970, P 20 55 550.4**
**Int. Cl. E05b** *47/00*
**U.S. Cl. 70—276** **24 Claims**



A first plate-like body has a predetermined number of chambers formed therein, of predetermined shape and location within the body; a second, plate-like body, relatively slidable with respect to the first is formed with chambers, the outlines of which, at least in part, match the chambers of the first body, and which further includes an additional chamber, and intercommunicating channels. Locking elements of magnetically responsive material, such as small balls, cylinders or the like are placed in the chambers to span both chambers. Upon application of a key having predetermined locations of zones of magnetization, the locking elements will assume the position in the chambers of the magnetization zones of the key. At those locations, one of the chambers is formed with interconnecting channels, permitting the locking elements to slide from one chamber into the next, and thus permit sliding movement of the plate-like bodies with respect to each other.

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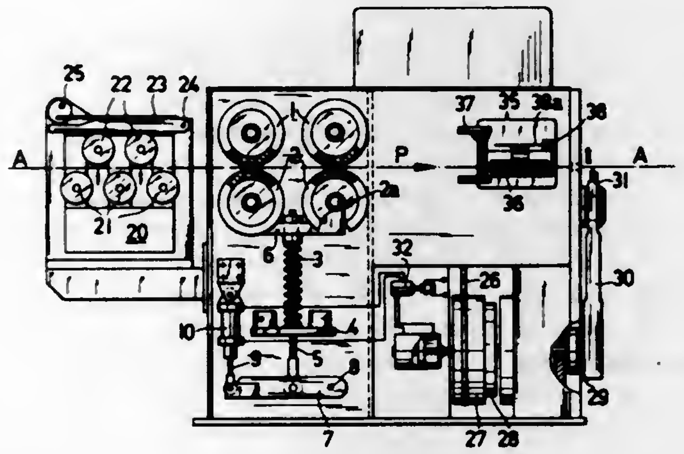
**3,757,552**

### MACHINE FOR STRAIGHTENING AND CUTTING METAL WIRE OR STRIP INTO PIECES

**Klaus Ritter; Hans Gott; Gottfried Zechner, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- und Verwertungsgesellschaft m. b. H., Graz, Austria**
**Filed Dec. 22, 1971, Ser. No. 210,824**
**Claims priority, application Austria, Dec. 22, 1970, A 11561/70**
**Int. Cl. B21f** *11/00*
**U.S. Cl. 72—12** **6 Claims**



A machine for straightening and cutting material in the form of metal wire or strip into lengths comprising a straightening device, a conveyor for conveying the material through the machine and a shearing device for cutting off lengths of the material. In this machine a measured length sensor for measuring the lengths of the material conveyed through the machine and an adjustable required length transmitter for controlling the length of material to be cut off are both connected to a comparison circuit which, as soon as the length sensed by the measured length sensor is equal to that to which the required length transmitter is adjusted brings the material to a standstill and operates the shearing device to cut off a length of the material. The machine is also provided with adjustable number-of-cuts counter which, after each cut has been made resets the measured length sensor and thus causes the cycle of operations of the machine to be repeated until the number of cuts to which the number-of-cuts counter is adjusted is reached.

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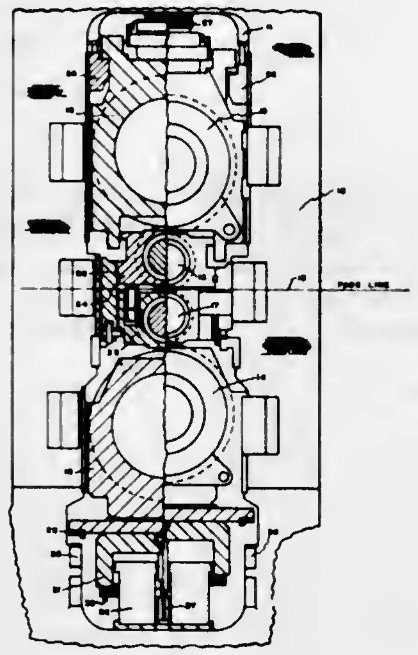
**3,757,553**

### HYDRAULIC MILLS

**Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.**
**Filed Aug. 13, 1971, Ser. No. 171,672**
**Int. Cl. B21b** *37/00*
**U.S. Cl. 72—21** **2 Claims**



The disclosure of the present invention relates to a rolling mill having hydraulic piston cylinder assemblies for controlling the gap of the work rolls of the mill. Linear INDUCTOSYNS (the term INDUCTOSYN being a registered United States trademark of the INDUCTOSYN CORPORATION) are arranged in openings provided in the pistons of the piston-cylinder assemblies for measuring accurately the relative movement of the pistons and cylinders as a function of changes in the roll gap caused by rolling variations. Because of the inherent capabilities of INDUCTOSYNS, they require no additional adjustment features, even though relatively large adjustments are required to maintain a fixed mill passline.

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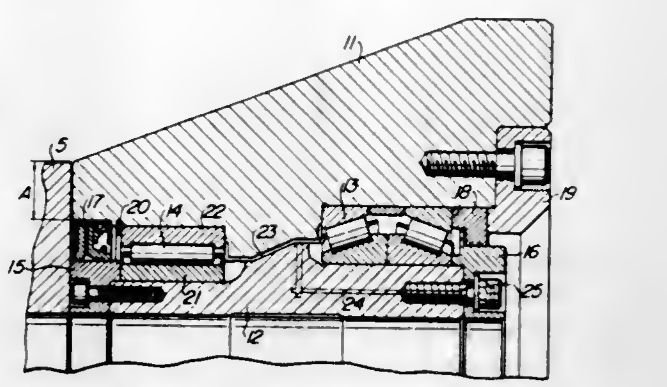
**3,757,554**

### SECTIONAL FORMING ROLL HAVING IMPROVED STRENGTH AND STABILITY

**Kaneaki Kida, Yasugi, and Kazuyoshi Ida, Yonago, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan**
**Filed June 8, 1971, Ser. No. 151,060**
**Claims priority, application Japan, Sept. 4, 1970, 45/77077**
**Int. Cl. B21b** *27/08*
**U.S. Cl. 72—43** **9 Claims**

Either one or both of an upper roll and a lower roll for cooperatively forming a ribbon of sheet metal into a desired form is divided into a plurality of driving sections and idling sections and a needle roller bearing is used for one of the two sets of bearings provided on a sleeve of each idling section fixedly mounted on a driving shaft, and further a labyrinth packing is used for one of two sets of oil seals, whereby a forming roll, well lubricated and having improved strength and stability can be obtained.



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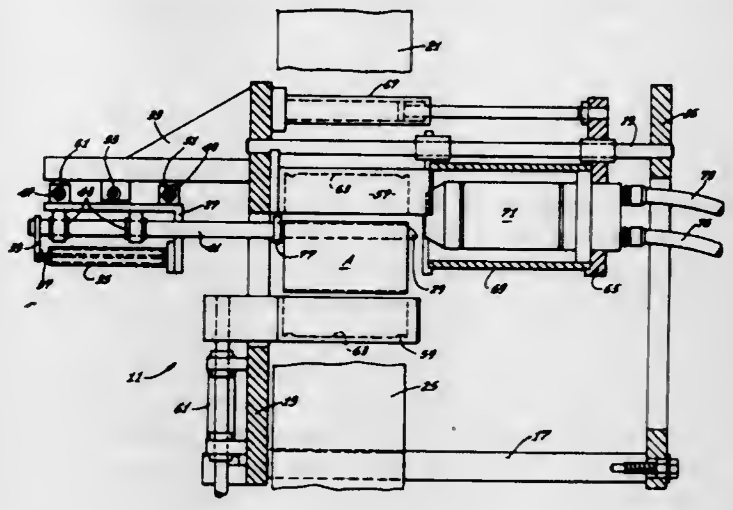
**3,757,555**

### CAN BODY EXPANDING AND FLANGING APPARATUS

**John Robert Blutt, Melrose, and Andrew Cecil Harvey, Boston, both of Mass., assignors to Vermont Marble Company, Proctor, Vt.**
**Filed Jan. 14, 1972, Ser. No. 217,874**
**Int. Cl. B21d** *22/12*
**U.S. Cl. 72—63** **18 Claims**



Apparatus for flanging and expanding a can body, which may be provided in a multi-station machine, including an axial core upon which are mounted three boot members. Two of the boot members, which are relatively short in length, may be pressurized simultaneously to form a flange at either or both ends of the can body by forcing the can body against the wall of a die. The third boot, situated between the flanging boots, may be similarly expanded by hydraulic pressure to reshape the central portion of the can body between necks thus formed intermediate the flanges and the central portion.

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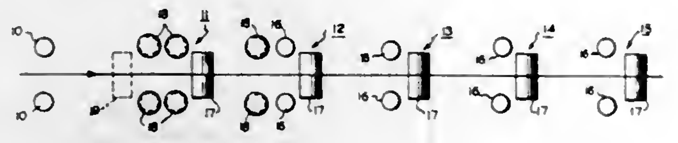
**3,757,556**

### METHOD OF ROUGHING SLAB TO PREDETERMINED WIDTH AND APPARATUS THEREOF

**Takaho Kawawa, Meguro-ku, Tokyo; Masamoto Kamata; Takishi Hirasawa, both of Kawasaki-shi, Kanagawa-ken, and Yoshisuke Ikegami, Meguro-ku, Tokyo, all of Japan, assignors to Nippon Kokan Kabushihi Kaisha, Tokyo, Japan**
**Filed Mar. 31, 1971, Ser. No. 129,777**
**Int. Cl. B21b** *13/08*
**U.S. Cl. 72—234** **12 Claims**

When roughing a continuously cast slab in a continuous hot rolling stand, the invention breaks down the width of the slab, having passed through a vertical scale breaker, by means of rolls having at least a pair of pressing calibers and thereafter the width of the slab is rolled by means of vertical rolls whereby the width of the slab is rolled more accurately than



was possible in the prior art, and accordingly changes of molds of continuous casting machines are no longer required during the continuous casting operation and such an operation is possible over many charges.

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### 3,757,557
### HYDRAULIC STRETCH LEVELLING MACHINE

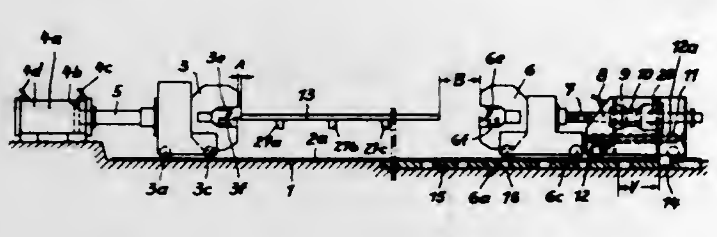
**Erwin Kost, Dahlienpfad 10, Osterath, Germany**

**Filed Apr. 6, 1972, Ser. No. 241,625**

**Claims priority, application Germany, Apr. 7, 1971, P 21 17 104.0**

**Int. Cl. B21d** ***11/04***

**U.S. Cl. 72—311** **10 Claims**



Hydraulic stretch levelling machines have a stretch gripper head which is powered by a hydraulic piston and cylinder drive unit in order to stretch level a workpiece; the other end of the workpiece is secured by a counter gripper head which includes an anchoring mechanism for anchoring it in position and which is adjustable at discrete intervals for allowing for different sizes of workpiece. I propose separating the anchoring mechanism from the counter gripper head and connecting the counter gripper head to the anchoring mechanism by steplessly variable connecting means so that the position of the counter gripper head can be steplessly variable in order to allow for different lengths of workpiece and in order to bring the workpiece properly between the jaws of the gripper head, without using the hydraulic piston and cylinder drive unit for this purpose.

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### 3,757,558
### APPARATUS FOR NECKING-IN TUBULAR MEMBERS

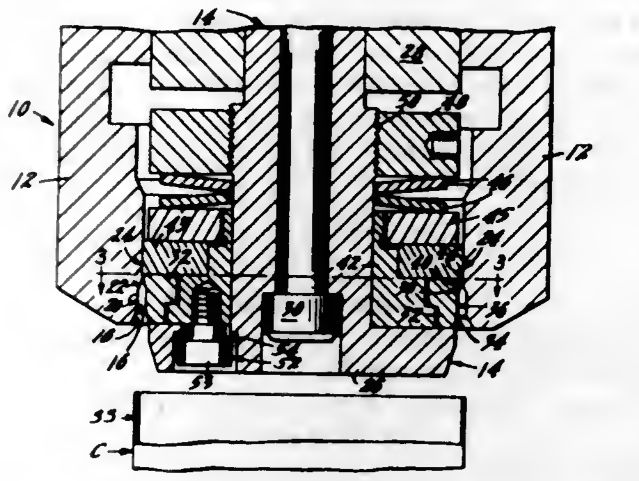
**Carl William Heinle, Pompano Beach, Fla., assignor to American Can Company, Greenwich, Conn.**

**Division of Ser. No. 231,207, March 2, 1972. This application Jan. 16, 1973, Ser. No. 324,115**

**Int. Cl. B21d** ***19/06***

**U.S. Cl. 72—354** **10 Claims**

Method and die assembly for necking-in tubular members wherein the die assembly comprises an outer reducing die and an inner die pilot comprised of a T-shaped holder on which is mounted a pilot ring that floats radially on an also mounted spring biased axially floating retaining ring means. The reducing die has a recessed inwardly angled directing surface on the wall of its inner chamber, and the pilot ring has a wide diameter circumferential step surface and two supporting surfaces of lesser diameter. A clearance is provided between the pilot ring supporting surfaces and the outer reducing die. The outer reducing die is brought into telescoping engagement with the marginal edge portion of the wall of a tubular member. This causes the reducing die directing surface to direct the marginal edge portion inwardly against the pilot ring step whereby the edge portion is directed into a groove formed by the pilot ring, the outer reducing die and a control surface which transversely engages the edge of the wall and controls its axial movement in relation to the die assembly. In the groove, the marginal edge portion is formed into a rim of reduced diameter. As the outer reducing die continues to move axially over the tubular wall, the directing surface directs the flow of tubular wall material into the aforementioned clearance and toward the lesser diameter pilot ring surfaces against and along which it rests to form a neck having a diameter less than that of the rim.



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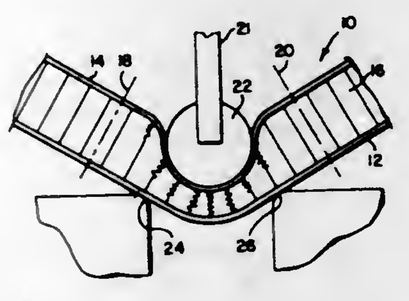
### 3,757,559
### METHOD FOR MAKING STRUCTURAL PANEL BENT FROM LAMINATED HONEYCOMB

**James W. Welsh, Logan, Utah, assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed Feb. 9, 1972, Ser. No. 224,835**

**Int. Cl. B21d** ***5/00***

**U.S. Cl. 72—379** **1 Claim**



A method is disclosed whereby a sandwich composite panel of other than flat configuration is bent from a flat panel by employing a brake-forming operation. The corners of the bent structural panel are shaped so that the inner and outer skins have substantially the same surface length in the bent panel as in the flat sheet. Thus, the sandwich laminate on either side of the bend is undeformed. The method comprises bending the inner lamination skin to a smaller radius and a longer arc than the outer skin. In the resultant bent structural panel, the surface length of each of the inner and outer skins is substantially the same and is substantially the same as before the bend.

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### 3,757,560
### BENDING DEVICE

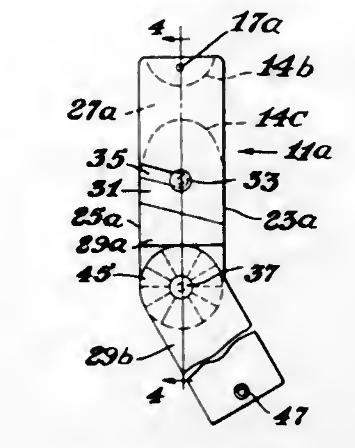
**Paul Hargash, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Dec. 2, 1970, Ser. No. 94,408**

**Int. Cl. B21j** ***13/08***

**U.S. Cl. 72—458** **10 Claims**

A device and method is described for bending an elongated article which comprises an elongated body having a transverse passage therein. Two convex wall sections within the body act as defining elements of the passage. An article is positioned within the passage and formed by altering the angle between the major axes of the body and article by rotating the body



and/or article in a plane operatively parallel with the two axes. This device is especially useful when the article to be formed, such as tubing, is attached in a confined location.

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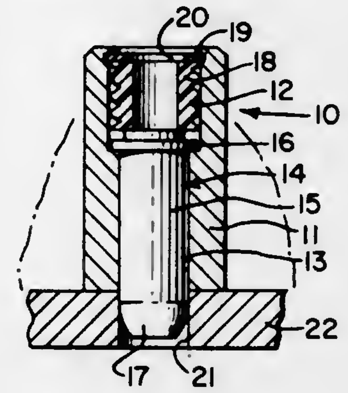
### 3,757,561
### CARTRIDGE LOCATOR

**Ronald E. Rupert, 231 N. College St., Palmyra, Pa.**

**Filed June 8, 1971, Ser. No. 150,998**

**Int. Cl. B21d** ***11/22***

**U.S. Cl. 72—461** **2 Claims**



A precision cartridge stock locator for use in stamping dies and the like includes a bushing, a headed pilot pin slidable within a bearing in the bushing, a polyurethane spring acting on the head of the pin, and a retainer for the spring.

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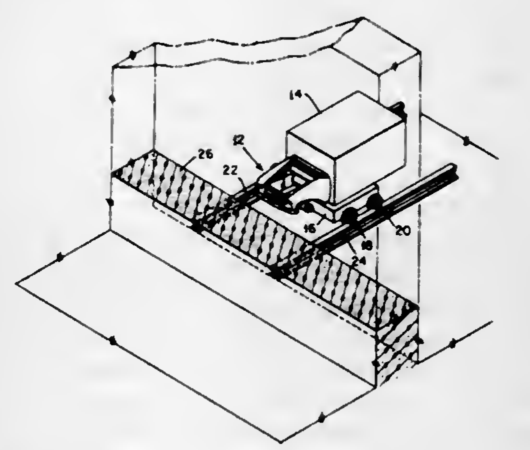
### 3,757,562
### METHOD OF IMPACT TESTING A METALLIC STRUCTURE

**Gerald L. Goldberg, and Henry W. Wessells, III, Phila., Pa., assignors to The Budd Company, Philadelphia, Pa.**

**Filed Oct. 20, 1971, Ser. No. 190,993**

**Int. Cl. G01n** ***3/30***

**U.S. Cl. 73—12** **5 Claims**



A method of testing a metallic structure comprises the steps of providing data relating to the structure, which may be data from a drawing or other source. A scale model of the metallic structure is then made of the metallic structure. The scale model is made of superplastic material having a stress-strain characteristic which is related to the stress-strain characteristic of the metallic structure. The scale model is then subjected to impact or collision testing with the test data acquired being used to determine what the reaction of the metallic structure would be if it were subjected to related impact or collision tests.

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### 3,757,563
### MEASUREMENT PNEUMATICALLY OF THICKNESSES OF COATINGS

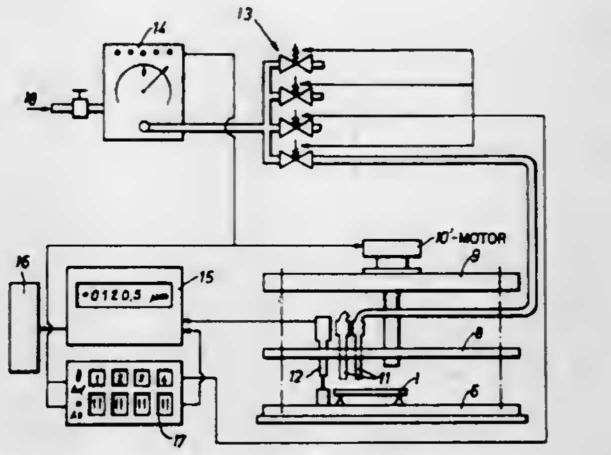
**Gunther Kampf, and Hans-Georg Volz, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Mar. 18, 1971, Ser. No. 125,662**

**Claims priority, application Germany, Mar. 24, 1970, P 20 14 071.0**

**Int. Cl. G01b** ***13/02***

**U.S. Cl. 73—37.5** **9 Claims**



Apparatus for pneumatically measuring the thickness of a coating on a support. A pneumatic measurement nozzle is mounted on a nozzle-carrying plate for directing a gas stream toward the support which rests on a base member. The nozzle-carrying member is movably mounted on guides. An absolutely calibrated fine measurement sensor is mounted on the device with one end connected to the nozzle-carrying plate and the other end connected to the base. A calibrated indicating instrument is operatively mounted in the pneumatic supply system for indicating discharge resistance at the nozzle and thereby indicating the elevation of the nozzle-carrying member relative to the base. For the measurement, a partially coated support can be placed on the base with an uncoated portion of the support beneath the nozzle. The nozzle can be moved to a selected elevation as a first position, and the elevation of that position can be read with the fine measurement sensor and the value stored in a computer, and the reading on said calibrated indicating instrument for said elevation can be noted. The support can then be moved so that a coated portion thereof is beneath the nozzle, and the nozzle can then be moved to a second position to provide the same reading on the calibrated indicating instrument. The elevation of the nozzle at said second position can be read with the fine measurement sensor and the measurement value fed to the computer, and the film thickness can then be determined by comparing the readings of the fine measurement sensor.

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### 3,757,564
### CIGARETTE INSPECTION

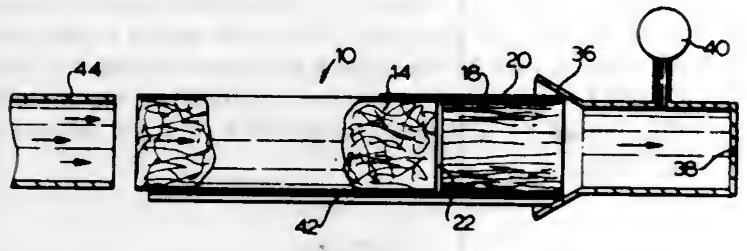
**Camille R. Blackburn, Willowdale, Ontario, and Jurgen F. Schmelzer, Downsview, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Canada**

**Filed Feb. 9, 1972, Ser. No. 224,829**

**Int. Cl. G01m** ***3/04***

**U.S. Cl. 73—45.1** **5 Claims**

Cigarettes are inspected for imperfections in the sealing of the filter to the cigarette rod by applying air at a relatively high velocity to the tobacco end of the cigarette while holding only the filter end of the cigarette. A characteristic of air flow of



the cigarette is measured, such as the pressure drop over the length of the cigarette. When the characteristic is abnormal, then the sealing is imperfect and the cigarette is rejected.

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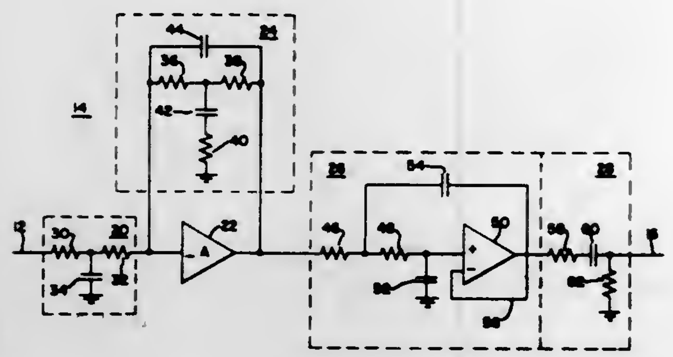
### 3,757,565
### NON-CONTACT VIBRATION VELOCITY APPARATUS

**Thomas Y. Wong, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**
**Filed Feb. 22, 1972, Ser. No. 228,182**
**Int. Cl. G01n** *29/00*
**U.S. Cl. 73—71.4** **4 Claims**



A non-contact device for measuring and monitoring vibrational velocity of a rotating shaft including a displacement probe positioned immediately above the surface of the shaft for generating an electrical displacement signal proportional to the instantaneous standoff distance between the probe and the shaft surface. The electrical signal is coupled to an active network which takes the derivative of the components of the displacement signal below a selected value and which takes the integral of the components of the displacement signal above a selected value. The output of the active network therefore is only a function of the low frequency components of the signal which, in turn, are indicative of velocity of the mass center of the shaft. Suitable circuitry is provided to display the output of the active network.

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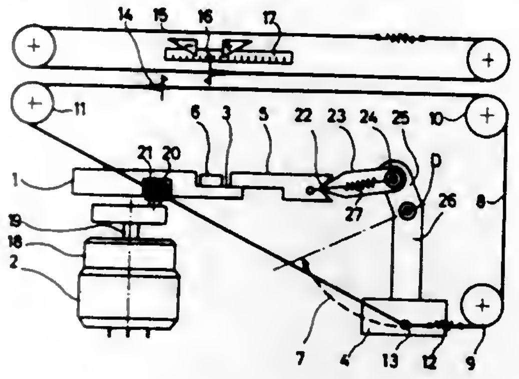
### 3,757,566
### HARDNESS TESTER FOR TABLETS

**Karl A. Flury, Dietikon, 8953 Dietikon, Switzerland, assignor to Heberlein & Co., Wattwil, Switzerland**
**Filed Sept. 28, 1971, Ser. No. 184,450**
**Claims priority, application Switzerland, Oct. 14, 1970, 15179/70**
**Int. Cl. G01n** *3/08*
**U.S. Cl. 73—78** **16 Claims**

A hardness tester for tablets comprises a power-driven pressure slide supporting the tablets and a measuring slide mechanically connected to a weight. The slides and the weight constitute a pendulum weight to which a cord is fastened. The cord is trained about guide rolls and carries between two of



the rolls an engaging means actuating a drag pointer fastened to a second cord parallel to the first cord. The force acting on the tablet is indicated on a linear scale.

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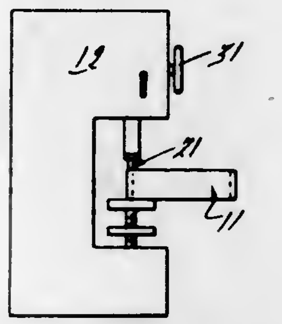
### 3,757,567
### METHOD FOR DETERMINING FORMABILITY OF MATERIAL

**Donald P. Worden, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.**
**Filed Nov. 9, 1970, Ser. No. 87,798**
**Int. Cl. G01n** *3/42*
**U.S. Cl. 73—81** **9 Claims**



Susceptibility of welded tubing to splitting as a result of cold working is determined by comparing resistance to deformation readings throughout a transverse cross section of the tubing, the readings being taken on a Rockwell hardness tester using a penetrator having a specially shaped penetrating edge.

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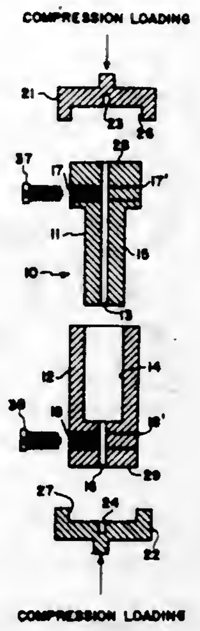
### 3,757,568
### COMPRESSION TEST ASSEMBLY

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Anthony H. Kariotis, Tallmadge, Ohio**
**Filed Feb. 25, 1972, Ser. No. 229,413**
**Int. Cl. G01n** *3/04*
**U.S. Cl. 73—94** **7 Claims**

A compression test assembly for long, small diameter test specimens having first and second means which interfit in telescoping manner and respectively define first and second holes centered around the same longitudinal axis and having the same diameters. First and second end cap means receive opposite ends of the first and second means, respectively, and define third and fourth holes centered around the same longitudinal axis as the first and second holes. The test specimen when placed in the first and second holes has first and second ends which extend into the third and fourth holes when the first and second means are interfitted in telescoping manner, the diameter of the first, second, third and fourth holes being just sufficiently larger than the diameter of the test specimen to prevent binding. The test specimen is thereby automatically aligned and laterally supported when compressive force is applied to the end caps means and transmitted to the test specimen during testing.



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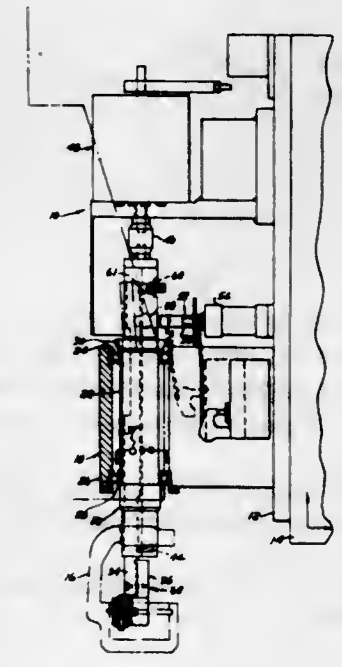
### 3,757,569
### FLAW OR CHIP DETECTOR

**James E. O'Brien, Kettering, and Emerson E. Schmidt, Dayton, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.**
**Filed Jan. 24, 1972, Ser. No. 220,023**
**Int. Cl. G01b** *5/28*
**U.S. Cl. 73—104** **5 Claims**



An arrangement is disclosed which detects flaws such as burrs, nicks, and/or chips by measuring the extent of deviations of the surface inspected by means of a displaceable gaging head traversed over the surface and an arrangement for generating signals corresponding to the displacement of the gaging head, with means to distinguish dimensional variations from flaws or chips by eliminating signals corresponding to displacements occurring at a low rate of change per unit length of the surface and detecting signals corresponding to displacements occurring at a high rate of change indicating the presence of a flow or chip. In the preferred embodiment, the gaging head includes a roller element adapted to be moved over an internal surface of a bore by a rotatable carrier assembly, with the angular displacements of a gaging head support member pivotally carried by the carrier assembly measured by an electronic transducer to provide the displacement signal, which is amplified and fed to an electronic filter circuit used to eliminate displacement signals corresponding to a low rate of change thereof.

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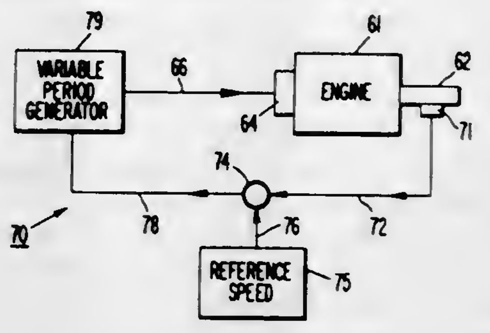
### 3,757,570
### SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES

**Richard Thomas Cowley, Littleton, and Leonard Robin Hulls, Marblehead, both of Mass., assignors to RCA Corporation, New York, N.Y.**
**Filed Oct. 6, 1971, Ser. No. 187,068**
**Int. Cl. G01m** *15/00*
**U.S. Cl. 73—116** **11 Claims**



Apparatus and process for testing and analyzing the overall performance of an internal combustion engine by providing a simulated load to the engine. The simulated load is effected by periodically interrupting the engine ignition to reduce the total developed power of the engine to a value equal to the frictional horsepower at a desired speed. The period of the interruption cycle is controlled in response to the desired speed.

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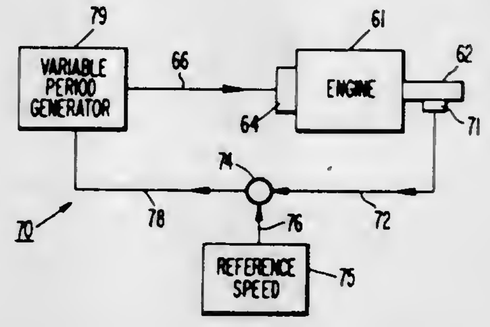
### 3,757,571
### SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES

**George Athanasios Chamberas, Chelmsford, Mass., assignor to RCA Corporation, New York, N.Y.**
**Filed Oct. 6, 1971, Ser. No. 187,069**
**Int. Cl. G01m** *15/00*
**U.S. Cl. 73—116** **18 Claims**



Apparatus and process for testing and analyzing the overall performance of an internal combustion engine by providing a simulated load to the engine. The simulated load is effected by periodically interrupting the engine ignition to reduce the total developed power of the engine to a value equal to the frictional horsepower at a desired speed. The period of the interruption cycle is controlled in response to the desired speed.

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### 3,757,572
### COMPRESSION TESTING METHOD

**Bob G. Gower, and Frederick L. Voelz, both of Harvey, Ill., assignors to Atlantic Richfield Company, New York, N.Y.**
**Filed Apr. 14, 1972, Ser. No. 244,244**
**Int. Cl. G01m** *15/00*
**U.S. Cl. 73—116** **12 Claims**

Disclosed is a method for determining whether a combustion chamber of an internal combustion engine is compression sound. The method involves removing individual combustion chambers from service, determining the exhaust gas carbon monoxide concentration with individual chambers removed from service and comparing these carbon monoxide concentrations. An individual combustion chamber is compression unsound if the exhaust gas carbon monoxide concentration with it removed from service is substantially less than the maximum carbon monoxide concentration obtained with any other combustion chamber removed from service. Also disclosed is a method for balancing the air-fuel composition supplied to different banks of combustion chambers. This method involves removing from service one combustion chamber from each bank, analyzing the engine exhaust gases for carbon monoxide with the chamber removed from service and comparing these carbon monoxide concentrations. A balanced air-fuel composition is supplied to different banks of combustion chambers when the exhaust gas carbon monoxide concentrations obtained by removing one chamber from each bank are substantially the same.

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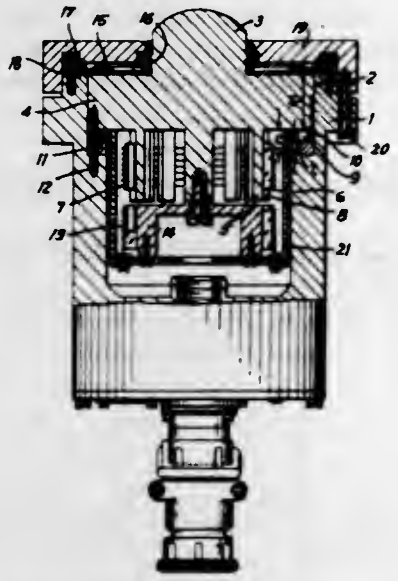
### 3,757,573
### LOAD CELL WITH RESISTANCE STRAIN GAUGES

**Vasily Ivanovich Pechuk, ulitsa Umanskaya, 49, kv. 8; Vladimir Mikhailovich Pompeev, ulitsa Dorogoznitskaya, 13, kv. 28, and Galina Petrovna Taratukhina, ulitsa Chapaeva, 8, kv. 13, all of Kiev, U.S.S.R.**

**Continuation of Ser. No. 875,119, Nov. 10, 1969. This application Jan. 25, 1972, Ser. No. 220,640**

**Int. Cl. G01l** ***1/22***

**U.S. Cl. 73—141 A** **3 Claims**



A load cell with resistance strain gauges comprising a solid insertion piece placed between an internal projection of the cell housing and a resilient element, the thickness of said insertion piece being selected depending upon the thickness of the resilient element so as to make a constant value with it. The latter fact provides a means for maintaining the mounting size of the cell constant when loads being measured are changed within a wide range.

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### 3,757,574
### APPARATUS FOR DETECTING THE ABILITY OF PAPER TO WITHSTAND PRINTING PROCESSES AND THE LIKE

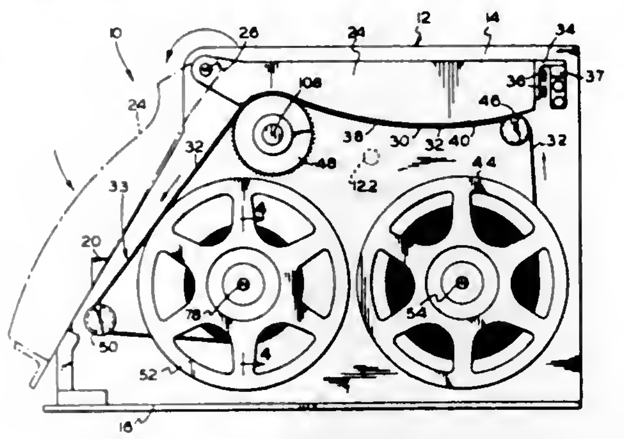
**Robert Plankinton, 668 McVey, Apt. 109, Lake Oswego, Oreg.**

**Filed Sept. 28, 1971, Ser. No. 184,417**

**Int. Cl. G01n** ***3/02***

**U.S. Cl. 73—150 A** **13 Claims**

A pick and bond tester employs a pivotable sample block upon which a sample of paper to be tested is supported. A transparent, pressure sensitive tape is adhered to the sample and partially doubled back for adhesion to a belt-like strip or web positioned along and in abutting relation to the pressure sensitive tape and sample. This web is transported at a selected velocity or acceleration for withdrawing the tape from the sample in a direction such that the tape is turned at an angle of 180° as removed. The picking resistance of the paper is determined according to the web speed at which picking first occurs, while the sample's Z-direction strength is determined by the speed at which complete delamination takes place.



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### 3,757,575
### WELL-LOGGING METHOD

**Robert P. Murphy; William W. Owens, and Dwight L. Dauben, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.**

**Filed July 9, 1971, Ser. No. 161,342**

**Int. Cl. E21b** ***49/00***

**U.S. Cl. 73—152** **13 Claims**

This invention relates to determining the oil saturation in an underground rock reservoir by use of a log-inject-log technique. The formation rock adjacent the well bore is prepared such that the saturation conditions there are representative of those in the interwell area. A log such as an electric or thermal decay time log is then run. A driving fluid such as alcohol or a micellar fluid is injected to drive all of the fluid from the pore space in the volume of rock being logged. Then the driving fluid is displaced by a second driving fluid which has the same resistivity or thermal neutron capture cross-section as the formation water. The formation is then again logged by the same equipment as the first log run. The formation water saturation at the time the first log was run is then determined from these two logs.

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### 3,757,576
### APPARATUS FOR MEASURING THE QUANTITY OF OUTFLOW IN OPEN CANALS OR THE LIKE

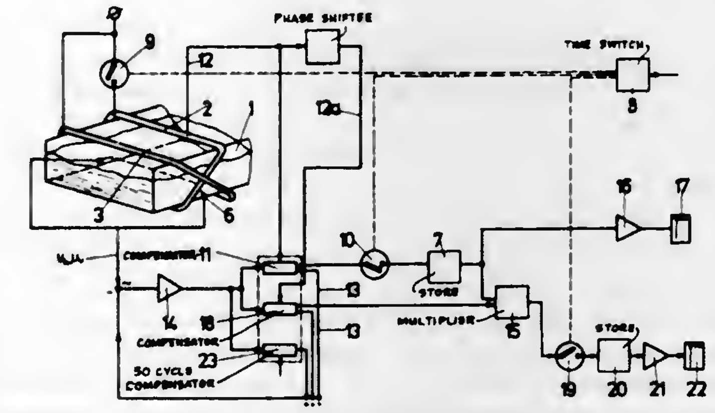
**Jacob J. P. Rolff, Schwaikheim, and Franco P. Di Marco, Stuttgart, both of Germany, assignors to J. C. Eckardt AG, Cannstatt, Germany**

**Filed Dec. 17, 1970, Ser. No. 99,104**

**Claims priority, application Germany, Dec. 18, 1969, P 19 63 413.0**

**Int. Cl. G01f** ***1/00;*** **G01p** ***5/08***

**U.S. Cl. 73—194 EM** **15 Claims**



An apparatus and a process for measuring the quantity of flowing liquids being discharged in open canals, gutters, partially filled pipes or the like, wherein a measured value is obtained for the flow velocity and the height of the level by measuring the voltage induced in an electromagnetic field by movement of the liquid. Two coils are provided, at least one of which can be switched on or off separately from the other one. The coils are arranged in a cross manner such that the field resultants thereof extend in the flow direction and at right angles thereto, and at least one of the coils is connected so that its polarity can be reversed. The electromagnetic fields are alternately switched vertically for measuring the velocity and horizontally for measuring the level, and then multiplying the measured values with each other.

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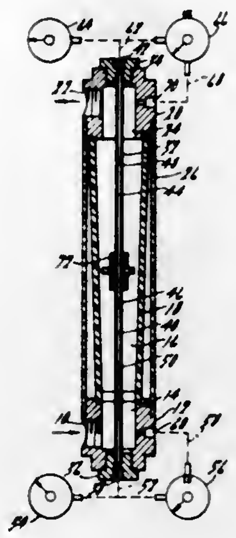
### 3,757,577
### HYDRAULIC REMOTE FLUID FLOW INDICATING DEVICE

**John W. Bozek, 6093 Waterfront Dr., Waterford, Mich.**

**Filed Aug. 27, 1971, Ser. No. 175,639**

**Int. Cl. G01f** ***1/00***

**U.S. Cl. 73—209** **7 Claims**



A device connected to a remote pressure gauge which will activate this gauge when the fluid flow through the device exceeds or diminishes below selective flow rates. The fluid pressure of the flowing fluid being the activating force on the indicating gauge and said fluid pressure being directed to the gauge selectively through holes in a central guide tube which are open or closed to fluid pressure depending on the position of the variable area flowmeter plummet on said guide tube.

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### 3,757,578
### TURBINE METER HAVING IMPROVED ACCURACY

**William D. Clinton, Tulsa, Okla., assignor to Signet Controls, Inc., Tulsa, Okla.**

**Filed Nov. 5, 1971, Ser. No. 195,974**

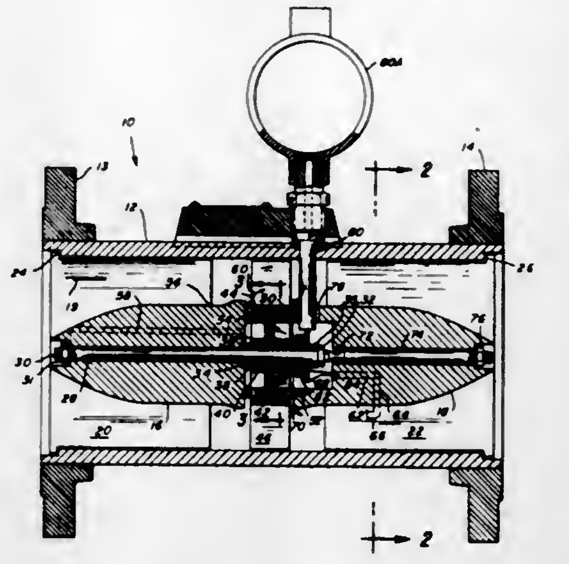
**Int. Cl. G01f** ***1/10***

**U.S. Cl. 73—231 R** **8 Claims**

The conventional axial flow turbine type liquid meter has a tubular casing and a streamlined cylindrical core coaxial with the cylindrical casing. The cores are generally made in two parts which are separated with a rotatable turbine wheel in between, with blades which are operated by the liquid flow in the annular portion between the core and the casing. Such meters are found to be nonlinear when used with high viscosity liquids. In general they show a greater flow than the true flow when the viscosity is high. It is advantageous to introduce a viscous drag on the rotor to compensate for this over-indication.

In this invention the rotor wheel is constructed with a hub, an annular plate perpendicular to the axis of the wheel extending out from the hub and a cylindrical flange mounted on the outside of the annular plate, the flange carrying the plurality of radial blades. This construction forms an annular depression in one or both sides of the wheel.

The invention involves providing an extension tubular portion to the inner end of one or both of the upstream and downstream parts of the central core. These extensions cooperate with the annular depression to provide narrow spacings between the extensions and the depression whereby the viscous liquids in this meter can provide sufficient drag on the wheel to correct for the over-indication. The tubular extensions may be of fixed spacing relative to the wheel or may be of variable spacing controlled by means exterior of the meter.



Means are also indicated for flowing liquid into the drag space of the annular depression to insure that there is always liquid in the drag space of the same type, nature, and viscosity as that flowing through the meter.

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### 3,757,579
### WATER-COOLED MEASURING PROBE FOR CONTINUOUSLY MEASURING THE TEMPERATURE OF HOT LIQUID METAL BATHS IN GREAT BASIC OXYGEN CONVERTERS

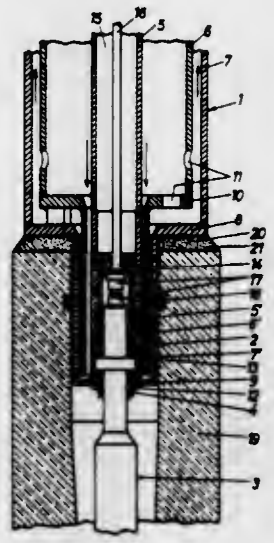
**Hellmuth Smejkal, and Gunter Poferl, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlweke Aktiengesellschaft, Linz, Austria**

**Filed Aug. 2, 1971, Ser. No. 168,267**

**Claims priority, application Austria, Aug. 17, 1970, 7434**

**Int. Cl. G01k** ***1/14***

**U.S. Cl. 73—343 R** **2 Claims**



The invention relates to a water-cooled measuring probe for continuously measuring the temperature of hot liquid metal baths, comprising a probe body, a probe head set back relative to said body in shoulder-like fashion under formation of an annular floor part enclosing with the longitudinal axis of the probe an angle of 80° – 120°, a sensing portion and a refractory jacket releasably attached to the probe body and surrounding said probe head and sensing portion. Thus the stability of the measuring probe is enhanced without impairing the strength of the connection between probe head and refractory jacket or the measuring accuracy.

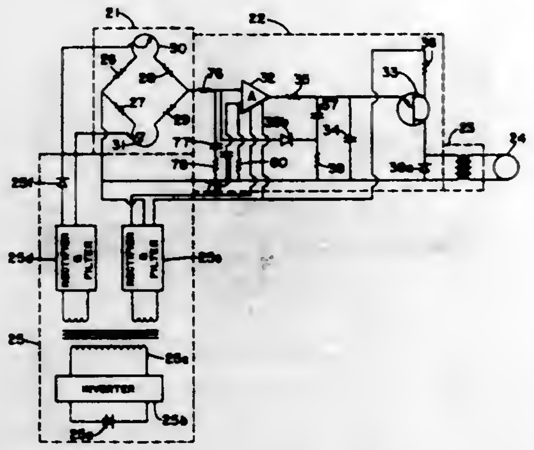
### 3,757,580
### DEVICE FOR MEASURING STRAIN IN ROTATING BODIES

**Charles W. Crocker, Houston, and Charles E. Barton, Kemah, both of Tex., assignors to Esso Production Research Company, Houston, Tex.**

**Filed July 6, 1970, Ser. No. 52,207**

**Int. Cl. G01l *3/10***

**U.S. Cl. 73—136 A** **10 Claims**



A device for measuring strain in a rotating body comprising a resistance strain gauge, a voltage-to-frequency converter, a pulse transformer, and a frequency meter. The resistance strain gauge bonded to the rotating body produces a direct current output signal having a voltage amplitude linearly proportional to the strain in the body. The voltage-to-frequency converter translates the strain gauge output signal into a pulsating signal, the frequency of which is proportional to the strain gauge output signal. The pulse transformer transmits the pulsating signal to a stationary meter which can be calibrated in useful engineering units such as strain, stress, force, or torque.

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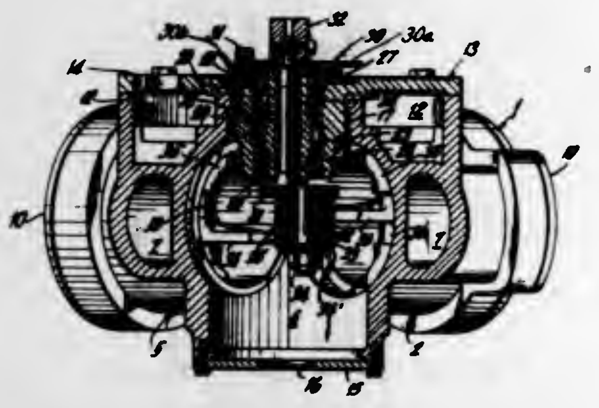
### 3,757,581
### DISPLACEMENT METER FOR MEASURING FLUIDS

**Paul A. Mankin; Thomas O. Mitchell, and Paul Zanoni, all of Muskegon, Mich., assignors to Bennett Pump Incorporated, Muskegon, Mich.**

**Filed Oct. 28, 1971, Ser. No. 193,303**

**Int. Cl. G01f *3/04***

**U.S. Cl. 73—247** **10 Claims**



The disclosure relates to an improved meter for measuring fluids such as gasoline including a plurality of pistons connected to a crankshaft by means of flexible rods, with the common crankshaft being journalled in axial relation to a series of cylinders. An adjustable eccentric mechanism is arranged on the crankshaft to enable an accurate adjustment of the stroke of the pistons, and a consequent adjustment of the displacement of the pistons to achieve a meter of high precision.

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### 3,757,582
### TUBULAR SPRING ELEMENT AND A METHOD OF PRODUCING THE SAME

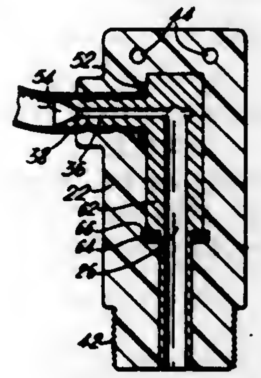
**Englebert Sellmaier, 8242 Bischofselwsen, Loipler; Wolfgang Hartling, 824 Schonau, Haus Waltraud, and Helmut Schnurr, 8242 Bischofswiesen, Rosspointweg, all of Germany**

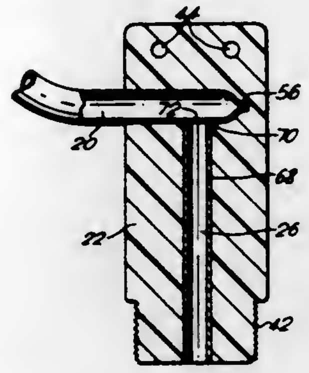
**Filed Feb. 7, 1972, Ser. No. 224,112**

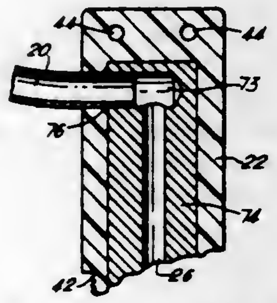
**Claims priority, application Germany, Aug. 10, 1971, P 21 40 086.2**

**Int. Cl. G01l *7/04***

**U.S. Cl. 73—418** **25 Claims**







A tubular spring having a first end and a second end is fixed at its first end in a plastic holder. The plastic holder has a central passage. The second end is closed by a terminal fitting. The interior of the tubular spring communicates with the passage in the holder but is otherwise sealed in relation to the outside atmosphere.

The tubular spring is fixed within the holder by injection molding the holder about the first end of the spring. An insert may be disposed within the portion of the tubular spring within the holder to prevent deformation of the spring. Alternatively, a removable filler material may be introduced into the tubular spring and removed after the injection molding step.

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### 3,757,583
### FLUID SAMPLING VALVE

**Frederick A. Ludewig, Jr., Ballston Spa, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.**

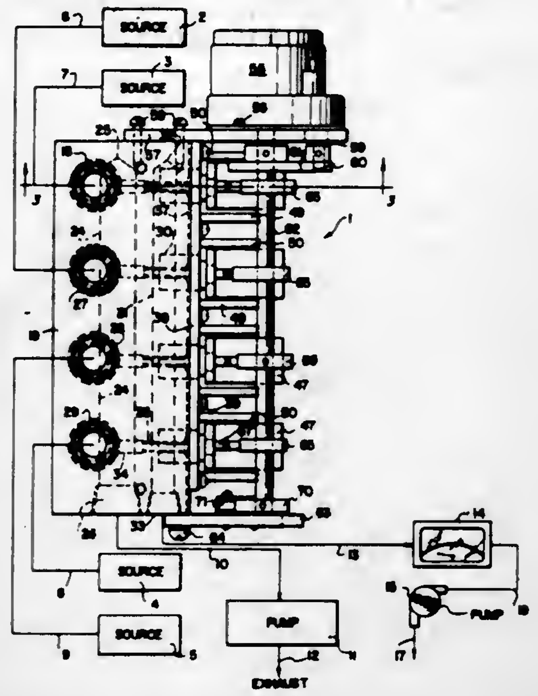
**Filed Feb. 8, 1971, Ser. No. 113,256**

**Int. Cl. G01n *1/26***

**U.S. Cl. 73—421.5 R** **20 Claims**

A sampling valve to be used in the system wherein fluid samples are to be selectively taken from a plurality of sources and fed to a common monitoring device or the like is provided

with a valve block having separate parallel bores to be connected to the sources, a common independent exhaust bore to receive continuous flow from all of the source bores, and a corresponding plurality of sample passages for tapping each of the source bores between their inlets and the common exhaust bore. The system may be balanced and calibrated with set screw restrictors for each of the source bores. A common rotary cam shaft operates bracket mounted L-shaped pivoting levers for actuating corresponding numbers of switches and diaphragm type valves in fluid series between the sample passages communicating with the source bores and a single sample outlet.



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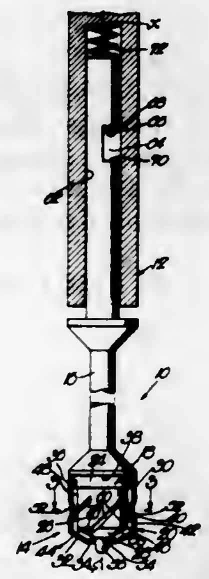
### 3,757,584
### DILUTER FOR LABORATORY TITRATION

**Reginald R. Gallant, Bristol, Conn., assignor to Linbro Chemical Co., Inc., New Haven, Conn.**

**Filed Mar. 13, 1972, Ser. No. 233,887**

**Int. Cl. G01n *1/10*; B01f *3/08***

**U.S. Cl. 73—425.4 P** **20 Claims**



A diluter having a shaft, and a liquid holding body at one end of and coaxial with the shaft, of which the body has a ring-shaped chamber of capillary width about its axis, and axially spaced ports providing sole communication between the chamber and the outside, and cam means in the body inclined to the body axis and exposed to the chamber for impelling liquid therein on oscillating the body about its axis.

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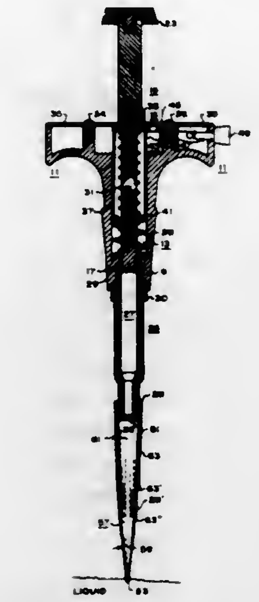
### 3,757,585
### PIPETTE APPARATUS

**Robert E. Heller, and Stanley T. Hall, both of Santa Rosa, Calif., assignors to Heller Laboratories, Santa Rosa, Calif.**

**Filed Sept. 15, 1971, Ser. No. 180,814**

**Int. Cl. B01l *3/02***

**U.S. Cl. 73—425.6** **4 Claims**



A manually-operated pipette for handling small volumes of liquid includes a spring-biased plunger and volume rod extending into a volume chamber. A spring-biased overriding slide sleeve is coupled to the plunger only during overriding ejection motion of the plunger, and switch means coupled to the sleeve provides electrical signalling of the ejecting motion. A removable universal disposable tip for pipettes of various maximum capacities communicates with the volume chamber of the body.

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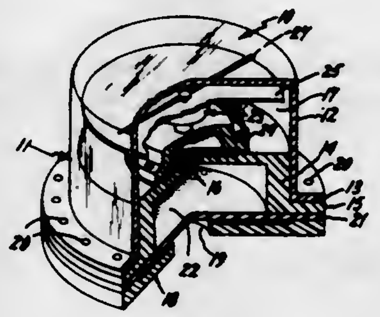
### 3,757,586
### PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT

**Marcus P. Borom, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 16, 1971, Ser. No. 181,048**

**Int. Cl. G06g *5/00***

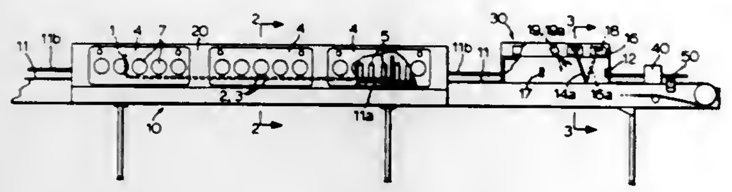
**U.S. Cl. 73—432 R** **8 Claims**



A pneumatic analogue computer for use in calculating and indicating decompression schedules is disclosed. It utilizes a semipermeable membrane through which a gas diffuses in simulation of the uptake and release of nitrogen by a diver's body tissue during the hyperbaric exposures of underwater excursions.

### 3,757,587
### DEVICE FOR TESTING THE TIGHTNESS OF CONTAINERS

**Jurgen Ahnsorge, Hamburg, Germany, assignor to Hans Schwarzkopf GmbH, Hamburg, Germany**
**Filed May 6, 1970, Ser. No. 35,205**
**Claims priority, application Germany, May 6, 1969, P 19 23 012.7**
**Int. Cl. G01m** *3/16*
**U.S. Cl. 73—45.4** **1 Claim**



An apparatus for testing the tightness of containers such as aerosol containers in which there are means for heating the containers, means for detecting leakage of gases from the containers and means for removing containers having leaks. The containers are heated by a high frequency electrical field and passed through a suction detecting means which actuates the container removal means upon detection of any leaked gases.

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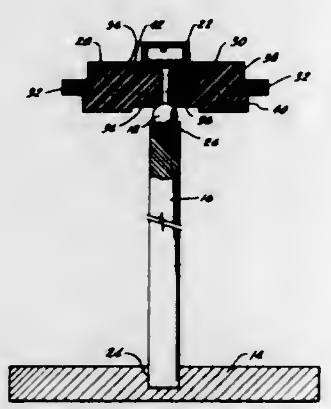
### 3,757,588
### WHEEL BALANCER

**William C. Bateman, 1110 E. 78th St., Derby, Kans.**
**Filed Sept. 23, 1971, Ser. No. 182,942**
**Int. Cl. G01m** *1/12*
**U.S. Cl. 73—483** **1 Claim**



A wheel balancer has pedestal mountable in a base. A wheel support mounts on the pedestal by a spherical bearing. The wheel support supports a wheel and a level indicator on one side, and is supported from the other by the spherical bearing. It is reversible to support different sized wheels.

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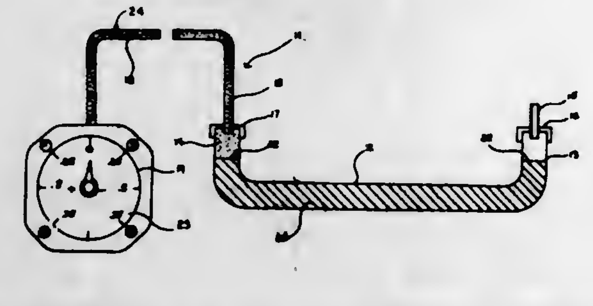
### 3,757,589
### FORCE INDICATOR

**Robert O. Brandt, Jr., 5027-C, Ft. Sumter Rd., Raleigh, N.C.**
**Filed May 20, 1971, Ser. No. 145,296**
**Int. Cl. G01p** *15/02*
**U.S. Cl. 73—502** **6 Claims**



In abstract, a preferred embodiment of this invention is a remote reading force measuring and indicating device utilizing a generally horizontally disposed, U-shaped liquid containing tube connected to a dial type pneumatic instrument.

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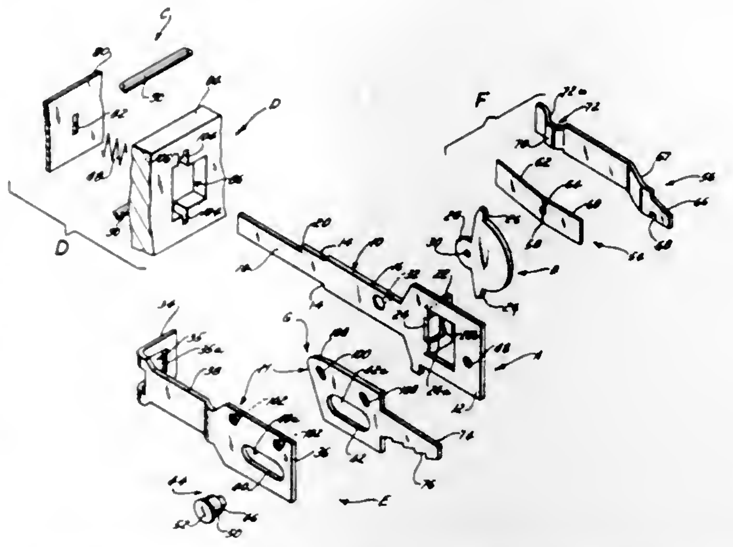
### 3,757,590
### PUSHBUTTON ASSEMBLY

**Donald B. Mears, Jr., Thompsonville, Conn., assignor to General Instrument Corporation, Newark, N.J.**
**Filed June 30, 1972, Ser. No. 267,909**
**Int. Cl. F16h** *35/18*
**U.S. Cl. 74—10.33** **3 Claims**



A pushbutton assembly for preset tuning is provided with a simple and effective mechanism for biasing the operative pushbutton slide into engagement with the front guide opening in response to pressure on the pushbutton thereby to significantly improve tuning accuracy. For this purpose a pushbutton support member is provided with inclined slots receiving projections formed on an auxiliary member movable with the pushbutton slide. As the pushbutton is pressed inwardly the camming action between the projections and inclined slots force the pushbutton support upwardly into engagement with the upper edge of the guide opening, that engagement in turn forcing the pushbutton slide against the lower edge of the guide opening to insure angular stability of the slide throughout the pushbutton stroke. The auxiliary member in turn carries a clamping mechanism adapted to lockingly engage an adjusting cam pivotally mounted on the pushbutton slide as the cam is forced into engagement with the tuning control element for initial setting.

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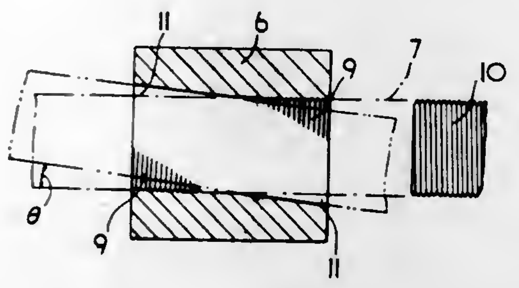
### 3,757,591
### DISENGAGEABLE NUT AND SCREW ARRANGEMENT

**Peter Graham Taylor, Cambridge, England, assignor to Cambridge Scientific Instruments Limited, Cambridge, England**
**Filed Sept. 30, 1971, Ser. No. 185,258**
**Claims priority, application Great Britain, Sept. 30, 1970, 46,617/70**
**Int. Cl. F16h** *27/02*
**U.S. Cl. 74—89.15** **3 Claims**



A nut and screw arrangement particularly for scientific instruments having a lead nut and screw in which the nut has two bores inclined with one another, the one plain and the other screw threaded and means for tilting the nut into and out

of engagement of the lead screw so that part of the apparatus may be advanced finely by the screw and coarsely manually.

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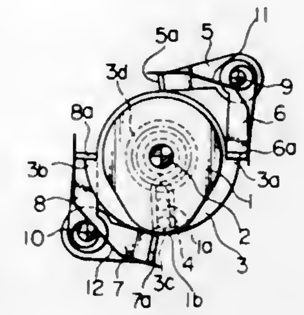
### 3,757,592
### INSTANTANEOUS INTERMITTENT FEEDING MECHANISM

**Katsuhiko Okabe, Saitama-ken, Tokorozawa-shi, Japan, assignor to Kabushikikaisha COPAL, Tokyo, Japan**
**Filed July 16, 1971, Ser. No. 163,262**
**Claims priority, application Japan, July 24, 1970, 45/64905**
**Int. Cl. F16h** *27/00*
**U.S. Cl. 74—112** **2 Claims**



Instantaneous intermittent feeding mechanism having a continuously rotating driving member and a driven member coaxial therewith. A spring resiliently couples the driven member with the driving member so that, when a relative rotation is established between the driving member and the driven member by temporarily holding the latter stationarily while the former is rotating, a rotational driving force is given to the driven member by the spring so as to instantaneously rotate the same. The driven member is releasably held stationary by each of the locking members arranged around the driven member, and the locking members are released by a cam portion formed in the driving member as the same is rotating so that the driven member which is held stationary by one of the locking members is instantaneously rotated when the cam portion releases that locking member until the succeeding locking member arrests the driven member so as to be ready for the instantaneous driving of the driven member when the cam portion reaches the succeeding locking member, thereby effecting the intermittent feeding of the driven member.

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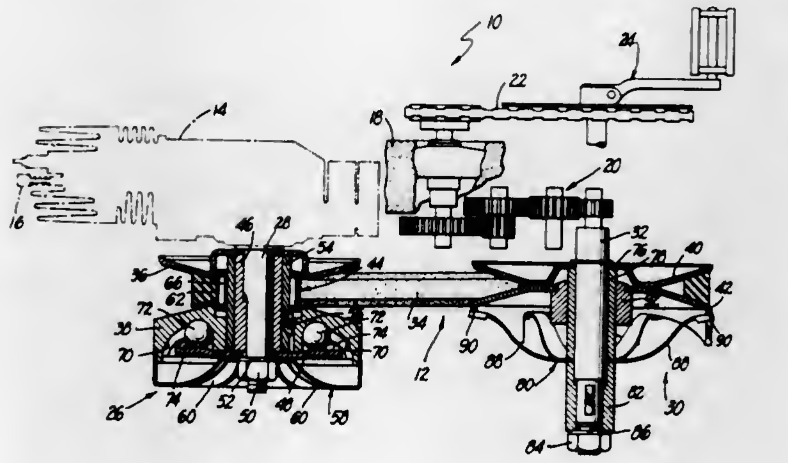
### 3,757,593
### VARIABLE-RATIO BELT-TYPE TRANSMISSION FOR ENGINE-DRIVEN CYCLE, INCORPORATING PEDAL-OPERATED ENGINE STARTING MEANS

**Bert N. Svenson, Norwalk, Calif., assignor to Instrument Systems Corporation, Jericho, N.Y.**
**Filed June 7, 1971, Ser. No. 150,523**
**Int. Cl. F16h** *9/00*
**U.S. Cl. 74—238.17 A** **13 Claims**



An engine-driven cycle having a variable-ratio belt-type transmission incorporating pedal-operated means for starting the engine. The transmission transmits power from a driving shaft of the engine to a driven shaft of the cycle when the engine is running, and transmits pedal-generated power from the driven shaft to the driving shaft to start the engine when it is not running.

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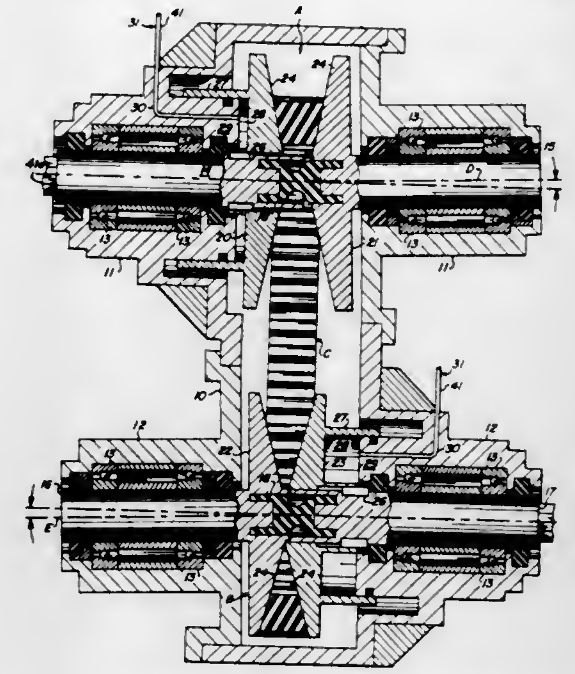
### 3,757,594
### VARIABLE SPEED BELT TRANSMISSION

**Emerson L. Kumm, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.**
**Filed Feb. 7, 1972, Ser. No. 223,888**
**Int. Cl. F16h** *55/52*
**U.S. Cl. 74—230.17 F** **19 Claims**



The subject transmission has a casing with spaced pulley elements composed of sets or pairs of cone-faced disk sections. The sections of each pair are in opposed relation and supported for simultaneous rotation about axes disposed in predetermined angular relation. One pair of disk sections is adapted to be power driven, a Vee belt having a predetermined compressibility with spaced lobes on the inner sides being trained around the sets of pulleys and transmitting rotary movement from the power driven set, hereinafter designated "the driving set," to the other driven set. One disk section of each pair is axially movable toward and away from the other disk section to change the effective diameters of the pulleys and vary the speed ratio between the driving and driven pulleys. Through use of the angular rotational axes arrangement high friction materials, such as polyurethane on brass, may be used which permits a reduction in the belt frictional surface area, for a specific belt tension, and consequently the use of smaller pulleys.

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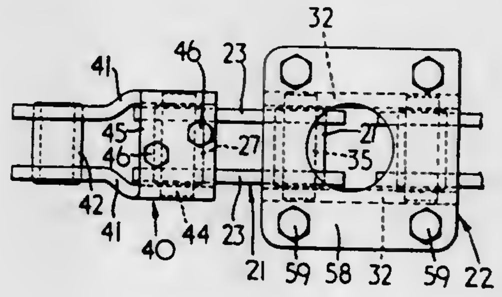
### 3,757,595
### CHAIN LINKS

**Daniel Cheale, Brentwood, England, assignor to Howard Harvestore Limited, Edmunds, Suffolk, England**
**Filed Nov. 19, 1971, Ser. No. 200,412**
**Claims priority, application Great Britain, Nov. 26, 1970, 56454/70; July 24, 1971, 34847/71**
**Int. Cl. F16g** *13/02*
**U.S. Cl. 74—245 C** **7 Claims**



A chain is made up of interconnected links, each link having side members interconnected by pins or bushes. In forming the links the pins and bushes are initially cylindrical and splines are cut in the ends of the pins and bushes so that the outer diameter of the splines has the same diameter as the remainder of the pins and bushes. The splined portions are then forced into bores in the side members so that the side members are secured rigidly together.

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3,757,596

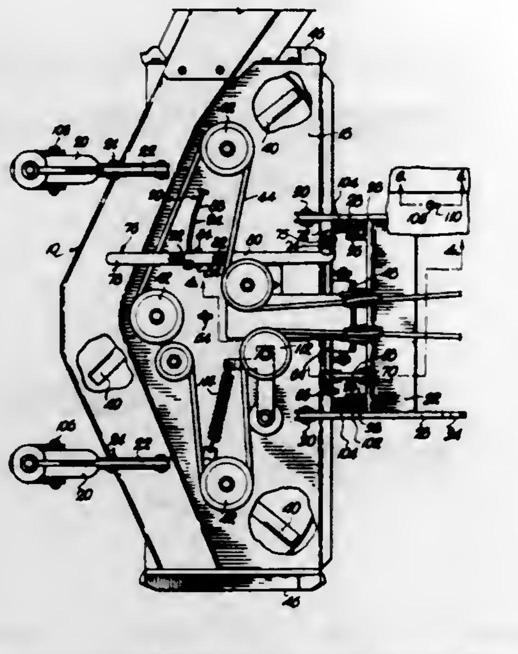
### MOTION TRANSMITTING STRUCTURE

**James E. McCanse, Oregon, Ill., assignor to Hesston Corporation, Hesston, Kans.**

**Filed Feb. 18, 1972, Ser. No. 227,468**

**Int. Cl. G05g** *7/00*

U.S. Cl. 74—491 **10 Claims**



A tractor implement employs a torque rod having an angularly offset projection, a swingable, adjusting lever provided with a tube slidably receiving the projection, and a crank pin on the rod engageable with and supported by a hitch assembly interconnecting the implement with the tractor for translating the swinging motion of the lever into an upward or downward movement of one end of the implement.

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3,757,597

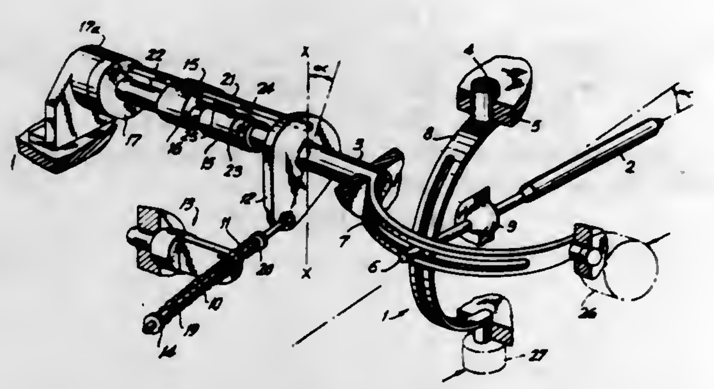
### AIMING DEVICE

**Jean-Luc Vogel, Meudon; Jacques Francois Dominique De Bernardi, Rueil Malmaison, and Claude Moulinard, Poissy-Beauregard, all of France, assignors to Etat Francais, Paris, France**

**Filed Oct. 20, 1972, Ser. No. 299,328**

**Int. Cl. G05g** *9/04*

U.S. Cl. 74—471 XY **8 Claims**



An aiming device comprising an aiming control rudder bar having at least one shaft rotatably mounted in a fixed frame and urged by a first elastic means to a neutral position. The position of the shaft is associated with the movements of a line of sight of a target to be checked in a predetermined relation. A plate is rotatably mounted on said shaft and the plate and shaft are coupled together through the intermediary of jaws and a second elastic means of higher strength than the first, to drive the plate from the shaft away from the neutral position. The plate can be held by an electromagnetic lock or the like in any fixed position to keep the shaft in a frozen position under the action of the second elastic means. The rotation of the aiming control shaft is thus principally effected against the first elastic means from the neutral position when the plate is not locked and against the second elastic means from the freeze position when the plate is locked in a fixed position.

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3,757,598

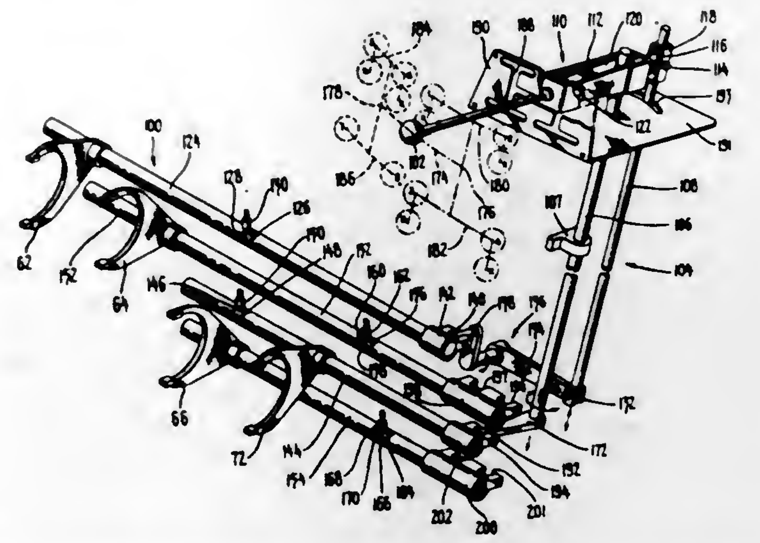
### SINGLE LEVER CONTROL FOR TRANSMISSION

**Jean Claude Van Dest, Westland, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.**

**Continuation-in-part of Ser. No. 155,051, June 21, 1971, abandoned. This application Sept. 17, 1971, Ser. No. 181,403**

**Int. Cl. G05g** *9/00, 13/00*

U.S. Cl. 74—473 R **17 Claims**



Transmission apparatus including gear shift means having a plurality of forward speed ratio settings and a plurality of reverse speed ratio settings with a single operating lever, the operating lever having a plurality of forward speed ratio settings corresponding to the forward speed settings of the shift means. Actuating means innerconnects the operating lever with the gear shift means for actuating the same to the forward speed settings in response to movement of the operating lever to its corresponding forward speed ratio setting and for actuating the shift means to a reverse speed settings in response to additional movement of the operating lever when the operating lever is in at least some of its forward speed ratio settings. Speed change gear means are operated by the gear shift means to provide a plurality of forward and reverse drive paths between an input shaft and an output shaft, each of the drive paths corresponding to one of the settings of the shift means.

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3,757,599

### SHIFTING LEVER FOR MOTOR VEHICLE TRANSMISSIONS

**Wilhelm Albrecht, Vaihingen (Enz), Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

**Filed Nov. 19, 1971, Ser. No. 200,496**

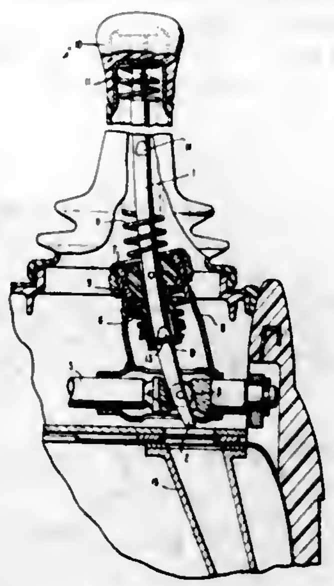
**Claims priority, application Germany, Nov. 21, 1970, P 20 57 311.9**

**Int. Cl. G05g** *9/00*

U.S. Cl. 74—473 **17 Claims**

A shifting lever, especially a center shifting lever for the transmission of vehicles disengageably connected with the shifting linkage leading to the transmission and/or a fixed vehicle part by application of axial pressure forces that are larger than the forces necessary for the shifting of the transmission.

The shifting lever after the disengagement is displaceable in the axial direction against the force of a compression spring.



Upon application of a predetermined tensional force the shifting lever may be brought back to its normal operating position.

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3,757,600

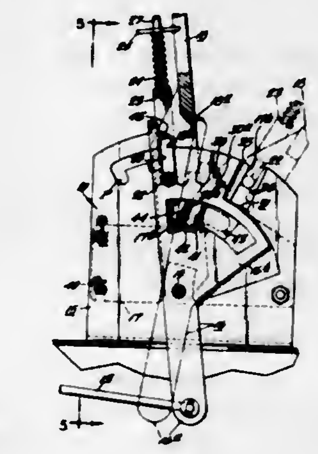
### AUTOMATIC TRANSMISSION SHIFTER HAVING CONVENTIONAL MODE AND RACING MODE OPERATIONAL CAPABILITIES

**William J. Bieber, R.D. No. 1, Pipersville, Pa.**

**Filed May 15, 1972, Ser. No. 253,580**

**Int. Cl. G05g** *7/08*

U.S. Cl. 74—473 R **20 Claims**



A shifter is provided for use with an automatic transmission on an automobile to enable the transmission to be shifted in a conventional mode and to enable the transmission to be upshifted quickly in a racing mode upon rapid sequential displacement of a master shift lever. The shifter comprises a stationary frame to which is pivotally connected a slave lever having one end connected to a shift arm on the transmission and having another end releasably connected to the master lever through a selector pin carried on the master lever. The slave lever is provided with a series of stepped surfaces which are selectively engaged by the selector pin to index the slave lever in one direction for upshifting the transmission when the master lever is pivoted sequentially against a stop. There is provided means to arrest pivotal motion of the slave lever at the completion of an upshift to prevent inertia forces on the slave lever from causing it to shift the transmission inadvertently. In each embodiment, there is provided means to bias the selector pin downwardly into engagement with the stepped surfaces for causing the pin to descend the surfaces as upshifting proceeds. In certain of the embodiments, there is provided means to bias the master lever into a home position at the completion of an upshift cycle.

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3,757,601

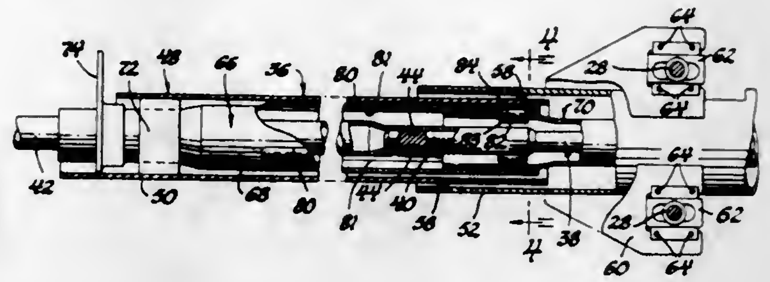
### COLLAPSIBLE STEERING COLUMN ASSEMBLY

**Harold J. Burke, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed June 22, 1972, Ser. No. 265,291**

**Int. Cl. B62d** *1/18*

U.S. Cl. 74—492 **3 Claims**



A telescopeable tube assembly adapted for incorporation in a collapsible steering column assembly, the tube assembly including a first tube section, a second tube section telescopically disposed relative to the first tube section, a plurality of longitudinal track portions on one of the tube sections, a corresponding plurality of seat portions on the other of the tube sections, and a plurality of cylindrical spring pins disposed between the tube sections in the seat portions and in the track portions, the natural resilience of the spring pins generating mechanical friction between a surface of the spring pins and the track portions which friction normally maintains the tube sections in fixed axial relation but which effects energy absorption at a predetermined rate during forced telescopic collapse of the tube assembly.

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3,757,602

### SERVO STEERING FOR VEHICLES

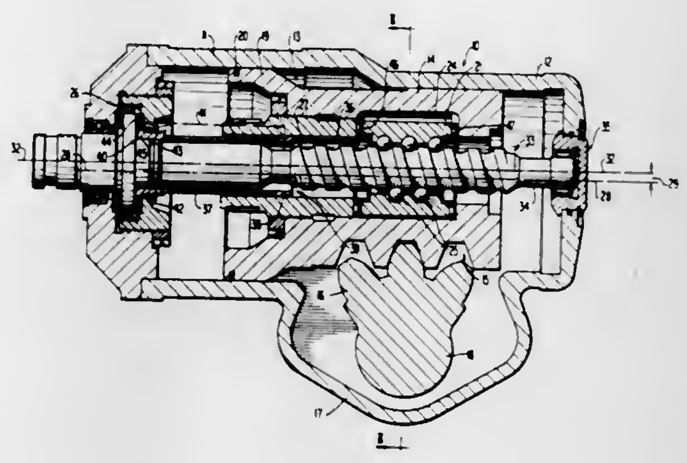
**Hans-Joachim M. Forster; Klaus Katz, and Reinhold Abt, all of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

**Filed Dec. 3, 1971, Ser. No. 204,649**

**Claims priority, application Germany, Dec. 5, 1970, P 20 60 021.9**

**Int. Cl. B62d** *3/08*

U.S. Cl. 74—499 **16 Claims**



A servo-steering mechanism for vehicles, in which the steering worm is connected with the working piston to convert the rotary movement of the worm into axial movement of the piston to provide a drive connection for the steering shaft; the steering worm is thereby eccentrically supported in the working piston.

### 3,757,603

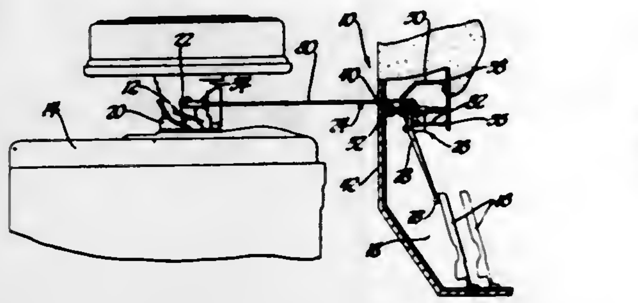
### DUAL ROLLER THROTTLE CONTROL-CABLE MECHANISM

**Walter J. Cattin, Clarkston, Mich., and Edgar C. Paffrath, Frankenmuth, Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed July 31, 1972, Ser. No. 276,642**

**Int. Cl. G05g** *1/14;* **F16c** *1/10*

**U.S. Cl. 74—513** **2 Claims**



An adjustable cable mechanism for operatively interconnecting an engine throttle with an adjustable accelerator pedal includes a control cable threaded from a fixed location along a first cable run to and serially around a fixed first roller and a pivotable second roller mounted on a pedal actuated control lever, and therefrom to the throttle along a second cable run. Pedal actuation pivots the control lever and the second roller to shift the second cable run and thereby control opening of the throttle. The rollers are mounted on an adjustable bracket for changing the relative lengths of the cable runs without changing the overall length of cable to permit fore and aft adjustment of the control lever for accommodating varying pedal positions.

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### 3,757,604

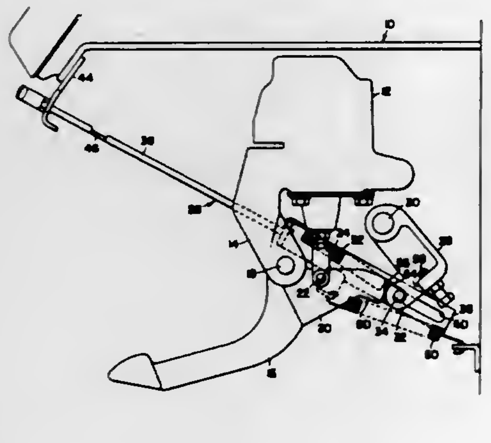
### SERVICE BRAKE LOCK MECHANISM

**Kenneth Roger Schroeder, Holy Cross, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Sept. 29, 1972, Ser. No. 293,671**

**Int. Cl. G05g** *5/06*

**U.S. Cl. 74—529** **5 Claims**



A lock mechanism is provided for selectively locking the service brakes of a tractor or the like in their fully engaged position. The lock mechanism includes a control rod which is movable between a released and an engaged position, the rod when in its engaged position conditioning a locking pawl which upon full application of the vehicle brakes will rotate to a position preventing the vehicle brake pedal from returning to its released position.

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### 3,757,605

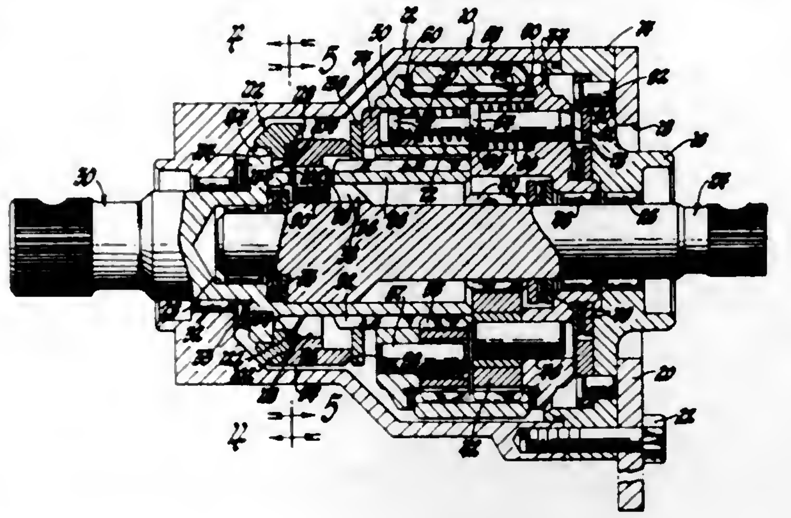
### TORQUE RESPONSIVE TRANSMISSION MECHANISM

**Russell L. Morden, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Feb. 2, 1972, Ser. No. 222,888**

**Int. Cl. F16h** *3/74, 5/52*

**U.S. Cl. 74—751** **3 Claims**



A mechanism adapted to transfer torque from an input to an output shaft at either a unitary transmission ratio or a ratio exceeding unity wherein the transmission ratio is automatically changeable in response to the magnitude of the torque applied at the input shaft, the mechanism including automatic ratio changing means including a pawl supported on the output shaft for rotation therewith and for radial bodily movement relative thereto between a retracted position and an extended position directly coupling the input and output shafts, a cam on the input shaft adapted to cam the pawl from the extended to the retracted position under conditions of high torque input, an annular actuator disposed about the output shaft and adapted to be engaged and bodily shifted by the pawl transversely of the output shaft during movement of the latter from the extended to the retracted position, and a cam between the actuator and the output shaft adapted to impart to the actuator during transverse bodily motion an axial component of bodily motion operative to activate a planetary gear set disposed between the input and output shafts for increasing the torque transmission ratio therebetween.

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### 3,757,606

### APPARATUS FOR THE AUTOMATIC SHIFTING OF CHANGE-SPEED TRANSMISSIONS, ESPECIALLY OF MOTOR VEHICLES

**Hans-Joachim M. Forster, Stuttgart-Riedenberg, and Ulrich Eltze, Esslingen-Liebersbronn, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

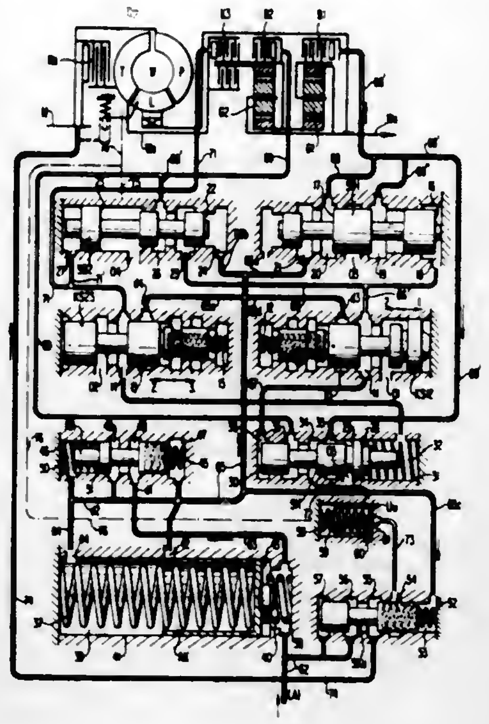
**Filed Sept. 29, 1970, Ser. No. 76,463**

**Claims priority, application Germany, Sept. 29, 1969, P 19 49 084.7**

**Int. Cl. F16h** *45/02, 47/08*

**U.S. Cl. 74—733** **39 Claims**

A method and apparatus for automatically shifting the individual speeds of a change-speed gear, particularly for motor vehicles, by means of force-locking shifting elements and by the use of a hydrodynamic unit, such as a torque converter or hydrodynamic coupling, whose slippage condition is increased during the change in transmission ratio by engageable means, in which the pressure space of the shifting element for the new speed is filled with a pressure medium while the shifting element for the pre-existing speed remains under hydraulic shifting pressure and the slippage condition in the hydrodynamic unit is maintained for a certain length of time; only after the filling of the pressure space of the shifting element for the new speed and with substantial simultaneous disengagement of the pre-existing speed, the slippage condition in the hydrodynamic unit is then increased; in the event a by-pass clutch is provided for the hydrodynamic unit, the by-pass clutch remains engaged until the pressure space of the servo-shifting element for the new speed is completely filled, at which time the by-pass clutch is disengaged with simultaneous disengagement of the pre-existing speed.



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### 3,757,607

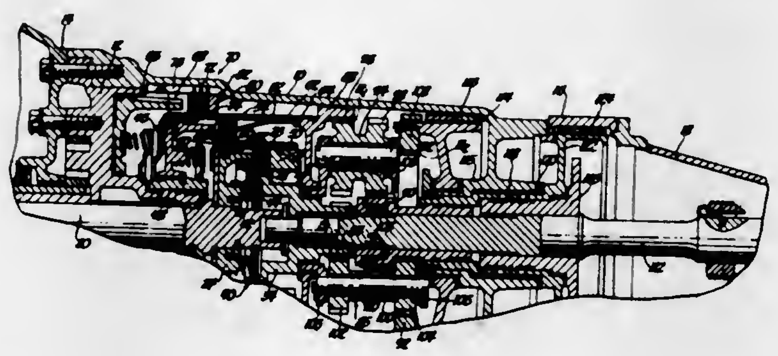
### MULTI-SPEED TRANSMISSION

**John D. Malloy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed June 27, 1972, Ser. No. 266,540**

**Int. Cl. F16h** *57/10*

**U.S. Cl. 74—761** **6 Claims**



A multi-speed transmission having a compound planetary gearing arrangement with an input reaction ring gear, a reaction ring gear, an input sun gear and a reaction sun gear. The ratio ($R_1/R_2$) of the pitch diameters of the input reaction ring gear to the reaction ring gear is greater than 1.00 and the ratio ($S_1/S_2$) of the pitch diameters of the input to reaction sun gears is less than 1.00. This relationship permits the transmission to have substantially equal output speed steps in the forward speed ratios or a combination geometric-constant output speed step.

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### 3,757,608

### SOLAR AND PLANETARY GEAR SYSTEM WITH LOAD PRESSURE COMPENSATION

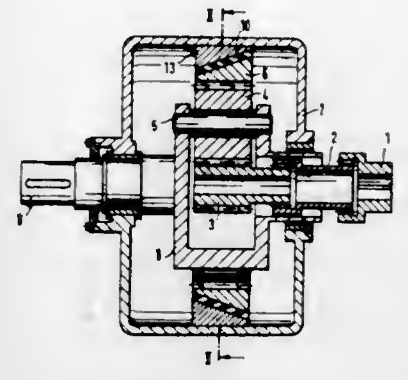
**Horst Willner, Essen, Germany, assignor to Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft, Munchen, Germany**

**Filed Nov. 22, 1971, Ser. No. 200,975**

**Claims priority, application Germany, Nov. 21, 1970, P 20 57 312.0**

**Int. Cl. F16h** *1/28, 57/00*

**U.S. Cl. 74—801** **6 Claims**



A solar and planetary gear system with load pressure compensation wherein the inner solar wheel is not deposited but bears down on the planetary wheels, the outer solar wheel being elastically connected with the gear housing or with the propelling or propelled part to make possible tumbler movements.

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### 3,757,609

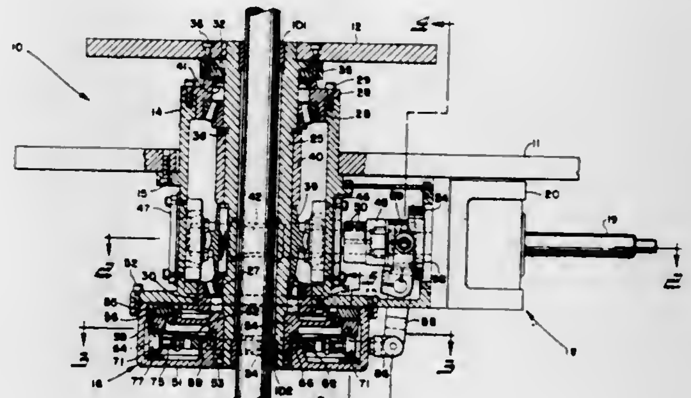
### UNIVERSAL INDEX MECHANISM

**Martin J. Zugel, Cleveland, Ohio, assignor to Cyclo Index Corporation, Cleveland, Ohio**

**Filed Jan. 10, 1972, Ser. No. 216,698**

**Int. Cl. B23b** *29/32*

**U.S. Cl. 74—826** **16 Claims**



A dial plate indexing mechanism having a pair of intermeshing ring gears for providing rigid support and precise index locations. One of the gears is fixed for rotation with the dial plate while the other is supported on plural leaf springs affixed to a base providing rotative rigidity but axial resilience for locking and unlocking purposes. Plural cam rollers engage cam surfaces on the back of the axially movable gear to wedge the latter into locking engagement, such force being derived from a face cam and linkage arrangement driven in timed relation to a worm wheel drive for the dial plate index movement by way of an intermittent drive mechanism.

### 3,757,610
### CONTROL SYSTEM FOR GAS TURBINE ENGINE

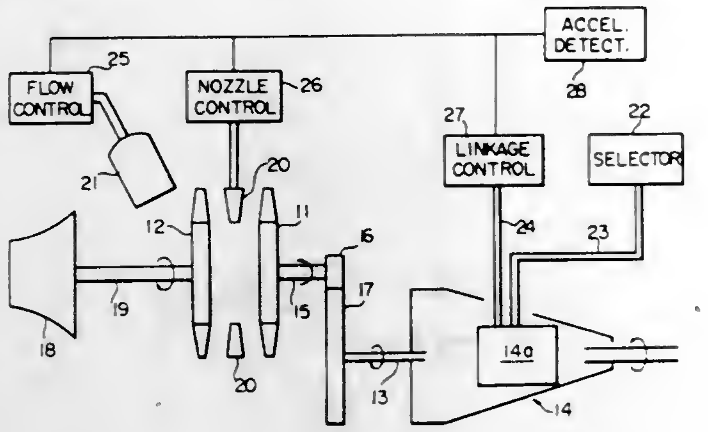
**Seishi Kubota, Yokosuka; Takashi Kunugi, Yokohama, and Tetsuo Katsume, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan**

**Filed July 23, 1971, Ser. No. 165,048**

**Claims priority, application Japan, Sept. 17, 1970, 45/81509**

**Int. Cl. B60k** *21/00;* **F02c** *9/02*

**U.S. Cl. 74—843** **5 Claims**



A control system is disclosed for a vehicle gas turbine engine having a power turbine driving a power transmission of a motor vehicle on which the gas turbine engine is mounted, an adjustable nozzle which is positioned relative to the power turbine, and a combustor, wherein a flow of fuel to the combustor, an angular position of the adjustable nozzle relative to the power turbine and a fluid pressure controlling a gear train control system of the power transmission are concurrently regulated electrically in accordance with a variation of the selected position and accordingly of the opening degree of an accelerator pedal.

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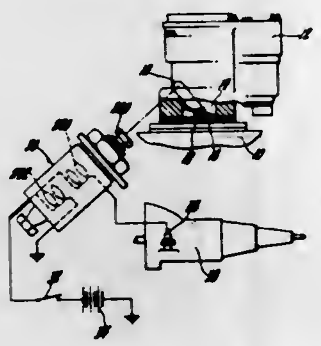
### 3,757,611
### THREE POSITION SOLENOID IDLE STOP

**Charles E. Buck, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed May 24, 1972, Ser. No. 256,376**

**Int. Cl. B60k** *21/00;* **H02k** *33/00;* **B60k** *33/00*

**U.S. Cl. 74—860** **4 Claims**



A three position solenoid or vacuum actuated throttle stop device having independent adjustment of two positions, allowing independent adjustment of the third position and comprising first and second axially aligned actuators, each of which carries a bolt-shaped axially aligned extension which is axially adjustable with respect to its actuator. The second extension is the throttle stop which is normally biased by a spring against the first extension and into a first position which allows the throttle idle position to be set independently by external means. A first signal causes the first actuator to move the throttle stop against the spring into a second independently adjustable position; and a second signal causes the second actuator to move the throttle stop out of engagement with the first extension into a third independently adjustable position.

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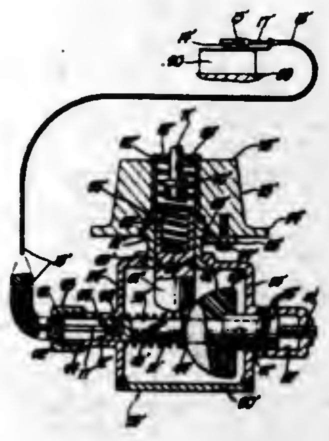
### 3,757,612
### TRANSMISSION AND CONTROLS

**Robert H. Schaefer, Westfield, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Mar. 24, 1971, Ser. No. 127,530**

**Int. Cl. B60k** *21/00;* **F16c** *1/12;* **F16k** *31/524*

**U.S. Cl. 74—865** **9 Claims**



A transmission controlled by a combustion engine torque demand or fuel feed control member which is connected by a linkage to move a cam actuator and cam follower which actuates a torque demand pressure regulator valve proportional to the movement of the fuel feed member to provide a torque demand pressure uniformly proportional to engine torque. A support housing is rotatably mounted in an aperture in a wall of the transmission housing for rotation about the axis of the cam follower and the cam actuator is reciprocably mounted on the support housing on an axis perpendicular to the axis of the cam follower. The support housing rotates about its axis so that swinging movement of the connecting linkage is accommodated by rotation of the support housing for accurate transmittal of the torque demand signal from the fuel feed control to the cam actuator and follower without binding or strain. The cam actuator has a profile so that its movement uniformly proportional to fuel feed provides in the cam follower movement uniformly proportional to engine torque.

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### 3,757,613
### MULTIPLE SCREWING SYSTEM

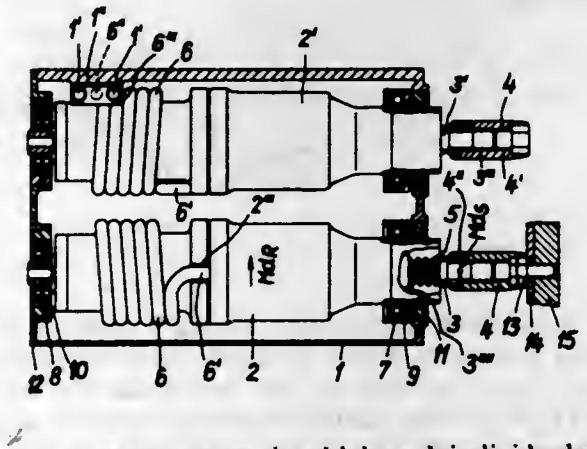
**Karl-Friedrich Arndt, and Helmar Nafe, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Mar. 14, 1972, Ser. No. 234,526**

**Claims priority, application Germany, Mar. 17, 1971, P 21 12 907.7; Mar. 17, 1971, P 21 12 907.7**

**Int. Cl. B25b** *23/14*

**U.S. Cl. 81—57.22** **4 Claims**



A multiple screwing system, in which each individual screwing device has helical spring means associated therewith which surrounds one end portion of the individual housing surrounding the pertaining screw spindle, said helical spring means having one end portion connected to said individual housing and having its other end portion connecting to frame means common to and surrounding the individual housings, while the bearings for the individual housings are journalled in elastic supporting means permitting a slight radial displacement of said individual housings.

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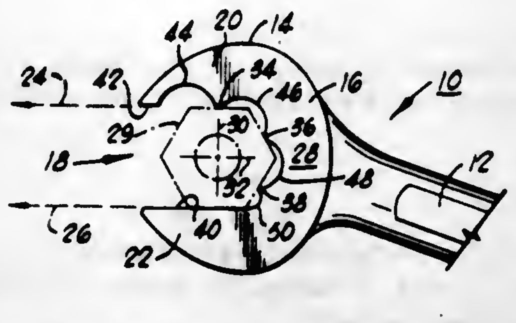
### 3,757,614
### RACHET TYPE SPEED WRENCH

**James P. Evans, 3233 S.W. 23rd St., Oklahoma City, Okla., and William R. Avey, Jr., 1225 N. Rockwell, Oklahoma City, Okla.**

**Filed Nov. 15, 1971, Ser. No. 198,930**

**Int. Cl. B25b** *13/46*

**U.S. Cl. 81—119** **6 Claims**



An improved open end wrench which is adapted for turning hexagonal head nuts, the wrench being of unitary formation with no moving parts yet having the capability of ratchet-type wrench return between successive power strikes. The wrench consists of a one piece formation of uniform substance having jaw portions which define a recessed wrench surface or configuration of non-symmetrical character as comprised of a series of juxtaposed arcuate indentations. The co-extensive arcuate recesses about the inner wrench surface are so formed to extend four surfaces into bearing contact with a hexagonal head nut during power stroke, while retaining the capability of unobstructed reverse or return stroke movement about substantially the same axis of revolution.

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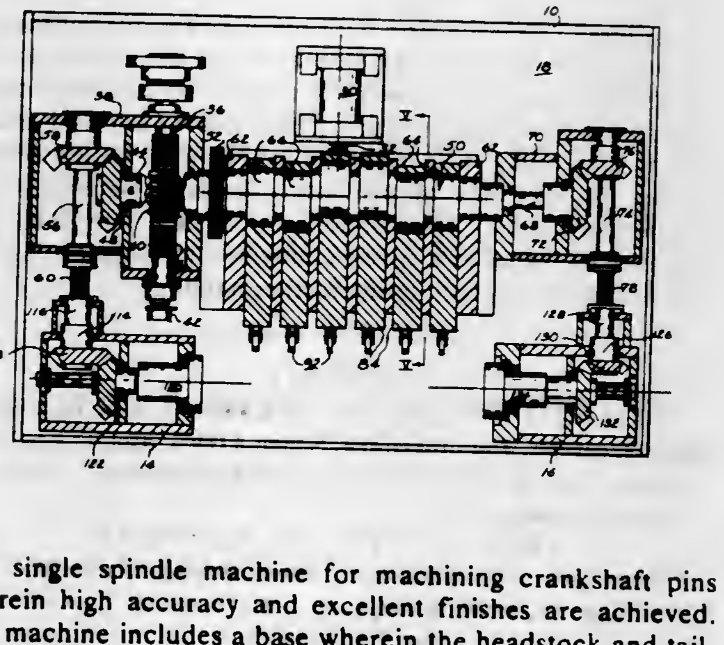
### 3,757,615
### SINGLE SPINDLE CRANKSHAFT MACHINE

**Joseph A. Oeming; Allen J. Heffron, both of Saginaw, and Arthur L. Estry, Jackson, all of Mich., assignors to C. M. Systems Incorporated, Saginaw and Crankshaft Machine Company, Jackson, both of Mich.**

**Filed Aug. 9, 1971, Ser. No. 170,100**

**Int. Cl. B23b** *5/18, 5/04, 21/00*

**U.S. Cl. 82—9 R** **8 Claims**



A single spindle machine for machining crankshaft pins wherein high accuracy and excellent finishes are achieved. The machine includes a base wherein the headstock and tailstock spindles are fixedly mounted thereon, and a slide mounted on the base movable toward and away from the spindles' axis mounts an electric drive motor, a master crankshaft for tool positioning, and the tools, wherein the tools may be moved relative to the crankshaft being machined. Bidirectional gearing interconnects the headstock and tailstock spindles to a primary power input gear wherein feedback reaction forces occurring during machining produce a biasing action upon the drive gearing system eliminating play in the power train.

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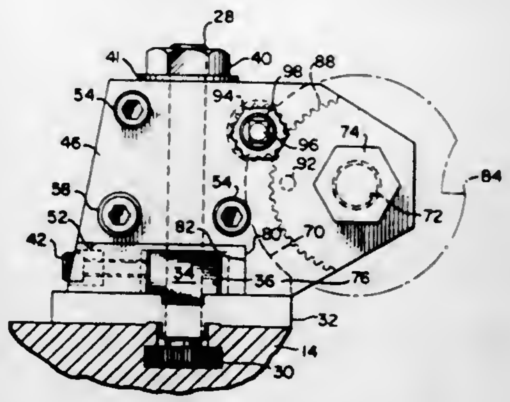
### 3,757,616
### TOOL-HOLDER FOR MACHINE TOOLS

**Joseph A. Raccio, Raccio Dr., Bethany, Conn.**

**Filed Oct. 27, 1971, Ser. No. 193,098**

**Int. Cl. B23b** *29/12*

**U.S. Cl. 82—36 R** **10 Claims**



A tool-holder for machine tools, such as engine lathes and screw machines having cross-slides by which cutting tools are moved into and out of engagement with the work. The present unit consists of an assemblage of parts that can be arranged to hold the cutting tools such that they can approach the work from either side, said assemblage of parts including a body member, which is clamped securely to the cross-slide, and a tool-mounting plate, which is separate from the body member so that it can be mounted on either side of the body member, depending on which side of the work the tool is to be located. By making the tool-mounting plate separate from the body member, it can also be readily replaced by a similar plate adapted to hold a tool of a different size, thereby making it possible to use tools designed for use on machines of other sizes.

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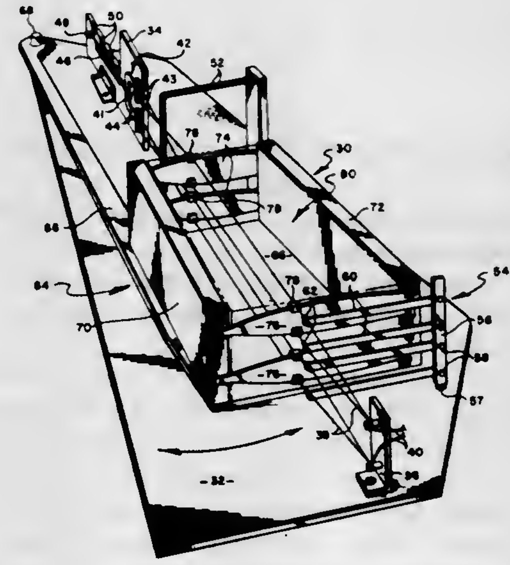
### 3,757,617
### FOAM CUTTING APPARATUS

**John A. Fabbri, 19067 Celtic St., Northridge, Calif.**

**Filed Mar. 16, 1972, Ser. No. 235,332**

**Int. Cl. B26d** *3/10*

**U.S. Cl. 83—1** **11 Claims**



An apparatus and a method for cutting rigidized foam material which comprises one or more electrically heated, stretched wires between at least a pair of fixed points, the foam material being directed into the heated wires at a uniform rate by a foam block retaining mechanism, the wires being directed by at least a pair of templates adjacent the mechanism at opposite ends of the foam material, thus guiding the wires through the foam, thereby cutting it to the shape of the templates.

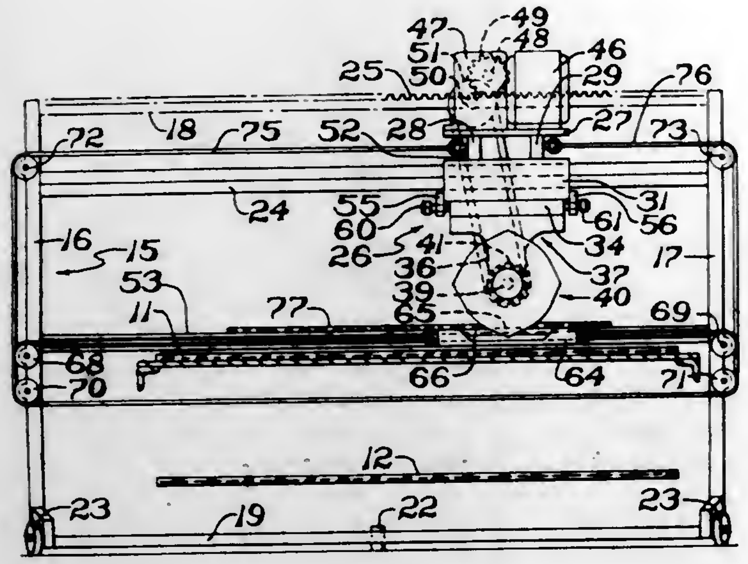
### 3,757,618
### FABRIC CUTTING

**Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 146,193, May 24, 1971, abandoned. This application Oct. 1, 1971, Ser. No. 185,544**

**Int. Cl. B23d** *19/02*

**U.S. Cl. 83—471.3** **22 Claims**



Bias cutting of rubberized fabric material wherein a carriage is reciprocated on a support frame, which frame is adjusted angularly to determine the bias angle of cut. A cutter support is mounted on the carriage for pivotal adjustment about a vertical axis to position the cutter that it supports to provide for a shearing cutting action. Such cutter support journals for rotation a shaft that supports on one end a rotating cutter with a plurality of circumferentially spaced linear cutting edges. A spring on the other end of the shaft biases the cutters into shearing engagement with a cutter guide over which the fabric material is to travel and is positioned for cutting. The cutting action of the cutters is a shearing action as the cutter and carriage are reciprocated across the support frame. In lieu of a single carriage and cutter, a pair of cutter supports may be continuously guided in an orbital path so that the rotary cutters cut in one portion of the path.

### 3,757,619
### APPARATUS FOR FEEDING AND CUTTING WEB MATERIAL

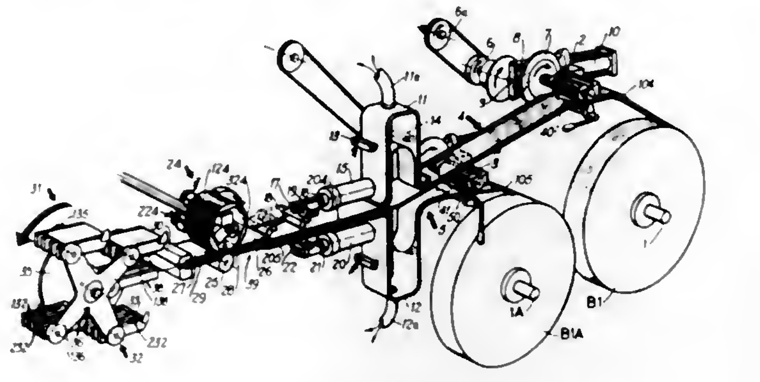
**Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.**

**Filed Jan. 27, 1972, Ser. No. 221,312**

**Int. Cl. B26d** *1/36*; **B65h** *25/10*

**U.S. Cl. 83—65** **12 Claims**

In apparatus wherein a reel of web material is unwound, fed in a substantially linear path by a web feeding means and cut into equal sized sheets by a web cutting means, the improvement comprising means for advancing the web material from the web feeding means to the web cutting means, means for forming a loop in the web material between the web feeding means and said web advancing means, the size of said loop being responsive to the rates of web feed by the web feeding means and the web advancing means, means for de-activating the web advancing means in response to the determination of a predetermined condition downstream thereof, said de-activation of the web advancing means enlarging the loop, means for sensing when the loop reaches a predetermined size, and means responsive to the sensing of a loop of predetermined size for controlling the rate of the web feeding means.



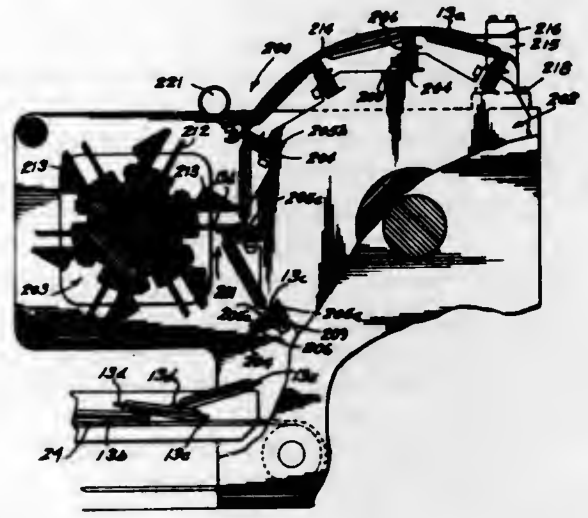
### 3,757,620
### CUTTING APPARATUS

**Charles E. Cloud, Wilmette, Ill., assignor to Cloud Machine Corporation, Skokie, Ill.**

**Division of Ser. No. 852,518, May 7, 1969, Pat. No. 3,597,898, which is a continuation-in-part of Ser. No. 504,709, Oct. 24, 1965, abandoned. This application Dec. 21, 1970, Ser. No. 100,254**

**Int. Cl. B23d** *25/12*

**U.S. Cl. 83—88** **11 Claims**



An apparatus for cutting or severing articles from a continuous strip of interconnected articles includes a pair of cooperative cutters to slice the strip between adjacent ones of the articles and is characterized by means on one of the cooperative cutters for controlling movement of the severed article during and after the cutting operation to deposit the severed articles onto an underlying surface with one side thereof oriented relative to similar sides of previously severed packages in a preselected manner. The underlying surface may include a conveyor operated at a speed controlled to shingle-stack the severed articles for facilitating further handling.

### 3,757,621
### GUILLOTINES AND LIKE SHEARING MACHINES

**Emile Breetvelt, Johannesburg, South Africa, assignor to Intermenua (proprietary) Limited, Johannesburg, Transvaal Province, South Africa**

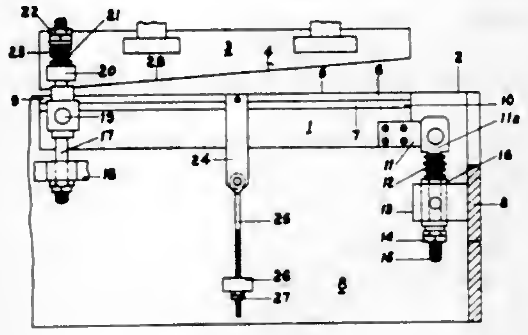
**Filed Feb. 17, 1971, Ser. No. 116,041**

**Claims priority, application South Africa, Feb. 20, 1970, 1132; Sept. 15, 1970, 6300; Oct. 5, 1970, 6732**

**Int. Cl. B26d** *1/00*

**U.S. Cl. 83—157** **8 Claims**

A guillotine machine for shearing metal, power driven or hand operated, including a yieldable supporting element located in a resting position adjacent the loading edge of the first blade in the path of the second blade and a biasing mechanism acting to resist displacement of the support from its resting position as the second blade is advanced over the first blade so that the material cut by the machine is maintained in a flat and untwisted condition requiring no straightening operation.



### 3,757,622
### DEVICE FOR OPENING CONTAINERS IN A STERILE ENVIRONMENT

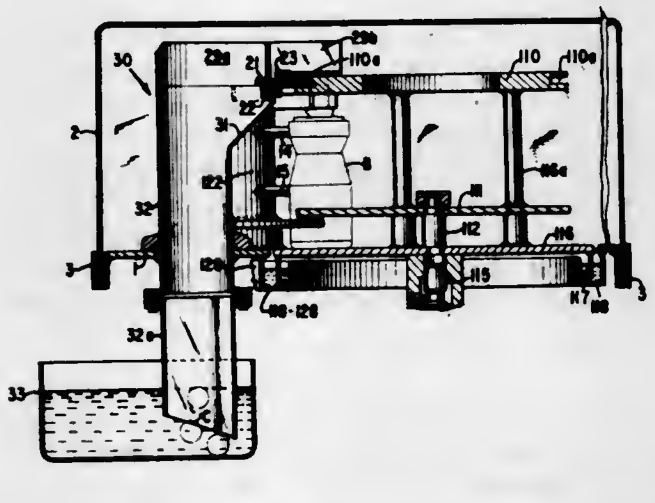
**Jean-Luc Berry, Mesnil sur L'Estree, France, assignor to E. P. Remy et Cie, Fenots, Dreux, France**

**Filed Oct. 12, 1971, Ser. No. 188,078**

**Claims priority, application France, Dec. 24, 1970, 7046740**

**Int. Cl. B26d** *7/06, 7/18*

**U.S. Cl. 83—165** **9 Claims**



Device for opening sealingly closed and internally sterile containers, by cutting a portion of the material of said containers, comprising an enclosure isolated from the ambient atmosphere, means for driving the said containers continuously within the said enclosure, a stationary cutting member placed in the path of said containers, so that the portion thus cut meets the said cutting member, means for discharging the portion thus cut from the said enclosure, and sealing means associated with the said driving means and discharge means, to preclude any communication between the enclosure and the exterior.

### 3,757,623
### DEVICES FOR CUTTING CLAY OR OTHER PLASTIC MATERIAL

**Josef Wiewel, Westphalia, Germany, assignor to C. Keller u Co., Laggenbeck/Westphalia, Germany**

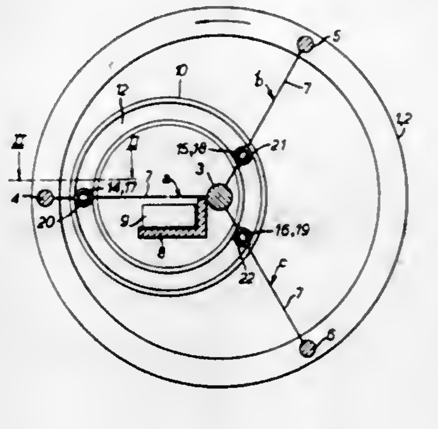
**Filed Jan. 6, 1972, Ser. No. 215,831**

**Claims priority, application Germany, Jan. 8, 1971, P 21 00 819.5**

**Int. Cl. B26d** *4/10*

**U.S. Cl. 83—168** **7 Claims**

A device for cutting clay or other plastic material comprises a row of cutter wires mounted for rotation about a fixed axis. A tube extending across the row of wires carries a plurality of wiper bushes through which the wires extend. The tube is reciprocated along the wires during rotation thereof so as to clear residual clay from the wires.



### 3,757,624
### APPARATUS FOR SEVERING SHEET-LIKE MATERIALS IN MACHINES FOR THE PROCESSING OF SMOKERS PRODUCT

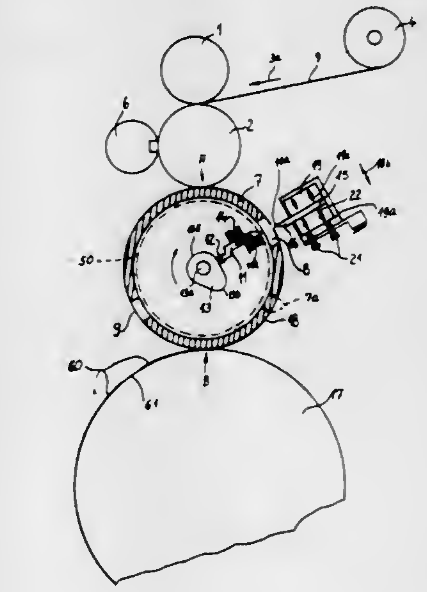
**Friedel Kruse, Hamburg; Gunter Wahle, Reinbek; Willy Rudszinat, Dassendorf, and Otto Erdmann, Hamburg, all of Germany, assignors to Hanuni-Werke Korber & Co. KG, Hamburg, Germany**

**Filed May 31, 1972, Ser. No. 258,371**

**Claims priority, application Germany, June 2, 1971, P 21 27 294.6**

**Int. Cl. B65h** *35/06*

**U.S. Cl. 83—271** **13 Claims**

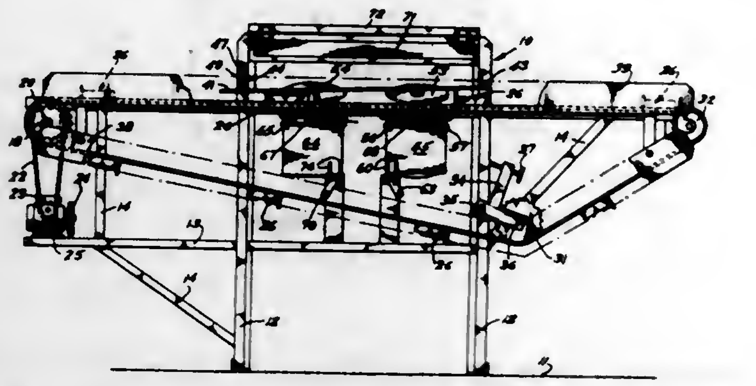


A cutting apparatus for subdividing webs of paper, metallic foil or synthetic plastic material into blanks or uniting bands for use in tobacco processing machines has an intermittently driven hollow drum which is open at one end and is formed with two openings located diametrically opposite each other. The external surface of the drum attracts by suction the leading end of a web which is being withdrawn from a bobbin. A stationary blade is mounted externally of the drum and a second blade is mounted in the interior of the drum opposite the stationary blade. When the drum is at a standstill, one of its openings (which is then overlapped by the leading end of the web to be severed) is located between the two blades. The second blade is then caused (either by an electromagnet or by a rotary cam) to move relative to the stationary blade whereby the cutting edges of the blades cooperate to sever the web overlying that opening which is located between the blades.

### 3,757,625
### APPARATUS FOR MAKING ENGINEERING STAKES

**Ray C. Pfenning, No. 2 Terrace Dr., and James E. Caton, P.O. Box 807, both of Helena, Ark.**

**Filed Nov. 12, 1971, Ser. No. 198,359**
**Int. Cl. B27b *25/04*; B27m *3/00*; B27b *5/04***
**U.S. Cl. 83—404.1** **4 Claims**



A continuous apparatus for cutting workpieces at different angles including a conveyor with flights thereon which deliver a plurality of workpieces in side-by-side relation to a cutting station, clamping means which engage the workpieces while advancing into the cutting station to hold the same against vertical displacement, and a pair of rotary power saws disposed in sequence in the cutting station with their blades in different angular planes for sequentially cutting the workpieces at different angles. Safety means are provided to enclose the chain and the power saws, with adjustment means being provided in front of the guards to permit angular adjustment of the axis of the power saws from a location remote from the saws.

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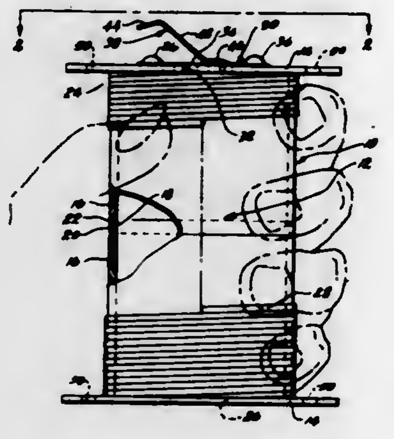
### 3,757,626
### DEVICE FOR STORING AND DISPENSING RIBBON-LIKE MATERIALS AND THE LIKE

**Jack H. Kulp, San Juan Capistrano, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.**

**Filed May 18, 1972, Ser. No. 254,570**
**Int. Cl. B26d *5/10***
**U.S. Cl. 83—542** **12 Claims**



A disposable device for storing and dispensing ribbon-like materials such as tie strips or the like includes a spool shaped to fit in the hand of a user and having a pair of spaced apart flanges for storing a quantity of ribbon-like material therebetween and spaced apart a sufficient distance to allow the spool to be grapsed by hand. A slot is formed in the edge of one of the spool flanges, and a cutting device made of spring metal is rigidly secured to the top of the flange adjacent the slot. The cutting device includes a flat base secured to the flange, and a resiliently bendable, elongated cutting arm integral with a portion of the base and projecting upwardly from the plane of the base to be movable relative to an adjacent edge of the base. In use, a preselected length of the tie strip ribbon is unwound from the spool, drawn through the slot and between the cutting arm and base, and the cutting arm is forced down toward the base to shear off the tie strip.

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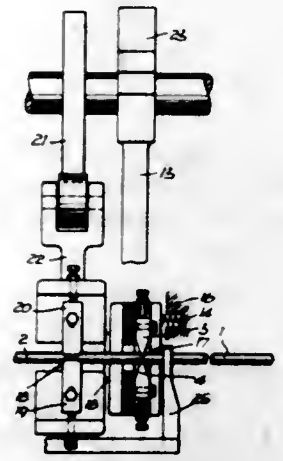
### 3,757,627
### METHOD AND APPARATUS FOR CUTTING PINS FOR PRODUCING CHAIN LINKS

**Gerhard Lange, Reutlingen, Germany, assignor to Wafios Maschinen fabrik Wagner, Ficker & Schmid G.m.b.H., Reutlingen, Germany**

**Filed May 28, 1971, Ser. No. 147,986**

**Claims priority, application Germany, June 18, 1970, P 20 29 865.1**

**Int. Cl. B23d *17/00*; B26d *3/16***
**U.S. Cl. 83—558** **5 Claims**



The production of pins which subsequently are to be bent and welded to form chain links, in which each pin is cut off a rod by a pair of equal wedge-shaped blades which are simultaneously reciprocated in opposite directions to each other within a common central plane extending transverse to the axis of the rod, and which while cutting impress V-shaped notches into diametrically opposite sides of the rod so that the ends of each pin have an angular shape similar to a peaked roof. One preferred embodiment of the invention provides that, instead of forcing the two blades so deeply in the material that their cutting edges engage with each other and thus cut off each pin completely, the blades are impressed only for such a distance into the material that a thin connecting web remains between the pin and the rod supply which web is then shorn off by moving the pin transversely relative to the rod.

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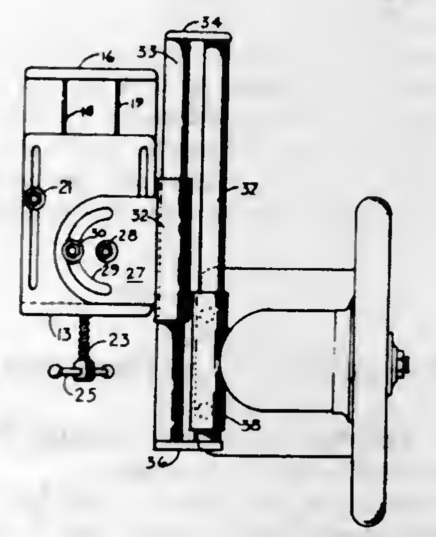
### 3,757,628
### FIXTURE FOR SAW

**George T. Camacho, 443 E. 31st St., Tucson, Ariz.**

**Filed May 1, 1972, Ser. No. 249,357**
**Int. Cl. B27b *9/04*, *5/20***
**U.S. Cl. 83—745** **4 Claims**



An adjustable box having open sides and expandable ends is slipped over the end of a rafter which is to be cut to length. After the box is placed it is clamped to the rafter. The box carries an adjustable angle plate to which is fastened a tube. A bar

sliding in this tube is secured at its ends to a second, parallel, bar which in turn carries a second sliding tube. This second tube has provision for fastening to a portable electric circular saw. After the fixture has been clamped to a rafter and set at the required angle and to the place marked for cutting, the attached saw is started and pushed through the rafter, cutting it off. Thus any requirement for scribing and following a cutting line is eliminated.

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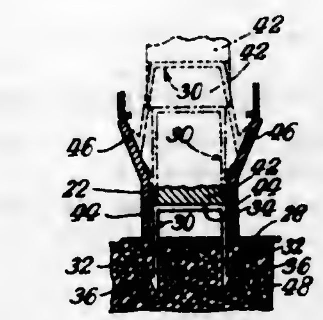
### 3,757,629
### RESILIENT PLASTIC STAPLE

**Robert J. Schneider, 479 Geneva Rd., Glen Ellyn, Ill.**

**Filed May 10, 1971, Ser. No. 141,746**
**Int. Cl. F16b *15/08***
**U.S. Cl. 85—49** **8 Claims**



A fastener or staple is formed of a resilient plastic material which has an elastic memory. The staple has legs, a crown integrally joining the legs, and retaining means such as barbs on the legs. The staple is formed so that normally the legs of the staple are non-parallel. The staple legs are displaced while being driven into the material to be stapled so that the legs are parallel, and after being driven into the material the legs return or tend to return to their normal non-parallel position due to the elastic memory of the plastic from which the staple is made. Thus the barbs or other retaining means are biased by the legs, which tend to return to their non-parallel position, into engagement with the material being stapled to retain the staple.

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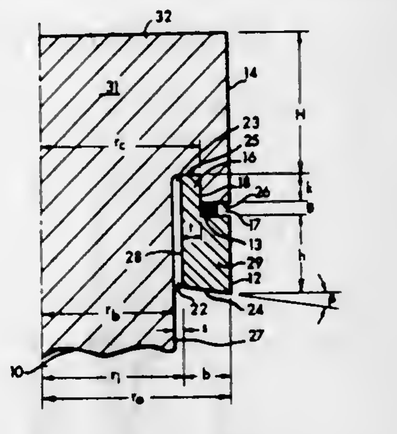
### 3,757,630
### FIXED FORCE LEVEL BOLT

**Norman C. Dahl, 78 Irving Pl., New York, N.Y.**

**Filed Feb. 3, 1972, Ser. No. 223,259**
**Int. Cl. F16b *31/02***
**U.S. Cl. 85—62** **11 Claims**



A bolt including a bolt head which bolt head is characterized by a depending ring-like extension therefrom. The extension has an inner surface spaced apart from the outer surface of the bolt to define a cylindrical radial clearance therebetween. An annular external groove is formed in the outer peripheral wrenching surface of the bolt head extension to define an annular section which plastically deforms radially inward when a predetermined force acts on the bolt with the resultant reduction of the axial width of the external groove.

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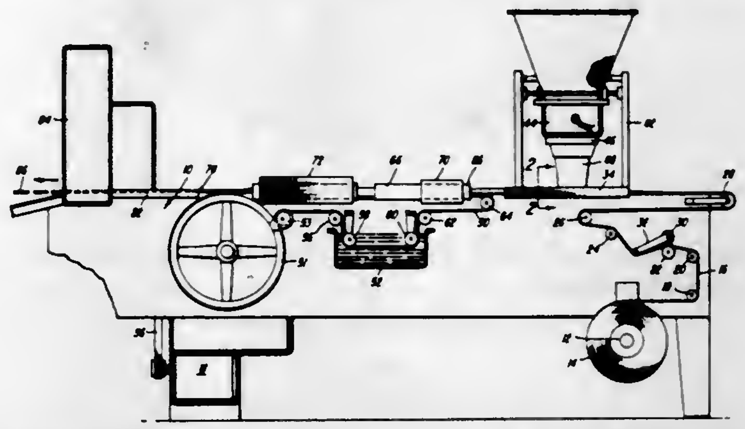
### 3,757,631
### METHOD AND APPARATUS FOR MANUFACTURING SPARKLERS

**Hugh D. McManus, Bolivar; Voorhis F. Wigal, and Robert S. Long, both of Jackson, all of Tenn., assignors to Kilgore Corporation, Toone, Tenn.**

**Filed May 24, 1971, Ser. No. 146,363**
**Int. Cl. C06d *1/08***
**U.S. Cl. 86—20 R** **8 Claims**



A method and machine for producing sparklers in solid rod form enwrapped in a paper or other combustible material casing from powdered pyrotechnic material which is dispensed onto an arcuated paper web which is drawn through a heated tubing and thence onto a wet belt of fabric, the paper web and contents being drawn by said belt through a garniture wherein the belt wraps around the paper web and contained material to form a rod shape after which the belt is stripped therefrom and the rod is severed into desired lengths.

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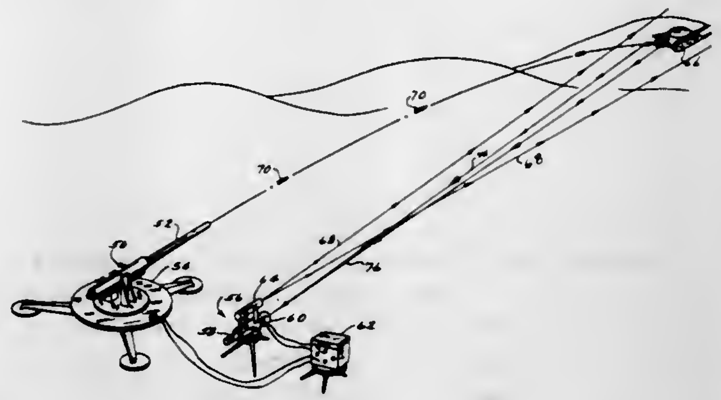
### 3,757,632
### AMMUNITION TRACER SYSTEM

**Spencer Lawrence Bellinger, Lake Luzerne, N.Y., assignor to General Robotics, Inc., Lake Luzerne, N.Y.**

**Filed Sept. 28, 1970, Ser. No. 75,979**
**Int. Cl. F41f *5/00***
**U.S. Cl. 89—1 R** **6 Claims**



An ammunition tracer system having a retro-reflective trailing edge on all projectiles and a laser illuminator bore-sighted with the weapon sighting and viewing equipment. At the sighted target, the reflective trailing edge of the projectile reflects the laser rendering the projectile visible in the viewing equipment.

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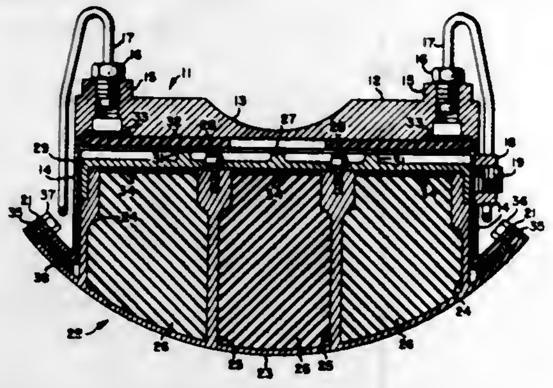
### 3,757,633
### VISUAL MARKER SYSTEM

**Paul K. Salzman, Long Beach, and Paul R. Studer, Jr., Yucalpa, both of Calif., assignors to The United States of America, as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Dec. 30, 1971, Ser. No. 214,249**
**Int. Cl. B64d *1/04***
**U.S. Cl. 89—1.5 R** **6 Claims**

A pyrotechnic device for rapid delivery of a chemical payload by an aerial vehicle has a double container construction. An inner can carries the pyrotechnic chemical and releasable lid therefor. An outer can, attached to the hull of the vehicle, provides mounting for the inner can and its release mechanism.



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3,757,634

### REPEATING PISTOL

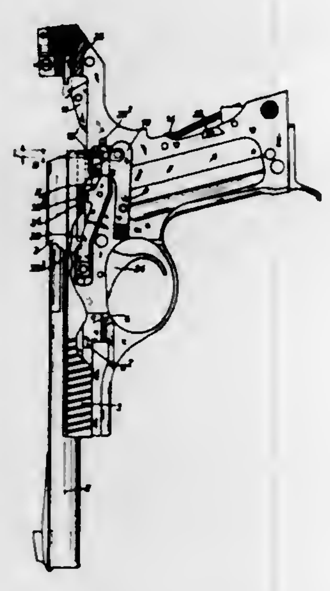
**Jose Maria Uria, 13 rue de Santiago, and Antoine Georges Uria, 6 rue delattre de Tassigny, both of Hendaye-Basses-Pyrenees, France**

**Filed July 21, 1970, Ser. No. 56,914**

**Claims priority, application France, July 21, 1969, 6924117**

**Int. Cl. F41c** *5/00, 19/00*

**U.S. Cl. 89—145** **8 Claims**



A repeating pistol wherein the sear is controlled by the trigger through an intermediate connecting link providing a clearance connection so that an idling motion may be imparted to the trigger before it releases the sear. The path or stroke of the trigger may be readily adjusted both forwardly and rearwardly independently of the adjustment of the pressure to be overcome when triggering. A manually operable lever is provided for lowering the intermediate connecting link so as to thereby disconnect the sear with respect to the trigger.

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3,757,635

### MULTI-PURPOSE MUNITIONS CARRIER

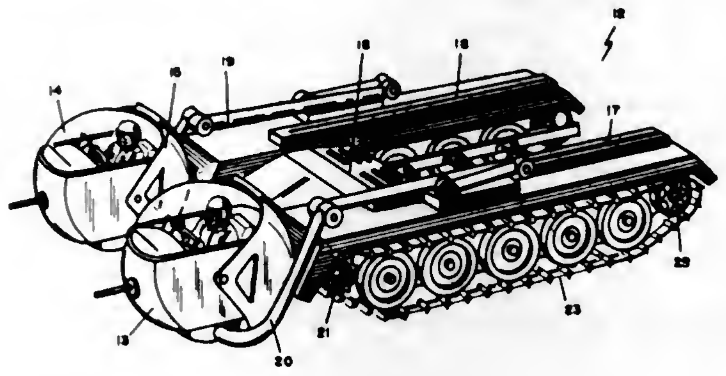
**Frederick R. Hickerson, P.O. Box 540, R.D. 4, Newton, N.J., and Andrew J. Marhefka, 246 Center St., Landing, N.J,**

**Filed Mar. 23, 1971, Ser. No. 127,298**

**Int. Cl. F41h** *7/02*

**U.S. Cl. 89—36H** **5 Claims**

A multipurpose munitions carrier comprising: a basic automotive tracked vehicle having extendable arms, a central recess, and a first attachment means along the sides and edges of said recess; an interchangeable central assembly, said assembly insertable into said central recess and having a second attachment means, said second attachment means complementary and firmly securable to said first attachment means; and detachable personnel capsules, each of said capsules rotatably attached individually to the end of said extendable arms of said tracked vehicle, and each capsule having independent control means whereby all functions of said multipurpose munitions carrier can be regulated by the operator of either capsule.



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3,757,636

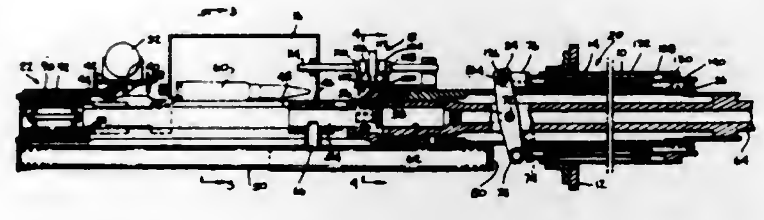
### BOLT ACCELERATOR FOR RECOIL OPERATED GUN

**Robert E. Chiabrandy, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.**

**Filed Apr. 19, 1972, Ser. No. 245,508**

**Int. Cl. F41d** *5/02*

**U.S. Cl. 89—169** **7 Claims**



A single barrel gun has a short recoil system of operation and a bolt accelerator which includes the barrel drive spring and barrel buffer spring as a part of its operating mechanism.

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3,757,637

### DEVICE FOR THE AUTOMATIC REPLACEMENT AND ADJUSTMENT OF TOOL CARRIERS, MORE PARTICULARLY ANGULAR MILLING HEADS ON THE MILLING SUPPORT OF A MACHINE TOOL

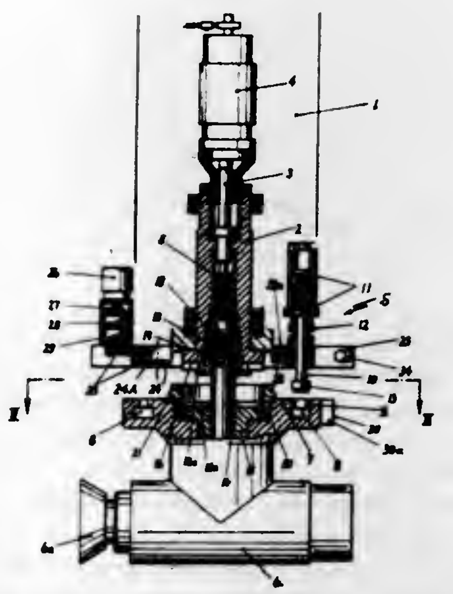
**Edmund Eich, Sauerbruchstr. 8, Coburg; Walter Muller, Schulstr. 8, Weitramsdorf, and Bruno Fritsch, joh Lindun Str. 681vt, Trenchtlingen, all of Germany**

**Filed Sept. 13, 1971, Ser. No. 179,783**

**Claims priority, application Germany, Sept. 15, 1970, P 20 45 604.6**

**Int. Cl. B23d** *1/12, 9/00*

**U.S. Cl. 90—17** **18 Claims**



A device for the automatic replacement and adjustment of tool carriers, such as angular milling heads on a milling support on a machine tool. A drawbar is axially slidably and rotatably mounted in the milling spindle. A base plate is provided for closing the milling support at the free end of the milling spindle. A tube is connected to the tool carrier and is secured to the free end of the drawbar. A fixing flange is provided on the tool carrier and extends parallel to the base plate. A fixing arrangement is provided between the fixing flange and the base plate for fixing the tool carrier in a predetermined angular position relative to the milling support. A plurality of clamping arrangements are mounted on the base plate and cooperate with the fixing flange.

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3,757,638

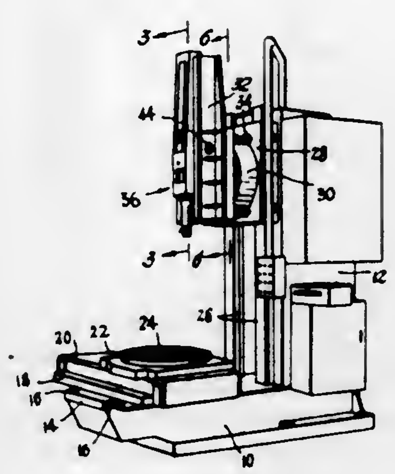
### FIVE-AXIS SHAPER

**Joseph Martin, c/o Martin Engineering Co. Inc., 167-17 Northern Blvd., Bayside, N.Y.**

**Filed Apr. 12, 1972, Ser. No. 243,307**

**Int. Cl. B23d** *3/00*; **B23b** *47/20, 47/26*

**U.S. Cl. 90—46** **15 Claims**



A heavy-duty combination vertical and horizontal metal-cutting shaper constituted of a machine bed provided at its back with a massive upright column having two vertical ways traversed by a saddle. The machine bed has ways on which a second saddle travels, the latter in turn mounting a carriage which supports a turnable table. On the saddle supported by the column there is a swivel head that carries an elongate housing, in which reciprocate a heavy counterweight-type slider and a ram, respectively movable in adjoining parallel paths. The ram, which carries the tool bit, is coupled to the slider by a drive mechanism comprising racks and gears. The slider is driven through a Scotch yoke and set of elliptical gears whereby it has a slow movement in one direction and a rapid movement in the opposite direction. Between the gears and Scotch yoke a shaft extends, disposed on the axis of the swivel head whereby the latter can be adjustably turned without affecting the drive mechanism of the slider and ram. The machine thus has two axes associated with the column, and three axes associated with the bed, making a total of five altogether. The slider, comprising in effect a counterweight, eliminates excessive vibrations at the working speeds.

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3,757,639

### NEGATIVE HYDRAULIC RATE DEVICE

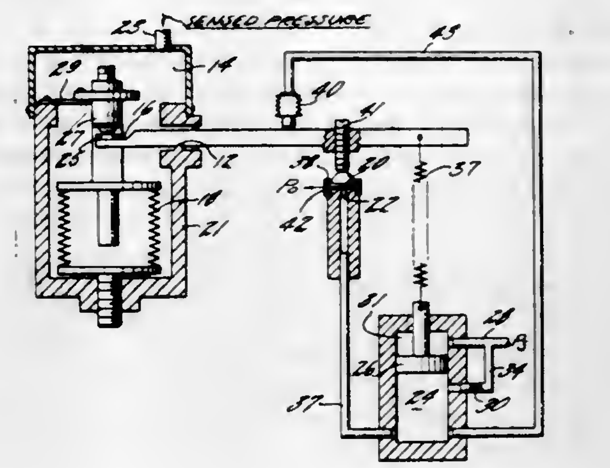
**James A. Baum, Enfield, Conn., and Charles F. Stearns, East Longmeadow, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Continuation of Ser. No. 52,162, July 6, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,129**

**Int. Cl. F15b** *9/02*

**U.S. Cl. 91—47** **2 Claims**

A force change from an input load on a force balance lever of a hydraulic servo system is augmented by an additional force indicative of a change in servo pressure by porting servo pressure from the servo piston to a bellows acting on the force balance lever for imparting a negative rate thereto.



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3,757,640

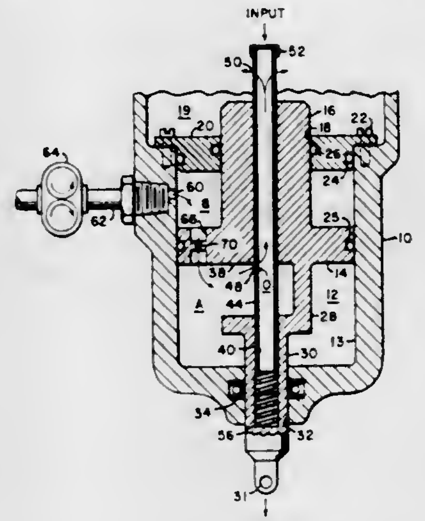
### SIMPLIFIED FOLLOWER SERVOMECHANISM

**Joseph A. Karol, Orange, Conn., assignor to Avco Corporation, Strafford, Conn.**

**Filed Dec. 1, 1971, Ser. No. 203,550**

**Int. Cl. F15b** *13/04, 9/10, 15/17*

**U.S. Cl. 91—49** **2 Claims**



A follower servomechanism comprises a piston displaceable in a chamber so that the chamber is divided into first and second compartments. A plunger integral with the piston extends out of the housing through the second compartment so that the effective area of the piston exposed to the first compartment is greater than the effective area exposed to the second compartment. A tube telescoped into a bore through the piston has a port which registers with a surface exposed to the first compartment to form a variable area orifice. A source of pressurized fluid is applied to the second compartment and a bleed passage in the piston connects the first and second compartments. A displacement of the tube relative to the piston causes a variation in the flow from the first compartment and its pressure, thus causing the piston to accurately follow the displacement of the force tube.

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3,757,641

### CONTROL SYSTEM FOR SYNCHRONIZING MOVEMENT OF DRIVEN MACHINE MEMBERS

**John R. Goff, Oak Forest, Ill., assignor to Dreis & Krump Manufacturing Company, Chicago, Ill.**

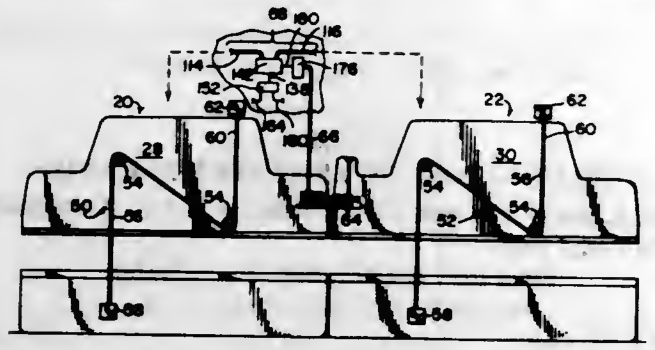
**Filed Dec. 15, 1971, Ser. No. 208,380**

**Int. Cl. F15b** *11/22*

**U.S. Cl. 91—171** **10 Claims**

A control system for synchronizing movement of two hydraulically actuated, individually driven and leveled machine members. Preferably, the control unit is used with a pair of hydraulically operated press brakes or other like machines having reciprocable rams which are advanced and retracted by hydraulic fluid under pressure. The control system includes means for detecting the presence and amount of relative motion, and hence lead and lag, between the machine members, means for generating a signal having a polarity indicative of the direction of such relative motion and an amplitude characteristic of the amount of such relative motion, and a valve system having means for decreasing fluid flow into the pressure side of the machine having the leading driven member. The valve is of a proportional flow type in which flow volume is controlled in response to the amplitude of the signal, and, the polarity of the signal determines the machine in which flow of hydraulic fluid will be regulated.

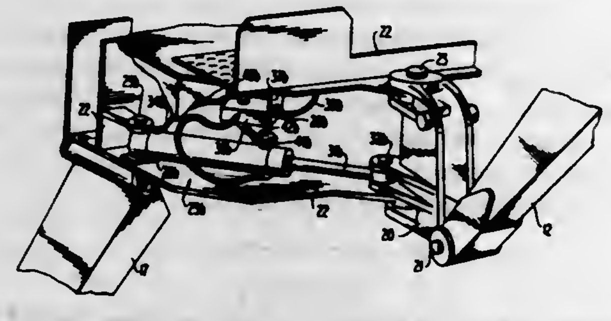
In the described form, an electric torque motor is used to control the spool of a three-port hydraulic servo valve having one inlet line from the pressure side of each of the press brakes, a center outlet and a spool land which, in the neutral position thereof, just loses both parts but which will open one or the other upon spool movement in either direction. The torque motor is controlled by an associated amplifier receiving a signal from the signal generator, which is in a form analagous to that of a linear variable differential transformer arranged for rotary movement. The signal generator includes a field disposed in a stationary housing and having a rotary armature, with the drum which serves as a portion of the detector being affixed to a portion of the armature shaft and disposed adjacent the ram on the adjacent press brake, with a flexible but non-extensible drive unit wound over a portion of the drum and being held in tension between a pair of mounting points disposed on either side of the drum. The individual level control system in each press brake is not affected by the synchronizing system.



### 3,757,642
### SWING MECHANISM FOR PIVOTED MEMBER

**Kenneth W. Schuermann, Perry, Okla., assignor to The Charles Machine Works, Inc., Perry, Okla.**

**Filed Nov. 24, 1971, Ser. No. 201,936**
**Int. Cl. F01b** *1/00, 15/04*
**U.S. Cl. 91—176** **21 Claims**

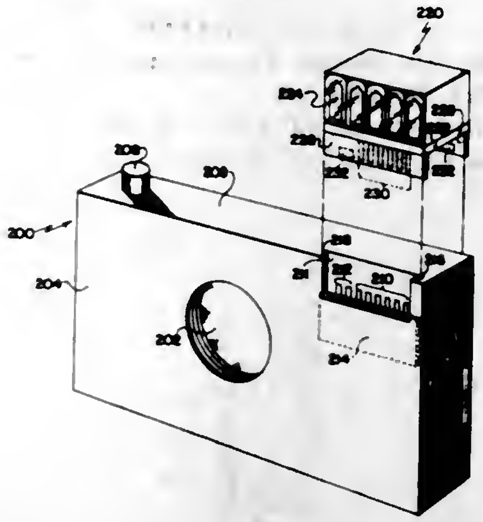


A backhoe mounted on a wheeled vehicle and having a mechanism for swinging the backhoe boom structure to positions on either side of a central axis. The swing mechanism comprises a pair of expansible chamber motors and a valve means associated with each motor for controlling the flow of pressurized fluid thereto. Each motor is pivotally connected at one end to the vehicle frame and at the other end to the boom structure. Each valve means comprises a valve body fixedly attached to the vehicle frame and having a valve chamber with suitable connections to the source of pressurized fluid and the motor, a rotatable valve partition in the valve chamber, and an actuator arm for rotating the partition pivotally attached to the respective motor. As the motors opeate to swing the boom, pivotal movement of each motor results in coordinated rotation of the valve partitions to control the flow of pressurized fluid through each of the valves.

### 3,757,643
### PHOTOFLASH APPARATUS

**John P. Burgarella, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Jan. 31, 1972, Ser. No. 222,258**
**Int. Cl. G03b** *15/03*
**U.S. Cl. 95—11 R** **42 Claims**

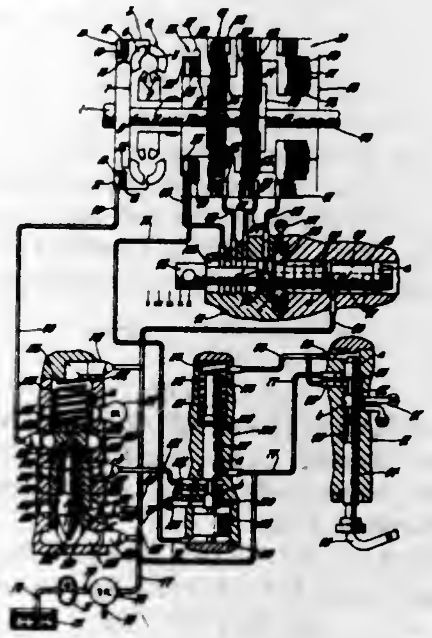


A flash socket assembly for use with a camera having an exposure control circuit convertible between ambient and flash modes of operation, and a flash assembly especially adapted for use therewith. The flash assembly includes a connector having a set of terminals for a photoflash lamp and an electrically conductive strip. The strip is adapted to bridge a pair of spaced contacts in the socket assembly to convert the exposure control circuit of the camera from an ambient mode of operation to a flash mode of operation upon coupling the flash assembly to the socket assembly.

### 3,757,644
### FLOW CONTROLLED CONTROL SYSTEM FOR MOTORS

**Keith A. Bailey, Speedway, and Jerry R. Marlow, Greenwood, both of Ind., assignors to General Motors Corporation, Detroit, Mich.**

**Division of Ser. No. 21,950, March 23, 1970, Pat. No. 3,682,043. This application June 5, 1972, Ser. No. 259,464**
**Int. Cl. F15b** *11/16*
**U.S. Cl. 91—411 R** **8 Claims**

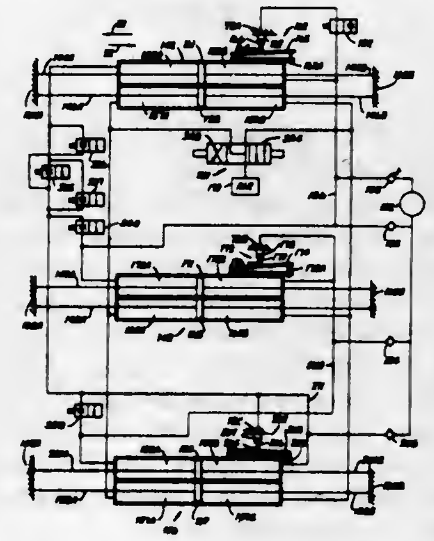


A flow controlled motor control system used to control a transmission torque converter lockup clutch in response to fluid motor operation to establish the transmission ratio drives. The controls have a shift motor system including a shift valve selectively supplying each fluid motor with shift apply and leakage make-up flow to establish and maintain a selected ratio drive, a lockup clutch valve to engage the lockup clutch and a flow valve tripped by a fast change in flow rate on initiating shift flow to disengage the lockup clutch and permitting slow changes in the leakage flow rate without tripping. These flows pass through a restriction providing a differential pressure which selectively actuates a trip control and the response control of the flow valve. The slowly increasing leakage flow rate actuates the response control which increases the size of the restriction or the return biasing force to permit slowly increased leakage flow without actuating the tripping control to trip the flow valve. The response control is unresponsive to the rapid increase of the shift flow rate which only actuates the tripping control to trip the flow valve.

### 3,757,645
### AUTOMATIC SHEARING METHOD AND APPARATUS

**Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.**

**Division of Ser. No. 42,047, June 1, 1970, Pat. No. 3,691,887. This application Sept. 7, 1972, Ser. No. 286,958**
**Int. Cl. F15b** *11/16*
**U.S. Cl. 91—411 R** **10 Claims**

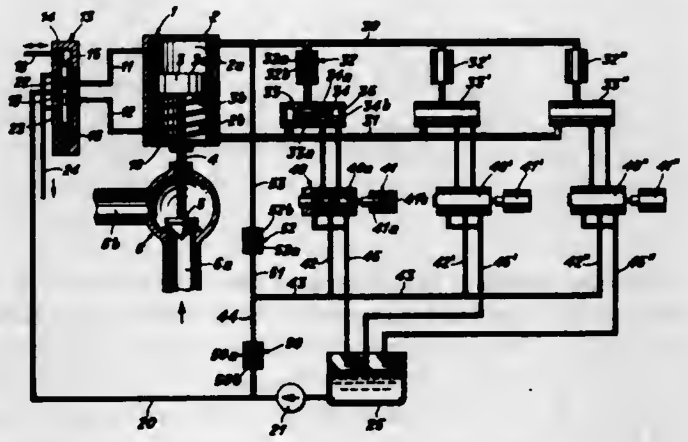


Two pairs of shears disposed at right angles and operable simultaneously, shear a sheet along intersecting lines simultaneously, the sheet being held and located by a power-driven positioning carriage. Each blank is cut to finished size, and various operational modes are available.

### 3,757,646
### SAFETY CIRCUIT FOR A WORKING CYLINDER

**Rudolf Rohner, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland**

**Filed May 11, 1971, Ser. No. 142,192**
**Claims priority, application Switzerland, May 21, 1970, 7514/70; Jan. 6, 1971, 101/71**
**Int. Cl. F15b** *11/08, 13/043*
**U.S. Cl. 91—438** **3 Claims**

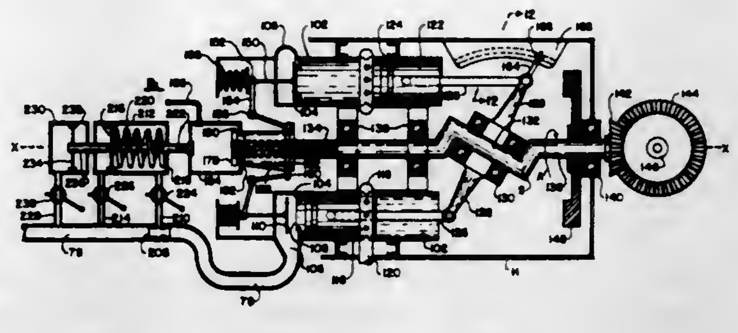


Upon reception of a safety signal, the power amplifier in the form of a control valve communicates the pressure fluid duct with the non-return valve piston to open the non-return valve. This allows a flow between the upper working cylinder chamber and the lower cylinder chamber so that the piston is moved into a safety position. Should the pressure in the fluid duct be insufficient, the power amplifier is switched into communication with the upper working cylinder to cause the non-return valve to open. This also allows a flow between the two cylinder chambers.

### 3,757,647
### COMBINED LAND AND AIR VEHICLE

**John Abramopaulos, 24-29 42nd St., Long Island City, N.Y.**

**Division of Ser. No. 823,639, May 12, 1969, Pat. No. 3,612,441. This application Apr. 14, 1971, Ser. No. 135,458**
**Int. Cl. F01b** *1/00*
**U.S. Cl. 91—482** **14 Claims**

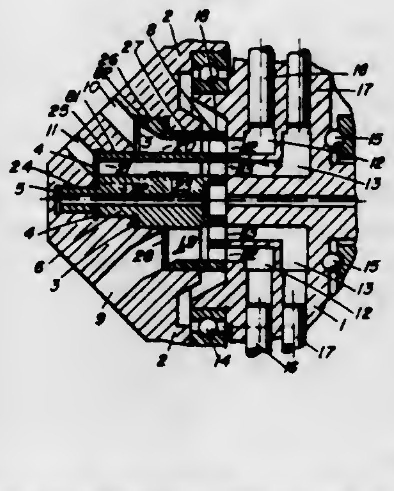


A land air vehicle comprising a chassis in which is journalled a pair of front steerable wheels and rear driven wheels, a superstructure mounted to said chassis journalling a helicopter rotor assembly, a compressor for creating a supply of pressurized air, a pneumatic motor coupled to the rear wheels, which motor is driven by the compressed air, and a jet propulsion system coupled to the rotor assembly also driven by said compressed air. The vehicle includes control means for selectively operating one or the other of the pneumatic motor or jet propulsion system in manual or automatic operation.

### 3,757,648
### PRESSURE BALANCING ARRANGEMENT FOR A MULTIPLE FLOW DEVICE

**Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan**

**Filed Mar. 21, 1972, Ser. No. 236,596**
**Claims priority, application Austria, Apr. 2, 1971, A 2856**
**Int. Cl. F01b** *13/06*
**U.S. Cl. 91—485** **12 Claims**



A multiple flow fluid handling device includes a rotor having a rotor end face with rotor ports which cooperate with the control ports of a stationary control end face of a control body. The control body has cylindrical portions slidingly fitting into cylindrical eccentric pressure chambers of a stationary closure means. The eccentric pressure chambers communicate with high pressure passages in the closure means, and the pressure in the cylindrical pressure chambers produce a resultant force which presses the control end face against the rotor end face and compensates the pressure forces urging the control body away from the rotor.

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### 3,757,649
### SMOKE FILTERS

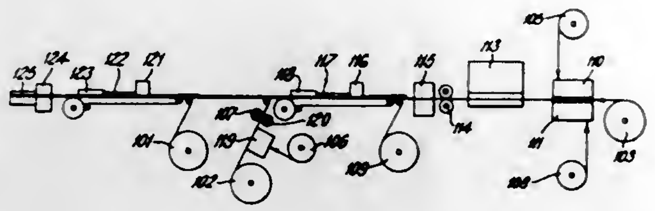
**Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, London, England**

**Division of Ser. No. 880,747, Nov. 28, 1969, abandoned. This application Oct. 13, 1971, Ser. No. 188,874**

**Claims priority, application Great Britain, Dec. 4, 1968, 57703/68; June 27, 1969, 32625/69**

**Int. Cl. B31c** *5/00*

**U.S. Cl. 93—1 C** **5 Claims**



A filter for a cigarette or other smoker's article wherein loose material is held in separate layers by porous elements arranged between the layers and so arranged that smoke passing from one end of the filter to the other is constrained to pass across and through said layers in succession.

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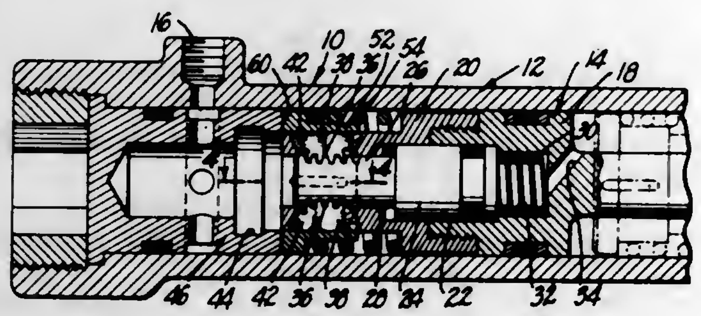
### 3,757,650
### RECIPROCATORY FLUID ACTUATED MOTOR HAVING A RACK AND PINION PISTON LOCKING MECHANISM

**Nicholas DeKiss, North Hollywood, Calif., assignor to DeLaval Turbine, Inc., Princeton, N.J.**

**Filed Feb. 22, 1972, Ser. No. 227,784**

**Int. Cl. F15b** *15/26*

**U.S. Cl. 92—25** **12 Claims**



A reciprocatory fluid actuated motor the piston of which carries a rack and pinion mechanism having locking elements engageable with a locking element on the cylinder to lock the piston in a predetermined position in the cylinder. The rack and pinion mechanism comprises a rack carried by and movable axially of the piston, pinion segments carried by the piston and meshed with the rack, and locking teeth on the pinion segments engageable with an annular locking shoulder in the cylinder to lock the piston in response to movement of the rack relative to the piston in one direction. A spring biases the rack in a direction to engage the locking teeth with the locking shoulder, and a retaining sleeve prevents engagement of the locking teeth with the locking shoulder until the piston approaches its locked position. Fluid pressure releases the lock when this is desired.

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### ERRATUM

For Class 93—36 see:
Patent No. 3,757,649

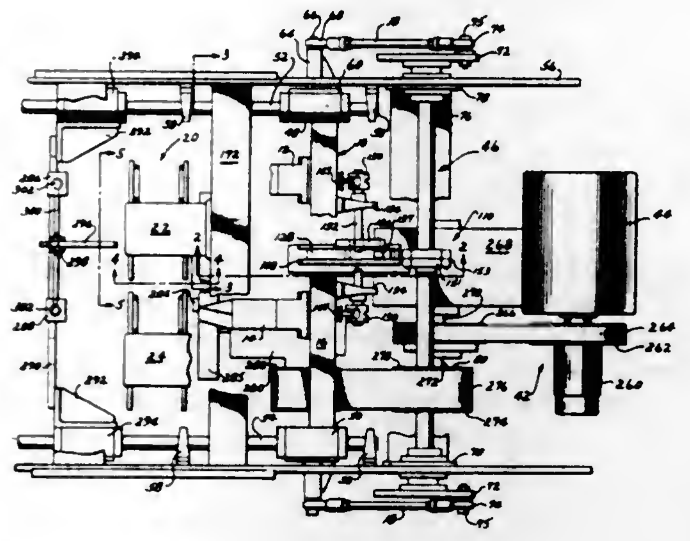
### 3,757,651
### APPARATUS FOR ADVANCING AND RETRACTING A DISPENSER BODY TO AND FROM A BAG APPLICATOR

**Roger K. Bruce, Mission Viejo, and Werner Marhold, Huntington Beach, both of Calif., assignors to Sterigard Corporation, Santa Ana, Calif.**

**Filed Apr. 13, 1972, Ser. No. 262,232**

**Int. Cl. B31b** *7/00, 1/52*

**U.S. Cl. 93—36.01** **40 Claims**



A ram picks up a dispenser body from a dispenser body feed and indexer and carries the body to a bag applicator, where a bag is applied over an upper flange of the body and is drawn inside of the body by vacuum applied through an indexing head of the ram. As the ram retracts from the bag applicator, fingers of the ram engaged to the dispenser body over a bottom flange thereof carry the dispenser body to the feed and indexer where the dispenser body retaining fingers open and the dispenser body is stripped from the ram by lugs. Index wheels of the feed and indexer rotate 90° to bring a new dispenser body into position for its capture and advance by the ram to the bag applicator, and to discharge the dispenser body which has just had a bag attached to it.

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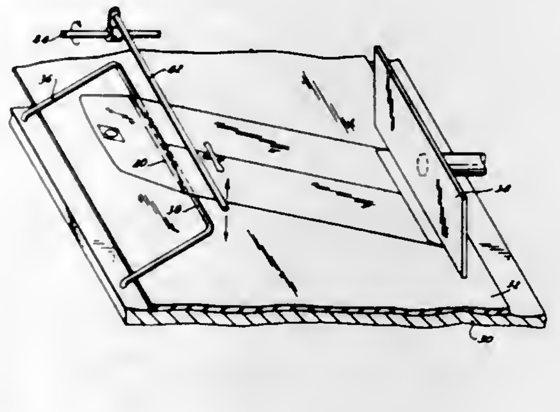
### 3,757,652
### ENVELOPE HANDLING AND MANUFACTURING MACHINERY

**Marvin Moinester, 47 Winesap Ln., Monsey, N.Y., and Allen Moinester, 706 Sherwood St., North Woodmere, N.Y.**

**Filed Feb. 4, 1972, Ser. No. 223,593**

**Int. Cl. B31b** *1/52*

**U.S. Cl. 93—61 R** **7 Claims**



Envelope-handling machinery of the type for use in conjunction with a device for inserting clasps and reinforced holes in envelopes. The machinery includes a pneumatic device at the insert end of the clasp inserting device for assisting in the opening of the envelope flap. Additionally, an arrangement is provided at the output end of the clasp-inserting device for folding the flap of the envelope to the closed position.

### ERRATUM

For Class 95—11 see:
Patent No. 3,757,643

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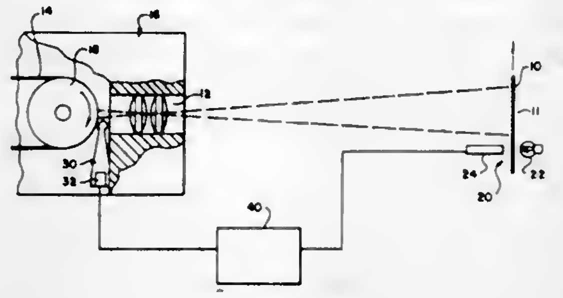
### 3,757,653
### FILM MARKING SYSTEM

**Richard E. Albrecht, and Terrence L. Reeder, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Oct. 26, 1971, Ser. No. 192,132**

**Int. Cl. G03b** *17/24*

**U.S. Cl. 95—1.1** **4 Claims**



An optical system for restricting the spread angle of a light beam and placing a mark on a film that includes a prism which transmits only those light rays within the desired spread angle and a lens which focuses the light beam onto the film. The prism and lens may be formed into a one-piece molded light pipe.

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### 3,757,654
### CAMERA HAVING AUTOMATIC EXPOSURE AND AUTOMATIC FLASH CONTROLS

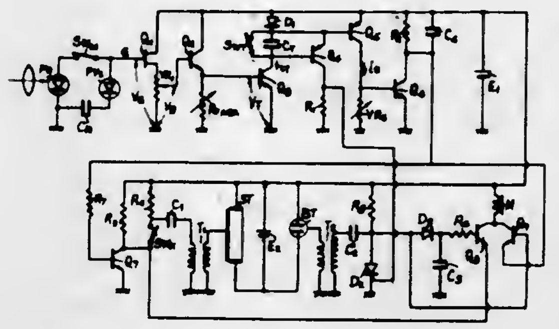
**Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Apr. 10, 1972, Ser. No. 242,593**

**Claims priority, application Japan, Apr. 19, 1971, 46/25162**

**Int. Cl. G03b** *7/08*

**U.S. Cl. 95—10 CE** **12 Claims**



A shutter timing circuit automatically determines when flash will be used and its duration. The timing circuit computes proper shutter speed using film sensitivity, diaphragm valve and scene brightness and compares that with a preset shutter speed. When the computed exposure time is longer that the preset time, an enabling circuit allows flash to be triggered when the shutter is opened. The actual speed of the shutter is determined by the timing circuit. If flash is used, the flash is terminated and the shutter closed at the same time by the timing circuit. The diaphragm, film sensitivity and brightness inputs are logarithmically compressed prior to computation of the proper shutter speed and the resultant computed valve is logarithmically expanded prior to timing of the exposure.

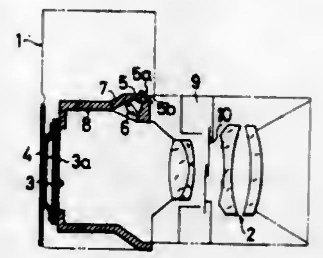
### 3,757,655
### ELECTRONICALLY CONTROLLED CAMERA SHUTTER

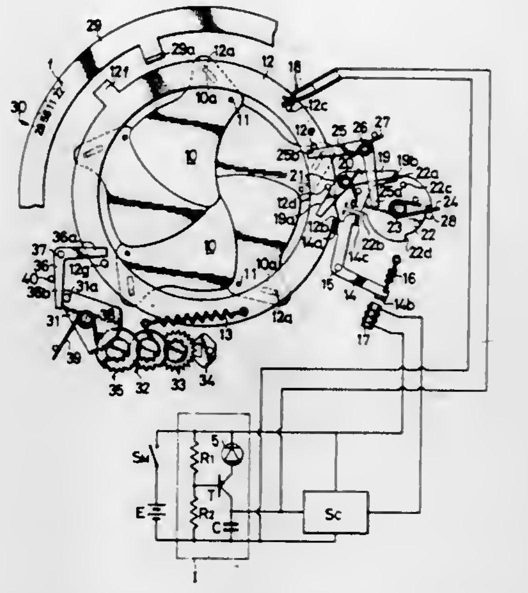
**Tatsuo Kobayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed Dec. 16, 1971, Ser. No. 208,778**

**Int. Cl. G03b** *7/08, 9/24*

**U.S. Cl. 95—10 CE** **19 Claims**





An electronically controlled shutter comprises a braking mechanism for braking the movement of a sector opening member so as to open the shutter diaphragm sectors at a lower speed than when they are closed, a diaphragm setting member for manually setting the diaphragm aperture value and a photoreceptor for measuring the light reflected from the film surface so as to automatically control exposure by integrating the output of the photoreceptor. The shutter further includes a mechanism for selectively enabling or disabling the braking mechanism, whereby the shutter is adapted for both programming exposure and diaphragm preset exposure.

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### 3,757,656
### SINGLE LENS REFLEX CAMERA

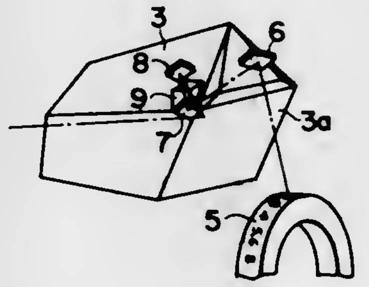
**Yoshio Kuramoto, Toyonaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan**

**Filed Nov. 15, 1971, Ser. No. 198,519**

**Claims priority, application Japan, Nov. 17, 1970, 45/113535**

**Int. Cl. G03b** *19/20*

**U.S. Cl. 95—11 V** **4 Claims**



A single lens reflex camera having a pentagonal prism view finder is provided with an additional prism disposed on the roof-type reflection surface of the pentagonal prism. The light rays from exposure condition information indicating devices such as a diaphragm opening indicator and a range finder may be caused to fall upon the pentagonal prism, through the additional prism. The light rays are reflected on the front lower reflection plane of said pentagonal prism which directs the rays to an eyepiece so that the exposure condition information is visible in the vision field of the finder.

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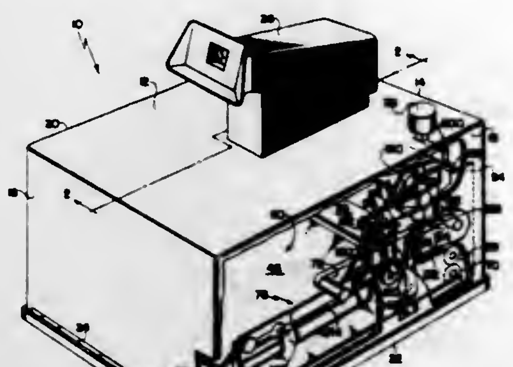
### 3,757,657
## MANUALLY OPERABLE FILM-ADVANCING APPARATUS

**Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed Mar. 27, 1972, Ser. No. 238,083**
**Int. Cl. G03b** *17/52*
**U.S. Cl. 95—13** **10 Claims**



Photographic apparatus including film-engaging apparatus mounted in position to engage a thin, flexible film unit near its trailing end and move it, subsequent to exposure, into the bite of a pair of pressure-applying members. The pressure-applying members rupture a container of processing liquid located near a leading end of the film unit and spread the processing liquid across a photo-sensitive element of the film unit while simultaneously continuing the movement of the film unit toward the exterior of the photographic apparatus. The film-engaging apparatus and at least one of the pressure-applying members are driven by a manually operated crank. Rotation of the crank is limited, by a pivotally mounted stop, to that which is necessary to advance the exposed film unit out of engagement with the pressure-applying members. The stop is temporarily rendered inoperative by actuation of a shutter release button to enable rotation of the crank to advance the next succeeding exposed film unit. Rotation of the crank, subsequent to actuation of the shutter release, is effective to recock the shutter of the photographic apparatus.

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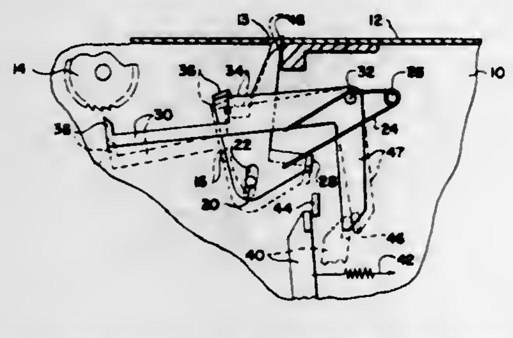
### 3,757,658
## FILM METERING MECHANISM FOR CAMERAS

**Jeffrey R. Stoneham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed May 24, 1972, Ser. No. 256,553**
**Int. Cl. G03b** *1/62*
**U.S. Cl. 95—31 FM** **6 Claims**



A camera for perforated roll film includes transport means for advancing the film along an exposure plane, a metering lever biased toward an active position to disable the transport means, and a film sensing member for detecting the arrival of a perforation at a predetermined position to permit movement of the metering lever to its active position. Means associated with the sensing pawl and the metering lever hold the sensing pawl in the perforation until metering is effected and thereupon permits movement of the sensing pawl out of the perforation.

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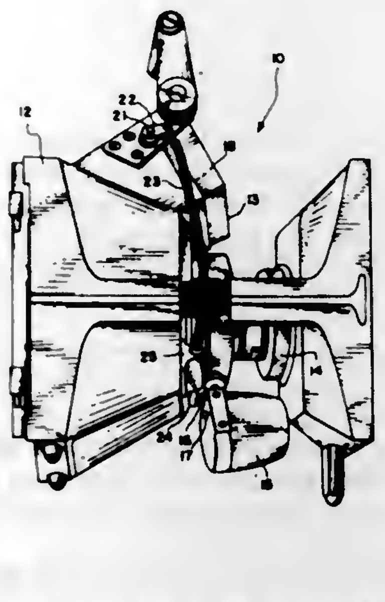
### 3,757,659
## EXPOSURE INTERLOCK FOR OSCILLOSCOPE CAMERAS

**Cary R. Spitzer, Williamsburg, and Jerry D. Stainback, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Nov. 11, 1971, Ser. No. 197,870**
**Int. Cl. G03b** *19/12;* **G01d** *9/42*
**U.S. Cl. 95—42** **2 Claims**



An exposure interlock for oscilloscope cameras which cuts off ambient light from the oscilloscope screen before the shutter of the camera is tripped. A flap is provided which may be selectively positioned to an open position which enables viewing of the oscilloscope screen and a closed position which cuts off the oscilloscope screen from view and simultaneously cuts off ambient light from the oscilloscope screen. A mechanical interlock is provided between the flap and shutter trip structure which causes the flap to be activated to its closed position before the camera shutter is tripped, thereby preventing overexposure of the film.

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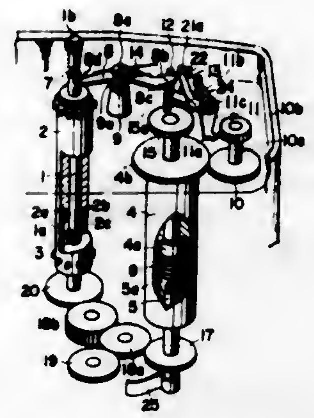
### 3,757,660
## PHOTOGRAPHIC CAMERA CAPABLE OF MAKING MULTIPLE EXPOSURES

**Yoshio Kuramoto, Toyonaki-shi; Toshio Kobori, Osaka-fu, and Hiroshi Ueda, Nara-ken, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan**

**Filed Dec. 22, 1972, Ser. No. 317,819**
**Int. Cl. G03b** *17/42, 19/04, 15/00*
**U.S. Cl. 95—31 AC** **8 Claims**

A photographic camera capable of making multiple exposures on a single film frame, the camera being of the type in which the advance of a single frame of film and the cocking of the shutter are effected by a single winding operation. The camera is provided with a first gear member rotatable for transmitting the rotary movement of the winding operation to a cocking member of the shutter, a second gear member rotatable for transmitting the rotary movement of the winding operation to a film winding spool through a friction clutch means, a third gear member rotatable for transmitting the rotary movement of the winding operation to a film transporting sprocket by way of a clutch means, a push button member actuatable for disconnecting the clutch means, and a blocking member for maintaining the clutch means in the disconnected condition and blocking the rotation of the film winding spool in the forward film winding direction against the action of the friction clutch means. The camera may be placed in a condition ready for double exposures simply by pressing the push button member, and after completion of the shutter cocking, the film winding spool is automatically relieved from the blocking action of the blocking member and the clutch is connected for associating the shutter cocking mechanism again with the film winding mechanism.



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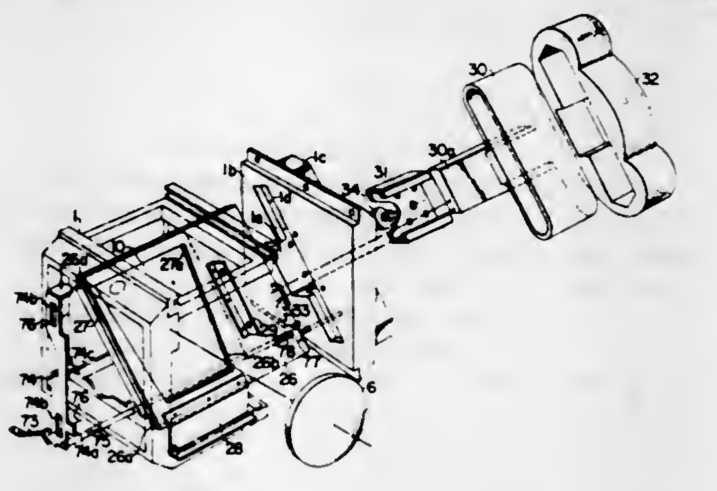
### 3,757,661
## MOVABLE MIRROR ARRANGEMENT IN A SINGLE-LENS REFLEX CAMERA

**Kohei Ochiai, Tokyo, and Kiyoakira Kato, Chiba-ken, both of Japan, assignors to Olympus Optical Company, Tokyo, Japan**

**Filed Nov. 10, 1971, Ser. No. 197,380**
**Claims priority, application Japan, Nov. 16, 1970, 45/100838**
**Int. Cl. G03b** *19/12*
**U.S. Cl. 95—42** **19 Claims**



In a camera of the single-lens reflex ground-glass focusing type, a mirror is positioned in an inclined position on the optical axis of the taking lens and between the lens and a location for a photosensitive surface. When an exposure is taken with the camera, the mirror is retained in the inclined position and is moved transversely out of the optical axis along a rectilinear path into a standby position. In the standby position a portion of the mirror is located within a housing which extends laterally from the camera body. The housing also acts as a grip for holding the camera. The housing is telescopically constructed so that it can be pulled outwardly from or pushed inwardly into the camera. When the housing is pulled outwardly, the camera is in the operating condition and when the housing is pushed inwardly the camera is in the non-operating condition. The member for operating the camera shutter is operatively connected to the housing so that the member is automatically locked when the camera is in its non-operating condition.

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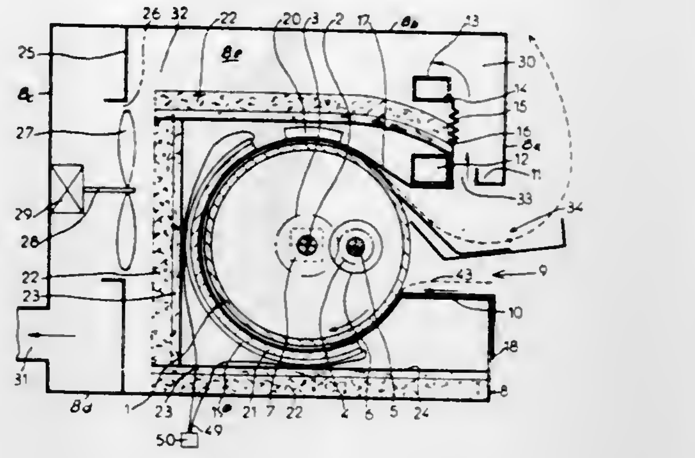
### 3,757,662
## APPARATUS FOR THERMIC DEVELOPMENT OF HEAT-SENSITIVE PAPER

**Francis Ingels, 29, rue des Rossignols, Saint Andre, France**

**Filed Jan. 8, 1971, Ser. No. 105,019**
**Claims priority, application France, Jan. 8, 1970, 7000652**
**Int. Cl. G03d** *3/00*
**U.S. Cl. 95—89 R** **11 Claims**



Apparatus for thermic development of heliographic paper and diazo copies comprises a drum rotating in an insulated compartment, a stationary tensioned fabric sheet extending around the drum to hold the copy against the drum and a heating element in the form of a thin sheet applied directly to the drum or the fabric sheet. Air is circulated through a space between the insulated compartment and an outer housing, entering at the front of the housing at an opening through which paper is fed to and discharged from the drum, passing over the top of the insulated compartment and being discharged at the rear of the housing.

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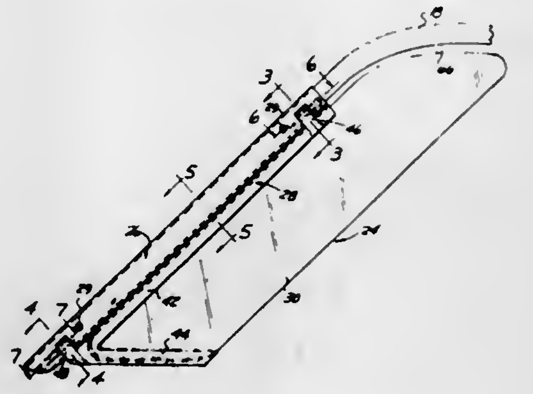
### 3,757,663
## WINDOW VENT

**Raymond A. McCarroll, 1725 Newcastle, Grosse Pointe Woods, Mich.**

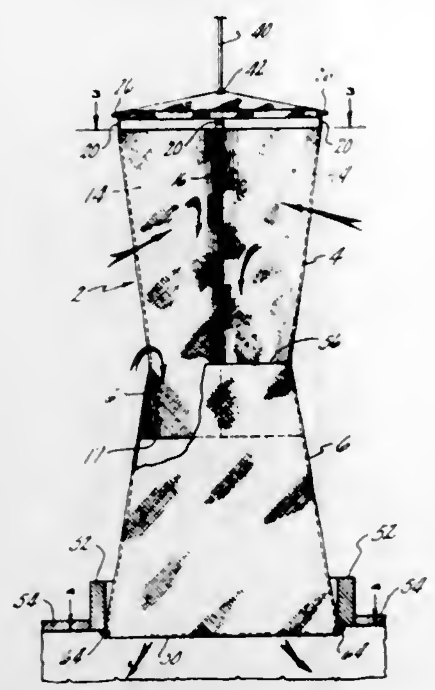
**Filed Mar. 24, 1972, Ser. No. 237,645**
**Int. Cl. B60r** *27/00;* **B60b** *1/24*
**U.S. Cl. 98—2.12** **11 Claims**



Vent apparatus that is mounted on a vehicle door and extends outboard of the door glass at the forward edge of the window opening. The apparatus includes a die cast ornamental strip that is fitted over and secured to the door frame that extends the length of the front edge of the window. An L-shaped die cast channel member supports a transparent plate and the upright leg of the channel member is hingedly connected to the strip adjacent to the upper and lower ends thereof. An adjustable torque device is incorporated in the hinge connection to retain the transparent plate at a desired angular relation with respect to the door glass.

### 3,757,664
### CLOTH VENTILATOR

**Domina C. Jalbert, 170 N. W. 20th St., Boca Raton, Fla.**
**Filed June 20, 1972, Ser. No. 264,609**
**Int. Cl. F24f** *17/02*
**U.S. Cl. 98—37** **7 Claims**



A cloth ventilator having an upper half formed of an X cross-section and a lower half formed as a diffuser of square cross-section, said part of X cross-section extending into said part of square cross-section. The bottom of said cloth ventilator having means for holding it open and fixing it within a hatchway and the top of said ventilator having means for supporting said X cross-section so that a wind can blow into said ventilator from any direction and be directed downwardly into said bottom section. Said ventilator has a top which is spaced from the top of said X cross-sectional portion so that a gust of wind can pass therebetween and not place too great a strain on the material, the top having a support rope connected to a support on a mast above the deck of a boat.

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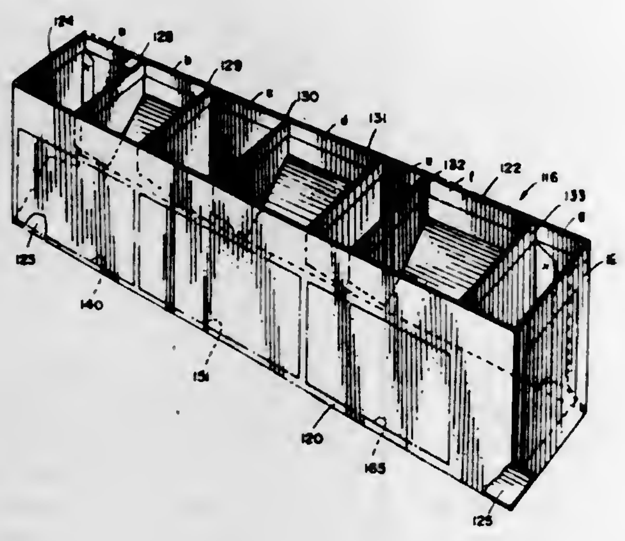
### 3,757,665
### PLENUM CONSTRUCTION

**Jess Lee Coplin, Fort Worth, Tex., assignor to Lennox Industries Inc., Marshalltown, Iowa**
**Filed Dec. 27, 1971, Ser. No. 212,292**
**Int. Cl. F24f** *7/00*
**U.S. Cl. 98—40 R** **8 Claims**



A plenum construction for receiving air from an air treating unit and distributing same to a plurality of zones to be treated. The plenum construction comprises a housing having wall means therein defining at least a pair of adjacent chambers, each having an entry portion and a discharge portion, with an inclined wall forming a common wall between the chambers and with the length of each discharge portion being substantially equal to the sum of the lengths of the entry portions of the adjacent chambers.

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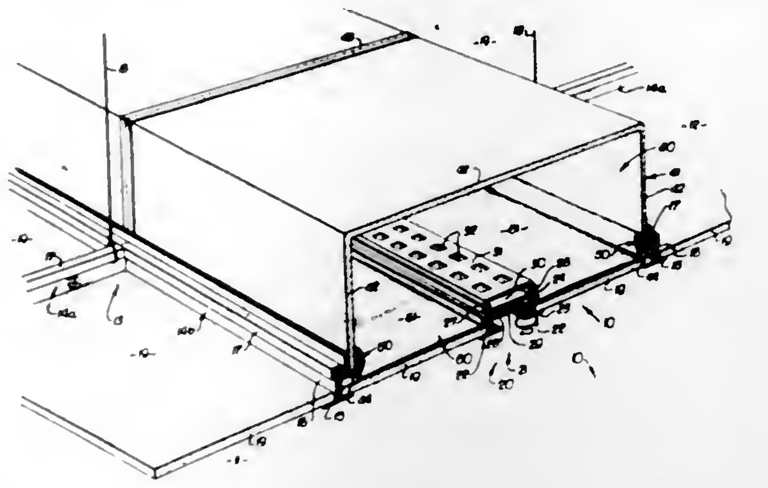
### 3,757,666
### CEILING TILE PLENUM BOUNDARY SUSPENDED CEILING CONSTRUCTION

**Robert R. Lambert, Glendora, Calif., assignor to Wehr Corporation, Milwaukee, Wis.**
**Filed Jan. 26, 1972, Ser. No. 220,758**
**Int. Cl. F24f** *13/06*
**U.S. Cl. 98—40 D** **7 Claims**



An air troffer has an imperforate flexible membrane sheet with the outer marginal edge located between the edge of an inverted channel section and the feet of the troffer. Upon the air troffer being mounted on the gridwork of a suspended ceiling over an air bar and over the ceiling tile, between the air bar and the gridwork, the sheet drapes from the troffer over the gridwork, over the ceiling tile and over a portion of the air bar to provide a boundary for an air plenum which does not leak air.

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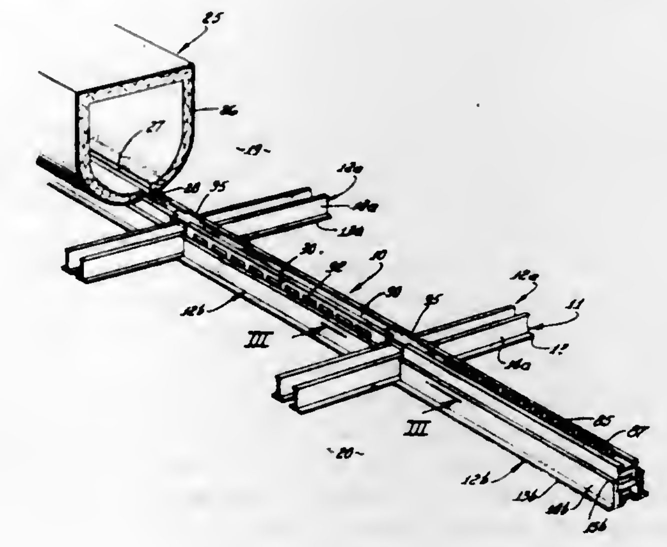
### 3,757,667
### PLUG-IN AIR DIFFUSER SUBASSEMBLY FOR A VARIETY OF SUSPENDED CEILING FRAMEWORK

**Robert R. Lambert, Glendora, Calif., assignor to Wehr Corporation, Wilwaukee, Wis.**
**Filed Mar. 11, 1971, Ser. No. 123,220**
**Int. Cl. F24f** *13/00*
**U.S. Cl. 98—40 D** **28 Claims**



A plug-in air diffuser subassembly has a pair of opposed and spaced end walls to which side walls are riveted to form an air distribution passage therethrough, and a pair of spaced protrusions extending laterally of the end walls and inwardly of the subassembly to frictionally mount a pair of cambered nested weirs in the air distribution passage; the subassembly plugs into a space formed between a pair of parallel inverted T-bar cross runners with the lower portion of the subassembly end walls resting on adjacent T-bar main runners. Each weir has a non-linear cambered body or web to cause the ends of the nested weirs to resiliently spread apart prior to being mounted between the protrusions. The end walls, each have a resilient block or spring arm to snap under the head ridge of an associated main runner. The subassembly side walls have integral inwardly folded lips along the upper portions to receive and locate extractor, blank-off and bridge plates or channels as well as an associated inverted continuous air ducts with the upper edges of the end walls having resilient blocks to bias the plates or channels against the inwardly folded lips.

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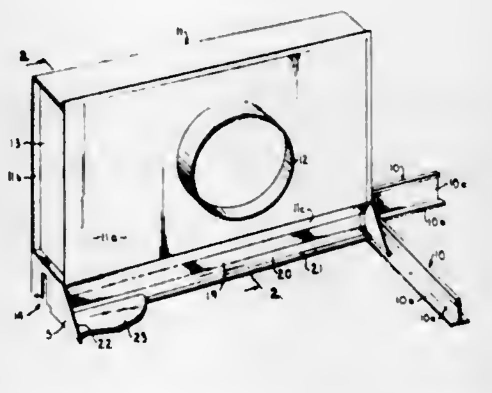
### 3,757,668
### T-BAR MOUNTED AIR DIFFUSER

**Frank J. Dean, Jr., Kansas City, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.**
**Continuation-in-part of Ser. No. 89,747, Nov. 16, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,495**
**Int. Cl. F24f** *13/06*
**U.S. Cl. 98—40 D** **5 Claims**



An air diffuser device is attachable to T-bar supports which hang or are otherwise supported from a ceiling structure. The diffuser device terminates in an integrally formed longitudinal single or double directional outlet slot with one side of the slot being shaped to facilitate directing the air flow from the diffuser device along the underside of the ceiling adjacent the shape side. The side of the device opposite the shaped side cooperates to divert the air in the aforesaid direction and does so independently of the T-bar parallel to the outlet slot. Supporting gussets (or end support plates) facilitate the mounting of the device on transverse T-bars (T-bars which are located in the supporting grid in a direction that is transverse to the outlet slot of said diffuser device). The diffuser device can also be utilized as return air inlets for return air ducts.

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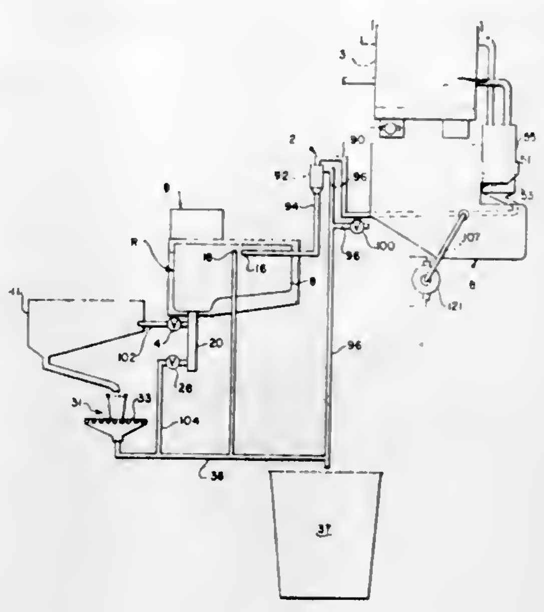
### 3,757,669
### FRESH-BREW COFFEE VENDOR

**Alvin W. Holstein, Brentwood; William H. Short, and William V. Koeneker, both of St. Louis, all of Mo., assignors to UMC Industries, Inc., New York, N.Y.**
**Filed Oct. 13, 1971, Ser. No. 188,718**
**Int. Cl. A47j** *31/34*
**U.S. Cl. 99—280** **19 Claims**

A fresh-brew coffee vendor having a reservoir adapted to hold a plural-cup batch of brewed coffee and a single-cup brewer for supplying the reservoir, with a dispensing valve opened on a time cycle basis for dispensing a cup of coffee from the reservoir on a vend cycle, and a control for effecting operation of the brewer to brew as many cups of coffee as may be needed to re-establish the plural-cup batch in the reservoir whenever coffee is dispensed from the reservoir, and for maintaining the dispensing valve closed whenever the supply of coffee in the reservoir falls below a predetermined low level (e.g., one and one-half cups). Provision is also made for dumping coffee from the reservoir if a predetermined time interval (e.g., two hours) elapses without a vend, and operation of the brewer is then deferred until the next vend.



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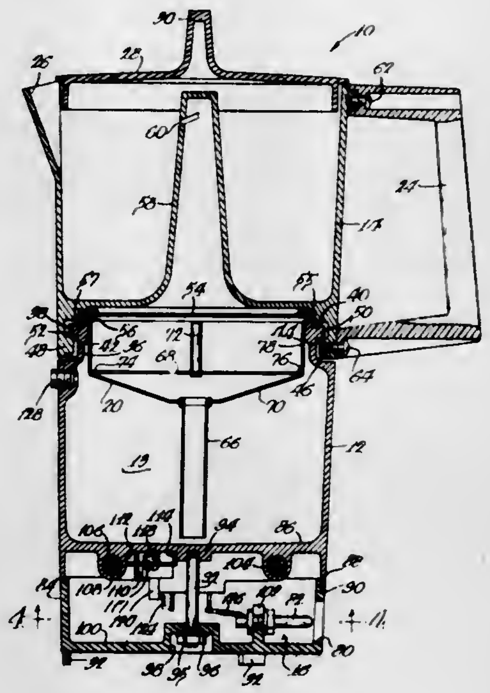
### 3,757,670
### EXPRESSO COFFEEMAKER

**Vello Laama, Lombard, and Robert Donald Grahn, Hinsdale, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.**
**Filed Feb. 10, 1972, Ser. No. 225,153**
**Int. Cl. A47j** *31/10*
**U.S. Cl. 99—302** **11 Claims**

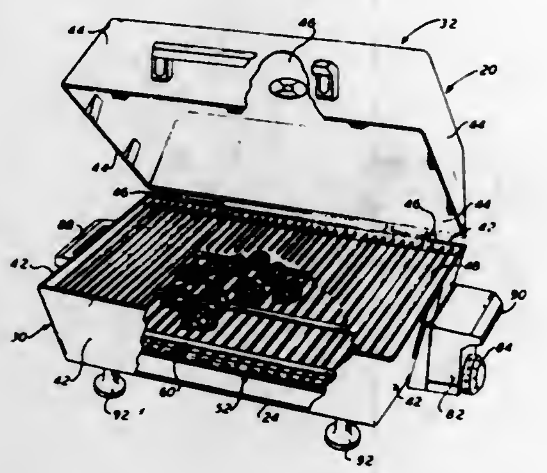


A two vessel electric coffeemaker wherein water is forced from the lower vessel through a coffee container to the upper vessel so that the percolate is collected in the upper vessel is provided. A C-shaped electrical heating element is integrally formed with the base of the lower vessel to provide energy for the generation of steam. The steam provides the necessary pressure for forcing the percolate into the upper vessel. Once the coffee has percolated it is kept warm by a thermostatic switch that is positioned inside the C-shaped heating element in contact with the base of the lower vessel.

### 3,757,671
### FOOD PREPARATION UNIT

**Martin Warshauer, Fair Haven, and Harold Sher, Rumson, both of N.J., assignors to Electric Char-B-Que, Inc., Red Bank, N.J**

**Filed Oct. 30, 1972, Ser. No. 302,080**
**Int. Cl. A47j** *37/06*
**U.S. Cl. 99—400** **13 Claims**

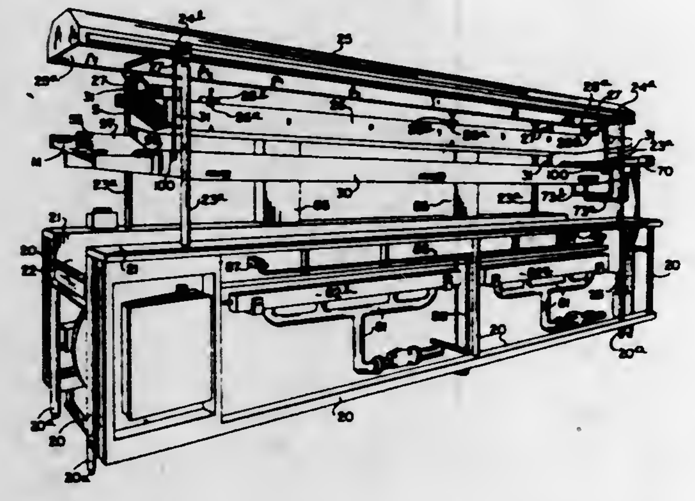


A food preparation unit including a base having a contoured bottom with an aperture formed therein to provide an air intake and to permit the drainage of fat from the unit, a cover hinged to the base and provided with an adjustable vent formed in the top thereof for permitting the escape of steam and smoke from the unit, the adjustable vent including an aperture for assuring an ever present opening to permit the escape of excess smoke and steam from the unit; and the elements contained within the grill, such as a support grill and drip pan assembly, being supported within the unit so as to be spaced from the walls of the unit so as to permit an intake of air in the aperture formed in the base of the unit and a flow of air upwardly through the unit along the walls thereof and out the vent so as to cool the bottom of the unit and purge smoke from the unit.

### 3,757,672
### DEEP FAT FRYER FEEDING APPARATUS

**Robert H. Szabrak, and Warren Stubblebine, both of Sandusky, Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio**

**Filed Feb. 8, 1971, Ser. No. 113,395**
**Int. Cl. A47j** *37/12*
**U.S. Cl. 99—404** **20 Claims**

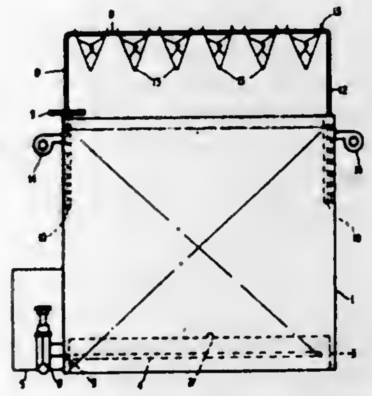


A deep fat fryer includes an elongated housing holding a bath of hot fat through which an endless main conveyor carries a batter coated food product through the bath from the infeed end thereof to a discharge end thereof. Above the main conveyor is a submerger conveyor having a run moving from the infeed end to the discharge end of the housing and adapted in operative position to lie close to the food portions on the main conveyor and to hold them submerged in the hot fat. At the infeed end of the main conveyor, there is provided a tiltable infeed conveyor, the end of which upon which the product is originally placed being movable from a position near the top level of the bath of hot fat or to another position submerged in the hot fat at approximately the horizontal level of the main conveyor so that the operator may select the time of exposure of the product to the cooking action of the hot fat before the product strikes any conveyor, between zero and that time sufficient to form a thin crust on the outside of the batter coating. To provide more economical operation by limiting the total volume of hot fat in the bath, the bottom of the housing at the infeed end of the apparatus is brought up to a level closely below the lowermost position of the infeed conveyor. In operative position of the apparatus, the submerger conveyor nests into the side rails of the main conveyor and an elongated hood encloses the hot bath housing at a zone closely above the submerger conveyor from one end of the housing to the other. For cleaning and maintenance, power means is provided to lift the hood and the submerger conveyor and the main conveyor out of the hot bath and to move them to separated horizontal levels so as to provide access space between the hood and the submerger conveyor, and between the two conveyors, and between the main conveyor and the housing holding the hot bath. The power means can then be reversed to place all of the parts in operative position.

### 3,757,673
### APPARATUS FOR COOKING OR HEATING FOODSTUFFS

**Griffith Wallace, 22 Daphne St., Botany, New South Wales, Australia**

**Filed June 22, 1971, Ser. No. 155,527**
**Claims priority, application Australia, July 10, 1970, 1795/70**
**Int. Cl. A47j** *37/12*
**U.S. Cl. 99—410** **1 Claim**



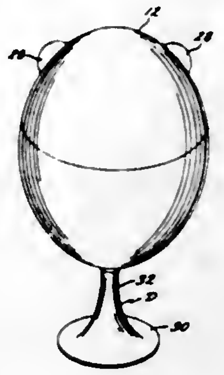
A cooking or heating apparatus having means whereby bags of foodstuffs can be selectively suspended therein and removed therefrom.

### 3,757,674
### EGG COOKING DEVICE

**Joseph E. Carroll, 13292 Anawood Way, Westminster, Calif.**

**Filed Oct. 12, 1971, Ser. No. 188,149**
**Int. Cl. A47j** *43/18*
**U.S. Cl. 99—440** **6 Claims**

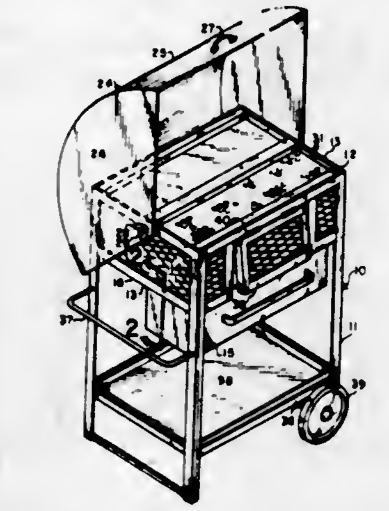
First and second semi-ellipsoidal shells having first and second open end portions, which end portions have fastening means associated therewith to removably hold the end portions in sealing engagement. The first shell is of sufficient size to hold at least the yolk and white of one egg. When the shells are in sealing engagement and an egg disposed in the confined spaced defined by the shells, the shells may be placed in a body of heated water to cook the egg. A pedestal is provided that removably engages a portion of the first shell opposite the open end portion thereof, to hold the first shell in an upright position after the egg has been cooked and the second shell removed from the first shell. The pedestal is of substantial weight and, if desired, may be secured to the first shell during the cooking operation to assure that the first shell remains in an upright position in the heated water.



### 3,757,675
### BARBECUE GRILL WITH TILT TOP AND SHIFTING FIRE BOX

**Arthur E. Wilbricht, 1515 W. Summit, San Antonio, Tex.**

**Filed Aug. 11, 1971, Ser. No. 170,754**
**Int. Cl. A47j** *37/07*
**U.S. Cl. 99—446** **4 Claims**



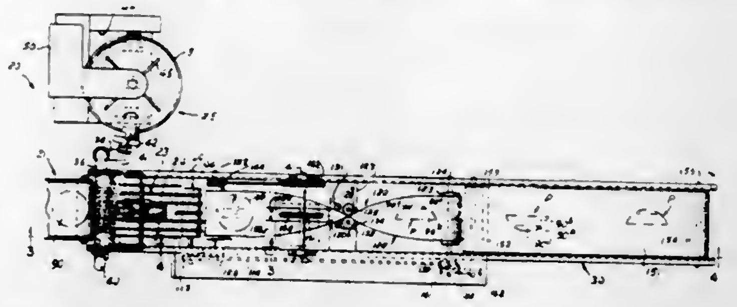
This invention pertains to an improved barbecue grill constructed on a welded angle iron frame. The grill incorporates expanded metal sides preventing inadvertent contact with the heated fire box. The fire box is movably mounted on angle iron cross members which serve as a fire box track permitting shifting of the box relative to the grill. A tiltable hood is mounted on wing nuts at the center of two cross members permitting a tiltable reversal of the relative position of the hood.

### 3,757,676
### FOOD PROCESSING APPARATUS

**Johnny B. Pomara, Jr., Dallas, Tex., assignor to El Chico Corporation, Dallas, Tex., a part interest**

**Int. Cl. A21c** *9/06*
**U.S. Cl. 99—450.6** **19 Claims**

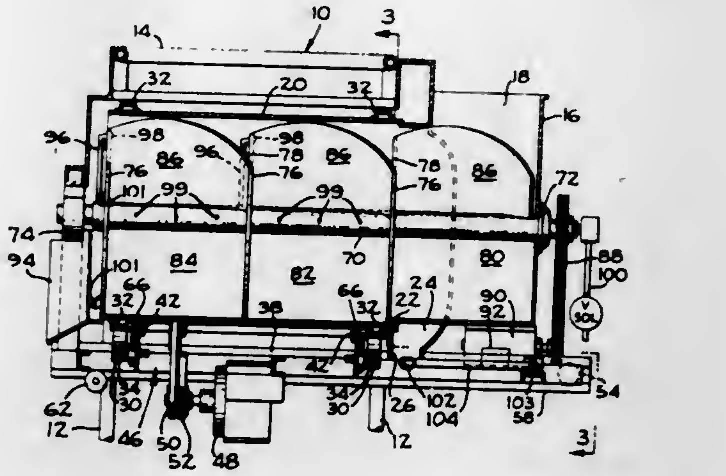
A food processsing machine particularly adapted to the rapid preparation of food items including Mexican food products such as enchiladas and tacos. The machine has a feed conveyor, a filler dispenser, and a folding belt for forming a bread, cake, or pastry type shell into an envelope around a food filler. One form of the apparatus also includes a sealing system associated with the folding belt for sealing the shell around the filler after folding by the belt. The shells are sequentially introduced into the machine on the feed conveyor where a measured quantity of filler, such as a meat paste, is deposited on each shell. The shell moves along the folding belt to a folding region where it is folded upwardly around the filler and sealed forming a filler enclosing envelope over a major central portion of the shell as the food product so prepared is advanced toward the discharge end of the belt. Various embodiments disclosed adapt the machine to processing different size food products of the nature described.



### 3,757,677
### METHOD OF AND APPARATUS FOR ABRASIVE PEELING

**Kenneth John Brady, 6870 Crows Landing Rd., Ceres, Calif., and Edward L. Catalina, deceased, late of 64 Whittier St., Milpitas, Calif. (by Doris M. Catalina, administratrix)**

**Continuation of Ser. No. 877,974, Nov. 19, 1969, abandoned. This application Nov. 23, 1971, Ser. No. 201,577**
**Int. Cl. A23n** *7/00*
**U.S. Cl. 99—630** **5 Claims**



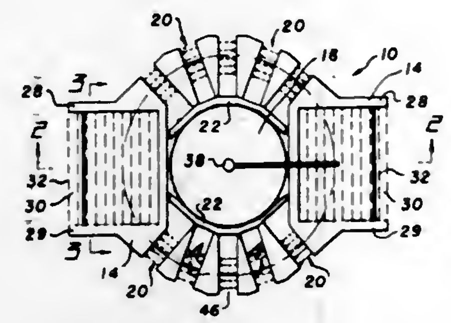
A peeling apparatus is disclosed which comprises a rotatable drum having an abrasive surface therein, a product-moving means disposed therein consisting of circular, segmental plates mounted about a said drum, and a helical plate disposed between the segmental plates to convey the product from one compartment to the other. A water jet is provided to maintain the abrasive surface in a clean condition.

### 3,757,678
### LOG BUNDLING METHOD AND APPARATUS

**John O. Hemmingsen, Vancouver, British Columbia; Glyn D. Rogers, North Vancouver, British Columbia, and Albert C. Mullen, West Vancouver, British Columbia, all of Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada**

**Filed Apr. 19, 1972, Ser. No. 245,497**
**Int. Cl. B65b** *13/02*
**U.S. Cl. 100—2** **38 Claims**

A method and apparatus for sorting and bundling logs that have been cut in the woods and when they are first placed in water to be towed to their destinations. The logs are placed in a receiving station or pontoon and then each log is lifted out and deposited in a selected one of a plurality of expansible cradles in accordance with the grade, species and/or size of the logs. The logs are tied into bundles in the cradles, and after the cradles have been expanded, the logs are towed out of them.



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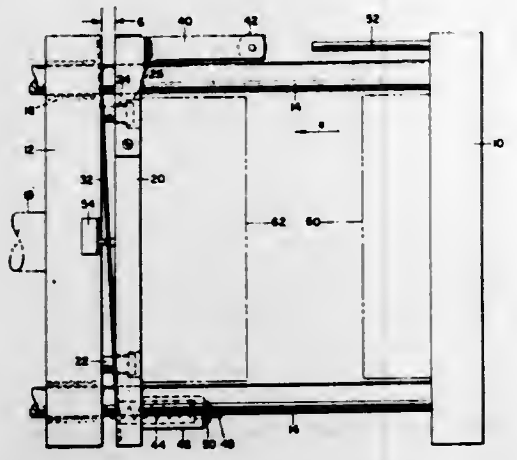
### 3,757,679
### MOLD PROTECTOR

**Walter M. Broderick, 854 Wilbraham Rd., Springfield, Mass.**
**Filed Nov. 26, 1971, Ser. No. 202,116**
**Int. Cl. B30b** *15/16*
**U.S. Cl. 100—53** **1 Claim**



A safety mechanism for a molding machine in the form of a two-part pressure sensitive means, a first part being the movable platen and a second part being disposed forwardly thereof and supporting its mold with a gap of predetermined dimension being provided between the parts by means of friction free reeds supporting the second part relative to the first part so arranged that, in the event of a malfunction or in the presence of an obstruction, the pressure created on the mold creates a closing of the gap and triggers micro switches which are tied in with the machine opening and closing mechanism to quickly reverse the closing action of the molding machine.

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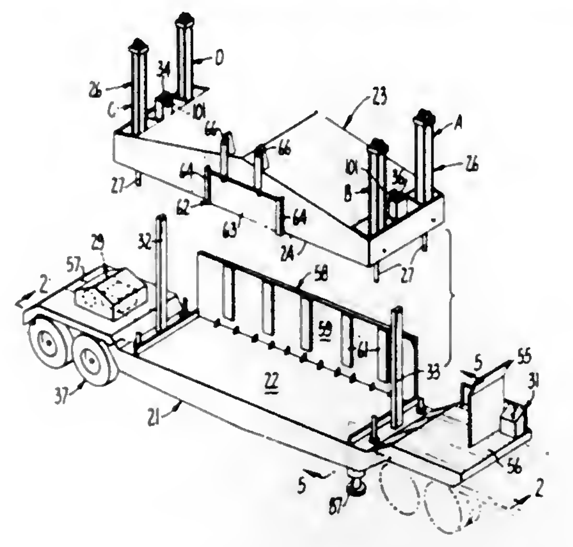
### 3,757,680
### MACHINE FOR COMPRESSING AND FLATTENING JUNKED AUTOMOBILES

**Jerome Williams, 823 W. 17th St., National City, Calif.**
**Filed June 28, 1971, Ser. No. 157,353**
**Int. Cl. B30b** *15/24*
**U.S. Cl. 100—100** **18 Claims**

A machine for flattening junked automobiles includes a relatively lightweight but rigid horizontally extending rectangular flattening head mounted for up and down movement over a rigid, comparatively lightweight horizontal flattening bed, with such movement being effected by hydraulic rams mounted at the corners of the generally rectangular flattening head. The head may be lifted enough to accommodate, between the head and the bed, one or more flattened automobiles plus one automobile to be flattened, so that a plurality of automobiles may be flattened between unloadings. The flattening mechanism is mounted on a highway trailer, and vertically disposed hydraulic rams force the head downwardly on their retracting stroke so that the height of the rams, and consequently the height of the overall unit, will be at a minimum, within Federal and State maximum highway transport height limitations, when the head is in its downmost position. In one form of the invention, the hydraulic cylinder bodies are attached to the flattening head and the remote ends of the piston rods are secured to the vehicle. In a modified form, the hydraulic cylinders are fastened to the vehicle and the remote ends of the piston rods are secured to the flattening head.



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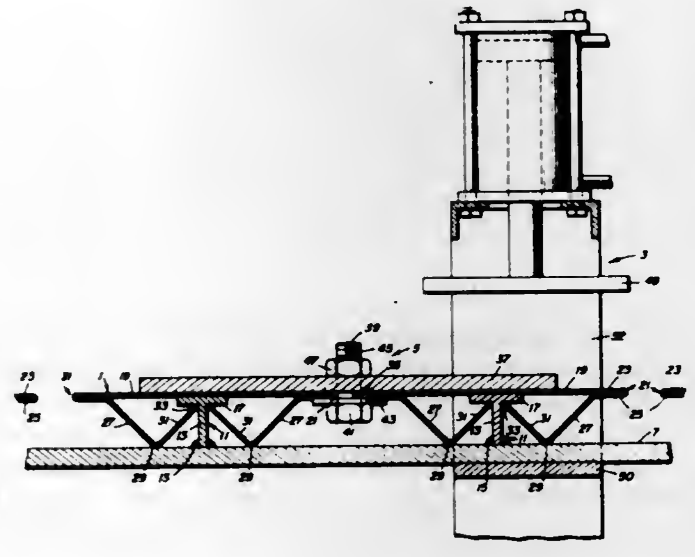
### 3,757,681
### APPARATUS FOR PRE-FABRICATING WOOD STRUCTURES

**Gail H. Templin, P.O. Box 807, Vero Beach, Fla.**
**Filed Nov. 26, 1971, Ser. No. 202,250**
**Int. Cl. B30b** *1/00*
**U.S. Cl. 100—214** **14 Claims**



Apparatus in the nature of a jig for fabricating wood trusses providing a stationary support means, upon which the members of the wood truss are disposed. Truss plates are placed at the joints of the members of the wood truss and the teeth thereof embedded therein by means of a hydraulic press. The stationary support means includes a plurality of metallic slats, having a degree of flexibility, upon which the members of the wood truss are properly positioned. The slats are so constructed as to be mounted and removed from the stationary support means with facility and are also so structured, that upon application of vertical forces to the truss plates to drive them into the members of the truss, the pressures resulting therefrom strengthen the entire unit and provide support along the transverse centers of each slat, and also at and adjacent to the longitudinal edges of each slat. The longitudinal edges of the slats are spaced apart and removable means operatively extend between adjacent slats for anchoring fixtures in proper position on the slats to abut and maintain the wooden members of the truss in the desired and necessary relative positions for fabrication of the truss components into a unitary building structure.

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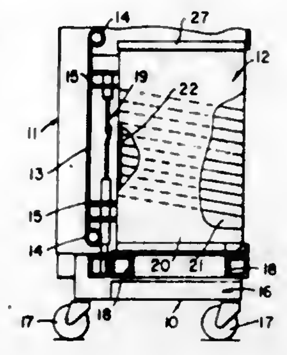
### 3,757,682
### DOLLY-MOUNTED BAG HOLDER FOR REFUSE COMPACTOR

**Lyle J. Ritchie, St. Clair Shores, Mich., assignor to Automatic Refuse Systems, Inc., St. Clair Shores, Mich.**
**Filed July 14, 1971, Ser. No. 162,546**
**Int. Cl. B30b** *15/00*
**U.S. Cl. 100—220** **2 Claims**



A dolly-mounted sheet metal box-like holder for plastic refuse bags, as utilized as an adjunct of existing refuse compacting equipment, is constituted by an upright front wall, an open top and rear, a bottom floor and parallel upright side walls. The side walls (and optionally, the front walls) are stamped to provide parallel ribs affording internal overhang ledges beneath which the walls of the refuse receiving bag engage as the material is ram-compacted, thus combatting a tendency of the interlocked material to spring back upwardly in the bag after each compacting ram stroke. The side wall ribs by preference also incline mildly downwardly from front to open rear.

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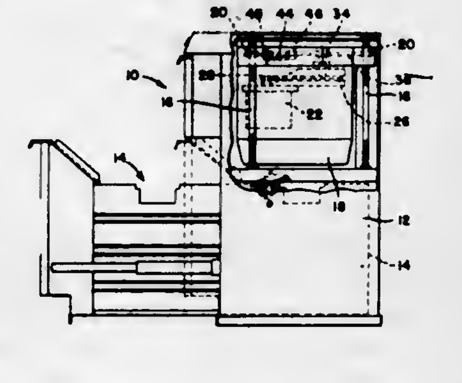
### 3,757,683
### COMPACTOR DRIVE CHAIN TENSIONING APPARATUS

**Einar O. Engebretsen, and Ernst Grunewald, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio**
**Filed Feb. 9, 1972, Ser. No. 224,775**
**Int. Cl. B30b** *1/18*
**U.S. Cl. 100—229 A** **5 Claims**



A compactor in which the compacting ram is driven along stationary jack screws by means of internally threaded sprockets mounted on the ram and threadably engaging the jack screws. The sprockets are rotated by means of a drive chain wrapping the sprockets and a drive sprocket. The drive chain is maintained in taut, sprocket engaging relationship to both the drive and driven sprockets by means of a pair of tensioning sprockets pivotally mounted on the ram and urged towards each other into engagement with the drive chain by means of a coil spring.

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### ERRATUM

For Class 100—270 see:
Patent No. 3,757,687

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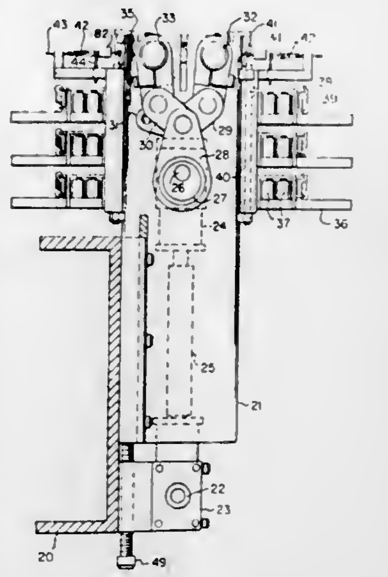
### 3,757,684
### HIGH SPEED AUTOMATIC CARD EMBOSSER

**Jacob H. Drillick, Hackensack, N.J., assignor to Data Card Corporation, St. Paul, Minn.**
**Division of Ser. No. 57,960, July 24, 1970, Pat. No. 3,638,563, Continuation-in-part of Ser. Nos. 769,245, Oct. 21, 1968, abandoned, and Ser. No. 861,432, Sept. 26, 1969, abandoned. This application Dec. 13, 1971, Ser. No. 207,504**
**Int. Cl. B41j** *7/40*
**U.S. Cl. 101—18** **1 Claim**



A machine for embossing credit cards having data reading means, a computer controlling selectively operable embossing punches corresponding to each character, and indexing means for moving the card past each embossing punch.

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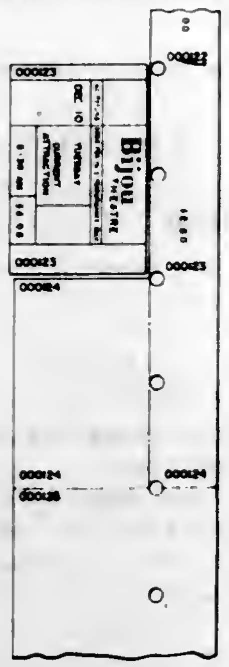
### 3,757,685
### TICKET ISSUING MACHINE

**Paul E. Woodie, and James B. Edwards, both of Cockeysville, Md., assignors to American Totalisator Company, Inc., Towson, Md.**
**Filed Nov. 24, 1969, Ser. No. 879,172**
**Int. Cl. B41j** *11/50*
**U.S. Cl. 101—66** **6 Claims**

A machine for issuing theatre tickets comprises a mechanism for printing and cutting individual tickets from blank ticket stock, leaving a continuous record strip to be retained in the machine. Printing of an individual ticket takes place immediately prior to its issuance, and prior to its being cut from the ticket stock. Printing wheels geared together cause the same price information to be printed on the continuous record strip as is printed on the ticket. The mechanism is installed in a cabinet having a ticket cup located underneath a glass plate arranged so that tickets ejected by the machine into the cup cannot be handled by the cashier.

The ticket issuing mechanism issues from one to five tickets automatically in one operation depending on which of a group of push-buttons is selected by the operator.

Electrical means are provided for the transmission of price information to a recorder. Two machines may be connected to transmit information to the same recorder. When this is done, an interlock circuit is provided to prevent the recording of confused information resulting from simultaneous operation of the two ticket issuing machines.



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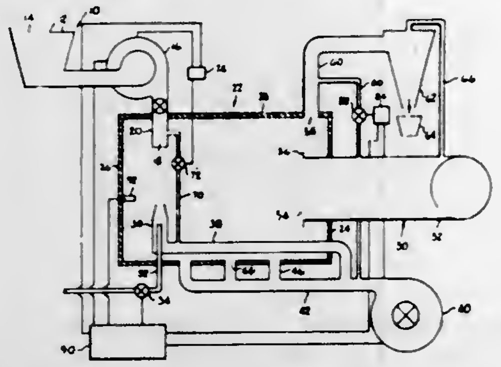
### 3,757,686
### INCINERATOR

**Syed Aejaz Ali, Shelbyville, and Robert Loren Shields, Rushville, both of Ind., assignors to General Electric Company, New York, N.Y.**

**Filed Jan. 19, 1972, Ser. No. 218,926**
**Int. Cl. F23g *5/00***

**U.S. Cl. 110—8 R** **27 Claims**



An incinerator for burning waste material having a horizontally extending combustion chamber comprising spaced end walls and side wall, through which a mixture of waste material and air is vertically moved and burned. The incinerator combustion chamber includes a tangentially directed inlet means adjacent one end wall for the feeding thereto of a mixture of waste material and air under fluid pressure. Adjacent to the opposite end wall, an exhaust flue is positioned concentrically with the longitudinal axis of the combustion chamber to vent gases, and also adjacent to the end wall opposite the inlet means is an outlet means extending tangentially from the chamber periphery for the discharge of solid material. Means are provided for introducing cooling air from a secondary source into the inlet means provided for the feeding of a mixture of waste material and air, and also for introducing cooling air from a secondary source into the outlet means provided for the discharge of solid material. Control means, including solenoid valves, are also provided to regulate the introduction of cooling air to either or both of the inlet means and outlet means and to provide cooling air during preheating of the incinerator to operating temperatures and/or upon a deficiency of the air introduced mixed with the solid waste material or upon a deficiency of air at the outlet means such as might result upon failure of equipment to supply adequate quantities of air.

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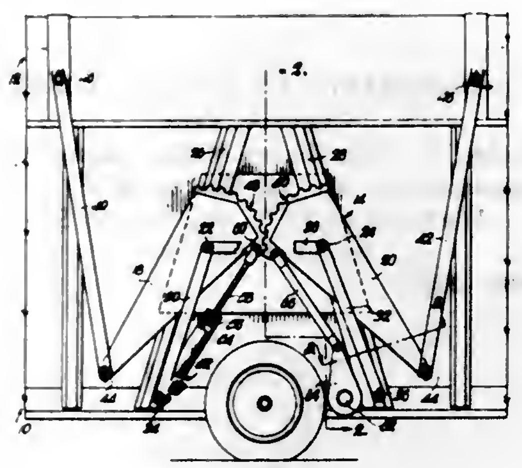
### 3,757,687
### PRESS MECHANISM FOR STACK-FORMING IMPLEMENTS

**Dean P. Brooks, and Gordon M. McDaniel, both of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.**

**Filed Jan. 19, 1972, Ser. No. 218,889**
**Int. Cl. B30b *1/08*; B60p *1/00***

**U.S. Cl. 100—270** **12 Claims**



Mechanism for reciprocating the press of a stack-forming implement utilizes hydraulic energy so arranged as to decrease the time consumed during each pressing operation. To this end, the forces imparted by fluid pressure piston and cylinder assemblies are, in effect, reversed by unique arm and link arrangements such that the pressing stroke takes place as the piston stems are extended and the press is moved rapidly along its return stroke during retraction of the stems. Synchronization is effected by intermeshing gear teeth between each of two pairs of power transmitting arms or beams and by an operable interconnection through use of a torque member, the linkages being so connected as to apply equalized forces at each of four corners of the press.

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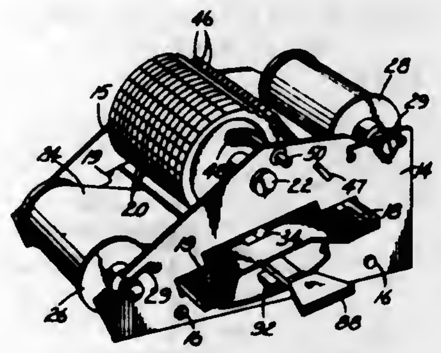
### 3,757,688
### TRAVELING CYLINDER IMPRINTER HAVING SETTABLE TYPE WHEELS WITH THREE PERIPHERAL SECTORS

**Ralph A. Weber, Richmond Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Feb. 23, 1972, Ser. No. 228,697**
**Int. Cl. B41j *1/46***

**U.S. Cl. 101—45** **5 Claims**



An imprinting device having a frame which mounts a form support bed. The frame also mounts a plurality of printing wheels above the bed. Each of the wheels has one peripheral segment with printing characters thereon, another peripheral segment with visually readable characters therein, and another peripheral segment with detent grooves. The wheels are settable to select desired characters for printing. A platen assembly is mounted beneath the bed and the platen extends through a slot in the bed. The platen assembly includes mounting members which mount the platen for shiftable movement between a printing position and an idling position. The mounting is such to move the platen to the printing position upon movement of the assembly in one direction and from one end and to an idling position upon movement of the assembly in the other direction from the other end. The device also includes an inked printing ribbon which is advanced incrementally upon each printing cycle of the platen assembly.

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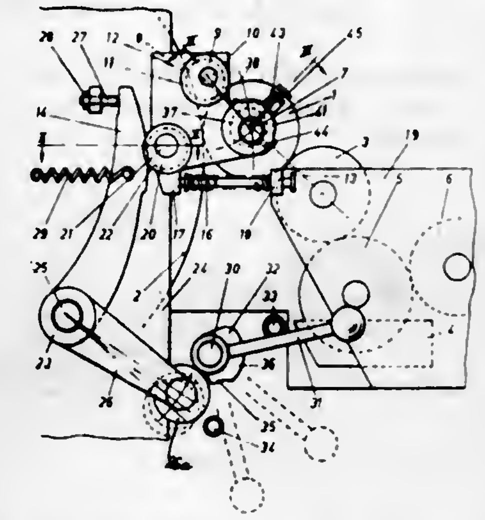
### 3,757,689
### ADJUSTABLE ASSEMBLY FOR A DAMPENING ROLLER OF AN OFFSET PRINTING PRESS

**Werner Koch, Gotzenhain, and Friedrich Preuss, Offenbach, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach a.m., Germany**

**Continuation-in-part of Ser. No. 797,834, Feb. 10, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 179,994**
**Int. Cl. B41f *7/26, 7/32***

**U.S. Cl. 101—148** **5 Claims**



A bearing assembly for a dampening roller of an offset printing press permits movement of the dampening roller relative to an intermediate roller used for applying moisture to the dampening roller and to a plate cylinder of the press for selectively positioning the dampening roller into and out of engagement with the plate cylinder and/or the intermediate roller.

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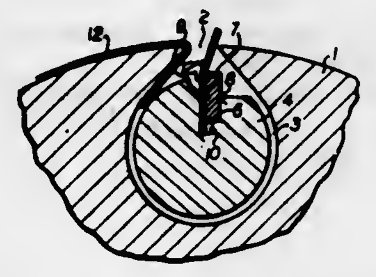
### 3,757,690
### PRINTING PLATE CLAMPING DEVICE

**Heinz Skiera, and Helmut Schumann, both of Leipzig, Germany, assignors to VEB Polygraph Leipzig, Kombinat Fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany**

**Filed Aug. 11, 1971, Ser. No. 170,827**
**Int. Cl. B41f *27/06***

**U.S. Cl. 101—415.1** **4 Claims**



A printing plate clamping device, particularly for web-fed rotary offset printing presses, which comprises a plate cylinder having a longitudinal groove and including end walls. A clamping shaft is disposed in the longitudinal groove and a clamping strip is inserted in the groove. The clamping shaft is supported in the end walls of the plate cylinder and is movable in locked position by means of worm drives disposed at least at one of the end walls. The clamping shaft has a flattened part on the side receiving the clamping strip and defines a groove, and the latter has a depression on the side receiving the printing plate.

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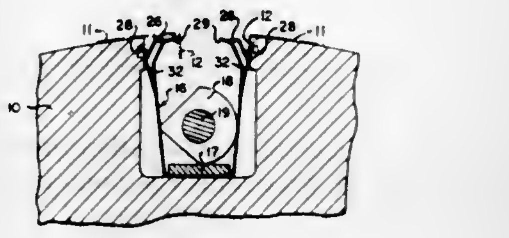
### 3,757,691
### PRINTING CYLINDER

**Gordon Etchell, Downers Grove, and Bohdan Washchynsky, Westchester, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.**

**Filed June 12, 1972, Ser. No. 261,864**
**Int. Cl. B41f *27/06***

**U.S. Cl. 101—415.1** **2 Claims**



A printing cylinder useful in rotary printing presses is provided with construction features whereby a flexible printing plate having leading and trailing edges flanged at essentially right angles to the plate principal printing surface may be conveniently and reliably secured to the printing cylinder for printing at high rotational speeds.

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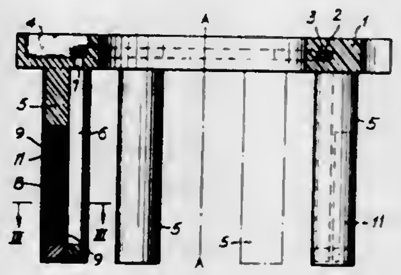
### 3,757,692
### IGNITING DEVICE FOR A ROCKET, AND ITS MOUNTING THEREON AND MANUFACTURE

**Bertrand Yves Hiffolyte Maue, and Grebert Robert Emmanuel Omer, both of St. Medard en Jalles, France, assignors to Etat Francais Represente par Le Ministre charge de La Defense Nationale, Paris, France**

**Filed Apr. 23, 1971, Ser. No. 136,874**
**Claims priority, application France, Apr. 24, 1970, 7015003**
**Int. Cl. I42b *3/08***

**U.S. Cl. 102—49.7** **5 Claims**



An igniter device comprises a ring containing a primary charge, and extending from the ring parallel to the axis thereof are hollow casings each containing a main charge. The main charge in each casing is operatively coupled to the primary charge through an orifice in the ring and a flame tube contiguous with the main charge. The igniter device can be mounted on a solid propellant rocket having a propellant unit with a set of arms separated by cavities into which the igniter casings are slidably engaged.

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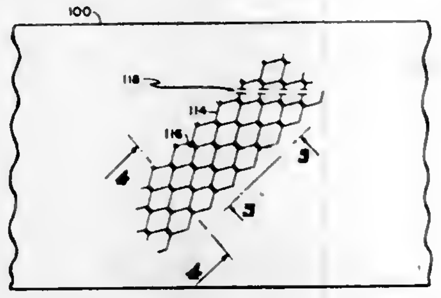
### 3,757,693
### FRAGMENTATION WRAP FOR EXPLOSIVE WEAPONS

**Frank M. Shea, Cincinnati, Ohio, assignor to Avco Corporation, Richmond, Ind.**

**Division of Ser. No. 145,695, May 21, 1971. This application Aug. 14, 1972, Ser. No. 280,589**
**Int. Cl. F42b *13/48***

**U.S. Cl. 102—67** **4 Claims**

A fragmentation wrap for explosive weapons is dicslosed.. The fragmentation sheet for explosive weapons having a predefined fragmentation shape therein is fabricated by the progressive flattening, shearing and/or indenting of hot or cold rolled steel. The complete fragmentation wrap may be a single layer or multi-layer wrap which is conformed to enclose a bomb or the like.



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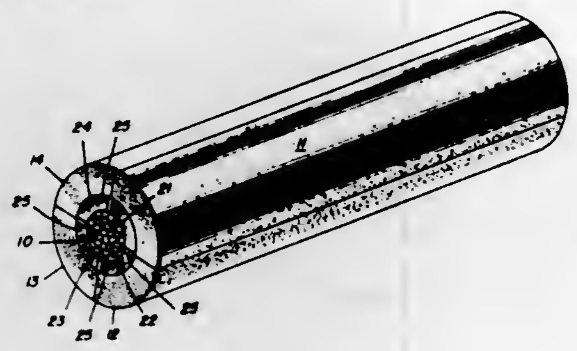
### 3,757,694
### FRAGMENT CORE WARHEAD

**James C. Talley, Dahlgren, Va.; Fred I. Grace, State College, Pa., and Francis R. McCleskey, Dahlgren, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 22, 1965, Ser. No. 502,712**
**Int. Cl. F42b** *13/48*
**U.S. Cl. 102—67** **5 Claims**



1. A warhead for a guided missile comprising
a fragmentation core;
a radially segmented burst charge surrounding said fragmentation core, each segment of said segmented burst charge being applied to be individually jettisoned from said warhead; and
means for jettisoning a predetermined segment of said segmented burst charge, upon the jettisoning of said predetermined segment, the subsequent explosive of the remaining segment of said segmented burst charge will cause said fragmentation core to be propelled in the direction of said predetermined segment.

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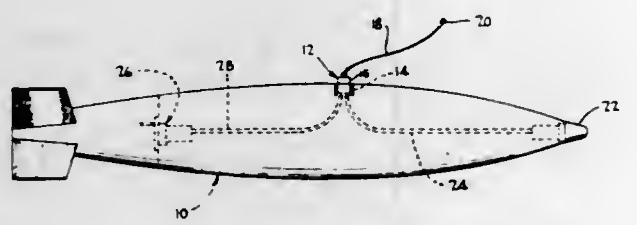
### 3,757,695
### CHARGING SYSTEM FOR ELECTRIC BOMB FUZES (U)

**Evan D. Fisher, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Dec. 19, 1969, Ser. No. 3,606**
**Int. Cl. F42b** *5/08*
**U.S. Cl. 102—70.2 G** **1 Claim**



An electric bomb charging device self-contained within the bomb requiring no external charging gear. The device is placed within a charging well located along the longitudinal surface of the bomb and is adapted so as to receive the slipstream of air flowing along the bomb's surface after it is released from the aircraft. The charging device transforms the air slipstream into the electrical energy necessary to operate a proximity sensor and electric fuze located within the bomb. The device is provided with a protective cover that is removed by a lanyard only upon the bomb's release, and a minimum threshold velocity must be attained before the charging device is actuated. In a first embodiment form, the device is comprised of a modified fluidic generator, while in a second embodiment it takes the form an anemometer-type vane coupled with an electric alternator. Both embodiments employ electronic circuits to regulate the output voltages derived therefrom.

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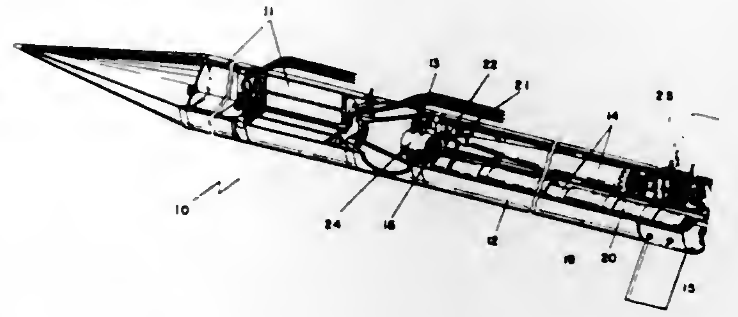
### 3,757,696
### ELECTRONIC SQUIB FIRING SEQUENCER

**Joseph T. Derk, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 5, 1971, Ser. No. 131,206**
**Int. Cl. F42b** *22/30;* **F42c** *9/00*
U.S. Cl. 102—70.2 R **7 Claims**



In a projectile carrying a plurality of payloads which are to be sequentially ejected, an electronic circuit for selectively firing ejection charges, which comprises a series of interlocked switches that are held in one position by the presence of the projectile backplate. Upon release of the backplate the switches assume a second position and thereby permit the application of voltage to an R-C network in which the capacitors charge up to a voltage sufficient to overcome a zener diode that in turn activates a silicon controlled rectifier via its conrol electrode. The rectifier is connected in series with an electrical energy source, ground interlock switches and a squib so as to fire the same sequentially after some selected period set by each of the R-C networks. The ground interlocks being connected so as to effectively short circuit the squibs prior to release of the backplate.

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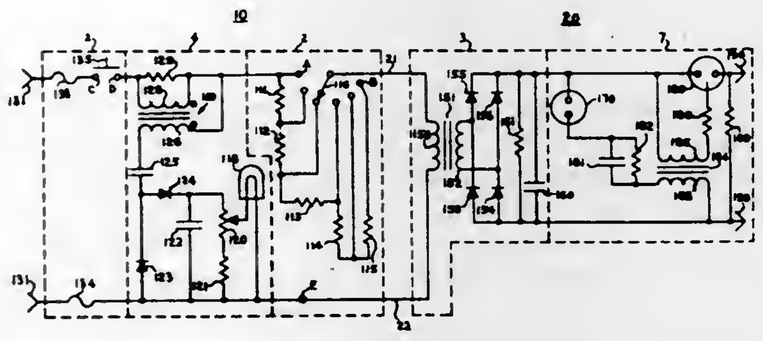
### 3,757,697
### REMOTELY CONTROLLED BLASTING MACHINE

**Earl M. Phinney, Oneonta, N.Y., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Feb. 2, 1972, Ser. No. 222,761**
**Int. Cl. F42c** *13/00*
U.S. Cl. 102—70.2 R **13 Claims**



A remotely controlled blasting machine for detonating explosives. The blasting machine is divided into two modules which are the remote control module and the energy storage module. The energy storage module is located in close proximity to the blasting caps while the remote control module which detonates the blasting caps is located at a safe distance from the explosion to protect the operator. The remote control module includes an indicator light which gives visual indication that the explosives are about to be detonated and a switch for stopping the detonation of the explosives during the presence of the visual indication. The blasting machine may be placed close to the explosive devices to be detonated while the operator controls the blasting machine from a safe distance.

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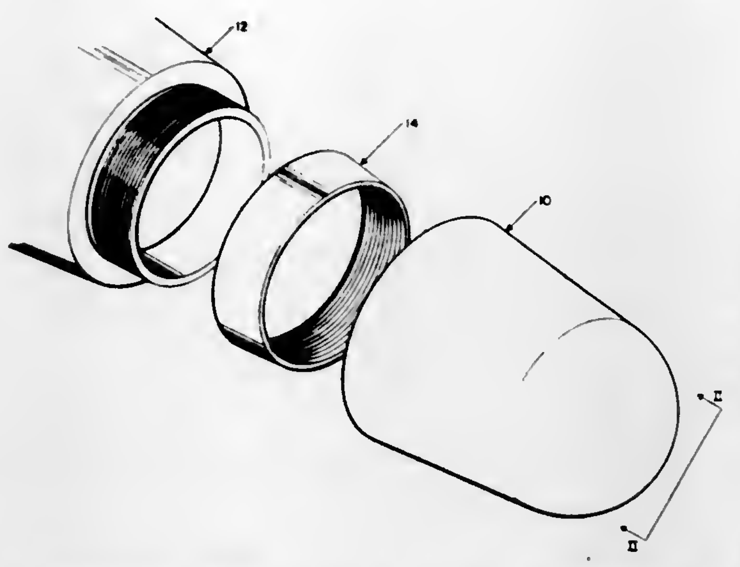
### 3,757,698
### LOW-INTERFERENCE SEEKER DOME ATTACHMENT

**Michael D. Jacobson, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Feb. 28, 1972, Ser. No. 229,840**
**Int. Cl. H01g** *1/42*
**U.S. Cl. 102—70.2 R** **5 Claims**



Attachment means for positioning a dome upon the airframe of a guided missile. An attachment ring is chemically bonded to the interior of a glass dome. The attachment ring has interior threads which match exterior threads on the steel airframe of the missile. The ring is made of a low thermal expansion alloy. The thread interface has a pitch angle of $\beta$. As the threads of the airframe move with respect to the threads of the attachment ring due to thermal expansion or contraction the movement will be parallel to the thread face. This parallel motion will induce only frictional forces across the thread interface causing negligible stresses in the ring and airframe.

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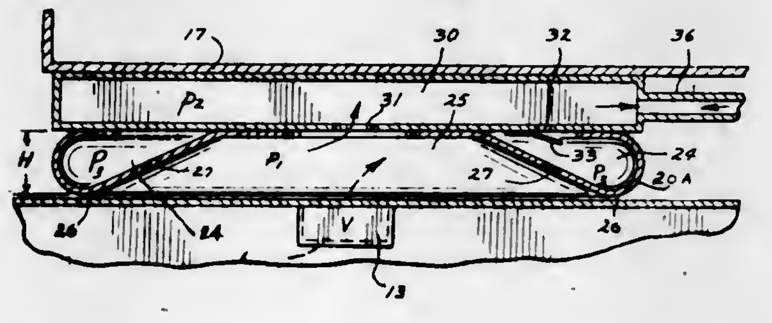
### 3,757,699
### PNEUMATIC SUSPENSION SYSTEM

**Gary J. Wirth, St. Paul, Minn., assignor to Uniflo Systems Company, Edina, Minn.**

**Filed Apr. 15, 1971, Ser. No. 134,211**
**Int. Cl. B60v** *1/16*
**U.S. Cl. 104—23 FS** **9 Claims**



A load distribution and vehicle leveling system for a levitated vehicle operating along a surface and which has inflatable levitation pads or rings mounted on the vehicle. The system relates to provision of a pressure signal to the pads to insure that each of the pads will stabilize at a height to insure proper load carrying capacity.

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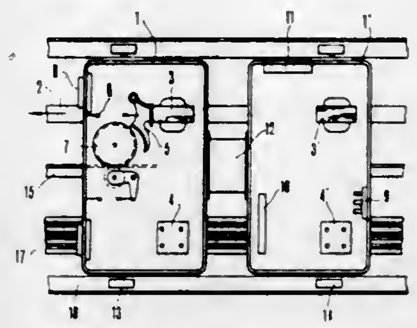
### 3,757,700
### RAIL VEHICLE WITH ELECTROMAGNET ENGAGING BELT DRIVE

**Kanenari Nakagawa, and Hidero Yuki, both of Tokyo, Japan, assignors to Automa Engineering Co., Ltd., Tokyo, Japan**

**Filed May 1, 1972, Ser. No. 249,184**
**Int. Cl. B61b** *13/12*
**U.S. Cl. 104—165** **7 Claims**



A vehicle operated by electromagnetically connecting the vehicle to a moving magnetic means. The vehicle has a plurality of wheels running on rails and has electromagnetic means thereon. Running in the same direction as the rails is a magnetic means, such as a magnetic belt or chain, and the electromagnetic means on the vehicle is energized to electromagnetically connect the vehicle with the moving magnetic means.

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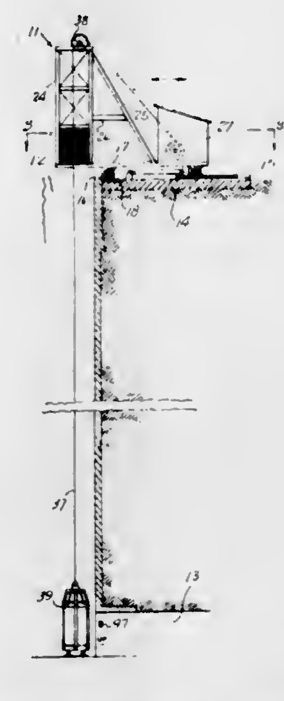
### 3,757,701
### EMERGENCY MINE ELEVATOR

**Russell L. Lepley, 511 East Green St., and Werner J. Motyl, 247 Oglevee Ln., both of Connellsville, Pa.**

**Filed Oct. 22, 1971, Ser. No. 191,762**
**Int. Cl. B61f** *9/00*
**U.S. Cl. 104—242** **10 Claims**



An emergency escape hoist assembly installed adjacent a mine shaft. The assembly has a cage and associated hoist mechanism normally parked in a retracted position relative to the mine shaft. The cage and hoist mechanism can be operated from push-button switches either at the mine level. at the hoist or at ground level. When the cage is called, a main power unit is energized and the cage and hoist mechanism are moved so as to position the cage over the shaft. The cage then descends and stops at the mine level. Personnel board the cage and push the hoist button, causing the cage to ascend. The cage stops at ground level and then the entire unit returns to its normal parked position. The mechanism is controlled by limit switches with necessary electrical and hydraulic interlocks to assure proper sequence of operations.

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### 3,757,702
### RAILWAY CAR ROLL CONTROLLED BY FLUID SPRING CONTROLLER ASSEMBLY

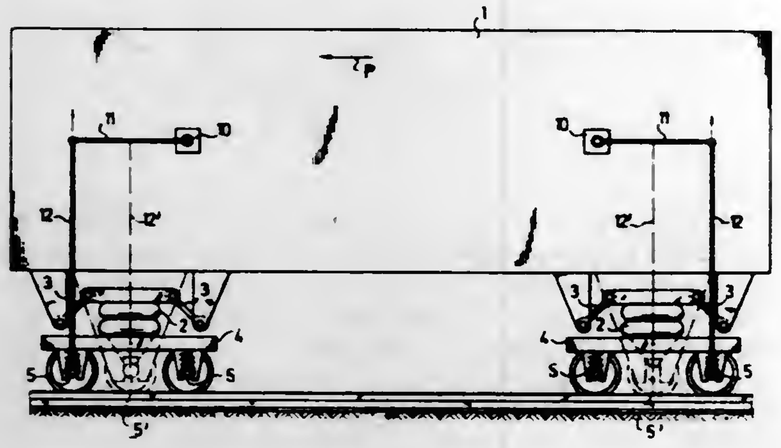
**Ernst Florian Kreissig, Seuzach/ZH, and Karl Feuerlein, Winterthur, both of Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland**

**Filed Oct. 13, 1971, Ser. No. 188,845**

**Claims priority, application Switzerland, Nov. 2, 1970, 16196/70**

**Int. Cl. B61f** *3/08, 5/10, 5/36*

**U.S. Cl. 105—210** **5 Claims**



The springs are connected to the pneumatic system over a controller which opens the springs on one side of the vehicle to air pressure while venting the springs on the opposite side to counteract tilting of the vehicle. The controller is actuated by tilt linkage devices between the axles and the body of the vehicle.

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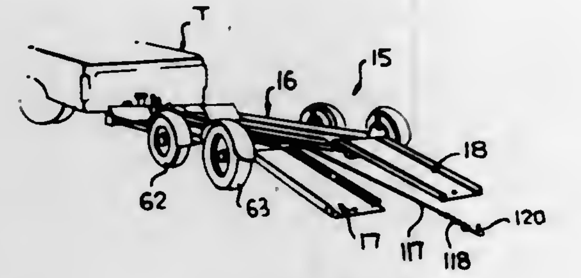
### 3,757,703
### SUPPORT AND GUIDE MECHANISM FOR PIVOTING A PLATFORM

**Bissett J. Roberts, P.O. Box 351, Waynesboro, Pa.**

**Division of Ser. No. 69,779, Sept. 4, 1970. This application June 14, 1972, Ser. No. 262,530**

**Int. Cl. A47f** *5/12*

**U.S. Cl. 108—6** **21 Claims**



This disclosure relates to a vehicle ambulance adapted to receive and transport disabled vehicles, i.e., automobiles, trucks, etc., and includes a main support having a rear end portion to which is pivotally mounted a pair of laterally spaced platform members, each of the platform members carrying on an underside thereof follower means, and a guide frame carrying a pair of actuators associated with each follower for moving the platform members between an outwardly and downwardly inclined first position relative to the main support and an outwardly and generally parallel second position relative to the main support.

The vehicle ambulance further includes means for supporting the platform members in a third generally upright vertical position, and means are provided for mounting a light assembly to the platform members in both the first and third positions thereof. The actuator means are moved in unison by means of an extensible-retractable fluid motor with the latter being articulately mounted between the main vehicle support and the laterally supported guide frame carrying the actuator means.

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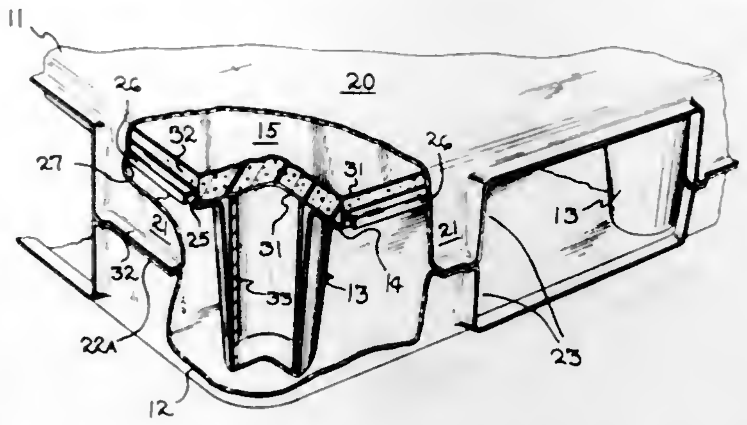
### 3,757,704
### PALLET

**Guy H. Allgeyer, and James B. Foote, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Division of Ser. No. 140,575, May 5, 1970, Pat. No. 3,699,902, which is a continuation of Ser. No. 867,589, Oct. 20, 1969, abandoned. This application June 21, 1972, Ser. No. 264,845**

**Int. Cl. B65d** *19/00, 19/38*

**U.S. Cl. 108—51** **4 Claims**



A pallet is provided for supporting loads thereon. The pallet includes an upper member formed of thermoplastic material for receiving loads thereon, a plurality of rows of supporting elements for supporting said upper member in an elevated position to permit the entry of lifting forks thereunder, and a reinforcing member positioned between the supporting elements and the upper sheet to bridge a load positioned on the upper sheet between the respective supporting elements. The reinforcing member has spaced apart upper and lower portions which are interconnected together to permit the reinforcing member to function as a flexual member.

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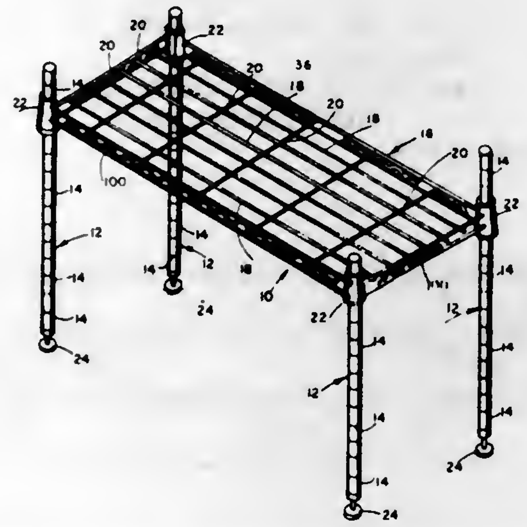
### 3,757,705
### ADJUSTABLE SHELVING

**Louis Maslow, Huntsville Rd., Dallas, Pa.**

**Filed Jan. 5, 1972, Ser. No. 215,579**

**Int. Cl. A47b** *9/00*

**U.S. Cl. 108—144** **8 Claims**



Adjustable shelving comprising a plurality of posts for supporting shelves in adjustable relation. Each of the shelves includes sleeves at the corners thereof respectively, the sleeves being generally frusto-conical and provided with a split wall so as to permit partial elastic lateral expansion thereof such that each of the sleeves are accurately positionable opposite one another at a common elevation, in surrounding relation, along the respective posts. The split wall elastically accounts for tolerance differences in the configuration of each of the frusto-conical sleeves and a frusto-conical support arrangement interpositionable between the sleeves and associated posts.

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### ERRATUM

For Class 110—8 see:
Patent No. 3,757,686

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### 3,757,706
### METHOD AND APPARATUS FOR INCINERATING POLLUTED LIQUIDS AND MUD

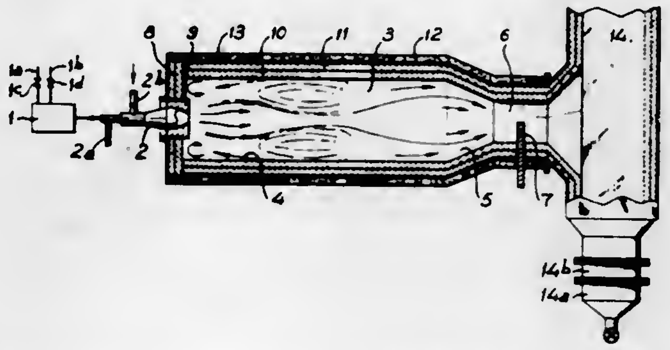
**Jean Marie Pariel, Saint-Germain-En-Laye, and Gabriel Robic, Paris, both of France, assignors to Societe Anonyme Heurtey and Elf-Union, Paris, France**

**Filed Apr. 12, 1971, Ser. No. 133,267**

**Claims priority, application France, Apr. 20, 1970, 7014159**

**Int. Cl. F23g** *7/00*

**U.S. Cl. 110—7 S** **11 Claims**



A method and apparatus for incinerating polluted liquids and mud, into which are sprayed, in the presence of an oxidizer and inside a reaction chamber, a mixture formed by the mutual dispersion of non-miscible phases at least one of which contains polluting agents to be destroyed and at least one of which is liquid.

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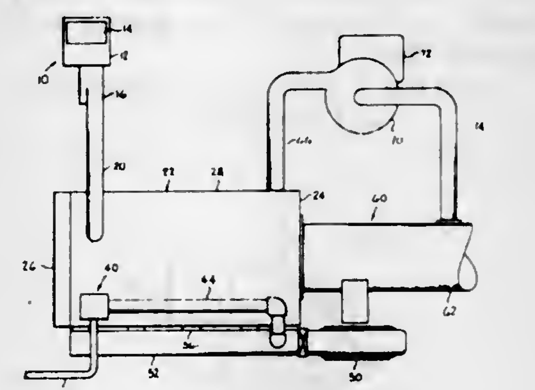
### 3,757,707
### INCINERATOR

**Robert Loren Shields, Rushville, Ind., assignor to General Electric Company, New York, N.Y.**

**Filed Jan. 19, 1972, Ser. No. 219,041**

**Int. Cl. F23g** *5/12*

**U.S. Cl. 110—8 C** **12 Claims**



An incinerator for burning waste material including a horizontally extending combustion chamber having spaced end walls and a side wall through which a mixture of waste material and air is fed under pressure tangentially directed to said side wall for establishing a vertical movement of the waste material towards one of the end walls The waste material is ignited during its vertical movement by ignition means directing a flame into the direct path of the waste material and air as they enter the chamber. The chamber includes a discharge flue near the one end wall substantially concentric with the longitudinal axis of the chamber to exhaust combustion gases.

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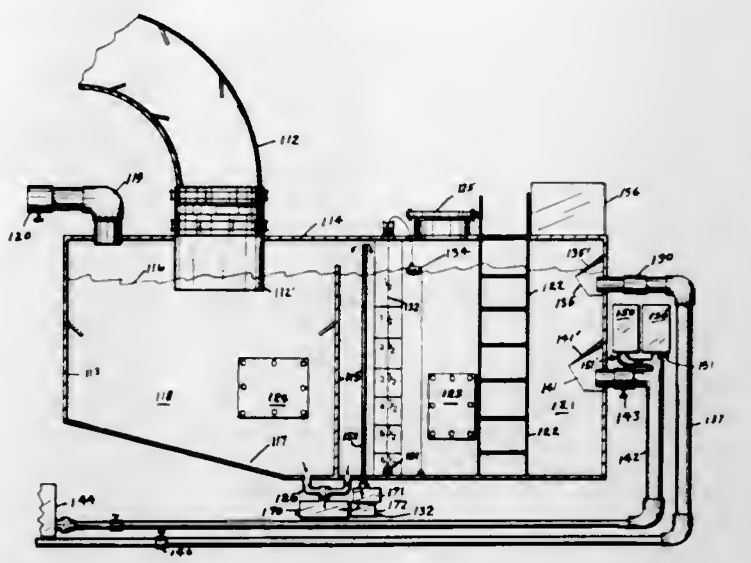
### 3,757,708
### POLLUTION CONTROL DEVICE

**Peter Di Prospero, 814 W. 25th St., Erie, Pa.**

**Filed Sept. 22, 1971, Ser. No. 182,620**

**Int. Cl. F23g** *3/00*

**U.S. Cl. 110—8 R** **7 Claims**



The invention described herein is made up of a closed tank, which is made to contain water. Flue gases are directed into this tank. Water is sprayed into the flue gases prior to entry to the tank. This water entrains all solid material which falls into the water in the tank and is cleaned out periodically. The matter entrained in the water in the tank floats over a partition into a second compartment where it is skimmed, and the scum is directed into a fire box of the furnace. The effluent water from the second tank is supplied to the sprayer and sprayed into the incoming flue gas as aforesaid.

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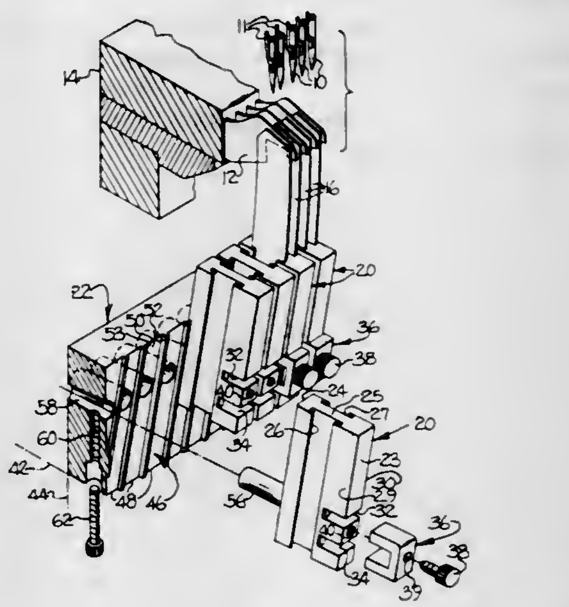
### 3,757,709
### KNIFE BLOCK FOR A TUFTING MACHINE

**James T. Cobble, Dalton, Ga., assignor to B & J Machinery Company, Inc., Dalton, Ga.**

**Filed Apr. 27, 1972, Ser. No. 248,197**

**Int. Cl. D05c** *15/24*

**U.S. Cl. 112—79 R** **6 Claims**



A knife block for a tufting machine having provision for accurately aligning and connecting the block to an oscillating knife bar. The aligning and connecting structure includes a channel formed in the front surface of the bar, the channel being adapted to closely receive the rear edge portion of the block therein to maintain a predetermined alignment.

### 3,757,710
### AUTOMATIC QUILTING MACHINE

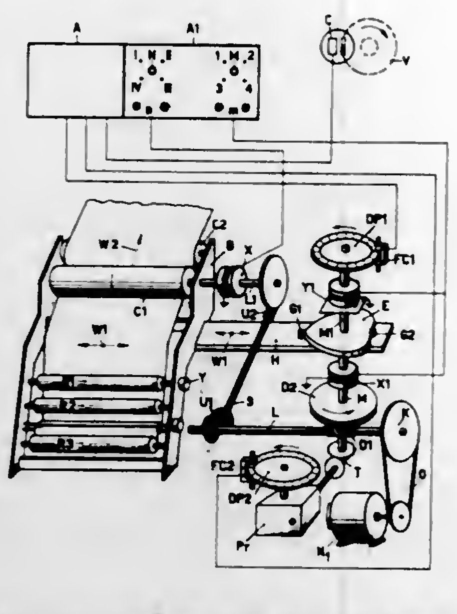
**Giannino Landoni, 21012 Cassano Magnago Via Verdi 133, Milan, Italy**

**Filed Jan. 27, 1970, Ser. No. 6,213**

**Claims priority, application Italy, Jan. 30, 1969, 12181 A/69**

**Int. Cl. D05b** *11/00, 35/00*

**U.S. Cl. 112—118** **8 Claims**



An automatic quilting machine for stitching together according to any programmed pattern a plain upper material, a lower material, elastic in the warp sense and optionally an intermediate batting, which provides that a certain drawing of the stitching paths consisting of a predetermined elementary pattern repeated a given number of times, can be alternated with another or more different drawings, each of which is formed also by a plurality of repetitions of a basic pattern. Two sets of knobs control the circuits of the machine and select the basic patterns and preset an associate counter which cooperates with an impulse generator for determining the number of said basic patterns to be repeated before changing over the subsequent drawing by means of a converter.

### 3,757,711
### TEMPLATE FOLLOWER MECHANISM

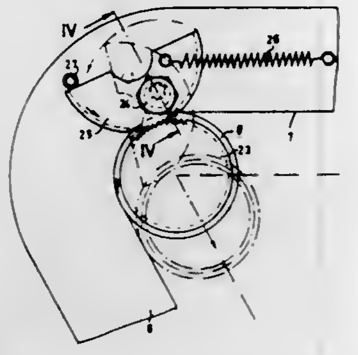
**Hubert Junemann, Bielefeld, Germany, assignor to Kochs Adler AG, Bielefeld, Germany**

**Filed Sept. 23, 1971, Ser. No. 183,096**

**Claims priority, application Germany, Sept. 26, 1970, P 20 47 438.8**

**Int. Cl. D05b** *21/00*

**U.S. Cl. 112—121.12** **4 Claims**



A mechanism for use in automatic and template-controlled machines tools and especially in automatic sewing machines, in which a driven magnetic roller rollalong the peripheral edge of the template, to provide an automatic and safe driving of the roller out of the internal corner. This mechanism includes a gear pinion coaxial with the magnetic roller and either one toothed segment pivoted eccentrically on the template, or two toothed segements, if the magnetic roller must roll alternately in two directions along the template. These two toothed segments pivoted adjacent the internal corner of the template, act like a lever when the gear pinion meshes with one of the toothed segments after entering the internal corner, in order to push the magnetic roller out of the corner into a direction of a course determined by the curve of the template and the magnetic roller.

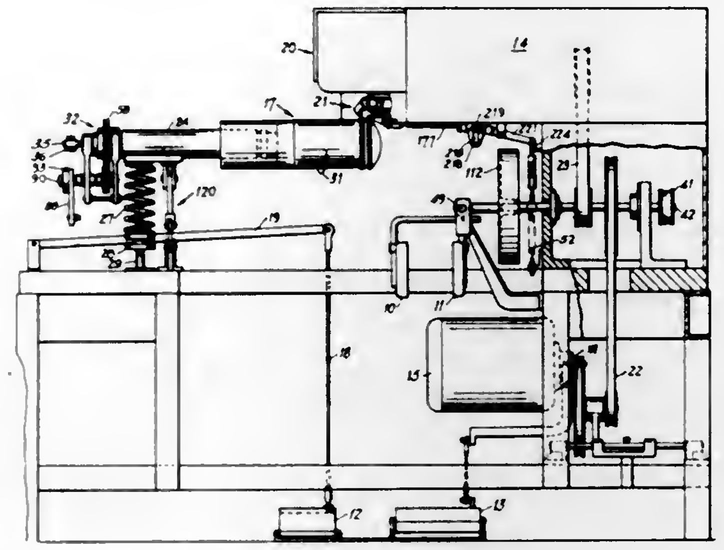
### 3,757,712
### ARMHOLE FEELING MACHINE

**Francis J. Brunel, and George P. Diacont, both of Richmond, Va., assignors to AMF Incorporated, White Plains, N.Y.**

**Filed June 17, 1971, Ser. No. 154,065**

**Int. Cl. D05b** *35/08*

**U.S. Cl. 112—132** **14 Claims**



A stitching machine for stitching a sleeve part to the armhole part of a garment including a fell stitch needle assembly with its associated drive and thread handling system, a rotatable mandrel for receiving and feeding the body and sleeve, means for indexing the mandrel between stitches, means for increasing the pressure applied to the parts by the mandrel during stitching and for reducing it during feeding thereof, a plunger for raising the portions to be stitched during the stitching, an outer feed wheel engageable with the parts during feeding, a pair of tucking fingers controllable by the operator for engaging one of the parts adjacent the stitching needle for forming tucks and a one-position clutch controllable by the operator to stop feeding while tacking stitches are applied.

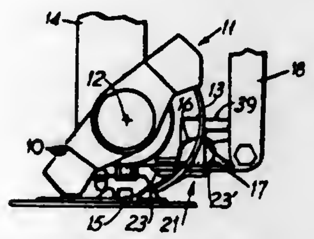
### 3,757,713
### STITCHING MACHINE IMPROVEMENTS

**James C. Mills, Jr., Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.**

**Filed Oct. 9, 1968, Ser. No. 766,044**

**Int. Cl. D05b** *23/00*

**U.S. Cl. 112—170** **1 Claim**



After a curved needle is passed through work material a first gripper grip holds the seam side loop of thread to prevent the pull of a looper on the other loop of thread from being transmitted back into the formed stitch. The first gripper doesn't release until after a second gripper near a thread puller to which the looper transfers the other loop grips the other loop.

### 3,757,714
### UPPER TRANSPORT DEVICE FOR SEWING MACHINES

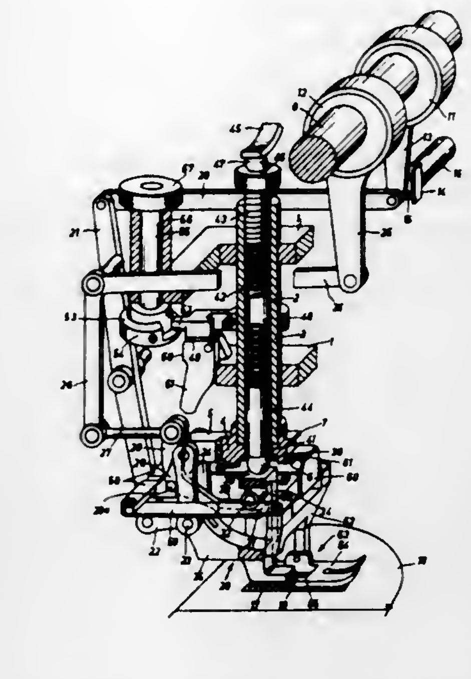
**Kurt Gustmann, and Herbert Wenz, both of Kaiserslautern, Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany**

**Filed June 5, 1972, Ser. No. 259,424**

**Claims priority, application Germany, June 19, 1971, G 71 23 663.0**

**Int. Cl. D05b** *27/04*

**U.S. Cl. 112—212** **2 Claims**



The means for feeding the material to be sewed by a sewing machine (especially a high speed sewing machine) comprises an upper transport foot and a material pressure foot. According to this invention, separate spring means, independent of one another, are provided to apply pressure to the upper transport foot, and the material pressure foot, so that the mass of the moving parts can be reduced and the undesirable inertia effects can be overcome when stopping the machine.

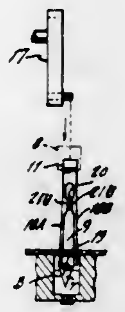
### 3,757,715
### NEEDLES FOR USE WITH TUFTING MACHINES

**Abram N. Spanel, 344 Stockton St., Princeton, N.J., and John L. Schwartz, Hightstown, N.J., assignors to said Spanel, by said Schwartz**

**Division of Ser. No. 836,399, June 25, 1969, Pat. No. 3,670,672. This application Apr. 9, 1971, Ser. No. 132,812**

**Int. Cl. D05b** *85/00*

**U.S. Cl. 112—221** **18 Claims**



Needle assemblies for tufting machines in which reciprocable tufting needles each have substantially parallel depending complementary shank or leg portions defining a needle eye which can be opened and closed by relative movement of said shank or leg portions. Various eye opening means are disclosed as for example, stationary and rotatable internal cams, linearly movable mounting members from which said shanks or legs depend, and arcuately movable mounting members all of which are designed to open and close the needle eyes in unison to receive and/or release the yarn during the tufting operation.

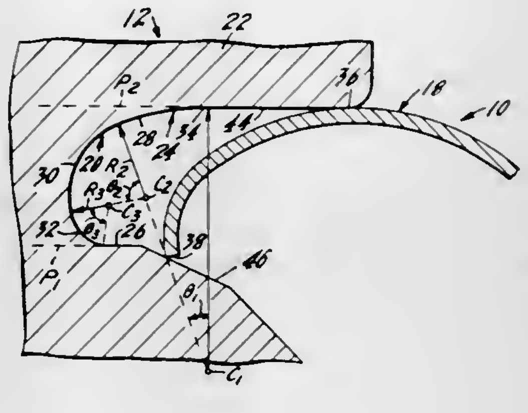
### 3,757,716
### CURLER TOOL

**Erik Gedde, Park Ridge, Ill., assignor to American Can Company, Greenwich, Conn.**

**Division of Ser. No. 152,066, June 11, 1971, Pat. No. 3,715,054. This application Oct. 4, 1972, Ser. No. 294,901**

**Int. Cl. B21d** *51/00*

**U.S. Cl. 113—1 F** **3 Claims**



A continuous curl formed on the periphery of a can end component prior to the first and second operations of double seaming the can end component to an end of a can body has an inner annular portion of a configuration substantially that of a surface of revolution generated by three successive merging arcs including an inner arc struck by a first radius $R_1$, a middle arc struck by a second radius $R_2$, and an outer arc struck by a third radius $R_3$, where $R_1 < R_2 < R_3$, and an outer annular portion of a configuration substantially that of a generally planar surface which is parallel to a plane formed by the innermost marginal edge of the inner arc of the inner annular portion of the continuous curl. A curler tool for forming the continuous curl has a curl-forming groove which has a contour substantially the same as the configuration of the inner and outer annular portions of the continuous curl formed by the curler tool.

### 3,757,717
### UNITARY AEROSOL MOUNTING CAP EXPANDER

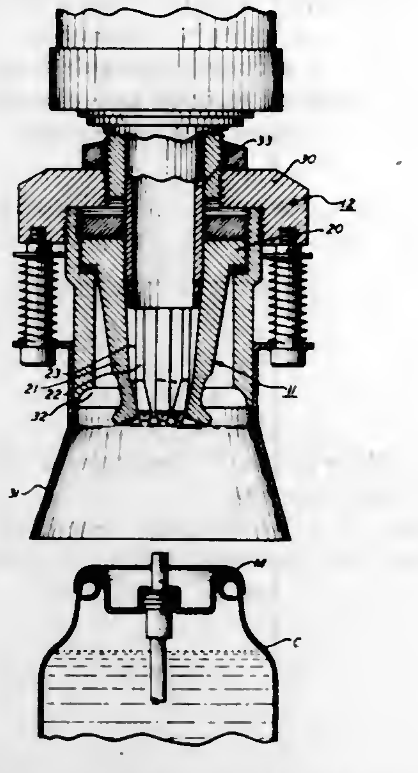
**Ronald Bennett, Livingston, N.J., assignor to Fluid Chemical Company, Inc., Newark, N.J.**

**Filed June 8, 1971, Ser. No. 151,098**

**Int. Cl. B21d** *37/00*

**U.S. Cl. 113—18 E** **6 Claims**

A unitary aerosol mounting cap expander, adapted to provide uniform crimping and sealing of an aerosol valve mounting cap in an aerosol container by interaction of inner and outer leaves in a unitary element on actuation thereof, to



thereby form a circumferentially uniform leak-proof seal for an aerosol dispenser.

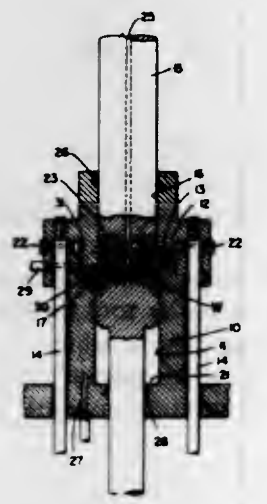
### 3,757,718
### METHOD FOR FORMING HOLLOW ARTICLES OF WORK-STENGTHENABLE PLASTIC MATERIALS

**Herbert G. Johnson, Havertown, Pa., assignor to Shell Oil Company, New York, N.Y.**

**Continuation of Ser. No. 819,869, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 601,380, Dec. 13, 1966, Pat. No. 3,499,188. This application May 27, 1971, Ser. No. 147,663**

**Int. Cl. B21d** *11/04, 51/00*; **B29c** *17/03, 17/07*

**U.S. Cl. 113—120 R** **17 Claims**



This application discloses method and apparatus for forming flanged hollow articles of solid-work-strengthenable tenaciously stretachable plastically flowable materials, particularly crystalline polymers, such as polyethylene polypropylene, and the like, and article made thereby, wherein a female die unit with a tubular portion has an annular (but not necessarily always circular) peripherally confined blank-holding recess seat at one end, the female die unit being formed of separable parts, when desired; wherein independently power-actuated rim-clamping means having axial movement clamp a rim portion of a blank securely in said recess seat against pull-in and with the added function of squeezing inventory material of the rim inwardly, when desired; and wherein an independently power-actuated axially movable article-forming plunger moves through said clamping means, preferably being guided thereby said sealed, to force the unclamped inner portion of the blank through the female die unit to pull bottom inventory material outward without extrusion action to form the sidewall of the article.

An opposed cooperating independently power-actuated axially movable bottom plunger may be provided to act against the bottom of the blank to control its shape during and at the end of the forming action, and, if desired, to eject the formed article. Means may be provided for supplying to or removing fluid from one or both sides of the blank to assist the flow of material and in ejection of the article, when desired. The arrangement of the rim-clamping means relative to the sidewall of the tubular portion of the female die unit and the shape of the forming plunger assist in the flow of material and in establishing the desired thickness of the sidewall of the article.

Means also may be provided for biaxially working the material in the rim, as by circumferential movement of pressure means acting thereon.

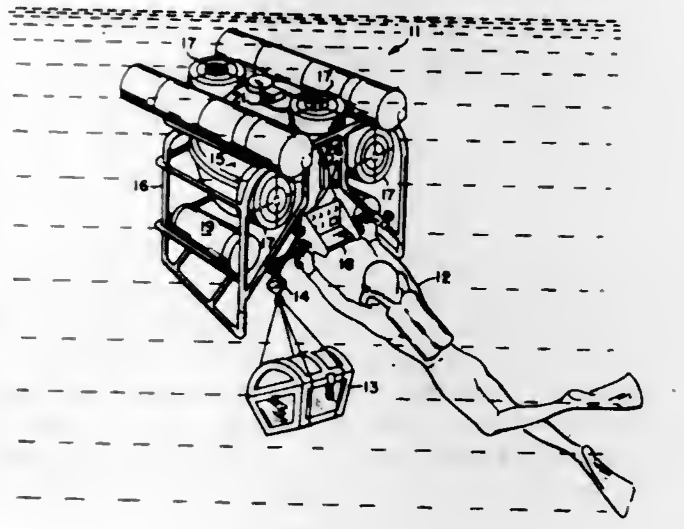
### 3,757,719
### DEPTH COMPENSATOR VALVE

**Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed May 26, 1972, Ser. No. 257,087**

**Int. Cl. B63g** *8/24*

**U.S. Cl. 114—16 E** **9 Claims**



A pressure regulator system for controlling pressure differential between a buoyancy sphere and the ambient water pressure during descent of the buoyancy sphere employs a control valve arrangement. The body of the valve arrangement is mounted integrally on the buoyancy sphere and communicates with the interior. A diaphragm control valve and pintle control the flow of gas producing fuel so as to regulate the amount of gas passing to the interior of the buoyancy sphere to thereby maintain a predetermined pressure differential. The valve mechanism also includes flushing means to cleanse portions of the interior of corrosive salt water and other materials admitted during operation.

### 3,757,720
### CONTROL SURFACES FOR SUBMERSIBLE VEHICLES

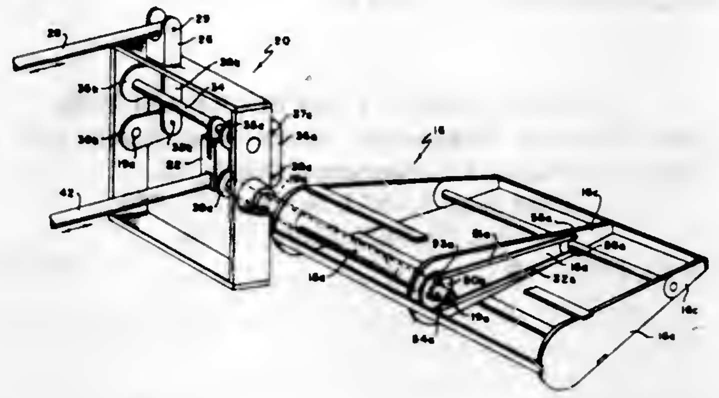
**Stephen J. Fischer, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 19, 1971, Ser. No. 190,503**

**Int. Cl. B63g** *8/18*

**U.S. Cl. 114—16 F** **5 Claims**

Apparatus for controlling the direction of an underwater submersible vehicle includes diving planes having first control surface portions angularly pivotable relative to the vehicle. Second control surface portions are integratedly formed with the first portions and are angularly pivotable relative to the vehicle and relative to the first portions. A first control device is operable to pivot the first and second portions as a unit and a second control device is operable to pivot the second portions independently of the first portions.



### 3,757,721
### UNDERWATER CRAFT FOR TRANSPORTING DIVERS

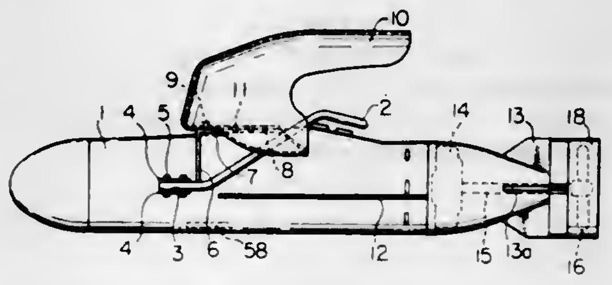
**Yasuhiro Ohishi, 26-34, 5-chome, Nakano, Nakano-ku, Tokyo, Japan**

**Filed Feb. 23, 1972, Ser. No. 228,578**

**Claims priority, application Japan, Feb. 24, 1971, 46/11025; Mar. 25, 1971, 46/20413; Mar. 25, 1971, 46/20414; Dec. 1, 1971, 46/113069**

**Int. Cl. B63g** *8/00*

**U.S. Cl. 114—16 A** **18 Claims**



An underwater craft or scooter adapted to transport a diver underwater and having a hull, a screw for propulsion of the hull, an electric motor for driving the screw through a propeller shaft, a storage battery for supplying power to the motor, and a control system for controlling the supply of power. Various improvements are provided, among which is a transparent water shield for shielding the operator from the relative flow of water past the hull in motion, a trimming device for fore-and-aft balancing of the hull, a device for reducing moisture in the hull, a system for detecting and indicating water in the hull, apparatus for protecting electrical parts from moisture and battery gases, a system for discharging battery gases out of the hull, a device for preventing infiltration of battery gases to and into electrical parts, and a device for preventing leakage of battery electrolyte to parts surrounding the battery.

### 3,757,722
### SUBMERSIBLE SUBMERSIBLE UNDERWAY DOCKING UNIT

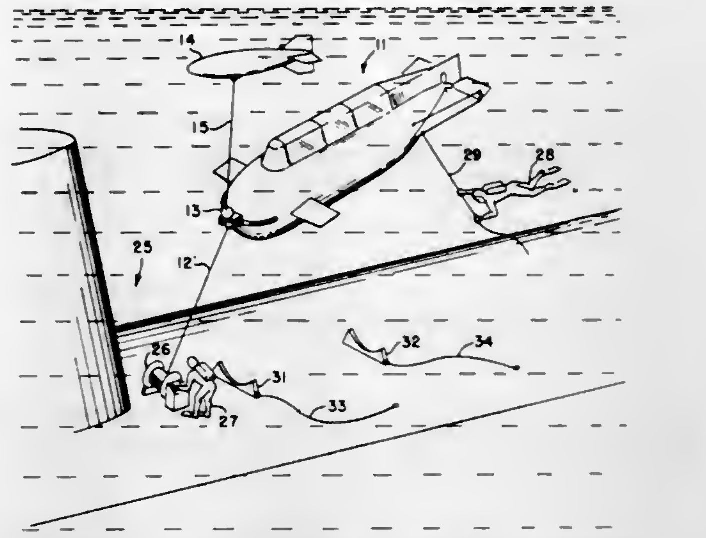
**Ronald L. Seiple, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 21, 1972, Ser. No. 246,443**

**Int. Cl. B63g** *8/00*

**U.S. Cl. 114—16** **10 Claims**

A docking system employs a haul down winch to recover and secure a swimmer delivery vehicle to the deck of a large submarine. A buoyancy system is used to deploy a haul down line in a vertical position extending above the submarine vehicle. An acoustic pulse transmitter provides guidance signals to direct the small swimmer delivery submersible to a point of engagement with the haul down line. An attachment means is secured to the line and cooperates with a capture socket carried on the nose of the submersible vehicle. A line capture and guidance device is also mounted on the nose of the sumbersible swimmer delivery vehicle to assist in attaching the vehicle to the haul down line.



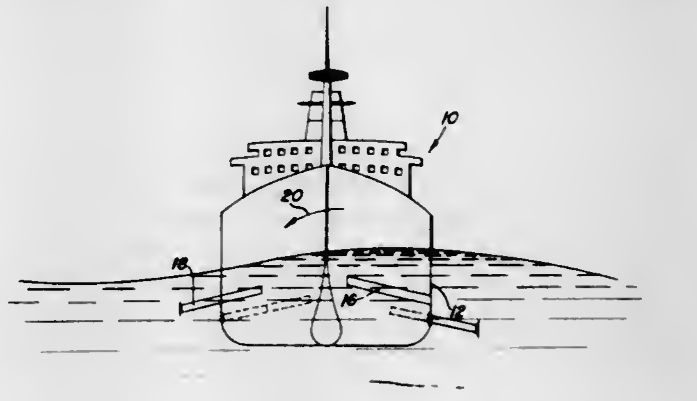
### 3,757,723
### FIXED-ANGLE STABILIZING FIN SYSTEM

**Frans V. A. Pangalila, Waddinxveen, Netherlands, assignor to John J. McMullen Associates, Inc., New York, N.Y.**

**Filed Apr. 7, 1971, Ser. No. 132,160**

**Int. Cl. B63b** *43/04*

**U.S. Cl. 114—126** **19 Claims**



A ship stabilization system comprising at least one pair of fixed-angle fins retractable into the hull of the ship. The moment developed by each fin is proportional to the area of the fin exposed to the external waters. In one embodiment, the fin is composed of a plurality of spinning rods or tubes. Also disclosed is a system for linking the fins with the ship's rudder thereby compensating for expected course changes of the ship.

### 3,757,724
### LOG BARGE

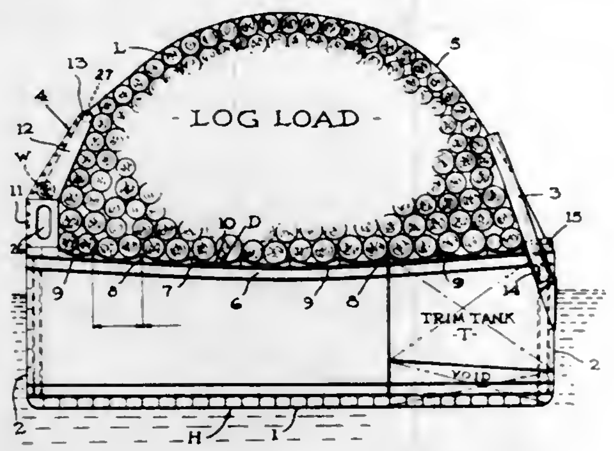
**Thomas Trygve Lunde, 1045 Sansome St., San Francisco, Calif.**

**Filed Sept. 21, 1971, Ser. No. 182,427**

**Int. Cl. B63b** *35/30*

**U.S. Cl. 114—27** **6 Claims**

A log barge includes a load-supporting deck comprising a plurality of adjacent deck sections, each of which is curved to present a depression extending longitudinally and parallel to the vessel centerline. Load securing lines extending transversely of the deck are disposed over a log load placed upon the deck and motor-driven winches maintain the thus disposed lines under a predetermined tension whereby the lines are self-



tightening as individual logs shift during transport and are urged to settle more compactly within said depressions.

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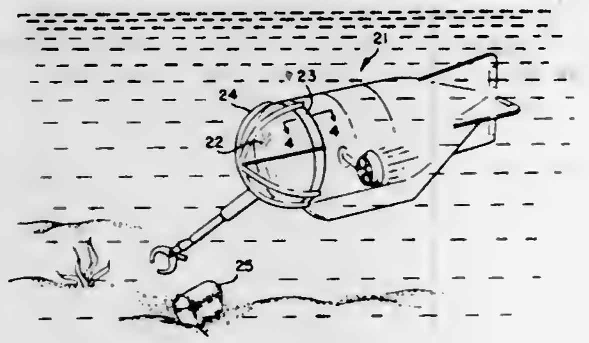
3,757,725

### RIGHT SPHERICAL SEGMENT-GLASS SHELL-TO METAL-JOINT

**George M. Horn, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Sept. 24, 1971, Ser. No. 183,483**
**Int. Cl. B63b** *19/02*
**U.S. Cl. 114—173** **5 Claims**



An improved viewing window construction for deep submersible vehicles and a method of construction thereof is disclosed. A hemispherical glass dome is ground and lapped with an edge radius of twice the dome thickness and fitted on a congruently configured mating ring with a bimetallic gasket providing a strain relieving seal therefor.

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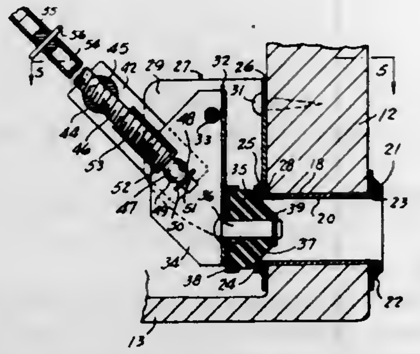
3,757,726

### MARINE BAILER

**Axel Moeller, St. Petersburg Beach, Fla., assignor to Moeller Mfg. Co., Inc., Greenville, Miss.**

**Division of Ser. No. 50,220, June 26, 1970, Pat. No. 3,703,150. This application Aug. 17, 1971, Ser. No. 172,539**
**Int. Cl. B63b** *13/00*
**U.S. Cl. 114—183 R** **10 Claims**



A remote control boat drainage valve assembly consisting of a thimble extending through an opening at the stern of a boat with a bracket secured in the stern having a pivoted arm carrying a plug engageable in the thimble. An elongated operating stem extends threadedly through a yoke carried by the bracket and is rotatably connected to the arm for moving the plug relative to the thimble by rotating the stem.

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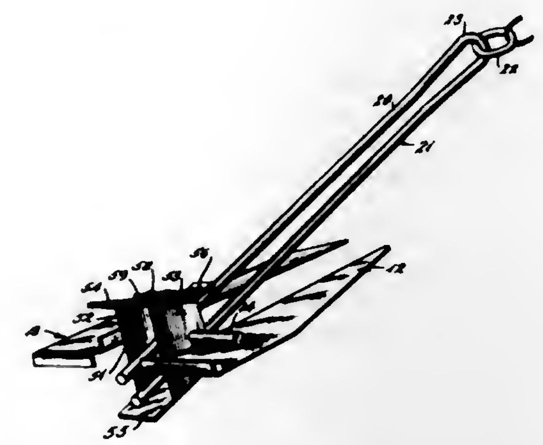
3,757,727

### VARIABLE ANGLE TWIN FLUKE ANCHOR

**Daniel Comstock Hungerford, North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.**

**Filed Sept. 3, 1971, Ser. No. 177,550**
**Int. Cl. B63b** *21/44, 21/46*
**U.S. Cl. 114—208** **9 Claims**



An anchor of the twin fluke type has stocks of substantial breadth to promote even penetration of the flukes, the flukes being pivotally mounted with reference to the shank, and a resiliently yieldable member tending to hold the flukes in a first angular position which favors initial penetration of the flukes in the bottom. The resilient member is yieldable to permit the attainment of a larger predetermined angle which is better adapted for setting the anchor in the bottom after the initial penetration has been effected.

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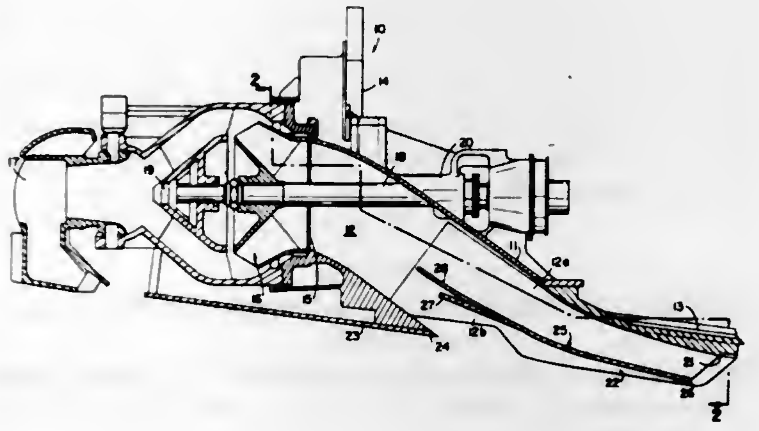
3,757,728

### GUIDE VANE FOR SUCTION SIDE OF MARINE JET PROPULSION SYSTEM

**Ralph A. Rhoda, Orinda, Calif., assignor to Berkeley Pump Company, Berkeley, Calif.**

**Filed Mar. 20, 1972, Ser. No. 236,394**
**Int. Cl. B63h** *11/08*
**U.S. Cl. 115—16** **10 Claims**



In a jet boat having a jet nozzle, an impeller pump discharging water through the nozzle, and a flow channel delivering water from below the boat to the impeller, the improvement wherein a fixed guide vane is disposed in the flow channel to divide the flow channel into upper and lower flow portions. At boat speeds greater than the impeller entrance velocity, the fixed guide vane causes an automatic adjustment of volume rates of flow of water through each flow channel portion so that a volume rate of water equal to the flow capacity of the impeller flows freely and smoothly through the flow channel, such water being distributed uniformly around the entrance of the impeller.

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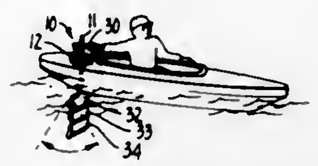
3,757,729

### SCULLING MECHANISM

**William Donald Golden, 6258 Ruthland Rd., Oakland, Calif.**

**Filed Sept. 5, 1972, Ser. No. 286,031**
**Int. Cl. B63h** *1/32*
**U.S. Cl. 115—28** **7 Claims**



An apparatus for mannual steering and movement of a small boat or the like, mounted on the transom or stern of the boat, having a horizontally rotatable steering post rotated by a tiller, with the tiller mounted for up and down pivotal pumping movements to activate lateral connected blades mounted on the lower end of the steering post as a unit in the power or rearward stroke, and return them with pivotal resistance-lessening action on the return stroke, resembling the action of a duck's foot during swimming.

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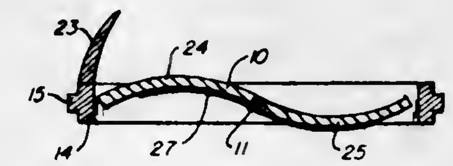
3,757,730

### WIND ACTUATED DEVICES

**Donald J. Douglas, White Bear Lake, Minn., assignor to Nu-Pro, Inc., Saint Paul, Minn.**

**Filed Sept. 21, 1972, Ser. No. 290,785**
**Int. Cl. B60q**
**U.S. Cl. 116—28** **20 Claims**



The wind actuated devices disclosed have a critical stationary wind shield which serves in combination with other features of the devices to promote desired wind actuated rotation of a rotatable part. The devices have at least one primary rotatable part, an axis means establishing a predetermined axis for rotation of the primary rotatable part, and holding means for the axis means. The primary rotatable part comprises a form-retaining base sheet material which is aligned with substantially all portions of it extending substantially parallel with the predetermined axis for its rotation. The axis for its rotation lies in the plane of the sheet and bisects the sheet into two wing parts. The wing parts are symmetrical and contoured in opposite directions to facilitate wind actuated rotation. Rotation causes each wing part to generate a solid of revolution having a curved surface extending about the axis of rotation. The wind shield is mounted in spaced proximate relationship to the rotation-generated curved surface at a radial location effective, under conditions of use in a wind environment, to interrupt external wind flow upon at least a portion of the sheet material at a wing part moving into the wind during rotation, but not to interrupt external wind flow upon the sheet material at a wing part moving with the wind during wind actuated rotation. Transparent wind shields are preferred, especially in combination with eye-catching attention-getting features including patterned areas of reflex reflecting and fluorescent materials on the base sheet material. Adjustable mounting bars are disclosed for fixing the devices to bicycles or the like.

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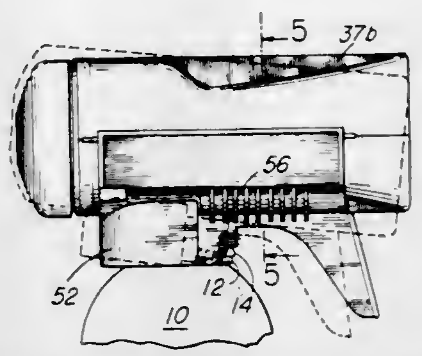
3,757,731

### GAS POWER OPERATED HAND HELD ACOUSTIC DEVICES

**Michael Pappas, Irvington, N.J.; Paul A. Witte, and Thomas Johnson, both of Hopewell, N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.**

**Filed July 5, 1972, Ser. No. 269,056**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 116—112** **18 Claims**



A gas powered hand held acoustic device has a horn removably mounted in a cradle and on the tiltable stem of a valve in the neck of a can containing fluid under pressure. The cradle has a trigger which when pressed tilts the horn and valve stem and blows the horn. Sliding movement of the cradle relative to the horn and can locks the horn and prevent blowing until pressure on the trigger slides the cradle and unlocks it, permitting operation. The horn has a body and a snap-on plastic cap with a vibratable unperforate diaphragm held between them in a none rigid non-hermetic sealing relationship.

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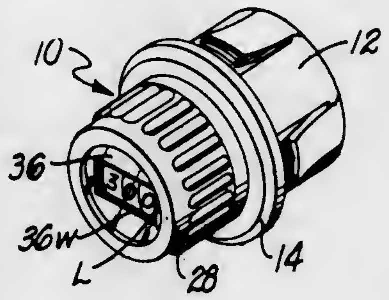
3,757,732

### DIGITAL-INDICATING KNOB-ENCLOSED MULTI-TURN POTENTIOMETER

**Sydney W. Frey, Jr., Upland, Calif., assignor to Bourns, Inc., Riverside, Calif.**

**Filed Jan. 10, 1972, Ser. No. 216,520**
**Int. Cl. G01p** *13/00*
**U.S. Cl. 116—115** **5 Claims**



A knob-enclosed multi-turn precision potentiometer having at its front end a turns-counting and indicating device effective to furnish an accurate decimal-digit indication of the current position of the potentiometer wiper relative to a zero position at one end of the helical resistance element, the potentiometer having means for permitting instant mounting in a standard aperture in an instrument panel of any of a plurality of standard thickness gages and the indicator means presenting accurate indications of fractions of hundredths of one turn from zero to ten turns to accommodate the full range of operation of a 10 turn precision potentiometer, and the indicator further having simplified means for connection with the potentiometer comprising a serrated plug press-fitted into a receiving bore in a supporting member of the potentiometer.

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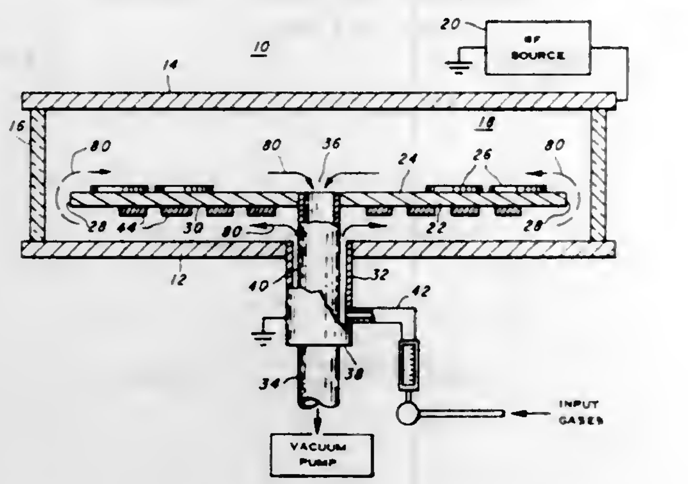
### 3,757,733
### RADIAL FLOW REACTOR

**Alan R. Reinberg, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Oct. 27, 1971, Ser. No. 192,957**
**Int. Cl. C23c** *13/08*
**U.S. Cl. 118—49.5** **9 Claims**



In apparatus for coating a radial flow of reactant gases is established over the substrates. A radio frequency radial flow cylindrical reactor is utilized to effect low temperature plasma deposition. Electrodes for generating the RF glow discharge are disposed within the chamber of the reactor. An annular electrode forms the support for the substrates which are disposed around the circumference of concentric circles on a surface of the support. The center region of the support communicates with an exhaust port extending downwardly therefrom. Gas flow is established over the outer edge of the support and flows in a laminar manner radially over the substrates to be exhausted through the exhaust port.

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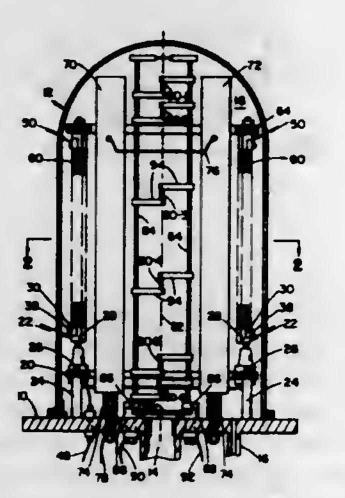
### 3,757,734
### APPARATUS FOR PROCESSING RAZOR BLADES

**Irwin W. Fischbein, Canton, Mass., assignor to The Gillette Company, Boston, Mass.**

**Continuation-in-part of Ser. No. 15,015, Feb. 27, 1970, abandoned, which is a division of Ser. No. 639,867, May 19, 1967, abandoned, and a continuation of Ser. No. 693,527, Dec. 26, 1967, abandoned. This application Jan. 17, 1972, Ser. No. 218,328**
**Int. Cl. C23c** *13/12*
**U.S. Cl. 118—49.5** **14 Claims**



A system for treatng razor blades includes a vacuum chamber having in it a set of blade stack support structures arranged in a circle. A source of metal is disposed along a line coaxial with the circle of support structures. After razor blades are positioned on the support structures, a vacuum is established in the chamber, the sharpened blade edges are cleaned, and then, material is transferred from the source to the blade edges to form a film about 100 Angstroms in thickness on those sharpened blade edges.

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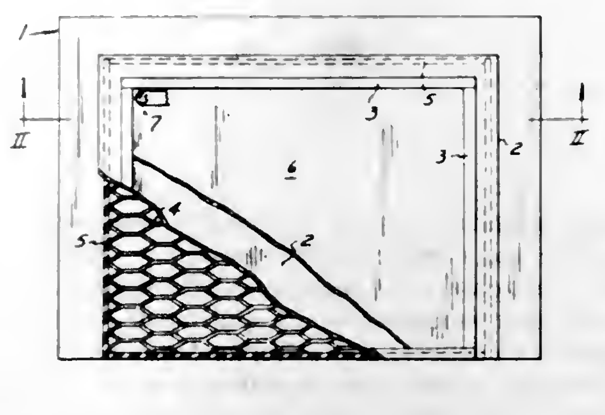
### 3,757,735
### VACUUM HOLDER TO CONFORM CASTING SURFACE

**Gordon Appling Crowe, Ann Arbor, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Division of Ser. No. 119,522, March 1, 1971, Pat. No. 3,728,777. This application Feb. 2, 1973, Ser. No. 329,232**
**Int. Cl. B05c** *11/14*
**U.S. Cl. 118—50** **5 Claims**



A process and apparatus are provided for flattening a metal sheet having a sinuous cross-section while it is supported from below against buckling by withdrawing air from beneath the sheet until atmospheric pressure above the sheet firmly presses it against the support substantially free from undulations and for casting a film of substantially uniform thickness on the exposed surface of the flattened sheet.

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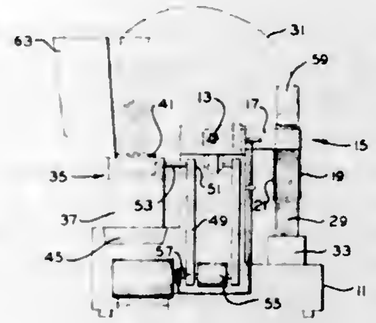
### 3,757,736
### SEMI-AUTOMATIC BOOKBINDER

**Clarence L. Anderson, Penfield, N.Y., assignor to Magnamatrix Corporation, Rochester, N.Y.**

**Filed Apr. 12, 1971, Ser. No. 133,026**
**Int. Cl. B05c** *1/02*; **B42c** *9/02*
**U.S. Cl. 118—59** **19 Claims**

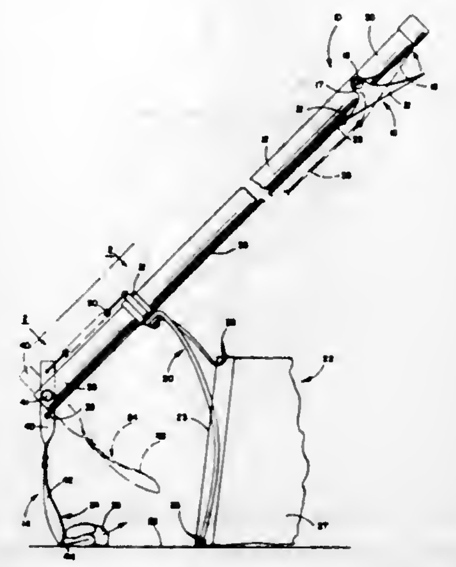


A bookbinding apparatus which permits economical operation over a wide range of book sizes and quantities and is particularly useful in central reproduction facilities. Pages are clamped in a carriage and edges aligned in a first angular position, the carriage is rotated to a second position for preheating, the pages automatically moved across a rotating drum, which applies hotmelt glue, to a cooling position. The carriage is then rotated back to the first side where tape may be applied to improve appearance.

### 3,757,737
### MECHANICAL PICKUP DEVICE FOR ANIMAL DROPPINGS

**Harvey R. Drum, 17186 Los Alimos, Granada Hills, Calif.; Jeffry L. Witherill, 17605 Enadia Way, Van Nuys, Calif., and Fredrick H. Rennwald, 3815 Edenhurst St., Los Angeles, Calif.**

**Filed Mar. 3, 1972, Ser. No. 231,585**
**Int. Cl. A47f** *13/08*
**U.S. Cl. 119—1** **11 Claims**



A mechanical device for sequentially loading multiple bodies of animal droppings from the ground into a disposable bag. The illustrated device has an elongated handle which carries a pickup means at its lower end. The pickup means includes means for releasibly holding a bag with the mouth of the bag held open in a generally vertical plane, and a movable paddle proportioned and arranged to engage and propell a body of animal droppings into the bag through the open mouth. The movement of the paddle is remotely controlled from the upper end of the handle by an manually movable lever which is operable to impart a rapid propelling movement to the paddle.

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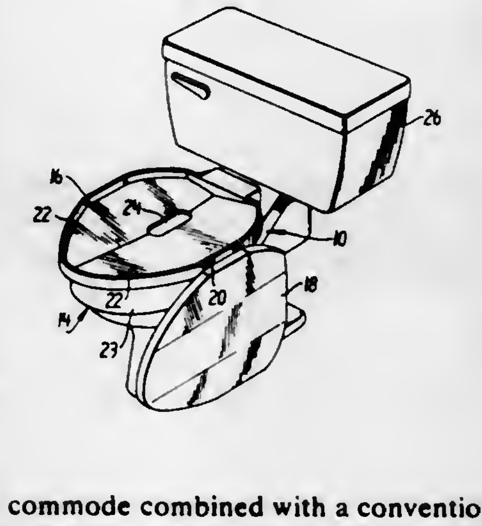
### 3,757,738
### ANIMAL COMMODE

**John Oliver Hall, 4210 Centre Ave., Pittsburgh, Pa.**

**Filed Aug. 1, 1972, Ser. No. 276,916**
**Int. Cl. A01k** *29/00*
**U.S. Cl. 119—1** **7 Claims**



An animal commode combined with a conventional human toilet facility, featuring a hinged or otherwise operatively mounted animal seat having walls sloping downwardly intersecting near the center of the bowl, at least one perforation provided in the seat in the vicinity of the intersecting walls, a cup located on the underside of the seat rearwardly of the perforation, a cup-like rim on the upperside of the seat next to the flush tank, a cover operatively mounted to the seat to move between a first position alongside the bowl when the animal seat rests upon the human set during use by animals and a second position closing the bottom of the animal seat when same is raised to rest against the flush tank when the human seat is in use.

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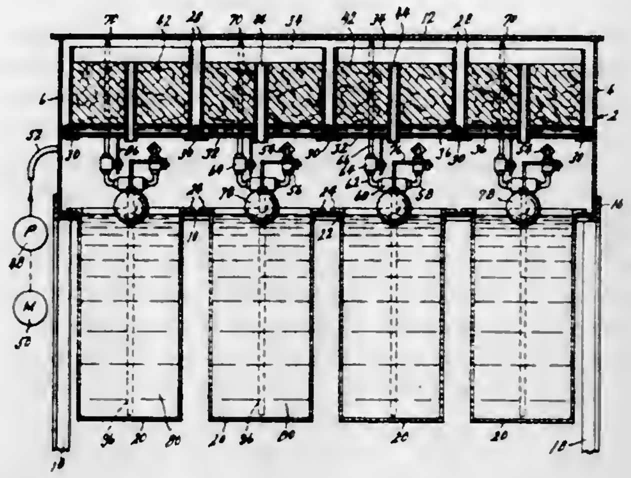
### 3,757,739
### ISOLATION AQUARIUM

**Kevin F. Whitener, 812 East St., Parkville, Mo.**

**Filed Mar. 27, 1972, Ser. No. 238,511**
**Int. Cl. A01k** *63/00*
**U.S. Cl. 119—5** **7 Claims**



An isolation aquarium consisting of a housing carrying a plurality of tanks detachably mounted therein, a filter case detachably mounted in the housing for each of the tanks, a system powered by compressed air for constantly withdrawing water from each of the tanks, circulating it through its associated filter and returning it to the tank, the water being aerated during its circulation and filtering, mechanism for terminating the circulation but not the aeration of any tank the filter case of which is removed for servicing, and mechanism for terminating the circulation and filtration systems of any tank removed from the housing for any purpose.

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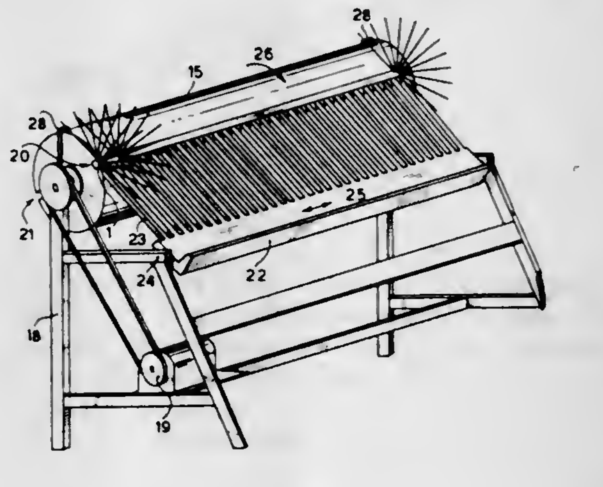
### 3,757,740
### PROCEDURE FOR SETTING UP A COCOONERY FOR SILKWORMS AS WELL AS REMOVING COCOONS FROM THE COCOONERY AND APPARATUS THEREFOR

**Gabriele Peressini, Via Pennato, 7, Udine, Italy**

**Filed Oct. 29, 1971, Ser. No. 193,676**
**Claims priority, application Italy, Oct. 31, 1970, 83370 A/70; Apr. 20, 1971, 83333 A/71; Oct. 7, 1971, 83389 A/71**
**Int. Cl. A01k** *67/04*
**U.S. Cl. 119—6** **16 Claims**



An artifical cocoonery is disclosed which includes a semicircular assembly of radially disposed circumferentially aligned flexible rods, the surfaces of the rods being suitable for the attachment of cocoons by the silkworm. A plurality of the semicircular assemblies of rods is mounted so as to protrude from and be spaced along one side of an elongated shaft. The radial rods of one assembly are alternately oriented between the circumferential spaces of the rods of each adjacent assembly for hygienic sericulture. In one embodiment each semicircular assembly of radially disposed flexible rods is mounted from a hub or sleeve. A plurality of these hub-mounted assemblies is engaged or telescoped in abutting relationship upon a supporting shaft to form a cocoonery unit. In another embodiment, a machine for removing and harvesting the fully developed cocoons is disclosed having an elongated rotatable drum with means for attachine, one or more cocoonery units upon the surface of the drum with their longitudinal axes disposed radially from the axis of the drum and with the flexible rods, with the cocoons thereon, extending generally outwardly from the drum. The drum is mounted on a stand, having means to rotate the drum, and an elongated array of teeth in the form of a comb is pivotally and slidably mounted on an axis therefrom so that the extended ends of the teeth are substantially tangential to the drum surface and each tooth of the comb passes between the respective semicircular assemblies of the flexible rods of the cocoonery as the drum is rotated. An outermost tooth at each end of the comb passes adjacent to the outermost semicircular assembly of flexible rods. The spacing between each tooth of the comb and a rod as it sweeps thereby is sufficient to dislodge the cocoons. The comb is disposed at an angle to the periphery of the drum whereby a sloping surface is provided to convey the dislodged cocoons into a receptacle. The ends of the teeth of the comb may slidably engage the surface of the drum and maintain the sloping attitude of the comb about its longitudinal pivot.

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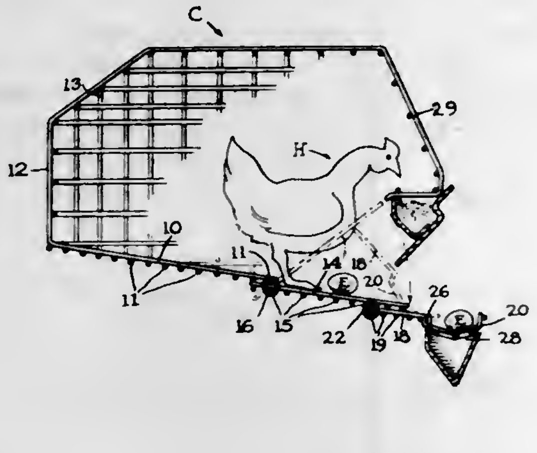
### 3,757,741
### ADJUSTABLE CAGE FLOOR CONSTRUCTION

**Anthony J. Siciliano, New York, N.Y., assignor to Diamond International Corporation, New York, N.Y.**
**Filed Jan. 19, 1972, Ser. No. 218,866**
**Int. Cl. A01k** *31/00*
**U.S. Cl. 119—17** **11 Claims**



An adjustable floor construction particularly adaptable for use in cage raising poultry, ranging in size from starters to growers to layers, said floor construction comprising a fixed section, a first adjustable section adjustably secured to said fixed section and a second adjustable section adjustably secured to said first adjustable section. The first adjustable section being selectively secured in either an upwardly inclined ramp position so that baby chicks of starter size may ascend thereon to avail themselves to feed or in a downwardly inclined ramp position upon which eggs of layer birds may freely gravitate to an egg receiving tray. The second adjustable section being capable of functioning both as part of a locking means and as said egg receiving tray.

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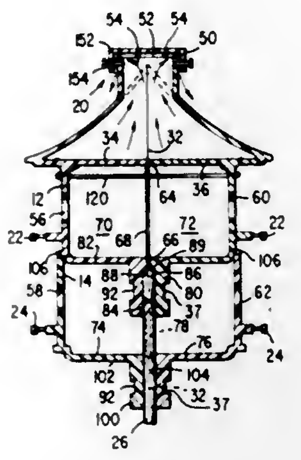
### 3,757,742
### PURPLE MARTIN BIRDHOUSE

**William Schlegel, Cranbury, N.J., assignor to Pen-Cell Plastics Inc., Hamilton Square, N.J.**
**Filed Oct. 20, 1971, Ser. No. 191,034**
**Int. Cl. A01k** *31/00*
**U.S. Cl. 119—23** **10 Claims**



A birdhouse is herein provided comprising a vertically split structure having at least two separate components. Each component presents a portion of a chimney extending from a roof portion of the structure. A removable clamping member, in the nature of a chimney cap, is secured to the outer, upper marginal edges of the chimney to urge the components of the vertically split structure horizontally together. The components are further formed to present a downwardly extending collar portion for axially receiving a birdhouse supporting post. The collar, which is of an axially split configuration due to the vertically split nature of the overall structure, may be clamped by a removable strap or the like to frictionally engage the cylindrical surface of the post. In one feature of the invention, an upper marginal surface of the chimney is formed with a plurality of protuberances to hold the chimney cap in spaced relationship to the marginal edge of the chimney to define a ventilation path from inside the birdhouse through the chimney and out under the chimney cap.

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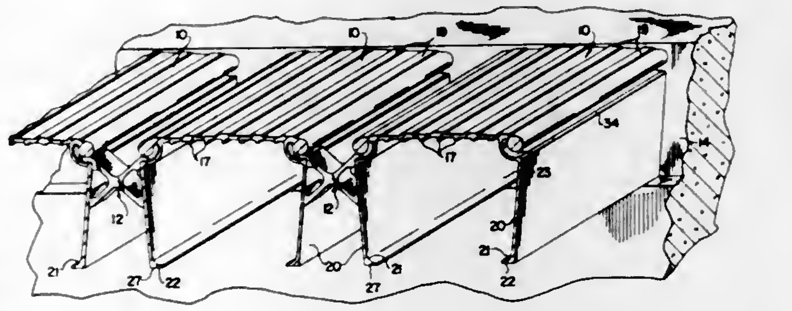
### 3,757,743
### SLATTED FLOORING CONNECTOR SYSTEM

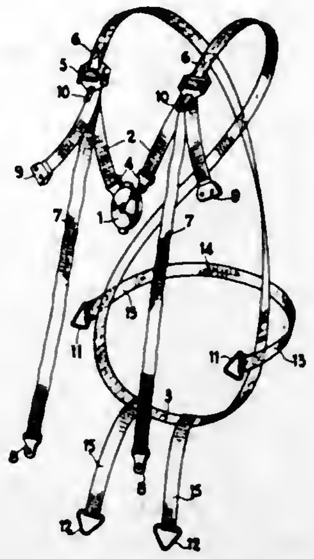
**Russell B. Lehe, Cleveland, Ohio, assignor to Morandex, Inc., Cleveland, Ohio**
**Filed Jan. 20, 1972, Ser. No. 219,312**
**Int. Cl. A01k** *1/00*
**U.S. Cl. 119—28** **15 Claims**



A lightweight, easily-assembled slatted flooring system for an animal enclosure comprising a plurality of channels interconnected in spaced-parallel relationship by X-shaped connectors, each connector having arcuately-shaped ends extending from two of its legs which engage similarly shaped grooves in the upper, outer corners of each channel.

### 3,757,744
### HARNESS FOR PARACHUTES AND THE LIKE

**Marcel H. Pravaz, Clichy, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France**
**Filed Dec. 1, 1971, Ser. No. 203,782**
**Claims priority, application France, Dec. 15, 1970, 7045214**
**Int. Cl. B64d** *17/30*
**U.S. Cl. 119—96** **3 Claims**



A harness for a parachutist or workman carrying out dangerous work liable to result in the falling of the workman. The harness has only two adjusting points. The harness has a rapid release means to which are attached a pair of shoulder straps and the ends of a pair of adjusting straps. The opposite or free ends of the adjusting straps pass through fixing means, defining the adjusting points and mounted on the shoulder straps. Adjustment of the entire harness is effected by manipulation of the free ends of the adjusting straps.

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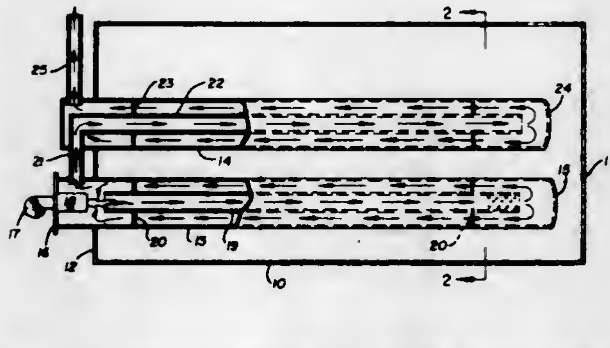
### 3,757,745
### DIRECT FIRED HEATING DEVICE

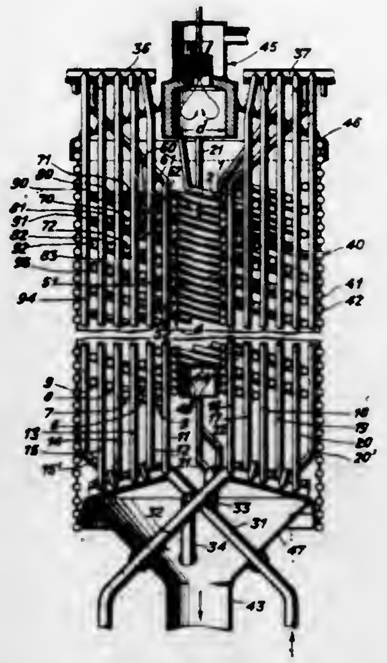
**John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio**
**Filed May 5, 1972, Ser. No. 250,795**
**Int. Cl. F22b** *7/00*
**U.S. Cl. 122—136 R** **4 Claims**



A direct fired heating device consists of a tank for containing the material to be heated and a pair of spaced elongated heat exchangers disposed in said tank with portions extending outwardly of one end of said tank. Each of said heat exchangers includes elongated tubular baffles disposed therein and one of said heat exchangers is placed in communication with a source of combustion the products of which are directed into the tubular baffle therein. The other of the heat exchangers has the tubular baffle therein in communication with the other heat exchanger so that the products of combustion are recirculated in a tortuous path through both heat exchangers and subsequently vented to the atmosphere.

### 3,757,746
### HEAT EXCHANGER

**Harendra Nath Sharan, Seuzach/ZH, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland**
**Filed May 3, 1971, Ser. No. 139,601**
**Claims priority, application Switzerland, May 8, 1970. 6861/70**
**Int. Cl. F22b** *21/26*
**U.S. Cl. 122—250 R** **13 Claims**



The heat exchanger is self-supporting in that one tube system of co-axial tube cylinders is supported within a second tube system formed of a skeleton of tubes. Both systems are connected to common distributors and headers and both are enclosed by a cylindrical casing of helically coiled tubes. A muffle burner is located coaxially of the first tube system to direct a flow of heat exchange medium into the heat exchanger.

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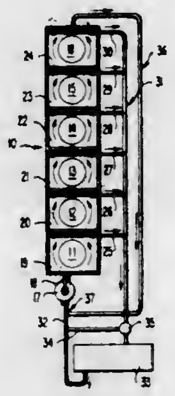
### 3,757,747
### COOLING WATER CIRCULATION FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

**Otto Hartmann, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertürkheim, Germany**
**Filed Nov. 4, 1971, Ser. No. 195,708**
**Claims priority, application Germany, Nov. 5, 1970, P 20 54 431.4**
**Int. Cl. F01p** *3/02, 7/16*
**U.S. Cl. 123—41.74** **15 Claims**



A cooling water circulatory system for multi-cylinder internal combustion engines in which a partial cooling water quantity is branched off from the individual cooling water spaces of the cylinders that are sequentially circumcirculated by the cooling water, and in which the partial cooling water quantities are collected after passage through the respective cylinder heads in a cooling water return line whereby the cooling water space of a downstream cylinder, as viewed in the flow direction, preferably the last cylinder, is tapped by means of a by-pass line which terminates, by-passing the cylinder heads, in the cooling water line system at a place between the suction side of the cooling water pump and the cylinder heads.

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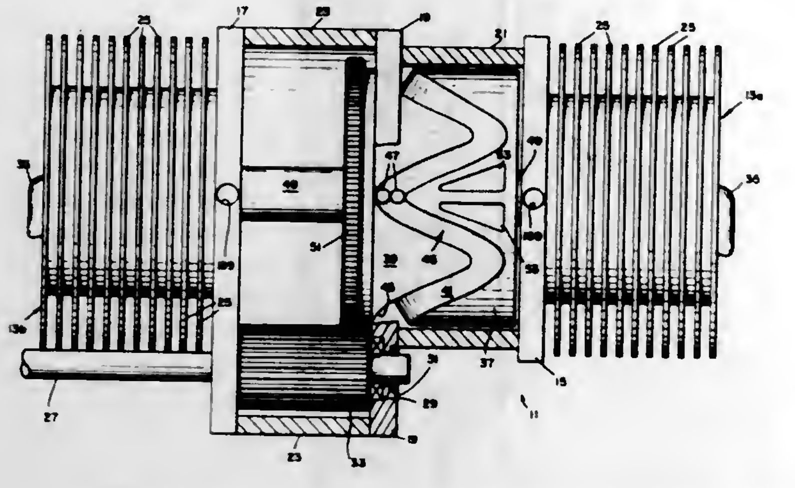
### 3,757,748
### ROTATING COMBUSTION ENGINE

**James A. Arney, 2218 Ripley, Redondo Beach, Calif.**
**Filed Jan. 17, 1972, Ser. No. 218,376**
**Int. Cl. F02b** *53/00;* **F01p** *1/04*
**U.S. Cl. 123—45 A** **21 Claims**



An engine capable of both internal combustion and fluid pump operation utilizing a pair of opposed reciprocating pistons in a piston accommodating cylinder or axially aligned cylinders, the pistons having centrally disposed apertures through the faces thereof and being affixed to the ends of a hollow piston rod slidably disposed over an elongated hollow rigid tube extending coaxially within and along the longitudinal axis of the cylinder and between and communicating through oppositely disposed cylinder heads.

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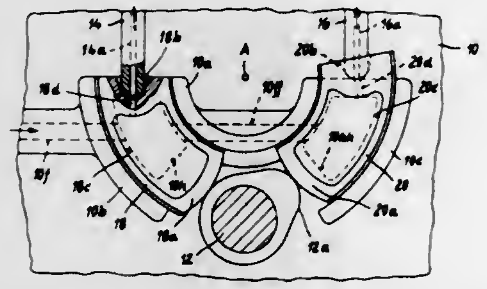
### 3,757,749
### VALVE OPERATING GEAR IN INTERNAL COMBUSTION ENGINES

**Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hatz KG, Ruhstorf, Germany**
**Filed Mar. 29, 1971, Ser. No. 128,945**
**Claims priority, application Germany, Apr. 14, 1970, P 20 17 823.8**
**Int. Cl. F01l** *1/26*
**U.S. Cl. 123—90.22** **3 Claims**



In an internal combustion engine, the engine casing has segmental flanges defining one or more annular guideways extending generally at right angles from the camshaft. At least one correspondingly annular segmental element is slidably disposed in each guideway such that one end thereof bears against the cam and the other end provides a seat for an associated valve push rod. Reciprocation of the element along the annular guideway actuates the push rod, and hence the valve. The segmental element may include an oil reservoir which receives oil from a duct or reservoir in the casing or flanges, and conducts the oil to an oil duct in the push rod.

### ERRATUM

For Class 123—97 see:
Patent No. 3,757,796

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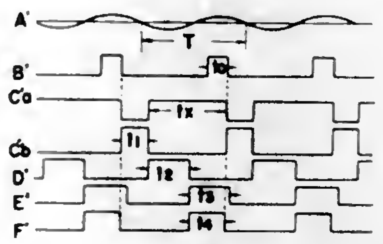
### 3,757,750
### ELECTRONIC GOVERNOR FOR INJECTION-TYPE INTERNAL COMBUSTION ENGINES

**Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan**
**Filed Sept. 2, 1971, Ser. No. 177,377**
**Claims priority, application Japan, Sept. 17, 1970, 45/80999**
**Int. Cl. B60k** *31/00*
**U.S. Cl. 123—102** **3 Claims**



An electronic governor for injection-type internal combustion engines intended to electrically detect changes in revolution speed, convert the detected information into an electric control current, and therewith operate an electromagnetic actuating section; on the other hand, to similarly detect the displacement of the fuel adjusting rod, feed back the detected information temporarily to the control section through a differentiating circuit, whose time constant corresponds to the engine, thereby stabilizing the engine speed; and, furthermore, to similarly detect also each displacement of the fuel adjusting rod due to a change in engine load, feed back the detected information to the engine speed setting section, in order to provide a control performance that eliminates the engine speed regulation.

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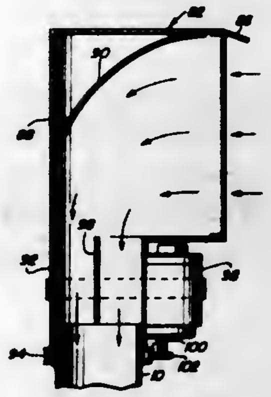
### 3,757,751
### AIR STREAM EXPOSED ADJUSTABLE RAM AIR INTAKE HORN

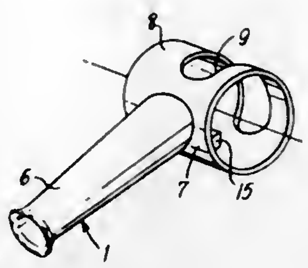
**James F. Kitchin, Rt. 2, and Dalton L. Smith, 310 Line Oak St., both of Marlin, Tex.**
**Filed Jan. 7, 1972, Ser. No. 216,057**
**Int. Cl. F23l** *17/02*
**U.S. Cl. 123—119 CG** **2 Claims**



An air intake horn assembly for use on the induction air intake of a vehicle combustion engine. The assembly is constructed in a manner whereby it may open horizontally in the direction in which the associated vehicle is moving to thereby support ram air induction for the associated combustion engine. However, the intake horn is constructed in a manner whereby it may be at least partially shielded from ram air in inclement weather.

### 3,757,752
### AIR FILTRATION AND OR REGULATION OF CARBURETOR AIR INTAKE TEMPERATURE

**Richard John Holker, Marple, England, assignor to Fram Filters Ltd., Llantrisant, Pontyclun, Glamorgan, Wales**
**Filed Oct. 5, 1970, Ser. No. 78,089**
**Claims priority, application Great Britain, Oct. 7, 1969, 49,310/69**
**Int. Cl. B01d** *27/08;* **F02m** *31/06*
**U.S. Cl. 123—122 D** **3 Claims**



Air filter housing comprising a casing having an inlet and an outlet, the inlet cooperating with an inlet extension tube to provide an air intake orifice for the housing at the distal extremity of the inlet extension tube, and the outlet having an outlet orifice member for connection to the air intake of user apparatus (for example an internal combustion engine carburettor) downstream of the air filter; means for mounting a filter element in the casing to filter air flowing from the inlet orifice to the outlet orifice; and means responsive to the temperature of air in the filter housing for automatically varying the position of the inlet orifice with respect to the outlet orifice member in accordance with the temperature.

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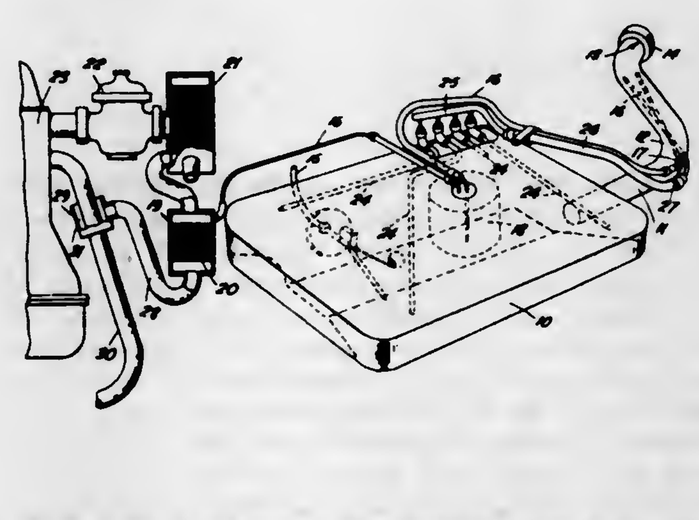
### 3,757,753
### FUEL TANKS

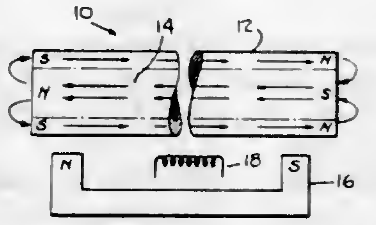
**Allan Frederick Hunt, Solihull, England, assignor to Chrysler United Kingdom Limited, London, England**
**Filed Oct. 5, 1971, Ser. No. 186,633**
**Claims priority, application Great Britain, Oct. 16, 1970, 49,336/70**
**Int. Cl. F02m** *25/08*
**U.S. Cl. 123—136** **7 Claims**



A fuel tank for a motor vehicle engine has a vent pipe for fuel or vapour overflow leading from an upper end of the tank filler pipe to a liquid separator chamber housed within the tank. The vent pipe extends from the separator chamber to a container holding activated carbon particles for adsorbing fuel vapour and thence to an air cleanser for the engine carburettor.

### 3,757,754
### IGNITION SYSTEM

**John Richard Wiegand, Valley Stream, L. I., N.Y., assignor to Milton Velinsky, Plainfield, N.J. and John R. Wiegand, Valley Stream, N.Y., part interest to each**
**Filed Sept. 28, 1971, Ser. No. 184,506**
**Int. Cl. F02p** *3/02*
**U.S. Cl. 123—148 E** **20 Claims**



An ignition system is disclosed which includes a primary circuit having a battery, the primary winding of an ignition coil and an electronic valve controlling energization of the primary winding by the battery; a secondary circuit having the secondary winding of the ignition coil, a plurality of contacts adapted to be connected to combustion ignition devices and a distributor mounted to sequentially complete electrical connection between the secondary winding and each contact and triggering means including at least one wire mounted on a rotor, the wire having a shell and core of different coercivity, a magnet for reversing the magnetic polarity of the core, and a sensing head for sensing a change in magnetic flux around the wire which is produced in response to the occurrence of predetermined criteria, the sensing head providing a signal for controlling the electronic valve.

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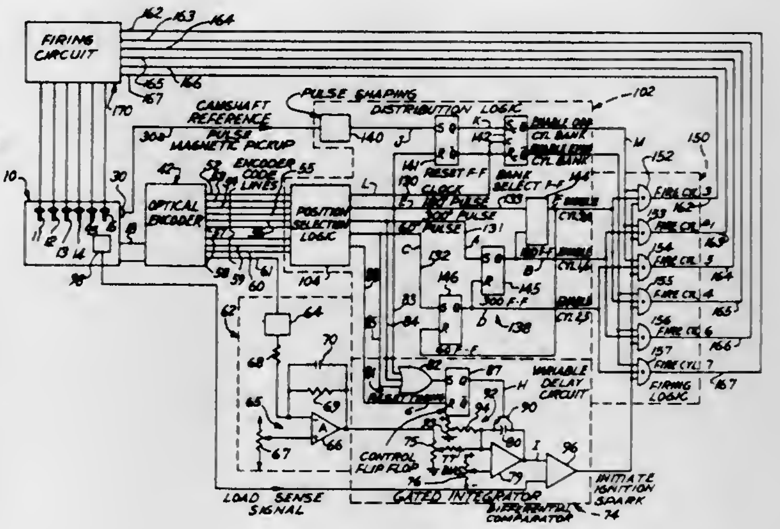
### 3,757,755
### ENGINE CONTROL APPARATUS

**Walter J. Carner, Ft. Collins, Colo., assignor to Institute of Gas Technology, Chicago, Ill.**
**Filed Oct. 14, 1971, Ser. No. 189,426**
**Int. Cl. F02p** *1/00*
**U.S. Cl. 123—148 E** **3 Claims**



The disclosure describes a system for controlling the performance and efficiency of an internal combustion engine of the type having a plurality of combustion chambers that are fitted with controlling devices, such as spark plugs, in order to drive a rotatable engine member, such as camshaft or a crankshaft. Encoder means for producing identity code signals that uniquely identify a plurality of positions of the rotatable engine member are provided in order to monitor the cyclic position and speed of the engine. Additional monitors may be provided for continuously monitoring other engine parameters, such as the load placed on the engine. These engine monitors convert the value of the engine parameters into corresponding electrical signals. The actuation of the controlling devices is controlled by a distribution electronic logic circuit that enables the controlling devices to be selected and actuated over a predetermined number of rotational degrees of the rotatable engine member. After the proper controlling device has been selected, the exact time of actuation is controlled by a variable electronic delay circuit that is controlled by the electrical signals corresponding to the engine parameters.

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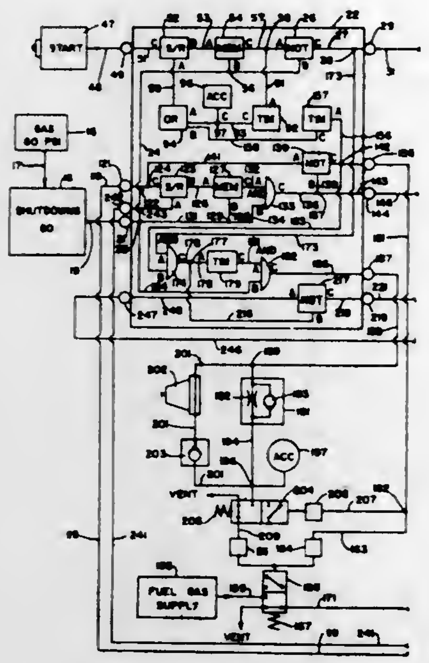
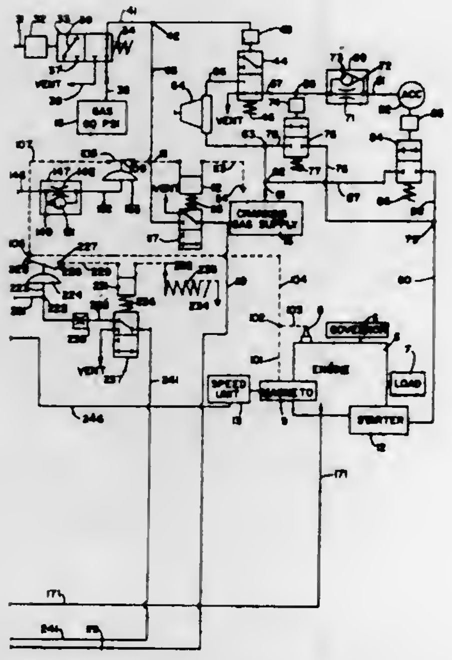
### 3,757,756
### AUTOMATIC ENGINE STARTING SYSTEM

**Sheldon Owyoung, Oakland, and Maurice H. Lowrey, Pleasanton, both of Calif., assignors to De Laval Turbine California, Inc., Oakland, Calif.**

**Filed June 21, 1972, Ser. No. 264,948**
**Int. Cl. F02n** *17/00, 17/06*
**U.S. Cl. 123—179 G** **12 Claims**





A rotating, spark ignition, gas engine has a starter motor and an ignition magneto. A pneumatic logic system operated by gas responds to a starting impulse to rotate the engine by a gas driven starter until the magneto has an appreciable electrical output, whereupon starting and running gas are, under control of the pneumatic logic system, furnished the engine and the starter is decoupled. The pneumatic logic system discontinues the starting sequence unless the engine properly comes up to minimum running speed.

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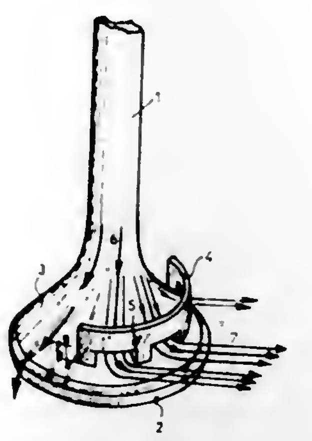
### 3,757,757
### INTERNAL-COMBUSTION ENGINE INTAKE-VALVE PROVIDED WITH A DEFLECTOR PLATE

**Dirk Bastenhof, Eaubonne, France, assignor to Societe D'Etudes De Machines Thermiques, Saint-Denis, France**

**Filed Jan. 7, 1972, Ser. No. 216,152**
**Claims priority, application France, Jan. 28, 1971, 7102840**
**Int. Cl. F01l** *3/06*
U.S. Cl. 123—188 VA **1 Claim**



An intake valve for an internal-combustion engine, especially a four-stroke engine, which comprises an arcuate deflector plate located on the collar of the said valve, said deflector plate being provided with spaced apertures adjacent to said valve collar.

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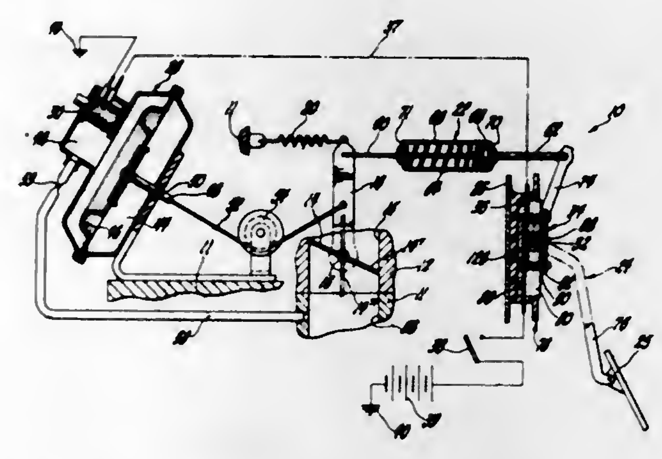
### 3,757,758
### THROTTLE PEDAL ACTUATED THROTTLE RETURN

**Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.**

**Filed July 24, 1972, Ser. No. 274,577**
**Int. Cl. F02b** *77/08*; **F02d** *11/04*; **B60k** *27/08*
**U.S. Cl. 123—198 DB** **4 Claims**

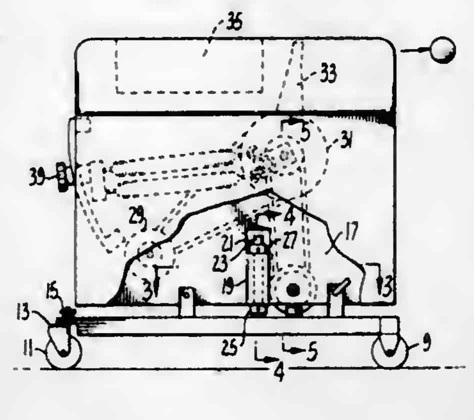


A throttle lever for pivoting a carburetor throttle valve is coupled by a yieldable coupling device to normally follow the movement of a throttle linkage operable with an actuating force applied thereto to move the throttle valve towards a full open position. The throttle lever is also connected to a vacuum motor controlled by a solenoid valve to have a normal condition for permitting the throttle valve to be normally controlled through the throttle linkage and, alternatively, a throttle return condition for overcoming the bias of the coupling device and returning the throttle valve to an idle position when the throttle linkage is prevented from normally doing so. Electrically connected with the solenoid is a switch actuatable by a linkage lever comprising a portion of the throttle linkage and having a pivot section. The pivot section is supported by a pivot support so as to be pivotable about a pivot axis and movable laterally thereto to cause the switch to establish the vacuum motor in the normal and throttle return conditions on the respective application and removal of actuating force.

### 3,757,759
### AUTOMATICALLY VARIED OSCILLATION TYPE BALL PROJECTING DEVICE

**James G. Haworth, 100 Green Ln., Eugene, Oreg.**

**Filed Apr. 7, 1972, Ser. No. 242,097**
**Int. Cl. F41b** *3/02*
**U.S. Cl. 124—7** **3 Claims**



A generally improved oscillator for a ball throwing machine is provided wherein the ball throwing machine is mounted on a flat frame member and the drive mechanism of the ball throwing machine is used to actuate a cam, causing the frame member to oscillate. The frame is a rectangular vertically positioned plate extending substantially the length of one of the members forming a T-shaped base. The plate is pivotally mounted to the base through a stub shaft on the base member. The plate has a rotatable camming sprocket that engages a cam follower on the base member to cause oscillation of the plate with respect to the base. A ball magazine is mounted on top of the plate. The magazine feeds balls to a ball throwing arm. There is a spring on the base that biases the rotatable camming sprocket into engagement with a cam follower. The ball throwing machine is wheel mounted.

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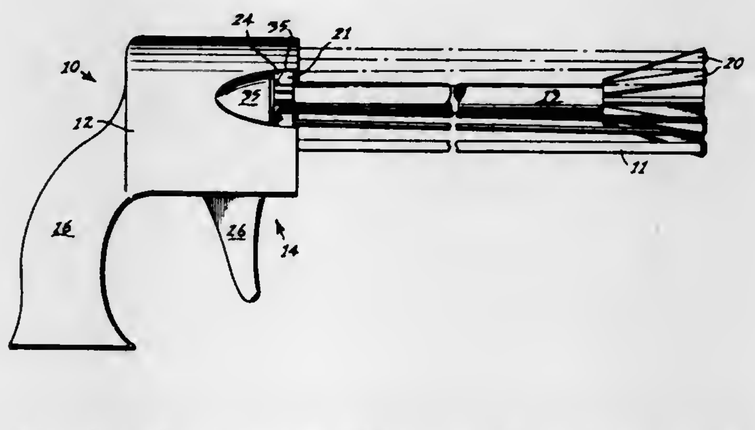
### 3,757,760
### TOY GUN WITH ROTATING MAGAZINE FOR DISCHARGING ELASTIC BANDS

**Wayne Lee Darnell, Rt. 6, Hwy. 79, Clarksville, Tenn.**

**Filed June 14, 1971, Ser. No. 152,544**
**Int. Cl. F41b** *7/02, 7/09*
**U.S. Cl. 124—19** **5 Claims**

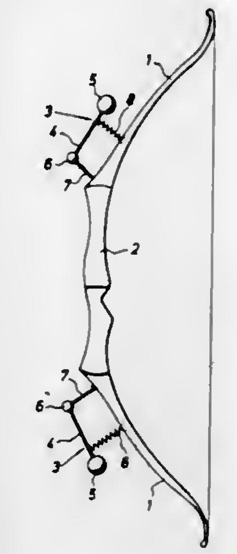


A toy gun having a handle member and an elongated spindle rotatably mounted upon the handle member. The spindle is provided with equally spaced front radial projections and equally spaced aligned rear radial projections for receiving thereover stretched rubber bands. A trigger member on the handle member is provided with a cam rod biased forward into operative engagement with a cam surface on each rear radial projection for simultaneous rotation of the spindle and removal of the elastic band from the rear projection. Upon deactuation of the trigger means, the cam rod moves into operative engagement with the next successive rear projection.

### 3,757,761
### ARCHERY BOW HAVING VIBRATION DAMPENER

**Tadao Izuta, Shizuoka-ken, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan**

**Filed Nov. 11, 1971, Ser. No. 197,680**
**Int. Cl. F41b** *5/00*
**U.S. Cl. 124—23** **8 Claims**



An archery bow being provided with at least one pair of stabilizers or vibration dampeness each of which comprises a vibrator, such as a rod- member with a weight mounted at the free end thereof. The vibrator extends over the limb section of the archery bow, and is directly connected to the limb section through an elastic member, such as a coil spring. The vibrator is also connected to the bow at another location on the bow. The shock and vibration caused by the limb section is directly and immediately transmitted to the vibrator through the elastic member, and is effectively absorbed by the vibrator. The elastic member prevents the shock or vibration that is once transmitted from the limb section to the vibrator to be fed back to the limb section.

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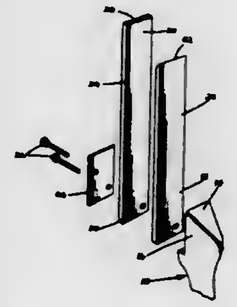
### 3,757,762
### ARCHERY BOW WITH REMOVABLE INSERTS TO VARY DRAW FORCE

**Barry D. Cousin, Walkerton, Ind., assignor to Plas/Steel Products, Inc., Walkerton, Ind.**

**Filed Apr. 20, 1970, Ser. No. 30,134**
**Int. Cl. F41b** *5/00*
**U.S. Cl. 124—24** **8 Claims**



An archery bow having a handle, a pair of limbs and a pair of stub members selected from a plurality of stub members having different lengths. All of the stub members are substantially shorter than the limbs. The inner ends of the limbs and the inner ends of the stub members are respectively removably secured to the handle ends with the inner ends of the stub members being respectively sandwiched between the handle ends and the belly sides of the limbs adjacent their inner ends. The limbs and stub members respectively extending outwardly from the handle ends in side-by-side relationship. The outer ends of the stub members respectively engage the belly sides of the limbs intermediate the ends of the latter when the bow is strung and cooperate therewith to provide a draw weight determined by the length of the selected stub member.

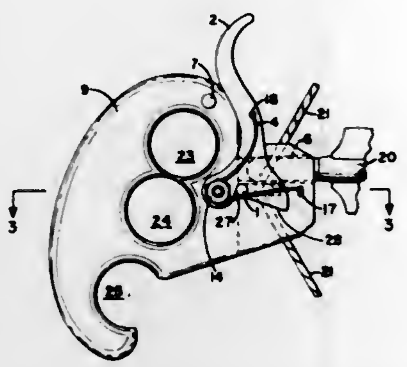
### 3,757,763
### TRIGGER OPERATED BOW STRING RELEASE DEVICE

**Ross A. Pinti, 1106 Roemer Blvd., Farrell, Pa., and Patrick R. Pinti, 62 Stiver St., Hubbard Township, Ohio**

**Continuation-in-part of Ser. No. 5,202, Jan. 23, 1970, abandoned. This application July 15, 1971, Ser. No. 163,019**

**Int. Cl. F41c** *19/00*

**U.S. Cl. 124—35** **8 Claims**



A trigger operated bow string releasing mechanism for receiving a bow string and arrow and shooting the arrow incident to a triggered release of the bow string. A hand-supported stock carries the releasing mechanism which includes a bow string engaging hook pivoted to the stock on a vertical axis. The hook is held in its string engaging position through engagement in a notch provided in the lower edge of a trigger which itself is pivoted to the stock on a horizontal axis. The notch is disengaged from the hook to release the bow string when the trigger is pivoted upward by rearward pressure of the archer's forefinger on the top end of the trigger.

### 3,757,764
### DEVICE FOR ADJUSTING THE POSITION OF AN ARCHERY BOW ARROW REST

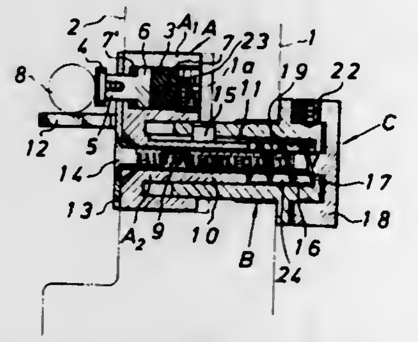
**Fumihiro Ikeya, Hamakita-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan**

**Filed Sept. 13, 1971, Ser. No. 179,628**

**Claims priority, application Japan, Sept. 14, 1970, 45/90701**

**Int. Cl. F41d** *5/00*

**U.S. Cl. 124—41** **10 Claims**



A device having a stationary member fixed to the grip portion of a bow, the member having a through hole therein, a movable member having an plate member transversely movable to various positions with respect to the movable member and an inner-threaded cylindrical section slidably inserted in the through hole of the stationary member, and a control member having an outer threaded extension engaged with the inner-threaded cylindrical section of the movable member. The rotation of the control member permits the sliding movement of the movable member, thus adjusting the lateral position of the arrow rest in the sight window of the bow. The movable member may further include a shock-absorbing arrow support, which absorbs the shocks caused when the arrow is released from the bow.

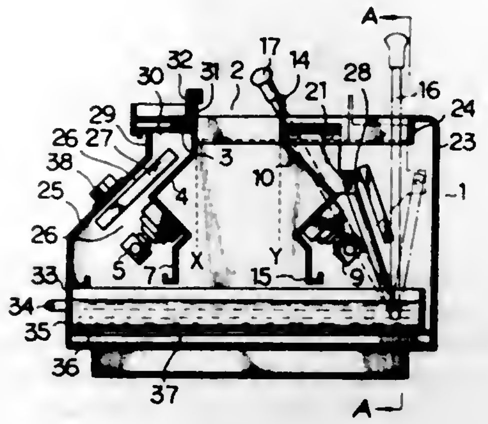
### 3,757,765
### GRILLER

**Eiichi Yamada, 3-9 Yotsuya, Shinjuku-ku, Tokyo, Japan**

**Filed Dec. 16, 1971, Ser. No. 208,702**

**Int. Cl. A47j** *37/04*

**U.S. Cl. 126—41 R** **7 Claims**



A griller adapted to roast skewered fish, meat and the like that are laid on between loading plates made at ends of an opening part which is formed at the upper part of the case of the griller, with use of heat sources positioned respectively outwardly of vertical lines dropped from the opening part in such a way as to point to the said opening part.

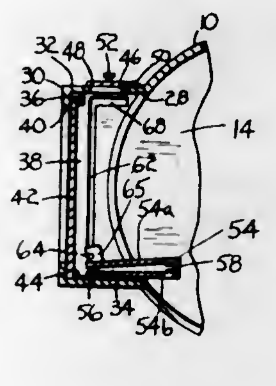
### 3,757,766
### WOOD HEATER WITH VIEWING WINDOW

**Robert L. Stevenson, 9003 W. Evans Creek Rd., Rogue River, Oreg.**

**Filed Oct. 26, 1971, Ser. No. 192,047**

**Int. Cl. F24m** *9/00*

**U.S. Cl. 126—60** **6 Claims**



A heater having an enlarged side window for viewing a fire within the heater. The window is supported in a side projecting window housing having top vent means serving to prevent soot from gathering on the inside surface of the window. A collapsible door is hinged at the bottom in the window housing and has a down or open position and an up or closed position, the latter position shielding the window from the firebox in the heater. Operating knobs are secured to the door and project through slots in the ends of the window housing. Such knobs have a locked position at the top of the slot for holding the collapsible door in its up position.

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### 3,757,767
### ROOM HEATING APPARATUS

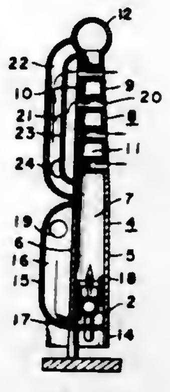
**Toshio Ito; Tamotsu Nomaguchi, and Tatsuo Saito, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**

**Filed Oct. 8, 1971, Ser. No. 187,638**

**Claims priority, application Japan, Oct. 8, 1970, 45/100408; Apr. 24, 1971, 46/17102**

**Int. Cl. F24h** *3/08*

**U.S. Cl. 126—110 B** **12 Claims**



A room heating apparatus using combustion gas having a linear type burner in the bottom or at one side thereof and a first heat exchanger substantially flat in configuration wherein a combustion gas is generated in an inner space of the first heat exchanger so that heat is transmitted to the outer part thereof. A second heat exchanger also being substantially flat in shape has an inner space which is connected to the inner space of the first heat exchanger so that the combustion gas being generated in the inner space of the first heat exchanger is passed to the inner space of the second heat exchanger and the heat thereof is transmitted to the outer surface thereof by a forcible convection current. Thus, the room heating apparatus is a compact heating apparatus having high thermal efficiency and the combustion occurs in a combustion chamber having high sealing efficiency to provide high efficiency of heating by heat radiation and forcible convection current.

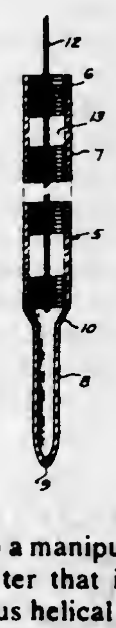
### 3,757,768
### MANIPULABLE SPRING GUIDE-CATHETER AND TUBE FOR INTRAVENOUS FEEDING

**William M. Kline, Gloversville, N.Y., assignor to Medical Evaluation Devices and Instruments Corp., Gloversville, N.Y.**

**Continuation-in-part of Ser. No. 218,224, Jan. 17, 1972, abandoned. This application Apr. 7, 1972, Ser. No. 241,915**

**Int. Cl. A61m** *25/00*

**U.S. Cl. 128—2 M** **7 Claims**



This invention is directed to a manipulable, flexible, unitary, combined spring guide-catheter that includes an inner wall portion formed as a continuous helical spring with the helices in contact with each other and an outer wall portion formed from an inert plastic material enclosing the spring in such a manner as to become firmly bonded to the spring while having its outer surface smooth. The distal end of the outer wall extends beyond that of the inner wall to define a hollow tip that is provided with axial and/or radial perforations. A wire stylette is freely carried within the lumen of the inner wall; and the stylette and the spring guide-catheter are separately manipulable by suitable handles attached to the respective proximal ends thereof. A shorter length guide-catheter of this same construction, but without the wire stylette, may be used to replace the rigid tubes heretofore used for intra-venous feeding.

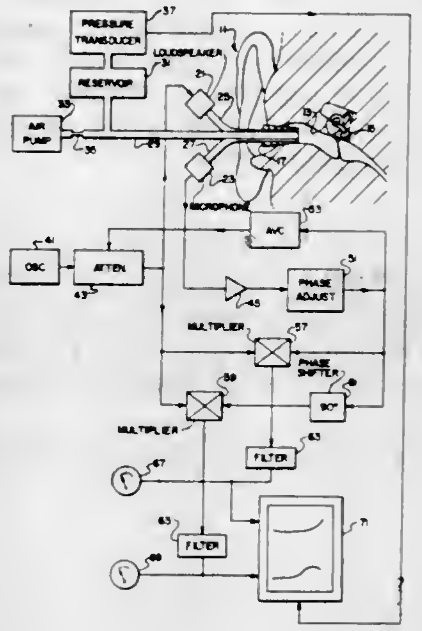
### 3,757,769
### ACOUSTIC ADMITTANCE TESTING APPARATUS

**Lawrence B. Arguimbau, Lancaster and Rufus L. Grason, Lincoln, both of Mass., assignors to Grason-Stadler Company, Inc., West Concord, Mass.**

**Filed Nov. 1, 1971, Ser. No. 194,268**

**Int. Cl. A61b** *10/00*

**U.S. Cl. 128—2 Z** **21 Claims**



Various characteristics of a patient's ear at the drum are tested by measuring, at the entrance of the ear canal, the complex acoustic admittance of the ear canal and the admittance at the eardrum together. An acoustic source including a first electro-acoustic transducer provides both an oscillatory air flow and a corresponding signal representing the flow. A second electro-acoustic transducer provides a pressure signal. The in-phase and quadrature components of the flow signal are then separately measured relative to the pressure signal while the static pressure in the ear canal is varied so as to controllably stiffen the eardrum, reducing its effect on the total complex admittance.

### 3,757,770
### PHYSIOLOGICAL PRESSURE SENSING AND TELEMETRY MEANS EMPLOYING A DIODE CONNECTED TRANSISTOR TRANSDUCER

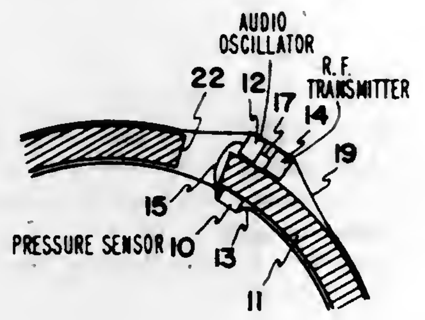
**Forrest G. Brayshaw, and Theodore S. Roberts, both of Salt Lake City, Utah, assignors to Bio-Tel Western, Inc., Ogden, Utah**

**Filed Feb. 22, 1971, Ser. No. 117,589**

**Int. Cl. A61b** *5/00*

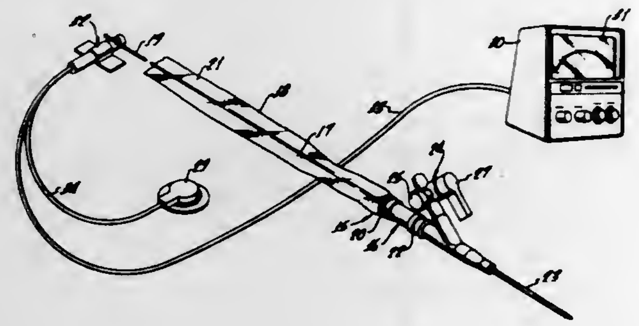
**U.S. Cl. 128—2 R** **1 Claim**

Pressure measurement apparatus and method, the apparatus having a pressure sensitive element, an audio oscillator, a transmitter, a receiver, a frequency-to-voltage converter and a read-out device. The pressure sensor is connected to and capable of varying the frequency of the audio oscillator as a function of the pressure applied to the sensor. The audio oscillator is connected to and capable of modulating the signal of the transmitter. The pressure sensor, audio oscillator and transmitter are implanted internal to the scalp of a living test subject, the pressure sensor being placed between the skull and the dura mater. Additionally, a remote receiver is connected to a frequency-to-voltage converter and is capable of receiving the radio frequency signal transmitter by the transmitter and supplying the detected audio oscillation of the radio frequency signal to the frequency-to-voltage converter. The frequency-to-voltage converter is capable of supplying a variable voltage to the read-out device, depending upon the frequency of the input signal delivered by the receiver. The read-out device is capable of optically displaying and/or recording the amount of signal voltage being fed to it by the frequency-to-voltage converter.



### 3,757,771
### STERILE INSERTER APPARATUS
**Frank A. Ruegg, Brea; Stanford B. Spracklen, San Juan Capistrano, and Burton L. Cheatham, II, Costa Mesa, all of Calif., assignors to International Biophysics Corporation, Irvine, Calif.**

**Filed Jan. 10, 1972, Ser. No. 216,455**
**Int. Cl. A61b** *05/04*; **A61m** *05/00*
**U.S. Cl. 128—2.1 E** **3 Claims**

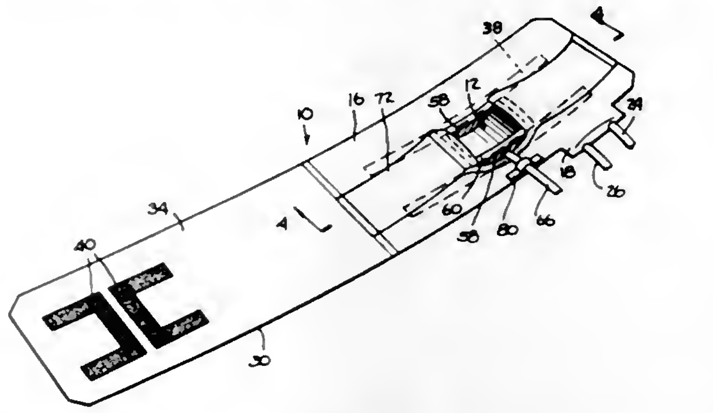


An apparatus for sterile insertion of a catheter or like device into an in-dwelling cannula. The catheter is sterilized after being sealed within the inserter apparatus and is retained within a sterile field during and following the insertion procedure. The inserter apparatus provides an effective seal around even a very small catheter to prevent loss of blood or other fluids from the in-dwelling cannula.

### 3,757,772
### DISPOSABLE COMBINED SPHYGMOMANOMETER CUFF AND SOUND CHAMBER
**Alexander Goldblat, 210 Central Park South, New York, N.Y., and Raymond Miller, 315 E. 86th St., New York, N.Y.**

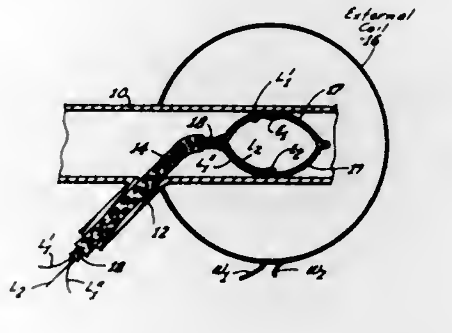
**Filed Aug. 27, 1971, Ser. No. 175,488**
**Int. Cl. A61b** *5/02*
**U.S. Cl. 128—2.05 G** **1 Claim**

A sphygmomanometer cuff and sound chamber combined as a unit. The cuff embraces a pliant plastic bladder integral with a wrap-around plastic sleeve. Two air tubes extend from the bladder interior for engagement, respectively, with an air bulb and a manometer. The sound chamber comprises an arcuate shell of rigid plastic greater in length in the direction of curvature, with extending walls to define an open cavity, with a peripheral lip extending outwardly from the wall edges. A tube extends from a side wall of the chamber affording sound communication between the chamber Interior and a stethoscope secured to the free end of the tube. A sling is bonded to the shorter sides of the bladder undersurface to which the chamber is bonded centrally around its lip, with the cavity exposed. In another embodiment the chamber is recessed within a window in the bladder undersurface, with its cavity exposed. The cuff is secured adhesively.



### 3,757,773
### EXTERNAL FIELD ELECTROMAGNETIC FLOW SENSOR-ARTERY
**Alexander Kolin, Los Angeles, Calif., assignor to Regents University of California, Berkeley, Calif.**

**Continuation-in-part of Ser. No. 873,240, Nov. 3, 1969, abandoned, and a continuation-in-part of Ser. No. 166,235, July 26, 1971, abandoned. This application Mar. 22, 1972, Ser. No. 236,815**
**Int. Cl. A61b** *5/02*
**U.S. Cl. 128—2.05 F** **44 Claims**

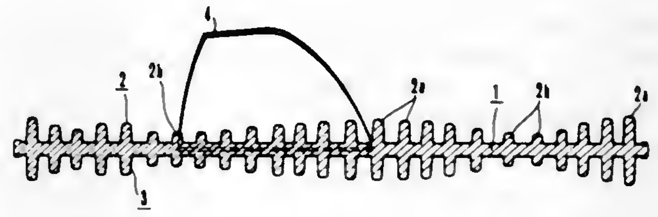


An electromagnetic catheter type flow sensor and artery gauge combination is provided which may be introduced into a blood vessel to measure, for example, the blood flow in the blood vessel or variations in the diameter thereof, and which is constructed to collapse its transverse dimension into a narrow elongated configuration as it is introduced from the outside into a blood vessel. The gauge of the invention includes a means, such as a coil, external to the patient or animal, and separate from the catheter portion of the gauge, for generating a magnetic field in the blood vessel. Since no magnets need be incorporated into the catheter probe, which has merely to contain electrodes for the pick-up of the signal, the catheter probe can be made of extremely small transverse dimensions.

### 3,757,774
### MASSAGE SANDAL
**Kimio Hatuno, 372 Nobidome, Niiza, Saitama-ken, Japan**

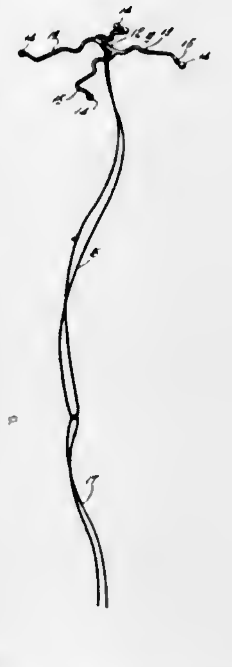
**Filed May 15, 1972, Ser. No. 253,310**
**Claims priority, application Japan, Oct. 21, 1971, 46/83551**
**Int. Cl. A61h** *1/02*
**U.S. Cl. 128—25 B** **1 Claim**

A massage sandal having a base, a plurality of projections provided on the upper and lower surfaces of said base, and a band fixed to said base, where said projections stimulate the sole of the foot to facilitate the circulation of the blood and strengthen the connective tissue of the sole of the foot by massaging the sole of the foot during the walking of the person who wears it. Therefore, the sandal is good for the health of the foot.



### 3,757,775
### INTRA UTERINE DEVICE
**Millicent L. Marco, and John L. Marco, both of Oakhurst, N.J., assignors to G. D. Searle & Co., Chicago, Ill.**

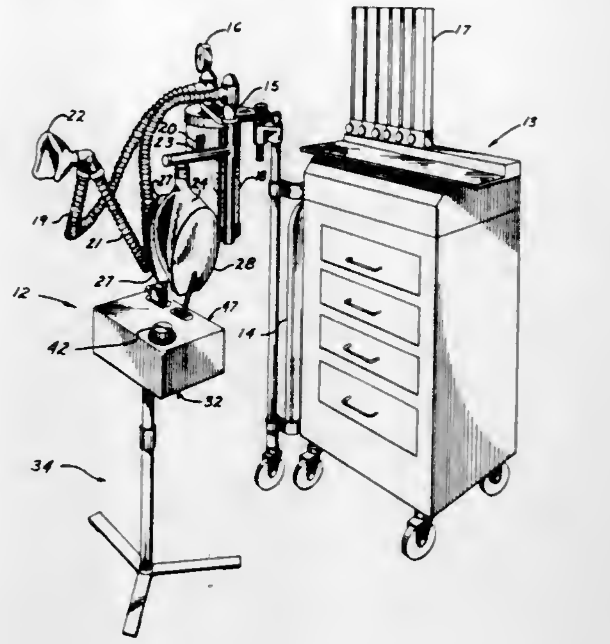
**Continuation-in-part of Ser. No. 1,661, Jan. 9, 1970, which is a continuation-in-part of Ser. No. 654,744, July 20, 1967, abandoned. This application Dec. 22, 1970, Ser. No. 100,643**
**Int. Cl. A61f** *5/46*
**U.S. Cl. 128—130** **6 Claims**



An intra-uterine device comprises a substantially flat body member integrally formed of a resilient, flexible, organic plastic and includes a longitudinally extending bridge section and a pair of independently movable legs outwardly diverging from each end thereof. The legs may be partially contracted by a fluid decomposable string interconnecting the ends thereof. A draw string extends from the bridge section and includes an upper inert section and a lower body fluid decomposable section. An alternative structure includes a flexible bridge member and polygonal loops mounted on opposite ends thereof, one of the loops being provided with laterally longitudinally projecting opposite legs having free outer ends. The intra-uterine device is inserted by contracting the legs into side by side juxtaposition and supporting it with the bended apex section forwardmost in the distal end of a tubular instrument, inserting the instrument into the fundus and ejecting the device by advancing a plunger through the instrument. The instrument body member has a forward leading section with a smaller bore than the rear section which terminates in a funnel shaped mouth.

### 3,757,776
### VENTILATOR FOR AN ANESTHESIA GAS MACHINE
**Jack Bauman, P.O. Box 25310, Los Angeles, Calif.**

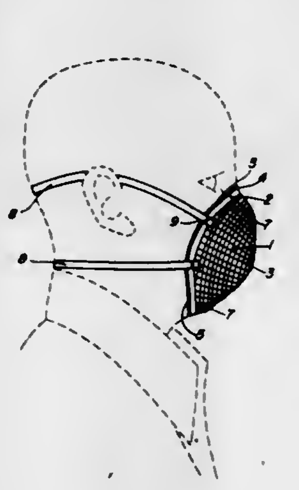
**Filed June 1, 1971, Ser. No. 148,580**
**Int. Cl. A61m** *16/00*
**U.S. Cl. 128—145.6** **6 Claims**



Located adjacent an anesthesia gas machine is a pair of opposed, concave paddles, relatively movable toward and away from each other, alternately squeezing and releasing a conventional, flexible, breathing bag interposed between the paddles. The frequency of the paddle opening and closing cycle can be controlled; and a warning mechanism monitors and indicates excessive back pressure during bag compression, thereby alerting the anesthetist to a change in the patient's responses.

### 3,757,777
### DISPOSABLE HALF-MASK RESPIRATOR
**Edward L. Kaufman, 216 E. Buena Vista, Santa Fe, N. Mex.**

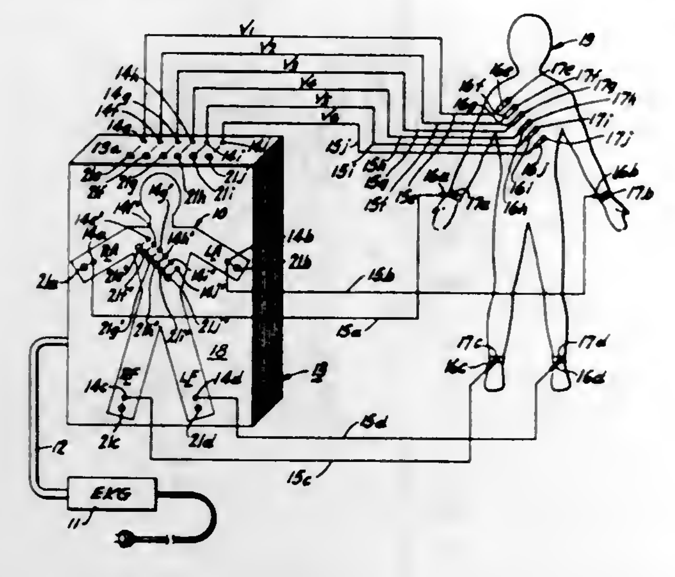
**Filed Dec. 9, 1971, Ser. No. 206,482**
**Int. Cl. A61b** *23/06*
**U.S. Cl. 128—146.2** **3 Claims**



A half-mask respirator comprising a high efficiency media filter and having a molded plastic edging or collar attached to the said media, said edging or collar composed of a thermal or catalytic setting plastic which is self-bonding to the filter media, and which is also molded in several individually different shapes to closely approximate an individual wearer's face shape and to which is applied a thin layer of uncured, non-toxic, catalytic, low temperature or thermo-setting plastic which is then positioned on the wearer's face and thus will provide a very high efficiency seal between the filter media and the wearer's face.

### 3,757,778
### ELECTROCARDIOGRAPH LEAD DISTRIBUTION AND CONTACT TESTING APPARATUS

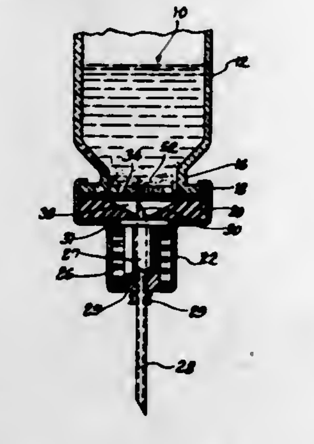
**Martin H. Graham, Berkeley, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.**
Filed Jan. 13, 1971, Ser. No. 106,008
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R 5 Claims



An electrocardiograph apparatus including a recorder electrically connected by a patient cable to a number of electrical terminals in a distribution head so that each terminal forms a contact point for a series of lead wires each adapted to receive electrical impulses from a selected location of the patient's body. To assist verification of correct interconnection, the distribution head incorporates the configuration of a schematic representation of the body with the position of each distributor terminal corresponding to actual examination locations on the patient. As another verification check, the lead wires may be of varying length corresponding to the distance between the terminals and the patient's contact points. An indicator light in the electrocardiograph circuit is de-energized upon establishing connection with the patient to indicate satisfactory contact. Electronic circuitry is provided for comparing and controlling various voltages and reference ground with the patient to derive standard output signals commonly used in EKG analysis.

### 3,757,779
### FILTER SYRINGE

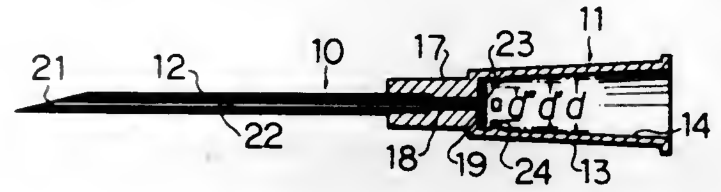
**Walter M. Rovinski, Turnersville, N.J., assignor to Century Laboratories, Inc., Metairie, La.**
Filed May 24, 1971, Ser. No. 146,271
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 M 1 Claim



A syringe for the injection of liquid having a diaphragm sealing the open end thereof and a filter member between the diaphragm and the open end of the vial with a hollow needle mounted for reciprocal movement between retracted position beyond the diaphragm and operated position piercing the diaphragm but not piercing the filter member.

### 3,757,780
### NEEDLE ASSEMBLY WITH LONGITUDINALLY MOVABLE FILTER

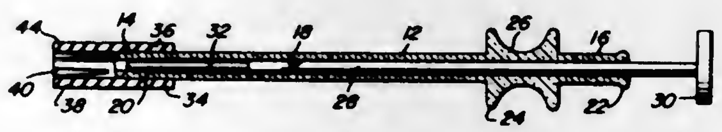
**Soji Ishikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ishikawa Susakusho, Tokyo, Japan**
Filed Nov. 4, 1971, Ser. No. 195,571
Claims priority, application Japan, Feb. 25, 1971, 46/10945; Feb. 25, 1971, 46/10946; May 20, 1971, 46/40176
Int. Cl. A61m *5/32*
U.S. Cl. 128—218 N 1 Claim



A needle assembly for use with a medical injector such as a syringe or drip set. The needle assembly is provided with a filter element in a fluid passage formed therein for completely removing dust particles which might exist in a dosage solution or in a blood transfusion when injected or dripped into a human body.

### 3,757,781
### TOOL FOR ADMINISTERING PILLS TO ANIMALS

**Ray F. Smart, P.O. Box 686, Boerne, Tex.**
Filed Sept. 17, 1971, Ser. No. 181,533
Int. Cl. A61d *7/00;* A61m *31/00*
U.S. Cl. 128—223 2 Claims

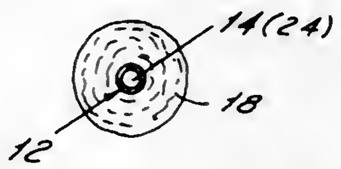


An elongated hollow sleeve having a split sleeve member constructed of resilient material telescoped over one end thereof and including a plunger insertable in the other end of the sleeve. The other end of the sleeve and the plunger include coacting portions for support of the tool in one hand and manipulation of the plunger for projecting the latter through the sleeve and into the sleeve member whereby a tablet or capsule frictionally supported within the split sleeve member may be ejected therefrom by the plunger when the tool has been positioned with the split sleeve member disposed in the back of the mouth of an animal to which a medicant is to be administered. In addition, the tool further includes a squeeze bulb removably engageable with the end of the sleeve remote from the sleeve member after removal of the plunger in order that the tool may also be used in the manner of an eye dropper for administering liquid medicants.

### 3,757,782
### FLUID PRESSURIZABLE SWAB APPLICATOR FOR MEDICAMENT, ANTISEPTIC OR THE LIKE

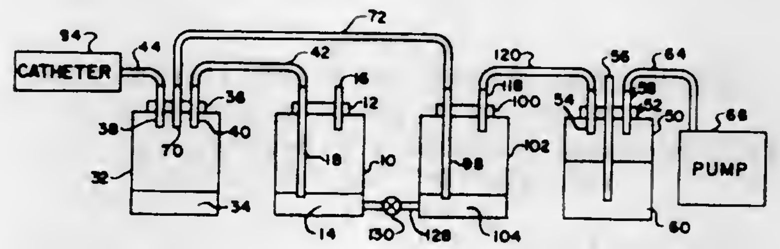
**Winthrop J. Aiken, St. Petersburg, Fla., assignor to Vivian C. Aiken, St. Petersburg, Fla., a part interest**
Filed June 5, 1972, Ser. No. 259,919
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 6 Claims

A swab-type applicator for a treatment liquid, such as a medicament or antiseptic solution, includes an elongated tubular member of relatively small diameter fabricated of a transversely flexible, preferably transparent, synthetic plastic material chemically inert to the solution, as encapsulated in said member. The latter is provided at both ends with a rupturable sealing element in the form of a thin closure disc or membrane; this confines within the applicator tube a charge of the liquid treatment medium or solution until manual squeezing pressure on the tube between the temporarily sealed ends causes the medium to rupture one or both of the sealing elements. The tube ends are completely embedded axially in cotton or equivalent applicator swabs which are saturated upon rupture of the tube end seals. Two versions of the device are disclosed, in one of which the rupturable seal elements alone confine the charge of solution in a full tube bore length between its ends, and in another of which a small separating and sealing plug is permanently seated within the wall of the tube at its mid-point. This permits a selective squeezing and end-rupturing compression of the tube at sub-lengths at either side of said separator element, temporarily leaving intact the rupturable sealing element for the opposite tube sub-length.



### 3,757,783
### SUCTION DRAINAGE APPARATUS

**Ralph D. Alley, Loudonville, N.Y., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.**
Filed Sept. 24, 1971, Ser. No. 183,332
Int. Cl. A61m *1/00*
U.S. Cl. 128—277 16 Claims

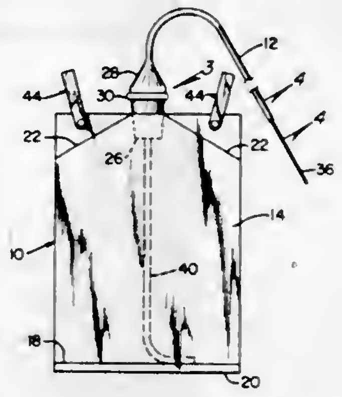


Suction drainage apparatus for use in conjunction with vacuum sources of the type that may fail in either an "open" or a "closed" state. The system includes a trap chamber having an inlet adapted to be connected to a catheter for receipt in a body cavity and an outlet connected to a pressure regulation device which, in turn, is connected to the vacuum source. To preclude pressure buildup within the body cavity of the patient in the event of vacuum failure in the "closed" state, a pressure release path from the trap chamber is provided. To prevent backflow of ambient air into the body cavity of the patient in the event the vacuum source fails in an "open" state, a backflow precluding device in the vacuum flow path is provided.

### 3,757,784
### NURSING SUPPLEMENTER

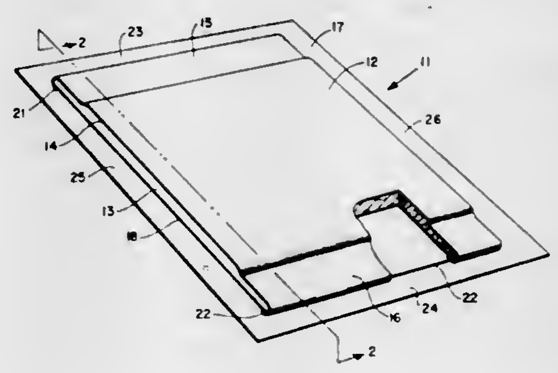
**John Richard Avery, Denver, Colo., assignor to J. J. Avery Inc., Denver, Colo.**
Filed Sept. 1, 1971, Ser. No. 177,071
Int. Cl. A61m *1/06*
U.S. Cl. 128—281 13 Claims

Method and apparatus for supplementing breast feeding characterized by an unvented collapsible liquid food supply bag. A feeding tube connected therewith having an end disposed within the mouth of the baby, the bag being so located relative to the breast nipple to compel simultaneous suckling effort on the breast nipple and feeding tube to provide flow through the tube, thus also providing suckling effort on the breast nipple to provide stimulation thereof with its attendant tendency to increase breast lactation.



### 3,757,785
### AIRFELT DIAPER WITH SHORT FIBER MATERIAL IN THE PINNING AREA

**Charles L. Wosaba, II, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**
Filed Dec. 9, 1971, Ser. No. 208,043
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 3 Claims



A diaper wherein the absorbent body is of low tensile strength, e.g., airfelt, and the absorbent body extends throughout the pinning area, wherein the airfelt material in the pinning area has an average fiber length of from about 0.5 mm. to about 0.9 mm. so that those fibers do not accumulate on a pin as the pin tip moves through the absorbent body during pinning of the diaper.

### 3,757,786
### SYNTHETIC SURGICAL SUTURES

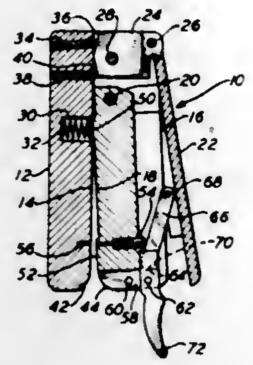
**David F. Smith, 120 Grove St., Bay Head, N.J.**
Filed Nov. 6, 1970, Ser. No. 87,603
Int. Cl. A61l *17/00*
U.S. Cl. 128—335.5 13 Claims

Synthetic surgical sutures with a controllable range of properties are made from water-insoluble metal salts of cellulose acid ethers.

### 3,757,787
### SURGICAL CLAMP FOR CIRCUMCISION

**Nathan Gottlieb, 516 E. 28th St., Paterson, N.J.**
Filed Feb. 9, 1971, Ser. No. 113,983
Int. Cl. A61b *17/08, 17/326*
U.S. Cl. 128—346 1 Claim

A surgical clamp for circumcision operations, adapted to be held and operated by one hand, which includes in a single unit a pair of clamping members having cooperating clamping surfaces operatively associated with means for locking the surfaces to provide a line of excision and for unlocking the surfaces after the operation. Each clamping member is provided with a beveled end portion, adjacent to the clamping surfaces, which coacts to form a beveled channel for guiding the prepuce and membrane toward the clamping surfaces and which also leads into an oval concavity provided in the clamping members to safely depress the glands away from the clamping surfaces during the operation, facilitating the gauging of the amount of prepuce and membrane to be excised along a clean, well-coated line.



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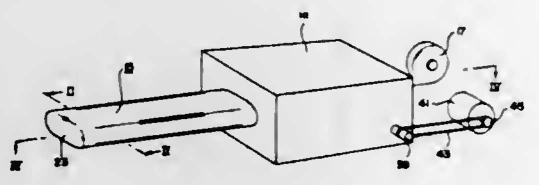
### 3,757,788
### PRYING AND/OR FRICTIONLESS PROBING DEVICE
**Hiram H. Renfroe, 505 Burns, West Memphis, Ark.**
**Continuation-in-part of Ser. No. 94,664, Dec. 3, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,775**
**Int. Cl. A61m** *25/00*
**U.S. Cl. 128—348** **5 Claims**



A device having an unlimited number of uses. Certain of these uses depend upon the physical size of the device, etc. For example, one such size enables the device to be used as a catheter for unblocking clogged arteries of the human body, another size enables the device to be used to insert exploratory sensing elements such as a microminiaturized television camera into certain cavities or ducts of the human body. Additionally, larger sizes might include a plurality of such devices grouped into a battery arrangement to lift and/or separate surfaces or objects having considerable weight, such as lifting a non-ambulatory patient from his bed or the like. Further, still larger sizes might be so arranged as to be capable of lifting an airplane which may have landed wheels up or for many other well known reasons conventional jacking apparatus may be unfeasible.

The principle of operation can easily be understood by comparing it to inflating a long balloon which was disposed inside out while in the deflated state, and the inflating or elongation process thereof proceeeds along the length thereof having the outside surface reversed gradually and only at the extreme end thereof until the balloon is fully extended. The device includes an elongated flexible tubular member which resembles a balloon in that it is controllably inflated but which is not resilient as is a balloon. The device optionally includes telescoping rigid tubular sections which are pulled within the flexible tubular member to aid in supporting the expanded flexible tubular member. A second embodiment includes structure particularly adapted for lifting a patient from his bed or the like. The concept of this embodiment is to counteract the tendency of certain prior devices to curl upwardly after having worked under one leg of the patient, i. e., extend between his legs rather than beneath both legs, as desired. A third embodiment includes ties for causing the flexible tubular member to be elongated in cross section rather than round when inflated.

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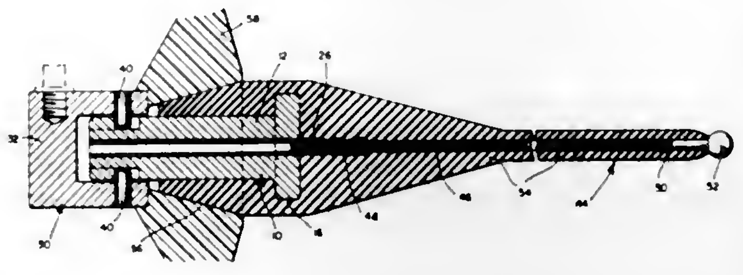
### 3,757,789
### ELECTROMEDICAL STIMULATOR LEAD CONNECTOR
**Irvin P. Shanker, Huntingdon Valley, Pa., assignor to ESB Incorporated, Philadelphia, Pa.**
**Filed Oct. 26, 1971, Ser. No. 192,151**
**Int. Cl. A61n** *1/02*
**U.S. Cl. 128—404** **4 Claims**



An electrode system for use in conjunction with body implantable electro-medical devices is disclosed. The system includes a socket having first coupling means. The socket forms an electrical output terminal of the electro-medical device. A plug forms a part of the system and is disposed on the proximal end of an electrical conductor which also forms a part of the system. The plug comprises an electrical connector secured to the conductor and having second coupling means, and a compressible resilient means. The resilient means provides a locking biasing force between the first and second coupling means when the plug and socket are coupled.

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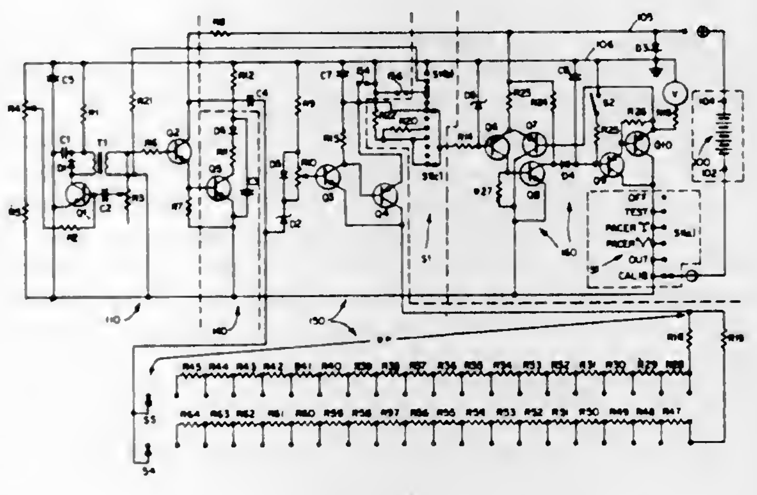
### 3,757,790
### THRESHOLD ANALYZER AND STIMULATOR TESTING DEVICE WITH INTERNAL GENERATOR
**Cal C. Herrmann, c/o ESB Inc., P. O. Box, Phila., Pa.**
**Filed May 5, 1971, Ser. No. 140,360**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 P** **8 Claims**



A threshold analyzer including a stimulator testing device measures the minimum impulse energy required to stimulate a body organ using the actual body implanted stimulating electrode system. A stimulating device to be implanted in the body may be connected to the implanted electrode system and its output impulse energy measured. Means are provided to calibrate the threshold analyzer stimulator testing device so that readings taken at different times as well as on different patients will be suitable for correlation. Readings are indicated in terms of true current and voltage values.

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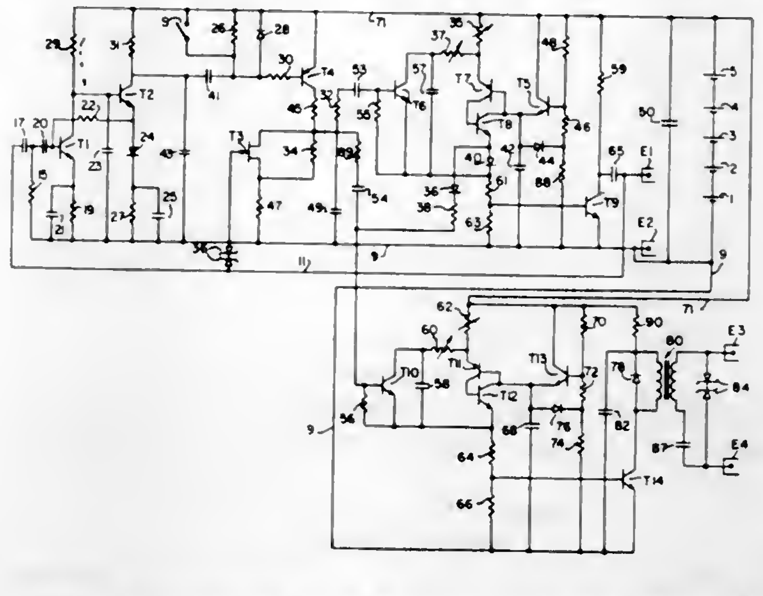
### 3,757,791
### SYNCHRONIZED ATRIAL AND VENTRICULAR PACER AND TIMING CIRCUITRY THEREFOR
**Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.**
**Filed Dec. 30, 1971, Ser. No. 214,218**
**Int. Cl. A61m** *1/36*
**U.S. Cl. 128—419 P** **11 Claims**



There is disclosed an atrial and ventricular pacer which features a unique pacer timing circuit dependent upon voltage supply level only under certain conditions, and in which the atrial and ventricular pulsing circuits are synchronized to each other even if the ventricular beat detector fails or ventricular beat signals are masked by noise. In prior art pacers of this type, in the event the pacer operates in the continuous mode both pulsing circuits operate independently of each other. But in the present pacer the generation of a ventricular stimulating pulse re-starts the atrial timing period.

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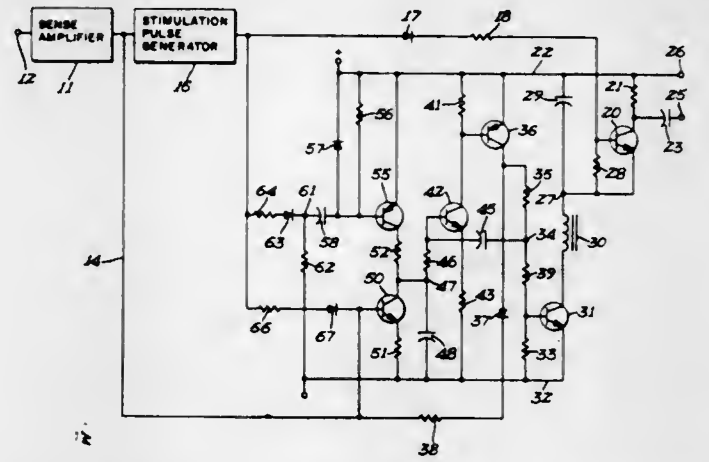
### 3,757,792
### AUTOMATIC THRESHOLD COMPENSATING DEMAND PACEMAKER
**Pieter M. J. Muller, Minneapolis, and John R. Helland, Brooklyn Center, both of Minn., assignors to Medtronic Inc., Minneapolis, Minn.**
**Filed Nov. 11, 1971, Ser. No. 197,895**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 P** **28 Claims**



In a demand cardiac pacer having means for providing periodic stimulating pulses to the heart, means for sensing natural heartbeats, and means for inhibiting the stimulating pulses on the occurrence of natural heartbeats, the improved apparatus including means for sensing stimulated heartbeats, means for decreasing the amplitude of a succeeding stimulating pulse on the occurrence of a stimulated heartbeat and means for increasing the next succeeding stimulating pulse by a predetermined amount on the failure to sense a stimulated heartbeat.

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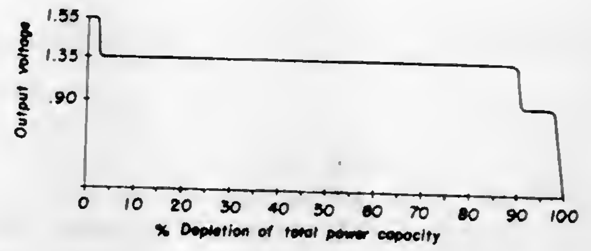
### 3,757,793
### ELECTROCHEMICAL CELL WITH STEPPED VOLTAGE OUTPUT
**Keith E. Fester, Roseville, and Richard L. Doty, White Bear Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.**
**Filed Nov. 15, 1971, Ser. No. 198,823**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 P** **4 Claims**



An electrochemical cell is provided having a stepped voltage output during its lifetime due to multiple composition anode and cathode construction. The stepped output voltage provides a beginning of life (BOL) voltage indication, a voltage output indicative of the main capacity of the cell, and an end of life (EOL) output voltage indication warning the user that the total battery capacity is nearly exhausted.

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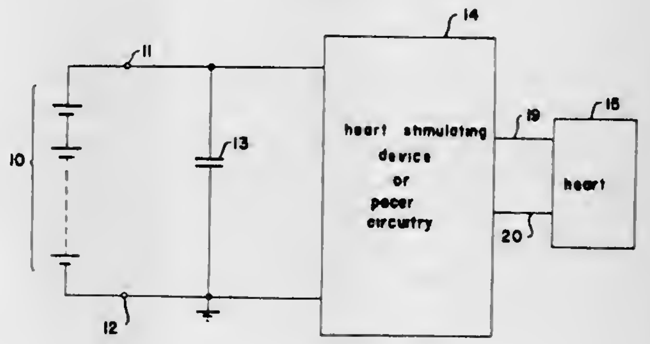
### 3,757,794
### TEMPORARY POWER SUPPLY FOR A HEART-STIMULATING DEVICE
**Robert L. Cannon, Waltham; Herbert E. Goldberg, Concord; Sherwood S. Thaler, Lexington, and Richard F. Daynard, Chelmsford, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.**
**Filed Aug. 19, 1971, Ser. No. 173,091**
**Int. Cl. A61m** *1/36*
**U.S. Cl. 128—419 P** **3 Claims**



A temporary power supply for a heart-stimulating device. Apparatus is disclosed that provides temporary power to a battery-powered pacer during the time of battery replacement. In an illustrative embodiment of the invention, a capacitor circuit is used for this purpose.

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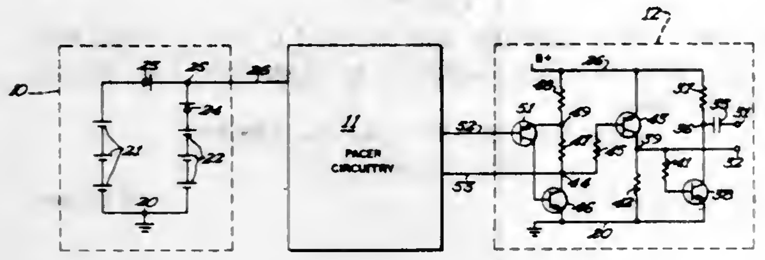
### 3,757,795
### POWER SUPPLY AND VOLTAGE DOUBLE OUTPUT CIRCUITRY FOR IMPLANTABLE ELECTRO-MEDICAL APPARATUS
**Robert K. Anderson, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.**
**Continuation of Ser. No. 770,965, Oct. 28, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,734**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 P** **7 Claims**

Implantable electrical medical apparatus having a redundant power supply to overcome problems of battery failure,



and in combination with an output voltage doubler to avoid increasing the number of batteries when the redundant supply is used.

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### 3,757,796
### DEVICE FOR REGULATING THE FLOW OF FUEL INJECTED INTO AN INTERNAL COMBUSTION ENGINE

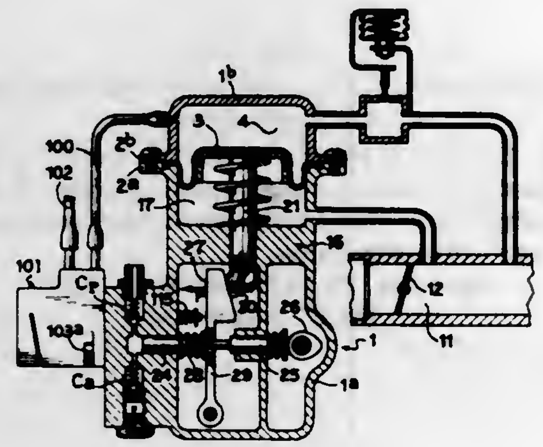
**Guy Boue, Bavans, and Marcel Vidberg, Montebeliard, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France**

**Filed May 15, 1972, Ser. No. 253,422**

**Claims priority, application France, June 17, 1971, 7121982**

**Int. Cl. F02d** *1/14*

**U.S. Cl. 123—97 B** **6 Claims**



Device for regulating the flow of fuel injected into an internal combustion engine. A rolling diaphragm is exposed on one side to the pressure prevailing in the induction pipe of the engine and on the other side to a pressure in the neighbourhood of atmospheric pressure by way of a conduit in which a valve device is inserted for normally closing the conduit. The valve device is shifted to the conduit opening position when a cam regulating the amount of fuel injected reaches the vicinity of an extreme position corresponding to predetermined conditions of engine operation.

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### 3,757,797
### COMBINE

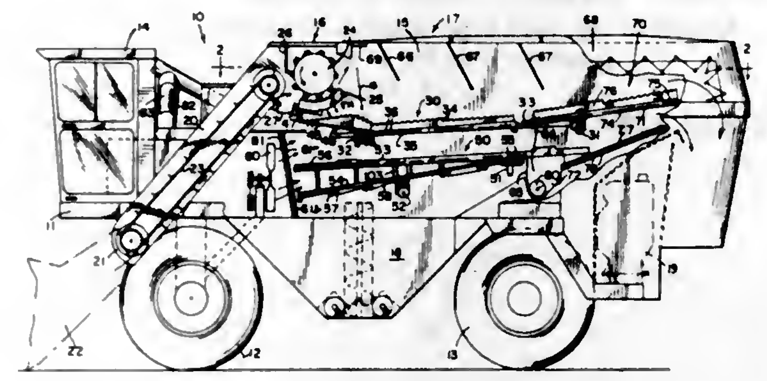
**Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.**

**Continuation-in-part of Ser. No. 132,727, April 9, 1971, which is a continuation-in-part of Ser. No. 818,295, April 22, 1969, Pat. No. 3,606,026. This application Oct. 4, 1971, Ser. No. 186,053**

**Int. Cl. A01f** *12/30*

**U.S. Cl. 130—24** **15 Claims**

The combine has a threshing cylinder, upper and lower sieves and a recovery sieve all located in the upper part of the casing, with the grain bin below. A fan is located forwardly of the lower sieve. The upper and lower sieves are vibrated with an orbiting motion which cooperates with the air stream from said fan to separate grain from the threshing mix on the sieve surface. The upper and recovery sieves have fish backs which maintain the straw in a bed above the sieve surface. The air stream blows the chaff up into the straw bed of the upper sieve. A dam between the upper and tailings sieve controls the depth of the straw bed. Tailings and clean grain from the recovery sieve are returned to the threshing cylinder and pass by a window in a duct so the operator can monitor the effectiveness of the sieve mechanism.



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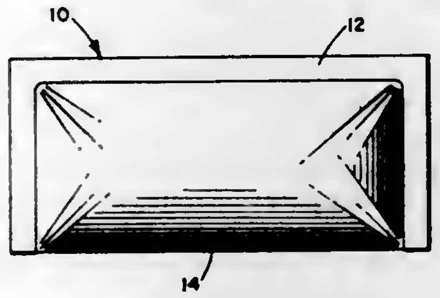
### 3,757,798
### METHOD OF REDUCING DEPENDENCE ON TOBACCO

**William M. Lambert, 1516 Beaver Dam Rd., Point Pleasant, N.J.**

**Filed Jan. 3, 1972, Ser. No. 215,010**

**Int. Cl. A24f** *47/00*

**U.S. Cl. 131—1** **4 Claims**



A method or reducing dependence on cigarette smoking or tobacco which comprises placing sequentially in the mouth a series of infusion bags containing tobacco in decreasing amounts.

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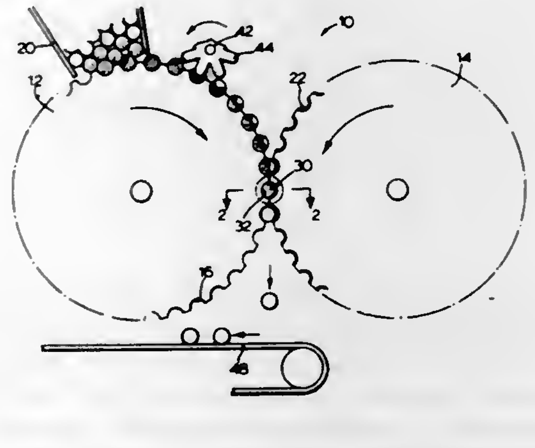
### 3,757,799
### TOBACCO RECLAIMING METHOD AND APPARATUS

**Daniel Di Ianni, Toronto, Ontario, and Warren A. Brackmann, Cooksville, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Ontario, Canada**

**Filed Jan. 26, 1972, Ser. No. 220,969**

**Int. Cl. A24c** *05/36*

**U.S. Cl. 131—96** **11 Claims**



Tobacco is reclaimed from cigarettes by a method which includes first radially compressing the tobacco in the cigarette wrapper and subsequently blowing the compressed tobacco out of the wrapper.

### 3,757,800
### APPARATUS FOR CLASSIFYING FRAGMENTS OF TOBACCO

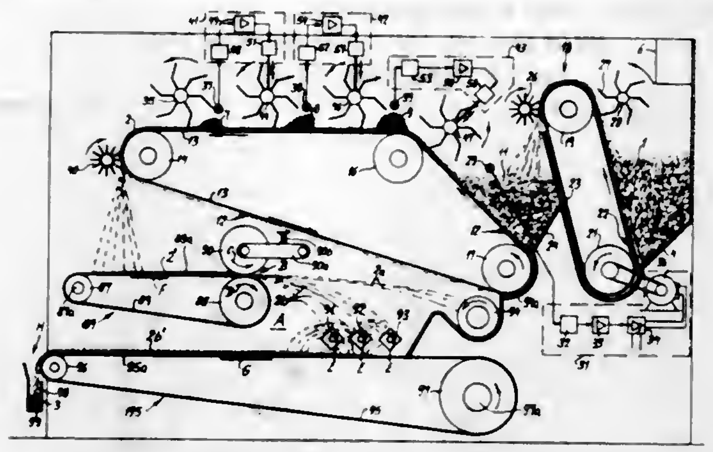
**Harry David, Hamburg, and Willy Rudszinat, Dassendorf, both of Germany, assignors to Hanne-Werke Korber & Co. KG, Hamburg, Germany**

**Filed Dec. 15, 1970, Ser. No. 98,349**

**Claims priority, application Great Britain, Dec. 22, 1969, 62,446/69**

**Int. Cl. A24c** *1/02*

**U.S. Cl. 131—109 B** **9 Claims**



Apparatus for segregating relatively light shredded tobacco leaf laminae from heavier particles of tobacco ribs and stem has a feeding device which showers a mixture of lighter and heavier particles onto the upper stretch of a rapidly moving classifying belt which propels the particles beyond one of its ends whereby the heavier particles are segregated from lighter particles because their flight span is longer than that of the shreds. The lighter particles are thereupon spread apart by a battery of horizontal winnowers of rectangular cross-sectional outline which distribute such particles on the upper stretch of a collecting belt which moves counter to the direction of travel of the upper stretch of the classifying belt. The feeding device has a carded belt which transports a sliver of intermixed lighter and heavier particles and from which a picker roller removes successive increments of the sliver to shower the particles onto the upper stretch of the classifying belt. The heavier particles are collected in a trough and are evacuated by a rotating screw.

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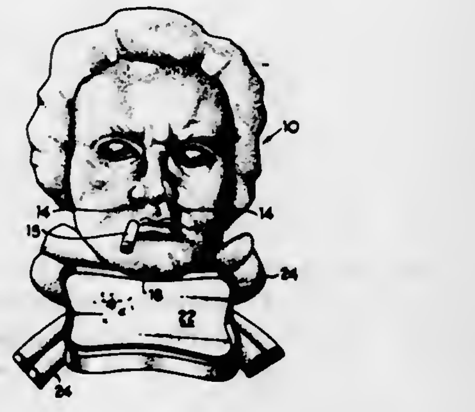
### 3,757,801
### NOVELTY SMOKING APPARATUS

**Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.**

**Filed Feb. 4, 1972, Ser. No. 223,446**

**Int. Cl. A24f** *13/00*

**U.S. Cl. 131—171 R** **5 Claims**



A novelty smoking apparatus which includes a generally hollow housing within which is mounted a bellows for applying suction to a smoking device, such as a cigarette or the like, received in an aperture in the housing. Smoke is drawn from the cigarette on expansion of the bellows and is exhausted from the housing through a second aperture on contraction of the bellows. The bellows is actuated by a battery operated motor mounted within the housing. The motor operates a sound reproducing apparatus for producing coughing sounds as the cigarette is smoked by the bellows. The sound reproducing apparatus also is mounted within the housing to provide a self-contained unit.

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### 3,757,802
### CIGARETTE OR CIGAR FILTER

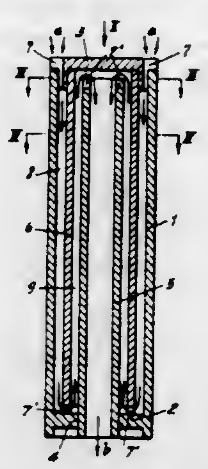
**Josef Streule, untere Klus, Brulisau, and Blasius Brot, Vonwilstr. 15, St. Gallen, both of Switzerland**

**Continuation-in-part of Ser. No. 842,205, July 16, 1969, abandoned, which is a division of Ser. No. 613,876, Feb. 3, 1967, abandoned. This application Dec. 15, 1971, Ser. No. 208,456**

**Claims priority, application Switzerland, Feb. 8, 1966, 2031/66**

**Int. Cl. A24f** *01/16*

**U.S. Cl. 131—187** **3 Claims**



Throw-away filter for cigarettes, cigars, cigarette holders and tobacco pipes, comprising at least in part polystyrene portions having the ability to retain an electrostatic charge. Preferably, the filter comprises two concentric telescopic units, the inner of which consists of polystyrene. The units define plural reversing passages which pass smoke, but tend to trap harmful solids on the electrostatically charged surfaces of the polystyrene portion. The outer unit is tubular and is closed at the upstream end and open at the other. The upstream closure in one instance, comprises a flat flange extending radially outwardly of the tubular portion thereof to space the same inwardly of an outer shell and has smoke passing slots in the peripheral portion of the same. The open end of the outer unit also has smoke passing slots whereby smoke may pass radially inwardly of the filter as it reverses direction, and leaves the filter through the downstream end of the inner unit which is also tubular and open at both ends thereof.

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### 3,757,803
### ELECTROSTATIC CIGARETTE FILTERING ARRANGEMENT

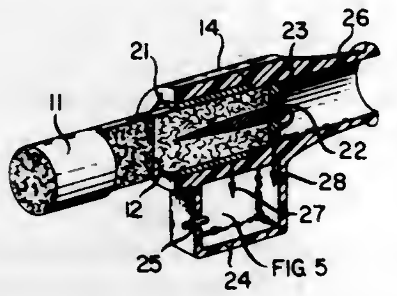
**Ta-Kuan Chiang, 923 Mountain Ave., Berkeley Heights Township, Union County, N.J.**

**Filed Oct. 2, 1972, Ser. No. 294,087**

**Int. Cl. A24f** *13/04, 13/08*

**U.S. Cl. 131—188** **4 Claims**

A cigarette holder is disclosed which establishes a nonuniform electric field in a cigarette so that not only positvely and negatively charged particles entrained in the cigarette smoke may be precipitated but also so that neutrally charged particles may be precipitated. Neutrally charged particles are polarized by the presence of the electric field. Once polarized, the nonuniform entensity of the electric field exerts a net mechanical force on the particle causing it to be precipitated. The nonuniform electric field is provided between one or



more needle-like electrodes which pierce the tobacco or filter tip of the cigarette and a surrounding cylindircal electrode. A power supply energizes the electrodes with sufficient voltage to provide a polarizing electric field at an intensity below the threshold that would ionize particles.

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### 3,757,804
## PRODUCT FOR TREATING HAIR

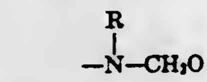
**Gregoire Kalopissis, Paris; Jean-Louis Abegg, Le Perreux, Val-de-Marne; Guiliana Ghilardi, and Henri Philippe De Beaulieu, both of Paris, all of France, assignors to Societe Anonyme dite L'Oreal, Paris, France**

**Filed July 18, 1968, Ser. No. 745,667**

**Int. Cl. A45d** *7/04*

**U.S. Cl. 132—7** **1 Claim**

New product for treating hair which comprises at least one methylol compound capable of polycondensation or polyaddition which comprises a group responding to the formula:



$$\overset{\overset{R}{|}}{-N}-CH_2OR'$$

in which R represents H, a lowr alkyl, hydroxymethyl, or alkoxymethyl, and R′ represents H, or a lower alkyl, said N being attached to a remainder which is sufficiently electrophile to prevent the immediate release of formol; and

an alkaline salt of a sulphur acid in which the sulphur is at the fourth degree of oxidation and capable of forming a stable compound with formol.

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### 3,757,805
## COIN COUNTING APPARATUS

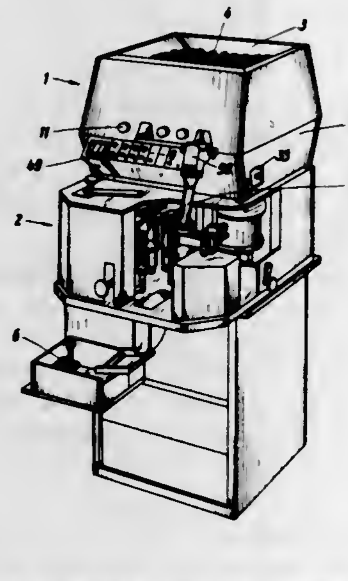
**Werner Puhahn, Phillippsburg, Krs. Bruchsal, and Rolf Lampert, Bauschlott, both of Germany, assignors to Standardwerk Eugen Reis GmbH, Bruchsal/Baden, Germany**

**Filed Nov. 30, 1971, Ser. No. 203,337**

**Claims priority, application Germany, Dec. 1, 1970, P 20 59 007.2**

**Int. Cl. G07d** *9/00*

**U.S. Cl. 133—8 R** **7 Claims**



Coin counting apparatus comprising a centrifugal turntable above which an annular flat member is adjustably mounted. The member covers approximately half the area of the disk about its periphery to form a space in which the coins are arranged in flat, single layer position. Means are provided for adjusting the space to selected thickness coins, for discharge of irregular coins, and for operation of a counting mechanism.

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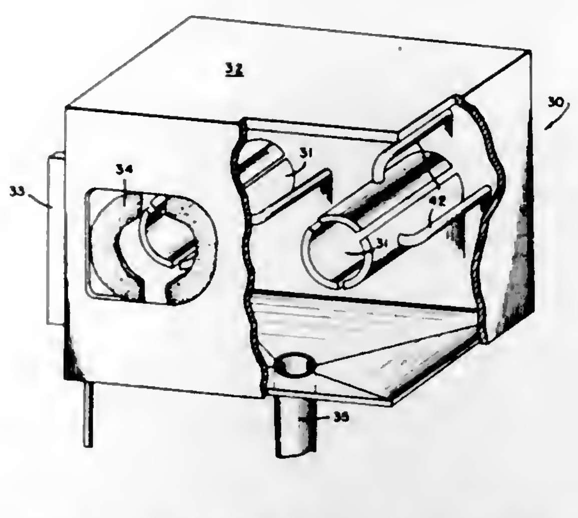
### 3,757,806
## PULSATING HYDROJET LAVAGE DEVICE

**Surindar N. Bhaskar, Bethesda; Duane E. Cutright, Chevy Chase, and Arthur Gross, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Jan. 19, 1972, Ser. No. 218,950**

**Int. Cl. B08b** *3/02;* **A61h** *33/00*

**U.S. Cl. 134—191** **14 Claims**



A pulsating hydrojet lavage device comprising (a) curvilinear manifold means arranged about a longitudinal axis, including fluid inlet means and fluid outlet means, (b) a pump for pumping with pulsating pressure a washing fluid, and (c) supply means for conveying the washing fluid from the pump to the manifold means. The washing fluid may be a mixture of water, detergents and antiseptic liquids. One purpose of the device is to prepare quickly medical personnel for surgical operations.

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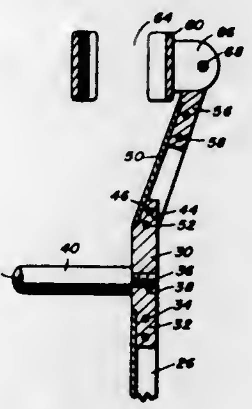
### 3,757,807
## ORTHOPEDIC DEVICE

**Joseph Manzo, P.O. Box 407, Providence, R.I.**

**Filed Apr. 19, 1971, Ser. No. 135.099**

**Int. Cl. A45b** *1/00*

**U.S. Cl. 135—47.5** **8 Claims**



An orthopedic device in the form of a crutch or cane assembly with the crutch including a lower column and an upper column forming a continuation thereof together with a handle or handgrip at the upper end of the lower column and a forearm engaging cuff at the upper end of the upper column and the cane including an upward extension from the handle having a wrist engaging cuff thereon. By constructing the assembly of structural components which are capable of disassembly and interchange with other structural components having selected dimensions and configurations, the assembly may be employed as a crutch in which the cuff engages the forearm or as a cane in which the cuff engages the wrist for stabilization thereof.

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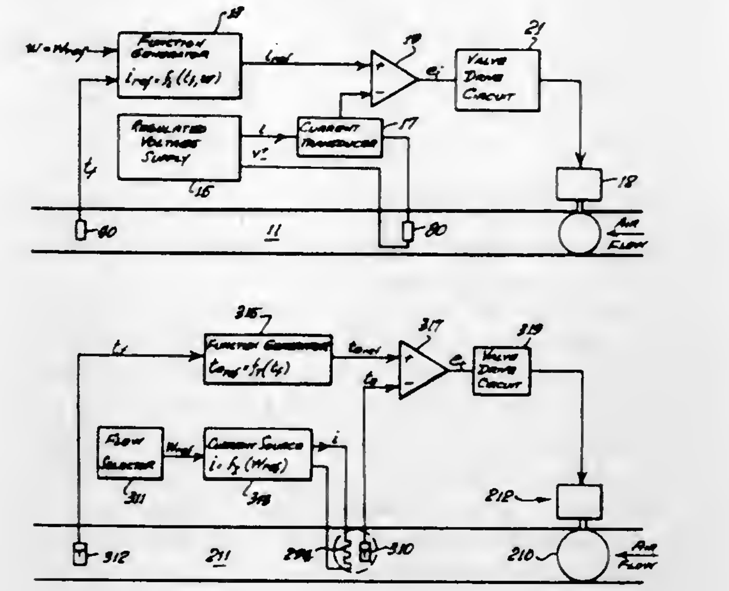
### 3,757,808
## ELECTRONIC MASS AIRFLOW SENSING AND CONTROL SYSTEM

**Frederick L. Peterson, Palos Verdes Peninsula, Calif., and George F. Paclik, Mississauga, Ontario, Canada, assignor to The Garrett Corporation, Los Angeles, Calif.**

**Filed July 21, 1972, Ser. No. 274,121**

**Int. Cl. G05d** *7/06;* **G01f** *1/00*

**U.S. Cl. 137—2** **37 Claims**



Two sensing elements are disposed in a ducted fluid stream whose mass flow rate is to be sensed and is to be controlled by a valve. One sensing element provides a signal as a measure of the temperature of the fluid. The other element is electrically energized at a known power level so that it assumes a temperature different from that of the fluid, and experiences an exchange of enthalpy with the fluid. This element provides a signal as a measure of its own temperature. The two sensing elements are coupled with the valve in a closed loop relationship by electronic sensing and control circuitry. This circuitry processes the signals from the two sensing elements to generate a signal equivalent to the fluid mass flow rate, and causes control action to regulate the mass flow rate to a desired value. Other transducers may be coupled to the circuit to automatically reset the regulated flow rate as a function of other parameter signals which may be either dependent or independent of the properties of the fluid.

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### 3,757,809
## LINEAR GOVERNOR

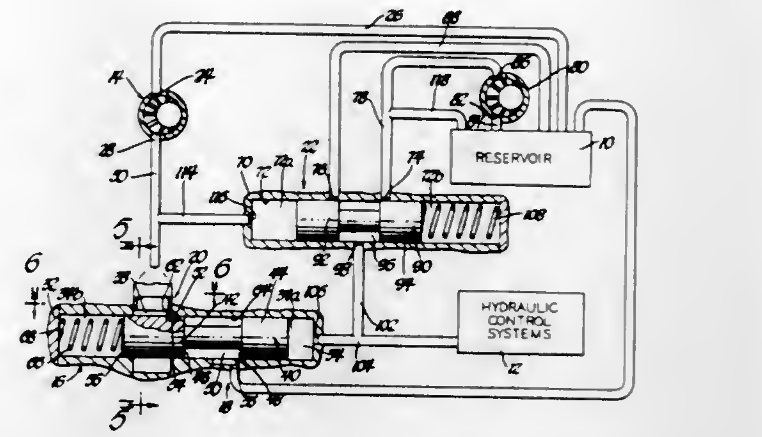
**Philip A. Le Bar, Jr., Belleville, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 22, 1971, Ser. No. 200,871**

**Int. Cl. G05d** *13/40*

**U.S. Cl. 137—47** **5 Claims**

This disclosure relates to a hydraulic governor which includes fixed displacement pump means for providing a fluid flow proportionate to the speed it is driven. The hydraulic governor also includes flow control valve means for controlling the communication of the fixed displacement pump means with an exhaust and which has variable orifice means for varying the restriction of the fluid flow. The hydraulic governor further includes pressure regulator valve means which is in fluid communication with the pump means and which is responsive to variations of the fluid flow pressure from a predetermined value for regulating the pressure of a control fluid as a substantially linear function of the speed of the pump drive. The pressure regulator valve means is in fluid communication with the flow control valve means for the variable orifice means to vary the restriction of the fluid flow in response to variations in the control fluid pressure to correct the fluid flow pressure to the predetermined value.



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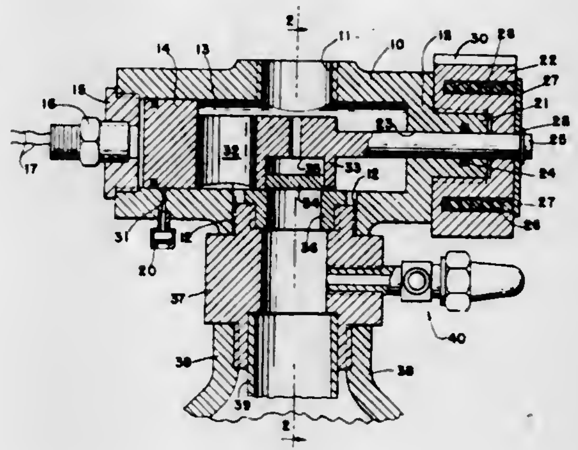
### 3,757,810
## SHEAR VALVE AND FRANGIBLE FITTING

**George S. Covarrubias, La Puente, Calif., assignor to C B F Systems, Inc., Covina, Calif.**

**Filed Jan. 11, 1972, Ser. No. 217,013**

**Int. Cl. F16k** *13/06;* **B67b** *7/00*

**U.S. Cl. 137—68** **10 Claims**



A frangible valve which may be operated manually by explosive charge, or by a solenoid. The valve includes a frangible fitting made of a single piece of metal so as to be leak-proof. When the valve is opened, a metal disk is sheared away from the fitting and a hollow cylinder is placed over the sheared portion, aiding in the transfer of a pressurized fluid. A pilot rod extends from the operating piston through a guide hole to insure proper alignment. An external nut can be operated to break the frangible portion, after which a compressed spring completes the operation and retains the hollow cylinder in axial alignment.

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### 3,757,811
## PRESSURE REGULATOR

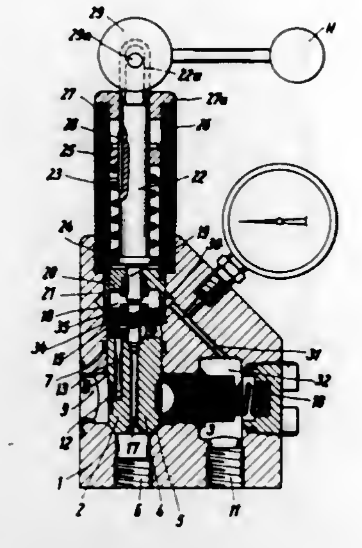
**Erich Broker, Oelde, Germany, assignor to Paul Hammelmann Maschinenfabrik, Oelde/Westf., Germany**

**Filed Sept. 10, 1971, Ser. No. 179,294**

**Int. Cl. F16k** *31/38*

**U.S. Cl. 137—116** **5 Claims**

A pressure regulator has an overflow valve the valve body of which is configurated as a stepped piston and cooperates with a spring-loaded bolt. Between the bolt and the stepped piston is located an actuating member which is connected in turn with a smaller-diameter valve needle and which controls the flow through an outlet channel in the stepped piston. In the region of their juncture the actuating member and valve needle



are exposed to the fluid pressure at a user device to which the pressure regulator supplies fluid.

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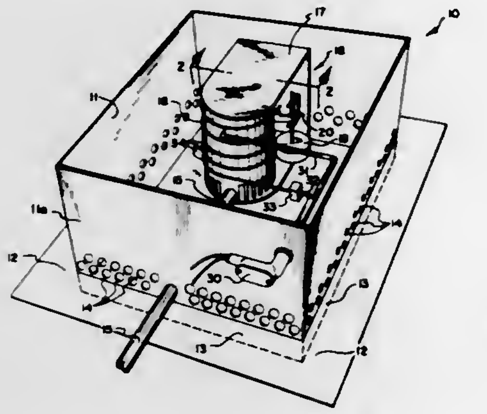
### 3,757,812
### ROOF STANDING WATER ELIMINATOR
**James E. Duncan, 1489 N. 400 West, Bountiful, Utah**
**Filed Jan. 3, 1972, Ser. No. 214,651**
**Int. Cl. F16l** ***43/00***
**U.S. Cl. 137—142** **6 Claims**



An apparatus for draining standing water from low areas in a flat roof surface. The apparatus is contained in a housing whose base is closed and is sealed in such a low area. Water accumulated on the roof surface draining into such a low area flows into the housing of the invention through appropriate holes formed therein. A float arrangement within the housing senses accumulated water and activates a pump therein to exhaust through a drain line water from the roof area. The float arrangement senses the exhaustion of accumulated water from the low spot and automatically cuts off electrical power to the pump turning off the system until another water accumulation is sensed. A heating arrangement, combining a thermostat with a source of electrical energy that is distinct from the electrical flow through the float arrangement and pump, is provided within the housing to protect against freezing.

The standing water eliminator is arranged to exhaust water from a roof surface through a main discharge line leading from the roof surface. Suction lines coming from other low areas on the roof surface, connected to the main line at a point below the roof eave, so that when water flows through the main discharge line each suction line has a suction created therein, that draws water through the line into the main discharge line. Siphon flow through each of the suction lines, once begun, will continue until water is eliminated from the low area within which the suction line is positioned.

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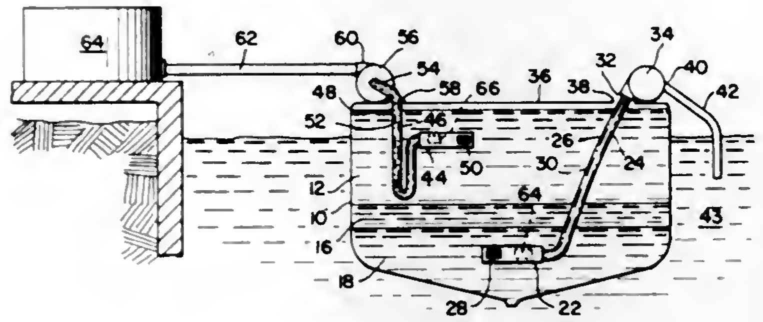
### 3,757,813
### APPARATUS FOR TRANSPORTATION AND SEGREGATED EMPTYING OF VESSELS CONTAINING FLUIDS OF DIFFERENT DENSITY
**Nathan Levenberg, 2 Windsor Pl., Lynbrook, N.Y.**
**Filed July 21, 1971, Ser. No. 164,509**
**Int. Cl. B43b** ***43/06***
**U.S. Cl. 137—172** **6 Claims**



A method of transporting oil by vessel which includes discharging an oil cargo at a destination and refilling the vessel with a water ballast, transporting the vessel to an oil supply area, discharging only the water ballast at the oil supply area while retaining any oil-water mixture within the vessel. Apparatus is provided which automatically maintains delivery of only a single density fluid by operating only within the fluid to be delivered and ceasing to operate when in a different fluid. In an alternative embodiment, conduits are fixed in the vessel with their ends a predetermined distance apart to withdraw selectively different density fluids by pump means selectively controlled by a float member.

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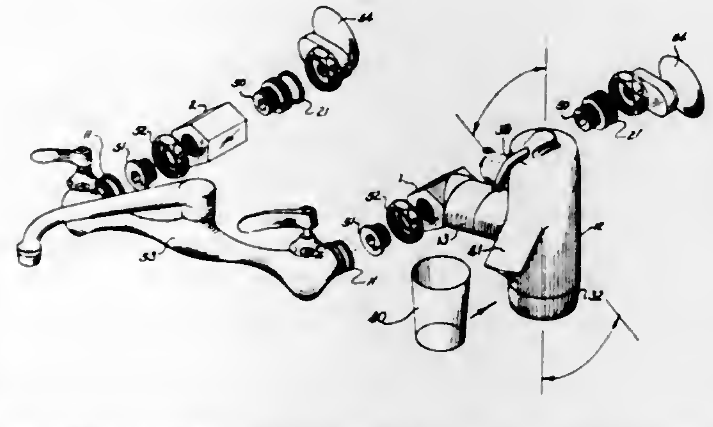
### 3,757,814
### LIQUID CONTROL AND DISPENSING
**Hayden C. Hill, 4798 Excelente Dr., Woodland Hills, Calif.**
**Filed Oct. 14, 1971, Ser. No. 189,360**
**Int. Cl. F16k** ***51/00***
**U.S. Cl. 137—268** **11 Claims**



My invention relates generally to a controlled liquid system outlet contrivance with or without various filter and process media enclosed and attached to plumbing systems for the purpose of treating, mixing, or dispensing a liquid. Although the invention may well be used solely for any dispensing system, it is more often used in combination of a dispensing system and a means to remove odors, tastes, chemicals, sediments, bacteria and all other unpleasant qualities often found in so called potable tap water.

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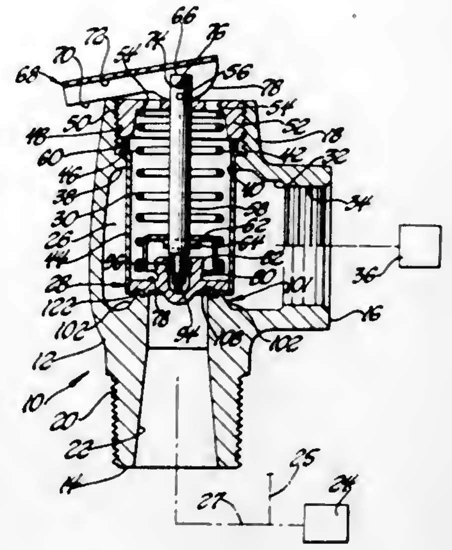
### 3,757,815
### PRESSURE RELIEF VALVE
**James D. Orr, 6330 E. Surrey, Birmingham, Mich.**
**Filed Feb. 10, 1972, Ser. No. 225,140**
**Int. Cl. F16k** ***17/04***
**U.S. Cl. 137—475** **8 Claims**

A pressure relief valve has a single piece outer body or housing with an inlet and an outlet formed therein communicating with a chamber formed internally of the housing; a moveable valving member situated within the chamber is generally contained within a removable valve guide and is resiliently urged toward a closed position against the inlet by a



spring also contained within the valve guide; and a manually actuated lever is operatively connected to the valving member through a valve stem member which is connected to the valving member in a manner providing for a lost motion connection therebetween.

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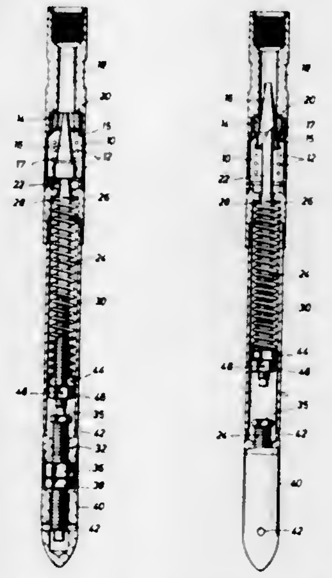
### 3,757,816
### DOWNHOLE SAFETY VALVE
**Frederick Price, 307½ Boles St., Houston, Tex.**
**Filed Sept. 7, 1972, Ser. No. 287,101**
**Int. Cl. F21b** ***33/00;*** **F16k** ***31/2***
**U.S. Cl. 137—498** **18 Claims**



An abrasion resistant flow control safety valve has a variably adjustable orifice or port for passage of a desired flow of a well fluid. The annular orifice is defined by a tapered plug extending through a seat, and the cross-sectional area of the orifice is varied by moving the plug relative to the seat. The valve operates responsive to a predetermined flow rate to close and shut in the well.

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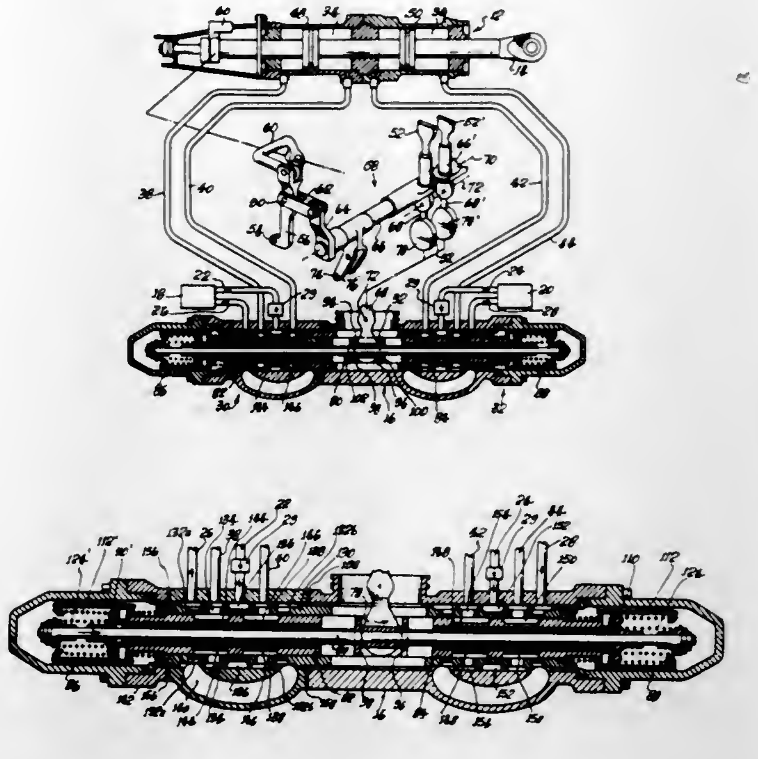
### 3,757,817
### TANDEM CONTROL VALVE
**Mildred S. Wheeler, Long Beach, and Robert D. Rothi, Rolling Hills, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.**
**Division of Ser. No. 148,612, June 1, 1971, Pat. No. 3,726,186.**
**This application Aug. 23, 1972, Ser. No. 282,926**
**Int. Cl. F16k** ***11/00***
**U.S. Cl. 137—596** **3 Claims**

A control valve for a hydraulic actuated assembly which includes two valve slides which are resiliently connected in tandem to a control input. If one of the slides jams, the other slide



can be moved to cause hydraulic lock of the hydraulic actuator.

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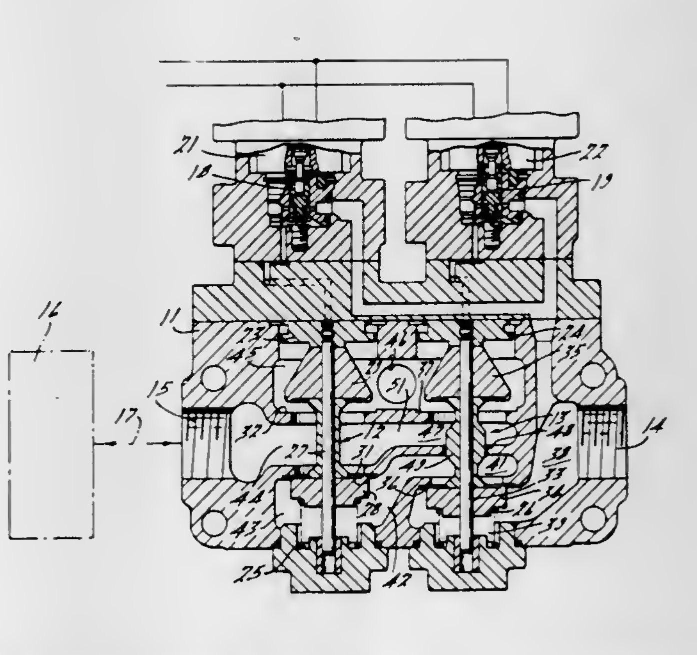
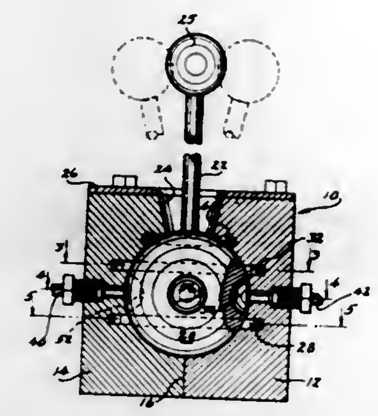
### 3,757,818
### SAFETY CONTROL VALVE SYSTEM FOR FLUID ACTUATED DEVICES
**Roger L. Sweet, Royal Oak, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.**
**Filed July 26, 1971, Ser. No. 165,967**
**Int. Cl. F16k** ***11/10***
**U.S. Cl. 137—596.16** **3 Claims**



Two normally closed three-way main valves are connected in series to supply fluid to an outlet port. When moved to their closed positions, the valves provide parallel connections from the outlet port to exhaust. Therefore, if either valve is stuck in an open or partially open position, movement of the other valve to its closed position will provide good exhausting capacity. Furthermore, there will be no substantial pressure at the outlet port until both valves are actuated to their open position. Movement of either valve to its exhaust position will completely stop the supply of air to the outlet port and provide a direct exhaust connection.

### 3,757,819
### OMNI-DIRECTIONAL FLUID-CONTROL VALVE

**Allen Richard Andis, 3209 Elwood Dr., Racine, Wis.**
**Filed Feb. 8, 1972, Ser. No. 224,570**
**Int. Cl. F16k** *11/02*
**U.S. Cl. 137—625.23** **5 Claims**



A fluid-control valve having a nutatable spherical control member seated in a body. A plurality of fluid passageways surround the spherical member and are in fluid connection therewith. The control member has peripheral ports that selectively direct the fluid in the passageways through conduits, when the control member is nutated, to operate hydraulic equipment.

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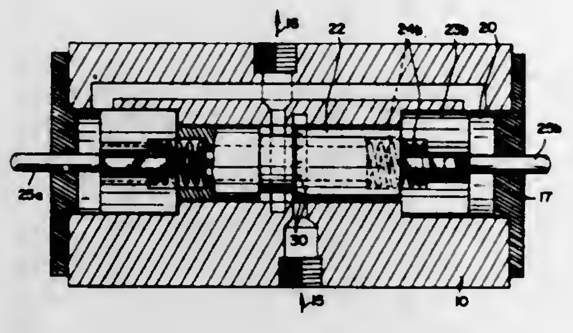
### 3,757,820
### HYDRAULIC CONTROL VALVE

**Albert O. Aylesworth, 3050 Alexander Blvd., Windsor, 10 Ontario, Canada**
**Filed Feb. 29, 1972, Ser. No. 230,355**
**Int. Cl. F16k** *3/24, 3/32*
**U.S. Cl. 137—625.3** **2 Claims**



A valve mechanism is described for controlling fluid flow, particularly for quickly adjusting the flow between a full flow position and an accurately defined limited flow position. The valve has a cylindrical valve member which is slidably mounted in a central bore and this valve member has a region of reduced diameter with an annular wall extending between the region of reduced diameter and the cylindrical surface of the valve member. One of these annular walls forms a sharp corner with the cylindrical surface and a series of notches are provided in this sharp corner. A pair of flow connected annular recesses are provided in the bore holding the valve member so that at full flow, the region of reduced diameter is over both annular recesses while for restricted flow fluid connection between the annular recesses is via the notches. A third position is also possible where the valve member completely closes the connection between the annular recesses thus preventing any flow.

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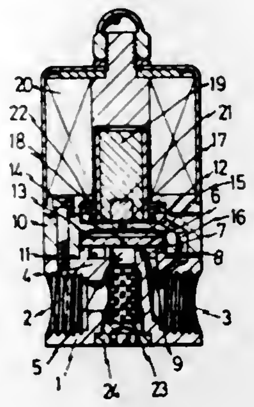
### 3,757,821
### DISK TYPE ELECTROMAGNETIC VALVE

**Katsuji Fujiwara, 191 Mishitani, Hiraoka-cho, Kakogawa, Hyogo-ken, Japan**
**Filed Dec. 22, 1971, Ser. No. 210,707**
**Claims priority, application Japan, Jan. 13, 1971, 46/675 (utility model); Mar. 11, 1971, 46/13299 (utility model); June 22, 1971, 46/54537 (utility model)**
**Int. Cl. F16k** *31/40*
**U.S. Cl. 137—625.48** **7 Claims**



A disk type electromagnetic valve comprising a disk valve floatingly arranged within a pressure chamber which is formed by a main body and a cover member, the opening and closing of the disk valve are hydrodynamically effected, and the pressure exerted from behind said disk valve for closing it is controlled by opening and closing a pilot valve under the influence of a small-type solenoid.

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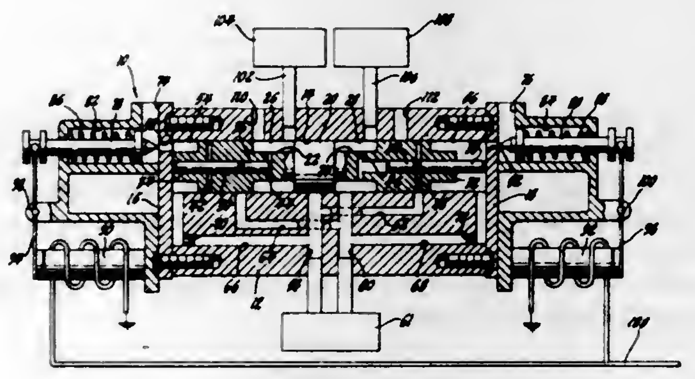
### 3,757,822
### DIRECTIONAL SHIFT INHIBITOR

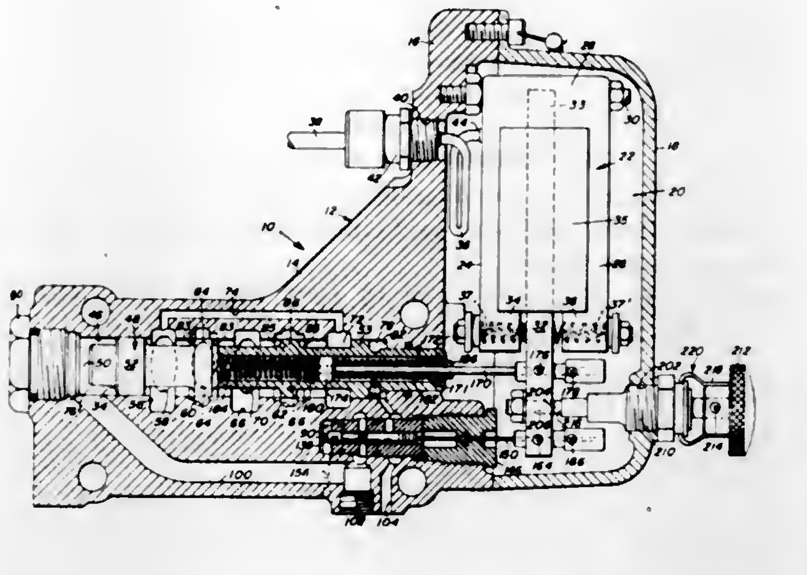
**Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed June 15, 1972, Ser. No. 262,958**
**Int. Cl. F16d** *25/10*
**U.S. Cl. 137—625.61** **8 Claims**



The directional shift inhibitor illustrated includes a valve mechanism which cooperates with a governor-actuated solenoid arrangement to alternately control the flow of fluid to forward and reverse clutches at predetermined low speeds regardless of the speed at which the operator shifts from forward-to-reverse or reverse-to-forward operation.

### 3,757,823
### VALVE

**Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.**
**Filed Nov. 2, 1971, Ser. No. 194,840**
**Int. Cl. F16k** *11/07*
**U.S. Cl. 137—625.64** **6 Claims**



A two stage servo operated valve comprising an open-center main valve and a pilot valve wherein separate hydraulic circuits are maintained for each of said valves.

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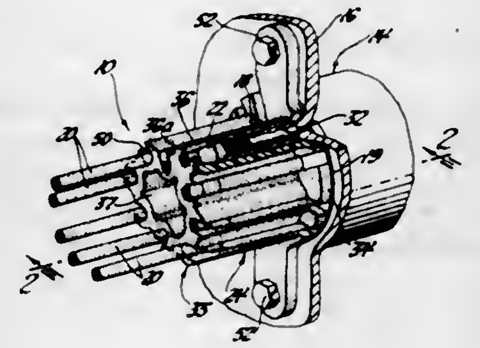
### 3,757,824
### VACUUM TUBE AND CONNECTOR ASSEMBLY

**Robert H. Parkhurst; William R. Beck, and Edward M. Bungo, all of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.**
**Filed May 15, 1972, Ser. No. 253,206**
**Int. Cl. F16l** *39/02*
**U.S. Cl. 137—798** **3 Claims**



This disclosure relates to a tube and connector assembly for use in a control system including a valve with multiple male outlets and which comprises a plurality of tubes for connecting different ones of the male outlets of the valve with other parts of the control system and female connectors on the ends of the tubes which are adapted to mate with and communicate the male outlets of the valve with the tubes. The tube and connector assembly further comprises a connector housing which has a plurality of tapered openings therethrough for receiving the female terminals to align the same with the male outlets of the valve. The connector housing has slots co-extensive with the openings to enable the tubes to be received within the openings. The female terminals are thereafter received within the tapered openings by pulling on the tubes to frictionally and sealingly engage the connector housing whereby the female connectors are aligned with the male outlets of the valve and can be simultaneously connected thereto.

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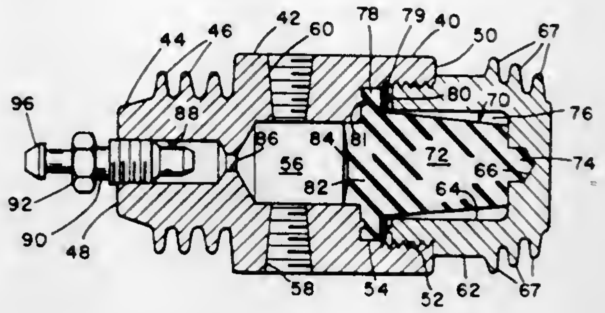
### 3,757,825
### PRESSURE EQUALIZING DEVICE FOR FLUID PRESSURE SYSTEMS

**Reuben H. Givens, 61 Canal St., Apt. 20, San Rafael, Calif., and Theodore P. Spero, 362 Via Casitas, Greenbrae, Calif.**
**Filed July 21, 1971, Ser. No. 164,733**
**Int. Cl. F16l** *55/04*
**U.S. Cl. 138—26** **4 Claims**



A shock absorbing and pressure equalizing device for hydraulic actuating systems comprises an elongated housing with threaded openings to facilitate its connection to a hydraulic line between a power source and a pair of actuators. The openings communicate with a fluid receiving chamber within the housing, one side of which is the end face of a shock absorbing, resiliently yieldable member that extends axially into but does not fill a cavity formed by one end of the housing. Shock waves of increased pressure within the first chamber produced by an imbalanced reaction from one of the system actuators are absorbed by a crushing action against the end face of the resiliently, yieldable member which can deform temporarily into the housing cavity. A graphite powder coating is provided on the yieldable member to prevent it from sticking to the inner walls of the cavity.

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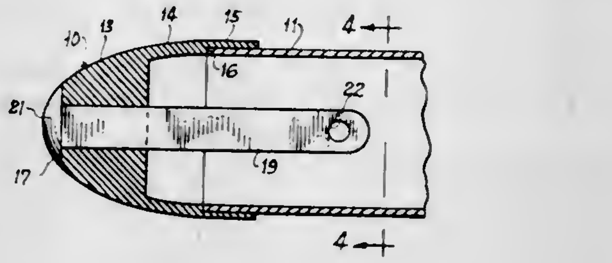
### 3,757,826
### END CAPS FOR GYM

**Glenn H. Kroll, Chicago, Ill., assignor to Sears Roebuck and Co., Chicago, Ill.**
**Filed May 1, 1972, Ser. No. 248,935**
**Int. Cl. F16l** *57/00*
**U.S. Cl. 138—89** **5 Claims**

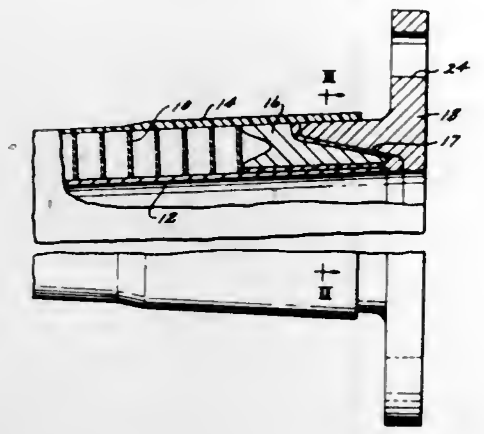


An end cap closure assembly for closing the end of a tubular member, particularly the cross bar hanger member of a gym set. The assembly includes a generally hollow body portion having a skirt portion extending therefrom and defining an interiorly facing annular shoulder with the body portion. The skirt portion is adapted to surround the exterior surface of the end portion of a tubular member, for example, the cross bar hanger, with the end thereof abutting the shoulder. The body portion is formed with an opening in the end thereof opposite the skirt portion with the opening communicating with the interior of the skirt portion. An elongated strap member is insertable into the opening formed in the body portion and extends axially beyond the skirt portion. The strap member includes a head portion adapted to close the opening in the body portion and has an aperture formed in the portion of the strap member extending beyond the skirt portion which is adapted to receive fastening means inserted therethrough to secure the assembly to the tubular member.

### 3,757,827
### LIGHTWEIGHT DUCT AND METHOD OF MAKING SAME

**David L. Seiwert, West Chester, and Thomas L. Hampton, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio**

**Filed Jan. 29, 1969, Ser. No. 794,952**
**Int. Cl. F16l** *9/14*
**U.S. Cl. 138—109 4 Claims**



A lightweight composite duct having inner and outer shells with a cellular core therebetween is provided with a mounting ring. The mounting ring is bonded to a split, wedge ring which, in turn, is bonded to the thin-walled inner shell of the duct. In fabrication, the inner shell is telescoped over a mandrel. The mounting ring is telescoped over the inner shell and defines a V-shaped groove. A strip of adhesive material is wrapped about the split, wedge ring, and the wedge ring is then forced into the V-shaped groove. A woven mesh material in the adhesive strip provides accurate spacing between the split, wedge ring and the shell and between the split, wedge ring and the mounting ring as the split, wedge ring flexes radially to provide essentially uniform adhesive thickness regardless of tolerance variations in the mounting ring and the inner shell. Thereafter, a honeycomb core is bonded to the inner shell, and an outer shell is bonded to the core and the mounting ring.

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### 3,757,828
### AIR-IMPERMEABLE SURFACES COATED WITH AN ADHESIVE COMPOSITION

**Elliott Frauenglass, Newington, Conn., and William E. Cass, Wayland, Mass., assignors to Loctite Corporation, Newington, Conn.**

**Division of Ser. No. 709,228, Feb. 29, 1968, Pat. No. 3,625,875. This application June 8, 1971, Ser. No. 150,938**
**Int. Cl. F16l** *9/14*
**U.S. Cl. 138—145 11 Claims**

Sheet coating compositions which are adhesive in nature can be made from a thermoplastic polymer by plasticizing the polymer with an anaerobic adhesive, i.e., a mixture of a polymerizable liquid acrylate ester monomer and a peroxy polymerization initiator therefor. Such compositions are used effectively as preapplied coatings for air-impermeable surfaces in sealing and bonding applications.

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### 3,757,829
### COMPOSITE PIPE WRAP MATERIAL AND METHOD

**George William Berry, Far Hills, N.J.; Milton Wesley Gregory, New Canaan, Conn., and John Louis Ambrose, South Bound Brook, N.J., assignors to Johns-Manville Corporation, New York, N.Y.**

**Filed May 12, 1971, Ser. No. 142,781**
**Int. Cl. B32b** *1/10;* **F16l** *9/14*
**U.S. Cl. 138—146 18 Claims**

A composite pipe wrap material for underground pipe including a fiber glass pipe wrap material bonded to an outer protective pipe wrap material by a layer of adhesive which partially penetrates into the fiber glass wrap. The fiber glass wrap is preferably in the form of a mat. The composite pipe wrap material is adapted to position a portion of the fiber glass mat in approximately the outer one-third of the thickness of a metallic pipe protective coating when the material is wrapped about a metal pipe. Also disclosed is a method or protecting a metallic pipe by forming the composite pipe wrap material, coating the pipe with a protective coating and wrapping the pipe to position a portion of the fiber glass wrap in approximately the outer one-third of the thickness of the coating. Further disclosed is a method of positioning a portion of fiber glass pipe wrap material in approximately the outer one-third of the thickness of a protective coating on a metallic pipe.

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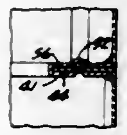
### 3,757,830
### RECTANGULAR AIR DUCT

**Leroy E. Anderson, and Gerald J. Munn, both of Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.**

**Division of Ser. No. 12,663, Feb. 19, 1970, Pat. No. 3,636,903. This application July 19, 1971, Ser. No. 163,917**
**Int. Cl. F16l** *9/16*
**U.S. Cl. 138—163 4 Claims**



A machine designed to continuously progress a pair of elongated flat sheets of metal longitudinally through a plurality of cooperative dies which progressively in sequential steps gradually shape the two sheets into a duct having a rectangular cross-sectional configuration. The machine utilizes cooperative rotary dies to shape and form the duct in a continuous operation to a length equal to that of the sheets so that rectangular ducts of any desired length can be produced in an automatic operation by merely inserting into the machine a prepared roll comprised of a pair of sheets of metal of the desired length, the sheets entering the machine at one end and leaving the same at the other end in the form of a continuous rectangular duct.

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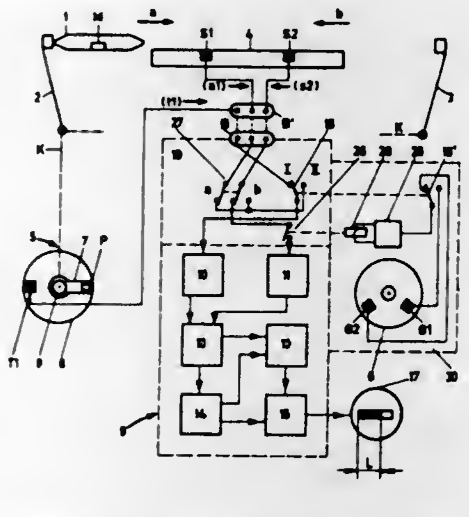
### 3,757,831
### EQUIPMENT FOR MONITORING THE SHUTTLE FLIGHT IN A LOOM

**Erich Loepfe, Zollikerberg, and Hans Peter Theiler, Wettswill Am Albis, both of Switzerland, assignors to Aktiengesellschaft Gebrueder Loepfe, Zurich, Switzerland**

**Filed May 18, 1972, Ser. No. 254,471**
Claims priority, **application Germany, May 18, 1971, P 21 24 573.8**
**Int. Cl. D03d** *51/02, 51/44*
**U.S. Cl. 139—336 10 Claims**



An equipment for monitoring the shuttle flight in a conventional loom provided with a shuttle, particularly for measuring and indicating the regularity of such shuttle flight comprising: at least one pair of control coils mounted along the shuttle race and a permanent magnet mounted in the shuttle for generating a control pulse every time the permanent magnet passes over a control coil; a second permanent magnet coupled to the drive means of the loom and tracing a cyclic path per shuttle passage, and at least one further coil arranged near said path for generating a cycle pulse every time the second permanent magnet passes by the further coil; circuitry for measuring time intervals elapsing between two successive of said pulses; and a selector switching device for establishing various operational connections from any pair of said coils to the time measuring circuitry. The equipment allows for adjusting the loom picking mechanism in an optimal manner and is designed for practical use in weaving mills.

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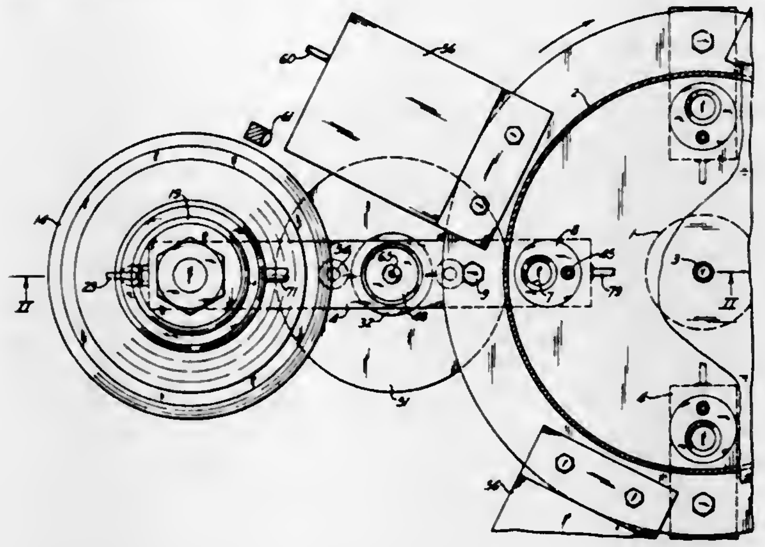
### 3,757,832
### PRESSURE-FILL CONTAINER FILLING MACHINE

**Chester E. Waxlax, Moon Township, Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.**

**Filed Feb. 3, 1971, Ser. No. 112,207**
**Int. Cl. B67c** *3/00*
**U.S. Cl. 141—59 12 Claims**



Spaced around a supply tank is a plurality of dispensing chambers, each of which is mounted on a conduit arm extending laterally away from the tank and connecting the bottom of the tank with the bottom of the chamber. There is a first valve for closing the tank outlet and a second valve for closing an outlet from the conduit arm to a downwardly extending filling tube. A suction tube extends along the filling tube and has an inlet at its lower end located above the lower end of the filling tube. The suction tube is connected with the inside of the tank, which is maintained under subatmospheric pressure. Means are provided for filling each dispensing chamber in succession with liquid from the tank while the first valve is open and the second valve is closed. Means also are provided for causing each dispensing chamber to force liquid down through the associated filling tube into a container that has been raised around the outlet of the tube. Liquid product that rises in the container above the lower end of the suction tube therein returns through that tube directly to the supply tank.

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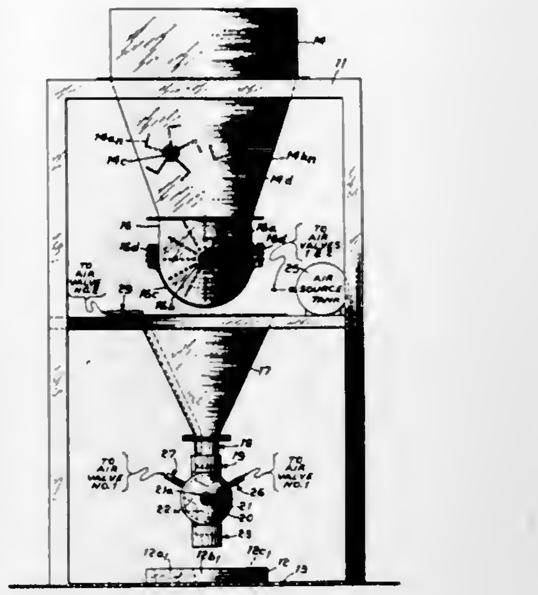
### 3,757,833
### DEPOSITING APPARATUS

**William H. Dugger, and Wayne K. Alexander, both of Kansas City, Mo., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Aug. 31, 1971, Ser. No. 176,459**
**Int. Cl. A21c** *9/04;* **B65b** *37/14*
**U.S. Cl. 141—186 10 Claims**

The depositing apparatus described provides an arrangement wherein a hopper is positioned to direct a flow of material into a multiple number of individual streams. A rotating drum having a series of Y-shaped bores revolvable about an axis is positioned for individually communicating with a stream of said material in a first position, and successively depositing the material accumulated in each of said bores in another position. The arrangement includes means for controlling the movement of said drum and for insuring the measured amounts of the material are deposited after each filling of the bores in said drum with said material.



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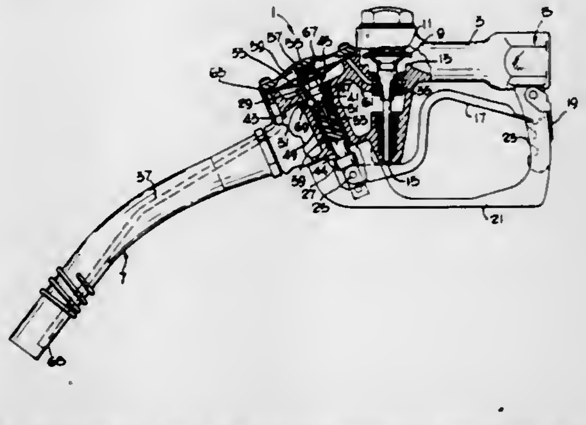
### 3,757,834
### FLUID DISPENSING NOZZLE AND LATCHPIN THEREFOR

**Mervin L. Carder, P.O. Box 3725, 509 N. Geyer Rd., Kirkwood, Mo.**

**Filed Nov. 11, 1971, Ser. No. 197,730**
**Int. Cl. B65b** *57/06*
**U.S. Cl. 141—225 14 Claims**



A fluid dispensing nozzle for dispensing gasoline wherein a high-level shut-off means includes a pressure-sensitive diaphragm, a latch pin carried by the diaphragm, a tapered camming surface on the latch pin, and means releasably engaging the camming surface for establishing a pivot point for a valve-controlling lever. The tapered portion is formed as a rotatable sleeve on the latch pin.

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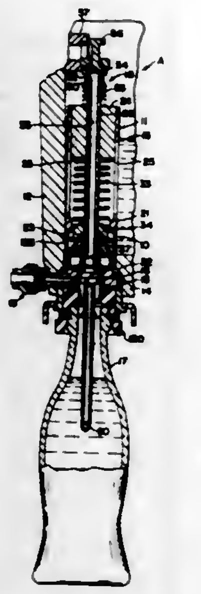
### 3,757,835
### BEVERAGE FLOW DISTRIBUTOR MEANS FOR BOTTLE FILLING DEVICES

**Bruce G. Copping, Akron, Ohio, assignor to Automatic Sprinkler Corporation of America, Willoughby, Ohio**

**Continuation-in-part of Ser. No. 767,396, Oct. 14, 1968, abandoned. This application May 6, 1969, Ser. No. 822,132**
**Int. Cl. B67c** *3/06*
**U.S. Cl. 141—286 8 Claims**

The bottle filler device is provided for use in machines having a member forming a valve seat in a filling head and where the valve means are vertically positioned for reciprocation to and from engagement with the valve seat. A beverage flow distributor means is carried by the valve means and positioned therebelow, which distributor means includes a plurality of circumferentially spaced blades positioned in the beverage flow path for setting up a swirling tubular flow on the beverage as it moves towards a bottle to fill the same.



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### 3,757,836

### QUICK-CONNECT VALVE FOR USE IN FILLING GAS CYLINDERS

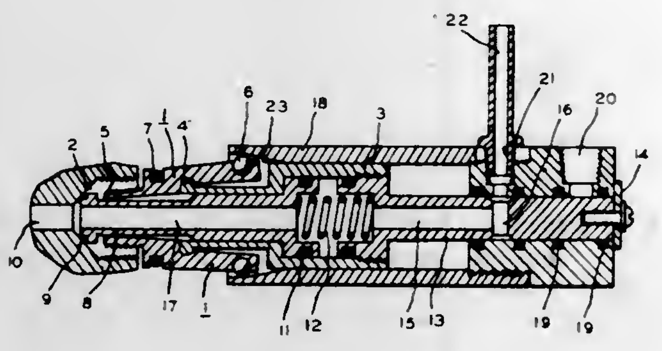
**Eiji Masuda, Takarazuka, Hyogo-Prefecture, Japan, assignor to Daido Kogyo Kaisha, Ltd., Nishi-ku, Osaka, Japan**

**Filed Nov. 1, 1971, Ser. No. 194,160**

**Claims priority, application Japan, Feb. 3, 1971, 46/4346**

**Int. Cl. F16l** *37/28*

**U.S. Cl. 141—312 4 Claims**



The valve comprises a tubular stem adapted to engage the central portion of a threaded socket inlet in a gas cylinder. A longitudinally sectioned sleeve surrounds the stem and has a threaded end that fits the threaded socket when expanded. A sleeve support slidably surrounds the stem and has a ferrule on which the sections of the sleeve are pivoted, and a resilient annular member surrounds the sectioned sleeve adjacent to the threaded end thereof, for pivoting the sections of the sleeve on the ferrule to contract the threaded end of the sleeve around the stem. A collar is axially slidable on the sleeve support and has a flared end for engaging the sections of the sleeve to pivot them in opposition to the resilient annular member in order to expand the threaded end of the sleeve into engagement with the threads of the socket.

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### 3,757,837

### SELF-PROPELLED TREE DELIMBER

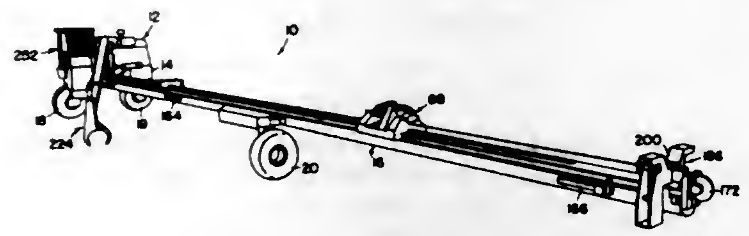
**John Lischer French, Moline, Ill.; Kenneth Quentin Kessler, Dubuque, Iowa; Walter W. Funk, Fresno, Calif.; Victor Charles Pierrott, III, and Stanley Hiseler, both of Dubuque, Iowa, assingors to Deere & Company, Moline, Ill.**

**Hiseler, 285 Grandview Ave., both of Dubuque, Iowa**

**Division of Ser. No. 120,501, March 3, 1971. This application July 27, 1972, Ser. No. 275,719**

**Int. Cl. A01g** *23/00*

**U.S. Cl. 144—2 Z 11 Claims**



A self-propelled tree delimber includes a horizontal T-shaped frame having a length suitable for supporting full-length trees of medium size. A boom and grapple assembly is mounted on the head portion of the frame and is operable for lifting cut trees from the ground and placing them on the frame. A delimbing assembly is mounted for movement along tracks extending the length of the leg portion of the frame and includes pivoted blades arranged to receive and encircle the stem of a tree, when the tree is placed on the frame. A drive motor is mounted on the head portion of the frame and is drivingly connected to the delimbing assembly for propelling the assembly along the tracks to delimb any tree stem encircled by the blades. The leg portion of the frame is supported on a driven steerable wheel and the head portion of the frame is supported on a pair of driven wheels which are mounted for movement between working and transport positions for respectively moving the delimber perpendicular and parallel to its length. The leg portion of the frame is constructed in two sections which are disconnectible for shortening the length of the delimber for transport.

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### 3,757,838

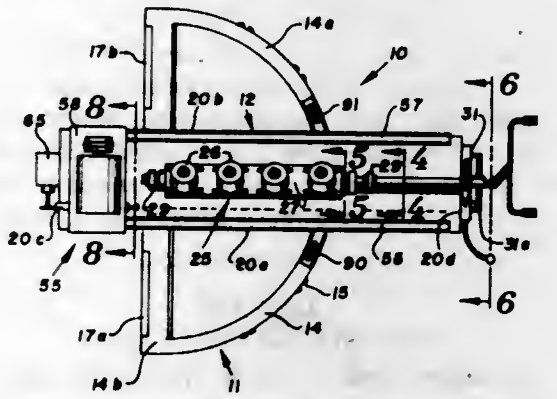
### CUTOFF AND ROUTING DEVICE

**Andrew Lee, Minneapolis, Minn., assignor to Hypaco, Incorporated, Minneapolis, Minn.**

**Filed May 17, 1972, Ser. No. 254,032**

**Int. Cl. B27c** *9/04;* **B27m** *3/18;* **B27b** *5/20*

**U.S. Cl. 144—3 R 13 Claims**



A precision cutoff and routing device including a support frame having locating and positioning elements thereon, with a cutting unit mounted for movement thereon which cutting unit includes material clamping members, a traversing cutting element and a plurality of routing devices which routing devices are arranged for controlled movement within a predetermined path for precisely routing a connector receiving recess in the bottom of the material being cut which recess may be formed on either side of the path of the traversing cutting element. Control means are provided to prevent movement of the routing devices through the path of the cutting element while the cutting element is moving.

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### 3,757,839

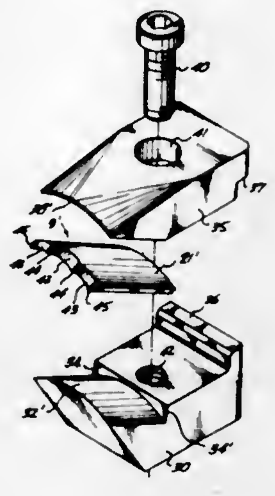
### CHIPPER BIT AND HOLDER

**Stanley Donald Vanek, Seattle, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.**

**Continuation-in-part of Ser. No. 883,038, Dec. 8, 1969, Pat. No. 3,661,192. This application May 10, 1971, Ser. No. 141,595**

**Int. Cl. B26c** *1/00*

**U.S. Cl. 144—172 6 Claims**



Bits clamped between fixed blocks and removable blocks are arranged in a spiral row around a hollow rotating chipping drum. Each bit is bent, one form of bit including flat sections defining side plate portions arranged at dihedral angles to a central plate portion, and another form of bit being substantially cylindrically curved. Each bit is clamped between bit-holding blocks engaging opposite bit faces with the bit-cutting edge projecting beyond the periphery of the chipping drum. The cutting edges of the flat section bit are straight, and cutting edges of the curved bit are concave with adjacent cutting edges meeting in a cusp.

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### 3,757,840

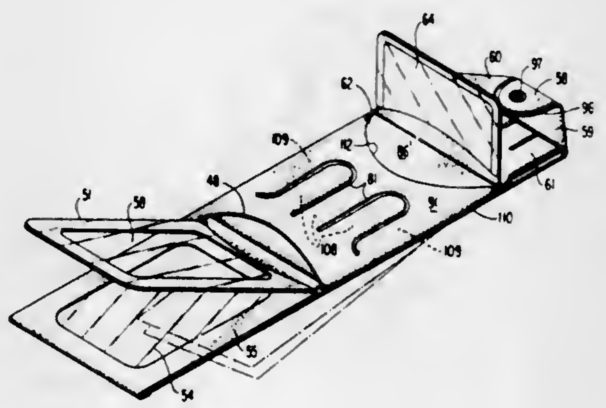
### BILLFOLDER AND METHOD OF MAKING

**Henry M. Herbener, 803 N. Davison St., Thomasville, Ga.**

**Filed Mar. 3, 1972, Ser. No. 231,655**

**Int. Cl. B65d** *1/06*

**U.S. Cl. 150—35 13 Claims**



A billfolder is constructed from a single pair of blanks formed of woven fabric coated on opposite sides with heat sealable plastic. The various layers or panels of the billfolder are held in assembled relationship by an absolute minimum number of heat seals or "welds," thus minimizing the tendency of the heat sealing operations to stretch and deform the material. Because of a small number of heat seals, a number of the billfolder panels may slide or float relative to one another during usage to preclude wrinkling and to enable the billfolder to adjust to the variable thickness of the contents. The parts of the billfolder requiring the greatest strength are formed with multiple layers of the material and all wear edges and exterior edges are folded and rounded as distinguished from raw cut edges. The billfolder is characterized by compactness with maximum carrying capacity for a variety of articles. It is highly economical in construction and resembles fine leather in appearance and feel.

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### 3,757,841

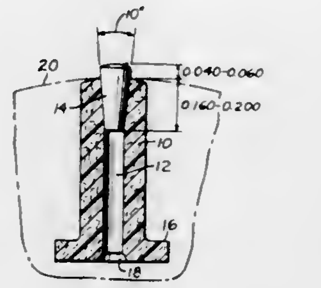
### TIRE STUD

**Rolf J. Cantz, Grove City, Pa., assignor to Kennametal, Inc., Latrobe, Pa.**

**Filed Oct. 29, 1970, Ser. No. 85,097**

**Int. Cl. B60c** *11/16*

**U.S. Cl. 152—210 8 Claims**



A tire stud having a body with a hard wear resistant pin mounted an axial bore in the body thereof and protruding from one end of the body. The body has a head on the other end and is mounted in the tread of a tire head end foremost with the end of the stud from which the pin protrudes about at the level of the surface of the tire tread or projecting slightly therefrom. The stud according to the present invention is particularly characterized in that the pin moves axially into the stud body as the stud wears thereby controlling the amount of the pin of the stud which protrudes from the end of the stud body.

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### 3,757,842

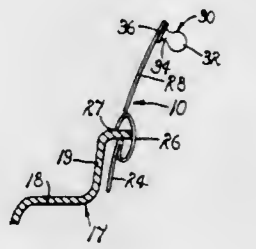
### MOUNTING DEVICE FOR TIRE CHAINS

**Delbert Elden Sandlin, 6375 N. Palm, Fresno, Calif.**

**Filed Oct. 12, 1971, Ser. No. 188,108**

**Int. Cl. B60c** *27/00*

**U.S. Cl. 152—216 4 Claims**



A mounting device, for a tire chain of a type having opposite ends including a plurality of individually selectable fastener links extended therefrom. The device is characterized by a pair of protuberances oppositely extended from the plane of the tire and to which is attached a pair of said links, whereby rotation of the tire serves to draw the chain about the tire in an encircling fashion.

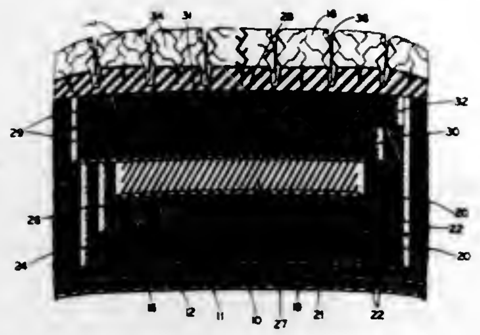
### 3,757,843
### BELTED PNEUMATIC TIRE

Robert L. Carr, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,896

Int. Cl. B60c *9/20*

U.S. Cl. 152—361 DM 10 Claims



A pneumatic tire such as a radial cord tire has a constricting peripheral belt under the tread containing plies of cords at small angles to the central plane of the tire, with a central ply, preferably narrower than the other, containing cords of a higher modulus than those of the plies above and below it. Preferably, the plies above and below the central ply of the belt are folded so that the cords of two adjacent plies at opposite angles are continuous from one ply through the fold to the other ply. It is also preferred that the outermost belt ply have the cords at an angular direction opposite to the high modulus belt ply. The belt construction is also useful on a tire having the carcass cords extending at bias angles.

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### 3,757,844
### HIGH-SPEED RADIAL TIRE

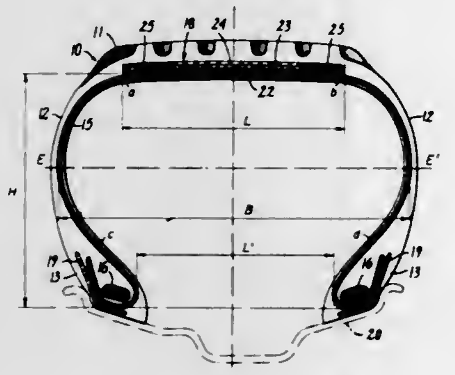
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Dec. 13, 1971, Ser. No. 207,323

Claims priority, application France, Dec. 30, 1970, 7047651

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 FP 5 Claims



The carcass reinforcement of a radial tire having a substantially cylindrical tread reinforcement meets the tread reinforcement tangentially at points of the tread reinforcement near or at the edges thereof, and the carcass and tread reinforcements are substantially in contact with each other over a width at least equal to the minimum width of the carcass reinforcement at the height of the bead wires. This permits continuous high-speed travel without danger of ply separation.

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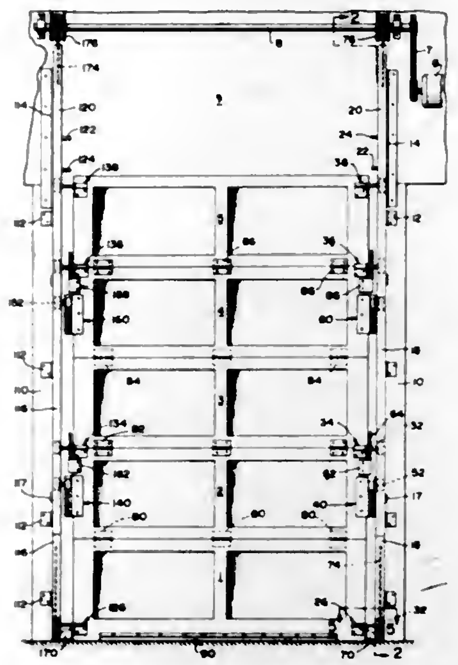
### 3,757,845
### OVERHEAD STACKED FOLDING DOOR

James M. Pagliaro, Harrisburg, Pa., assignor to Compact Closures, Inc., Middletown, Pa.

Filed Sept. 28, 1971, Ser. No. 184,479

Int. Cl. E05f *11/54*

U.S. Cl. 160—189 14 Claims



Folding door apparatus including a plurality of panels hinged together in accordian fashion are raised and lowered along parallel spaced guide channels by a winding drum and cable; one end of the cable is secured to the winding drum while the other end is fastened to the remotest panel from such drum. In a door open position, the panels are folded and located above the door opening with the panel located closest to the winding drum being stored in an unfolded condition.

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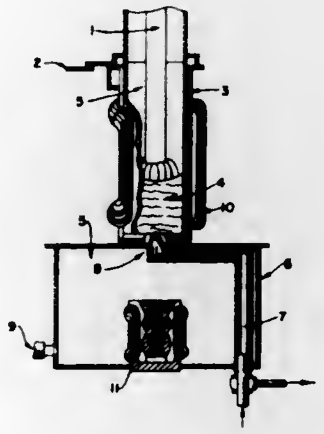
### 3,757,846
### METHOD AND APPARATUS FOR EFFECTING ELECTROMAGNETIC DISPLACEMENT OF FLUIDS

Harry H. Herman, Jr., 4201 Cathedral Ave., N.W., Washington, D.C.

Continuation-in-part of Ser. No. 710,108, March 4, 1968, which is a division of Ser. No. 776,885, Nov. 28, 1958. This application Apr. 12, 1971, Ser. No. 133,102

Int. Cl. B22d *27/02*

U.S. Cl. 164—51 8 Claims



This invention related to effecting the movement of liquids by electromagnetic means. Liquids, as used herein, should be understood to include fluids, generally such as gases, vapors, and plasma. By the proper adjustments of temperature and pressure, materials may be handled as liquids, vapors, or plasma. Fluidized solids are also contemplated within the scope of the term liquid, as are magnetic fluids.

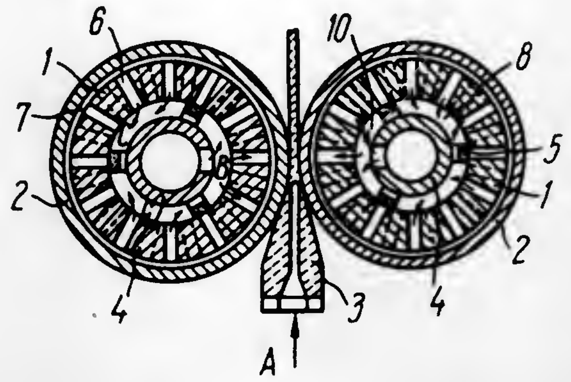
### 3,757,847
### ROLL MOULD WITH COOLING SYSTEM

Pavel Ilich Sofinsky, Lukhovitskaya ulitsa, 3, kv. 54, and Ivan Filippovich Tsedyakov, 2 Pyatigorsky proezd, 2, kv. 6, both of Moscow, U.S.S.R.

Filed Oct. 7, 1971, Ser. No. 187,307

Int. Cl. B22d *11/06*

U.S. Cl. 164—277 3 Claims



A roll mould which consists of rolls each having the form of a shaft incorporated in a sleeve with the molten metal passing into the clearance between said rolls. Each roll is fitted with a central bore and radial passages. Inside of the central bore in either roll there is the header dividing all the radial passages into individual sections, one part of which serves for supplying and the other — for discharging the coolant.

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### 3,757,848
### METHOD AND APPARATUS TO RELIEVE THE STRAIN ON ROLLER APRON SEGMENTS DURING CONTINUOUS CASTING

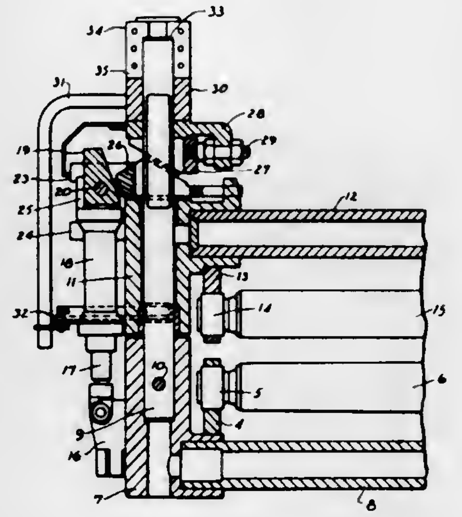
Heinrich Scholz, Grevenbroich; Georg Bollig, Buederich; Horst Grothe, Kaarst, and Gerhard Otto, Duesseldorf, all of Germany, assignors to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Dec. 16, 1971, Ser. No. 208,828

Claims priority, application Germany, Dec. 19, 1970, P 20 62 792.3

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 13 Claims



In a continuous casting machine in which the casting emerging from the mold is conducted through a secondary cooling zone by a guide apron having spaced apron segment parts between which the casting moves, means are provided for relieving overload stresses which may be applied to said spaced apron segment parts by said casting in the event of interruption of the casting process. Hydraulic pressure is applied to said spaced apron segment parts to hold them in spaced relation, and means are provided to maintain the spaced relation even in the event of failure of the hydraulic pressure.

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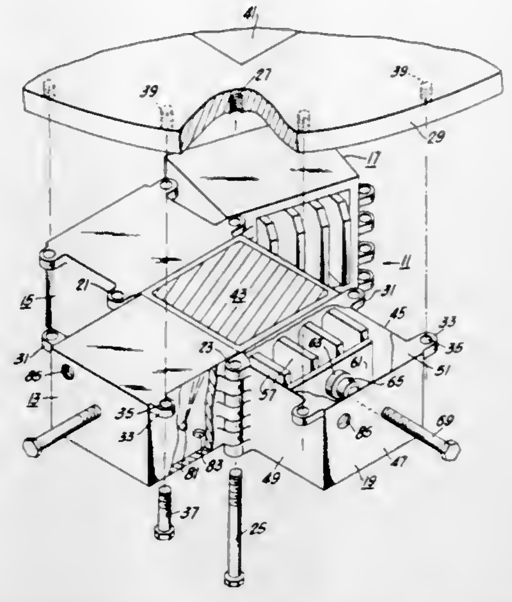
### 3,757,849
### STRAND COOLING SUPPORT SYSTEM

John W. Toperzer, and Dale K. Beachy, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 28, 1972, Ser. No. 248,399

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 10 Claims



The invention comprises a set of four interconnected housing units which face the four sides of a rectangular continuous cast strand. Enclosed within each housing unit is a set of guide plates which may be moved toward the cast strand surface, but not in direct contact therewith. The plates contact and restrain the surface of the strand whenever it tends to bulge and break out due to excessive internal metallostatic pressure.

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### 3,757,850
### LOW-PRESSURE CASTING APPARATUS

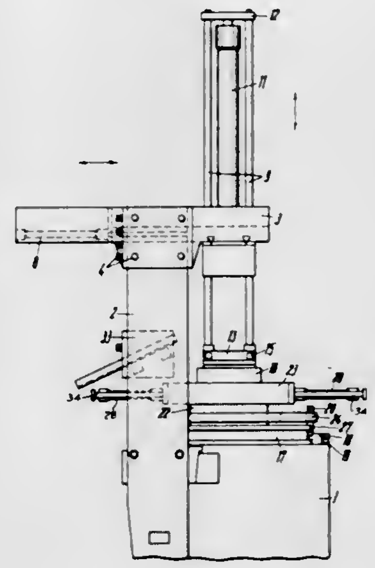
Adolf Diez, Neckarsulm, and Josef Heim, Oedheim, both of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Germany

Filed Jan. 19, 1972, Ser. No. 218,887

Claims priority, application Germany, Jan. 22, 1971, P 21 02 884.2

Int. Cl. B22d *17/06*

U.S. Cl. 164—309 13 Claims



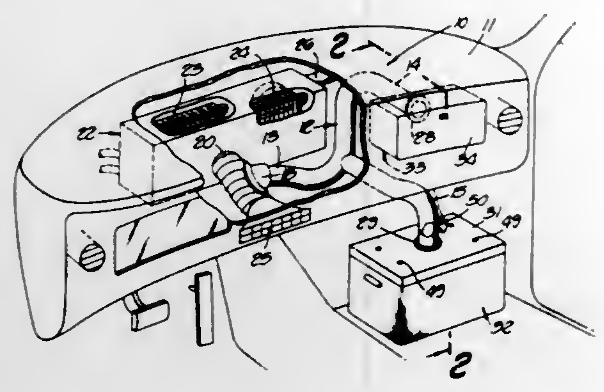
Low-pressure casting apparatus includes a holding furnace for molten metal which is sealed and supplied with gas under pressure. A riser pipe is immersed in the molten metal and communicates with the base plate of an ingot mold positioned on top of the holding furnace. Two opposed flat, upright members are positioned to the rear of the sidewalls of the holding furnace and a horizontal bridge member is mounted between the upright flat members. The bridge member has a forwardly opening U-shaped slot in which a tension element is horizontally slidably mounted. The tension element contains guide means for tension rods which are attached to the core cover plate, which is part of the ingot mold.

### ERRATUM

For Class 165—21 see:
Patent No. 3,758,368

### 3,757,851
### AIR CONDITIONING CONVERTER ACCESSORY FOR MOTOR VEHICLES

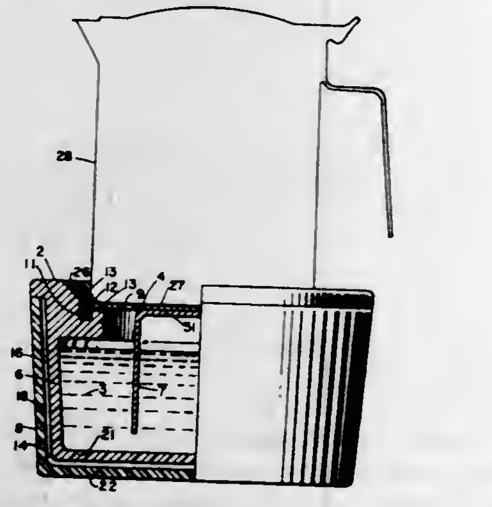
**Orlin G. Marble, 1216 S. Garfield, Alhambra, Calif.**
**Filed Sept. 3, 1971, Ser. No. 177,566**
**Int. Cl. B60h** *3/00*
**U.S. Cl. 165—41** **5 Claims**



A converter accessory adapted to be readily installed between a vehicle air conditioner and one or more storage compartments for foods and beverages and operable at the option of a motorist to heat and to cool the contents of the compartment at the user's option. The accessory includes flexible hose and couplings by which the novice can connect the hose between the air distributor duct, the glove compartment and an insulated storage chest. Foodstuffs in the chest can be isolated from the air distributor while the accessory is in temporary use to warm a nursing bottle, or the like, using hot air supplied from the heater portion of the conditioner following which cooling can be resumed.

### 3,757,852
### MINI-COLD PLATE PORTABLE COOLER

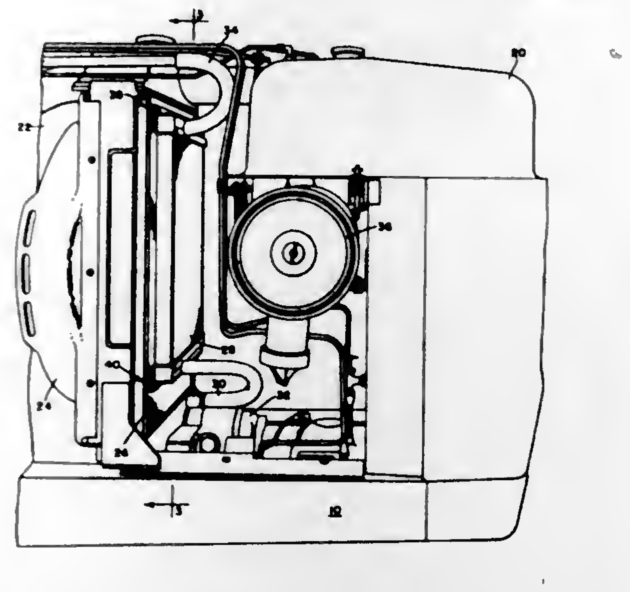
**Arlen W. Allinger, 1337 Fountain St., Alameda, Calif.**
**Filed Feb. 7, 1972, Ser. No. 224,168**
**Int. Cl. F24h** *3/00*
**U.S. Cl. 165—47** **10 Claims**



A thermal energy transfer device consisting of a closed container, a coolant hermetically sealed within said container, the container having a small portion which is relatively highly thermally conductive and a second substantially larger portion which has a relatively low thermal conductivity; and a thermally conductive member thermally connected to the small portion extending into the coolant.

### 3,757,853
### HEAT-EXCHANGER FOR POWER PLANTS, ESPECIALLY MOTOR VEHICLES

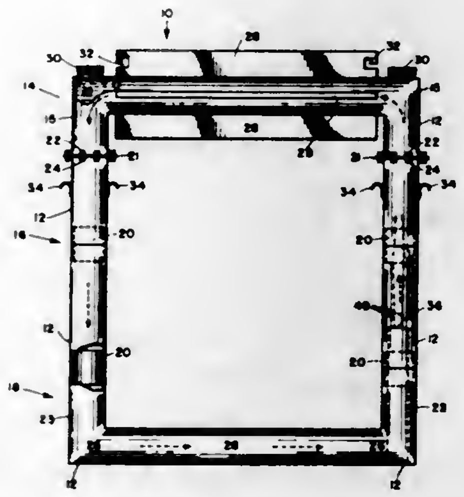
**Leonard Salisbury Daman, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.**
**Filed June 12, 1972, Ser. No. 261,696**
**Int. Cl. F28f** *7/00*
**U.S. Cl. 165—76** **10 Claims**



In a motor vehicle, for example, having the usual coolant radiator, a second heat exchanger is mounted ahead of the radiator and carried thereby for sliding removal and replacement.

### 3,757,854
### HORIZONTAL BOTTOM-FREEZING APPARATUS

**Thomas L. Culbertson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed June 24, 1971, Ser. No. 156,409**
**Int. Cl. F28d** *15/00*
**U.S. Cl. 165—106** **3 Claims**



A horizontal bottom-freezing cell which operates on the liquid convection principle wherein loop circulation occurs because of temperature differentials between the upper and lower portion of the cell. The apparatus contains three interconnected members so that the lower member may be left in the ice strata for reinforcement purposes. Also by being interconnected the cell length may be varied as desired.

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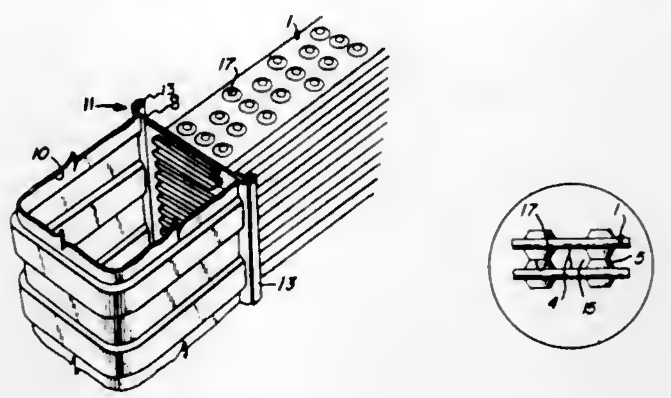
### 3,757,855
### PRIMARY SURFACE HEAT EXCHANGER

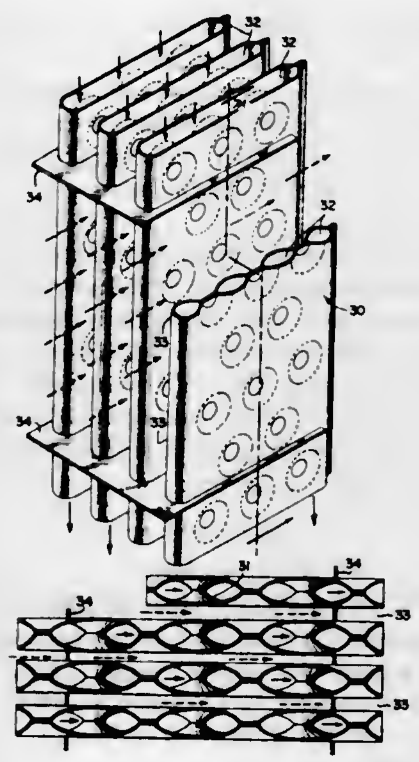
**Leslie C. Kun, and James B. Wulf, both of Williamsville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.**
**Filed Oct. 15, 1971, Ser. No. 189,509**
**Int. Cl. F28f** *3/02*
**U.S. Cl. 165—166** **6 Claims**



An all purpose primary-surface heat exchanger, comprising an array of parallel channels formed and bounded by thin heat conductive walls, at least one wall of which has on at least a portion of its surface substantially uniformly disposed unidirectional truncated conical wall-supporting projections formed from the wall. The projections are arranged so as to mate with and to abut supportingly against corresponding wall-supporting projections of a similar adjacent wall. The walls, so arranged, are sealed at the wall edges in a manner to form and isolate alternate enclosed channels from intervening open channels so that the alternate channels may contain and conduct a first fluid, and the intervening channels may contain and conduct a second fluid at a different temperature, thereby effecting heat exchange between the fluids.

### 3,757,856
### PRIMARY SURFACE HEAT EXCHANGER AND MANUFACTURE THEREOF

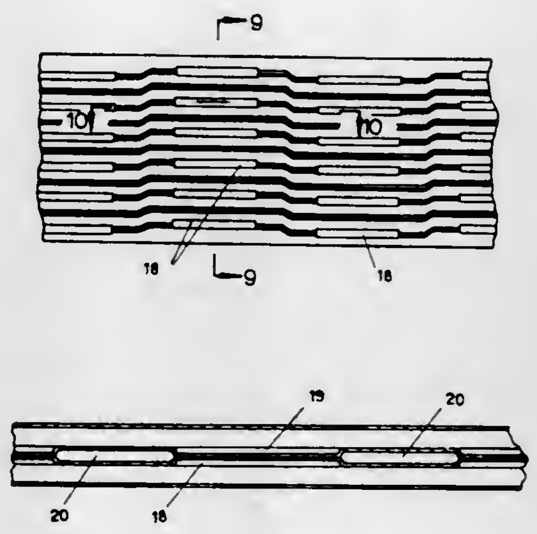
**Leslie C. Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**
**Filed Oct. 15, 1971, Ser. No. 189,659**
**Int. Cl. F28f** *3/02*
**U.S. Cl. 165—166** **6 Claims**



An all purpose primary surface heat exchanger, and manufacture thereof, comprising an array of parallel channels formed and bounded by thin heat conductive walls, at least one wall of which has on at least a portion of its surface isostress contours with substantially uniform disposed unidirectional wall-supporting projections formed from the wall. The projections are arranged so as to mate with, and to abut supportingly against, correspond wall-supporting projections of a similar adjacent isostress wall. The walls, so arranged, are sealed at the wall edges in a manner to form and isolate alternate enclosed channels from intervening open channels so that the alternate channels may contain and conduct a first fluid, and the intervening channels may contain and conduct a second fluid at a different temperature, thereby effecting heat exchange between the fluids.

### 3,757,857
### HEAT EXCHANGERS

**Albert Edward Merryfull, 17 Ayres Rd. East, St. Ives, New South Wales, Australia**
**Filed Mar. 23, 1971, Ser. No. 127,229**
**Int. Cl. F28b** *3/00*
**U.S. Cl. 165—170** **2 Claims**



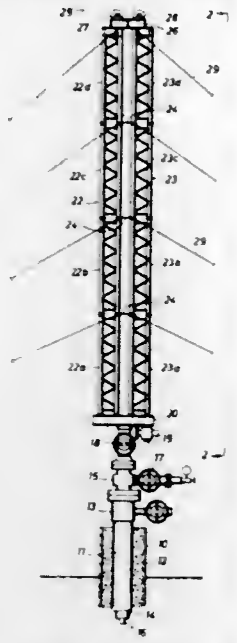
A heat exchange element having a hollow body through which a first fluid may flow for heat exchange with a second fluid outside the element. The element is made of two sheets, at least one of which is corrugated with the plates being welded along their points of contact to form a series of internal flow passages.

### 3,757,858
### APPARATUS FOR MOVING PIPE INTO AND OUT OF A WELL

**Haggai Davis, and Robert S. Robertson, both of Morgan City, La., assignors to Snub-R-Rig Corporation, St. Mary Parish, La.**
**Filed Dec. 8, 1971, Ser. No. 206,019**
**Int. Cl. E21b** *33/03, 15/00*
**U.S. Cl. 166—77** **10 Claims**

The apparatus includes a derrick and a base for supporting the derrick on the well head of a well. The derrick comprises two symmetrical legs that extend upwardly from the base on opposite sides of the centerline of the well head and equidistant therefrom so that the weight of the derrick imposes no unbalanced turning moment on the well head. Each leg supports a sprocket and sheave that move a chain and cable assembly vertically along the side of the leg adjacent the centerline of the well head. Elevators are attached to each chain for movement by the chains along the centerline of the well head to move pipe into and out of the well below the well head. The force imposed on the elevators is equally divided between the chains and the two legs of the derrick so that no unbalanced turning movements are imposed on the well head.

When the fluid in the well is imposing an upward compressive force on the pipe greater than the weight of the pipe, members are spaced along the pipe above the well head that extend laterally to engage support members or brackets carried by the chains and limit the amount the pipe can bend due to the compressive force. The elevators hold the pipe against movement up or down relative to the elevators.



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3,757,859

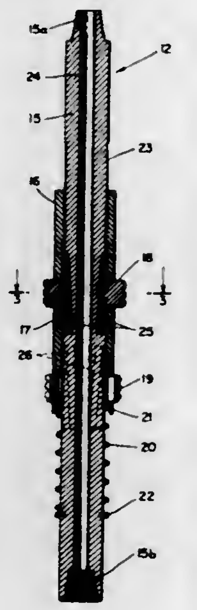
### OIL WELL SCRAPING DEVICE

**Donald P. Hammon, Long Beach, Calif., and Edwin J. Hammon, Albuquerque, N. Mex., assignors to Industrial Concepts Corp., Albuquerque, N. Mex.**

**Continuation-in-part of Ser. No. 214,697, Jan. 3, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,381**

**Int. Cl. E21b *37/02***

**U.S. Cl. 166—173** **11 Claims**



An oil well scraping device includes an integral central mandrel with tapered grooves about its periphery slidably holding scrapers which extend radially beyond the periphery of the central mandrel. An adjustable collar is threaded to the mandrel and serves as a stop for the upper ends of the scrapers so that by adjustment of the axial position of the adjustable collar, the position of the scrapers in the tapered grooves is adjusted to a positive setting which in turn determines their minimum radial extent. This radial extent defines an internal diameter of clearing of a borehole of scale and the like. The scrapers are individually spring loaded to extend beyond the positive setting by the adjustable collar so that continuous engagement of the scrapers with the borehole side walls will take place. Two sets of grooves and scrapers are provided separated by a spacing collar and staggered circumferentially relative to each other to assure three hundred sixty degree scraping action on the borehole side walls.

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3,757,860

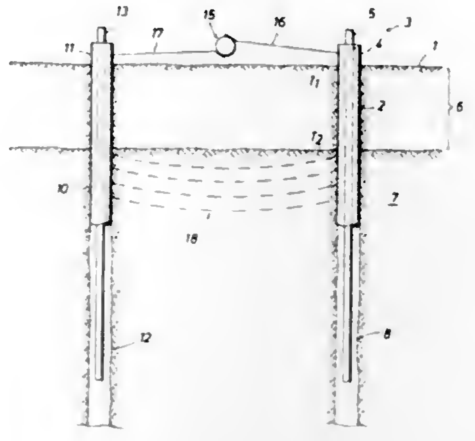
### WELL HEATING

**William C. Pritchett, Plano, Tex., assignor to Atlantic Richfield Company, New York, N.Y.**

**Filed Aug. 7, 1972, Ser. No. 278,267**

**Int. Cl. E21b *43/24***

U.S. Cl. 166—248 **22 Claims**



A method for heating a well to thaw out a frozen portion of the well or to protect permafrost surrounding the well from thermal cycling due to variations in production rate from the well. Also, a method for improving the pumpability of fluid which is produced from a well which does or does not pass through a permafrost zone. Further, a method for preventing the formation of hydrates in a gas well which is in or out of permafrost. In this invention, an alternating current is applied to at least one pipe in the well and maintained at a desired voltage level, the frequency of the alternating current is varied and controlled to cause a skin effect and to increase the effective electrical impedance of said pipe, and an electrical return is established from beneath the portion of the well to be heated, e.g., from beneath a permafrost zone. By this method the pipe is uniformly heated on its outer surface throughout the portion of the well to be heated to a temperature which prevents hydrate formation, or reduces the viscosity of liquid produced through the wellbore, or causes thawing of ice, or prevents freezing of water present to eliminate alternate freezing and thawing of the permafrost and sloughing of permafrost due to such thermal cycling.

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3,757,861

### OIL RECOVERY EMPLOYING PEROXIDES AND ALKALIS

**Willis G. Routson, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Apr. 1, 1971, Ser. No. 130,541**

**Int. Cl. E21b *43/16***

U.S. Cl. 166—273 **11 Claims**

For more efficient recovery of petroleum, particularly for recovery of residual oil after conventional water flooding, an aqueous solution of hydrogen peroxide is injected into the oil-bearing formation and followed by an alkaline solution such as an aqueous solution of sodium hydroxide. The resulting treated slug may then be displaced toward a production well or wells, preferably employing a mobility control agent in the driving fluid, to sweep out residual oil.

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3,757,862

### MULTILAYER PROPPING OF FRACTURES

**Loyd R. Kern, and Ferman G. Martin, both of Irving, Tex., assignors to Atlantic Richfield Company, New York, N.Y.**

**Filed Aug. 11, 1972, Ser. No. 279,879**

**Int. Cl. E21b *33/138, 43/26***

**U.S. Cl. 166—280** **20 Claims**

A method for increasing the permeability of a formation whereby alternate layers of substantially insoluble particles (propping agent) and essentially soluble particles are emplaced in a fracture in said formation. At least one of the layers of substantially insoluble particles is treated with a stabilizing resin which can be hardened or otherwise set up to physically stabilize that layer to resist movement of the insoluble particles back toward the wellbore during the production of fluid through the fracture and into the wellbore.

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3,757,863

### SECONDARY RECOVERY METHODS

**Richard L. Clampitt, Bartlesville, Okla., and James E. Curzon, Great Bend, Kans., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Dec. 27, 1971, Ser. No. 212,688**

**Int. Cl. E21b *43/22, 43/27***

**U.S. Cl. 166—307** **9 Claims**

A method for reducing the quantity of water recovered from a subterranean formation which is penetrated by at least one well bore wherein prolonged mobility control and/or plugging is maintained through increased thickener agent adsorption on oil bearing formation surfaces; comprising the steps of treating the formation with an acid, a neutralizing brine, and at least one slug of thickened aqueous solutions.

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3,757,864

### FRICTION REDUCING AND GELLING AGENT FOR ORGANIC LIQUIDS

**David Lee Crawford; Robert Brooks Earl, both of Tulsa, Okla., and Roger F. Monroe, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 16,591, March 4, 1970, abandoned. This application May 12, 1971, Ser. No. 142,783**

**Int. Cl. E21b *43/26***

**U.S. Cl. 166—308** **16 Claims**

The pressure drop of a confined non-polar organic liquid in motion due to friction is markedly lessened by admixing with the liquid an effective amount of one or more aluminum salts of an aliphatic orthophosphate ester. By increasing the concentration of the aluminum salts of the aliphatic orthophosphate ester so that a gelling quantity is present, the organic liquid can be gelled to provide for example a fracturing fluid for oil and gas wells wherein hard particulate material may be suspended to serve as proppants in the resulting fractures.

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3,757,865

### REMOVAL OF GASES FROM CONTAINERS

**Michael John Clements, "Rosedeme," Orient Drive, Woolton, Liverpool, Lancashire, England**

**Filed Apr. 28, 1971, Ser. No. 138,322**

**Int. Cl. A62c *1/12***

**U.S. Cl. 169—2 R** **1 Claim**

Disclosed is a method of removing explosive or inflammable gases from a container which comprises continuously pumping into container containing liquid and highly explosive or highly inflammable gases, or such gases alone, a high expansion fire-fighting foam, and, when the available space within the container is full with such foam, continuously removing it at a rate corresponding to the inlet rate.

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3,757,866

### ON-OFF SPRINKLER

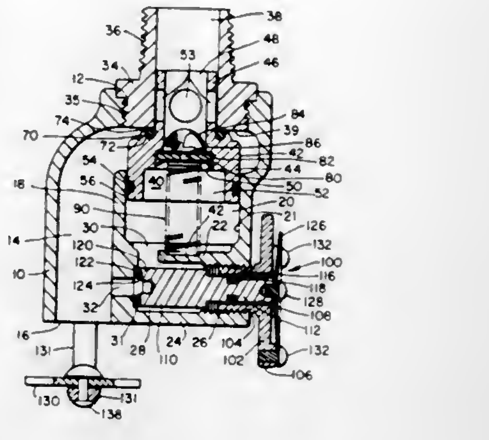
**James William Mears, and William James O'Brien, both of Providence, R.I., assignors to Grinnell Corporation, Providence, R.I.**

**Filed Nov. 8, 1971, Ser. No. 196,641**

**Int. Cl. A62c *37/08***

**U.S. Cl. 169—37** **2 Claims**

An improved sprinkler for a fire protection sprinkler system in which the sprinkler opens to discharge water at one temperature and closes to stop the flow of water at a lower temperature. A pilot valve is actuated by a bimetal disc which also resiliently biases the pilot valve in a closed position. The bimetal disc has a snap action resulting in better control of the "on" and "off" temperatures of the sprinkler. A thermal delay for closing is obtained by the hysteresis which is designed into the bimetal disc.



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3,757,867

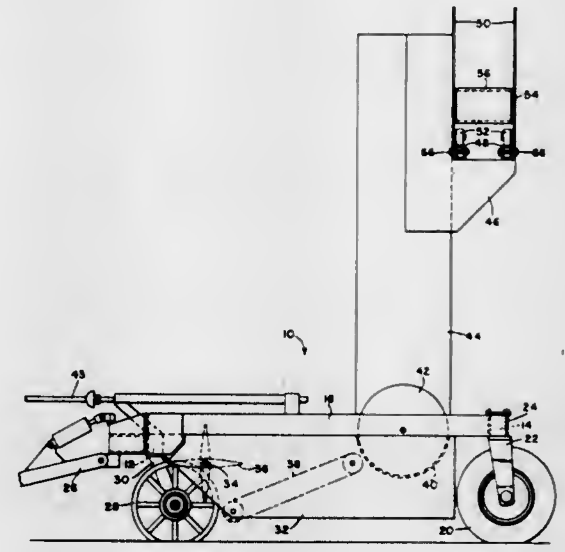
### ROOT CROP HARVESTER

**Richard Wayne Hook, and Richard David Zaun, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed Feb. 28, 1972, Ser. No. 229,669**

**Int. Cl. A01d *17/02***

U.S. Cl. 171—58 10 Claims



A root crop harvester includes a main frame, a plurality of digger wheels on the front of the main frame, conveyor means supported on the main frame to receive roots from the digger wheels and deliver the same to a transversely extending auger conveyor which moves the roots to a vertical auger conveyor. An additional conveyor mounted on the upper end of the vertical auger conveyor in root-receiving relationship therewith moves the roots laterally upwardly for deposit in a vehicle moving alongside the harvester. The additional conveyor is mounted for lateral movement on the upper end of the vertical auger conveyor so that it can be moved inwardly to a transport position.

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3,757,868

### TRACTOR-IMPLEMENT HITCH CONTROL

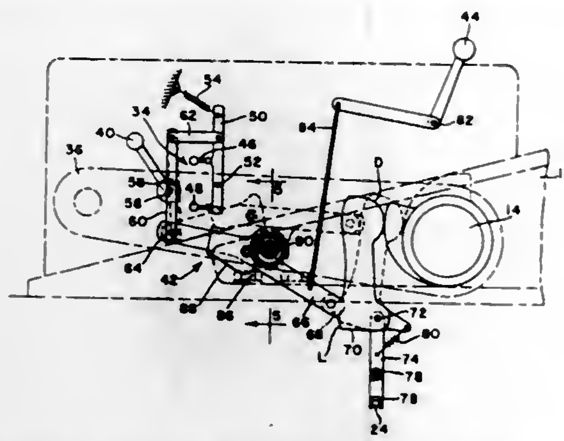
**Stanley Martin Gregerson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed June 12, 1972, Ser. No. 261,697**

**Int. Cl. A01b *63/112***

U.S. Cl. 172—9 **10 Claims**

A hitch control of the type wherein the working depth of the implement depends upon the draft between the tractor and implement, with provision for draft-sensing in both "positive" and "negative" phases and featuring means for locking out negative sensing when the implement is in its raised or transport position.



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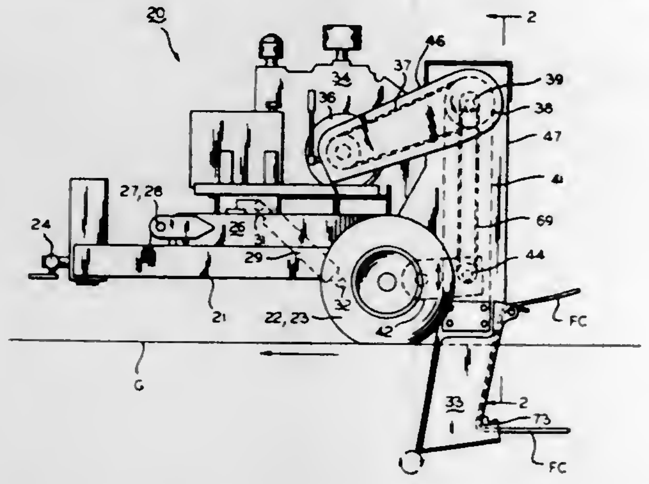
### 3,757,869
### SLIT TRENCHING MACHINE WITH ORBITAL MOTION PLOW

**Archie R. Gagne, R.R. 1, Box 146A, St. Charles, Ill.**

**Division of Ser. No. 17,261, March 6, 1970, Pat. No. 3,647,003. This application Jan. 14, 1972, Ser. No. 217,752**

**Int. Cl. F16l *1/00;* E02f *5/02***

**U.S. Cl. 172—40** **2 Claims**



A cable plow including a ground engaging vehicle having a plow member extending into the ground where it is driven orbitally to form a slit trench. Cable laying means feed a flexible cable or the like into the slit trench as it is formed by movement of the vehicle over the ground surface.

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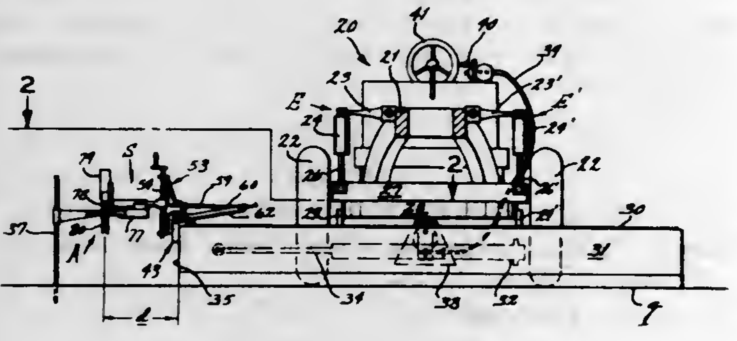
### 3,757,870
### BLADE POSITION CONTROL APPARATUS

**Raymond E. Gill, Peoria, Ill., assignor to Westinghouse Air Brake Company, Peoria, Ill.**

**Filed Aug. 30, 1971, Ser. No. 175,885**

**Int. Cl. E02f *3/76***

**U.S. Cl. 172—4.5** **12 Claims**



An automatic blade position control apparatus mounted on the cutting blade of a surface finishing vehicles for maintaining the end edge thereof at a predetermined distance from a reference string and also at a predetermined height relative to the ground; said apparatus having a vertically disposed feeler arm and a horizontally presented feeler arm, both being engageable with said reference string and having a switch control arm coupled thereto for opening and closing a switch responsive to the movement of the respective feeler arms. The cutting blade is horizontally and vertically moved by hydraulic rams, of the double acting type, which rams are in circuit with the related switch and are operated responsive to the movement of said feeler arms. A parallelogram linkage assembly connects the apparatus to the vehicle for assuring proper blade endwise disposition relative to the reference string regardless of the blade angle with respect to the transverse axis of the vehicle.

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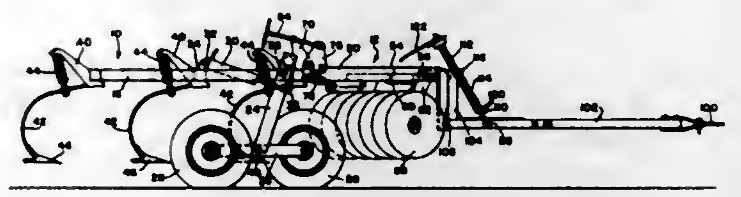
### 3,757,871
### MINIMUM TILLAGE AGRICULTURAL IMPLEMENT

**John Edward Maust, Jr., Des Moines; Darrel Lee Honnold, Winterset, Iowa, and William Wayne Jackson, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed Jan. 26, 1972, Ser. No. 220,797**

**Int. Cl. A01b *35/28, 63/00***

**U.S. Cl. 172—178** **4 Claims**



A combination disk harrow and chisel plow for effectively working the soil while leaving sufficient residue on the surface to prevent soil erosion and water run-off. The implement includes an adjustment for varying the effective working depth of the disk gangs with respect to the working depth of the chisel plows.

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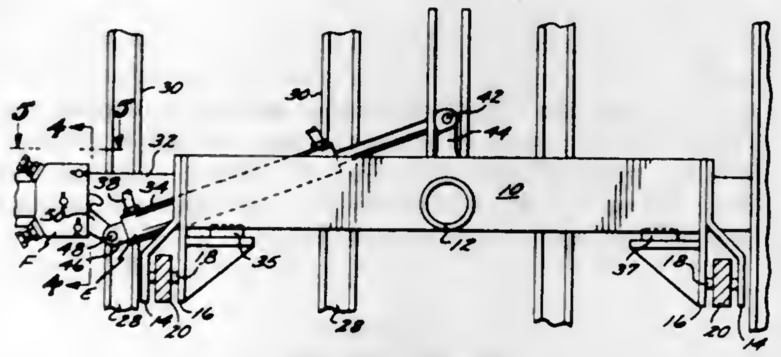
### 3,757,872
### TWO-WAY PLOW ACTUATOR LOST MOTION MECHANISM

**William F. Mellen, Anaheim, Calif., assignor to Alice Marian Mellen, Anaheim, Calif.**

**Continuation-in-part of Ser. No. 159,116, July 2, 1971. This application Nov. 15, 1972, Ser. No. 306,734**

**Int. Cl. A01b *3/28***

**U.S. Cl. 172—225** **6 Claims**



A two-way plow that includes a plow assembly that may be pivoted to either a first or second operating position by a longitudinally expandable and contractable hydraulic actuator in conjunction with a lost motion mechanism. The plow includes a frame on which first and second laterally spaced rests are provided, which rests when contacted support the plow assembly slightly below the first and second operating positions.

The lost motion mechanism includes a first portion pivotally supported from the actuator and a second portion that occupies a fixed position relative to the plow assembly. The second portion includes first and second longitudinally adjustable stops.

The first and second portions are so operatively associated that the lost motion mechanism serves two functions. First, as the actuator is contracted the plow assembly will be pivoted from one operating position towards the other, and the center of weight of the plow assembly moves through dead center prior to the actuator being fully contracted. The weight of the plow assembly causes the latter to pivot by gravity towards the operating position to which it is moving after the center of weight of plow assembly has passed dead center. The rate at which the plow assembly is allowed to so pivot is determined by the rate at which the actuator is allowed to expand. The second function served by the lost motion mechanism, and that occurs when the actuator is fully extended and the first portion is in contact with one of said stops, is to support the plow assembly in either the first or second operating position without the assembly being in contact with either of said rests. Upward shock arising from movement of the plow assembly through the ground is accordingly transferred to hydraulic fluid in the actuator rather than to the plow frame, and damage to the latter is minimized.

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### 3,757,873
### ADJUSTABLE MAST FOR DRILLING ON HOISTING WITH RIGID STAY

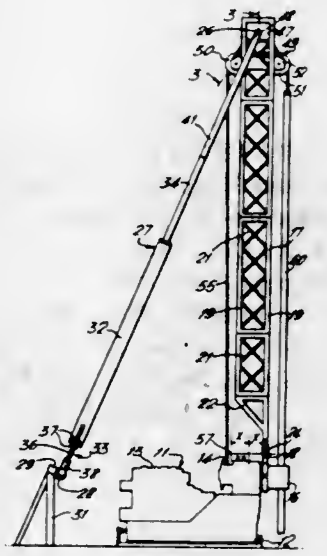
**Keith Charles Bice, Greenborough, Victoria, Australia, assignor to Mindrill Limited, Preston, Victoria, Australia**

**Filed Oct. 6, 1971, Ser. No. 186,974**

**Claims priority, application Australia, Oct. 6, 1970, 2766**

**Int. Cl. E21b *15/00***

**U.S. Cl. 173—43** **5 Claims**



A base has rails extending longitudinally in one direction and a drilling machine assembly is supported on the rails for movement in this direction between a forward drilling position and a retracted hoisting position, the drilling machine assembly including a drilling head to grip and rotate an upright drill rod when in the drilling position. Power means are provided to move the drilling machine between its two positions. An upright mast has its lower end pivotally connected to the drilling machine assembly by a first pivot connection to move back and forth with the assembly, and a rigid stay is pivotally connected at its upper end, by a second pivot connection, to an upper part of the mast and is pivotally connected, at its lower end, by a third pivot connection to an anchorage fixed relative to the base, so that the mast is rotated about the second pivot axis upon movement of the drilling machine assembly between the drilling and hoisting positions. A hoist sheave support is suspended from the mast for swinging about the second pivot connection, and hoist sheaves are mounted on the sheave support. When the drilling machine assembly is in the drilling position, the first pivot connection is spaced forwardly through a preselected distance from a vertical plane through the second pivot connection and, when the drilling machine assembly is in the hoisting position, the first pivot connection is spaced an equal distance rearwardly from this vertical plane, which assures that the second pivot connection and the sheaves remain in the same location for both the drilling and hoisting positions of the drilling machine assembly.

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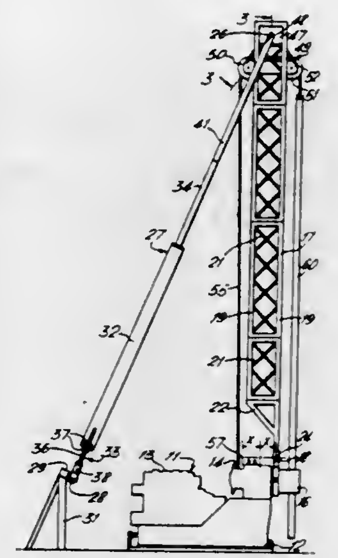
### 3,757,874
### DRILLING APPARATUS WITH MAST TILTING ABOUT UPPER PIVOT AXIS FIXED AGAINST HORIZONTAL TRANSLATION

**Lindsay Graham Claxton, East Brighton, Victoria, Australia, assignor to Mindrill Limited, Preston, Victoria, Australia**

**Filed Oct. 6, 1971, Ser. No. 186,975**

**Int. Cl. E21b *15/00***

**U.S. Cl. 173—43** **8 Claims**



A base has rails extending longitudinally thereof and a drilling machine assembly is mounted on the rails for displacement between a drilling position and a hoisting position, the drilling machine assembly including a drilling head operable to grip and rotate an upright drill rod supported from the upper end of an upright mast having its lower end pivotally connected to the assembly for movement of the lower end with the assembly. A mast support is pivotally connected, at an upper pivot axis, to the upper end of the mast and to a ground point fixed relative to the base, the mast support restraining the upper end of the mast against horizontal translational movement. Thereby, upon movement of the drilling machine assembly from the drilling position to the hoisting position and toward the fixed ground point, the mast is tilted about its upper pivot axis from a first substantially upright position to a second relatively tilted position. The rails guide the drilling machine assembly to tilt in the same direction as the mast to cause the drilling head to tilt in the same direction as the mast. Fluid pressure actuators displace the drilling machine assembly along the rails, and the rails include relatively inclined portions to effect the tilting of the drilling machine assembly.

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### 3,757,875
### AIR HAMMER AND COMBINED SUPPORT AND MUFFLER THEREFOR

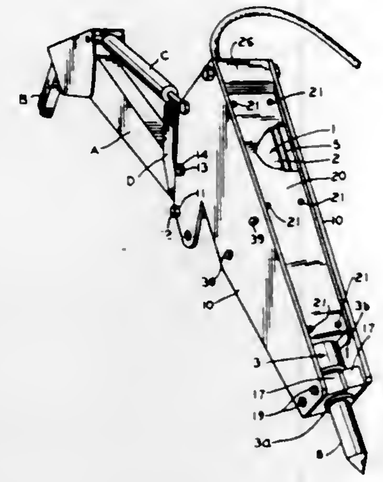
**Samuel D. Gunning, Cleveland, Ohio, assignor to Kent Air Tool Co., Kent, Ohio**

**Filed Nov. 24, 1971, Ser. No. 201,933**

**Int. Cl. F01n *7/00;* B25d *17/12***

**U.S. Cl. 173—44** **8 Claims**

A support by which a reciprocating air hammer of the type having an elongated body or barrel is pivotally supported on the bucket supporting boom arm of a conventional power shovel, is modified to enclose the hammer body and to muffle the air percussively discharged from the hammer body.



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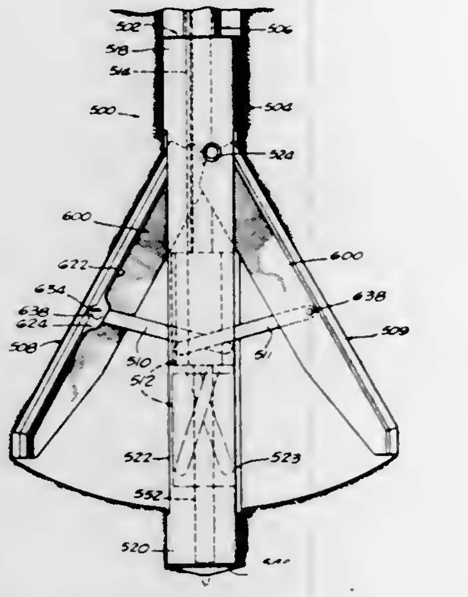
### 3,757,876
### DRILLING AND BELLING APPARATUS

**Robert L. Pereau, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.**
**Filed Sept. 1, 1971, Ser. No. 177,037**
**Int. Cl. E21b** *9/26*
**U.S. Cl. 175—267** **9 Claims**



Apparatus for drilling a hole, and for belling out the lower end of the hole into a conical enlargement, in a single pass of the apparatus down the drill hole, which apparatus includes a combined drilling and belling tool.

Both the extension and the retraction of the belling blades are positively driven.

The combined drilling and belling tool is characterized by the fact that the drilling blades are adapted to cut in one direction of rotation, while the belling blades are adapted to cut in the opposite direction of rotation.

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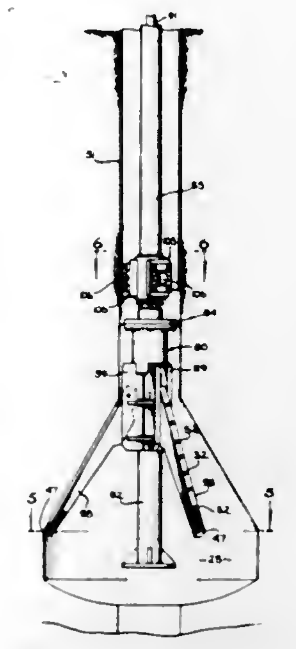
### 3,757,877
### LARGE DIAMETER HOLE OPENER FOR EARTH BORING

**Clarence H. Leathers, Redondo Beach, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.**
**Filed Dec. 30, 1971, Ser. No. 213,956**
**Int. Cl. E21b** *9/26*
**U.S. Cl. 175—269** **2 Claims**

The present invention is an earth boring device and more particularly a device for expanding a portion of a drilled hole to a greater diameter. The device of the present invention includes a body portion adapted to be attached to the end of, or inserted into, a drill string. A plurality of cutter blades are pivotally mounted upon and circumferentially spaced about the body. Fluid circulation means are provided to supply fluid outwardly along the cutting length of each blade. A mandrel is carried within the body in engagement with a lever arm portion of each blade whereby longitudinal movement of the mandrel pivots each blade from a closed to an opened position. In order to center the drill string in the non-expanded portion of the bore hole, a bearing guide means is provided on the drill string proximate to the expanding apparatus.



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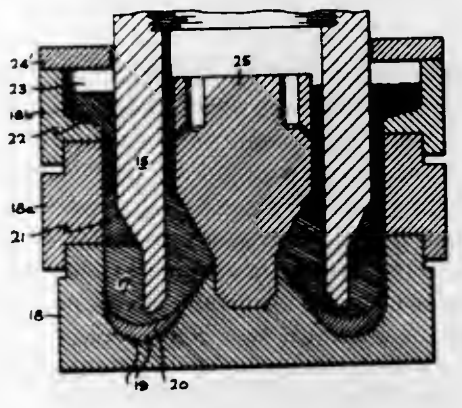
### 3,757,878
### DRILL BITS AND METHOD OF PRODUCING DRILL BITS

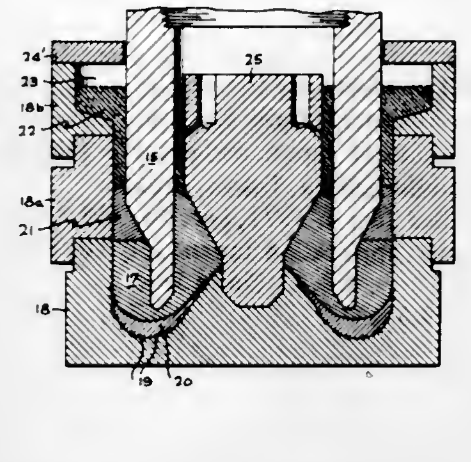
**Arthur G. Wilder, and Harold C. Bridwell, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah**
**Continuation-in-part of Ser. No. 219,973, Jan. 24, 1972, Continuation-in-part of Ser. No. 220,351, Jan. 24, 1972, Continuation-in-part of Ser. No. 220,352, Jan. 24, 1972. This application Aug. 24, 1972, Ser. No. 283,475**
**Int. Cl. E21b** *9/36*
**U.S. Cl. 175—329** **24 Claims**



Earth boring drills such as are useful in oil well drilling or other drilling operations and methods of producing such drills in which metal-encapsulated primary abrasive particles such as diamonds and metal-encapsulated secondary particles are bonded together and to a metallic shank by means of a metal matrix.

### 3,757,879
### DRILL BITS AND METHODS OF PRODUCING DRILL BITS

**Arthur G. Wilder, and Harold C. Bridwell, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah**
**Continuation-in-part of Ser. No. 219,973, Jan. 24, 1972, and a continuation-in-part of Ser. No. 220,351, Jan. 24, 1972, and a continuation-in-part of Ser. No. 220,352, Jan. 24, 1972. This application Aug. 24, 1972, Ser. No. 283,474**
**Int. Cl. E21b** *9/36*
**U.S. Cl. 175—329** **13 Claims**



A diamond bit comprising a steel shank coated with abrasive particles, with a ring of tungsten-coated iron particles bonded together in a metal matrix and by metal to the end of the shank.

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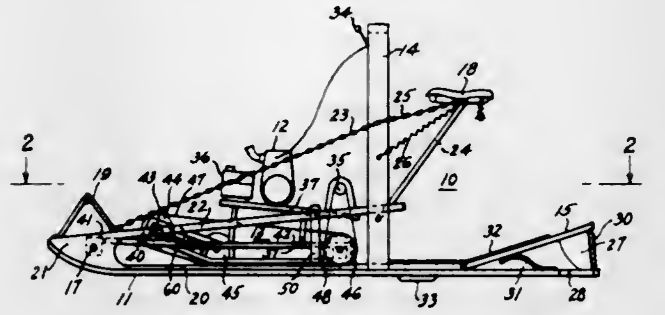
### 3,757,880
### SELF-PROPELLED SNOW SLED

**Claude A. Jones, R.D. 4, Box 140, Nazareth, Pa.**
**Filed Dec. 22, 1971, Ser. No. 210,674**
**Int. Cl. B62m** *27/02*
**U.S. Cl. 180—5 R** **3 Claims**



Apparatus for use in traveling over terrain covered by snow and/or ice which comprises a vehicle having a pair of spaced parallel runners and support frame pivotally mounted at the forward end thereof for supporting the motor and tractive means. The rearward portion of said frame is adapted to move freely vertically while being contained laterally.

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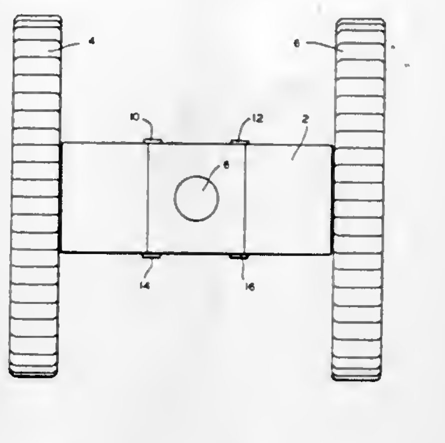
### 3,757,881
### CRANE CRAWLER TRUCK

**Ralph H. Short, and Paul C. Goodwine, both of Lima, Ohio, assignors to Clark Equipment Company, Buchanan, Mich.**
**Filed Dec. 23, 1971, Ser. No. 211,505**
**Int. Cl. B62d** *55/08*
**U.S. Cl. 180—9.2** **3 Claims**

This is a vehicle having detachable self-propelled track laying traction devices which may be detachably mounted on opposite sides or opposite ends of a rectilinear base or chassis of the vehicle. The crawler type traction apparatus is mounted on the sides of the rectilinear chassis to give a narrow tread width to give maximum maneuverability for working within a narrow area. The traction apparatus may be mounted on the ends of the chassis to obtain a wide tread width and thereby give maximum stability.



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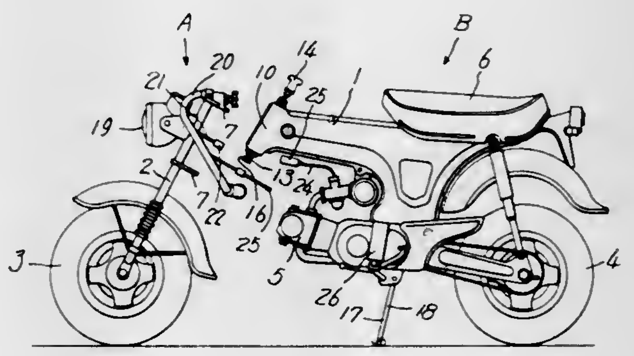
### 3,757,882
### MOTORCYCLE WHICH CAN BE DISASSEMBLED INTO FRONT AND REAR SUBASSEMBLIES

**Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**
**Filed Oct. 5, 1970, Ser. No. 77,850**
**Claims priority, application Japan, Oct. 3, 1969, 44/78635**
**Int. Cl. B62k** *15/00*
**U.S. Cl. 180—33 R** **11 Claims**



A motorcycle with rear wheel drive is constructed with a front subassembly having a front fork carrying a front wheel separably connected to a vehicle frame on a rear subassembly. The frame is provided with an arch-shaped support stand at such a position that the center of gravity of the connected subassemblies is forward of the support stand while the center of gravity of the rear subassembly alone is rearward of the support stand.

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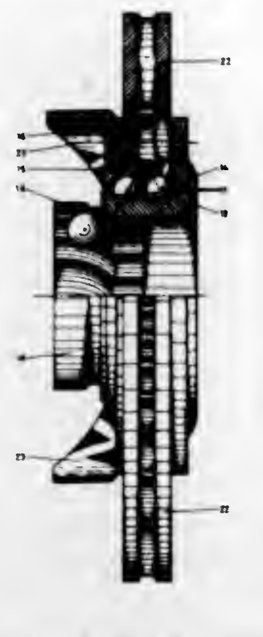
### 3,757,883
### WHEEL SUPPORT FOR AN ENGINE PROPELLED ROAD VEHICLE

**Sture Lennart Asberg, Savedalen, Sweden, assignor to SKF Industriele-En Ontwikkeling-Maatschappij N.V., Amsterdam, Netherlands**
**Filed Feb. 3, 1971, Ser. No. 112,287**
**Int. Cl. B62d** *7/06*
**U.S. Cl. 180—70 R** **6 Claims**

A preassembled wheel support unit having inner and outer annular members with confronting raceways for relative rotation and means for connecting one annular member to the vehicle and the other annular member to the wheel and brake disk. The pitch diameter of the raceways is at least twice the overall axial width of the annular members whereby forces resulting from functioning of the brake are acting at substantially the same diameter and close to forces from the wheel and reaction forces from the vehicle. A drive coupling member is connected to the inner annular member.



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### 3,757,884

### APPARATUS FOR SUPPORTING THE GEAR SHIFT LEVER FOR OPERATING THE TRANSMISSION OF A MOTORCAR

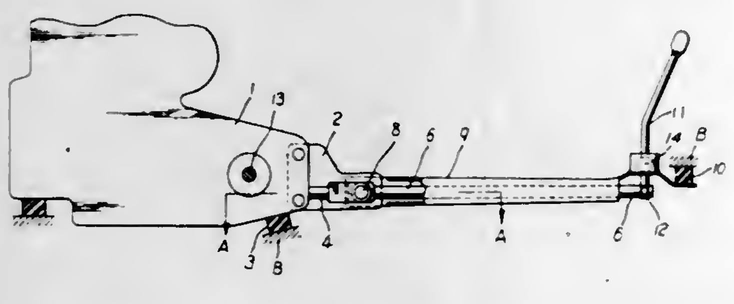
**Takao Tomita, Wako, and Masayoshi Uesugi, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Dec. 29, 1971, Ser. No. 213,403**

**Claims priority, application Japan, Dec. 31, 1970, 45/123273**

**Int. Cl. B60k** *17/00*

**U.S. Cl. 180—77 R** **10 Claims**



Apparatus for supporting a gear shift lever for operating a transmission in a motorcar wherein a connecting rod is attached to a projecting control rod of the transmission for pivotable movement about a horizontal axis which is coincident with the axis of pivotal movement of a frame connected to the internal combustion engine. The frame supports the gear shift lever in a spherical bearing and the gear shift lever is operatively connected to the connecting rod. The frame is resiliently supported at its rear end by the car body and the engine is mounted on its own resilient supports on the car body.

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### 3,757,885

### STEERING SPINDLE FOR MOTOR VEHICLES, ESPECIALLY FOR COMMERCIAL-TYPE VEHICLES

**Adolf Steiner, Gerlingen, and Hans Rinnergschwentner, Rotenfels, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

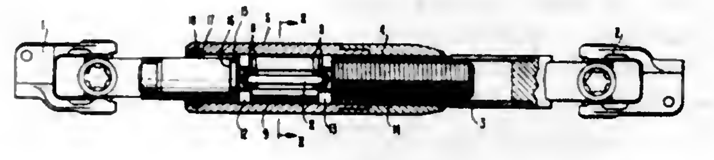
**Filed Jan. 20, 1971, Ser. No. 107,937**

**Claims priority, application Germany, Jan. 21, 1970, P 20 02 471.9**

**Int. Cl. B62d** *1/18*

**U.S. Cl. 180—89 A** **19 Claims**

A steering spindle for motor vehicles, particularly for trucks equipped with a spring-supported and preferably tiltable driver cab in which a part of the steering spindle is constructed two-partite to provide a linear compensation; this part of the steering spindle consists of a tubular member with a rod disposed within the same which are connected with each other by a multi-spline connection; roller bodies are arranged between the flanks of the multi-spline connection.



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### 3,757,886

### POWER STEERING MECHANISM FOR VEHICLES

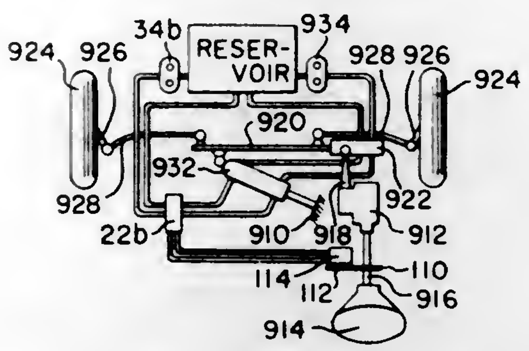
**Osamu Hirao, Tokyo; Youichi Kimoto, Nagoya, and Toyoshi Sakano, Aichi, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed July 6, 1971, Ser. No. 159,885**

**Claims priority, application Japan, July 10, 1970, 45/59838**

**Int. Cl. B62d** *5/06*

**U.S. Cl. 180—79.2 R** **8 Claims**



A system including a pump and a control valve is added to a conventional power steering mechanism for a vehicle so as to advance the operating phase of the steering mechanism. The pump is driven by the steering shaft and discharges a fixed quantity of hydraulic fluid as the steering shaft is successively rotated from an angular position of rotation to another through a predetermined angle. The fluid under pressure is supplied to the control valve to derive an output proportional to the angular velocity of rotation of the steering shaft, and this output is applied to an actuator together with the output derived from an existing control valve so as to steer the road engaging wheels without any phase lag.

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### 3,757,887

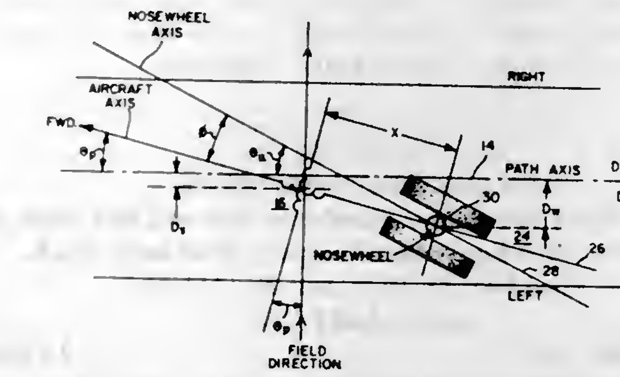
### VEHICLE GUIDANCE SYSTEM

**Wilcy I. Moore, Folsom, Pa., and Gerard L. Lafond, Cinnaminson, N.J., assignors to Versadyne Inc., Prospect Park, Pa.**

**Filed July 9, 1971, Ser. No. 161,078**

**Int. Cl. B60k** *27/06*

**U.S. Cl. 180—98** **15 Claims**



A system for guiding a vehicle on a surface along a predetermined path defined by at least one wire coupled to an oscillator for generating an electromagnetic field. A field sensor carried by the vehicle including pick-up coils having mutually orthogonal axes lying in a plane substantially parallel to the plane of the track senses the horizontal components of the field. Signals induced in the pick-up coils are then utilized by a deviation computer in the vehicle to determine the angle and distance of deviation from the track. A steering control which responds to the deviation adjusts the steering mechanism of the vehicle to minimize the deviation.

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### 3,757,888

### SONAR TRANSDUCER HOUSING

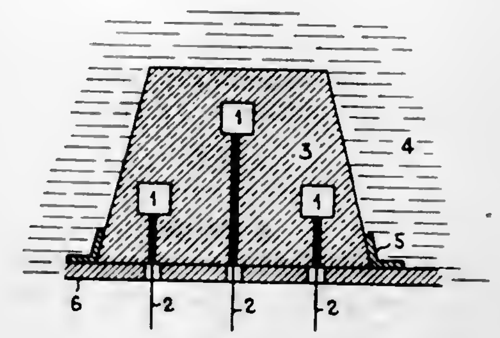
**Michel Lagier, Cannes, and Rene Reynier, Cagnes, both of France, assignors to Thomson-CSF, Paris, France**

**Filed Nov. 16, 1970, Ser. No. 89,735**

**Claims priority, application France, Nov. 25, 1969, 6940589**

**Int. Cl. H04b** *13/00*; **H04r** *1/28*

**U.S. Cl. 181—.5 A** **4 Claims**



A solid block of material has an outer surface shaped to be streamlined, or otherwise present little flow resistance within a liquid medium; the block has a base, and an inner surface which surrounds the outer surface of transducer elements, the entire volume of the solid block and the material between the outer surface thereof and the inner surface of the transducer elements being homogeneous throughout and of a material which is permeable to sound waves created by the transducer element, the material having a specific gravity similar to that of the liquid medium and propagating sound waves therethrough at a velocity substantially similar to the velocity of propagation of sound waves through the liquid, the transducer being located within the block at a distance which is large with respect to the wave lengths of the waves propagated by the transducer through the block of material. To make this transducer, a mold is provided having a desired exterior outline and then the transducer, or a mold form is inserted therein and elastic material is poured into the mold and permitted to harden to form the housing.

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### 3,757,889

### SOUND REPRODUCTION SYSTEM

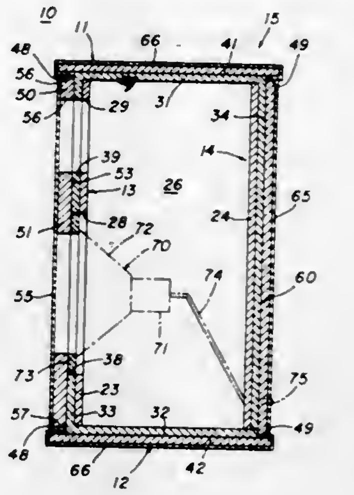
**Scott F. Everitt, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.**

**Filed Jan. 31, 1972, Ser. No. 222,263**

**Int. Cl. G10k** *13/00*; **H04r** *1/28*

**U.S. Cl. 181—31 B** **19 Claims**

Three tubular members of corrugated board, each being rectangular in transverse cross-section and including four panels having corrugations extending in directions perpendicular to the longitudinal axis of the tubular member, are nested one within the other with the longitudinal axes thereof being mutually perpendicular to form a closed six-walled housing, each wall comprising back-to-back panels of two different tubular members secured together with the corrugations thereof disposed perpendicular to each other, the outermost tubular member extending outwardly beyond the inner tubular members to form front and rear recesses respectively receiving a baffle board and a rear cover panel therein, and a loudspeaker accommodated in a complementary opening in the front wall and having a mounting flange secured to the inner surface of the baffle board; the rear cover panel and the other walls of the housing are covered with a decorative facing, either secured directly to the walls or separated therefrom by a layer of foam or cushioning material. A strip of gasketing material, foamed or otherwise, may also be provided between the baffle board and the front wall of the housing.



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### 3,757,890

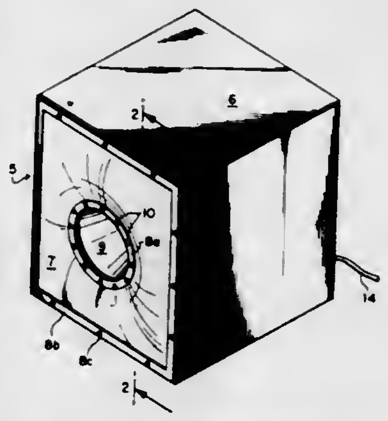
### ELECTROMAGNETIC SUSPENDED SPEAKER

**William S. Dunning, 72-89 Yellowstone Blvd., Forest Hills, N.Y.**

**Filed Feb. 14, 1972, Ser. No. 225,797**

**Int. Cl. G10k** *13/00*; **H04r** *1/28*

**U.S. Cl. 181—31 B** **12 Claims**



In a preferred embodiment, an electromagnetic audio speaker device including an electromagnetic vibrator connected functionally to a speaker cone, the vibrator and cone being suspended within an inner enclosure having a first speaker opening circumscribing a membrane means attached at the first inner opening periphery and attached to an outer periphery of the cone, the inner enclosure being encased within and spaced from an outer enclosure having a second speaker opening aligned with the first speaker opening, the inner and outer enclosures at their opening peripheries being joined to the outer periphery of the membrane means, the membrane means being an elastomer foam encased between two taut polyethylene membranes, the enclosures each being of plastic sheet material laminated to fiber-board sheet material.

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### 3,757,891

### TOOL SILENCING MEANS

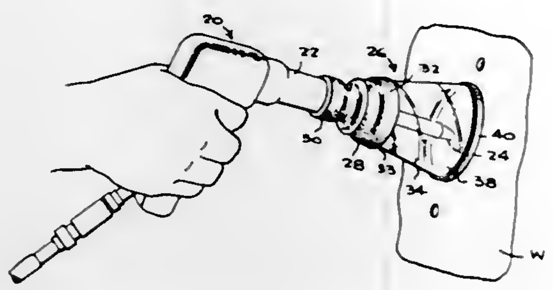
**A. P. Krieger, 1808-41st Ave., Apt. D, Vero Beach, Fla.**

**Filed July 28, 1972, Ser. No. 276,105**

**Int. Cl. E04b** *1/99*; **G10k** *11/04*

**U.S. Cl. 181—33 K** **15 Claims**

A noise inhibitor for a rivet gun is disclosed comprising a hollow flexible elastic coupling sleeve having one end stretchably fitted over a portion of the gun casing, a concial transparent body tube is received in the other end of the coupling sleeve and a cushion member in the form of a soft rubber tube is fitted over the opposite end of the conical body tube to engage the work being riveted with the impact member of the rivet gun being positioned in the transparent body tube so as to be visible by the user; in another embodiment; the conical body tube and rubber sleeve members are oblong conical configuration and are dimensioned to fit over a rivet bucking bar having an impact surface visible through the transparent body tube so that in both embodiments the working surface is visible; however, noise emanating from the working surface components is substantially dissipated.



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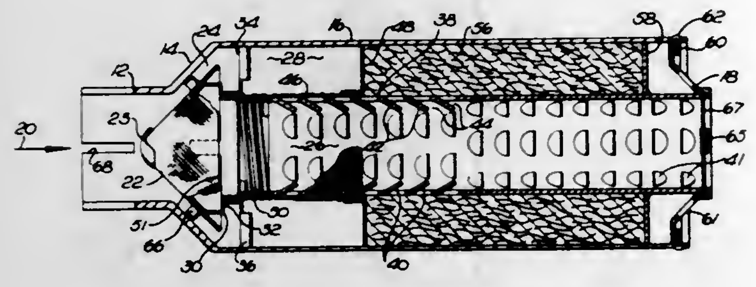
### 3,757,892
### EXHAUST UNIT FOR COMBUSTION ENGINE
**Charles J. Raudman, Jr., Newhall, Calif., assignor to Skyway Machine, Inc, Pacoima, Calif.**
**Filed Apr. 3, 1972, Ser. No. 240,629**
**Int. Cl. F01n** *3/06*; **B01d** *45/12*
**U.S. Cl. 181—36 C** **6 Claims**



As disclosed, a modular arrester unit is fixed into a housing and includes a conical screen supported so that the exterior surface receives an exhaust stream, thereby passing a major part of the stream, but deflecting particles into an annular space which also receives a fragment of the stream through a vane structure to create turbulence. A cylindrical screen internally bounds the cylindrical space and passes the stream fragment back to the major stream. The housing additionally supports a silencer or muffler section downstream from the modular arrester unit.

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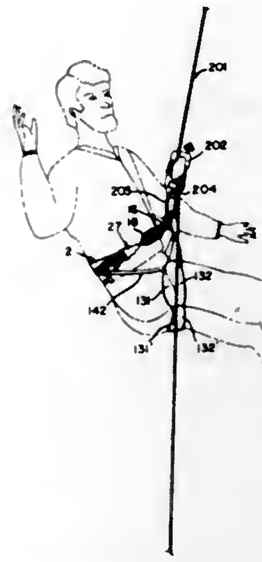
### 3,757,893
### ARTICULATING LEG SLINGS AND BELT
**Edwin L. Hobbs, P.O. Box 295, Moraga, Calif.**
**Continuation-in-part of Ser. No. 88,681, Nov. 12, 1970, abandoned. This application June 26, 1972, Ser. No. 266,339**
**Int. Cl. A62b** *1/14*
**U.S. Cl. 182—6** **5 Claims**

A pair of independent leg slings connected to a safety belt and adapted for connection to a safety line by means of a carabiner. The leg slings and safety belt providing combined articulation permitting freedom of movement. The belt having an offset fastening means permitting sliding movement along a portion of the belt adjacent the attachment point to the carabiner.



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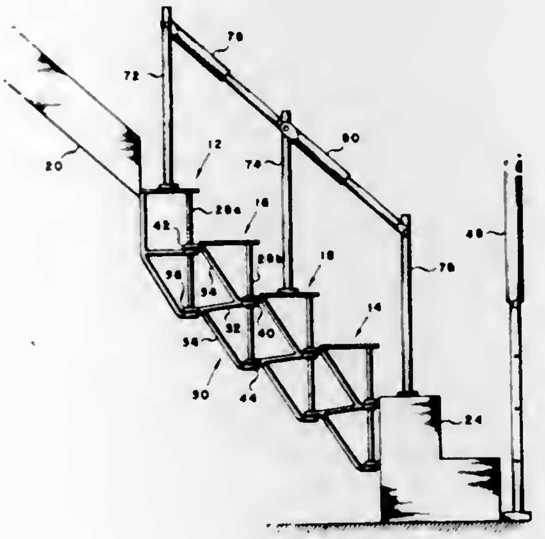
### 3,757,894
### VARIABLE HEIGHT STAIRS FOR WORK PLATFORM
**Virgil W. Chamberlin, Watsonville, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.**
**Filed June 5, 0172, Ser. No. 259,907**
**Int. Cl. E06c** *9/08*
**U.S. Cl. 182—106** **8 Claims**



A variable height stairway, especially suitable for use with a height adjustable work platform. The stairway comprises step members forming a level base at the lowest position of the work platform and extending upwardly one at a time as the platform is raised in increments equal to the riser dimension of the stairway. The pitch of the stairway remains fixed at each elevated position.

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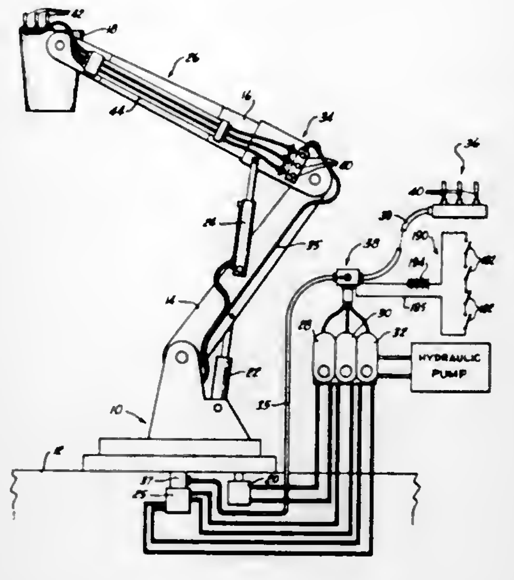
### 3,757,895
### AERIAL LIFT VEHICLE
**Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.**
**Filed Mar. 10, 1972, Ser. No. 233,422**
**Int. Cl. B66f** *11/04*
**U.S. Cl. 182—46** **14 Claims**

An aerial lift vehicle having a carriage rotatably mounted on the vehicle, an electrically insulated boom support on said carriage and an aerial bucket pivotally carried at the upper end of said boom, a hydraulic system for moving the carriage and the boom, the hydraulic system including a number of electrohydraulic proportional remote control valves, a set of electric controllers mounted on said boom for operating the valves, manually actuated levers for each of said electric controllers mounted in a fixed position in said bucket, an electrically insulated push-pull assembly in said boom connecting each of said levers to a corresponding electric controller and a second set of electric controllers connected to said valves at a point remote from said valves, the electrically insulated push-pull assemblies being connected to the mechanical controllers through a set of coaxially arranged rotatable linear motion actuators positioned at the pivot point of the connection of the aerial bucket to the boom.



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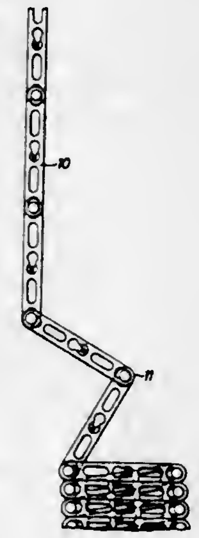
### 3,757,896
### LADDERS
**William Waltham Alfred Lee, Bognor Regis, England, assignor to Walthams (Bognor Regis) Limited, London, England**
**Filed Jan. 26, 1972, Ser. No. 220,830**
**Claims priority, application Great Britain, Feb. 3, 1971, 3,823/71**
**Int. Cl. E06c** *1/383*
**U.S. Cl. 182—164** **8 Claims**



This invention relates to a ladder capable of being erected from a plurality of similar rungs and links, the ladder being capable of being folded in a zig-zag manner and also of being dismantled into a kit of component parts. The ladder comprises a plurality of rungs and side links which in the extended form of the ladder are adapted to maintain the spacing of the rungs and means between the rungs and the side links for inter-engagement.

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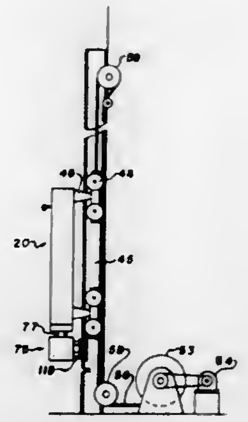
### 3,757,897
### VERTICALLY MOVING TRANSPORTING APPARATUS FOR BUILDINGS
**Donald C. Moulson, Burnaby, and James K. McGuigan, North Vancouver, British Columbia, both of Canada, assignors to Sky-Van Limited, Burnaby, British Columbia, Canada**
**Continuation-in-part of Ser. No. 879,207, Nov. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 879,208, Nov. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 209,469, Dec. 17, 1971, abandoned. This application Apr. 26, 1971, Ser. No. 137,472**
**Int. Cl. B66b** *9/00*
**U.S. Cl. 187—6** **17 Claims**



There is disclosed apparatus for moving containers up and down on track means secured to buildings. The apparatus includes a lift unit adapted to travel up and down on tracks mounted on a wall of a building. This lift unit has securing means for releasably connecting a container thereto, and power means for selectively operating this securing means to grip and to release the container. The power means is preferably located in an actuator unit which is releasably connected to the lift unit. The actuator unit has means for connecting it to the tracks either permanently or for movement along said tracks.

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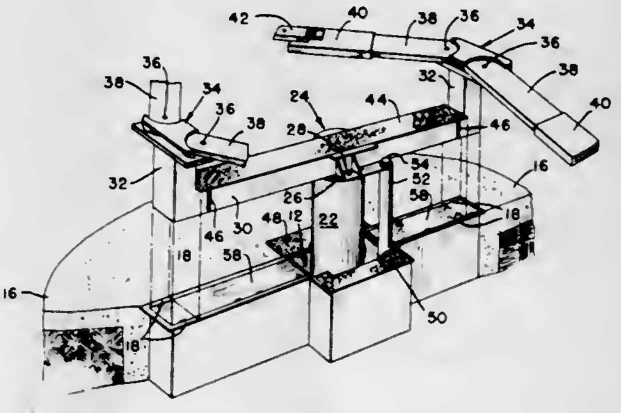
### 3,757,898
### VEHICLE LIFT
**Sidney C. Mitchell, Greensboro, and Stanley C. Crandall, Kernersville, both of N.C., assignors to Gilbert Barker Manufacturing Company, New York, N.Y.**
**Filed Dec. 22, 1971, Ser. No. 210,760**
**Int. Cl. B66f** *7/00*
**U.S. Cl. 187—8.62** **9 Claims**



A lift for elevating vehicles above a floor surface includes a trench or box-like enclosure located below the floor surface and closure means for closing the enclosure when the lift is in the raised and lowered positions. A first cover means is normally positioned to close the enclosure when the lift is in the lowered position and is displaced by the lift superstructure when the lift is in the raised position. Second cover means, pivotably mounted within the box-like enclosure, are displaceable to an operative position wherein the enclosure is enclosed, by a series of displaceable arm members and the piston anti-rotation means upon raising of the lift.

3,757,899

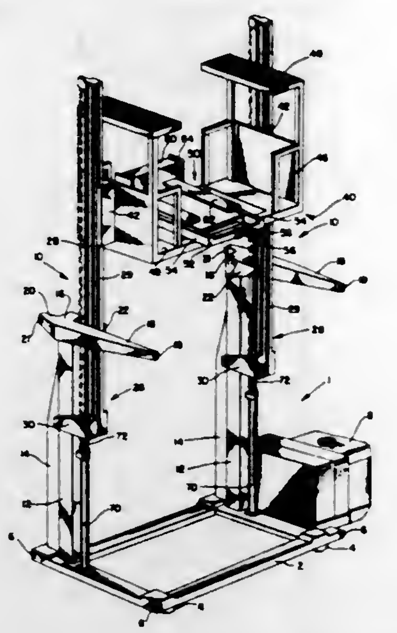
### DOUBLE MAST SIDE LOADER LIFT TRUCK AND DOUBLE ACTUATOR BALANCING

**Raymond L. Smith, Jr., Southbury, Conn., assignor to C&M Manufacturing Company, Inc., Bethesda, Md.**

**Filed Mar. 12, 1971, Ser. No. 123,792**

**Int. Cl. B66b** *11/04*

**U.S. Cl. 187—17** **5 Claims**



A side loader lift truck has a carriage which moves vertically between fore and aft spaced and unconnected masts. Forks on the carriage move laterally to either side of the masts through the open space between the masts. To prevent carriage tilting and jamming caused by a lift cylinder at one end of the carriage overrunning its opposite counterpart, a supply valve for the overrunning actuator is cut off until the other actuator catches up. The balancing or overrunning prevention is effected by connecting valve bodies to pistons, movable mast portions, or the carriage. Control spools moving within the valve bodies are interconnected by parallel chains and sprockets which move with an interconnecting shaft. The shaft is biased initially in an up or down direction, biasing the valve spools in the up or down position. When the carriage is being raised, excessive upward motion of one valve body carries the body over the spool, cutting off further supply through that valve to the actuator until the synchronizing shaft and chain return the valve spool to its predetermined position.

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3,757,900

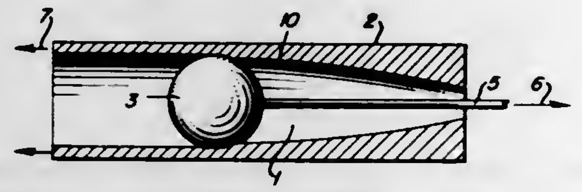
### SHOCK LIMITING AND ENERGY ABSORBING DEVICE

**George M. Gischlar, Towson, Md., assignor to Isotopes, Inc., Westwood, N.J.**

**Filed Oct. 22, 1971, Ser. No. 191,752**

**Int. Cl. F16f** *7/12*

**U.S. Cl. 188—1 C** **11 Claims**



An improved shock limiting and energy absorbing device comprises two components arranged one inside the other. The components are prevented from freely slideably moving with respect to one another by the fact that the external diameter of the inner component is somewhat larger than the internal diameter of the outer component. Application of a force between the inner and outer components results in the inner component being moved through the outer component with the force and energy applied between the two components being absorbed and controlled by the plastic flow of the material tending to prevent the slideable movement.

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3,757,901

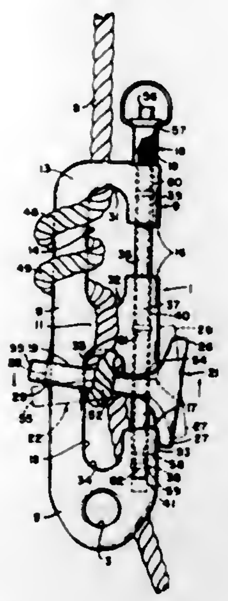
### DOUBLE GATE TORTUOUS GRIP ROPE BRAKE

**Edwin L. Hobbs, P.O. Box 295, Moraga, Calif.**

**Filed Aug. 11, 1972, Ser. No. 279,873**

**Int. Cl. B65b** *59/14*

**U.S. Cl. 188—65.4** **7 Claims**



A rope brake for use with an elongated flexible member such as a rope consisting briefly of a frame having a closed opening for non-releasable attachment of carabiners and other safety rings and two separate gated openings for receipt of a line. A brake bar slides upon the frame engaging the line in various degrees of frictional contact and a cam surface on the frame terminating in a shoulder permits holding the brake bar in or out of braking position.

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3,757,902

### COUPLING FOR ROTATIONAL COUPLING OF TWO SUBSTANTIALLY COAXIAL SHAFTS

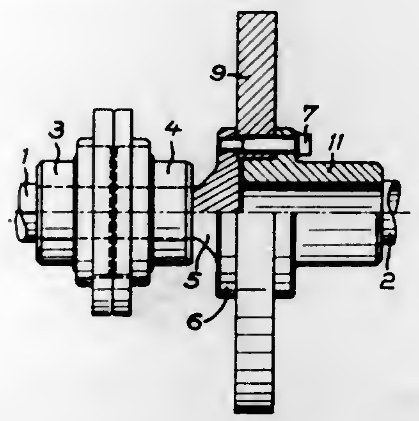
**Philippe R. Messian, Saint-Cloud, France, assignor to Engrenages Et Reducteurs (Engrenages Citroen et Etablissements R. Messian reunis), Velizy-Villacoublay, France**

**Filed Oct. 26, 1971, Ser. No. 192,144**

**Claims priority, application France, Oct. 27, 1970, 7038770**

**Int. Cl. F16d** *55/00*

**U.S. Cl. 188—71.1** **7 Claims**



A disc brake assembly comprising: a movable disc brake member and a coupling for rotational coupling of two substantially coaxial shafts, said coupling comprising a first element connected to one shaft, a connecting member releasably connecting the first element to a second element and disposed with radial clearance on at least one of the elements, a spacer member detachably connected to the other shaft and to which the second element is rigidly connected; wherein the disc or calliper of the disc brake member is detachably but rigidly connected to the spacer member, the arrangement being such that the distance between the oppositely directed end surfaces of the second element and spacer member is at the most equal to the distance between the opposed end surfaces of the first element and the other shaft.

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3,757,903

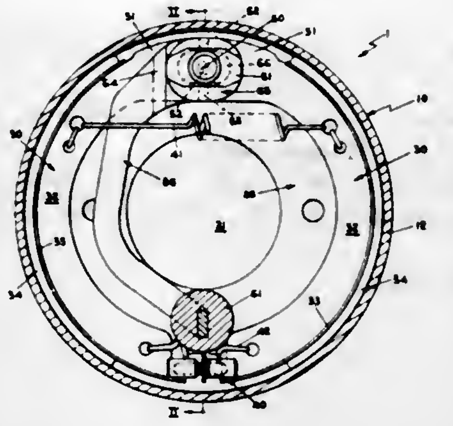
### ELECTRIC BRAKE

**Cletus McLane, c/o Dexter Axle Comp. Inc., P.O. Box 250, 2030 S. Main St., Elkhart, Ind.**

**Filed Feb. 11, 1972, Ser. No. 225,393**

**Int. Cl. F16d** *65/34*

**U.S. Cl. 188—138** **15 Claims**



This electromagnetically activated servo brake includes a pair of brake shoes joined at one end by an adjusting screw device and being separated at their opposite ends by an anchor pin. Loosely mounted on the anchor pin, such that it can shift to the left or right thereon, is an actuating lever having an upper and lower cam positioned above and below the anchor pin, respectively. These cams extend between the free ends of the brake shoes. The lever curves out around the central portion of the brake drum and includes an electromagnet mounted on its opposite end.

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3,757,904

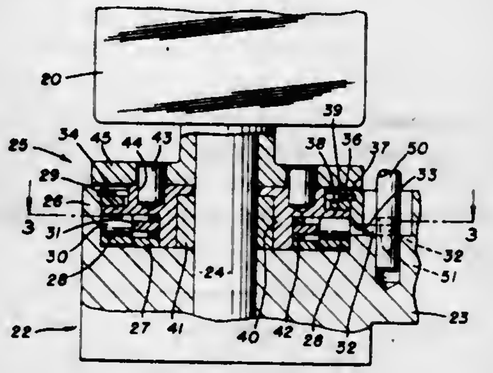
### SPOOL RELEASE MECHANISM

**Simon Arden Deyoung, Ravenna, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio**

**Filed Oct. 27, 1971, Ser. No. 193,013**

**Int. Cl. F16d** *63/00*

**U.S. Cl. 188—82.3** **3 Claims**



Mechanism for controlling the rotation of a spool of strand material on a strand fabricating machine having a "work center" toward which a tensioned strand from a spool is incrementally released. The spool is carried by a spindle of a spool holder having a base with a case housing the mechanism. The mechanism develops a frictional locking force against rotation of the spool which is selectively released for let off of a strand of material from a spool.

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3,757,905

### BRAKING ARRANGEMENT FOR A ROTATABLE BODY MOUNTED ON FLUID BEARINGS

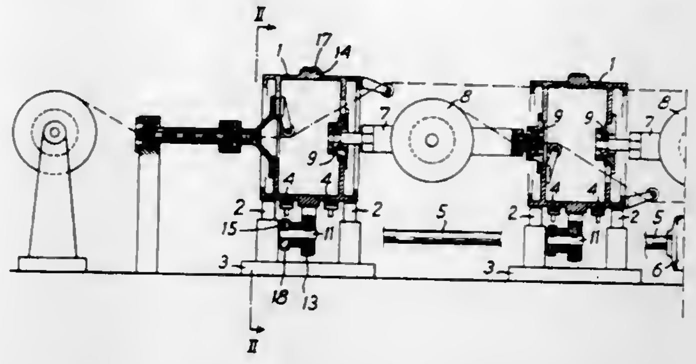
**Charles M. Fevre, Lyon, France, assignor to Societe Stephanoise de Constructions Mecaniques, Saint-Etienne, France**

**Filed Apr. 20, 1971, Ser. No. 135,572**

**Claims priority, application France, Apr. 21, 1970, 7014460**

**Int. Cl. F16d** *65/20*

**U.S. Cl. 188—170** **2 Claims**



A braking arrangement for a rotatable body mounted on fluid bearings comprising a braking lining shoe or pad whereof the movements relative to a cylindrical part of the body is controlled by a spring or the like and a fluid jack or the like. The spring tends to urge the brake lining against the cylindrical part of the body while the fluid jack tends to move the brake lining away from the cylindrical part of the body. When the fluid bearings are not supplied with fluid the spring urges the brake lining against the cylindrical part of the body.

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3,757,906

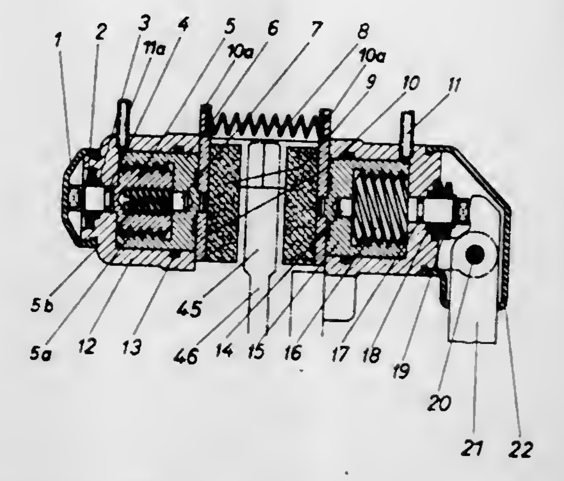
### MECHANICAL ADJUSTING ARRANGEMENT

**Karl Baezold, Niederbarnstrasse 13, Frankfurt am Main, Germany**

**Filed Dec. 21, 1970, Ser. No. 100,209**

**Int. Cl. F16d** *65/56*

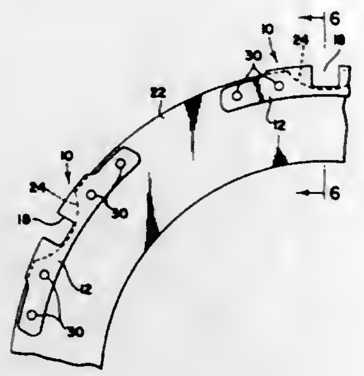
**U.S. Cl. 188—196 D** **13 Claims**



Mechanical adjusting arrangement, in particular for braking members in motor vehicles, which are operated by means of a self-braking or non-reversible outer thread set or a pair of cooperating curved cam elements corresponding thereto for adjusting an abutment, there being a reversible central and coaxial inner thread set or curved pair of elements, one thread of each of the two thread sets being disposed upon the same rotatable spindle, the two thread sets having the same lead and being of the same hand. The outer thread set also serves to support the rotatable spindle; the inner, central thread set is freely mounted and is used to drive the rotatable spindle. In the disclosed embodiment the outer thread set is composed of a thread on a brake-operating piston mounted for axial reciprocation and held from rotation about its longitudinal axis, the other thread of such set being that on the outer surface of the adjusting spindle.

### 3,757,907
### KEY SLOT SEGMENTS FOR DRIVING BRAKE DISCS

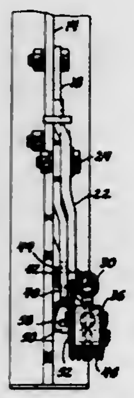
**Richard L. Crossman; Albert W. Cook, both of Tallmadge, Ohio, and Jesse G. Hawley, Penn Yan, N.Y., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed May 24, 1971, Ser. No. 146,181**
**Int. Cl. F16d** *65/12*
**U.S. Cl. 188—218 XL** **13 Claims**



Annular brake discs are provided with metal key slot segments. The metal segments are fastened such as by rivets to the discs and the location of the fasteners are positioned to evenly distribute torque load through the metal segments to the discs. The discs may be either of single piece, multiple piece, or segmented construction. In the segmented construction the metal keyway segments also serve as links connecting the disc segments together. The method for mounting the segments to the discs is also covered.

### 3,757,908
### MECHANICAL LATCH ASSEMBLY FOR BRAKE SYSTEM

**Delbert P. Fisher, 17094 Dunblaine, Birmingham, Mich.**
**Continuation of Ser. No. 884,866, Dec. 15, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 221,466**
**Int. Cl. F16d** *63/00*
**U.S. Cl. 188—265** **13 Claims**

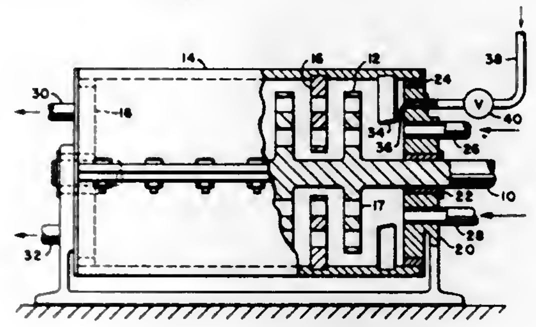


An auxiliary brake system including a ratchet mounted on a brake shoe, a lever pivotally mounted on the ratchet and carrying a pawl, hydraulic pressure responsive means for pivoting the lever to an applied position whereby the pawl and ratchet latch. Release is effected by means of a resilient or non-resilient release member which assumes a cocked position relative to the pawl after the lever is applied, thus, to respond to the next stroke to disengage the pawl from the ratchet.

### 3,757,909
### FLUID DYNAMOMETER HAVING A ROTATING STATOR HOUSING

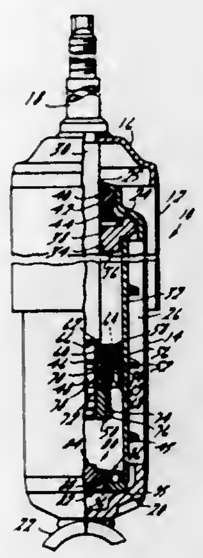
**John W. McClure, Charleston, S.C., assignor to Avco Corporation, Charlestown, S.C.**
**Filed July 23, 1971, Ser. No. 165,623**
**Int. Cl. F16d** *57/02*
**U.S. Cl. 188—290** **2 Claims**

A dynamometer such as a water brake is provided with a rotatable housing so that the normal stator disks are rotatable. In one embodiment the housing with the attached stator disks are counterrotated. In another embodiment the stator housing is free to rotate in a forward or a reverse direction or may be maintained stationary.



### 3,757,910
### SHOCK ABSORBER AND COMPRESSION VALVE ASSEMBLY

**Dale A. Palmer, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.**
**Continuation-in-part of Ser. No. 867,427, Sept. 17, 1968. This application July 29, 1971, Ser. No. 167,135**
**Int. Cl. F16f** *9/34*
**U.S. Cl. 188—322** **6 Claims**



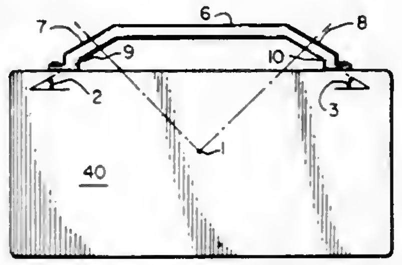
In combination in a shock absorber, a pressure cylinder, a piston movable within the cylinder, valve means on the piston for controlling the flow of fluid through the piston between the opposite sides thereof, a fluid reservoir adjacent the cylinder, and a compression valve assembly for communicating fluid between the reservoir and the cylinder, the compression valve assembly comprising a first member defining a first flow passage and a first valve seat, a second member defining a second flow passage and a second valve seat, and at least one generally ring-shaped valve element interposed between the first and second members and adapted for free longitudinal sliding movement toward and away from engagement with the first and second valve seats.

### 3,757,911
### LUGGAGE HANDLES

**Huntington Potter, 5234 42nd St. N.W., Washington, D.C.**
**Filed Dec. 18, 1970, Ser. No. 99,463**
**Int. Cl. A45c** *13/26*
**U.S. Cl. 190—57** **6 Claims**

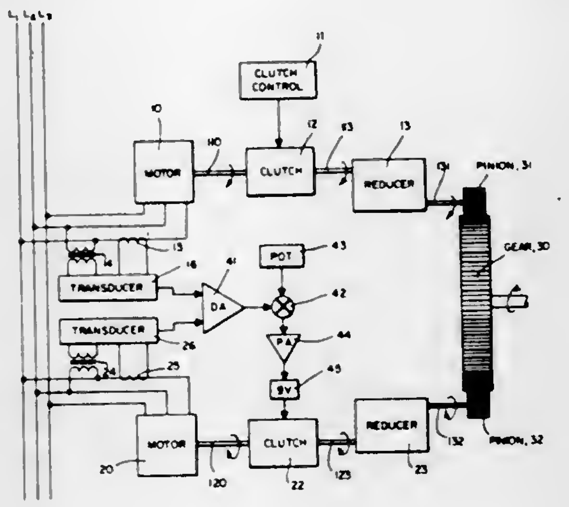
A piece of luggage or like article incorporates a rigid handle having three straight segments. The middle segment is horizontal, i.e., parallel to the top of the piece of luggage, and each of the two end segments are depressed approximately 30° from horizontal so that they make an angle of 150° with the

middle segment. The end segments should be at least 4 inches long so that the user may grip the handle segment. The center segment will generally be longer than 4 inches. The exact length of the handle will depend on the size and shape of the piece of luggage utilizing this new handle.



### 3,757,912
### LOAD EQUALIZING CLUTCH CONTROLS

**Russell C. Ball, Jr., Malvern, and John K. Liu, Valley Forge, both of Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.**
**Continuation-in-part of Ser. No. 255,506, May 22, 1972. This application June 7, 1972, Ser. No. 260,365**
**Int. Cl. F16d** *43/00*
**U.S. Cl. 192—.02** **20 Claims**

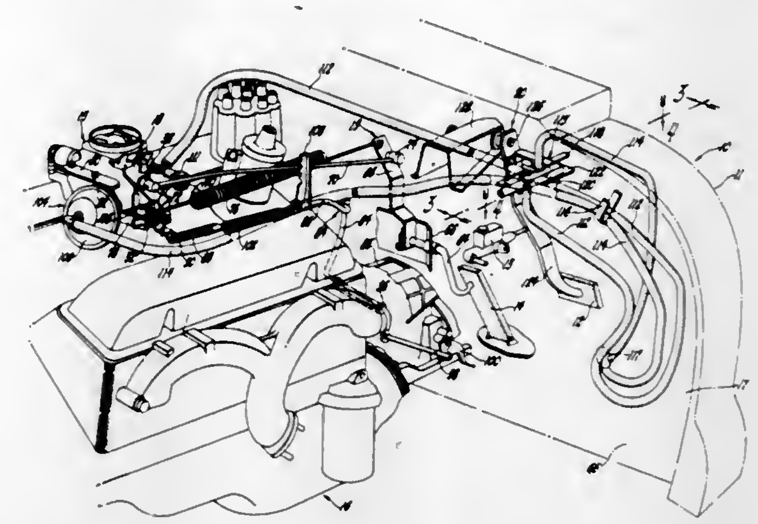


A load-sharing control system controls the division of power among different prime movers driving a common load. In one basic form, the control system utilizes a positive drive in one power path and slipping-clutch means in one or more other power paths. The power delivered to each of the various prime movers is sensed and compared, and used to regulate the torque transmitted by the slipping clutch means.

### 3,757,913
### BRAKE ACTUATED THROTTLE CLOSURE SYSTEM

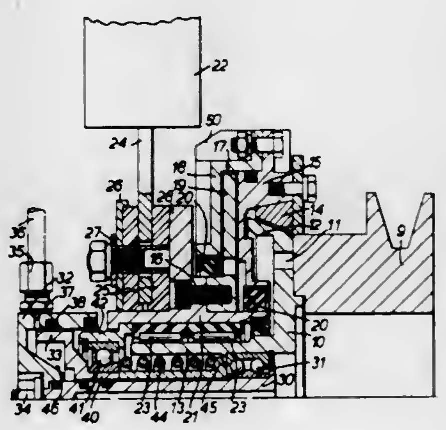
**Philip J. Passon, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed June 8, 1972, Ser. No. 260,774**
**Int. Cl. B60k** *29/02, 21/00*
**U.S. Cl. 192—3 R** **5 Claims**

First and second throttle levers are coupled to normally move conjointly with each other by a scissor spring biasing the levers in opposite directions on a throttle shaft carrying a carburetor throttle valve. The first throttle lever is fixed to the throttle shaft, and the second throttle lever comprises a part of the vehicle throttle pedal linkage for normally controlling the position of the throttle valve. The first throttle lever is loosely connected to a vacuum motor to permit normal movement of the throttle pedal linkage and is pivoted in a throttle velve closing direction when the vacuum motor is actuated with engine vacuum communicated when a vehicle brake pedal opens a vacuum valve. Should the second throttle lever be prevented from moving in the closing direction with the first, actuation of the vacuum motor overcomes the bias of the scissor spring and assures the return of the throttle valve to its idle position.



### 3,757,914
### FAN DRIVES

**Arthur Ernest Henry Elmer, Painswick, Great Britain, assignor to Dynair Limited, Nailsworth, Great Britain**
**Filed Nov. 19, 1971, Ser. No. 200,454**
**Claims priority, application Great Britain, Nov. 21, 1970, 55,490/70**
**Int. Cl. F16d** *47/06*
**U.S. Cl. 192—48.3** **5 Claims**

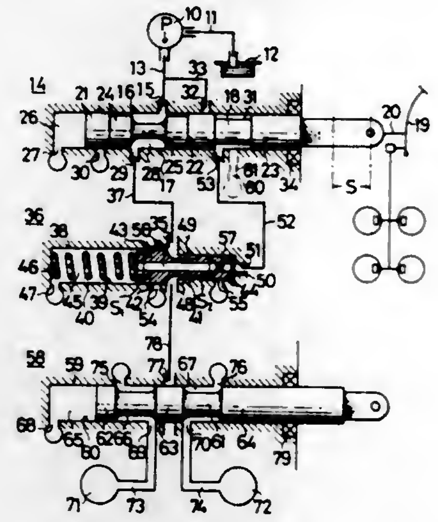


A rotary fan including a fluid filled slipping clutch and means for dis-engaging the slipping clutch by means of a remote thermal sensing device in a liquid coolant circuit. In one form of the invention the thermal sensor controls a pneumatic ram connected to a friction clutch in series with the slipping clutch. In another form of the invention the thermal sensor actuates a pneumatic ram in the fan hub which controls a device for evacuating fluid from the slipping clutch to disconnect the drive.

### 3,757,915
### PRESSURE CONTROLS FOR INCHING CLUTCHES

**Yutaka Momose, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan**
**Filed Oct. 29, 1971, Ser. No. 193,666**
**Claims priority, application Japan, Oct. 29, 1970, 45/095454**
**Int. Cl. F16d** *67/04, 25/10*
**U.S. Cl. 192—87.19** **12 Claims**

A transmission control system for a vehicle having fluid actuated frictional clutch means, comprising a source of pressurized fluid, a first fluid conduit connecting the source to the frictional clutch means, a regulator valve assembly disposed within the first conduit for controlling fluid pressure discharged from the source for the clutch means, an inching valve means disposed within the first conduit being mechanically connected to a manually operable pedal, and a second normally closed fluid conduit for on-off controlling by the inching valve means, the second conduit being adapted for conveying fluid pressure supplied from the source to the regulator valve assembly for rapidly lowering the controlled fluid pressure, whereby when the second conduit is opened by depressing of the pedal, the controlled fluid pressure is lowered rapidly, and then the lowered fluid pressure is gradually regulated by the movement of the inching valve means corresponding to the degree of the depression of the pedal.



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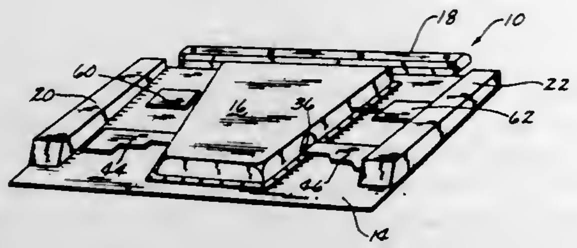
### 3,757,916
### SELF-ENFORCING PARKING SYSTEM

**Clark L. Selby, 1004 Shady Ln., West Liberty, Iowa**
**Filed Oct. 20, 1971, Ser. No. 190,979**
**Int. Cl. G07c** *1/30*; **G07f** *17/24*
**U.S. Cl. 194—1 R** **1 Claim**



A self-enforcing parking system is disclosed herein wherein the motorist must deposit the proper monetary amount in a meter before he can remove his vehicle from the parking stall. The stall comprises a flat plate having wheel guides thereon which aid in properly positioning the front wheels of the vehicle as it is driven into the stall. A front curb is positioned at the forward end of the stall to position the vehicle front wheels on a pair of pressure pads having normally open switches therein. A pair of barrier plates, driven by a hydraulic cylinder means, pivotally move upwardly behind the vehicle front wheels after the vehicle is properly positioned on the pressure pads. When the motorist desires to leave the parking stall, he must deposit the proper amount of coins in the meter to cause the barrier plates to be lowered by the hydraulic cylinder means. The parking charges are directly indicated on the meter to indicate the fee which must be paid.

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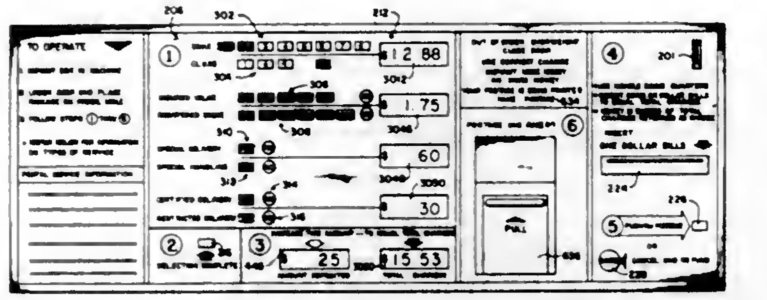
### 3,757,917
### LOGIC SYSTEM FOR A POSTAL FACILITY

**William P. Waiwood, Mentor; John E. Trybuski, Parma; Wendel M. Friedl, Cleveland, and Thomas S. Cross, Richfield, all of Ohio, assignors to Design and Development, Incorporated, Cleveland, Ohio**
**Filed Dec. 30, 1971, Ser. No. 213,995**
**Int. Cl. G06f** *15/20*
**U.S. Cl. 194—10** **13 Claims**



A logic system including an array of input push buttons, a scale, a postage printer, and a money changer performs all the necessary steps in calculating the postage required by parcels. The system includes a memory containing all the postage charges applicable to any given combination of weight, class of postage, delivery zone, and special service. When a parcel has been placed upon the system scale and after appropriate class, zone, and special-service push buttons have been depressed, the logic system computes postage by summing the applicable postage charges which are retrieved from the system and memory. The system then accepts money, makes change, and prints out an appropriate postage label for attachment to the parcel.

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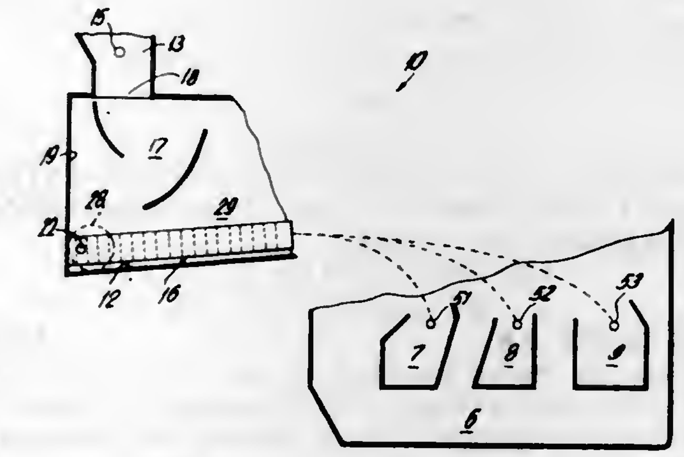
### 3,757,918
### METHOD AND APPARATUS FOR COIN DISCRIMINATION UTILIZING A COIN IMPELLER

**Guy Lloyd Fougere, Sandy Pond Rd., Lincoln, Mass.**
**Continuation-in-part of Ser. No. 120,652, March 3, 1971, Pat. No. 3,701,405, which is a continuation-in-part of Ser. No. 858,351, Sept. 16, 1969, abandoned. This application July 5, 1972, Ser. No. 269,129**
**Int. Cl. G07f** *3/02*
**U.S. Cl. 194—101** **27 Claims**



A method of coin discrimination and a coin discriminator are disclosed which utilize a coin impeller, the impeller comprising magnetic field means for accelerating each coin to a velocity primarily dependent upon the coin's characteristics of electrical conductivity and density, for discriminating among coins based upon the trajectory of the accelerated coin.

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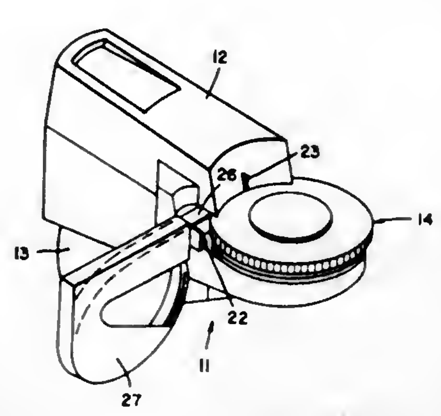
### 3,757,919
### EMBOSSING TOOL TAPE CUT-OFF MECHANISM

**Dane Harald Pedersen, Berkeley, Calif., assignor to Dymo Industries, Inc., Alameda, Calif.**
**Filed Sept. 23, 1971, Ser. No. 182,961**
**Int. Cl. B41j** *1/30*
**U.S. Cl. 197—6.7** **3 Claims**



A cut-off mechanism incorporated in an embossing tool for applying indicia on a strip of tape-like material and effecting cut-off of the embossed strip to form a label, which mechanism facilitates a relatively simple, low-cost design of the overall tool. The mechanism features a strip cut-off knife and vertically opposed depressible anvil which are carried by a rotatable embossing die wheel mounted upon the tool body. The knife and anvil are selectively positionable upon rotation of the die wheel to locations upwardly and downwardly disposed relative to a central opening of a transverse tape guide channel formed in a bridge member secured to the body so as to be on opposite sides of a tape fed through the channel. An underlying spring loaded depressible handle pivotally secured to the forward end of the body is provided with an upstanding embossing stud which is aligned with the bridge opening upon depression of the handle and urges the anvil upwardly through the opening towards the knife to cut-off the tape in the channel disposed therebetween. As a principal feature, the bridge member includes a very narrow transversely extending ledge at one longitudinal end of the channel opening to support the tape during embossing and cut-off operations effected by the embossing stud urging dies or the anvil upwardly through the opening. In addition, the opposite ends of the anvil are closely inwardly spaced from the opposite ends of the knife such that the anvil clears the ledge during traversal of the opening. The tape is thereby cut in a central transverse region closely spaced inwardly from the opposite side edges thereof such that the very narrow uncut regions adjacent the side edges still permit severance of the tape upon pulling of same apart.

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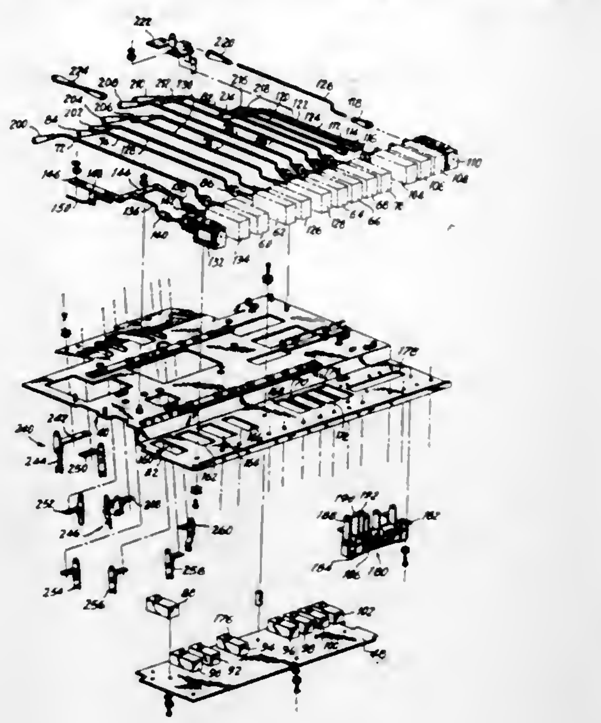
### 3,757,920
### ELECTRIC TYPEWRITER WITH INPUT-OUTPUT ARRANGEMENT

**Edgar Wolf, New Hope Park; Edward Lau, Old Westbury, and Joseph F. Polizzotto, South Babylon, all of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.**
**Filed Dec. 17, 1971, Ser. No. 209,325**
**Int. Cl. B41j** *5/30, 23/02*
**U.S. Cl. 197—19** **15 Claims**

An electric typewriter is adapted to input-output functions without increasing the height thereof by arranging, at the rear and within the bottom of the typewriter, a supplemental structure including solenoids to operate the typeweriter keys and function mechanisms, and switches to generate signals to be fed to an electronic data unit. The solenoids and switches are coupled to the various typewriter mechanisms by rods having a lost motion connection with the solenoids so that the switches can be operated without effecting the solenoids. A special strobe arrangement is provided in which reed switches are juxtaposed to spaced parallel magnets which are cyclically bridged by a rotating butterfly.



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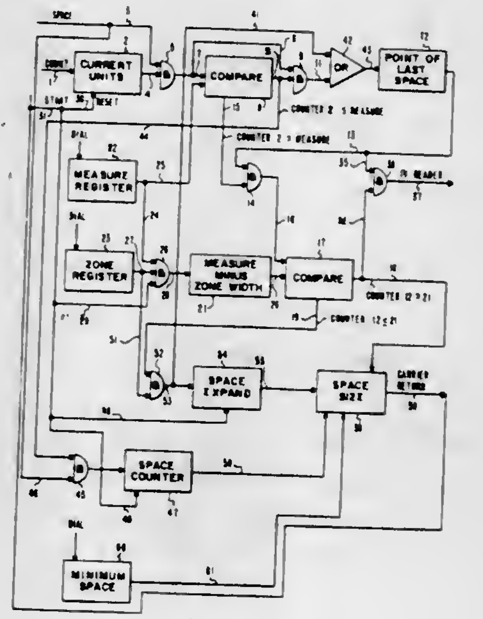
### 3,757,921
### RIGHT HAND MARGIN CONTROL SYSTEM

**David A. Bishop, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Dec. 23, 1970, Ser. No. 100,974**
**Int. Cl. B41j** *5/30*
**U.S. Cl. 197—19** **4 Claims**

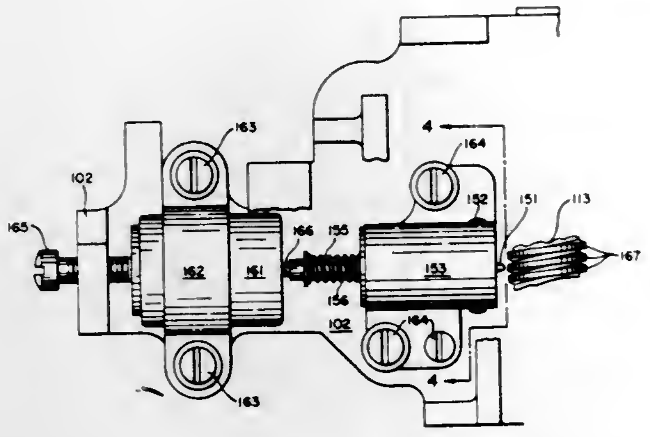


A system which accepts an input medium and provides an output copy having a right hand edge which is controlled by means of a variable control zone. The control zone may be made 1) relatively wide with a resultant extremely ragged right hand edge; 2) quite narrow with a resultant slightly ragged right hand edge; or 3) equal to a value of one escapement unit with a resultant even right hand edge. The system is operable such that in the event that more than one word space occurs in the zone, the word space nearest to the right hand side of the zone which corresponds to the end of the measure is chosen. No operator intervention is necessary to achieve the desired result after the system has been started.

### 3,757,922
### PRINTER CARRIER DRIVE

**David F. Sweeney, Pittsford, N.Y., assignor to The Singer Company, New York, N.Y.**

**Filed Aug. 30, 1971, Ser. No. 176,046**
**Int. Cl. B41j** *1/22*
**U.S. Cl. 197—49** **9 Claims**



A new and improved technique and device is disclosed for selectively coupling a print wheel carrier with a constantly rotating lead screw. The engaging device comprises a rotatable engaging member which is in rolling engagement with the lead screw. This relationship reduces the friction and wear between the members. The technique also facilitates rapid decoupling and minimizes carrier over-travel.

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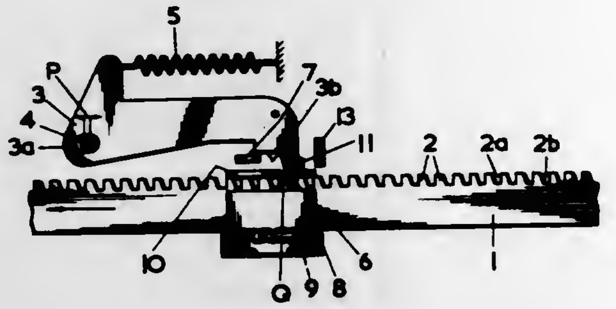
### 3,757,923
### SILENCER FOR ELIMINATING NOISE CAUSED BY A PAWL ON A GEAR RACK WHEN THE GEAR RACK IS RETURNED TO A INITIAL POSITION

**Paul L. M. Kosters, 3 Hazenputten, St. Oedenrode, Netherlands**

**Filed June 25, 1971, Ser. No. 156,877**
**Int. Cl. B41j** *19/66*
**U.S. Cl. 197—94** **4 Claims**



A structure disposed on a gear rack for preventing the point of a carriage control pawl from sliding over the teeth of the gear rack during carriage return.

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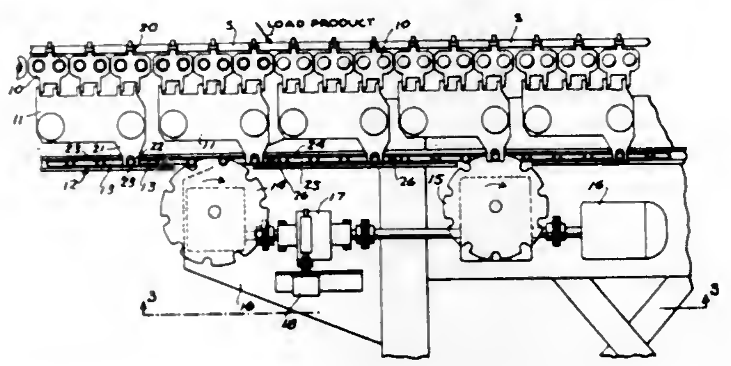
### 3,757,924
### CHAIN DRIVEN MACHINERY

**Louis P. Yakubek, Perrysburg, Ohio, assignor to Owen-Illinois, Inc., Toledo, Ohio**

**Continuation-in-part of Ser. No. 6,895, Jan. 29, 1970, abandoned. This application Sept. 30, 1971, Ser. No. 185,285**
**Int. Cl. B23q** *5/22*
**U.S. Cl. 198—19** **2 Claims**

In chain driven machinery, a pair of endless chains, each of which has work elements thereon. Portions of the chains are moved in parallel relation to one another. Means are provided for maintaining a predetermined pitch length between the elements of the chains along the parallel portion.



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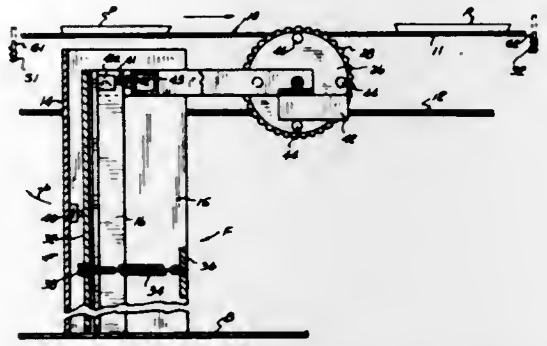
### 3,757,925
### MOTION SENSING APPARATUS FOR FOOD HANDLING OR THE LIKE

**Gerald J. Luther, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.**

**Filed Apr. 16, 1971, Ser. No. 134,613**
**Int. Cl. B65g** *43/08, 43/00*
**U.S. Cl. 198—37** **4 Claims**



Apparatus for use in a bakery, for example, wherein a conveyor system for conveying products, such as panned dough moves in a forward path of travel. A control system is provided which includes a control having a plurality of operating positions or conditions for controlling or affecting the products or the system to produce a desired result, and there is a sensor for sensing the presence of a product on the conveyor, a sensor for indicating if the passage of the products on the conveyor is interrupted, and apparatus connected to the sensors for operating the control system when a product on the conveyor is not moving forwardly.

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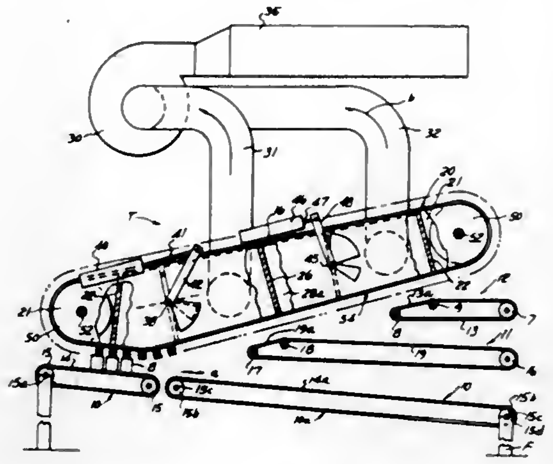
### 3,757,926
### TRANSFER APPARATUS

**Rober J. Gendron, Bridgeport, and Carl Richard Skarin, Saginaw, both of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.**

**Filed June 29, 1971, Ser. No. 151,072**
**Int. Cl. B65g** *43/00, 47/00*
**U.S. Cl. 198—38** **20 Claims**

Apparatus for selectively removing or not removing products such as bakery products from a conveyor and transferring those removed to any selected one of a plurality of superposed discharge conveyors including: a multiple chamber, downwardly opening vacuum box positioned above the feed conveyor and connected to a vacuum source, an endless pick-up conveyor covering the opening in the box and having resilient bellows members positioned on its outer face for sealing to the tops of the products on the feed conveyor when vacuum is communicated thereto to lift the products as the belt moves in an endless path of travel, and actuable valve members in the chambers for releasably and selectively blocking communication of certain portions of the chambers, and the bellows members positioned adjacent thereto, with the source of vacuum to selectively lift products from the conveyor and to selectively deposit them on any one of the discharge conveyors.



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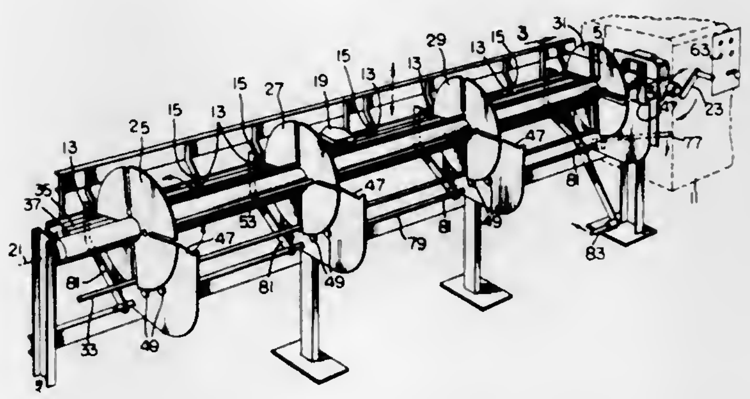
### 3,757,927
### BAR STOCK STORAGE DISPENSING AND FEEDING APPARATUS AND METHOD

**Charles E. Gable, and Marcus A. Gotsch, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.**

**Filed Sept. 13, 1971, Ser. No. 179,786**
**Int. Cl. B65g** *37/00*
**U.S. Cl. 198—105** **16 Claims**



Method and apparatus for storing dispensing and feeding bars of stock to a material processing device includes a rotatable magazine to and from which bars of stock are transferred laterally and a bar support rack which receives the bars one at a time from the magazine, and transfers them axially into or out of a device such as a lathe for machining. Means are provided for the bidirectional transfer of bars of stock between the magazine and the support rack so that an unused portion of a bar of stock may be removed from the lathe and transferred back into the magazine for storage or disposal. A bar of stock is moved axially along the bar support rack by a pair of skewed concave rollers so that a bar is simultaneously moved axially and rotated about its axis to thus aid in inserting the bar into the lathe spindle collet.

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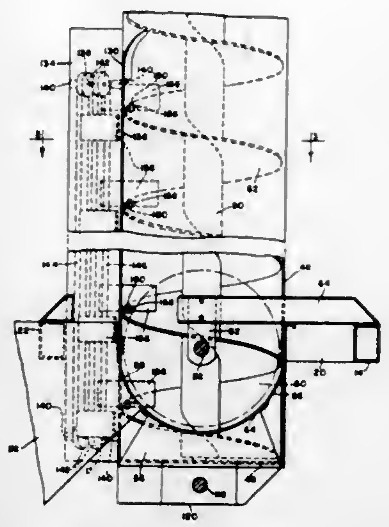
### 3,757,928
### AUGER CONVEYOR

**Richard Wayne Hook, and Richard David Zaun, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed Dec. 17, 1971, Ser. No. 209,116**
**Int. Cl. B65g** *15/14*
**U.S. Cl. 198—160** **20 Claims**

A generally upright auger conveyor is illustrated as part of a beet harvester and includes an endless chain carrying a plurality of paddles which extend into the confines of the helical flight of the auger. Engagement between the paddles and helical flight drives the endless chain so that the paddles are advanced by the helical flight. The paddles prevent material advanced by the helical flight from gravitating down the helical flight and thereby increase the efficiency of the auger conveyor.



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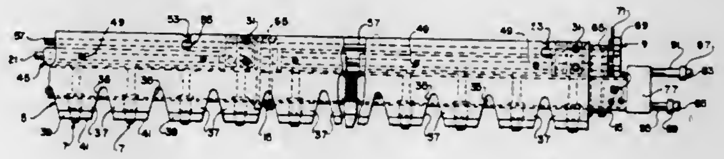
### 3,757,929
### BOTTLE CARRIER

**Henry E. Hull; Herbert C. Abrams, and Charles A. Cummings, all of Columbus, Ohio, assignors to Liberty Glass Company, Sapulpa, Okla.**

**Filed Sept. 27, 1971, Ser. No. 183,997**
**Int. Cl. B65g** *15/00*
**U.S. Cl. 198—179** **16 Claims**



A bottle carrier comprising an elongate support adapted to be conveyed by conveyor means in a direction at right angles to its length, having means for clamping a plurality of bottles at their moutns with the bottles spaced at intervals along the length of the support and suspended at their mouths from the support, the clamping means being formed to clamp the bottles on the outside thereof immediately below the "finish" at the bottle mouths, a plurality of spring-loaded bottle mouth centers carried by the support for entry in the mouths of the bottles gripped by the clamping means to center the bottles relative to the clamping means, and means operable from one end of the support for effecting opening and closing of the clamping means.

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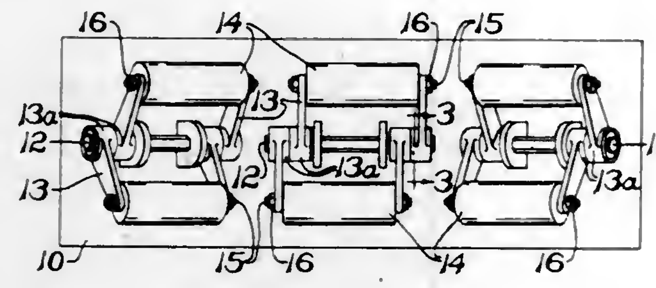
### 3,757,930
### CONVEYOR BELT SUSPENSION

**James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.**

**Filed May 18, 1970, Ser. No. 38,203**
**Int. Cl. B65g** *15/08*
**U.S. Cl. 198—192** **3 Claims**

A resilient idler suspension for conveyor belts having suspension arms cantilevered in pairs axially spaced about a common pivot shaft with each of the arms attached to the pivot shaft by an intermediate elastomeric torsion spring such that rotation of the arms about the pivot shaft is resiliently resisted. Pairs of arms each have a conveyor idler roller rotatably mounted between the free ends of the arms. Three of the pivot shafts may be arranged in angular relationship in a common plane transversely of the conveyor belt so that the idlers support the belt in the form of a trough.



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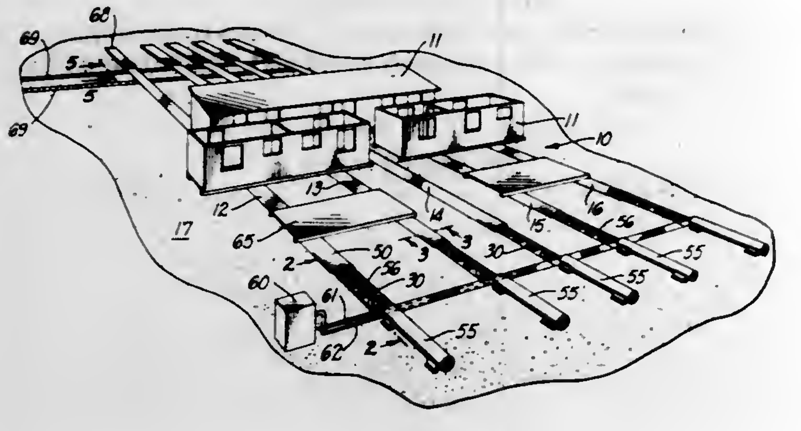
### 3,757,931
### AUTOMATIC CONVEYOR SYSTEM FOR BUILDINGS AND THE LIKE

**Terry M. Baker; Henry W. Huthsing; Robert B. Kieding, and Edwin D. Reddan, all of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.**

**Filed June 9, 1971, Ser. No. 151,318**

**Int. Cl. B65g** *25/04*

**U.S. Cl. 198—218** **9 Claims**



A conveyor system for handling large units such as houses and portions thereof. A plurality of parallel conveyor plates set in the floor of an assembly area, with compliant air bearing or air cushion units for raising the plates to engage and raise the loads from the floor, and drive units for translating the raised plates and loads, after which the air bearing units are deflated to lower the loads to the floor in a new position and the plates are moved in the opposite direction to the initial position. A bed for a plurality of air bearing units with the bearing surfaces between the bed and the plate to support the reciprocating load carrying plate.

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### 3,757,932
### SPRING SYSTEM FOR VIBRATORY PARTS FEEDERS

**Daniel J. Baljet; George A. Sodderland, and John D. H. Hania, all of London, Ontario, Canada, assignors to Advanced Automated Equipment Ltd., Ontario, Canada**

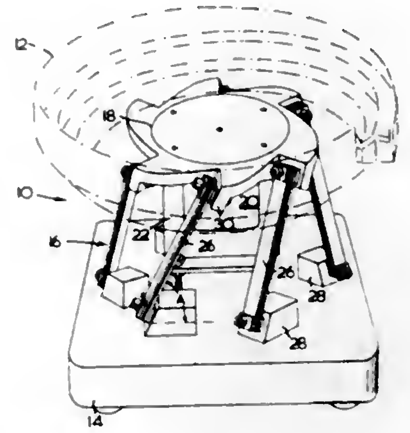
**Filed Jan. 17, 1972, Ser. No. 218,433**

**Claims priority, application Canada, Nov. 12, 1971, 127489**

**Int. Cl. B65g** *27/00*

**U.S. Cl. 198—220 BC** **4 Claims**

A vibratory parts feeder includes a massive base and a mount supporting a feeder bowl having an upwardly inclined spiral ramp therein along which the parts progress during operation. The feeder bowl mount is supported over the base by a plurality of elongated leaf spring units which are arranged in a generally circular array about a central region of the feeder. The elongated springs are each inclined at a primary angle relative to the base as measured in a vertical plane and are also each inclined inwardly from the vertical towards said central region by a relatively small secondary angle.



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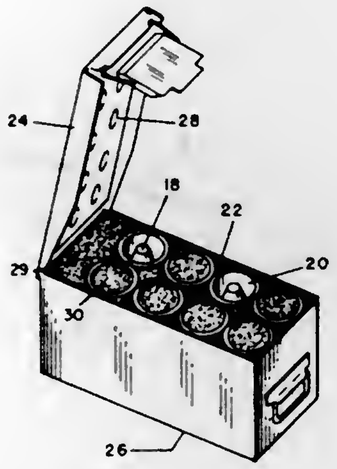
### 3,757,933
### CONTAINER FOR PACKAGING A PLURALITY OF EXPLOSIVE UNITS SO AS TO PREVENT SYMPATHETIC DETONATIONS

**Charles C. Banta, Hamburg, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 27, 1971, Ser. No. 137,904**

**Int. Cl. B65d** *51/16*; **F42b** *37/00, 39/00*

**U.S. Cl. 206—3** **4 Claims**



A container for packaging a plurality of explosive units so as to prevent sympathetic detonations comprises a box containing a plurality of hollow tubes with explosive units slidably set within the tubes. Frangible areas are carried by portions of two opposite walls of the box proximate the ends of the tubes. The frangible areas operating with the hollow tubes permit a rapid release of explosive gases generated upon a single premature detonation and isolate adjacent explosive units from a residual shock wave that would otherwise trigger sympathetic detonations.

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### 3,757,934
### TELESCOPING DISPLAY ASSEMBLY

**Ethel B. Taub, Highland Park, Ill., assignor to Ronald H. Taub, Highland Park and Charles C. Kirschbaum, as trustees of the Ronald H. Taub Trust, Highland Park, Ill.**

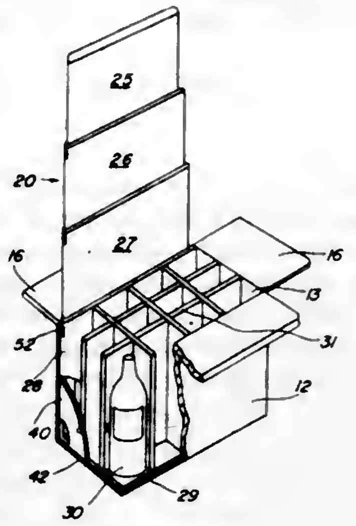
**Filed May 15, 1972, Ser. No. 253,050**

**Int. Cl. B65d** *77/24*; **G09f** *1/06*

**U.S. Cl. 206—44 R** **7 Claims**

An extensible and collapsible, telescoping display assembly which includes an array of longitudinally aligned, overlapping panels adapted to interlock by means of integrally formed cooperating tabs and slots. When collapsed, the assembly is

adapted to fit within a container of merchandise, and when the merchandise reaches its point of sale the assembly is quickly erected into a stable, multi-panel display by simple telescopic extension of panels outwardly from the container.



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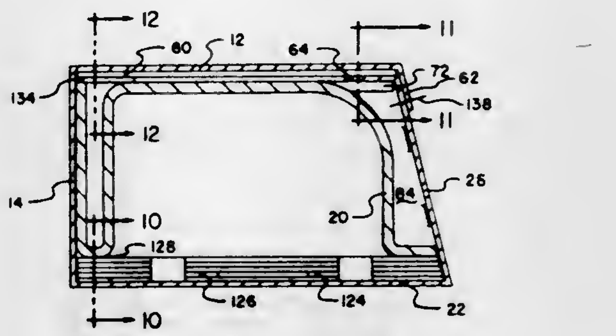
### 3,757,935
### BATHTUB CONTAINER

**Everett A. Coons, West Monroe, La.; Lewis D. Poggiali, and Richard P. Jacalone, both of Owosso, Mich., assignors to Olinkraft, Inc., West Monroe, La.**

**Filed Feb. 4, 1972, Ser. No. 223,582**

**Int. Cl. B65d** *85/54, 5/32*

**U.S. Cl. 206—46 H** **6 Claims**



An improved bathtub shipping package for completely encircling the bathtub to protect the bathtub from rough handling and the elements of weather. The package comprises a wrap-around tube member having a pair of unique end caps fixedly attached to the tube member, the end caps having built in means for reinforcing the end caps from horizontal and vertical shock as well as built in protective pads for protecting the top end portions of the bathtub whenever the bathtub is placed within the package. The structural manufactured joint for the tube member is formed at the bottom rear of the tube which serves to cushion the rear legs of the bathtub whenever the bathtub is placed within the package. The end caps are positioned within the tube in combination with the structural manufactured joint so that longitudinal stapling of the end caps to the tube member is easily accomplished due to the resistance of the structural manufactured joint.

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### 3,757,936
### DRYCLEANING TAG

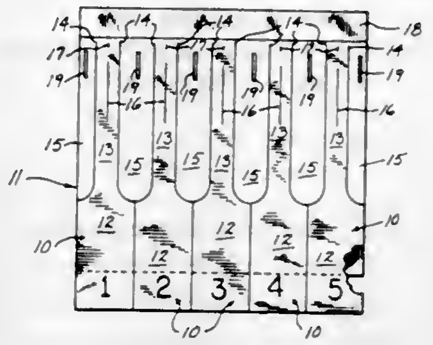
**Erik D. Lindegren, 303 Dahl St., Rhinelander, Wis.**

**Filed July 28, 1971, Ser. No. 166,901**

**Int. Cl. B65d** *83/00, 85/62*

**U.S. Cl. 206—56 AB** **7 Claims**

Sheets of spun bonded polyolefin are stapled together to form a pad. Five tags are cut in each sheet and are dispensed by pulling them to tear a bridge of uncut material. The tags have a label portion and a relatively long and narrow tongue portion containing a slit. Tags are attached to clothing by passing the tongue portion through an opening in the garment and forming a loop by feeding the label portion through the slit in the tongue portion.



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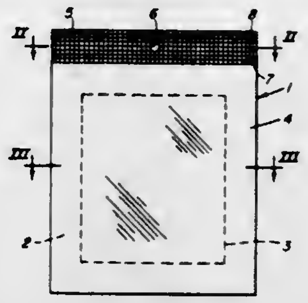
### 3,757,937
### DISPLAY PACKAGE WITH INTEGRAL HEADER AND METHOD OF PRODUCING THE SAME

**Raymond P. Weinstein, Carnegie, Pa., assignor to A. J. Weinstein Company, Carnegie, Pa.**

**Filed Nov. 19, 1971, Ser. No. 200,447**

**Int. Cl. B65d** *73/00, 65/16*

**U.S. Cl. 206—80 R** **11 Claims**



A display package for merchandise is provided which encapsulates the merchandise in a shrink-wrap film and which has an integral header to enable easy hanging of the package on a rod or the like. Preferably, the package has a shrink-wrap polyethylene film and a cardboard support for the merchandise, with a portion of the film laminated to the board to form a header or border. The header may then be punched so that an aperture is formed for hanging of the package.

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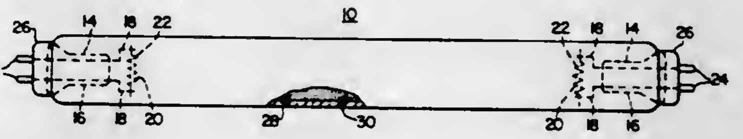
### 3,757,938
### METHOD OF REMOVING ULTRA FINE PHOSPHOR PARTICLES OF A (ZN,MG)$_2$(SI,GE)$_{04}$:MN PHOSPHOR

**Anselm Wachtel, Parlin, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Feb. 3, 1971, Ser. No. 112,187**

**Int. Cl. B03d** *3/00*

**U.S. Cl. 209—5** **2 Claims**



Method of sizing a zinc-magnesium silico-germanate phosphor to remove the ultra fine particles to improve the performance of a discharge lamp, comprising suspending the finely divided prepared phosphor in an aqueous solution of ionizable aluminum compound or diethylenetriamine pentaacetic acid chelating agent, then settling the phosphor and removing the ultrafine particles which remain in suspension, and thereafter repeating the foregoing procedure with a water vehicle in order to remove remaining ultrafine particles and residual solute.

### 3,757,939

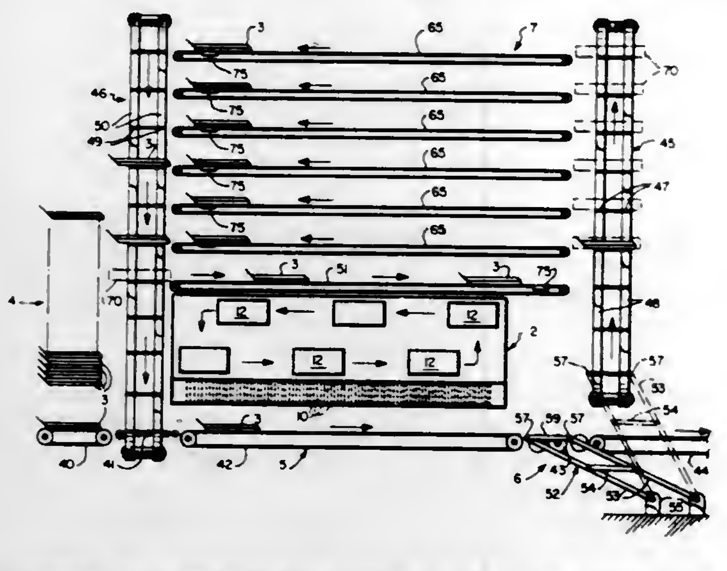
### METHOD AND APPARATUS FOR SORTING ARTICLES SUCH AS LETTERS

**Seymour Henig, Kensington, Md., assignor to John I. Thompson & Company, Rockville, Md.**

**Filed May 12, 1971, Ser. No. 142,600**

**Int. Cl. B07c** *3/02*

**U.S. Cl. 209—72** **20 Claims**



System and method for sorting articles, particularly letter mail, in such fashion that articles having a common characteristic, e.g., letters with the same address, are delivered as containerized group containing at least a predetermined threshold number of the articles. Applied to systems of the type wherein a classifying apparatus identifies each article and delivers the articles to individual article retaining stations while retaining cognizance of the characteristics and locations of the articles, the invention employs receptacles which are advanced past the retaining stations, articles having a common characteristic being discharged into the same receptacle, means being provided whereby any receptacle in which less than a predetermined number of articles have been accumulated can be transferred to storage and later retrieved and advanced again past the article retaining station for addition of more articles having the same characteristic.

### 3,757,940

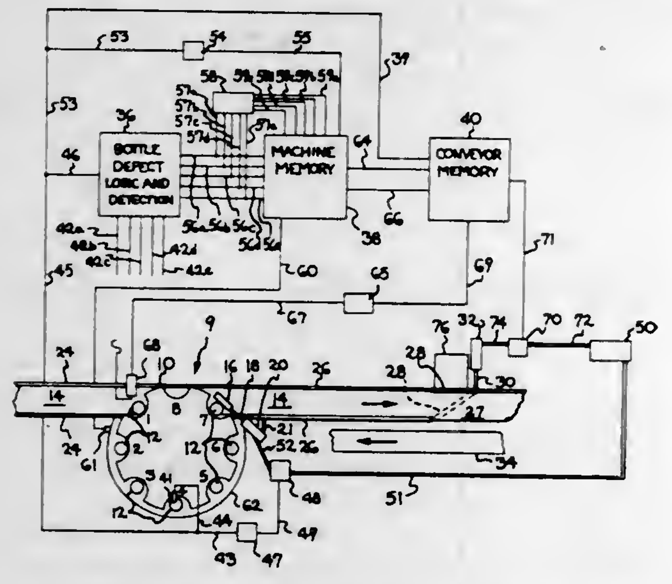
### MEMORY SYSTEM HAVING TWO CLOCK PULSE FREQUENCIES

**David A. Damm, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed June 19, 1972, Ser. No. 263,966**

**Int. Cl. B07c** *5/00*

**U.S. Cl. 209—74 M** **21 Claims**



A series connected dual memory system in which the clocking frequency of one memory is independent of the clocking frequency of the other memory. This system is designed to store and shift defective article information generated by an article inspection machine. The machine removes articles from a continually moving conveyor, indexes the articles one at a time through a series of inspection stations, generates a defect signal if an article fails to pass any one of the inspections, and returns all articles to the conveyor. A first memory stores defective article information. This information is shifted in the memory in synchronism with the index of the article through the inspection machine by a clock pulse at a frequency proportional to the index speed. Any defective article information is transferred into a second memory as the article to which the information pertains is replaced on the conveyor. As the article is moved away from the inspection machine, the information is shifted in the second memory in synchronism with the speed of the article by a clock pulse at a frequency proportional to the speed of the conveyor. When the information in the second memory reaches a rejection station downstream of the inspection machine, the rejection station is activated to remove the article from the conveyor.

### 3,757,941

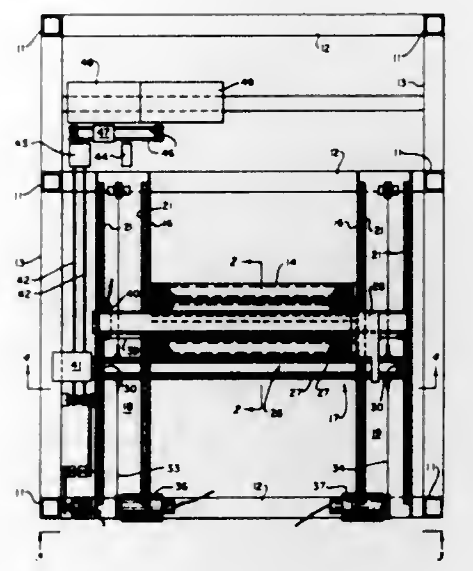
### DOCUMENT AND INFORMATION STORAGE AND RETRIEVAL SYSTEM

**Wayne D. Anstin, Cupertino; Joseph E. Byrne, Los Altos; Gilbert F. Clifford, Los Altos Hills; Robert W. Henkel, Cupertino; Arthur W. Odell, Atherton; Lawrence T. Quaglia, Sunnyvale, and Donald F. Smith, Palo Alto, all of Calif., assignors to Varian Adco, Palo Alto, Calif.**

**Filed Nov. 3, 1971, Ser. No. 195,088**

**Int. Cl. B07c** *5/342*

**U.S. Cl. 209—80.5** **27 Claims**



Documents or information in the form of microfilm, microfiche or other permanent form are mounted on rectangular frames or carriers which are edge coded. A plurality of carriers are stored in a random manner in spaced slots arranged in one or more elongated storage bins with the bins arranged side by side. A bridge which carries a random document locator and retrieve and refile head assembly is adapted to move across the bins to a selected bin. The document locator, retrieve, and refile head assembly then moves along the bridge over the selected bin to store or retrieve selected carriers. During location, the coded edges are scanned to locate the desired carrier; an electrical control starts the retrieve cycle to pick up the carrier having the desired document and deposits the carrier on a conveyor system for transport to an output location where the document or information is presented to a video camera and the signal from the camera may be transmitted to a remote video terminal for viewing. The carrier is then returned to the document refile assembly along the same conveyor system where it is picked up and refiled by the head assembly.

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### 3,757,942

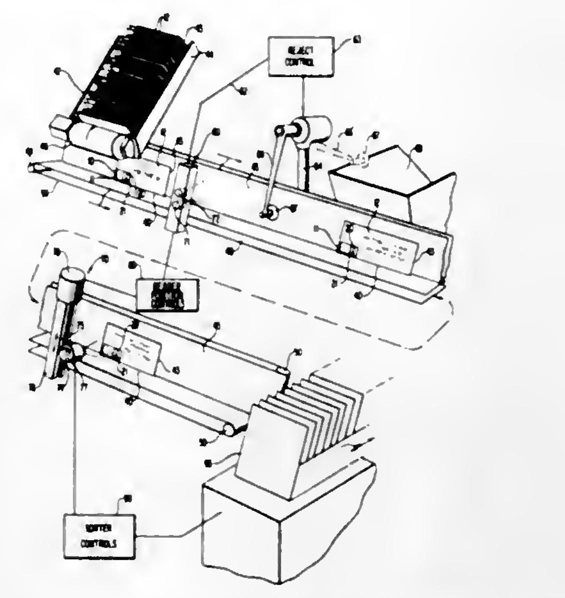
### ARTICLE SORTING APPARATUS AND METHOD

**Damon M. Gunn, 4007 49th St. N.W., Washington, D.C.**

**Filed Nov. 23, 1970, Ser. No. 91,701**

**Int. Cl. B07c** *5/34*

**U.S. Cl. 209—11.5** **13 Claims**



There is disclosed an article sorting apparatus and method wherein articles bearing a manually marked code in a grid or code area locatable by one or more guide elements which may be separate and distinct from the manually marked code. For postal articles, such as letters and the like, the code may be the zip code, preferably associated with a unique postage stamp. The code is marked on grid by dots, circles, lines "X" or like optical marks. On passing through a reading station, the articles, particularly postal articles, are turned upside down so as to minimize the amount of adjustment or orientation of the optical reader relative to the code bearing grid and also to accomodate, for example, various sized envelopes. There is also disclosed a reader for the guide elements for determining the location of the grid and orienting a manually marked reading device.

### 3,757,943

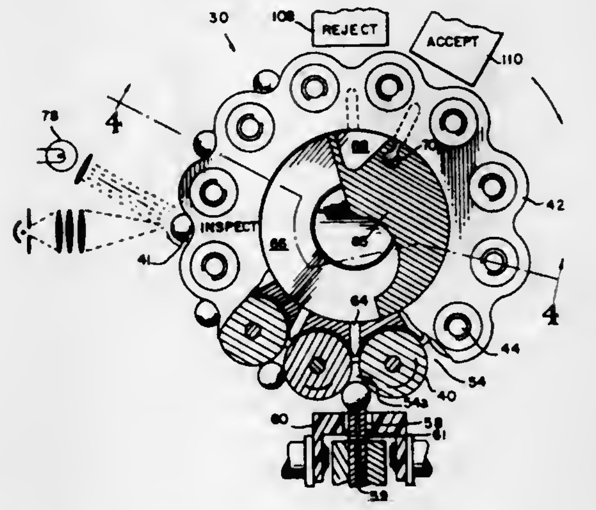
### ELECTRONIC SYSTEM AND METHOD FOR CAPSULE INSPECTION

**Hi Chul Chae; Richard Gelinas; Jon Caton Trusty, and Walter H. Berntsen, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, N.Y.**

**Filed Sept. 27, 1971, Ser. No. 183,948**

**Int. Cl. B07c** *5/342*

**U.S. Cl. 209—111.7** **39 Claims**



An electronically controlled system and method for processing the signals obtained from an optical inspection of rapidly presented and rotated medicinal capsules. Built-in deviations in the capsule structure are differentiated from structural defects which may occur and the decision made to accept or reject each capsule. The occurrence of a defect or a built-in deviation causes photo detectors to have a current spike output. Both the defect and the built-in deviation spikes are converted to digital pulses. The defect pulses are counted and the deviation pulses are used to reset a free-running oscillator controlled counter. A defect in the circumferential vicinity of the built-in deviations causes the built-in deviation counter to be prematurely reset. This causes a defect to be recorded. Each capsule is redundantly examined. A sufficient number of reoccurrences of any defect causes a shift register to be activated which initiates and controls the rejection of the capsule. Optical readouts present the number of rejected and accepted capsules, and the percentage of rejected capsules for each lot of 1,000 capsules which are inspected.

### 3,757,944

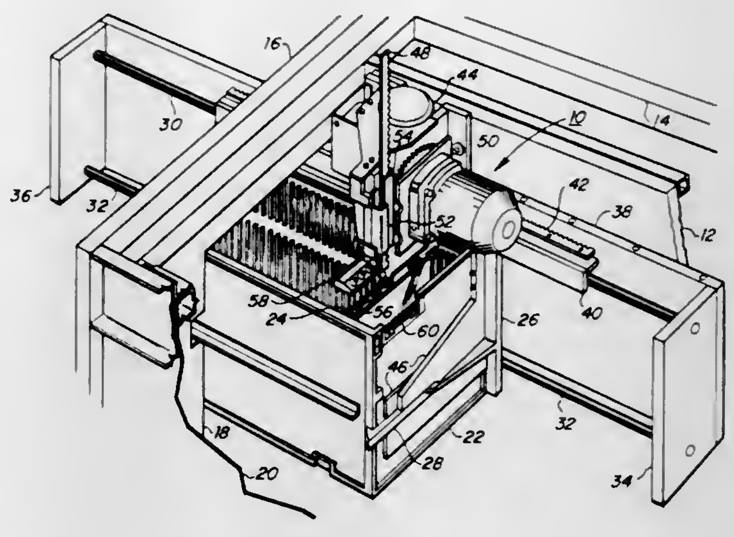
### OPTICAL VERIFICATION DEVICE

**Allan C. Goodman, 6431 Lake Apapka, San Diego, Calif.**

**Filed Jan. 15, 1971, Ser. No. 106,828**

**Int. Cl. B07c** *5/342*

**U.S. Cl. 209—111.7** **9 Claims**



An optical device useful in selecting and verifying the position of projection slides, slide magazines, etc., is disclosed. The verification device includes a mounting strip adapted to be removably attached to the edge of a projection slide, a slide magazine end panel, etc. A number of reflective elements are secured to the strip by frangible webs along a line. Selected elements may be easily broken away to provide a coded array of reflective and non-reflective elemental areas. A sensing means including a light source and photodetector past which a group of the coded devices is passed can select a slide, or verify the presence of a desired slide, according to the coded pattern of reflecting and non-reflecting elemental areas.

### 3,757,945

### APPARATUS AND METHOD FOR SEPARATING HEARTS AND LIVERS FROM A MIXTURE THEREOF

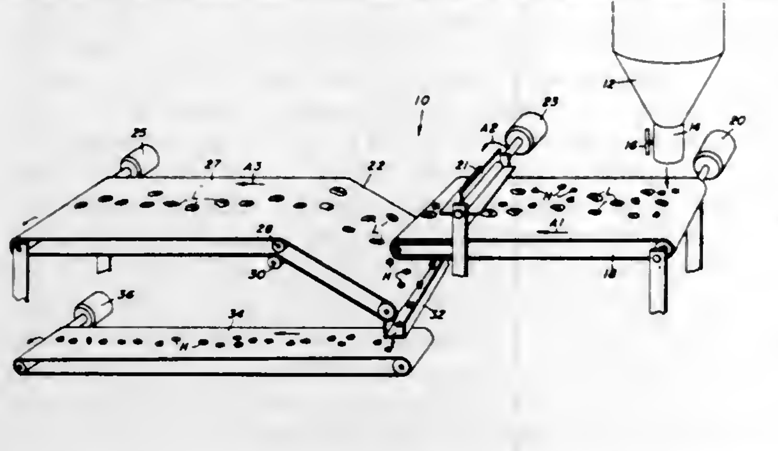
**Marlin Edward Keiter, Jr., Berlin, Md., assignor to Showell Poultry, Inc., Showell, Md.**

**Filed Feb. 4, 1972, Ser. No. 223,673**

**Int. Cl. B07c** *3/02*

**U.S. Cl. 209—114** **4 Claims**

A conveyor system having a moving belt depositing a mixture of hearts and livers to an inclined, moving conveyor which conveyor has a surface to which chicken livers will adhere but to which chicken hearts will not adhere when said



inclined conveyor is moving at a selected speed and disposed at a selected angle.

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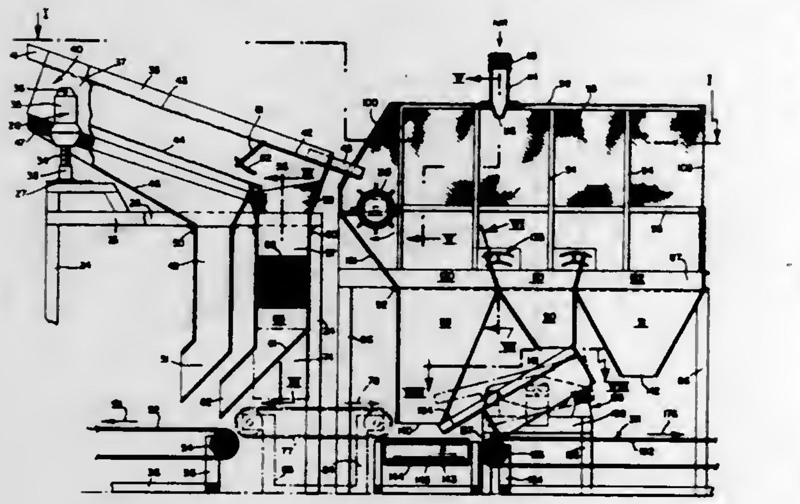
### 3,757,946
### TRASH SEPARATING APPARATUS

**Lawrence Berkowitz, Willingboro; Georgs Novickis, Lindenwold, both of N.J., and Prafulchandra N. Sheth, Lansdowne, Pa., assignors to Dickson Paper Fibre, Inc., Philadelphia, Pa.**

**Division of Ser. No. 846,320, July 31, 1969, Pat. No. 3,643,797. This application Feb. 14, 1972, Ser. No. 225,904**

**Int. Cl. B07b** *13/10*

**U.S. Cl. 209—120** **5 Claims**



A system is provided for reclaiming usable paper from a heterogeneous trash mixture that has previously been shredded to a predetermined size. The trash is deposited on a sloped vibrating screen which permits the passage therethrough of smaller sized trash particles. These particles then pass onto another sloped vibrating screen whereby minutely sized particles may pass therethrough, to be discarded. The smaller sized particles that pass through the first screen, but not the second then enter a chute which has a cross current in the form of an air stream, whereby paper, light sheet plastic and the like are forced from the smaller sized mixture and are delivered onto a conveyor. The larger sized particles that do not pass through the first vibrating screen are delivered onto a trash wheel, which is rotating, and which throws the larger sized particles in a given direction whereby the particles travel a given distance depending upon their eight, or upon their ability to be thrown, with at least the heavier of these larger particles passing through an air screen directed toward a series of bins. The lighter of these larger particles are collected in a bin which is located most closely to the trash wheel, which bin deposits these lighter particles onto the conveyor. Trash which is thrown into an intermediate bin is deposited onto another sloped vibrating screen, whereby larger paper materials are separated from smaller but heavier trash components such as heavier plastics, with the thus separated paper materials also passing onto the conveyor. The conveyor then passes beneath an extractor which removes sheet plastic films and the like therefrom, preferably by means of electrostatic attraction of the plastic films from the paper materials, resulting in paper reclamation having an acceptable minimum percentage (if any) of non-paper materials therein.

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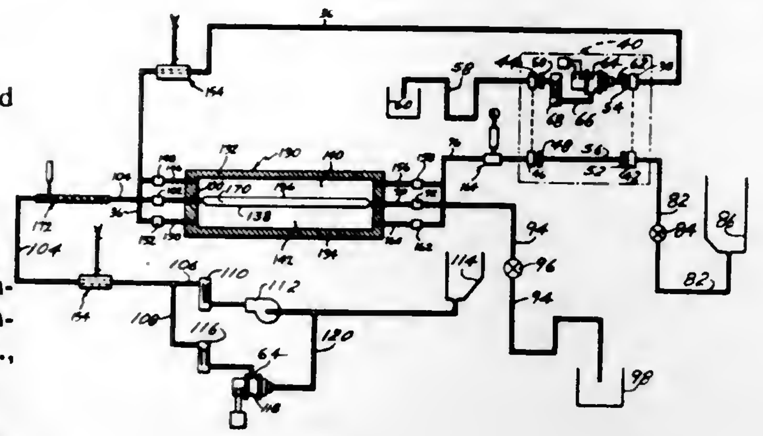
### 3,757,947
### RESEARCH TEST DIALYZER SYSTEM

**Albert W. Wakefield, and Albert L. Babb, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.**

**Filed June 25, 1969, Ser. No. 836,269**

**Int. Cl. B01d** *31/00*

**U.S. Cl. 210—86** **60 Claims**



A test unit and a method for testing membranes, membrane support systems and solution diffusivities for parallel and countercurrent flow of liquids, temperature effect on liquids, pressure effect on liquids with respect to a positive pressure and to a negative pressure, for two and three liquid systems, and for use under sterile and nonsterile conditions.

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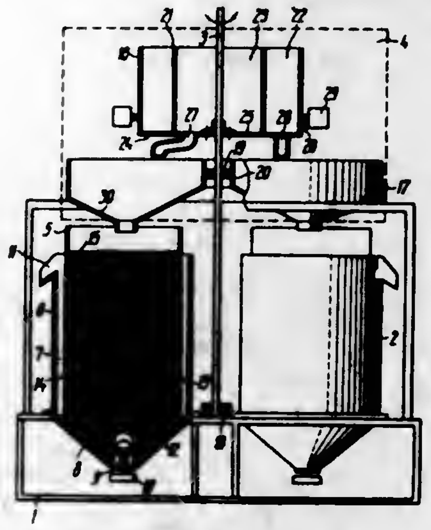
### 3,757,948
### FILTER SEPARATOR FOR WET ENRICHMENT OF FINELY DISPERSED MATERIALS

**Sergei Alexeevich Tikhonov, prospekt Kirova, 28, kv. 61; Gennady Georgievich Judin, prospekt Kirova, 28, kv. 1, and Ninel Alexandrovna Babushkina, ulitsa Gagarina, 26, kv. 24, all of Simferopol, U.S.S.R.**

**Filed Mar. 29, 1971, Ser. No. 128,855**

**Int. Cl. B01d** *25/30, 35/06*

**U.S. Cl. 210—102** **8 Claims**



A filter separator for wet enrichment of finely dispersed materials comprising at least two filtering tanks made from non-magnetic material with ferromagnetic filtering elements accommodated therein and adapted for extracting desired materials from the pulp. Mounted in each tank between the filtering elements are electromagnetic coils, and provision is made for a distributor unit for separate supply of pulp and water to each of the tanks, this unit being installed above the tanks with capability of turning about their axis of symmetry.

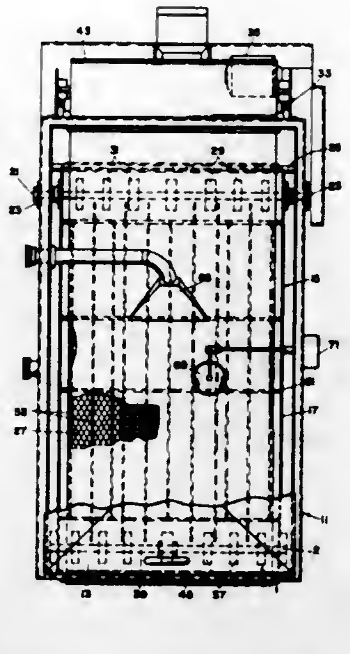
### 3,757,949
### LIQUID FILTER DEVICE

**Elmer F. Halvorsen, Indianapolis, and Harold R. Byrd, Lebanon, both of Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.**

**Filed June 24, 1971, Ser. No. 156,254**

**Int. Cl. B01d** *35/08*

**U.S. Cl. 210—122** **4 Claims**



In a liquid filter device, a tank for receiving filtered liquid has a frame disposed therein and pivotably mounted at one end thereof. Rollers mounted at each end of the frame support a driven conveyor which carries filter media. A head is adapted to discharge fluid onto the filter media. Due to the pivotable mounting, the frame including the conveyor can be moved to an upright position for cleaning the filter device.

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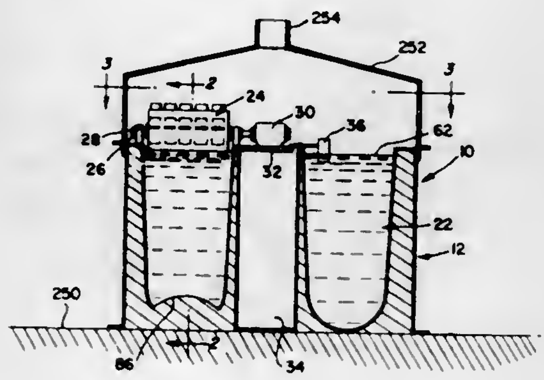
### 3,757,950
### WASTE WATER TREATMENT PACKAGE PLANT HAVING A MODULAR DITCH MEMBER

**Donald D. Zebley, Greenville, S.C., assignor to Edward F. Connors, Edgewater, Md.**

**Filed Mar. 2, 1971, Ser. No. 120,188**

**Int. Cl. C02c** *1/10*

**U.S. Cl. 210—123** **9 Claims**



A predetermined package plant for waste water treatment is constructed in a modular fashion for installation inside or outside a building structure and includes a substantially elliptical ditch that receives waste water after an initial grinding treatment thereof and which has a controlled aerator whereby a high rate primary aerobic treatment is effected. The ditch has a central supporting arrangement wherein a settler tank and a chlorination retention tank are mounted in separate, removable and side-by-side communicating fashion. The settler tank receives controlled overflow from the ditch and mechanically acts thereon to return sludge to the ditch and pass clear water on to the chlorination retention tank wherein the water is chemically treated in a time controlled manner by virtue of a water controlled flow arrangement therein and then aerated and recycled directly to the building structure for utility use, at least.

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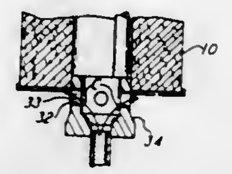
### 3,757,951
### FLUID FILTER WITH CLOGGING RELIEF MEANS

**Philip D. Redenbarger, Centerpoint, and Ashok Khilnani, Terre Haute, both of Ind., assignors to J. I. Case Company, Racine, Wis.**

**Filed Feb. 7, 1972, Ser. No. 224,013**

**Int. Cl. B01d** *35/14, 27/10*

**U.S. Cl. 210—131** **1 Claim**



A fluid filter with clogging release means and including a filter member for filtering foreign particles from the fluid flowing through the member. A chamber exists in the filter member for receiving the fluid and a fluid inlet connection is in fluid flow communication with the chamber for directing fluid into the chamber. A fluid by-pass passageway is in the fluid inlet connection, and the filter is yieldingly urged relative to the fluid inlet connection to cover and uncover the by-pass passageway in response to fluid pressure in the chamber in the filter. A spring urges the filter over the fluid connection and the by-pass therein, and a stop is provided for limiting the pressure the spring can exert on the filter member.

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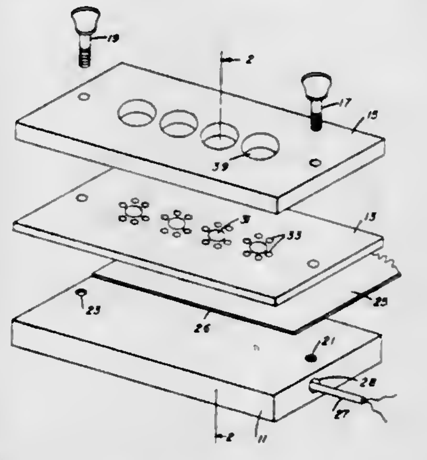
### 3,757,952
### TEMPLATE FOR APPLYING SAMPLES TO A THIN LAYER CHROMATOGRAPHIC SHEET

**Albert D. Baitsholts; Nancy E. Jackobs, and Imants Timrots, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Aug. 31, 1971, Ser. No. 176,627**

**Int. Cl. B01d** *15/08*

**U.S. Cl. 210—198 C** **7 Claims**

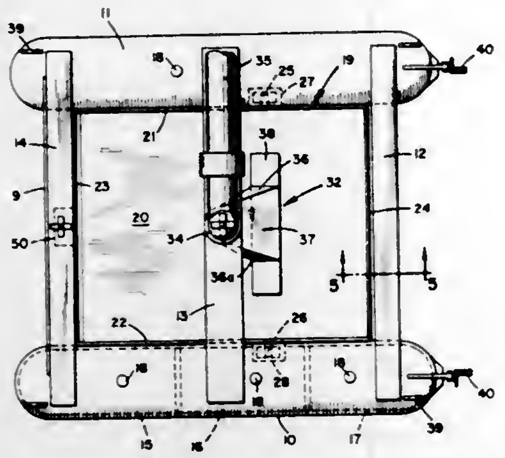


A template for holding a chromatographic sheet while permitting the application of one or a series of liquid samples rapidly and on a well defined area of fixed size comprises a base plate adapted to receive a chromatographic sheet on its surface, an applicator plate mating with the base plate and adapted to lie on the top of the sheet, and means for clamping the parts together to hold the sheet in place. The latter means can include a holding plate which mates with the applicator plate, and suitable means such as bolts for holding the elements together. The applicator plate has one or a series of holes for receiving liquid samples, and the holding plate has corresponding holes overlying the holes in the applicator plate for introduction of the liquid samples. Evaporation of solvent from the samples can be assisted by providing a suitable heater associated with the base plate.

### 3,757,953
### DECANTING SKIMMER

**William A. Sky-Eagle, Jr., 1038 Meadowbrook Dr., Corpus Christi, Tex.**

**Filed May 26, 1972, Ser. No. 257,283**
**Int. Cl. E02b** *15/04*
**U.S. Cl. 210—242** **4 Claims**



An apparatus for skimming oil or other scum from the surface of water, has floats supporting a sump tank with a weir at its forward end, means for pivoting the sump around a transverse axis to adjust the depth of the weir below the surface of the water and pumping means for withdrawing liquid collected in the sump.

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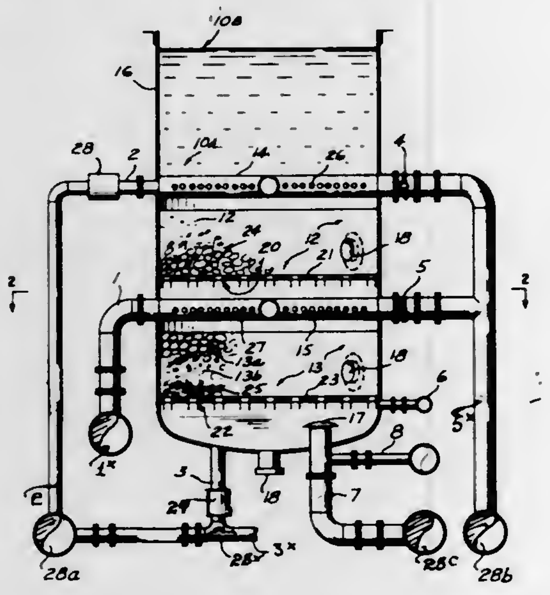
### 3,757,954
### TWO-WAY FILTER

**Albert S. Toth, 205 W. End Ave., New York, N.Y.**

**Filed Dec. 15, 1971, Ser. No. 208,297**
**Int. Cl. B01d** *29/08*
**U.S. Cl. 210—277** **2 Claims**



Apparatus in the form of a vertical vessel, having two spaced and supported filter beds located at either sides of a centrally located influent member, so that water to be treated is admitted to the apparatus through said influent member and a portion of the flow is filtered by passage through the lower filter bed and the second portion is filtered by its rise through the upper filter bed, the filtered fluid, for example water, being discharged to points of collection by separate effluent conduits, controlled by control and measuring devices. Valves adapted to close and open the influent member and the effluent conduits are provided, and a valved back-wash conduit is provided at the lower area of the vessel, together with an air-pressure inlet member. The top of each filter bed is provided with a valved outlet member leading to a conduit primarily for receiving dirty fluid by back wash and for discharging it from the vessel, the influent and the first named filtered fluid effluent valves being closed and the last named outlet member valves being opened.

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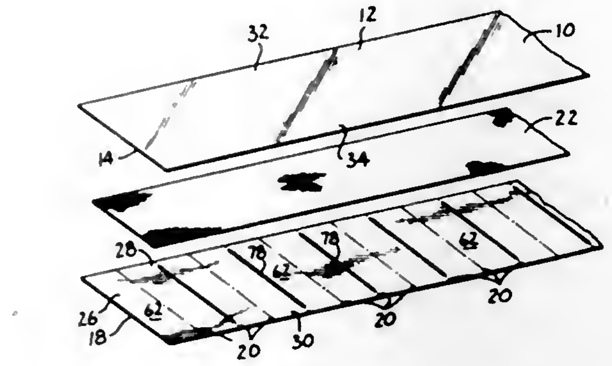
### 3,757,955
### MULTI-LAYER MEMBRANE TYPE MASS TRANSFER DEVICE AND PROCESS

**Ronald James Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.**

**Continuation-in-part of Ser. No. 73,524, Sept. 18, 1970, which is a continuation-in-part of Ser. No. 825,348, May 16, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,163**
**Int. Cl. B01d** *31/00*
**U.S. Cl. 210—321** **45 Claims**



A foldable cardboard backing is secured to one surface of a flexible mass transfer membrane to enable rapid formation of a folded multi-layered device by compressing the backing and membrane connected thereto into folds and then fixing the folds by sealing their ends.

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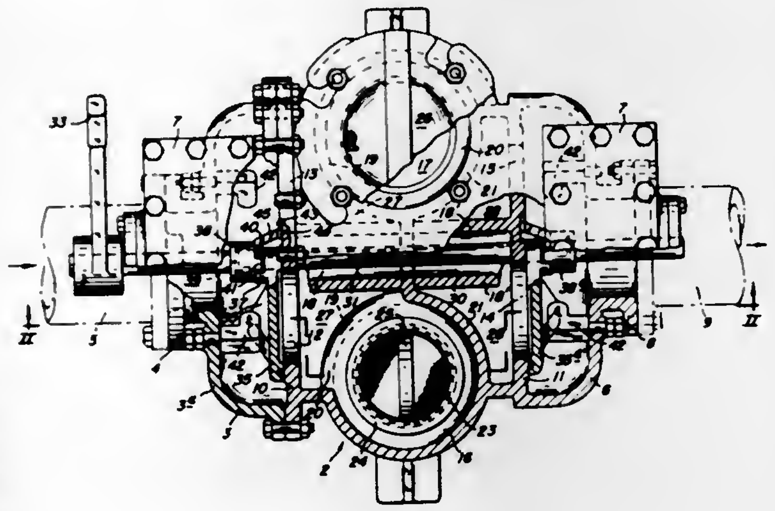
### 3,757,956
### TWIN BASKET STRAINER

**Norman F. Bradel, Scott Township, Allegheny County, and Herbert L. Hormel, Oakdale, both of Pa., assignors to S. P. Kinney Engineers, Inc., Carnegie, Pa.**

**Filed Mar. 9, 1972, Ser. No. 233,180**
**Int. Cl. B01d** *35/12, 29/38*
**U.S. Cl. 210—333** **8 Claims**



A twin basket strainer for industrial use has two baskets through which water to be strained is alternately passed so that one basket may be cleaned while the other is in use. Each basket is in a separate chamber, each chamber having an inlet port and an outlet port. A shaft supported in the body of the structure has a handle outside the body, and inside the body it has a valve disk near each end so arranged that when the shaft is rocked through a few degrees of arc the valve disks move from a position over the inlet and outlet ports of one chamber to a position clear of said ports but closing the corresponding ports of the other chamber.

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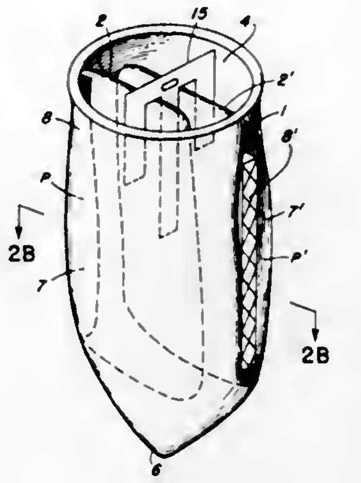
### 3,757,957
### EXTENDED FILTER BAG

**Edward A. Smith, Glenville, Conn., assignor to GAF Corporation, New York, N.Y.**

**Filed Nov. 19, 1971, Ser. No. 200,331**
**Int. Cl. B01d** *29/16*
**U.S. Cl. 210—486** **12 Claims**



An improved filter bag arrangement making use of a number of internally disposed, integrally formed filter surface media adapted to increase the effective working area of the filter bag without an associated increase in external size. Drainage members are used in a manner to co-act with such additional surface areas to provide support for the internally placed filter media as well as to convey the filtered liquid to the outlet position for exit.

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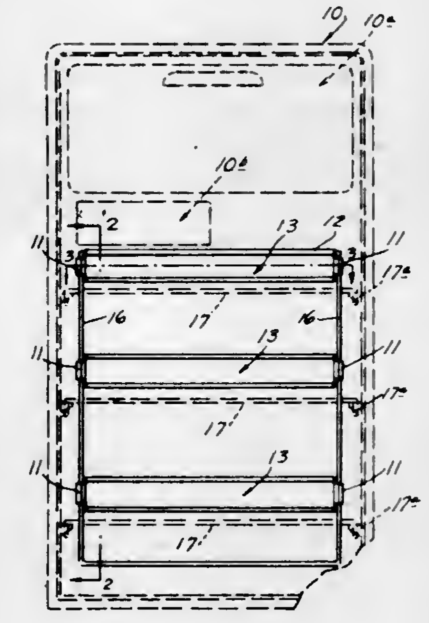
### 3,757,958
### REFRIGERATOR GUARD

**Lillian F. Kirkemo, 951 Ronald Ave., Apt. 311, Missoula, Mont.**

**Filed Oct. 22, 1971, Ser. No. 191,761**
**Int. Cl. A47f** *5/00*
**U.S. Cl. 211—153** **4 Claims**



A device as described for preventing food and other items stored on the shelves of refrigerators and the like from slipping from the shelves after the refrigerator or other storage device has been subjected to jostling and the door thereof is subsequently opened. In its preferred form, the invention comprises a guard rail designed to hook over the top and bottom shelves of the refrigerator, having baffles mounted thereon. The baffles extend above each shelf so that items stored on the shelves will be unable to slip off.

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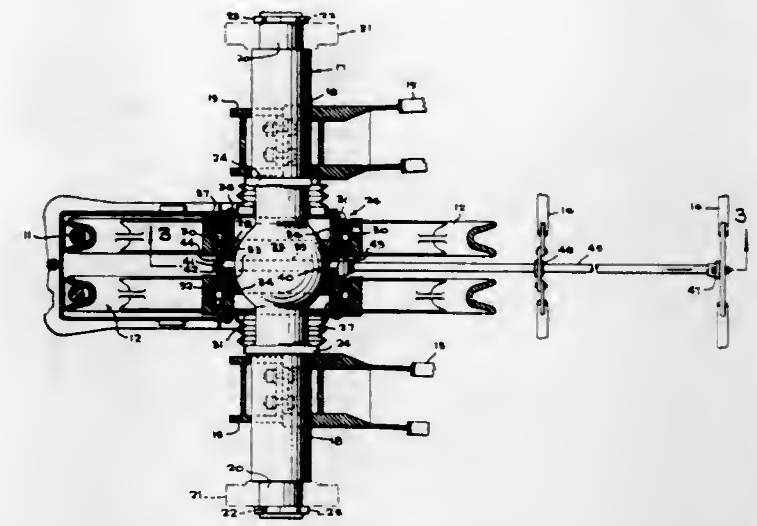
### 3,757,959
### BOOM POINT SHEAVE ASSEMBLY

**George J. Thompson, and Vance D. Dutton, both of Marion, Ohio, assignors to Marion Power Shovel Company, Inc., Marion, Ohio**

**Filed Oct. 19, 1971, Ser. No. 190,575**
**Int. Cl. B66c** *13/16*
**U.S. Cl. 212—1** **19 Claims**



A boom point sheave mounting assembly for excavators, such as draglines, or shovels, which includes a sheave shaft mounted transversely of the boom in the boom side frames and carrying at least one ball at its center upon which a bearing carrier assembly is mounted for swivel movement. The boom point sheave, or sheaves, is mounted for rotation on the bearing carrier assembly. The shaft ends may project beyond the boom side frames and have the outboard ends of the boom pendants, or hoist ropes, connected to them. A torque rod, in some instances, is used to urge the sheave toward at rest position. This mounting assembly imposes sheave rotational loads, sheave swivel loads and boom suspension loads on a single transverse axis for direct application to the boom to put the boom in compression.

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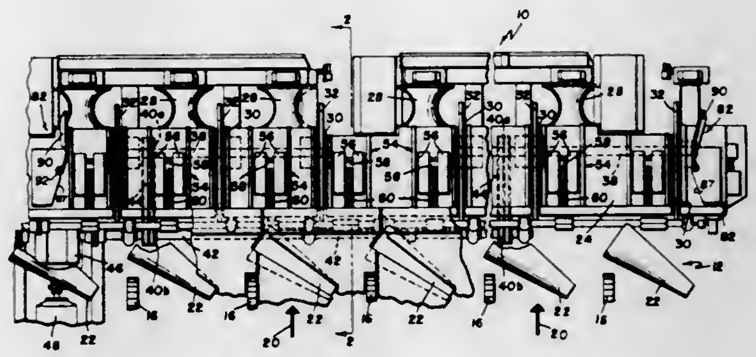
### 3,757,960
### MATERIAL HANDLING APPARATUS

**William J. Hill, and William R. Wynn, both of Holden, Mass., assignors to Morgan Construction Company, Worcester, Mass.**

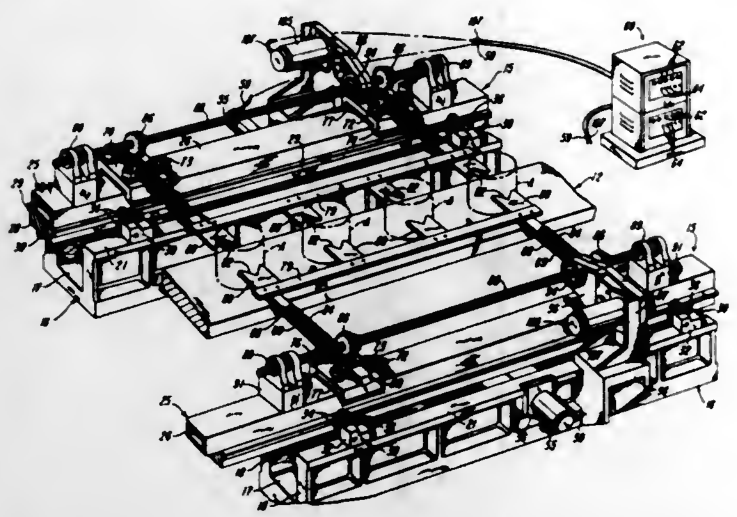
**Filed Dec. 22, 1971, Ser. No. 210,853**
**Int. Cl. B65b** *35/30*
**U.S. Cl. 214—1 PB** **3 Claims**



An apparatus for handling elongated elements which includes a downwardly sloping ramp along which the elements move laterally into an assembly notch. Alignment devices are provided at either end of the assembly notch for aligning the ends of elements being collected therein. The alignment devices axially adjust the elements by contacting the ends thereof.

### 3,757,961
### ARTICLE TRANSFER APPARATUS

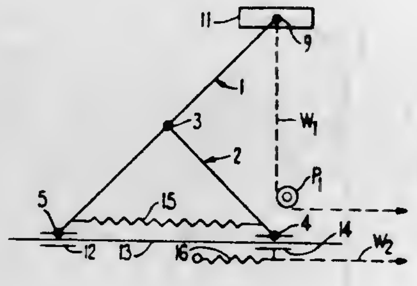
**Orville W. Jacobs, Ludlow Falls, Ohio, assignor to The East Dayton Tool & Die Company, Dayton, Ohio**
**Filed Jan. 10, 1972, Ser. No. 216,392**
**Int. Cl. B65g** *25/04*
**U.S. Cl. 214—1 BB** **8 Claims**



A series of articles are successively advanced in a step-by-step manner along a linear path by a transfer unit which includes a plurality of gripping members supported by parallel-spaced arms. The arms are supported for lateral movement relative to an elongated carriage which is supported for longitudinal movement. The arms are reciprocated as a unit by corresponding racks which engage pinions mounted on a splined shaft extending longitudinally of the carriage. The shaft is movable axially within a gear driven by a reversible stepping motor controlled by a pre-set control unit which also synchronously controls a reversible stepping motor for reciprocating the carriage. The control unit includes decade counters which may be adjustably set for precisely selecting the corresponding limits of longitudinal movement of the carriage and lateral movement of the arms and gripping members.

### 3,757,962
### CONTROL MECHANISM FOR THE FINE POSITIONAL ADJUSTMENT OF AN OBJECT

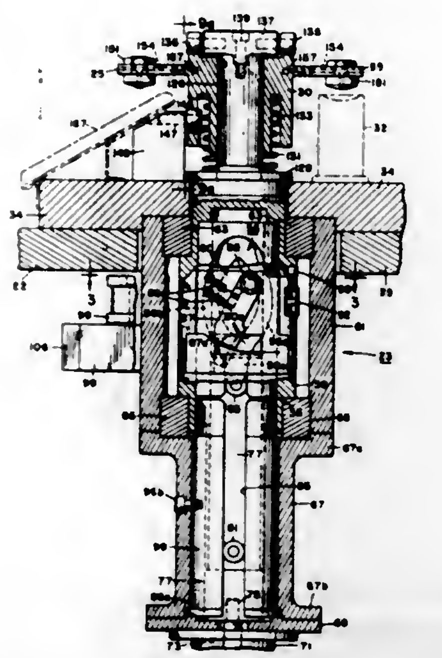
**Itzhak Chavet, Rehovoth, Israel, assignor to The State of Israel, Atomic Energy Commission, Ramat Avin, Israel**
**Filed Nov. 17, 1971, Ser. No. 199,424**
**Claims priority, application Israel, Nov. 19, 1970, 35691**
**Int. Cl. B25j** *7/00*
**U.S. Cl. 214—1 CM** **7 Claims**



A control mechanism for the fine positional adjustment of an object, in at least two substantially perpendicular directions, substantially independently of each other, particularly for adjusting the position of objects inside sealed systems (e.g. vacuum-tight, pressure-tight or radiation-tight systems) by manipulation of controls outside of the systems whose motions can be transmitted into the sealed system through suitably tight seals.

### 3,757,963
### MULTI-DIRECTIONAL INDEXING APPARATUS

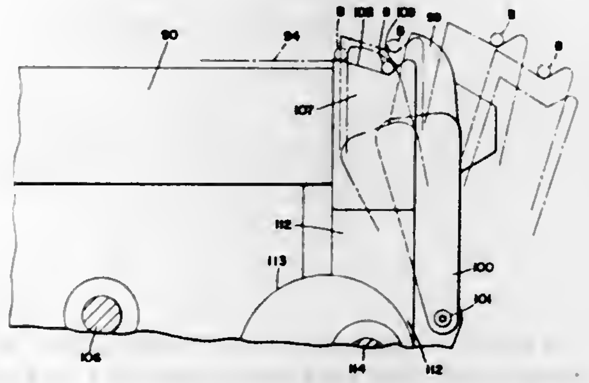
**Ralph N. Binkley, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.**
**Filed Apr. 6, 1971, Ser. No. 131,653**
**Int. Cl. B66c** *1/02*
**U.S. Cl. 214—1 BH** **23 Claims**



A multi-directional indexing apparatus for transporting articles in succession to and for depositing and/or picking-up such articles at a plurality of circumferentially disposed work stations. The apparatus comprises a multi-finger index table, with each finger having a vacuum pick-up head associated therewith for carrying the articles, and a drive mechanism including a barrel cam having a peculiarly shaped orbital cam passageway formed therein and a reciprocally movable cam follower for driving the barrel cam and the index table indirectly coupled thereto. A reciprocal, linear stroke of the cam follower during each composite indexing period sequentially effects, through the resultant rotational movements of the barrel cam, very precise multi-directional rotation and vertical displacement of the index table.

### 3,757,964
### BAR UNSCRAMBLER

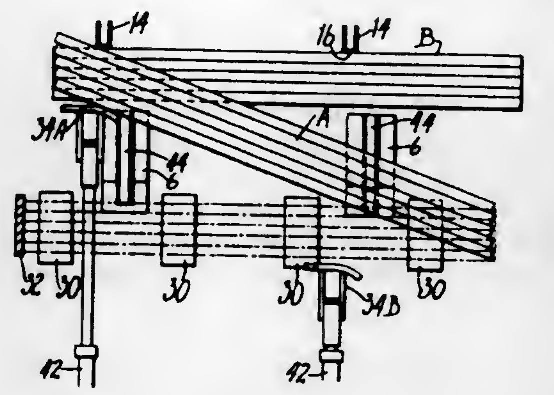
**Irving Leonard Kaplan, Cleveland, Ohio, assignor to Carl Krasny & Associates, Inc., Cleveland, Ohio**
**Division of Ser. No. 878,132, Nov. 19, 1969, Pat. No. 3,670,902. This application Jan. 21, 1972, Ser. No. 219,886**
**Int. Cl. B25j** *3/00*
**U.S. Cl. 214—1 PB** **5 Claims**



A bar unscrambler is provided consisting of feed cradles, shuffle bed modules, and bar feeder units, which are so arranged as to effectively and progressively unscramble or separate bars and the like from a bundle of bars and from each other. The feed cradles are provided with elements having a walking beam type of movement. The shuffle bed modules comprise mainly walking and fixed beam components, the walking beam components functioning also to activate the aforesaid feed cradle elements. The bar feeders have incorporated therein bar stops effective to temporarily restrain movement of the unscrambled bars, and have also incorporated therein bar selectors designed to individually move the restrained bars to a transfer mechanism or the like, the movements of the bar selectors being synchronized to avoid interference with the bars as they move to the bar stops. Provision is also made for adjusting the position of the bar stops to accommodate bars of different sizes or dimensions.

### 3,757,965
### STACKING OF ARTICLES

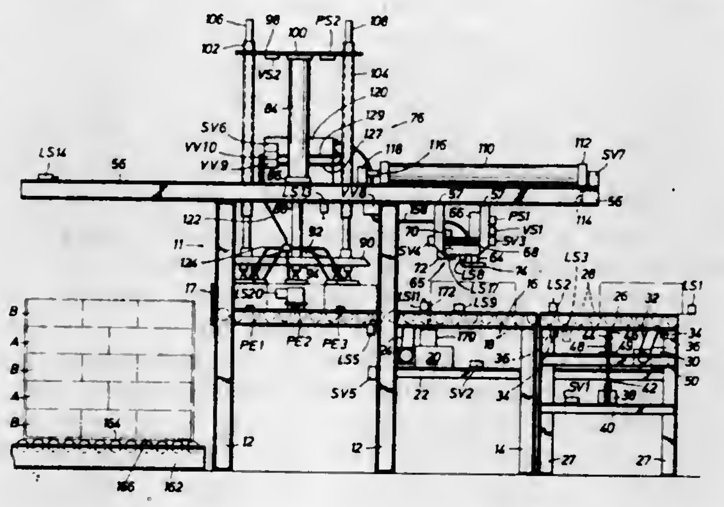
**Gilbert Lendrum Renshaw, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, Yorkshire, England**
**Filed June 16, 1971, Ser. No. 153,540**
**Claims priority, application Great Britain, July 9, 1970, 33,393/70**
**Int. Cl. B65g** *57/10*
**U.S. Cl. 214—6 H** **6 Claims**



To form a stack of elongate articles, such as steel bars, successive arrays of the articles are formed and each array in turn is pushed to a stacking location where it is moved over the preceding array with the lengths of the articles inclined to the length of the articles in the preceding array. When the new array has been brought to a position approximately above the previous array, the articles of the new array are brought into substantial parallelism with those of the preceding array.

### 3,757,966
### PALLETIZING APPARATUS

**Thomas L. Cox, Beaumont, and David G. Rodriguez, Vidor, both of Tex., assignors to J & J Manufacturing Company, Beaumont, Tex.**
**Filed Mar. 12, 1971, Ser. No. 123,731**
**Int. Cl. B65g** *57/04*
**U.S. Cl. 214—6 P** **4 Claims**

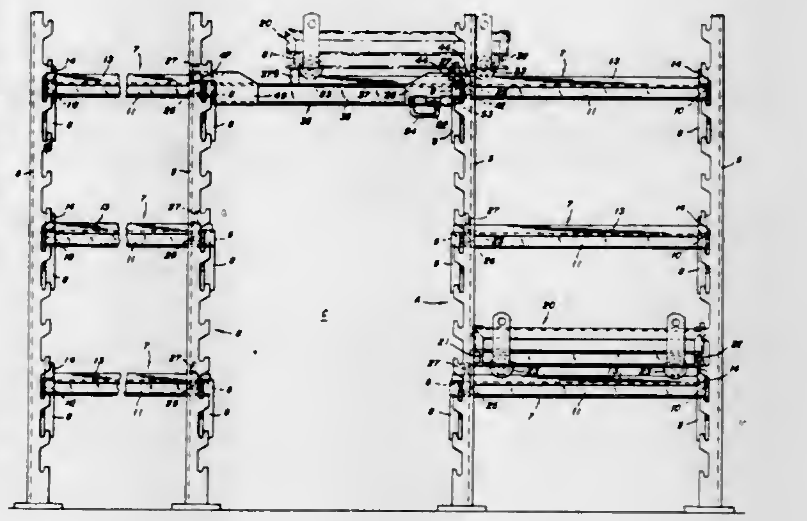


Apparatus for palletizing elongated generally rectangular articles according to the present invention comprises a frame work disposed adjacent a powered feed conveyor provided for conveying articles serially in linear manner to a shuttle conveyor carried by the frame work. The shuttle conveyor is operative, responsive to a tier pattern being developed and also responsive to the presence of an article, to selectively shift the article laterally from a neutral position to locate selected ones of the articles laterally with respect to the original line of movement thereof. Apparatus is provided to lift and rotate selected ones of the articles and reposition the artcles on a transfer conveyor also carried within the frame work. The articles are transported by the transfer to a tier forming section where they are collected into a tier of selected pattern. The tier is then lifted and transferred to a loading section where they are stacked either upon a pallet or upon a mirror image tier of articles previously stacked onto a pallet.

As the articles are engaged by vacuum heads carried by various article lifting rotating and transporting devices, plastic film from which the container is composed is pierced and the film container is evacuated to conform it to the article configuration and therefore facilitate neat and structurally secure palletizing of the tiers of articles.

### 3,757,967
### STORAGE RACK WITH DUAL SAFETY BRIDGE

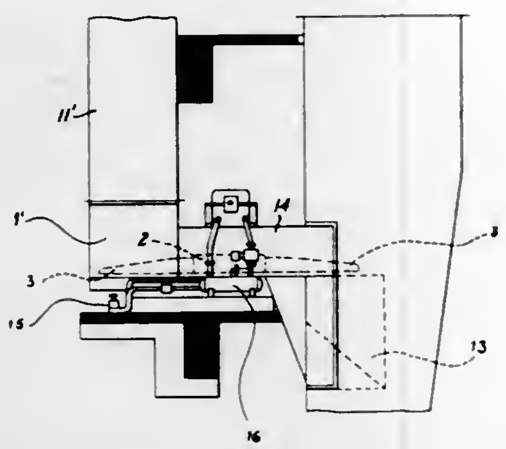
**Thomas D. Colbridge, Chalk Hill, Pa., assignor to Rack Engineering Company, Connellsville, Pa.**
**Filed Oct. 8, 1971, Ser. No. 187,609**
**Int. Cl. E01b** *11/58*
**U.S. Cl. 214—16.4 R** **11 Claims**



A storage rack installation has two rows of multi-shelf racks with an intervening aisle and at least some of the shelves have track rails extending from front to back on which the wheels of a load-carrying dolly ride. Spring-projected latch pins at the front of each such shelf normally restrain its dolly against forward travel on the shelf. Dual bridge bars are removably rested at one end on a selected shelf at one side of the aisle and at the other end on a shelf across the aisle, each of which has a rail thereon to register with a rail on the selected shelf. Each bar has hooks that straddle the track rail of the selected shelf to align the shelf rail and rail of the bridge bar and each has an extension that depresses the nearby latch pin so that when both bridge bars are in place both latch pins are depressed and the dolly can roll at least part way off the selected shelf onto the bridge bars. A slide bolt on each bridge bar engages the selected shelf to selectively hold the bridge bar against vertical movement.

### 3,757,968
### APPARATUS FOR DISCHARGING BULK MATERIAL FROM STORAGE BUNKERS

**Fritz Teske, Industriestr. 28; Lothar Teske, Industriestr. 30, both of 505 Porz-Westhoven, and Robert Dreismann, Niehler-Kirchweg 139, 5 Cologne-Weidenpesch, all of Germany**
**Filed Oct. 15, 1970, Ser. No. 81,087**
**Claims priority, application Germany, Oct. 15, 1969, P 19 51 840.2; Oct. 9, 1970, P 20 49 655.3**
**Int. Cl. B65g** *65/48*
**U.S. Cl. 214—17 B** **3 Claims**



Apparatus for assisting the discharge of bulk material from a bunker to a conveying system has a stationary casing connected to a bunker for sealing the lower end thereof and arranged in communication with a discharge opening of the bunker and with a conveying system. A discharge wheel is arranged in the casing and for rotation in the horizontal plane for feeding material received from the bunker to the conveying system.

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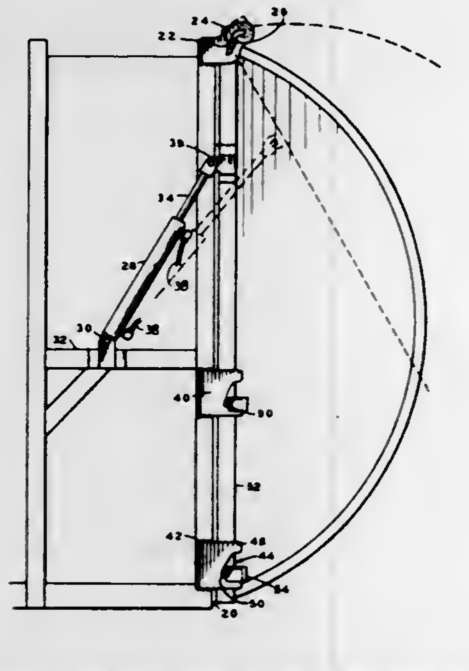
### 3,757,969
### LATCHING ARRANGEMENT FOR TAILGATES

**Harold E. Smith, Defiance, Ohio, assignor to Smithpac Canada Limited, Toronto, Ontario, Canada**
**Filed June 30, 1969, Ser. No. 837,481**
**Int. Cl. B65f** *3/00*
**U.S. Cl. 214—83.3** **5 Claims**



A self-locking, -releasing, and -sealing latching arrangement is provided for a tailgate of a refuse truck. The tailgate is pivotally supported by the body of the truck in a manner to enable transverse movement of the pivot axis. The latching arrangement further includes latching pins and slotted latching plates which, when in cooperating relationship, hold the door closed firmly and tightly. The tailgate is opened and closed by a pair of fluid-operated cylinders which are positioned to first move the tailgate in a direction parallel to the slots of the latching plates in order to move the latching pins out of the slots, and then to effect pivotal movement of the tailgate relative to the body opening.

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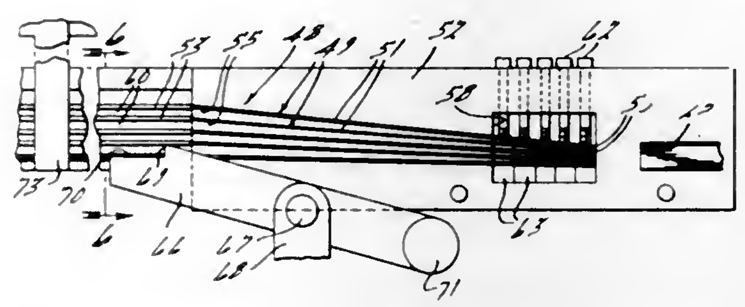
### 3,757,970
### LIFT FORMING DEVICE FOR BOOK PUNCHING MACHINE

**Ernst Pfaffle, Neuffen-Wuerttemberg, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.**
**Filed Apr. 28, 1972, Ser. No. 248,746**
**Int. Cl. B65g** *59/12*
**U.S. Cl. 214—8.5 F** **9 Claims**



Precollated sheets and covers to be punched and bound as a book are placed on a conveyor and moved against a series of blades extending along one edge of the conveyor which separates each book into sections, called lifts. These are individually fed to a punching station and then recollated. The punched books are fed to a rotary carrier and wirebound.

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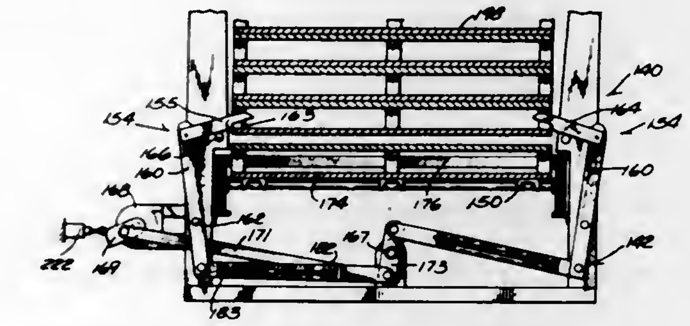
### 3,757,971
### PALLETIZING APPARATUS

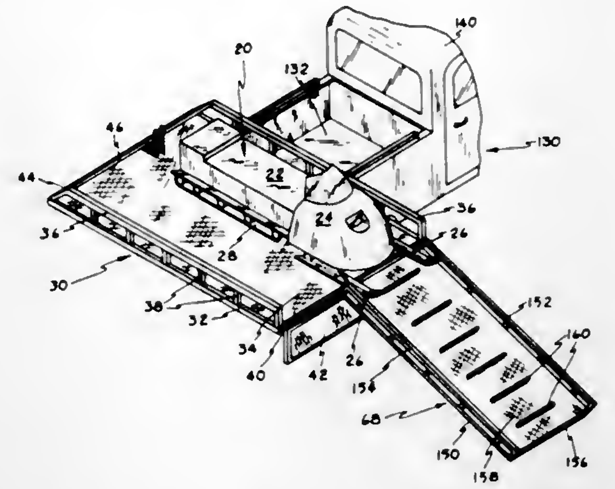
**William G. Frish, 302 North Ave., Watertown, Wis.**
**Division of Ser. No. 148,525, June 1, 1971, Pat. No. 3,688,920. This application Aug. 10, 1972, Ser. No. 279,429**
**Int. Cl. B65g** *59/06*
**U.S. Cl. 214—8.5 K** **4 Claims**



Palletizing apparatus includes a pallet loading chamber with a pallet lift or elevator having a trunnion mounted ball nut assembly which receives a drive screw driven by an electric motor. The pallet lift and ball nut are confined against rotational motion by spaced opposed guide tracks which engage guide rollers on the lift. The drive screw motor is controlled by a digital pulse counter which is coupled to a sensor which senses screw revolutions. The pulse counter can be programmed to move the lift upward or downward a pre-selected distance such as the height of the layer of cartons. The apparatus also includes a retractable apron which is movable between an advanced position over the pallet loading chamber and a retracted position free of the loading bin by a motor driven screw and a ball nut assembly on the apron. A pallet magazine for supplying pallets to the pallet loading chamber has cam operated elevating fingers for separating the lower pallet from a vertical pallet stack and a sweep bar for moving the lower pallet into the loading chamber. The apparatus also includes a conveyor assembly with a pivoted conveyor extension and a cross conveyor at the end of the extension to afford positioning of two loaded pallets for access by fork lift trucks.

### 3,757,972
### VEHICLE CARRIER ASSEMBLY AND METHOD

**Harold G. Martin, Twin Falls, Idaho, assignor to TDM Corporation, Burley, Idaho**
**Filed May 12, 1971, Ser. No. 142,498**
**Int. Cl. B60p** *1/44*
**U.S. Cl. 214—85** **7 Claims**



A vehicle carrier including method and apparatus having a supporting frame which is removably connected to a conventional truck, trailer or other suitable transportable bed. A carrier is rotatably connected to the supporting frame so that the carrier is rotatable through as many as 360°. A peripheral barrier exists along both sides and at each end of the carrier, the end barriers being selectively displaceable to provide ingress and egress ways. A ramp is detachably connected to the carrier at the ingress or egress way. In the method of using the carrier assembly, the carrier is oriented either parallel to the transportable bed or projecting transversely away from the transportable bed. The ingress barrier is displaced out of the way and the ramp attached so that a vehicle can drive onto the carrier. When it is desired to remove the vehicle, the carrier may be rotated to either side of the transportable bed or toward the rear end of the bed, the barrier removed and the ramp attached so that the vehicle can be easily driven forwardly off the carrier without manually lifting or backing the vehicle from the carrier.

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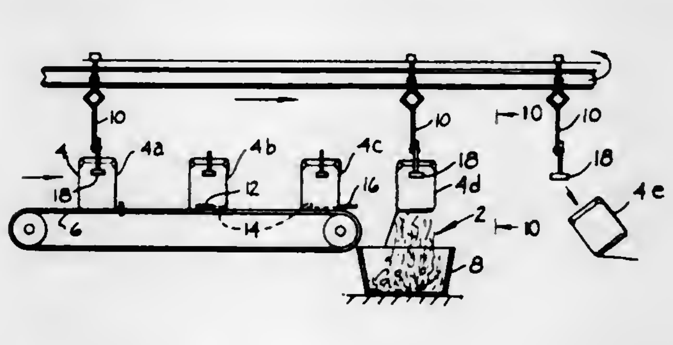
### 3,757,973
### METHOD OF REMOVING CONTENTS FROM CONTAINER

**Gerard L. Lambert, and Charles A. Greenlay, both of Asbestos, Quebec, Canada, assignors to Johns-Manville Corporation, Denver, Colo.**
**Filed Feb. 22, 1972, Ser. No. 228,001**
**Int. Cl. B65g** *65/00*
**U.S. Cl. 214—152** **7 Claims**



A method is described for opening closed, perforable, flexible containers. The containers are perforated along lines parallel to and transverse to their direction of travel along a conveyancing device. They are then moved to a position overlying a hopper where the weight of the contents causes the container to open along the lines of perforation, thus emptying the contents into the hopper. Apparatus for performing the method is also discribed.

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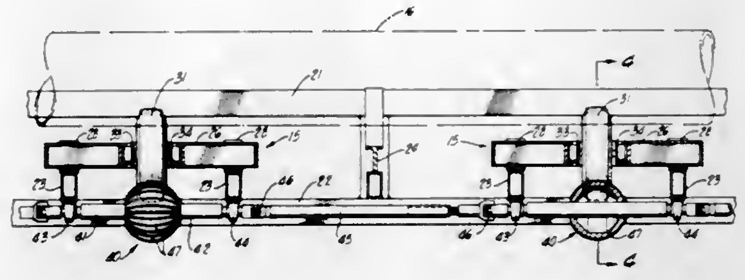
### 3,757,974
### PIPE CONVEYOR APPARATUS

**Heinz Steinbach, Reutlingen, Germany, assignor to Institut Dr. Forster, Reutlingen, Germany**
**Filed May 25, 1972, Ser. No. 256,703**
**Int. Cl. B65h** *51/26*
**U.S. Cl. 214—339** **8 Claims**



A pair of conveyor support frames which can be easily assembled and disassembled are provided for temporary connection to the entrance and exit ends, respectively, of a transportable test station. A plurality of individual pipe drive units are mounted on the upper frame reaches for guiding and driving the pipe lengthwise through the test station. Each drive unit includes a pair of rubber-tired wheels rotatably mounted in spaced, edge-opposed relation. Rotative power is furnished from a single shaft extending through both frames via a plurality of special friction drive members which individually engage the rubber-tired wheels. Common adjustment means interconnecting the drive units enable varying the attack angle of all the drive wheels as a unit and to the same amount.

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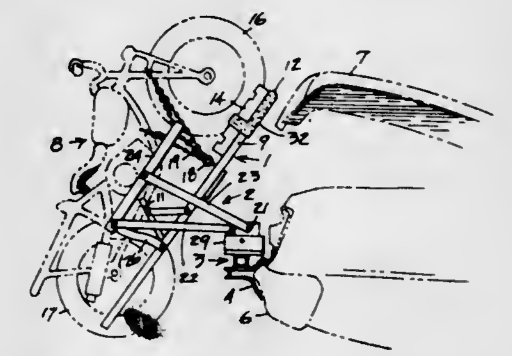
### 3,757,975
### CARRIER FRAME FOR AUTOMOBILES

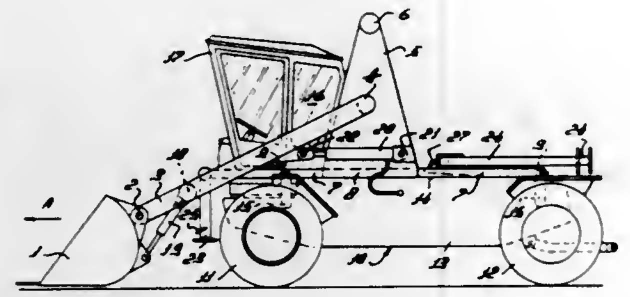
**Charles Sneider, 7950 Mirabel Rd., Forestville, Calif.**
**Filed Jan. 12, 1972, Ser. No. 217,321**
**Int. Cl. B60m** *9/00*
**U.S. Cl. 214—450** **6 Claims**



The carrier frame is pivotally supported on brackets mounted on the rear bumper of an automobile so that the frame extends longitudinally over the trunk of the automobile and partially rests upon it. The linkage which supports the carrier frame is so pivoted as to move over center both in upward direction to lift the carrier over the trunk and in downward direction to shift the carrier into an inclined position to the ground at such an angle as to permit the raising of the lid of the trunk and thereby permit access to the trunk without the removal of the article on the carrier. In this form the carrier is a cradle on which a motorcycle is supported and the loaded cradle can be easily pushed over the trunk lid or shifted down to the ground by one hand of the user. Means being provided to fix the cradle in the loaded position over the trunk.

### 3,757,976
### IMPLEMENTS

**Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland**
**Filed Apr. 7, 1970, Ser. No. 26,291**
**Claims priority, application Netherlands, May 28, 1969, 69,08076**
**Int. Cl. B60p** *1/64*
**U.S. Cl. 214—515** **11 Claims**



An agricultural tractor has a load supporting area to receive removable working tool and/or container attachments. The supporting area and the attachments have cooperating lifting devices and flaring parts that orient and retain the attachments during operation. Quick release elements are located on the tractor and attachments to cooperate with the lifting devices and lock the attachments in place as same are lowered on the load area. The lifting devices and quick release elements can be hydraulically operated.

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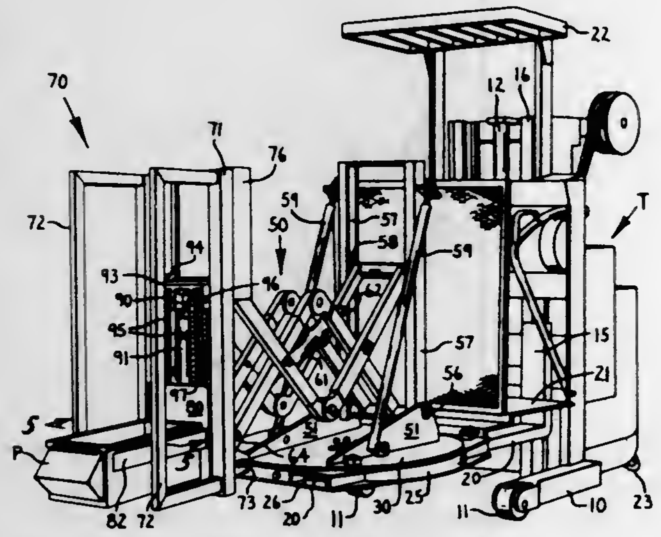
### 3,757,977
### TOTE PAN HANDLER ATTACHMENT FOR LIFT TRUCKS

**Ronald A. Brudi, Longview, Wash., and Jerry D. Hamlik, Rainier, Oreg., assignors to Brudi Equipment, Inc., Kelso, Wash.**
**Filed Sept. 30, 1971, Ser. No. 185,085**
**Int. Cl. B66f** *9/14*
**U.S. Cl. 214—620** **9 Claims**



The attachment has a flat base member to support it on the floor when not in use. A pair of fork pockets in the base member receives the arms of a lift truck fork for up and down movement with the lift truck carriage. A turntable on the base member carries an extensible lazy tongs boom for rotation through 190° to reach straight forward, right or left from the truck. A tote pan fork is movable vertically in a vertical guide frame on the boom. The attachment is readily removable to leave the lift truck available for general service.

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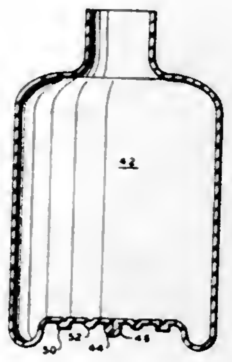
### 3,757,978
### BIAXIALLY ORIENTED BLOW MOLDED ARTICLE WITH RIBS PARALLEL TO SEAM

**Dixie E. Gilbert, Orangeburg, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.**
**Filed Dec. 22, 1971, Ser. No. 210,680**
**Int. Cl. B65d** *1/44*
**U.S. Cl. 215—1 C** **6 Claims**



A blow molded hollow article, such as a bottle, formed under conditions giving biaxial orientation, said bottle having ribs in the bottom wall parallel to the seam.

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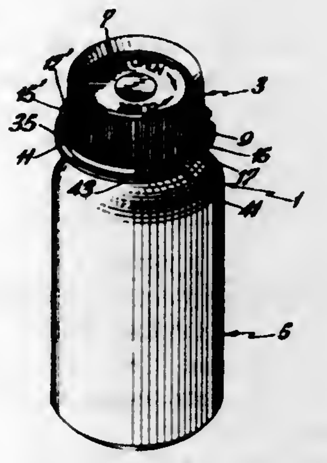
### 3,757,979
### SAFETY CLOSURE-BOTTLE ASSEMBLY

**Walter G. Berghahn, Scotch Plains, N.J., assignor to Bristol-Myers Company, New York, N.Y.**
**Filed Jan. 19, 1972, Ser. No. 218,885**
**Int. Cl. A61j** *1/00;* **B65d** *55/02*
**U.S. Cl. 215—9** **7 Claims**



A safety closure-bottle assembly comprising a snap-on closure and bottle in which the closure is provided with a tab and the bottle neck with a notched flange which registers with said tab.

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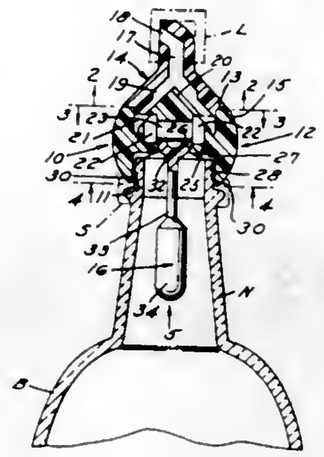
### 3,757,980
### NON-REFILLABLE BOTTLE

**Alfred E. Rundgren, 6347 N.W. 24th Ct., Margate, Fla., and Alfred C. Rundgren, 23143 Beverly, St. Clair Shores, Mich.**
**Filed Oct. 20, 1971, Ser. No. 190,932**
**Int. Cl. B65d** *49/02*
**U.S. Cl. 215—23** **8 Claims**

A non-refillable bottle closure features a one-piece, pouring body having an axially intermediate valve seat at which it is gravity-sealed; and integral hooks on the body grip it onto the top of the bottle neck, so as to be removed only by breaking. A number of partitioned radial passages beneath the valve seat open to the bottle interior for pouring, and to accommodate an anti-vacuum back air flow after a smooth pouring. Above the valve seat the body has a central axial bore which opens laterally to radial ports, and the ports in turn communicate axially upwardly with an annular, downwardly flared conical flow chamber of a pour cap fused unitarily to the body, this chamber being centrally defined at its bottom by a tamper-proof integral top cone formation of the body. This cone radially outwardly overhangs and shields the radial porting of the body, also its valve seat and a weighted, pour-displaceable valve member normally seated on and sealing the latter.



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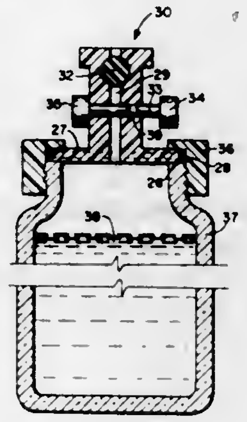
### 3,757,981
### VALVES AND VALVE NEEDLE SYRINGES

**Rano J. Harris, Sr., 1945 Carolyn Sue Dr., and Rano J. Harris, Jr., 9880 S. Riveroaks, both of Baton Rouge, La.**
**Continuation-in-part of Ser. No. 879,232, Nov. 24, 1969, Pat. No. 3,603,471. This application Nov. 18, 1970, Ser. No. 90,603**
**Int. Cl. B65d** *51/00*
**U.S. Cl. 215—37 R** **10 Claims**



A valve, particularly in combination with a needle syringe, for containing fluids, i.e., liquids or gases, within a confined space. The valve per se includes a body comprising a tubular member (e.g., the barrel of a syringe), which contains an inner resilient tubular member within its axial opening. A lateral opening is provided within the walls of both the tubular members and a stem, containing a cut-away portion or lateral opening, is slidably mounted within the laterally oriented wall opening of the tubular members for opening and closing the valve. In another embodiment, the valve is employed in combination with a container. In this combination, the valve body contains, additionally, a cylindrically shaped septum mounted in series with the stem. The septum, contained within an intersecting passageway, lies across the opening or passageway through the valve body to provide an effective leak-proof seal. The valve can be opened to permit exposure of the septum to the valve exterior. Exposure of the septum in such manner permits withdrawal or injection of fluid from the enclosed container. The valve is also adaptable for use with conduits of various types, and can be employed, e.g., in sample inlet systems as conventionally used in modern analytical instruments.

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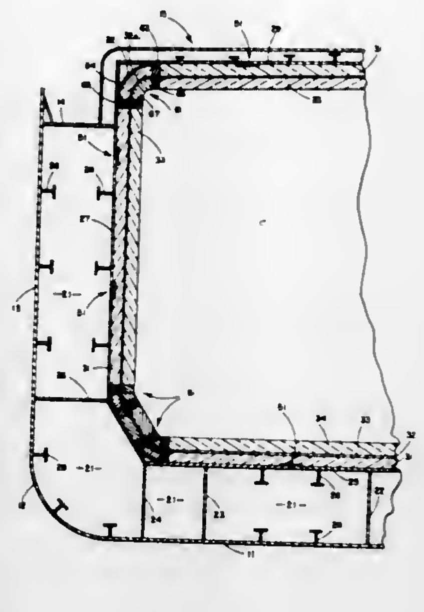
### 3,757,982
### THERMALLY INSULATED CONTAINER

**Lionel Isenberg, Downey, and Ernest T. Hillberg, La Habra, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.**
**Filed June 11, 1971, Ser. No. 152,125**
**Int. Cl. B65d** *25/18*
**U.S. Cl. 220—9 C** **15 Claims**



An insulated container for transporting low temperature liquids has a strong, rigid outer shell internally lined with first and second layers of polyurethane foam with the second layer directly in contact with the contained liquid. Between the layers of foam may be interposed a composite membrane made of, for example, a combination of one or more metal foil layers, an impervious resinous material, and a plurality of temperature sensing devices spaced throughout the membrane to detect any degradation of the insulation. The interior foam surface is preferably reinforced with a scrim cloth. Means are used over weld seams in the rigid outer shell and at the weld corners to allow flexing without cracking the foam.

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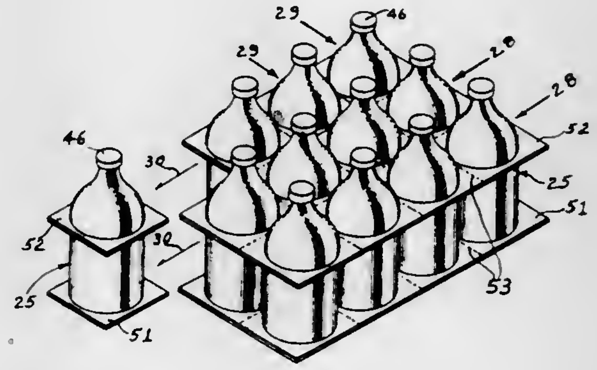
### 3,757,983
### DISPOSABLE INTEGRAL BOTTLE AND STACKING CASES

**Donal Edward McCarthy, 9104 Chickawane Ct., Alexandria, Va.**
**Division of Ser. No. 819,343, April 25, 1969, Pat. No. 3,587,910. This application Mar. 24, 1971, Ser. No. 127,704**
**Int. Cl. B65d** *21/02, 11/04*
**U.S. Cl. 220—23.4** **2 Claims**



A multiplicity of disposable plastic containers are structurally interconnected in a unitary, severable assemblage to form a package from which the containers can be selectively removed by a simple manual tearing action.

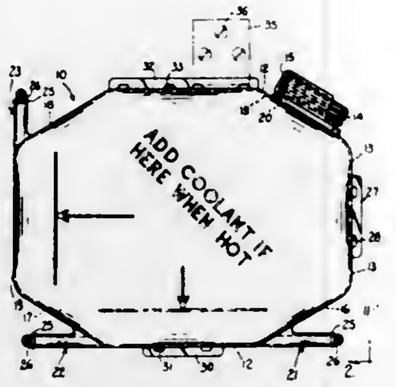
### 3,757,984
### COOLING SYSTEM CONTAINER

**Frederic D. Barton, Kaneohe, Hawaii, assignor to Fre-Bar Inc., Holly, Mich.**

**Filed Aug. 16, 1971, Ser. No. 172,031**

**Int. Cl. B65d** *17/06, 11/10*

**U.S. Cl. 220—27** **3 Claims**



A cooling system container for use with a recovery-type vehicle cooling system is disclosed, said container having a liquid coolant fill opening and at least two port means formed therein, said improvement comprising said port means formed in diagonal corners of said container and said fill opening formed in the corner of said container between said port means, each said port means in the form of a severable hollow pipe which projects from said container, said hollow pipes projecting at right angles to each other so that in each of two vertical positions of said container said fill opening is in an upper corner thereof, one of said pipes is in the other upper corner thereof projecting vertically so as to be capable of serving as an air vent therefor and the other of said pipes is in a lower corner thereof projecting horizontally so as to be capable of serving as a liquid coolant inlet therefor.

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### 3,757,985
### HARVESTING CONTAINER PARTICULARLY FOR USE IN PICKING FRUIT

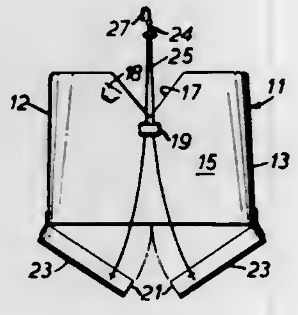
**Philip Clarke, The Priory, Eddington, Herne Bay, Kent, England**

**Filed Oct. 8, 1971, Ser. No. 187,714**

**Claims priority, application Great Britain, Oct. 21, 1970, 49,878/70; Sept. 3, 1971, 49,878/71**

**Int. Cl. B65d** *51/18*

**U.S. Cl. 220—29** **3 Claims**



Harvesting container, particularly for use in picking fruit, which has a two-part outwardly opening hinged bottom. The inside and underside of each bottom part is covered with resilient material. The bottom is supported and held closed by a flexible carrying handle when the container is suspended by the handle.

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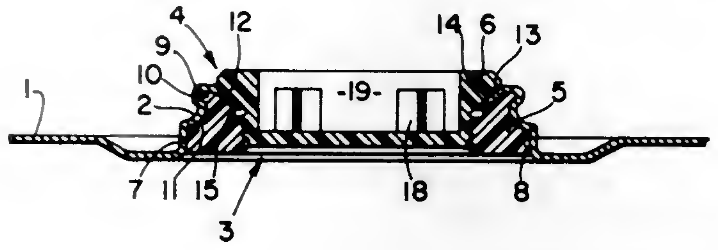
### 3,757,986
### CLOSURE MEMBER FOR METAL CONTAINERS AND METHOD OF ASSEMBLY

**John W. Eichinger, Sharpsville, Pa., assignor to Gulf & Western Industrial Products Company, Buckeye Forge Division, Grand Rapids, Mich.**

**Filed Jan. 18, 1971, Ser. No. 107,165**

**Int. Cl. B65d** *41/04*

**U.S. Cl. 220—39 R** **4 Claims**



A closure member for a metal container comprising a plastic sleeve member snapped into an opening in the metal container and a plastic plug removably received within the sleeve member. The sleeve member has a radially projecting shoulder at one end which extends into an annular groove in an embossment on the metal container surrounding the opening therein. During insertion of the sleeve member into the container opening, the radial shoulder is bent radially inwardly by the smaller diameter surface of the embossment adjacent the annular groove therein to permit movement of the radial shoulder therepast, after which the radial shoulder returns to its original shape where it is confined within the annular groove, locking the sleeve member in place. An axially and radially inwardly extending lip on the embossment overlies the radial shoulder on the sleeve member providing a frusto-conical bearing and sealing surface for sealing engagement by a frusto-conical shoulder on the plug when tightened in the sleeve member.

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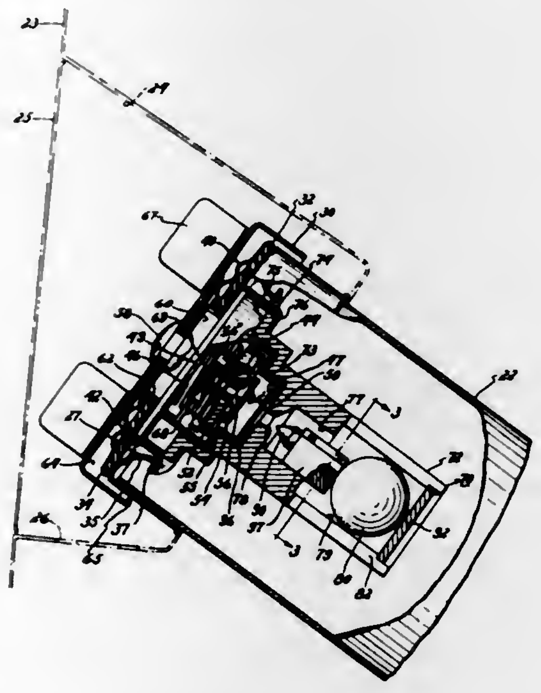
### 3,757,987
### VENT CONTROLLING GAS CAP WITH SHUT-OFF VALVE

**Charles J. Marshall, Detroit, Mich., assignor to American Motors Corporation, Kenosha, Wis.**

**Filed July 15, 1971, Ser. No. 162,805**

**Int. Cl. B65d** *51/16*

**U.S. Cl. 220—44 R** **4 Claims**



A valve associated and assembled with a vent controlling arrangement in the closure cap of a fuel storage tank in a motor vehicle. The valve having a weighted member responsive to the influence of gravity to effect the opening and closing of the valve and accordingly the communication between the tank and vent controlling arrangement, the closing being when the tank is inverted to prevent fuel spillage.

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### 3,757,988
### SHATTERING FRANGIBLE OBJECTS, PARTICULARLY PLATES

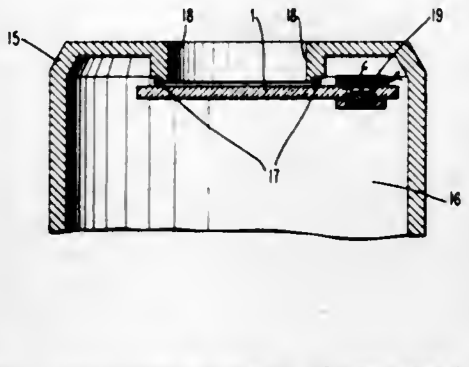
**Heinz Kunert, Koln, Germany, assignor to Saint-Gobain, Neuilly-sur-Seine, France**

**Filed June 10, 1971, Ser. No. 151,850**

**Claims priority, application Germany, June 10, 1970, P 20 28 350.1**

**Int. Cl. B65d** *43/02, 25/00*

**U.S. Cl. 220—47** **20 Claims**



Wall means comprising a pane of tempered glass transpierced by a hole, an explosive device comprising oppositely disposed hollow bullets sharing a common explosive charge disposed in the hole, means to direct the bullets against the wall of the hole, means to fire the charge, and closure means sealing both faces of the hole.

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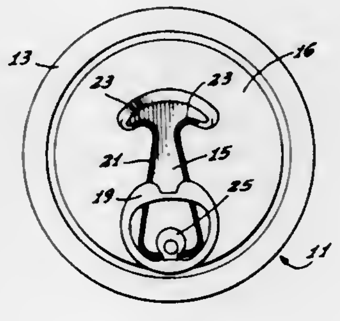
### 3,757,989
### CAN END WITH INSEPARABLE TEAR STRIP

**Omar L. Brown, Kettering, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio**

**Filed Dec. 31, 1970, Ser. No. 103,255**

**Int. Cl. B65d** *17/20*

**U.S. Cl. 220—54** **17 Claims**



A can end in which the tear strip is defined by a non-continuous score which is formed so that the tear strip is prevented from being completely removed from the can ends. Coined formations are positioned in the area about the score line to prevent the formation of sharp edges against which a user could cut himself. In one embodiment of the invention, the end wall is coined so as to form a score ledge situated beneath the horizontal plane of the end wall and the tear strip is further coined or formed to a position beneath the horizontal plane of the score ledge. When a score is formed in the ledge, the tear strip is coined slightly further away from the horizontal plane of the ledge to absorb the metal flowing away from the score. In another embodiment, ridges are coined into the end wall and the tear strip on opposite sides of the legs of the score to accomplish the same result.

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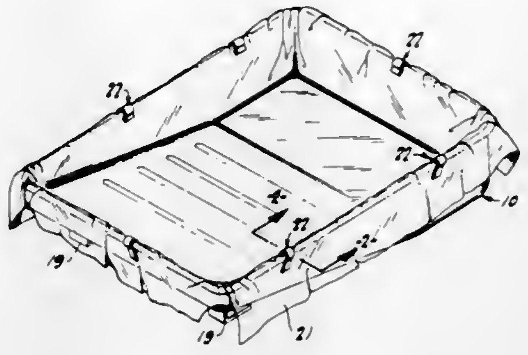
### 3,757,990
### DISPOSABLE FLEXIBLE LINER FOR PAINT TRAYS

**Wallace R. Buth, 33 Curtis St., San Francisco, Calif.**

**Filed July 21, 1970, Ser. No. 56,922**

**Int. Cl. B65d** *25/16;* **A44b** *21/00;* **B65b** *67/12*

**U.S. Cl. 220—63 R** **2 Claims**



Assembly including a flexible liner for protecting a paint tray and mechanical means for removably attaching the flexible liner to the tray. The mechanical means includes a plurality of clips for clamping the liner to the walls of the tray, a resilient band or drawstring for clamping the liner to the outside of the tray, and adhesive means for attaching the liner to the tray. A disposable bag is provided for disposing of used liners.

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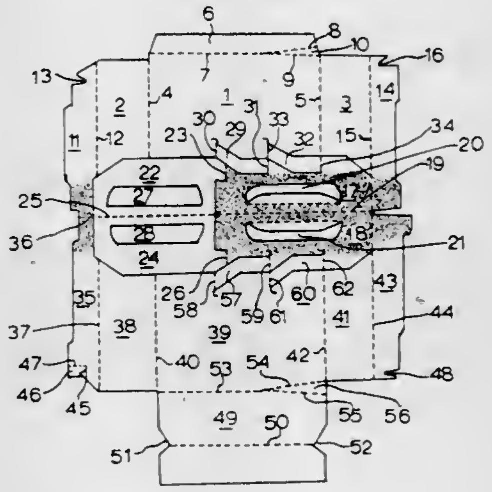
### 3,757,991
### ARTICLE CARRIER

**James T. Stout, Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio**

**Filed May 22, 1972, Ser. No. 255,391**

**Int. Cl. B65d** *75/00*

**U.S. Cl. 220—113** **5 Claims**



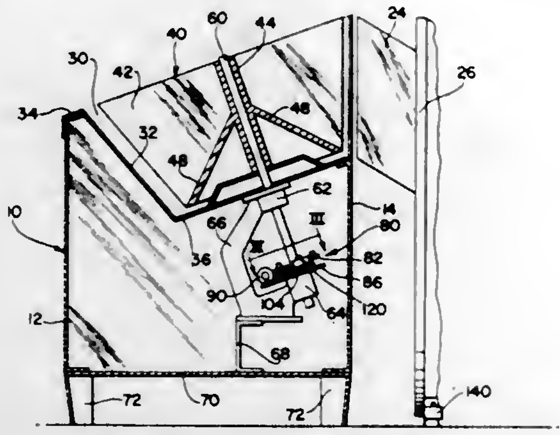
A basket-style article arrier having a bottom wall, side walls foldably joined along their bottom edges to opposite side edges of the bottom wall, end walls foldably joined to the end edges of the side walls, riser panels foldably joined to the end walls medially thereof, a handle panel secured at its ends to the upper portions of the riser panels, and partition structure interconnected between the handle and the side walls is provided with stabilizing structure for insuring that the carrier is squarely set up to facilitate loading, such structure including a fold line which is bifurcated at one end and which interconnects the bottom edge of each side wall with the corresponding side edge of the bottom wall together with a specially constructed locking notch and an associated closure flap formed in the riser panels at the end of the carrier opposite from the bifurcated portion of the fold line between the side walls and the bottom wall.

### 3,757,992
## SUPPLY BOBBIN DELIVERY MECHANISM

**David G. Cruickshank, North Kingstown, and Raymond V. Tata, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.**

**Filed July 24, 1972, Ser. No. 274,745**
**Int. Cl. B65h** *43/02*

**U.S. Cl. 221—13** **10 Claims**



Supply bobbin delivery mechanism including a rotatable divider mounted on an axis within a tub-like bobbin container is described. The divider includes a plurality of separators, the space between each adjoining pair of separators forming a bobbin receiving compartment. The divider is driven by an indexing mechanism having at least as many positions as there are separators thereon. The container is mounted in an inclined plane and has an opening at the high point along its periphery. The container is charged with bobbins by automatically or manually filling each space or compartment. On demand from the user mechanism the divider is indexed one position at a time. Consequently, bobbins in each compartment are moved sequentially into alignment with the opening in the container whereupon these bobbins slide downwardly under the force of gravity to the user mechanism. Indexing of the divider to thereby deliver a fresh quantity of bobbins from the next succeeding compartment to the user mechanism is repeated on each occasion when a demand signal for supply bobbins is received.

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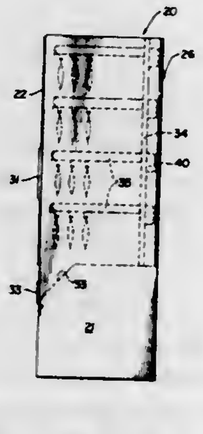
### 3,757,993
## ANTI-THEFT MEANS FOR VENDING MACHINE MODULES

**James V. Bruckner; William A. Patrick, and Thomas O. Yingst, all of Conway, Ark., assignors to Polyvend, Inc., Conway, Ark.**

**Filed Nov. 5, 1971, Ser. No. 195,932**
**Int. Cl. G07f** *11/58*

**U.S. Cl. 221—80** **8 Claims**



A replaceable vending machine merchandise dispensing module having endless-chain-mounted merchandise supporting means and means associated therewith for preventing improper dislodging of the merchandise and for ensuring proper discharge therefrom.

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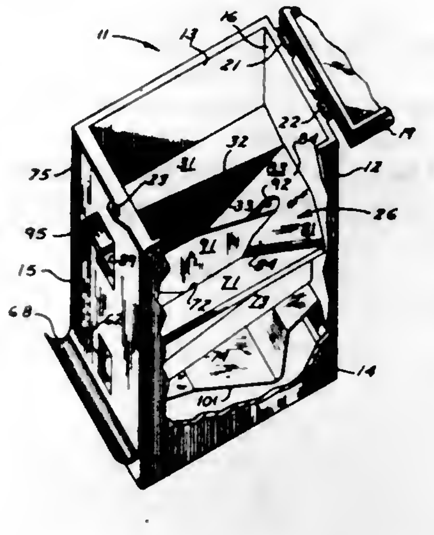
### 3,757,994
## PILL DISPENSER

**Paul B. S. Skoetsch, 1428 N. Madison, Stockton, Calif.**

**Filed Apr. 6, 1972, Ser. No. 241,685**
**Int. Cl. B65h** *7/00*

**U.S. Cl. 221—202** **9 Claims**



A transparent container holds a supply of tablets, such as vitamin pills, the container having a hinged lid which is color-coded to the type of pill. An ejector mechanism on the container is manually operated and ejects one pill at a time. By combining several units, a full spectrum of pill types is made readily available.

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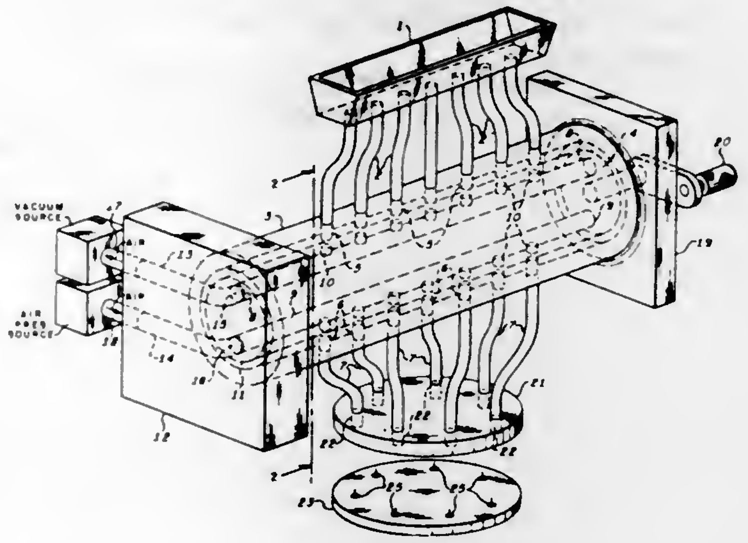
### 3,757,995
## SMALL PARTICLE DISPENSER

**James B. Armstrong, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed May 20, 1971, Ser. No. 145,384**
**Int. Cl. B65g** *59/06*

**U.S. Cl. 221—211** **2 Claims**



A rotary pin dispenser utilizes vacuum to draw a predetermined number of pins from pin supply tubes into a cylindrical barrel. The barrel is rotated to a second position and air pressure is utilized to expel the pins into delivery tubes.

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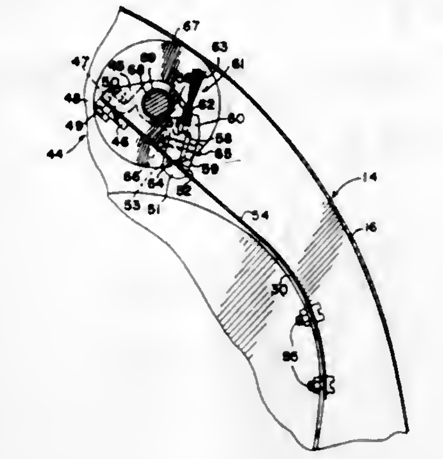
### 3,757,996
## SEED CUT-OFF FOR PLANTERS

**Dario E. Lienemann, Darien, and Arthur S. Datta, Willow Springs, both of Ill., assignors to International Harvester Company, Chicago, N.Y.**

**Filed Aug. 9, 1971, Ser. No. 169,960**
**Int. Cl. B65h** *3/08*

**U.S. Cl. 221—211** **8 Claims**

A seed dispenser for a pneumatic planter of the type wherein seed is fed to the interior of a revolving seed selector drum having peripheral seed-receiving openings. The interior of the drum is supplied with air under pressure to attract seeds to the openings and carry them upwardly to a discharge area. A cut-off means is provided within the drum ahead of the discharge area to dislodge excess seed from the openings.



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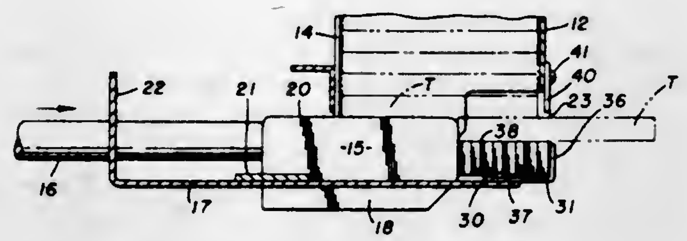
### 3,757,997
## VARIABLE THICKNESS FOR RECIPROCABLE-TYPE ARTICLE EJECTOR OF A VENDING MACHINE

**Clarence Fredrick Millies, and Loren V. Hughes, both of Cincinnati, Ohio, assignors to Unlimited Invested Corporation, Cincinnati, Ohio**

**Filed Oct. 15, 1971, Ser. No. 189,707**
**Int. Cl. B65g** *59/06*

**U.S. Cl. 221—241** **9 Claims**



An adaptor attachment for use in connection with the reciprocable-type ejector of an article vending machine, such as a cigarette package vending machine. It consists of a filler arrangement cooperating with the ejector block upon which the column of articles normally rests and which, upon the retraction stroke of the block, is located underneath and supports the lowermost article in the magazine, preparatory to the advancing or dispensing stroke. The filler is adapted to make it possible for the ejector to eject thinner articles, the vertical extent of the filler plus that of the thinner article it supports being substantially equal to the thickness of the ejector block which was designed to eject the thicker articles.

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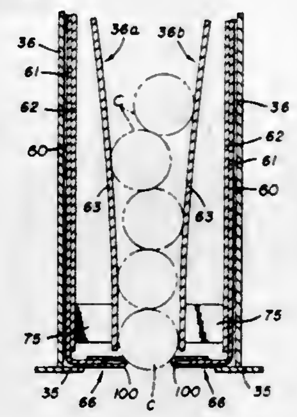
### 3,757,998
## ADAPTOR SYSTEM FOR A VENDING MACHINE TO ADAPT IT TO THE VENDING OF VARIOUS SIZE ARTICLES

**Clarence Frederick Millies, and Loren V. Hughes, both of 727 Dixmyth, 605 Tower West, Cincinnati, Ohio**

**Filed Dec. 8, 1971, Ser. No. 205,890**
**Int. Cl. G07f** *11/16*

**U.S. Cl. 221—242** **39 Claims**

An adaptor system for use on vending machines, such as a cigarette vending machine, of the type in which the articles to be vended are supported as a column of superimposed articles with the lowermost article resting on a support at a predetermined level or ejector plane where it is subjected to an ejector that will move the article off that plane in an ejecting or dispensing stroke. The adapter system includes means for adjusting the support or ejector plane to different levels so as to adapt the machine to the dispensing of articles of different thicknesses. It also includes means for changing the width and length of the magazine to adapt the machine to the dispensing of articles of different lengths and widths. It further includes means for making compensating adjustments of the ejector to adapt it to the different thicknesses, width, and lengths of the articles to be dispensed.



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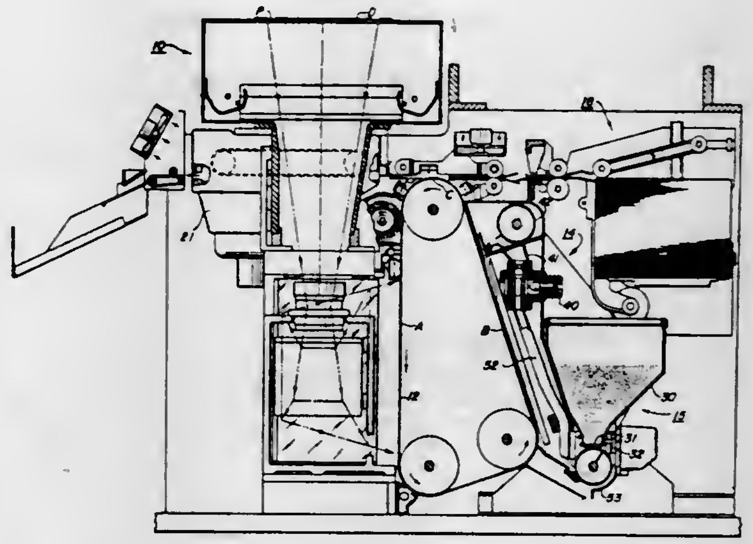
### 3,757,999
## AUTOMATIC DEVELOPABILITY CONTROL SYSTEM FOR ELECTROSTATIC RECORDING APPARATUS

**John Maksymiak, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.**

**Division of Ser. No. 867,208, Oct. 17, 1969, Pat. No. 3,727,065. This application Nov. 3, 1972, Ser. No. 303,667**
**Int. Cl. G01n** *21/26*

**U.S. Cl. 222—57** **7 Claims**



A developability control system for an electrostatic recording apparatuin which a sensor including two parallel spaced NESA apparatus in plates through which developer material flows are connected in a circuit wherein each is electrically charged alternately for equal periods of time. While each plate is charged, it is adapted to attract toner. A light source on one side of the two plates and a photocell on the other side "senses" the sum toner deposit on the two plates at all times thereby effecting a steady state control signal.

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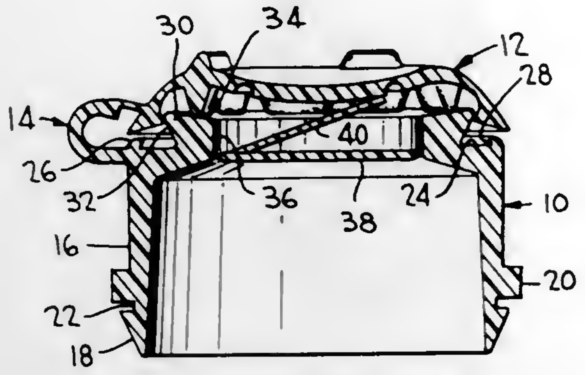
### 3,758,000
## SAFETY CLOSURE FOR CONTAINERS

**Frank J. Mack, Miamiville, Ohio, assignor to The Drackett Company, Cincinnati, Ohio**

**Filed May 14, 1971, Ser. No. 143,351**
**Int. Cl. B65d** *43/10*

**U.S. Cl. 222—143** **14 Claims**

A safety closure including a base member having a spout, an annular shoulder around the spout, and a peripheral ridge protruding from the shoulder, a cover member having a domed crown with a skirt depending therefrom, a plurality of stacking bosses protruding from the outer surface of the crown and a segmented ring protruding from the inner surface of the crown, and a hinge interconnecting the base member and the cover member and having a weakened portion of reduced cross section adjacent the cover member, the cover member being adapted to be disposed on the base member with the segmented ring engaging a top surface of the spout and a peripheral bottom edge of the skirt captured by the ridge whereby the cover member can be removed from the base member only by depressing the crown to free the peripheral bottom edge.



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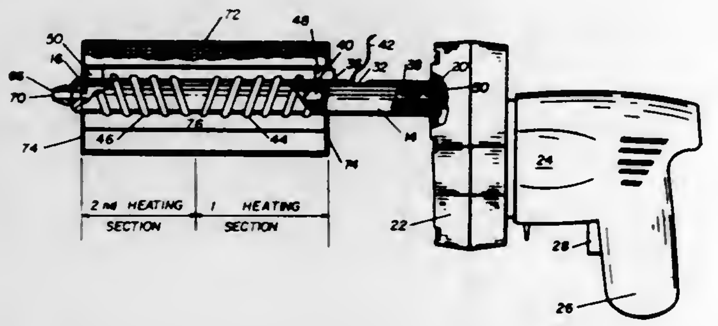
## 3,758,001
## EXTRUDER

**John E. Callan, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.**

**Filed Oct. 29, 1971, Ser. No. 193,991**

**Int. Cl. B67d** *5/62*

**U.S. Cl. 222—146** **4 Claims**



A polymer extruder having heating means which is thermostatically controlled for regulated heating of the extruder barrel and, hence, the material being extruded. In preferred embodiments the extruder barrel is fitted with two longitudinally spaced-apart electric heating elements, each of which is independently controlled with separate thermostats attached to the barrel in the vicinity of the element which it controls. The first heating element is located near the feed inlet of the extruder, and the second near the extrusion orifice. The first element provides high heat input for rapid softening of the polymeric feed. The other element provides additional heat input for extrusion of the polymeric material at a constant, preselected temperature. The invention is especially applicable to hand-held extruders which are operated intermittently for extruding hot tapes during the weather sealing of structural joints.

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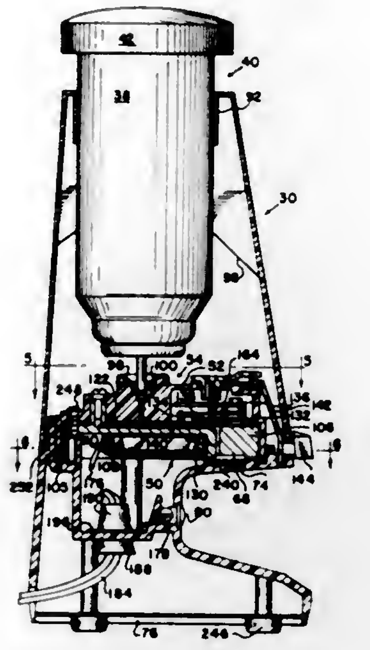
## 3,758,002
## PRODUCT DISPENSER AND HEATER

**Edward J. Doyle, Hatboro, and Richard S. Bagwell, Jr., Lancaster, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.**

**Filed Sept. 29, 1970, Ser. No. 76,454**

**Int. Cl. B67d** *5/62*

**U.S. Cl. 222—146 HA** **16 Claims**



A unit for electrically heating and dispensing products from pressurized containers. The unit receives a pressurized container, and, upon actuation of the container valve, directs the product through a series of passages, including one or more heating chambers, steam traps, and the like, to the outlet openings from which the product is dispensed. Depending on the predetermined configuration of the openings in the dispensing nozzle of an associated product container, the dispenser is adapted to direct the product into one or more heating chambers alternatively, or into two or more chambers simultaneously. Each heating chamber is formed in part by an exterior surface of a relatively massive heat sink unit having an electrical resistance heating element associated therewith and controlled by an adjustable thermostat. Electric current is supplied to the element and the control through a connector which affords mechanical strength, electrical insulation and which provides a water-tight connection. The passages directing the product to one or more of the heat exchangers are located within a cover element closely overlying the heat sink and the thermostat. Since typical products dispensed by the novel unit are highly viscous, the containers thereof should be stored in the inverted position and accordingly, containers are constructed so as to facilitate inverted storage and to prevent unintentional upright storage.

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## 3,758,003
## HOT MELT LIQUEFYING AND PUMPING MECHANISM

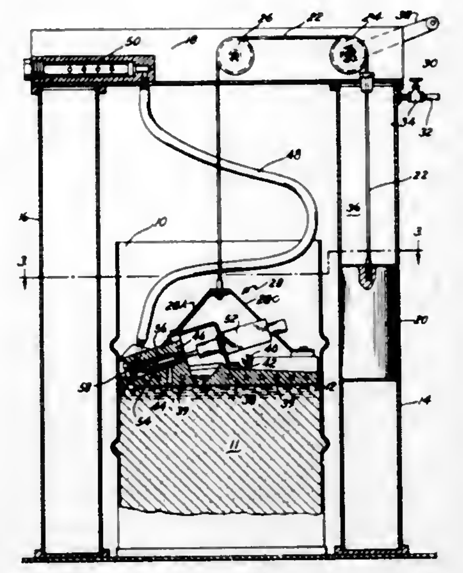
**Wilbert G. Kautz, and Dale F. German, both of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio**

**Filed Dec. 20, 1971, Ser. No. 209,671**

**Int. Cl. B67d** *5/62;* **F16k** *49/00*

**U.S. Cl. 222—146 R** **5 Claims**

A mechanism for melting and discharging hot melt material from a barrel includes a hot plate which fits through the top of the barrel and melts the hot melt material adjacent the bottom side of the plate. A pump operates to draw the melted hot melt material from the region between the plate and the unmelted material for discharge through a flexible hose.



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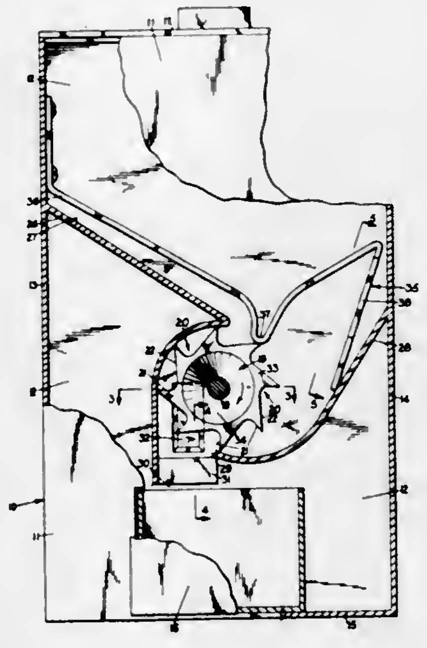
## 3,758,004
## DIAL-CONTROLLED DISPENSER FOR POWDERED OR PARTICULAR MATERIAL

**Lawrence E. Garrett, Rt. 1, Box 676, and Luther B. Garrett, 824 Miller Ave., both of Dallas, Oreg.**

**Filed Feb. 28, 1972, Ser. No. 229,739**

**Int. Cl. B65g** *29/00*

**U.S. Cl. 222—181** **3 Claims**



A wheel on a horizontal axis in a dispensing container has a continuous series of scoops in its periphery which produce the discharge of material from the dispenser. The wheel is rotated and controlled by an external finger-operated dial. Clogging of the wheel is prevented by a recess in each of the adjacent walls of the container facing the lower portion of the wheel and by decreasing thickness of the wheel at its center portion. Close tolerance of the peripheral walls and lips of the wheel with the discharging mouth of the dispenser enable desired amounts of material to be accurately dispersed. For powdered material an agitator in the container prevents caking.

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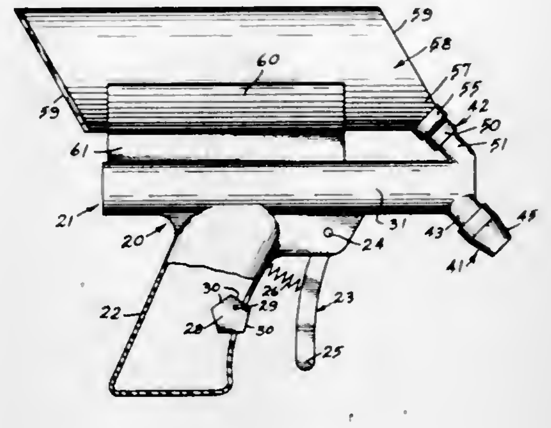
## 3,758,005
## DISPENSING SYSTEM

**William C. Christine, Catasaqua, and William E. R. Watt, Barto, both of Pa., assignors to Inpaco, Allentown, Pa.**

**Filed Dec. 7, 1971, Ser. No. 205,692**

**Int. Cl. G01f** *11/06*

**U.S. Cl. 222—309** **1 Claim**



A dispensing system which is adapted to discharge controlled quantities of a substance such as a condiment. The dispenser includes a forward chamber housing a trigger controlled piston and inlet and outlet means to the chamber being regulated by spring pressed check valves. An arcuate cradle and fitment are provided for mounting a flexible disposable puch on the dispenser.

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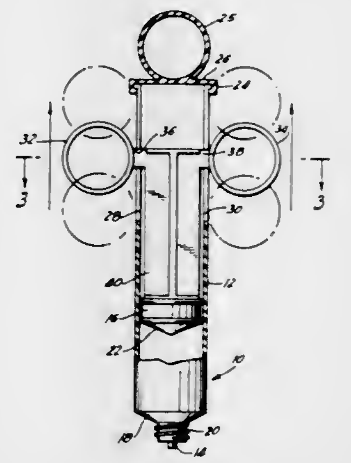
## 3,758,006
## ASPIRATING SYRINGE WITH GRASPING RINGS

**Leland C. Gravlee, Mountain Brook, Ala., assignor to Becton Dickinson and Company, East Rutherford, N.J.**

**Filed Oct. 15, 1971, Ser. No. 189,612**

**Int. Cl. G01f** *11/06*

**U.S. Cl. 222—323** **2 Claims**



A hypodermic syringe barrel has a delivery tip at one end and an axially movable plunger spaced within the barrel movable toward and away from the delivery tip. A grasping ring is connected to the barrel at the opposite end of the barrel from the delivery tip. A pair of axially movable grasping rings are oppositely spaced along the sides of the barrel. Each of the movable rings is connected to the plunger. The movable rings fit through guide slots in the barrel. When the movable rings are conveyed toward the end-mounted grasping ring, while the grasping ring is braced against motion, the syringe is aspirated.

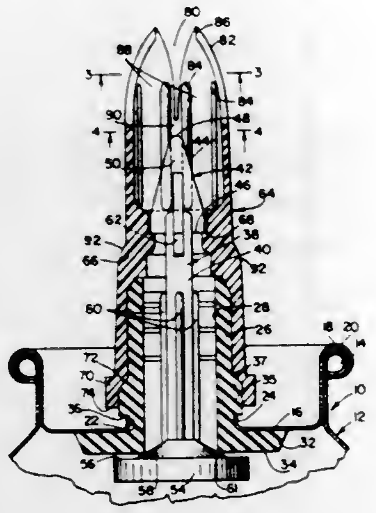
### 3,758,007
### DISPENSER VALVE STRUCTURE

**Joseph L. Rosen, Chicago, Ill., assignor to Super Whip Valve Mfg. Co., Chicago, Ill.**

**Filed Mar. 19, 1971, Ser. No. 126,187**

**Int. Cl. B65d** *83/14*

**U.S. Cl. 222—394** **5 Claims**



A dispenser valve structure for use with containers dispensing liquids under pressure, in which the nozzle is provided with spaced guide ribs which form guideways therebetween for guiding the material to be discharged in a substantially straight stream and avoid spattering.

This invention is an improvement of the type of valve structure shown in my U.S. Pat. No. 3,300,105.

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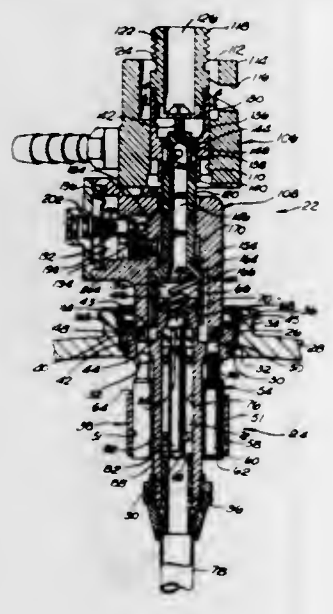
### 3,758,008
### TAPPING ASSEMBLY FOR BEER KEGS AND THE LIKE

**Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif.**

**Filed Oct. 14, 1971, Ser. No. 189,281**

**Int. Cl. B65d** *83/00*

**U.S. Cl. 222—400.7** **19 Claims**



A keg adapter for beer kegs and the like with gas and liquid passageways containing normally closed valves, which when opened permit compressed gas to be admitted to the keg and beer to be withdrawn therefrom, said valves being biased toward the closed position by actuators which contain permanent magnets. A tapper is connected to a source of compressed gas and to a beer faucet and contains a tap rod, which, when manually actuated, seals the tapper to the adapter and interconnects the gas source and the faucet with the interior of the keg.

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### 3,758,009
### MAGNETIC RECORDING AND REPRODUCTING APPARATUS

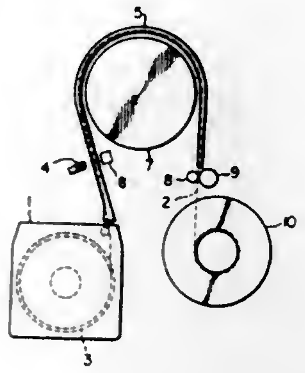
**Michinori Nagahiro, Nishinomiya; Toshiomi Yabu, Kyoto; Hiroo Hosono, Hirakata, and Masaharu Ushihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Oct. 12, 1972, Ser. No. 297,073**

**Claims priority, application Japan, Oct. 15, 1971, 46/81996**

**Int. Cl. B65h** *25/10*

**U.S. Cl. 226—11** **7 Claims**



A video tape recorder of the one reel cartridge type using a magnetic tape having a transparent leader tape and a transparent trailer tape connected to the leading and trailing ends thereof respectively. A transparent tape portion detector is disposed adjacent to the tape path for detecting misloading of the leader tape portion so that the magnetic tape can be automatically stopped or rewound in the event of misloading.

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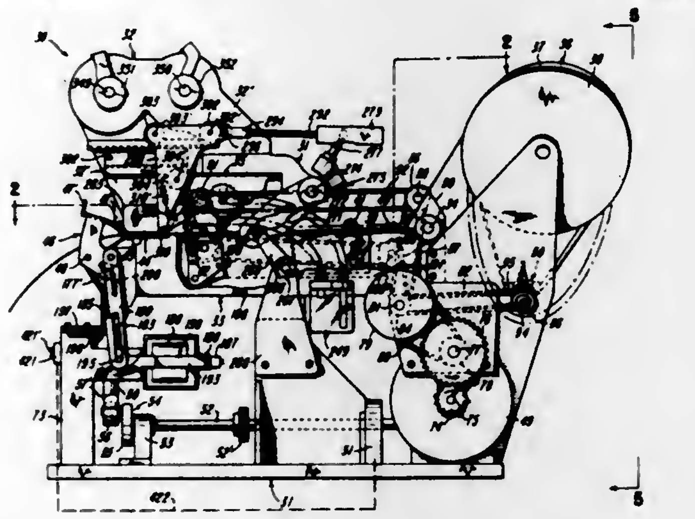
### 3,758,010
### PRINTING APPARATUS

**Paul H. Hamisch, Jr., Franklin, and Robert M. Pabodie, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio**

**Filed Jan. 6, 1972, Ser. No. 215,852**

**Int. Cl. B65h** *23/18*

**U.S. Cl. 226—33** **13 Claims**



There is disclosed a printing, feeding and severing method and apparatus for carrying out the method. The apparatus includes a print head assembly and a platen assembly movable relatively toward and away from each other into and out of printing cooperation, mechanism for inking the print head assembly, mechanism for feeding a web of record members to between the print head assembly and the platen assembly, the web being in roll form and there being means to assist the gradual unwinding of the roll with gradual paying out of web material from the roll to the feeding mechanism, an idler contacting the web and disposed at a slight angle to the direction of feed of the web to cause the web to follow a feed edge, record severing means disposed downstream of the print head assembly and the platen assembly, and a modular support assembly of a print head of the print head assembly.

### 3,758,011
### APPARATUS FOR OSCILLATING DRIVE OF SHAFTS AND USE OF THE AFORESAID APPARATUS

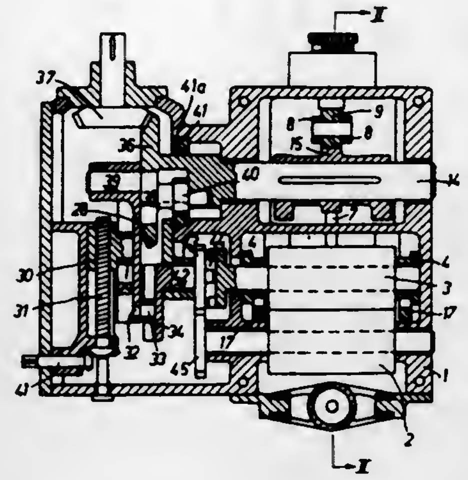
**August Thomas Portmann, Arbon, Switzerland, assignor to Bruderer AG, Arbon, CH**

**Filed Sept. 26, 1972, Ser. No. 292,355**

**Claims priority, application Switzerland, Oct. 1, 1971, 14370/71**

**Int. Cl. B65h** *17/26*

**U.S. Cl. 226—142** **6 Claims**



An apparatus for the oscillating drive of shafts, comprising a lever pivotable about a pivot axis. The lever is connected with a drive element moving to-and-fro with a translatory movement between two terminal positions and possesses a rotatably secured sliding body member which is guided in a slide or guide track provided at a rocker arm connected with the shaft to be driven.

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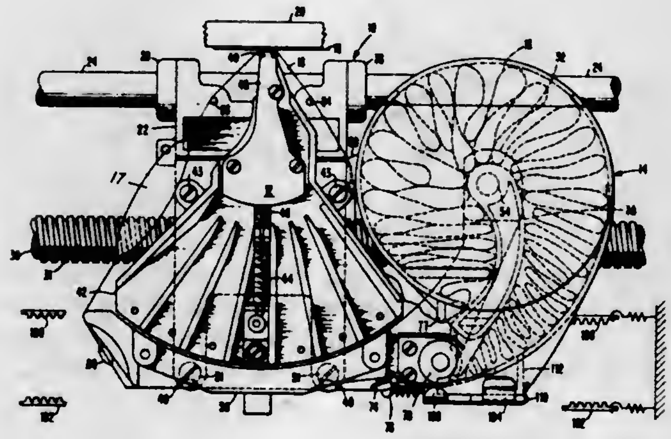
### 3,758,012
### CONTROLLED TENSION RIBBON CASSETTE

**Gilbert B. Bonner, and Philip A. Brumbaugh, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 20, 1971, Ser. No. 209,684**

**Int. Cl. B65h** *17/20*

**U.S. Cl. 226—168** **6 Claims**



An endless ribbon for a wire matrix printer is pulled past the print head as the print head moves along the print line by a feed roll located at the entrance to a cassette which has an elongated gradually-expanding storage chamber which readily permits random folding of the ribbon in the chamber resulting in reduced ribbon tension and more uniform ribbon feed.

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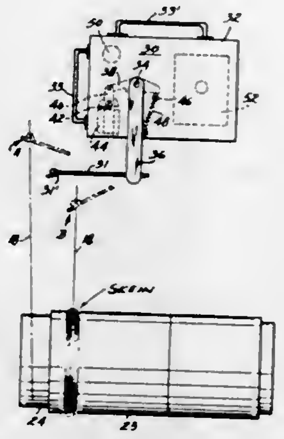
### 3,758,013
### SKEIN TIMER-DEVICE

**Charles William Johnson, Waterville, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.**

**Filed Nov. 18, 1971, Ser. No. 199,950**

**Int. Cl. B65h** *23/02*

**U.S. Cl. 226—199** **5 Claims**



This is a device having strand guiding means at one position for guiding attenuated continuous glass fibers onto a rotatable mandrel at one location, and means for selectively moving the guiding means to a second position only for a predetermined period of time for guiding fibers onto the rotatable mandrel at another location for collecting thereon a skein of fibers.

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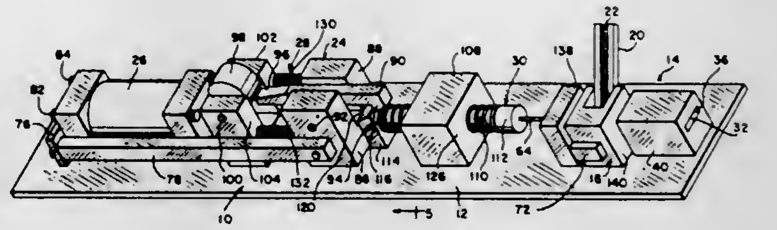
### 3,758,014
### AUTOMATIC PIN INJECTOR

**Robert L. Herr, Manheim, Pa., assignor to Rimar Manufacturing, Inc., Manheim, Pa.**

**Filed May 30, 1972, Ser. No. 257,876**

**Int. Cl. B27f** *7/02*

**U.S. Cl. 227—7** **12 Claims**



An automatic pin injector for positioning pins within an axial bore of a grill bar including a spring biased plunger axially reciprocal from an initial position to a driving position, a forward pin chamber section which receives the end of a grill bar therein, the pin chamber section including an intake slot and pin pick up which is initiated by the insertion of the grill bar within the intake slot and a micro switch which trips upon seating the grill bar within the intake slot, an air cylinder responsive to operation of the micro switch to pull the plunger rearwardly against the bias of one of its springs, a plunger release which functions upon the rearward movement of the plunger to release the plunger and a plunger spring to propel the plunger forwardly to drive a pin into the axial bore upon function of the plunger release.

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### 3,758,015
### LAST STITCH AND TIE STITCH PLACING SYSTEM

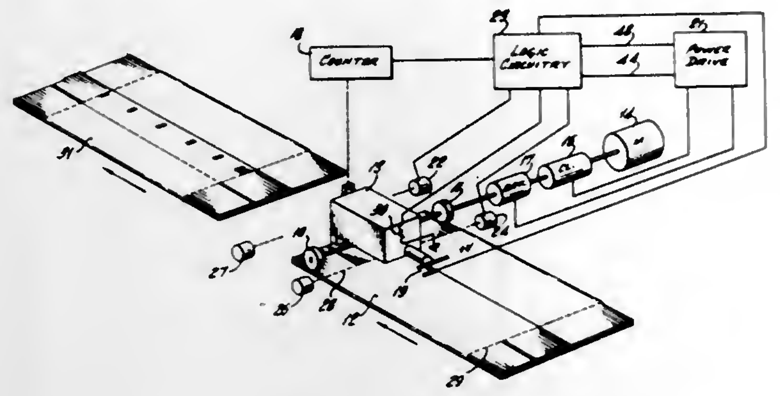
**Stephen Stanton, Baltimore, Md., assignor to Precision Industries, Inc., Baltimore, Md.**

**Filed Jan. 5, 1972, Ser. No. 215,604**

**Int. Cl. B27f** *7/06*

**U.S. Cl. 227—7** **26 Claims**

A box stitching machine is disclosed which includes a stitching head and a set of pull rollers for intermittently moving a box to be stitched past the stitching head. An operating motor drives a shaft which is connected to the pull rollers through a clutch brake combination. Logic circuitry which is selectively responsive to (1) a pair of photocells for determining the position of a box to be stitched and (2) a counter which counts the number of stitches put into a box, drives a power circuit for controlling the brake clutch combination.



Details of the logic circuitry are also disclosed showing how the brake clutch combination can be controlled to provide (1) a predetermined number of stitches in a box, (2) automatically place a last stitch at a predetermined position in the box without regard to the number of stitches placed therein and (3) provide tie stitches at leading and trailing ends of a stitched box.

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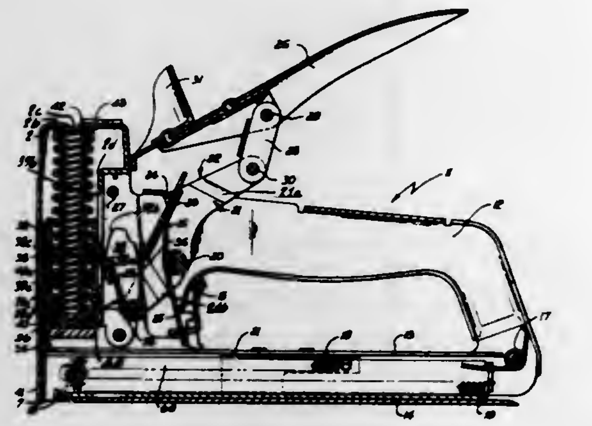
### 3,758,016
### TACKER

**Nathaniel M. Olney, New York, N.Y.; Antoon M. Hurkmans, New Milford, Conn.; Edward E. Barrett, Massapequa Park, and Martin J. Leff, New York, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.**

**Filed Oct. 18, 1971, Ser. No. 190,155**
**Int. Cl. B25c** *5/10*
**U.S. Cl. 227—132** **5 Claims**



A gun-type manually operable tool for firing a fastening element such as a staple into a work piece is disclosed. The tool comprises a driving means including a spring loaded ram means movable through an arming and firing stroke into contact with a staple situated at the driving station of the tool. A movable means engageable with the ram means operates to move the ram means through the arming stroke and release means is provided for automatically effecting disengagement between the ram means and movable means at the completion of the arming stroke permitting movement of the ram means through the firing stroke. The tool is actuated by depressing a pivotally mounted actuating handle which is responsively connected to the movable means by a linkage means. The movable means includes a ram lifting member which is pivotally mounted on one link of the linkage means and the release means includes a pin element disposed in the path of movement of the ram lifting member; the pin acting as a cam to pivot the ram lifting element out of engagement with the ram at the completion of the arming stroke. Advantageously, the pin element also serves to pivotally mount the actuating handle. Also, the tool includes a magazine means for incrementally feeding fastening elements to the driving station and a window in the external housing of the tool having visual measuring means for determining the length of the fastening elements loaded in the tool.

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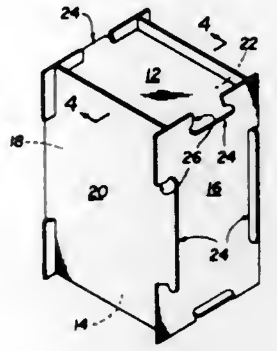
### 3,758,017
### RIGID PANEL CONTAINER

**Donald R. Ross, 126 California Ave., Freeport, N.Y.**

**Filed Sept. 24, 1971, Ser. No. 183,571**
**Int. Cl. B65d** *5/32, 5/60*
U.S. Cl. 229—14 C **1 Claim**



A readily assembled and disassembled container fabricated of rigid panels to provide maximum protection to the transported product, in which cooperating tabs and notches are relied on solely to assemble the panels, i.e., no nails, bolts, screws or the like, nor is assembly facilitated by any appreciable bending of the rigid panels. Instead, an angular orientation of the tabs and notches, which orientation will not often occur inadvertently, is made a requirement for panel assembly and disassembly.

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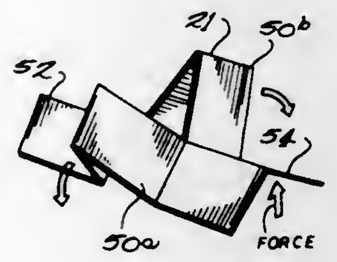
### 3,758,018
### CARTON DIVIDER

**Richard A. Black, Calumet City, Ill., assignor to Bell Fibre Products Corporation, Marion, Ind.**

**Filed Dec. 23, 1971, Ser. No. 211,331**
**Int. Cl. B65d** *5/48*
U.S. Cl. 229—15 **3 Claims**

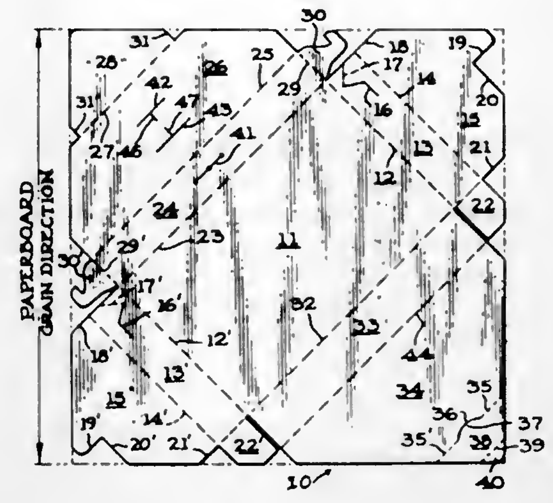


A carton divider is formed of a rectangular cardboard blank having a slit partially through the thickness of the blank and substantially centrally of the longitudinal dimension thereof. Perforations extend through the remaining thickness of the blank in the slit formed therein. Three equally spaced apart score lines are formed transversely of the slit and perforations. Upon folding the blank along the score lines and then parting the blank along the perforations in the region of the center score line by pulling on both sides of the perforated section, the cardboard blank is then folded into a cross-shaped divider unit. The apparatus for forming the same consists of a conveyor with a single cutting and perforating wheel which forms a slit and perforations in a single operation.

### 3,758,019
### MULTI-USE GARMENT BOX

**Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.**

**Filed Dec. 6, 1971, Ser. No. 205,127**
**Int. Cl. B65d** *85/18, 5/46*
**U.S. Cl. 229—16 R** **11 Claims**



A one-piece multi-use garment box which lends itself to being carried in a completely closed condition or to being hung on a rack in a semi-closed condition, said garment box being formed from a blank having a plurality of foldable panels and flaps which cross the grain of said blank. The assembled garment box comprises a back panel, a pair of side panels, a bottom panel, and foldable flaps extending from each of said panels adapted to form a four-piece front wall section with locking members.

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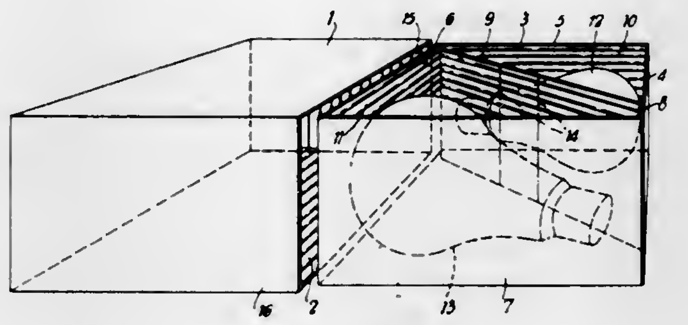
### 3,758,020
### PACK FOR ARTICLES

**Ronald Frederick George Childs, Bracknell, Bershire, and Richard Wolfgang Emil Mosse, London, N.W. 8, both of England, assignors to Corrugated Products Limited, Bracknell, Berkshire, England**

**Filed Oct. 19, 1971, Ser. No. 190,608**
**Int. Cl. B65d** *5/08*
**U.S. Cl. 229—39 B** **5 Claims**

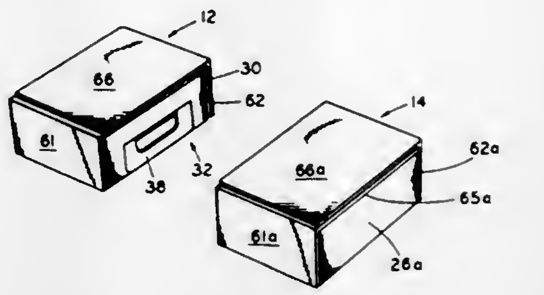


A pack for two electric lamp bulbs includes a covering sleeve of oblong rectangular cross-section, and a containing sleeve of rectangular cross-section. An oblique partition extending across the rectangular containing sleeve between two opposite walls thereof divides its interior into two four-sided compartments open at both ends and receiving the bulbs. The bulbs are fitted into the compartments, via one end of the container sleeve, to lie side-by-side and head-to-tail. The partition, a gluing strip, and the containing sleeve are a folded single piece of material, the partition not having been cut from the containing sleeve. The latter is fittable into the covering sleeve, with the partition in position, by sliding in the containing sleeve with one of the aforesaid opposite walls leading, such that the other two walls lie face-to-face with the respective narrower covering sleeve walls.

### 3,758,021
### DIVISIBLE CARTON

**Ronald H. Gordon-Ross, Downers Grove, Ill., assignor to Stone Container Corporation, Chicago, Ill.**

**Filed Feb. 28, 1972, Ser. No. 229,919**
**Int. Cl. B65d** *5/54*
**U.S. Cl. 229—51 DB** **26 Claims**



The divisible carton is made from a single unitary blank of paperboard material which has a plurality of score lines, slits, cuts and handle formations therein. The carton has at least one continuous top wall, a continuous bottom wall, continuous side walls, continuous end walls and at least two juxtaposed internal walls. The divisible carton has a line of perforations extending around the carton midway between the end walls thereof and in the bottom wall, the side walls and the top wall. When the divisible carton is separated at the line of perforations to form two smaller cartons, the internal walls form respective end walls of the two separate and smaller cartons. Preferably, a handle formation is formed in each of the internal walls and each handle formation is completely enclosed within the divisible carton and is exposed only when the divisible carton is separated at the line of perforations into two smaller cartons. The handle formations can then be manipulated to form handles for easy carrying of each smaller carton.

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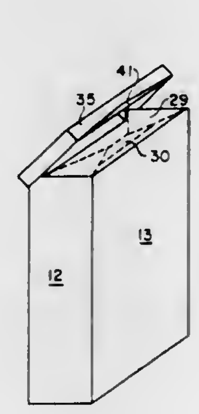
### 3,758,022
### RE-CLOSING ARRANGEMENT FOR PACKAGES OF CARDBOARD

**Od Wikar Christensson, Bromma near Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Stockholm, Sweden**

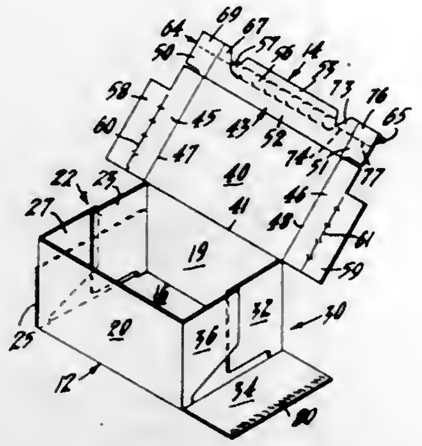
**Filed Feb. 2, 1970, Ser. No. 111,900**
**Int. Cl. B65d** *5/66*
U.S. Cl. 229—44 R **4 Claims**



A cardboard package having a recloseable flat plastic lid. The upper edge of one side of the package is formed with a hinged flap for attachment of a plastic lid. The lid is flat and formed with a frame for embracing the cardboard sides. A depression in the lid forms, with a portion of the frame, a groove for engaging the flaps to secure the lid thereto. A further depression forms a further groove for engaging an upper edge of the cardboard package to secure the lid in a closed position.

### 3,758,023
### CARTON

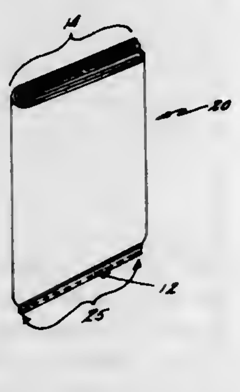
**George LeRoy Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.**
**Filed Feb. 22, 1971, Ser. No. 117,262**
**Int. Cl. B65d**
**U.S. Cl. 229—51 TC** **11 Claims**



A blank of material is provided that forms a carton when erected which includes a receptacle and a hingedly connected cover of the hooded type that telescopes the upper portion of the receptacle. The carton cover when set up has a top panel with opposed end panels, and end panel extensions connected by tear lines to the cover end panels, respectively, and which are folded along the tear lines back upon the cover end panels and adhesively connected to the opposed ends of the receptacle. The cover has a front panel with a bottom portion adhesively connected to the front wall of the receptacle, an upper main front portion connected to the lower portion by a tear strip for disconnecting the cover from the bottom portion during opening of the carton, a pair of cover corner flaps hingedly connected respectively to the opposed ends of the cover front panel upper portion and adhesively connected to the cover end panels, a cover front panel extension hingedly connected to the front panel and folded back thereon, and a cover corner flap extension hingedly connected to the cover corner flap and folded back thereon, the extensions being hingedly connected together and providing a double thickness of material at the cover corners.

### 3,758,024
### PLASTIC BAG

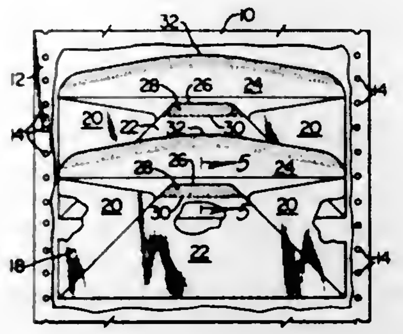
**Robert F. Bethke, Bloomington; David P. MacFadden, Burnsville; Ronald H. Nelson, Sr., Northfield, and Steven G. Ross, Edina, all of Minn., assignors to U.S. Industries, Inc., Minneapolis, Minn.**
**Filed June 24, 1971, Ser. No. 156,430**
**Int. Cl. B65d** *33/00*
**U.S. Cl. 229—57** **4 Claims**



A flexible plastic container or trash can liner is manufactured by flattening tubular-shaped plastic material, folding the flattened material in half, and refolding the previously folded material in half a second time. The resulting eight-ply material is then simultaneously cut and heat-sealed to provide a bottom seam for the flexible container. The resulting flexible liner or container, when opened, has a very flat bottom portion circular in shape which includes three relatively large overlap fold portions when opened. The shape of the flexible container therefore will substantially conform to the shape of a conventional rigid, cylindrical container employed for the storage of refuse. The liner has excellent stress characteristics around the seam since the bottom is flat and the stresses thereby have less tendency to concentrate at the seam where the plies are sealed together.

### 3,758,025
### CONTINUOUS WEB AND AFFIXED ENVELOPES WITH SELECTIVE SPACING

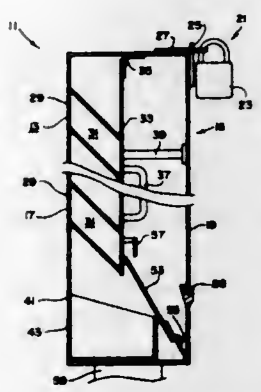
**Richard A. Schafer, Arcadia, Calif., assignor to Pak-Well Corporation, Denver, Colo.**
**Filed July 30, 1971, Ser. No. 167,753**
**Int. Cl. B65d** *27/10*
**U.S. Cl. 229—69** **6 Claims**



Envelopes of otherwise conventional construction, each characterized by a gummed tongue or tab affixed to the upper edge of the lower flap of the envelope rear panel along a weakening line therebetween, forming an extension of the lower flap which enables affixation of the tongues to a carrier web in various configurations of envelope overlap or shingling or in spaced relation on the web. When the envelopes are torn or burst along the weakening lines, the tongues remain affixed to the carrier web. The web is preferably provided with pin wheel perforations adjacent its longitudinal edges to enable rapid and automatic processing of the assembly through printing apparatus.

### 3,758,026
### COIN COLLECTION BOX

**Stephen H. Henderson, 1279 Woodston, Memphis, Tenn.**
**Filed May 22, 1972, Ser. No. 255,446**
**Int. Cl. G07f** *9/06*
**U.S. Cl. 232—1 R** **9 Claims**



A coin collection device for use in self-service parking lots and like establishments which allows a first authorized person visibility of the money received for determining which parking spaces or the like have been paid for, and which allows a second authorized person access to the money. A transparent inner wall and a cover plate prevent the first authorized person from having access to the money received.

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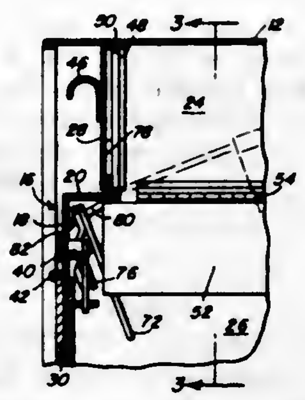
### 3,758,027
### MAILBOX

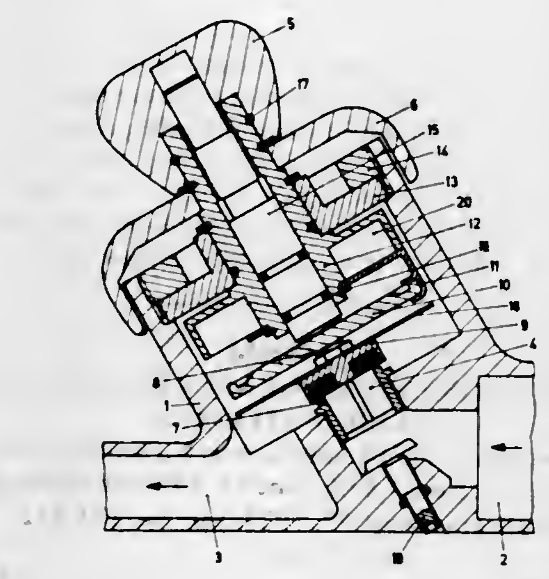
**Walter C. Morgan, P. O. Box 4088, Monroe, La.**
**Filed July 1, 1971, Ser. No. 158,941**
**Int. Cl. A47g** *29/12*
**U.S. Cl. 232—17** **6 Claims**



A mailbox having upper and lower compartments interconnected by a trapdoor which defines a bottom for the upper compartment when in closed condition. The lower compartment is provided with a lock device so that only authorized persons have access thereto. The upper compartment is provided with a pivotal mounted access door engaged with a mechanism for automatically closing the trapdoor when the access door to the upper compartment is opened and permitting the trapdoor to open when the access door to the upper compartment is closed. A signal flag is mounted on the mailbox for pivotal movement and is associated with the operating mechanism for the trapdoor to retain the trapdoor in closed position while the signal flag is in an upright signalling position.

### 3,758,028
### MIXING VALVE AND THERMOSTAT FOR USE WITH SAME

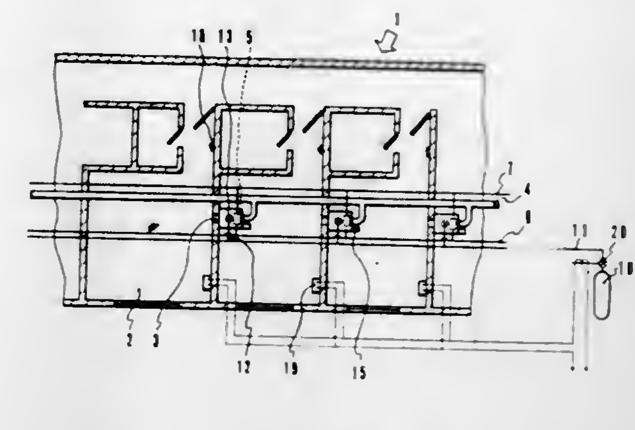
**Hermann Paul Lange, Singlistrasse 15, Zurich, Switzerland**
**Filed Nov. 29, 1971, Ser. No. 202,874**
**Claims priority, application Austria, Dec. 2, 1970, 4A 10848**
**Int. Cl. F16k** *19/00*
**U.S. Cl. 236—12 R** **26 Claims**



A mixing valve for controlling both total volume of flow and relative volumes of flow through two inlet valves, such as hot and cold water valves, has the two valves bearing against a pressure plate which is tiltable on an axis offset with respect to the two valves. By increasing or decreasing the angle of tilt of the pressure plate, both valves are caused to open or close, increasing or decreasing the total volume of flow. By rotating the axis of tilt of the pressure plate relative to the valves, one valve or the other is caused to open or close more than the other, varying the relative volumes of flow through the two valves. Thermostat means may be provided to control rotation of the pressure plate to maintain a uniform temperature of the mixed outflow of the two valves.

### 3,758,029
### METHOD AND APPARATUS FOR AIR-CONDITIONING

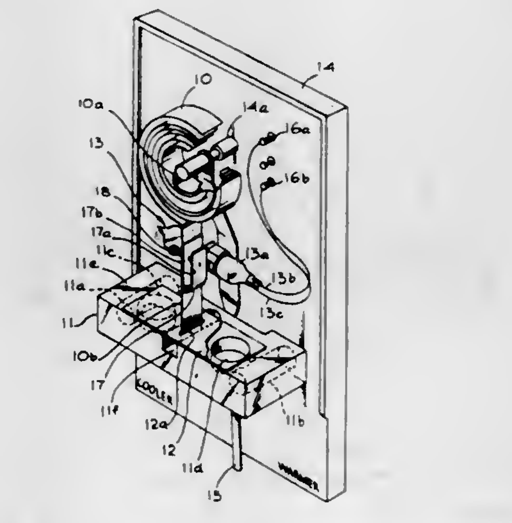
**Toshio Yoshida, 34 Tsukudshachiman, Shinjuku-ku, Tokyo, Japan**
**Filed June 30, 1972, Ser. No. 267,931**
**Int. Cl. G05d** *7/00*
**U.S. Cl. 236—49** **2 Claims**



When air is introduced for heating, cooling or ventilation of rooms in building, for example in a hotel located in a polluted air district, oxygen in an amount calculated to meet the requirements of the number of inmates is continuously supplied to the room together with air through an oxygen supply passage opening into the air inlet of the room. At the same time negative-ions generated by a negative-ion generator installed at the air inlet are supplied to the air-oxygen mixture. In the event of a fire occurring in the building, the oxygen supply is automatically cut off. In the rooms of a hotel located in polluted air districts, such as urban areas or industrial zones, a salubrious pleasant air can be supplied, with oxygen and negative-ions present in the air kept at an optimum level and at the same time, the aggravation of fire by oxygen can be prevented.

### 3,758,030
### THERMOVALVE-ELECTRIC SWITCH APPARATUS

**Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Inglewood, Calif.**
**Filed Dec. 7, 1971, Ser. No. 205,521**
**Int. Cl. G05d** *29/00, 23/08*
**U.S. Cl. 236—87** **9 Claims**



In the present invention, a pair of valves and an electric switch are controlled by the same bi-metallic strip, with the result that the operation of the switch and the operation of the valves are inter-related. The device basically comprises a coiled bi-metal strip fixed at one end and whose other end is coupled to a flat plate. The plate rests on a member containing the valve orifices, which are covered or uncovered by the plate as it moves horizontally in one direction or another as the bi-metal coil rotates in a clockwise or counterclockwise direction in response to changes in ambient temperature conditions. Mounted on the bi-metal strip is a mercury switch whose angular position is made adjustable so that it can be made to operate at specified temperatures.

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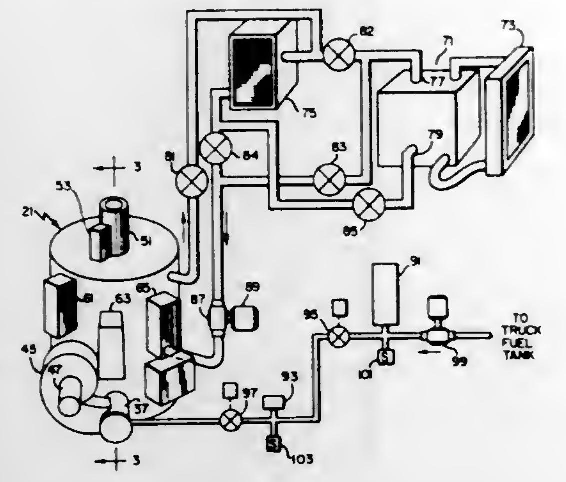
### 3,758,031
### HEATER FOR AUTOMOTIVE VEHICLES

**John P. Moran, 70 E. Main St., Hopkinton, Mass.**
**Filed May 8, 1972, Ser. No. 251,346**
**Int. Cl. F24d** *3/02*; **B60h** *1/22*
**U.S. Cl. 237—8 A** **5 Claims**



The heat-generating system disclosed herein is adapted to burn diesel fuel and to otherwise effectively utilize available automotive electrical and pneumatic systems, e.g., such as those normally found on semi-trailer tractor trucks, and to thereby efficiently provide heat for maintaining an automotive engine at an easily started temperature and to provide heat for an operator, if needed, while the engine is stopped.

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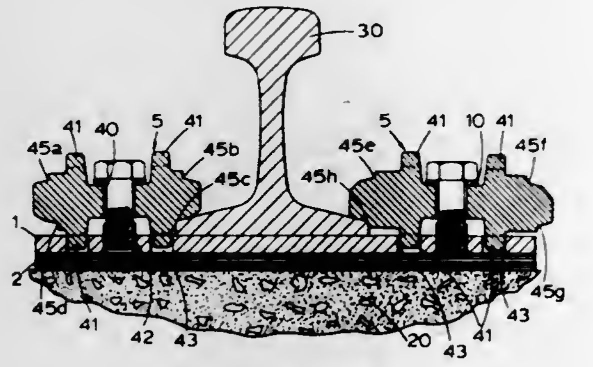
### 3,758,032
### RAIL FASTENING ARRANGEMENTS

**Otto Herman Varga, Bradford-on-Avon, England, and Ralph Huston, Pfafftown, N.C., assignors to Resilient Grip Limited, Bristol, England, by said Varga**
**Filed Nov. 3, 1971, Ser. No. 195,275**
**Int. Cl. E01b 9/46**
**U.S. Cl. 238—338** **11 Claims**



The invention relates to a rail fastening arrangement for securing a flat bottom rail on a foundation having preformed holes therein.

There is provided a baseplate on which the flat bottom of the rail is adapted to rest and means for securing the baseplate to the preformed holes in the foundation. A pair of rail clips is provided one on each side of the rail with bolt means passing through a bolt aperture in each clip and engaging in a preformed bolt hole in the baseplate. Each clip has symmetrically spaced about its bolt aperture at least one pair of projecting heel lugs and the baseplate has symmetrically spaced about its bolt hole a complementary number of recesses adapted to receive and locate the clip heel lugs. Each clip is engageable with the baseplate with its lugs received and locates in the baseplate recesses, in at least two alternative dispositions. Each clip has for each lug a respective rail foot abutting and clamping shoulder, one of which rail foot abutting and clamping shoulders faces inwardly towards the rail foot for each alternative disposition of engagement of the clip with the baseplate and for each clip, each respective rail foot abutting and clamping shoulder is differentially spaced from the centre of the bolt aperture of the clip.

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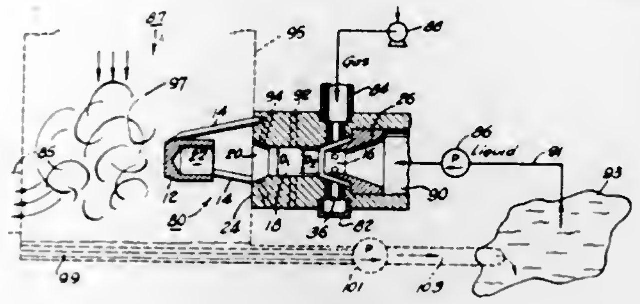
### 3,758,033
### PRESSURE WAVE ATOMIZING METHOD

**Robert E. Schurig, Maywood, and Joseph Korn, Fort Lee, both of N.J., assignors to Sonic Development Corporation of America, Yonkers, N.Y.**
**Division of Ser. No. 889,596, Dec. 31, 1969, Pat. No. 3,677,525, which is a continuation-in-part of Ser. No. 669,109, Jan. 19, 1968, abandoned. This application Jan. 17, 1972, Ser. No. 218,118**
**Int. Cl. B05b** *17/04*
**U.S. Cl. 239—4** **12 Claims**



Fluids to be mixed and atomized are fed into a converging-diverging nozzle which directs them towards a cavity member. In one embodiment of the invention, liquid is forced through the central opening of the nozzle, and gas is injected into the liquid at a plurality of points around the liquid stream through an inclined baffle structure near the converging portion of the nozzle. In another embodiment, air is fed into the central opening of the nozzle, and liquid through the baffle structure, as well as downstream from the baffle structure. The liquid supply flow rate and the gas supply pressure are regulated so that the input gas pressure is greater than the minimum liquid pressure but less than the maximum liquid pressure. The upstream liquid feed passageway is effectively closed at low flow rates, while being open at high flow rates, thus enabling the maintenance of relatively high liquid back-pressures for accurate flow rate control over a wide range of flow values.

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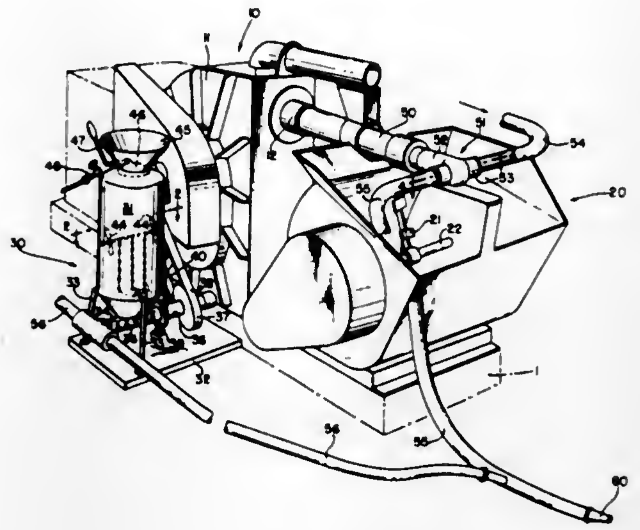
### 3,758,034
### METHOD FOR PNEUMATICALLY PLACING SEMI-FLUID MATERIALS

**John T. Broadfoot, 12714 Aurora Ave. N., Seattle, Wash.**
**Division of Ser. No. 47,538, June 18, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,462**
**Int. Cl. A62c** *1/12*
**U.S. Cl. 239—9** **7 Claims**

Quick-setting concrete is applied to a work surface by air conveying wet concrete through a hose to a nozzle and air conveying a dry accelerator powder for the wet concrete through a separate hose into juncture with the stream of suspended wet concrete a predetermined distance back of the nozzle. A positive metering concrete pump meters the concrete into a T-intersection where compressed air entering through one side of the top of the T impinges at substantially right angles to the flow of wet concrete through the base of the T resulting in shearing off of discrete pieces of wet concrete which are conveyed through a hose attached to the other side of the T-intersection. The positive metering concrete pump is directly attached to a positive metering device for the accelerator powder so as to maintain the ratio of wet concrete to accelerator constant.



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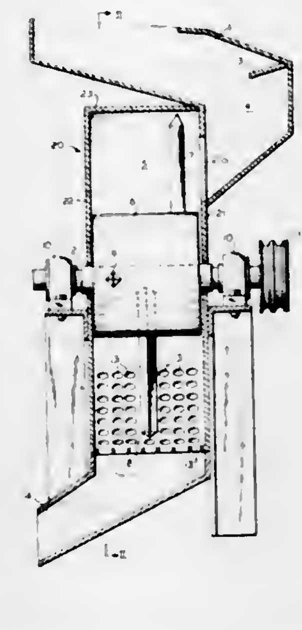
### 3,758,035
### CRUSHER FOR TENACIOUS MATERIAL SUCH AS ASPHALT

**Yoshio Ushiku, Tochigi-shi, and Hirokazu Saitoh, Ohmiya-shi, both of Japan, assignors to Mitsuboshi-Sangyo Co., Ltd., Tokyo, Japan**
**Filed June 1, 1971, Ser. No. 148,813**
**Claims priority, application Japan, June 20, 1970, 45/53341**
**Int. Cl. B02c** *13/10, 13/28*
**U.S. Cl. 241—73** **2 Claims**



A crusher for crushing tenacious material, particularly asphalt. A horizontally arranged cylindrical casing has a rotary shaft concentrically mounted therein and at least two radial crushing rods are fixed on the rotary shaft at axially spaced locations. The casing includes end walls, one of which has an inlet opening at its upper part and a cylindrical wall which has perforations at its lower part. The crushing rod located adjacent to the inlet opening has a square cross-sectional shape with its opposite side surfaces being parallel to the end wall of the casing, and the remaining crushing rod has a square cross-sectional shape with its side surfaces being at an angle to the end wall of the casing.

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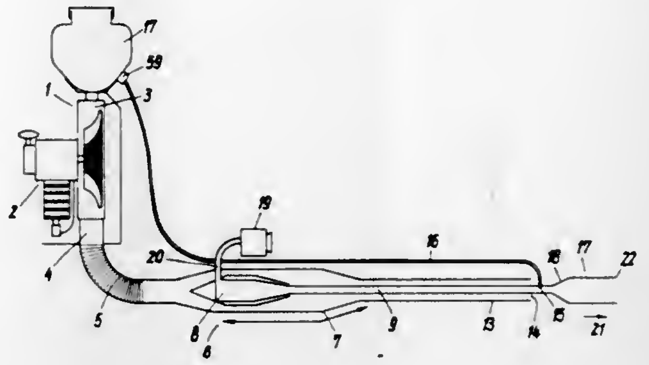
### 3,758,036
### SPRAYING APPARATUS

**Herbert Bauder, Grossholzleute, and Otto Locher, Isny/Allgau, both of Germany, assignors to Heimo Geratebau Gesellschaft mit beschrankter Haftung, Isny/Allgau, Germany**
**Filed Dec. 23, 1970, Ser. No. 100,869**
**Claims priority, application Germany, Dec. 24, 1969, P 19 64 907.1**
**Int. Cl. B05b** *3/14*
**U.S. Cl. 239—102** **20 Claims**



A spraying apparatus especially an apparatus portable on the back of a person, with a motor driven blower connected to a delivery pipe and with an active agent receiving tank connected to said delivery pipe, in which an oscillating burner resonator has its cooling means for purposes of generating a mist detachably connected to the blower, said cooling means including a cover surrounding said oscillating burner resonator.

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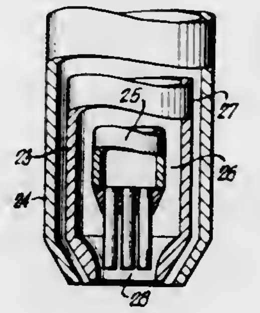
### 3,758,037
### FUEL BURNER AND PROCESS FOR GAS MANUFACTURE

**Charles P. Marion, Mamoroneck, N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Development Corporation, New York, N.Y.**
**Filed Oct. 4, 1971, Ser. No. 186,207**
**Int. Cl. B05b** *15/00*
**U.S. Cl. 239—132.3** **20 Claims**



A partial oxidation burner and process for the manufacture of synthesis gas, reducing gas and other gas mixtures substantially comprising $H_2$ and CO. A hydrocarbon, oxygen-rich gas and, optionally, $H_2O$ or some other temperature moderator are introduced into the reaction zone of a synthesis gas generator in which, by partial oxidation at an autogenous temperature in the range of about 1700° to 3500°F. and a pressure in the range of about 1 to 250 atmospheres, said synthesis, fuel, or reducing gas is produced. For example, a hydrocarbon is introduced into the reaction zone by way of the inner assembly of a novel multitube burner, and a mixture of oxygen-rich gas and steam is passed through a coaxial conduit disposed about the outside of said inner assembly. Said inner asembly comprises a central conduit of circular cross-section, having a plurality of parallel open-ended tubes extending downstream from the exit end of said central conduit and in communication therewith. The tubes terminate in a surrounding nozzle, which is the exit end of the coazial outer conduit.

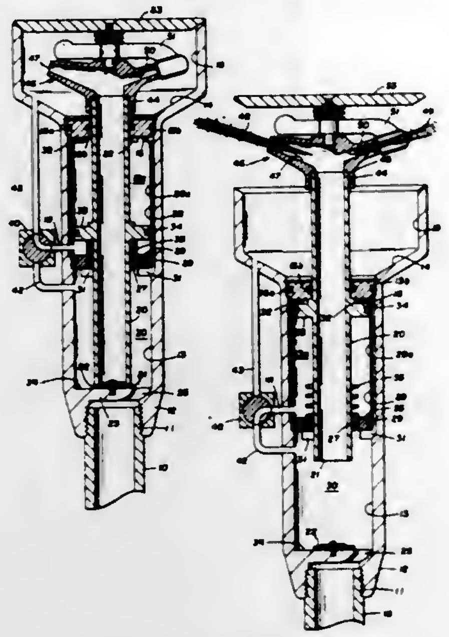
### 3,758,038
### HYDRAULICALLY ACTUATED ROTARY POP-UP SPRINKLER

**Harold C. Ridgway, Garland, Tex., assignor to Telsco Industries, Dallas, Tex.**

**Filed Apr. 17, 1972, Ser. No. 244,836**

**Int. Cl. B05b** *3/04*

**U.S. Cl. 239—206** **20 Claims**



Pop-up sprinklers are widely used in irrigation systems to provide watering over large areas. Pop-up sprinklers in such systems are power actuated into an extended position for a sprinkling cycle and are then power actuated into a retracted position upon completion of the sprinkling cycle. The power actuator includes a two chambered cylinder with the upper chamber separated into first and second regions by a piston movable with an axial tube that supplies water to the sprinkling head from a supply source. To power the sprinkler into an extended position, water at the supply pressure is directed into the second region of the upper chamber thereby lifting the piston and the attached supply tube. Upon completion of a sprinkling cycle, the second region of the upper chamber is vented to atmosphere and water at the supply pressure directed into the first region drives the piston down to retract the sprinkling head and close off the supply tube from the source of water supply.

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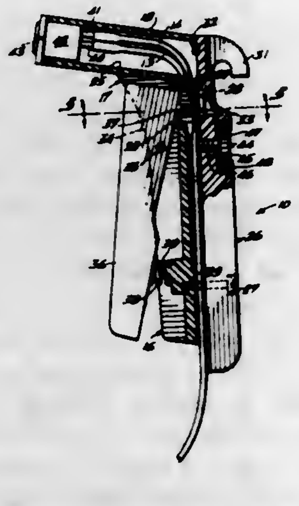
### 3,758,039
### SPRAY GUN

**William Wagner, 1800 W. 4th Ave., Miami Beach, Fla.**

**Filed Oct. 12, 1972, Ser. No. 297,055**

**Int. Cl. B05b** *7/02, 1/30*

**U.S. Cl. 239—372** **7 Claims**



A spray gun for applying hair-setting fluids and the like and in which pressurized air and fluid are separately fed through flexible conduits for mixing in a mixing chamber prior to discharge through a nozzle, and including cut-off mechanism operative first to shut off the flexible fluid conduit and then shut off the pressurized air conduit to ensure that all fluid is blown out of the nozzle at the discontinuance of spraying, the shut-off mechanism comprising an anvil member and a relatively movable abutment member adapted to sequentially squeeze to shut-off condition the flexible fluid conduit and the pressurized air conduit, the conduits being superposed in series between the anvil member and the abutment member with the pressurized air conduit adjacent the anvil.

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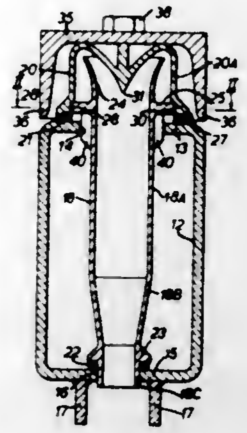
### 3,758,040
### COOLING EQUIPMENT

**David Robert Howard, Sheffield, England, assignor to Davy and United Engineering Company Limited, Yorkshire, England**

**Filed Aug. 31, 1971, Ser. No. 176,454**

**Int. Cl. B05b** *1/14*

**U.S. Cl. 239—550** **8 Claims**



Cooling equipment for supplying jets of cooling liquid in laminar form comprises a horizontal header and a plurality of nozzles each of which is removably located in openings in the top and bottom of the header. The nozzles are sealed in the header to prevent leakage and to ensure that water in the header issues through the nozzles.

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### ERRATUM

For Class 241—73 see:
Patent No. 3,758,035

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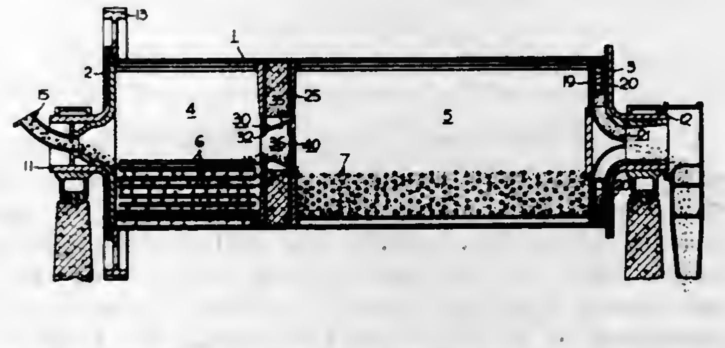
### 3,758,041
### DIVISION HEAD CURTAIN FOR COMPARTMENTED GRINDING MILL

**Donald R. Olson, and Eugene P. Waddell, both of Brookfield, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed May 15, 1972, Ser. No. 253,534**

**Int. Cl. B02c** *13/286, 17/06*

**U.S. Cl. 241—153** **4 Claims**



A grinding mill is disclosed having a cylindrical shell for rotation about its central axis, and a division head that divides the interior of the shell into axially disposed compartments, one compartment containing steel rods for relatively coarse grinding and another compartment containing steel balls for finer grinding. A passage defining liner extends through the division head assembly and defines a central passage through the division head assembly with a surface having the configuration of a truncated cone with its central axis coincident with the central axis of the shell and with its apex end pointed toward the coarse grinding compartment. A shielding disk is concentrically mounted within the conical central passage in a plane perpendicular to the shell axis and supported by a plurality of arcuately spaced mounting blocks between the outer periphery of the shielding disk and the inner periphery of the conical central passage. Channels are defined between the disk, a pair of adjacent blocks, and the inner surface of the surrounding liner. A plurality of curtain strips are attached to the disk and arranged to extend radially outward to cover each channel. The strips have greater radial length than the distance between the disk and the liner, and the end of each strip is turned away from the rod compartment end of the liner. The strips thereby block grinding balls from migrating through the channels into the rod compartment, but the ends of the strips pivot away from the rod compartment end of the liner as pulp flows from the rod compartment through the liner and into the ball compartment of the mill.

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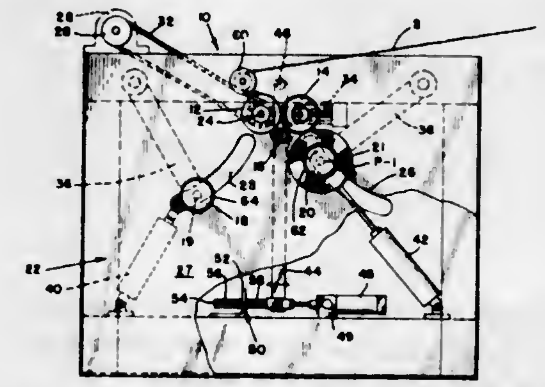
### 3,758,042
### CONTINUOUS YARN WINDING APPARATUS

**Stuart B. Sear, Gastonia, N.C., assignor to Petty Machine Company, Inc., Gastonia, N.C.**

**Filed Oct. 14, 1971, Ser. No. 189,185**

**Int. Cl. B65h** *54/02*

**U.S. Cl. 242—18 A** **8 Claims**



A winder assembly for continuously taking up a textile strand onto one of two displaceable, self-supporting bobbins at high speed without interruption of the take-up of the strand. The strand is fed between nip rollers and upon transfer from one bobbin to the other is directed between one of the nip rollers and a displaceable transfer roll, the displaceable transfer roll being moved into engagement with one of the nip rollers before transfer.

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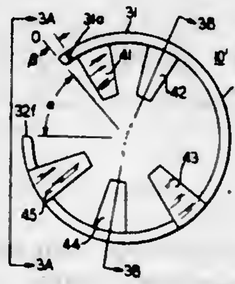
### 3,758,043
### STORAGE CARTRIDGE FOR WOUND MATERIAL

**Henry J. Setzer, East Brunswick, N.J., and George S. Thompson, Newtown, Pa., assignors to Dennison Manufacturing Company, Framingham, Mass.**

**Filed , Ser. No. 86,395**

**Int. Cl. B65h** *75/20;* **B65d** *85/04*

**U.S. Cl. 242—55 R** **8 Claims**



A storage cartridge for a coil of embossing tape. The cartridge is in the form of a partial ring with a relatively wide and short head and a long and narrow body. The tape is maintained within the cartridge by side lobes which are also positioned to permit the cartridge to be accommodated by a wide variety of embossing machines.

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### 3,758,044
### LOCKING DEVICE FOR VEHICLE SAFETY BELTS

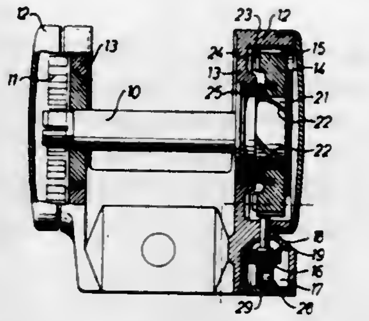
**Karl-Ivar Sigurd Nilsson, Upplands Vasby, Sweden, assignor to Granges-Essem AB, Vasteras, Sweden**

**Filed June 10, 1971, Ser. No. 151,882**

**Claims priority, application Sweden, June 10, 1970, 8064/70**

**Int. Cl. A62b** *35/00*

**U.S. Cl. 242—107.4** **4 Claims**



A locking device for retractable vehicle safety belts for preventing extraction of the belt only at a change of direction or velocity of the vehicle above a predetermined level, including a tiltable member having a first position releasing the belt and a second position locking the belt, said tiltable member being in the locking position only when actuated by a force above a certain limit.

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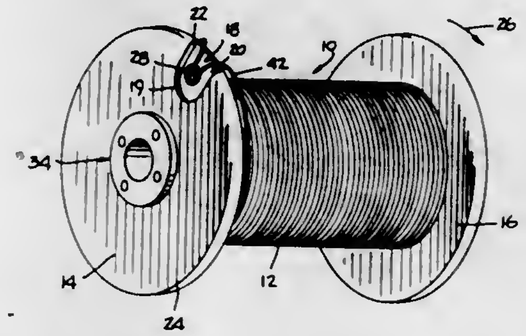
### 3,758,045
### TWISTER SPOOL AND METHOD OF WINDING YARN THEREON

**Douglas Allen, Hogansville, Ga., assignor to Uniroyal, Inc., New York, N.Y.**

**Filed Mar. 5, 1971, Ser. No. 121,416**

**Int. Cl. B65h** *75/28, 75/14*

**U.S. Cl. 242—125.2** **5 Claims**



A spool and method for winding thereon yarn made by a twister. The spool is adapted to form a loop of yarn designating when a predetermined length of yarn has been wound on the spool.

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### 3,758,046
### DEVICE FOR CONTROLLING TENSION OF WIRE DISPENSED FROM A REEL

**Anthony Jordan, Des Plaines, Ill., assignor to WISCO, Des Plaines, Ill.**

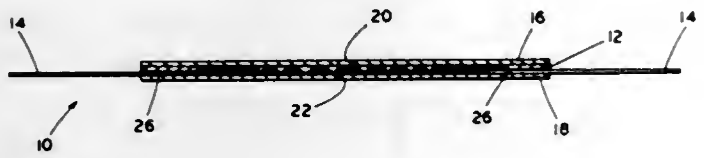
**Filed Mar. 27, 1972, Ser. No. 238,377**

**Int. Cl. B65h** *59/06*

**U.S. Cl. 242—147 R** **7 Claims**

A device for controlling the tension of a length of wire as it is being unwound from a spool across one end flange thereof.

A continuous, looped flexible mono-filament member is sandwiched between two coaxially secured discs extending around the circumference thereof with the extremities of the flexible member protruding radially beyond the periphery of the discs. The sandwiched portions of the flexible member are spaced radially from the axes of the discs. The protuberant extremities of the flexible member are severed to produce a plurality of flexible separated fingers or strands. The assembled discs can be mounted on a flange of the spool with the wire extending through the fingers to control tension of the wire as it is unwound from the spool, the device remaining stationary on the spool.



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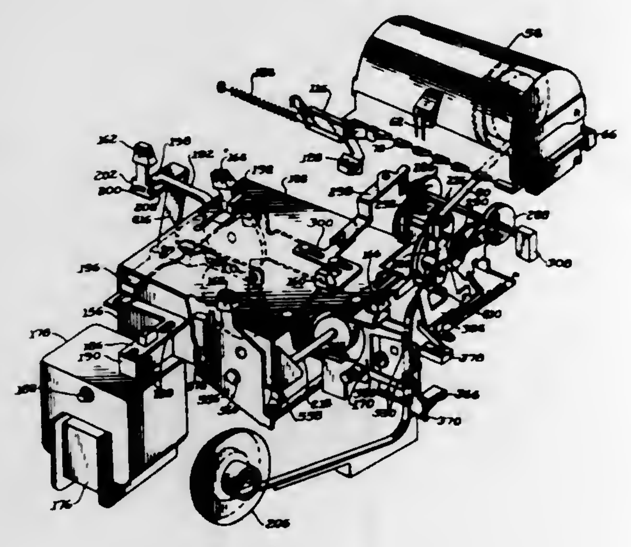
### 3,758,047
### MOTION PICTURE PROJECTOR

**Jack W. Thomsen, La Grange Park; Arthur E. Nupnau, Chicago; Raymond W. H. Kim, Morton Grove, and Jaroslav Cherniavskyj, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.**

**Division of Ser. No. 777,018, Nov. 19, 1969, Pat. No. 3,635,548. This application Jan. 28, 1971, Ser. No. 110,587**

**Int. Cl. G03b** *1/04;* **G11b** *15/32*

**U.S. Cl. 242—181** **13 Claims**



A shuttle is manually adjustable transversely of a film path to enable engagement of its claw in sprocket performations of standard 8mm and super 8mm films for intermittent movement thereof in opposite projection directions, the rate of which is selectively controllable by manual means. An interlock mechanism disables the manual means and enables the shuttle adjusting means when a switch for closing the power circuit of the projector is "off," and enables the manual means while disabling the other means when the switch is "on." A single solenoid in the circuit is energizable manually for removing a strip from a supply reel for projection, and manually and by filmstrip condition for returning the filmstrip to said supply reel. Responsively, the shuttle and the film gate, respectively, will be withdrawn from the film path and expanded to facilitate filmstrip movement through the gate for threading and rewind.

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### 3,758,048
### TAPE CASSETTE

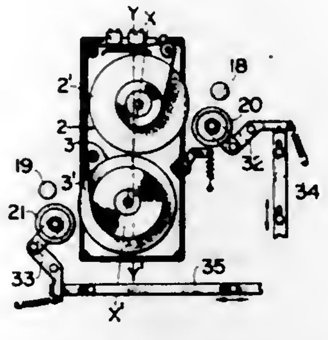
**Hiroshi Sugaya, Suita, and Hideki Sakumoto, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Dec. 21, 1970, Ser. No. 100,336**

**Claims priority, application Japan, Dec. 23, 1969, 44/556; Mar. 4, 1970, 45/18891; June 18, 1970, 45/53770**

**Int. Cl. G11b** *15/32, 23/10;* **B65h** *17/08*

**U.S. Cl. 242—192** **3 Claims**



A tape cassette for magnetic recording and reproducing apparatus, wherein tape-supply and take-up reels are rotatably accommodated in a cassette body, the outer peripheries of the flanges of said reels are partially exposed to the exterior of said cassette body, and said flanges are mechanically engageable at the exposed parts with a driving roller of said recording and reproducing apparatus, thereby driving both said reels.

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### 3,758,049
### RAPID DRIVE DEVICE FOR TAPE TRANSFERS

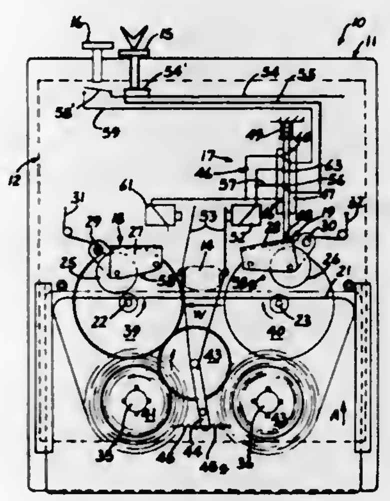
**Theophiel Clement Josef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium**

**Filed Oct. 30, 1970, Ser. No. 85,649**

**Claims priority, application Belgium, Nov. 7, 1969, 81,313**

**Int. Cl. G11b** *15/30, 15/44*

**U.S. Cl. 242—201** **4 Claims**



A tape transport is provided with fast forward and fast rewind drives and associated controls and a mechanism for relating the fast forward and rewind function to the direction in which the tape is moving at its normal playing speed when the fast forward or fast rewind control is actuated.

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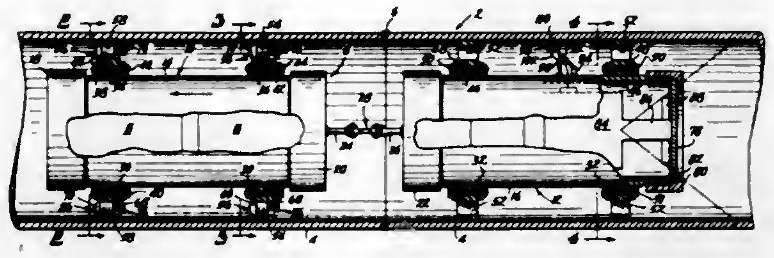
### 3,758,050
### PHOTO INSPECTION POD ASSEMBLY FOR PIPELINES

**Raymond K. Watts, 10136 Dunbarton Dr., and Walter Harry Chapman, 1108 Puerto Rico St., both of El Paso, Tex.**

**Division of Ser. No. 879,872, Nov. 25, 1969, Pat. No. 3,667,359. This application Mar. 2, 1972, Ser. No. 231,176**

**Int. Cl. B65g** *51/06*

**U.S. Cl. 243—32** **3 Claims**



A self-contained inspection pod assembly for pipelines, propelled by gas pressure within the pipeline. The pod assembly has resilient cups thereon equipped with spring-loaded calibrated valves that stabilize travel speed.

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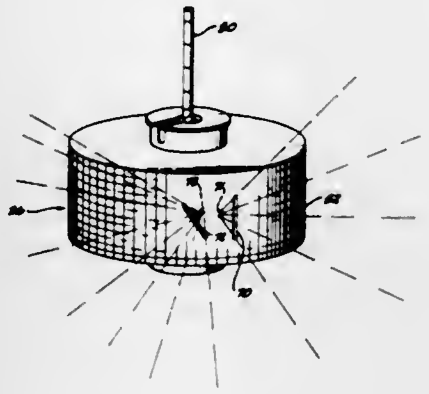
### 3,758,051
### VELOCITY CONTROL AND ORIENTATION OF A SPIN-STABILIZED BODY

**Donald D. Williams, Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Continuation-in-part of Ser. No. 22,733, April 18, 1960, abandoned. This application Aug. 21, 1964, Ser. No. 391,187**

**Int. Cl. B64g** *1/10*

**U.S. Cl. 244—1 SA** **3 Claims**



An orbiting satellite having a radio antenna and solar cells is oriented with respect to the earth and the sun to optimize the satellite antenna gain and the solar cell illumination. The satellite enters its orbit around the earth with its spin-axis initially oriented perpendicular to the earth's axis. The desired orientation of the satellite spin axis is parallel to the earth's axis and means is provided for processing the spin axis of the satellite to the desired orientation by applying a reactive force to the satellite in a proper plane. Nutation of the satellite is damped by a viscous damper provided therein. Means is provided for sensing the orientation of the satellite relative to the earth, the sun, or both. Deviations from the correct orbital period, eccentricity, and phase are determined from observations made from the earth. Means is provided to correct orbital deviations by applying a reactive force to the satellite with a predetermined amount of force and in the proper direction.

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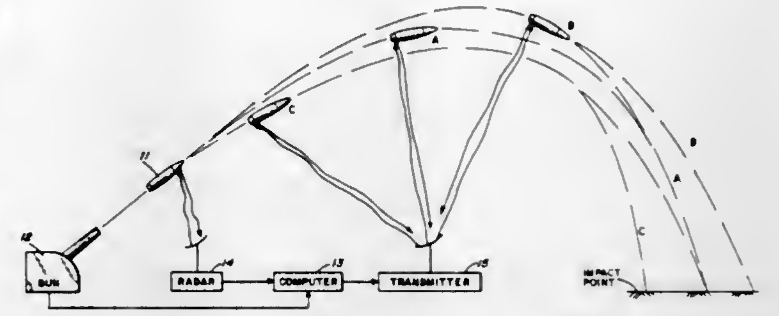
### 3,758,052
### SYSTEM FOR ACCURATELY INCREASING THE RANGE OF GUN PROJECTILES

**Robert L. McAlexander, Saratoga, Calif., and Lilburn G. Stout, Falmouth, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 9, 1969, Ser. No. 844,727**

**Int. Cl. F42b** *13/30*

**U.S. Cl. 244—3.14** **7 Claims**



The present invention is a gun system which utilizes rocket assisted projectiles and accurately controls their placement. The projectile is fired by a gun and actual trajectory variables are compared in a computer with desired trajectory conditions. If there is a difference, the firing time of the rocket is altered to make the actual trajectory variable correspond to the desired condition. A radar system is utilized by the computer to obtain the trajectory information. A transmitter is connected to the computer to send the firing signal to a receiver mounted in the projectile.

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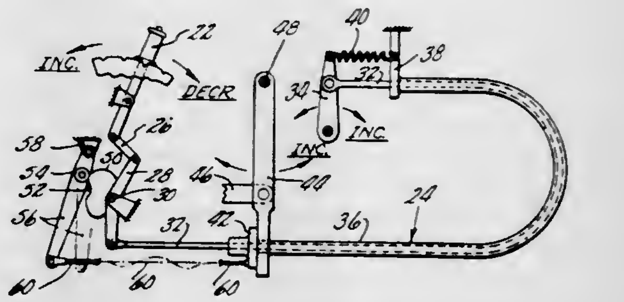
### 3,758,053
### DUAL INPUT CABLE

**Armand Francis Amelio, Yonkers, N.Y., and Daniel J. Naples, Milford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Filed Sept. 16, 1971, Ser. No. 181,138**

**Int. Cl. B64c** *19/00*

**U.S. Cl. 244—83 R** **3 Claims**



Control system for a helicopter which includes a cable arrangement in which a core wire connects the pilot's engine speed control lever and the engine fuel control and a sheath surrounding the core wire is connected to the collective pitch stick so that collective pitch inputs can bias fuel flow and with a connection for deactivating the collective pitch input at ground idle operation.

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### 3,758,054
### MULTI-POSITION AIRCRAFT HOLDBACK CLEAT

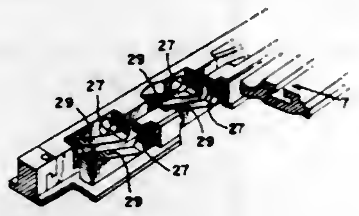
**Nathan Melman, Levittown, Pa., and John P. Malriat, Pennsauken, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Mar. 24, 1972, Ser. No. 237,839**

**Int. Cl. B64f** *1/12*

**U.S. Cl. 244—115** **7 Claims**

The present disclosure relates to novel and improved apparatus for restraining an aircraft from a catapult assisted take-off until a predetermined required launching force is developed. The improved aircraft restraining or holdback apparatus includes a multi-position cleat assembly inset in the aircraft launching surface, a frangible holdback assembly



which is secured at one end to the aircraft and which engages the cleat assembly at its other end, and means for directing the holdback assembly away from the launching area when the launch is initiated.

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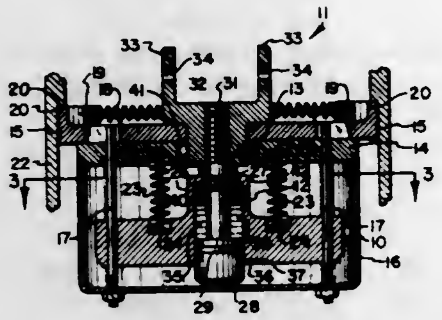
### 3,758,055
### RELEASE MECHANISM FOR FLARE PARACHUTE
**Gary V. Adams, Perry, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.**
**Filed Feb. 17, 1972, Ser. No. 223,145**
**Int. Cl. B64d *17/38***
**U.S. Cl. 244—149** **6 Claims**



A mechanism for releasing a drogue parachute from an aerial flare has a base plate with a central lug extending therefrom that has means for attaching a drogue parachute at its outer end, and an intermediate zone of reduced diameter; the lug extends centrally through a disk to which a pair of opposing pawls are attached for a sliding movement thereon; spring means bias the disk away from the base plate so that the pawls, which are spring biased toward each other, normally abut the central lug at its larger diameter. Hence, the pawls are normally extended beyond the diameters of the base plate and the disk to fit beneath the shoulder in a flare case, whereby the mechanism may be retained therein. Means are also provided for limiting the space between the base plate and the disk, and a shear pin that extends radially from the lug adjacent the disk may be used to insure that the pawls are normally maintained in their extended positions by abutting the larger diameter of the central lug.

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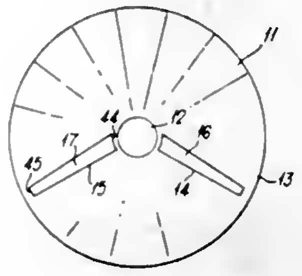
### 3,758,056
### PARACHUTES
**John Rothwell Mitchell, Woking, England, assignor to RFD-GQ Limited, London, England**
**Filed Feb. 25, 1972, Ser. No. 229,308**
**Claims priority, application Great Britain, Mar. 5, 1971, 6,078/71**
**Int. Cl. B64d *17/20***
**U.S. Cl. 244—152** **8 Claims**

A parachute canopy is shaped so that the internal surface of the inflated canopy is concave near the peripheral hem and is convex nearer the apex of the canopy, vents being provided in the canopy to relieve the circumferential tensions generated within the canopy, which vents are covered by flaps which close the vents, wholly or in part, when the excess pressures have been relieved. The vents can be covered by extensible netting or flaps can have control cords operating by the movements of the canopy fabric or controlled manually by the parachutist.



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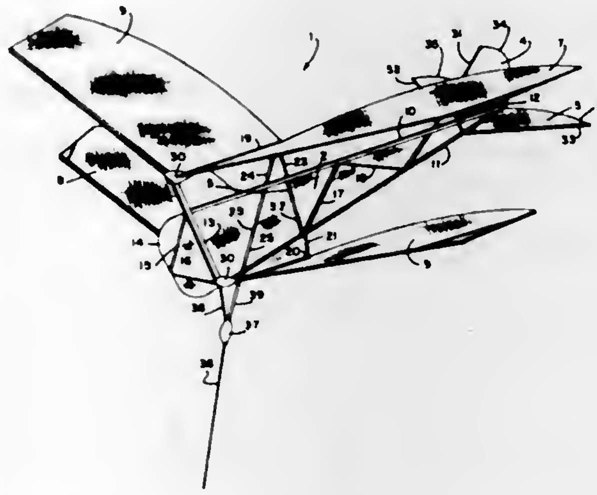
### 3,758,057
### AIRPLANE KITE
**Craig A. Stratton, 12821 Martha Ann Drive, Los Alamitos, Calif.**
**Filed Sept. 24, 1971, Ser. No. 183,543**
**Int. Cl. B64c *31/06***
**U.S. Cl. 244—154** **9 Claims**



A tethered airplane kite design comprising a planar fuselage, a horizontal stabilizer, a vertical stabilizer, one or more pairs of wing members oppositely disposed and connected to the fuselage, and a string attachment point located directly below and in the same plane as the fuselage. All wing members incorporate sweep back and a positive dihedral. The horizontal stabilizer is at a negative angle of attack of approximately 13° with respect to the main wings. The rigid air frame structure and the position of the point to which the tether is attached with respect to the aerodynamic characteristics of the wing structure provide for an exceedingly stable flight characteristic.

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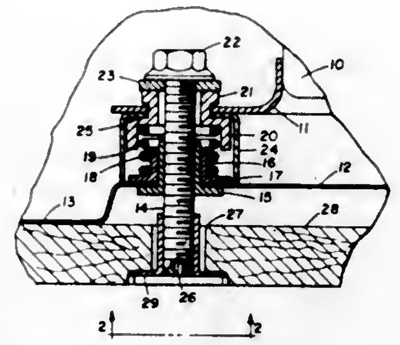
### 3,758,058
### SHIPPING MOUNT FOR ROOM AIR CONDITIONERS
**Herbert D. Neudeck, Cedar Rapids, and Ronald A. Thalacker, Amana, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa**
**Filed Sept. 27, 1971, Ser. No. 183,843**
**Int. Cl. F16f *15/06***
**U.S. Cl. 248—20** **4 Claims**

A shipping mount for a room air conditioner having a fixed outer case employs special nuts accessible from the bottom of the shipping block which engage the compressor hold down bolts and the shipping block to pull the compressor down tight

against the chassis base pan for shipping purposes. By removing the nuts, the compressor is freed to float normally on its coils spring mounts without need to remove the outer case for adjustment of the compressor hold down bolts.



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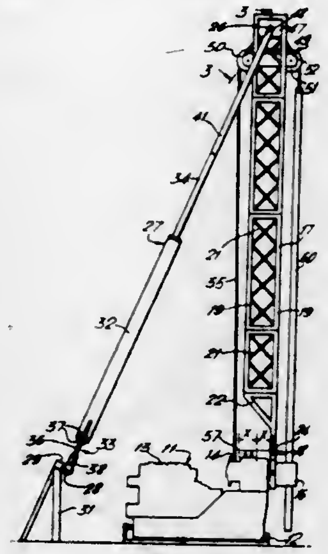
### 3,758,059
### DRILLING APPARATUS
**John Arpad Toth, Lower Plenty, Victoria, Australia, assignor to Mindrill Limited, Victoria, Australia**
**Filed Oct. 6, 1971, Ser. No. 187,011**
**Int. Cl. E21b *3/02***
**U.S. Cl. 248—23** **4 Claims**



A drilling machine assembly is movable on a base between a drilling position and a hoisting position by operation of power means such as a hydraulic cylinder unit. The drilling machine assembly can be held firmly in each of the two positions by the interengagement of wedging surfaces on the machine assembly and on the base with the power means operating, thereby eliminating the need to operate screw clamps for this purpose.

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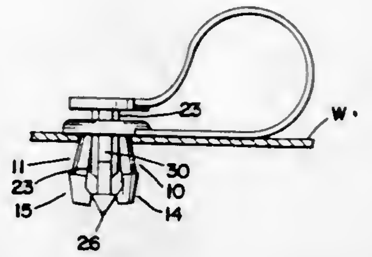
### 3,758,060
### CABLE CLAMP OR FASTENER
**Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio**
**Filed Oct. 20, 1971, Ser. No. 190,725**
**Int. Cl. F16l *3/08;* B65d *63/16***
**U.S. Cl. 248—74 PB** **8 Claims**

A cable clamp or fastener is provided for clamping one or more cables to a wall having a hole therethrough. The clamp comprises a substantially flat flexible strap having anchor means at one end and locking means at the other end. The anchor means comprises spaced elements which are adapted to be flexed toward each other to facilitate their entry into and through said hole, and are of such configuration as to resist withdrawal through said hole when the elements are in unstressed condition. The locking means comprises a tenon-like element adapted to be introduced into the space between said anchor elements for the purpose of preventing flexing of the anchor elements toward each other, said introduction being accomplished without movement of said anchor elements to positions in which they are under stress. The locking means also includes a locking head which is movable into a position beyond the locking means, and which, when in such position, is not retractable from said anchor elements. The anchor elements and locking means provide a four-point locking contact with the edges of said hole.



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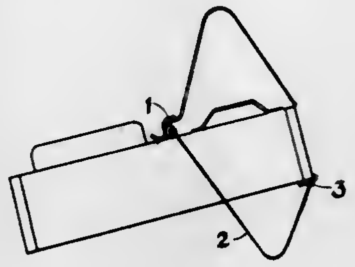
### 3,758,061
### GOLF CLUB BAG STANDS
**Arthur Townhill, 739 Alma Real Dr., Pacific Palisades, Calif.**
**Filed Aug. 4, 1971, Ser. No. 169,011**
**Int. Cl. A63b *55/06***
**U.S. Cl. 248—96** **4 Claims**



My invention consists of a four legged stand made essentially of metal rod. Two of the legs from a frame with the golf bug suspended between them for sideways stability. Two other legs meet and are fastened together at the open end of the bag. These legs give endwise stability. Each leg of the first set joins a leg of the second set at ground level to form the stand.

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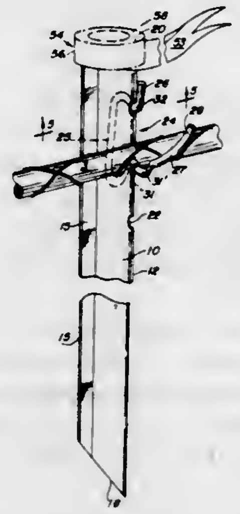
### 3,758,062
### MULTI-PURPOSE STAKE
**Robert H. Caldwell, Jacksonville, and Larry I. Pauline, Alexander, both of Ill., assignors to Grizzly Corporation, Jacksonville, Ill.**
**Filed Apr. 13, 1972, Ser. No. 243,759**
**Int. Cl. A45f *3/44;* E04c *5/16***
**U.S. Cl. 248—156** **1 Claim**



A disposable, inexpensive, multi-purpose stake of V-shape horizontal cross section having a sharpened end for penetrating the earth and a flat end for driving therein with a plurality of spaced apertures spaced along its length and a flange extending outwardly from the free ends of each of the legs of said "V" and interchangeable attachments to be used thereon either as a screed support for concrete flat work, as a nail stake for concrete form board installations, as a tent tethering peg, or as a grade stake having a simple attachment of a banner thereto.

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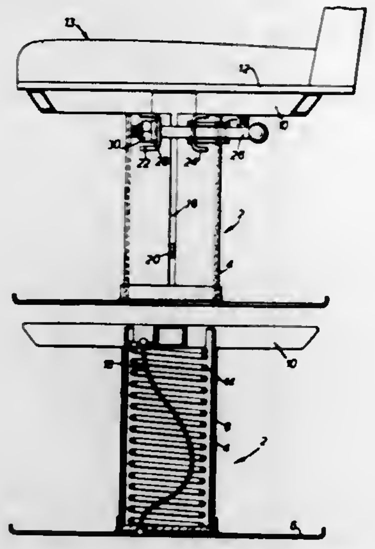
### 3,758,063
## ADJUSTABLE SEATS FOR TRUCKS, COACHES AND OTHER VEHICLES
**Robert Ronald Lacey, Bromham, England, assignor to Universal Oil Products Company, Des Plaines, Ill.**
**Filed Mar. 1, 1972, Ser. No. 230,905**
**Claims priority, application Great Britain, Mar. 3, 1971, 5941/71**
**Int. Cl. A47b** *95/00*
**U.S. Cl. 248—161** **7 Claims**



Pedestal type seat mount comprises a pair of telescopic tubular members, one of which is attached to the vehicle floor and the other of which is attached to the seat and adapted to move vertically relative to the floor. The outer telescopic member carries a toggle operated clamping device which is operative to clamp the telescopic members together in selected positions of vertical adjustment. In one embodiment, the tubular members include guide members preventing rotation, while in another embodiment, the tubular members can rotate relative to each other for adjusting the direction of the seat forces and can also be clamped in any position of adjustment by a pair of rotaty cam members.

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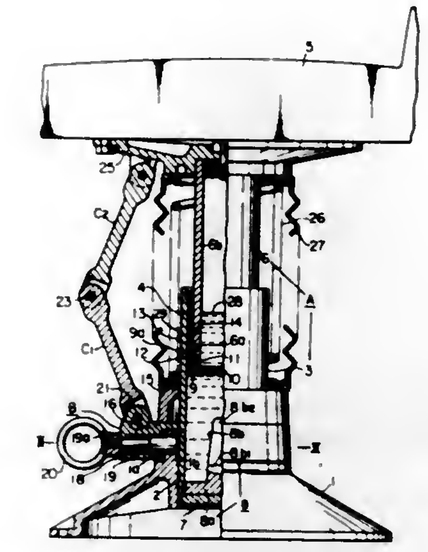
### 3,758,064
## SEAT FOR HIGH-SPEED WATER CRAFT
**Koji Sawaki, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan**
**Filed July 20, 1971, Ser. No. 164,314**
**Claims priority, application Japan, July 20, 1970, 45/71744**
**Int. Cl. F16m** *11/30*
**U.S. Cl. 248—403** **5 Claims**

A shock and vibration absorbing seat for high-speed boats, in which there is provided a base, a seat main body above the base, a plurality of slidably telescoping upper and lower cylinders constituting a pillar structure interposed between the base and the seat main body and containing a damping oil, an annular body rotatable disposed around the lower cylinder, a lock pin slidably supported by the annular body to be urged into any one of several holes provided in said base, a two-link knuckle joint interconnecting the seat main body can be moved only vertically relatively to the annular body without rotation relative thereto, and damping means for operating cooperatively with the damping oil to damp the movement of the seat main body relative to the base near the upper and lower extremities of the movement.



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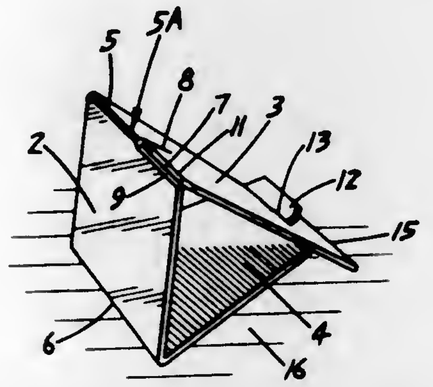
### 3,758,065
## CARD SUPPORTING DEVICE
**Mauritz C. Ranseen, 3019 Bryant Ave. South, Apt. 2, Minneapolis, Minn.**
**Filed Sept. 13, 1971, Ser. No. 179,830**
**Int. Cl. A47b** *97/04*
**U.S. Cl. 248—459** **4 Claims**



A display device for supporting cards such as price tags, product identification cards, posters and the like. The device is manufactured from flat cardboard or paperboard or the like and distributed flat. It can be set up into card supporting position without the use of staples, adhesive, etc. The device includes a sloping front wall and a sloping rear wall connected at a junctional apex having a card-receiving slit extending from one lateral edge of the apex to a median portion. The bottom ends of the front and rear walls are connected by a base wall connected to the front wall and having means interlocking with cooperating means on the rear wall.

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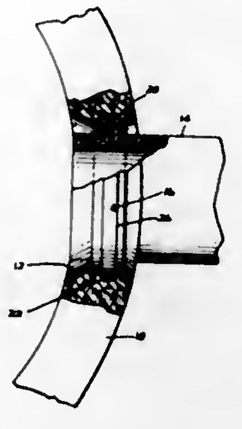
### 3,758,066
## APPARATUS FOR FABRICATING A PIPE JOINT SEALING DEVICE
**Harry W. Skinner, and Fouad M. Deeb, both of Fort Wayne, Ind., assignors to Harry W. Skinner, Fort Wayne, Ind.**
**Filed Nov. 11, 1971, Ser. No. 197,729**
**Int. Cl. B28b** *7/30*
**U.S. Cl. 249—95** **6 Claims**

This disclosure relates to an apparatus for fabricating a pipe joint sealing device, this device including a concrete structure, such as a manhole, having an opening in the wall thereof provided with a rubber lining or gasket. It is the purpose of this invention to provide the concrete structure with the sealing ring or gasket permanently locked therein in fluid-tight engagement. The apparatus includes an annular support preferably fabricated of glass fiber reinforced plastic, this support resembling the wheel and rim of an ordinary automobile wheel which is adapted to mount the usual rubber tire. This support is radially divided into two annular or disc-like sections, one of the sections having an annular support or boss adapted to receive thereover in coaxial relation a rubber-sealing ring. The two support sections are detachably secured together so as to retain the sealing ring in position, and the support is further designed with radially outwardly extending sides which define a generally U-shaped cross-section or channel. This channel shape is of such size that the sealing ring seats on the base thereof with the sides extending angularly outwardly therefrom.



In the use of this apparatus, the support or form with the sealing ring thereon is supported in position in a concrete mold set up for casting a concrete structure, such as a manhole. Liquid concrete is introduced into the mold in the usual manner in encircling relation to the form and rubber ring and caused to harden. The form sections are eventually removed leaving the sealing ring securely cast and locked into the perimeter of the opening formed by both the sealing ring and the support form.

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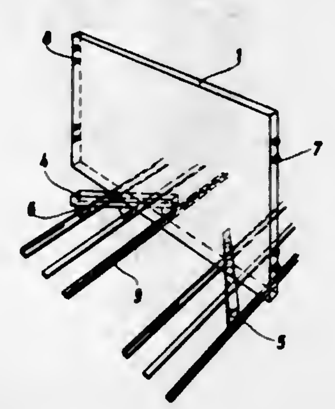
### 3,758,067
## MOVABLE MULTIPLE CASTING MOULDS AND ELEMENTS THEREFOR
**Armin Kleiber, Mozartstr. 5, Karlsruhe, Germany**
**Filed Mar. 1, 1972, Ser. No. 230,630**
**Claims priority, application Germany, May 12, 1971, P 21 23 478.6**
**Int. Cl. B28b** *7/26*
**U.S. Cl. 249—129** **8 Claims**



A movable casting mould for use in a production line for such articles as prefabricated concrete slabs is adapted to run on a track which may comprise parallel rails. The mould is assembled from a plurality of individual movable elements each comprising a panel which forms a side wall of an individual mould, and running gear which preferably includes rotatable ball units in contact with said track to allow movement in direction both parallel and perpendicular to the planes of the panel.

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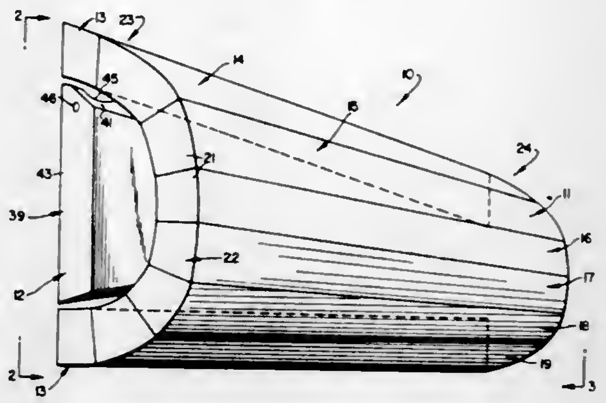
### 3,758,068
## FORM FOR MOLDING A TAPERED BORE IN CONCRETE
**George W. Lengel, R.F.D. No. 1, Pine Grove, Pa.**
**Filed Nov. 18, 1971, Ser. No. 200,037**
**Int. Cl. E04g** *15/04;* **B28b** *7/30*
**U.S. Cl. 249—177** **5 Claims**



A form including a tapered body of cylindrical cross section for mounting between the inner and outer sections of a mold and with its ends in abutting engagement with adjacent corners of both mold sections, and around which concrete is poured between the mold sections to produce a bore in the concrete, when set, which extends through the corner of the concrete and which tapers from the exterior to the interior thereof. A hanger of the form is detachably secured to the outer mold section to support the body between the mold sections while the concrete is poured and allowed to set. The body is composed of tapered staves certain of which may be detached to permit contraction of the body for removal thereof from the set concrete. The ends of the body are shaped to abut flush against portions of walls forming right angular corners of the inner and outer mold sections.

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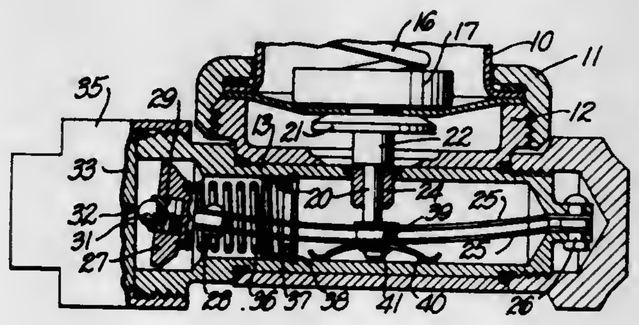
### 3,758,069
## RIBBON TYPE FLOW CONTROL DEVICE
**David E. Whitten, Northridge, Calif., assignor to Air-Dry Corporation of America, Northridge, Calif.**
**Filed Dec. 29, 1971, Ser. No. 213,669**
**Int. Cl. F16k** *17/04, 31/12*
**U.S. Cl. 251—58** **10 Claims**

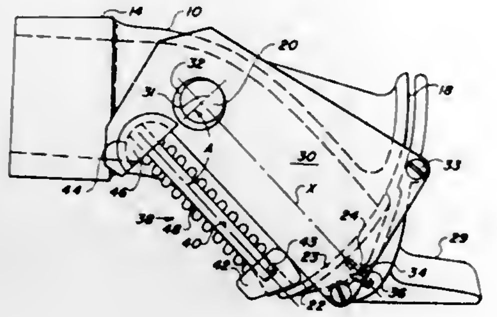


A ribbon type flow control device which provides a variable mechanical advantage. A ball type poppet is removably mounted in a valve seat. A pair of elongated flat resilient ribbons are connected at one end thereof to the ball and fixed at the other end. A diaphragm reacts to pressure changes to move a push rod transversely against the midportion of the ribbons and deflect them into an arcuate configuration. Deflection of the ribbons moves the ball away from the valve seat. The push rod has a mechanical advantage with respect to movement of the ball. This mechanical advantage decreases with increased deflection of the ribbons. When the ball is in closed position engaging the valve seat, the ribbons buckle to provide an added mechanical advantage between movement of the push rod and movement of the ball.

### 3,758,070
### SELF-CLOSING, GUILLOTINE-TYPE, SHUTOFF VALVE

**William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensenville, Ill.**

**Filed Sept. 22, 1972, Ser. No. 291,201**
**Int. Cl. F16k** *3/04*
**U.S. Cl. 251—86** **4 Claims**



A hand-operated, guilliotine-type, self-closing, viscous liquids shutoff valve having maximum effectiveness in self-aligned sealing pressure between the valve plate and valve seat when the valve is closed, and reduced forces resisting the hand effort when the valve is open, and effectively wiping the liquid from the valve seat in the operation thereof.

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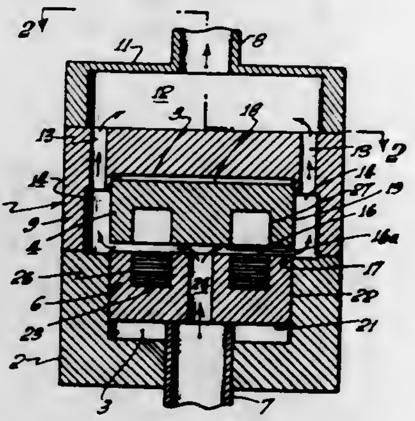
### 3,758,071
### MAGNETICALLY-ACTUATED FLUID CONTROL VALVE

**Victor C. Anderson, San Diego, Calif., and Ronald C. Horn, New Brighton, Minn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Nov. 26, 1971, Ser. No. 202,286**
**Int. Cl. F16k** *31/06*
**U.S. Cl. 251—139** **4 Claims**



A body member formed as a solid block of high purity iron is provided with an axial bore forming a fluid inlet passage and a planar end wall surrounding the bore. The valve member which blocks the inlet flow also is shaped as a solid block formed of high purity iron. Further, this latter member is slidably carried in a casing and itself has a planar end wall adapted to flushly engage the end wall of the valve body member and, when so engaged, to block the inlet flow. The body member carries an electric coil to magnetize the high purity iron pieces and cause the valve member to move into its flow-blocking position. When the coil is not energized, fluid flow admitted through the axial bore spreads laterally and forces the valve member away from the valve body member to create a gap in the order of 0.010 inch. This small stable gap allows closure of the valve with very low electrical power.

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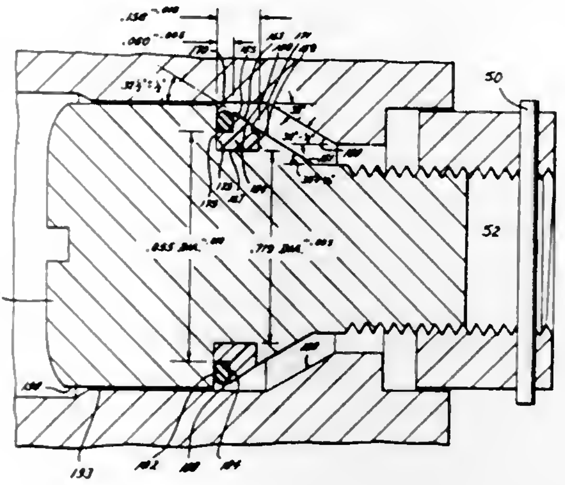
### 3,758,072
### SEALING ARRANGEMENT

**David P. Herd, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.**

**Filed Feb. 16, 1971, Ser. No. 115,621**
**Int. Cl. F16k** *1/38*
**U.S. Cl. 251—332** **11 Claims**



Sealing arrangement comprising a semi-rigid seal ring sealed to its supporting member on upstream side by an elastomer ring to prevent expansion and extrusion of seal ring by fluid pressure when tapered supporting member is moved mechanically to disengage tapered seal ring from surface with which it seals. Arrangement is useful in actuators for diverters for through flow line tools in oil wells.

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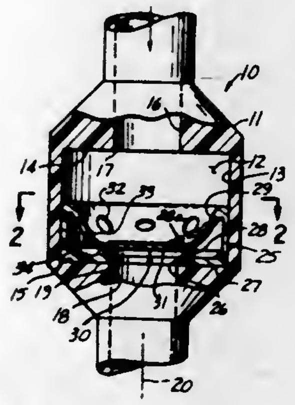
### 3,758,073
### VALVE FOR PHYSIOLOGICAL DRAINAGE ACTUABLE BY LATERAL COMPRESSION

**Rudolf R. Schulte, 5377 Overpass Rd., Santa Barbara, Calif.**

**Filed Oct. 26, 1971, Ser. No. 192,211**
**Int. Cl. F16k** *31/58*
**U.S. Cl. 251—342** **3 Claims**

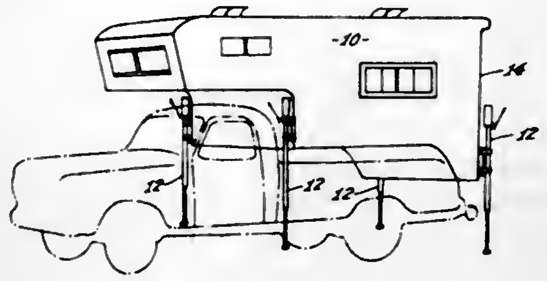


A normally-closed valve for physiological drainage which can be opened by lateral compression. A valve body defines an interior flow cavity with an inlet and outlet passage opening therein through the body. A peripheral valve seat extends continuously around the outlet passage and faces into the flow cavity, the valve body and valve seat being flexible and deformable by lateral compressive force exerted externally on the valve body. A valving member is movably disposed in the flow cavity and adapted to make a fluid-tight sealing fit with the valve seat when the valve body is undistorted, and to leave a flow passage between them when the valve body is distorted by lateral compression.

### 3,758,074
### CAMPER LIFTING SYSTEM AND REMOVABLE JACKS THEREFOR

**Edward William Jeffries, 151 Hacienda, Arcadia, Calif., and Raymond Elmer Jeffries, Jr., 1831 Alpha Ave., South Pasadena, Calif.**

**Filed Aug. 7, 1972, Ser. No. 278,624**
**Int. Cl. B60p** *1/64*
**U.S. Cl. 254—45** **11 Claims**



Removable jack lifting means for use with a heavy body, such as a camper, and detachably carried on a motor vehicle. A plate with at least one notched vertical web is secured to each corner of the body, manually actuated hydraulic jack having telescoping tubular sections is removably affixed to each such plate by bracket members encircling the outer tubular section and carrying transverse studlike elements which are insertable in the web notches. The tubular sections of each jack may be extended gradually to lift up the corner of the body to which it is removably affixed, until the entire body is elevated to where no further support is provided by the vehicle. The latter may then be driven away. The body may be remounted by reversing the process. This is facilitated by a slow release valve in the hydraulic portion of the jack. By providing a plate with a pair of parallel notched edged extensions for each corner of the body, unpowered telescoping tubular support members may be utilized merely to provide support so that a single powered jack may be moved from corner to corner to accomplish the actual lifting or letting down of the body.

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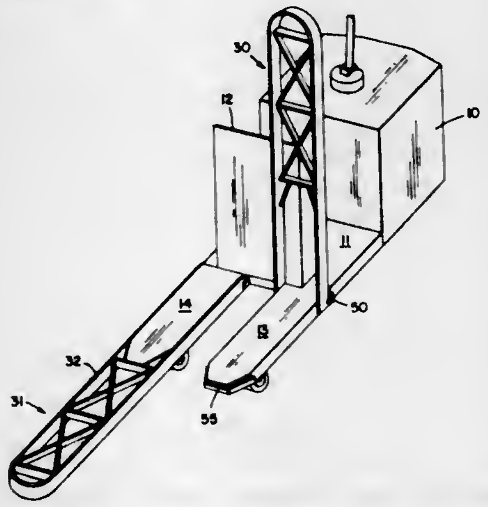
### 3,758,075
### PIVOTALLY MOUNTED FORK EXTENSIONS FOR LOW-LIFT PALLET TRUCKS

**Richard S. Briggs, Los Altos Hills, Calif., assignor to Integrated Handling Systems, Menlo Park, Calif.**

**Filed Apr. 14, 1971, Ser. No. 133,933**
**Int. Cl. B60p** *1/00*
**U.S. Cl. 254—2 R** **4 Claims**



A low-lift pallet truck of the type having a pair of forks operative to raise pallets a small distance above the ground for transporting including a pair of pivotally mounted fork extension frameworks for raising and transporting at least two adjacent pallets. The fork extensions are rotatable between an upright vertical position to facilitate maneuverability of the truck and an extending horizontal position resting on the forks for simultaneous transportation of adjacent pallets.

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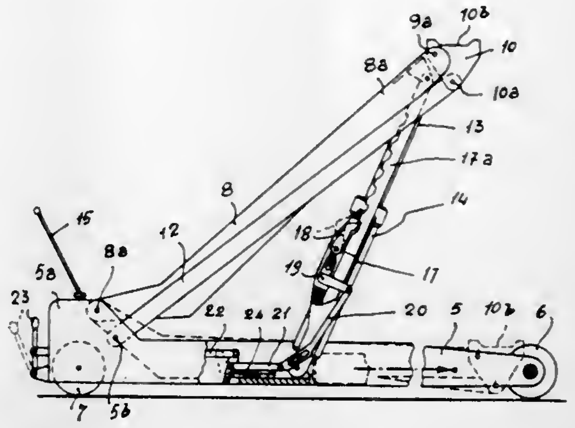
### 3,758,076
### MOBILE LIFT APPARATUS PARTICULARLY FOR MOTOR VEHICLES WITH AUTOMATIC SAFETY DEVICE

**Jacques Tranchero, via Villanovetta 2, Piasco, Italy**

**Filed Apr. 8, 1971, Ser. No. 132,481**
**Claims priority, application Italy, Apr. 8, 1970, 68171 A/70**
**Int. Cl. B60p** *1/48*
**U.S. Cl. 254—8 R** **1 Claim**



A mobile lift, particularly for use with heavy vehicles is provided with first and second rectangular frame members and wheels for journalling the first frame member. The second rectangular frame member is comprised of a parallel linkage system and is pivotly mounted at one end thereof on the first frame member. The other end of the second frame member includes a pair of laterally spaced apart ears that are pivotly secured to a pair of supporting brackets each of which has one surface that is maintained in the horizontsl position at all times. A hydraulic cylinder is pivotly mounted on the first frame and the piston of the cylinder is pivotly mounted to the second frame. A pair of laterally spaced apart telescoping racks are pivotly mounted on the first frame concentrically with the cylinder and a pawl cooperates with each of the racks. Lever means are used for controlling the movement of the pawls in opposition to spring means that normally maintain the pawls in engagement with the racks.

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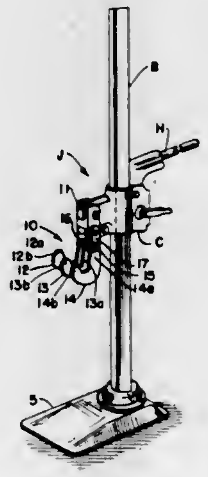
### 3,758,077
### BUMPER LIFT HOOK

**James Glenn Fisher, Hartwell, Ga., assignor to NVF Comapny, Wilmington, Del.**

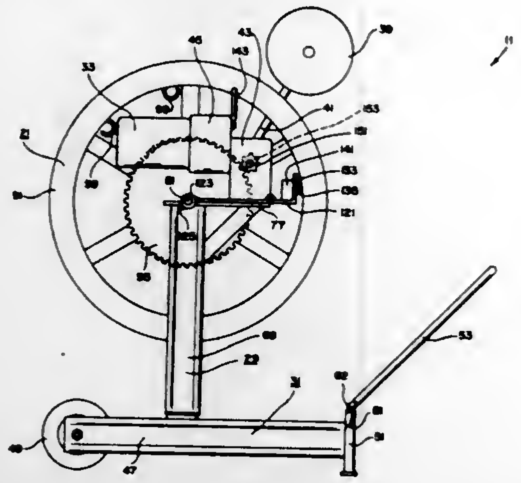
**Filed Feb. 23, 1972, Ser. No. 228,600**
**Int. Cl. B66f** *3/00*
**U.S. Cl. 254—133** **17 Claims**



A bumper lift hook including a bracket means, a plurality of movable bumper engaging hooks carried by said bracket means, at least one of said hooks, after being moved, insertable through a slot in a vehicle bumper, and all of said hooks engageable with the bottom edge of a bumper.

### 3,758,078
### WATER PUMP HOIST

**James F. Grena, Rt. 2, Box 169, Bogue Chitto, Miss.**
**Filed June 2, 1971, Ser. No. 149,178**
**Int. Cl. B66d** *3/00*
**U.S. Cl. 254—166** **5 Claims**



A hoist for raising or lowering an electrically driven water pump into or out of a well, i.e., the pump being suspended by a length of flexible conduit. The hoist includes a main support member which is mounted on a hand truck-like base member, a pair of reels rotatably mounted on the support member, i.e., a main reel for receiving the flexible conduit and an auxiliary reel for receiving the electrical power cord, and a brake gear motor which rotatably drives the main reel selectively in forward and reverse directions, i.e., respectively winding the flexible conduit about the main reel for hoisting the pump out of the well and unwinding the conduit from the main reel for lowering the pump into the well, knockdown structure is incorporated throughout to facilitate expeditious disassembly of the various components one from the other, a feature of great importance, particularly at locations where the head of the well is enclosed in a cramped pumphouse.

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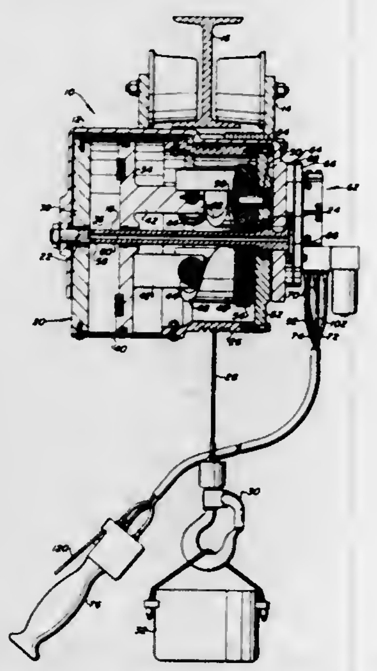
### 3,758,079
### CONTROL SYSTEM FOR BALANCING HOIST

**William Workman, Jr., Spring Lake, and George Doig, Pontiac, both of Mich., assignors to Gardener-Denver Company, Quincy, Ill.**
**Filed Nov. 18, 1970, Ser. No. 90,499**
**Int. Cl. B66d** *1/08, 1/48*
**U.S. Cl. 254—168** **6 Claims**



A control system for a pneumatically operated balancing hoist in which a load attached to the hoist cable is balanced by regulating air pressure acting on the piston of an expansible chamber hoist motor. The control system is characterized by a pneumatic control circuit including a pressure regulating valve which has a sensor operable to sense the pressure in the hoist motor chamber required to balance a load and set the regulator valve to maintain the load balancing pressure value. The control circuit also includes a pneumatically operated valve which limits the flow of compressed air to the hoist motor to prevent rapid wind-up of the hoist cable. A further feature of the control system includes a circuit arrangement in which the hoist motor exhaust valve is operable to exhaust pressure air from the motor chamber only in response to receiving a positive pressure signal from a pendant hoist controller.

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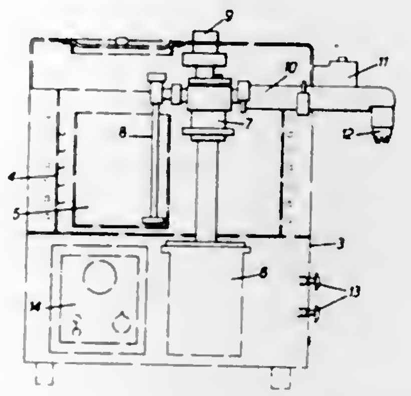
### 3,758,080
### MACHINE FOR PRODUCING AERATED PRODUCTS

**John MacManus, 143-16-22nd Rd., Whitestone, N.Y.**
**Continuation-in-part of Ser. No. 837,087, June 27, 1969, Pat. No. 3,713,841, which is a continuation of Ser. No. 571,885, Aug. 11, 1966, abandoned, and a continuation-in-part of Ser. No. 154,431, June 18, 1971, Pat. No. 3,700,214, which is a division of Ser. No. 883,867, Dec. 10, 1969, Pat. No. 3,606,266. This application Apr. 26, 1972, Ser. No. 247,575**
**Claims priority, application Great Britain, Dec. 31, 1968, 61,986/68; Feb. 13, 1969, 7,982/69; Sept. 5, 1969, 44,032/69; Apr. 29, 1971, 12,000/71**
**Int. Cl. B01f** *15/02*
**U.S. Cl. 259—4** **13 Claims**



The machine includes a motor-driven pump having an inlet operatively connected both to an air intake and to an unpressurized liquid product container, whereby the liquid product and air are simultaneously drawn into the pump. An adjustable needle valve assembly is provided at the air intake to control flow of air into a chamber which has a check valve at its outlet. The assembly includes a two-piece plug which has an air filter positioned between the two pieces. The pump outlet is connected to a static, narrow-orifice homogenizer which emulsifies the liquid and air mixture. A solenoid-operated valve is located at the outlet of the homogenizer and an electrical control system simultaneously opens the valve and starts the motor.

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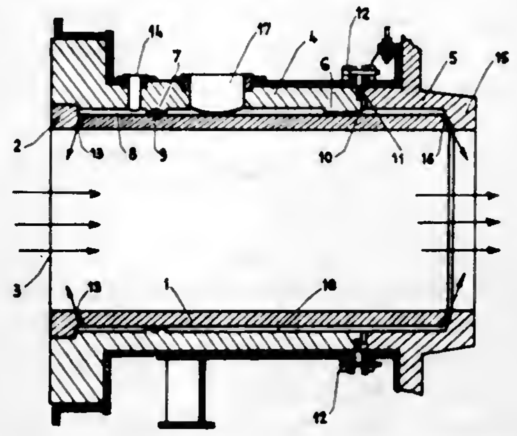
### 3,758,081
### QUENCH CHAMBER FOR HOT GASES

**Francois Prudhon, Saint-Auban, France, assignor to Rhone-Progil, Courbevoie, France**
**Filed Mar. 31, 1971, Ser. No. 129,841**
**Claims priority, application France, Apr. 2, 1970, 7011873**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—18 B** **4 Claims**

A quench chamber for hot gases comprising an internal jacket formed of porous graphite and defining an internal volume, an external jacket encasing the internal jacket and defining at least one compartment therebetween and passage means communicating with the compartment and the internal volume for the passage of a cooling fluid to the internal volume.



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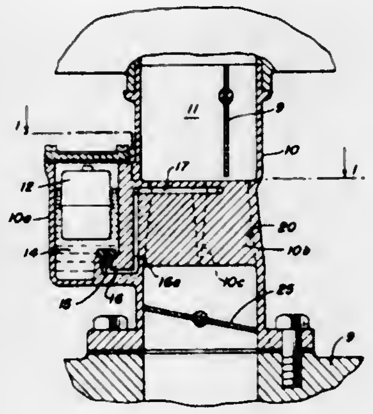
### 3,758,082
### QUAD JET

**Frank W. Kertell, Santa Cruz, Calif., assignor to Brooks Walker, San Francisco, Calif.**
**Continuation of Ser. No. 672,773, Oct. 4, 1967, abandoned. This application Sept. 15, 1970, Ser. No. 72,526**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—23 A** **2 Claims**



This invention pertains to a carburetor having four main fuel nozzles in place of a lesser number and at the ends of tube extensions for improved atomization of the main fuel nozzle, by the use of streamlined vanes in the form of a cross between the four main fuel outlets.

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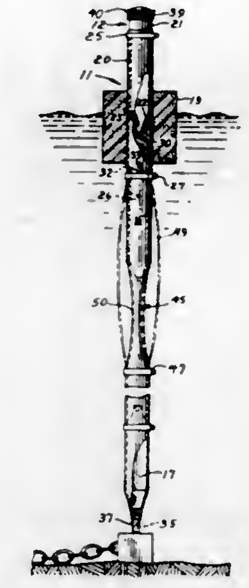
### 3,758,083
### WAVE-POWERED AERATOR

**William E. Palmer, 5237 Fairmount, Downers Grove, Ill.**
**Filed Dec. 30, 1971, Ser. No. 214,035**
**Int. Cl. E02b** *3/06*
**U.S. Cl. 261—25** **4 Claims**

A system is disclosed for taking atmospheric air and forcing it to the bottom of a large body of water, such as a lake, using only the energy available in waves. A number of flexible chambers and rigid chambers are alternately interconnected to form a string extending down into the lake. A rigid chamber communicates with the atmosphere above the lake, and adjacent chambers are connected through a check valve which opens only when pressure in an upper chamber is greater than the pressure in a lower chamber. Pressure differentials in the water caused by waves forces the air into successively lower chambers. Air is ultimately discharged from the lowermost chamber.



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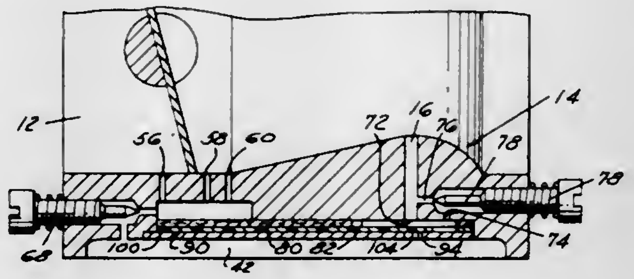
### 3,758,084
### NOZZLE CHECK VALVE SYSTEM

**Charles H. Tuckey, Cass City, Mich., assignor to Wallro Corporation, Cass, Mich.**
**Filed Dec. 9, 1971, Ser. No. 206,324**
**Int. Cl. F02m** *17/04*
**U.S. Cl. 261—35** **4 Claims**



A carburetor of the diaphragm type in which a fuel duct from the diaphragm chamber to the venturi mixing passage is formed with branch passages, the first of which flows directly to the mixing passage and the second of which is controlled by a manually operated control valve leading to the mixing passage. A check valve is provided to close, in one position, the fuel duct from the mixing passage, and, in a second position to block the first branch of the fuel duct, leaving the second branch as the fuel supply duct. In an intermediate position of the check valve, fuel can flow through both branch passages to provide an acceleration fuel flow during a changeover condition from idle to full throttle.

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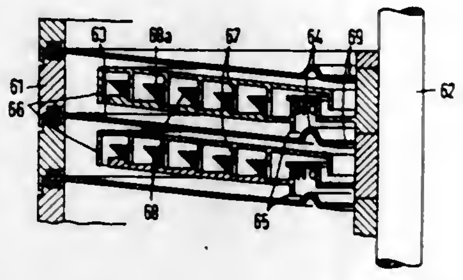
### 3,758,085
### CENTRIFUGAL DEVICE FOR TREATING GASES OR VAPORS WITH LIQUIDS

**Hellmuth Mentschel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**
**Filed June 15, 1971, Ser. No. 153,208**
**Claims priority, application Germany, June 18, 1970, P 20 29 994.9**
**Int. Cl. B01d** *47/16*
**U.S. Cl. 261—89** **11 Claims**

A centrifugating device for reacting gases or vapors with liquids or with liquid or solid substances finely distributed in liquids, comprises a centrically arranged rotor shaft to which rotor wheels are attached which carry centrifugating or fling members with reaction stages being formed by fixed partitions between the rotor wheels. The centrifugating members at least, in part, are made in the form of bristles, and baffles are located on the rotor wheels. The fling and baffle members serve to destroy and re-form the liquid surface.



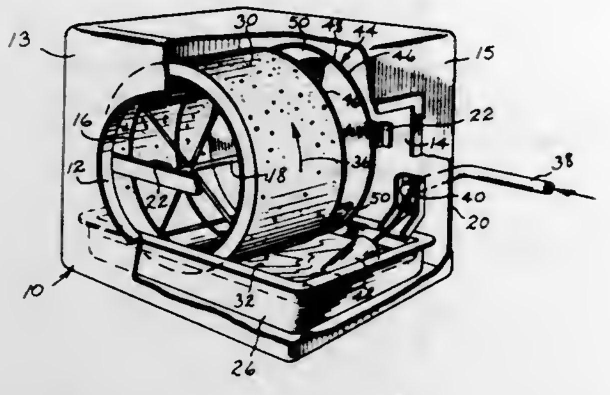
### 3,758,086
### HUMIDIFIER WITH FLUSHING SYSTEM

**Hubert M. Pugh, North Judson, Ind., assignor to Thermo-Products, Inc., North Judson, Ind.**

**Filed Dec. 1, 1971, Ser. No. 203,608**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—92** **3 Claims**



A humidifier having a fluid reservoir and a rotatable fluid absorption pad which is in air contact and which is positioned over the reservoir in contact with the fluid therein. A fluid inlet is provided for maintaining the fluid in the reservoir at a specified level. A fluid transfer component is associated with the absorption pad and upon rotation of the absorption pad causes a portion of the fluid in addition to the fluid absorbed by the pad to be removed from the reservoir so that a continual fresh supply of fluid enters the reservoir through the fluid inlet during rotation of the pad.

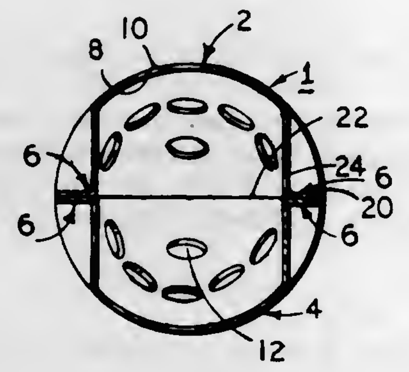
### 3,758,087
### CONTACT DEVICE

**Harry E. Hoon, Jr., Strongsville, Ohio, assignor to Envirotech Corporation, Salt Lake City, Utah**

**Filed Apr. 20, 1971, Ser. No. 135,586**

**Int. Cl. B01t** *3/04*

**U.S. Cl. 261—94** **1 Claim**



A filter device in the form of a perforated, hollow spherical contact article for use in an apparatus for intercontacting fluid streams is described and illustrated. Preferably, the article comprises a pair of similarly shaped polymeric hemispheres, each of which has a plurality of spaced, radially extending portions adjacent the mating edge. In this preferred form, the hemispheres are joined together at these radially extending portions so as to provide a pair of hemispheres joined at spaced intervals to form a sphere.

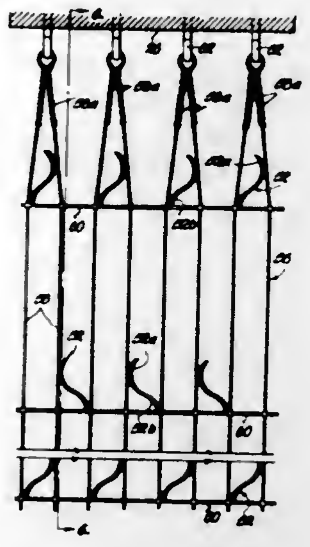
### 3,758,088
### HYPERBOLIC CROSS FLOW COOLING TOWER WITH BASINS AND FILL INTEGRATED INTO SHELL

**Homer E. Fordyce, Kansas City, Mo., assignor to The Marley Company, Johnson County, Kans.**

**Continuation-in-part of Ser. No. 857,134, Sept. 11, 1969. This application Dec. 10, 1971, Ser. No. 206,843**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—111** **10 Claims**



A fireproof, hyperbolic, natural draft, crossflow water cooling tower having two story fill assembly structure between respective concrete hot water distribution and cold water basins within the tower shell and integral therewith adjacent the air inlet of the shell. Stainless steel fill and eliminator supports suspended from the distribution and basin units carry transversely three-quarter wave asbestos cement board fill members and transversely full wave eliminator bars respectively cut from corrugated sheets. The fill members are disposed on edge with the longitudinal length thereof generally parallel to the air flow through each fill assembly structure while the eliminator bars lie in flat, generally horizontal disposition with the longitudinal axes thereof tilted for drainage of the bars and located perpendicular to the path of travel of air through respective fill assembly structures.

### 3,758,089
### KILNS

**Friedrich Kocks, Freiligrathstrasse 1, Dusseldorf, Germany**

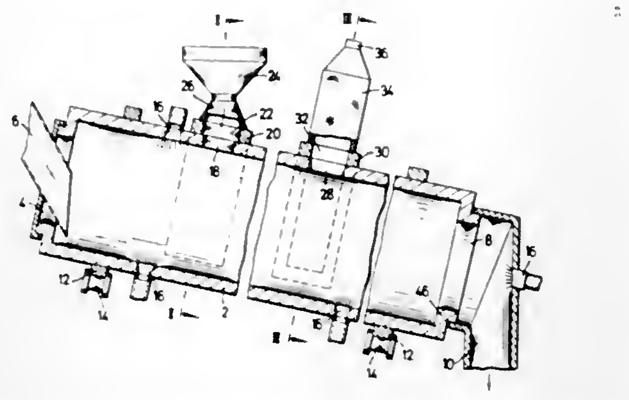
**Filed Nov. 10, 1971, Ser. No. 197,423**

**Claims priority, application Germany, Nov. 25, 1970, P 20 57 931.1**

**Int. Cl. C21b** *1/06*

**U.S. Cl. 266—18** **16 Claims**

A drum kiln is provided for treating ores and like materials for preheating and prereduction which kiln includes an elongated cylinder journalled for rotation with its axis inclined to the horizontal, means for rotating said cylinder to-and-fro through an angle less than 360° and a port in the wall of said cylinder intermediate its ends and position so that the material in the cylinder does not contact it, said port selectively admitting and discharging solids and gases into the cylinder.



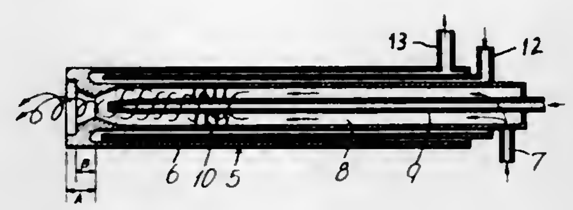
### 3,758,090
### COMBUSTION APPARATUS FOR BLAST FURNACES

**Teruo Shimotsuma; Kazuo Kunioka, both of Yokohama, and Takeo Yamada, Hodogaya-ku, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 26, 1971, Ser. No. 128,377**

**Int. Cl. C21b** *7/16*

**U.S. Cl. 266—41** **1 Claim**



A combustion apparatus for a blast furnace for providing complete combustion beyond the tuyeres by injecting a hot blast which is caused to swirl in a blow pipe and into the furnace, causing oxygen or oxygen enriching air to swirl in a burner and into said blow pipe and adding fuels to the burner.

### 3,758,091
### RESILIENT END ABUTMENT

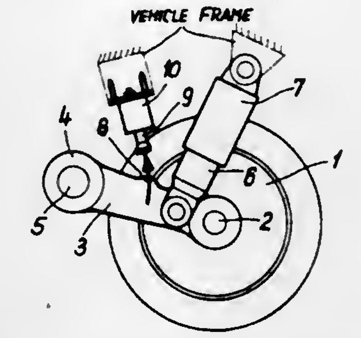
**Winfried Heinz, Accum; Wilhelm Schwartz, and Henricus Tromp, both of Wilhelmshaven, all of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Aug. 2, 1971, Ser. No. 167,945**

**Claims priority, application Germany, Aug. 13, 1970, P 20 40 204.4**

**Int. Cl. F16f** *1/37*

**U.S. Cl. 267—65 R** **5 Claims**



A resilient abutment unit, especially for use in connection with motor vehicles, according to which a pushrod equipped piston is guided in a cylinder comprising resilient spring means, while the piston has at least its circumferential cylinder engaging surface provided with resiliently compressible material so that said piston will be able in response to shocks acting eccentrically thereon to occupy an inclined position in the cylinder.

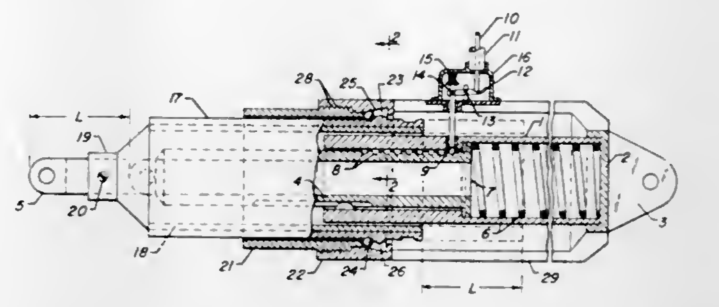
### 3,758,092
### POSITION ADJUSTMENT DEVICE WITH DEFORMATION TYPE DAMPER MEANS

**Eugene R. McGregor, Morris, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Oct. 29, 1971, Ser. No. 193,644**

**Int. Cl. F16f** *3/02*

**U.S. Cl. 267—131** **10 Claims**



A spring-biased mechanical positioning device of the type providing multiple positioning of an extensible-retractable member and compression spring means to effect the return of such member incorporates therewith a special energy absorbing deformation-type damper means to overcome an inherent rapid action return movement from the compression spring means provided in the device. The energy absorbing damper portion embodies the use of a deformable, elastomeric surface on an elongated member and a slidable encompassing ring member with internal tapered ball holding recess means such that the ball means therein can roll freely for one direction of rectilinear movement and, conversely, can depress the ball means into the surface of the elongated member to cause a wave-form resisting force for that direction which resists the expansion force of the compression spring member of the device.

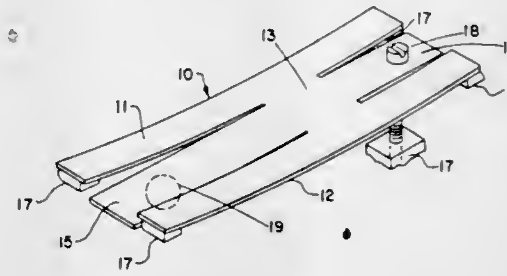
### 3,758,093
### PNEUMATIC RELAY

**Hoel L. Bowditch, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.**

**Division of Ser. No. 789,453, Jan. 7, 1969, Pat. No. 3,566,899. This application July 15, 1970, Ser. No. 62,748**

**Int. Cl. F16f** *1/22*

**U.S. Cl. 267—159** **7 Claims**



A pneumatic relay wherein a diaphragm is used as a valve actuator, with the diaphragm formed as a sandwich of a flexible metal sheet with relieving slots therethrough and a rubber sheet as a covering seal for the slots, and in which a leaf spring structure is provided as an adjustable zero bias device for the relay valve, the spring being an H form with the H leg ends grounded and tongues between the H legs, one tongue having grounded adjustment means and another tongue as the spring force applicator to the relay valve as a bias therefor, this device, further, having an adjustable valve seat in the relay valve.

### 3,758,094
## FRICTION CLUTCHES AND TO ENGAGING LOAD APPLYING SPRING MEANS FOR SUCH FRICTION CLUTCHES

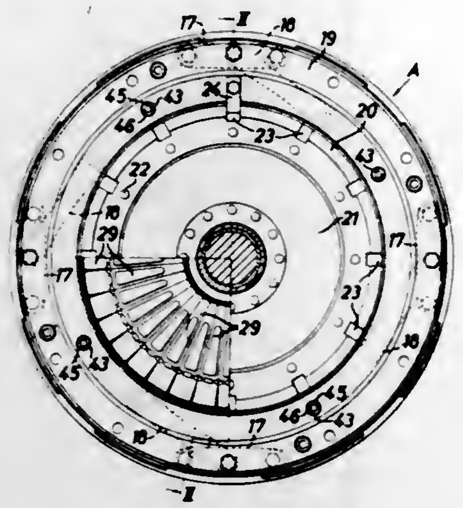
**Frederick Crutchley, and David Hindley, both of Leamington Spa, Warwickshire, England, assignors to Automotive Products Company Limited, Leamington Spa, Warwickshire, England**

**Filed Nov. 24, 1970, Ser. No. 92,336**

**Claims priority, application Great Britain, Dec. 3, 1969, 59,076/69; May 19, 1970, 24,272/70**

**Int. Cl. F16f** *1/26*

**U.S. Cl. 267—162** **4 Claims**



This invention relates to single or twin plate friction clutches in which the clutch spring is a Belleville spring and a number of levers are provided to release the clutch engaging load. The radially inner edge of the Belleville spring define a number of circumferentially spaced recesses so that the range of axial positions of the Belleville spring portion engaged with the pressure plate, over which an adequate axial load is applied by the spring, is greater than if that Belleville spring had a continuous circular edge. The specification describes forms of such recesses and suitable parts of the Belleville spring for engagement with the pressure plate. Conveniently the levers are clamped between the Belleville spring and the pressure plate.

### 3,758,095
## DAMPED SPRING

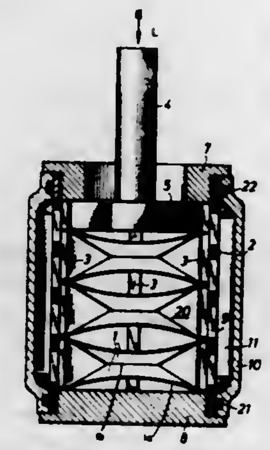
**Otto Mulhauser, Berghausen, Germany, assignor to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany**

**Filed July 26, 1971, Ser. No. 165,952**

**Claims priority, application Germany, Aug. 18, 1970, P 20 40 915.8**

**Int. Cl. F16f** *1/32*

**U.S. Cl. 267—165** **12 Claims**



A damping spring including a casing defining an interior space filled with a damping medium and individually stacked dished plates. The plates are subdivided into an even number of sectors and are supported along their edges. A slide valve cooperates with at least one aperture in the casing to vary the cross section thereof so as to allow variation of the damping characteristics of the spring.

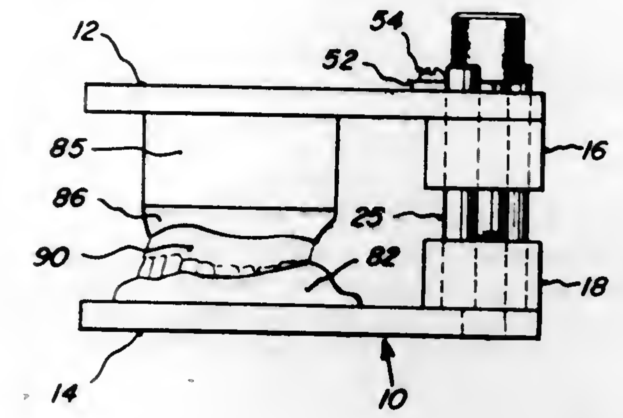
### 3,758,096
## METHOD AND APPARATUS FOR REPAIRING DENTURES

**John S. Tregillis, 825 Dale St. South, and Lester E. Schuft, Rt. 2, both of Hutchinson, Mich.**

**Filed Dec. 28, 1970, Ser. No. 101,451**

**Int. Cl. A61c** *9/00*; **B23g** *3/06*; **B25b** *1/02*

**U.S. Cl. 269—7** **5 Claims**



A method and apparatus for repairing, relining and duplicating dentures and in particular for compensating for loss of vertical dimension in a patient's mouth is disclosed herein. The apparatus or fixture provides a means for holding a denture in contact with an impression material and separating the impression material from the denture to provide an exact spacing therebetween corresponding to the amount of material to be added to compensate for lost vertical dimension by a patient. A buildup of the denture in terms of temporary material facilitates remolding of the existing denture to add the desired material for loss compensation.

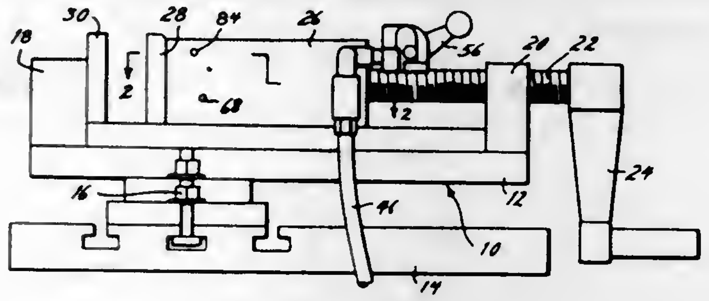
### 3,758,097
## AUTOMATIC VISE JAW

**Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa.**

**Filed June 25, 1971, Ser. No. 158,550**

**Int. Cl. B25b** *1/08, 1/18*

**U.S. Cl. 269—27** **9 Claims**



An automatic vise jaw wherein a movable jaw is urged toward a fixed vise jaw by means of crank operated screw. The movable jaw is equipped with integral air cylinders to actuate a pressure plate for work holding purposes. The air cylinders function piston rods which operatively cooperate with the pressure plate by means of linkage interposed therebetween. By employing suitable leverage, the linkage serves to substantially increase the ratio of pressure applied at the air cylinders and to rapidly apply the increased pressure at the pressure plate.

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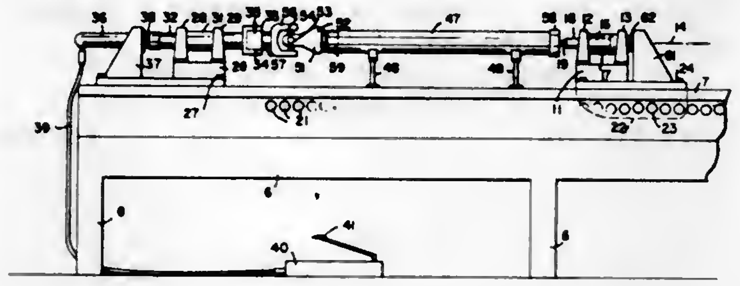
### 3,758,098
## MACHINE FOR WORKING ON DRIVE SHAFTS

**Mark Vrilakas, P.O. Box 561, West Sacramento, Calif.**

**Filed Sept. 20, 1971, Ser. No. 181,752**

**Int. Cl. B23k** *37/04*

**U.S. Cl. 269—55** **4 Claims**



Particularly for working on automotive drive shafts including universal joints is a machine including a frame on which are mounted a headstock and a tailstock movable along a common axis toward and away from each other, the tailstock being lockable in any of several selected positions and carrying a tail centering device for supporting one end of a drive shaft. Also on the frame is a headstock having a head centering device mounted therein for rotation about the same axis and for movement along such axis toward and away from the tailstock. Also mounted on the frame is a hydraulic jack structure for moving the head centering device toward the tail centering device, the latter being particularly backed up by a stop for limiting axial movement of the tail centering device.

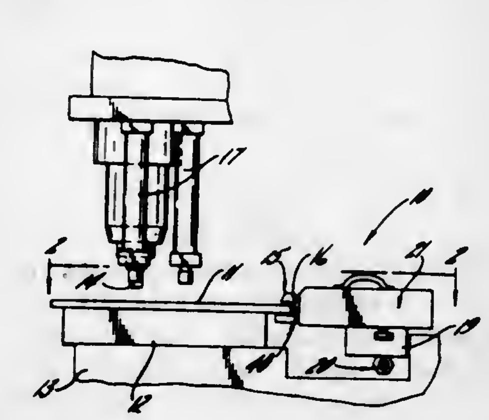
### 3,758,099
## CLAMP WITH WORKPIECE LOCATOR

**William B. Scott, Steward, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.**

**Filed July 29, 1971, Ser. No. 167,269**

**Int. Cl. B23q** *3/18*; **B26d 7/16**

**U.S. Cl. 269—58** **4 Claims**



An apparatus for locating and holding a workpiece of sheet material on a punch press bed in an exact predetermined edgewise position relative to a punch tool. The apparatus includes two spaced clamps mounted on an elongated slide which is movable incrementally to draw the workpiece beneath the punch tool for punching. When the slide reaches its natural limits of movement, temporary holders are used to clamp the workpiece on the bed in the edgewise position before the clamps release the workpiece to allow the slide to be slid back along the edge of the workpiece to reposition the clamps on the workpiece for further incremental movement. To assure that the workpiece is located in the exact edgewise position when first placed within the clamps, locators are movable with the slide and are mounted on the opposite sides of each clamp so as to extend outwardly into position to be engaged by the edge of the workpiece when the latter is placed in the clamps. The locators are retractable away from the edge of the workpiece once the workpiece is clamped in position so that the locators will not be scored and worn by the edge of the workpiece when the clamps are repositioned.

### 3,758,100
## CLAMPING DEVICES

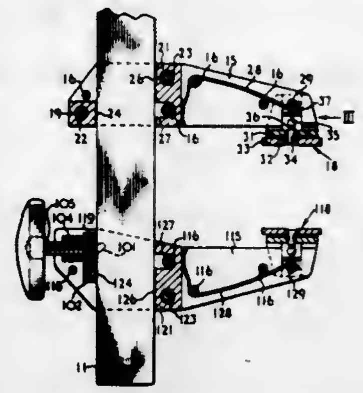
**David John Taylor, 6 Overtons Close, and Aris Mednis, 8 Overtons Close, both of Redford Semele, Leamington Spa, England**

**Filed Mar. 16, 1971, Ser. No. 124,882**

**Claims priority, application Great Britain, Mar. 23, 1970, 14,009/70; Oct. 1, 1970, 46,670/70**

**Int. Cl. B25b** *1/02, 1/10*

**U.S. Cl. 269—203** **7 Claims**



A clamping device comprising two clamping jaws each slidable along a shank to a desired clamping location on the shank and then engaging with the shank and exerting a clamping force which is reacted through the shank. Each clamping jaw comprises an elongated jaw member having a shank receiving aperture at one end portion thereof and a clamping pad at the other end portion thereof for exerting the clamping force on a workpiece. Each jaw member carries a first contact pad for frictional engagement with a side of the shank adjacent the clamping pad and a second contact pad for frictional engagement with the side of the shank remote from the clamping pad at a position along the shank in the direction of said clamping force from the first clamping pad. The contact pads have a surface for engaging the shank incorporating projections of substantial crest radius such that in use the projections elastically deform the surface of the shank into depressions corresponding to the crests of the projections. At least one clamping jaw is also provided with means for moving its second contact pad in a direction towards the shank to thereby tend to pivot the jaw member to produce the clamping force on the workpiece.

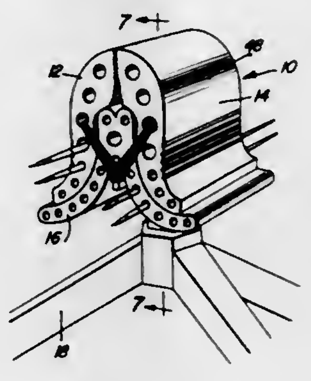
### 3,758,101
## VISE APPARATUS

**Windell C. Sewell, Lakewood, Colo., assignor to Fred D. Smith, Evergreen, and Robert L. Smith, Golden, both of Colo., a part interest to each.**

**Filed June 23, 1971, Ser. No. 155,702**

**Int. Cl. B25b** *1/24, 5/16*

**U.S. Cl. 269—254 R** **18 Claims**



A multi-purpose vise apparatus for hobbiests and the like comprised of a mounting base having a pair of curved, oppositely inclined leg portions, a pair of reversible vise jaws with curved mounting surfaces and a plurality of gripping surfaces, and elastic means fastening each of the vise jaws to the mounting base for independent sliding and rocking movement between a plurality of positions to readily accept a variety of objects of different sizes and shapes. The vise jaws and mounting base may be provided with a plurality of horizontal bores or apertures which may be used for storage of paint brushes and similar hobbiest implements.

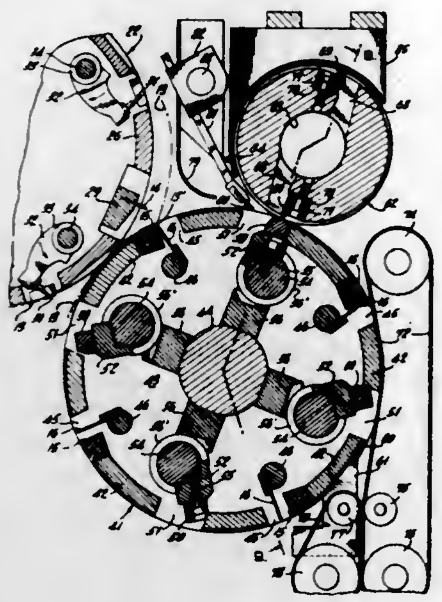
### 3,758,102
### SIGNATURE CUTTING AND TRIMMING APPARATUS

**Robert Munn, Monsey, and Albert Tiso, Scarsdale, both of N.Y., assignors to George Hantscho Company, Inc., Mt. Vernon, N.Y.**

**Filed May 28, 1971, Ser. No. 147,754**

**Int. Cl. B65h** *45/00*

**U.S. Cl. 270—69** **14 Claims**



Apparatus for use with printing presses to cut, fold and trim each individual signature and deliver the completely trimmed signature to succeeding folding or stacking stations.

### 3,758,103
### LABELLING DEVICE

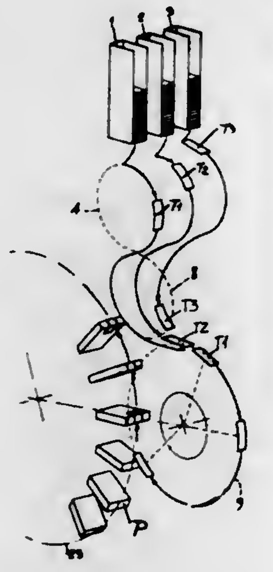
**Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.**

**Filed Mar. 13, 1972, Ser. No. 234,101**

**Claims priority, application Italy, Mar. 11, 1971, 12554 A/71**

**Int. Cl. B65h** *5/00, 5/26*

**U.S. Cl. 271—4** **6 Claims**



Apparatus for providing labels or the like at an application station, which comprises a plurality of label supply units mounted in spaced relationship with each other, means for withdrawing labels from the supply units, means for placing the labels with-drawn from the spaced supply units in alignment with each other, and means for receiving the aligned labels and delivering them seriatim to an application station.

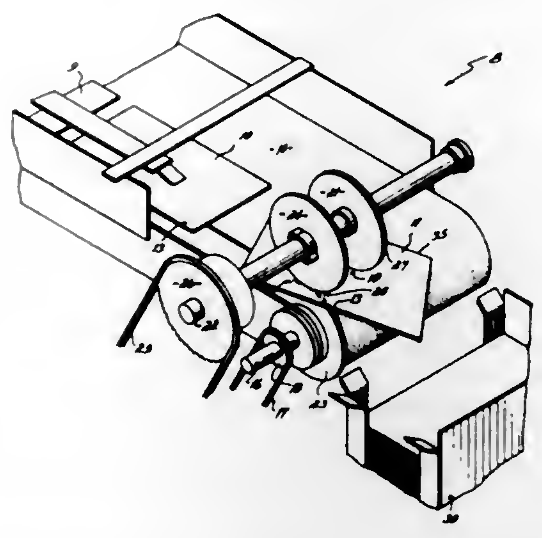
### 3,758,104
### TURNING APPARATUS

**William C. Daily, Covington, Ky., assignor to R. A. Jones & Co., Inc., Covington, Ky.**

**Filed Sept. 23, 1971, Ser. No. 183,031**

**Int. Cl. B65h** *29/14*

**U.S. Cl. 271—75** **11 Claims**



Apparatus for turning carton blanks or the like comprising a conveyor and means forming two nips generally transverse to the conveyor. An inward free-wheeling disk forms a blank engaging nip with the conveyor for maintaining a portion of the carton at conveyor velocity and an outward disk forms a second blank engaging nip with a third free-wheeling disk located beneath it. The outward disk is driven at a circumferential velocity which is greater than the conveyor velocity so as to drive a portion of a blank at greater speed than the portion engaged by the first nip. The difference of the velocities acting on the blank turns it. The speeds and axial distance between the inward and outward disks may be adjusted to provide various turning results.

### 3,758,105
### SHEET CATCH TRAY FOR AUTOMATIC SHEET FEEDING APPARATUS

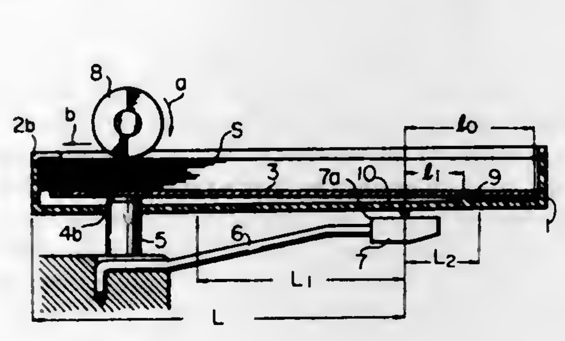
**Toyoo Okamoto, Suginami-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan**

**Filed Sept. 17, 1970, Ser. No. 73,083**

**Claims priority, application Japan, Oct. 22, 1969, 44/84546**

**Int. Cl. B65h** *1/04*

**U.S. Cl. 271—61** **2 Claims**



The present invention relates to a sheet catch tray for an automatic sheet feeding apparatus mounted to a feeder portion of a reproduction apparatus or a printing machine, said sheet catch tray holding a stack of photosensitive sheets or printing paper and feeding sheets one by one continuously in cooperation with said automatic sheet feeding apparatus.

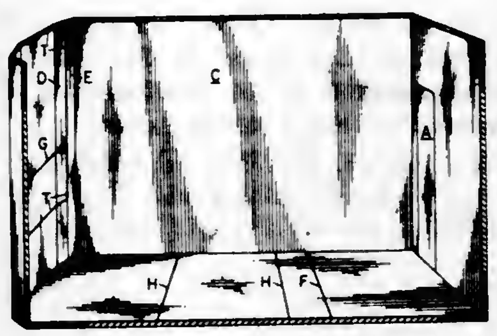
### 3,758,106
### ENCLOSED GAME OR SPORT FACILITY

**Anthony E. Liebig, 432 Denslow Ave., Los Angeles, Calif.**

**Filed Sept. 28, 1971, Ser. No. 184,341**

**Int. Cl. A63b** *71/04*

**U.S. Cl. 272—3** **1 Claim**



A game or sport facility in the form of an enclosed court which, because of its shape and arrangement, permits the playing by two persons of a vigorous and strenuous competitive racket and ball game or sport (adapted to the facility) within an area considerably smaller than has heretofore been possible. The enclosure for the court includes upstanding walls on all sides thereof wherein one wall, which is designated as the front wall of the facility, is adjoined by four obtusely angled, narrow, upstanding wall sections with two of the sections on each side thereof. These sections preclude rebounds of balls off of the aforementioned front wall which would be too difficult for a competitor to return against the wall in the limited playing area of the game facility.

### 3,758,107
### BICYCLE-TYPE EXERCISING APPARATUS WITH ECCENTRIC MOUNTING

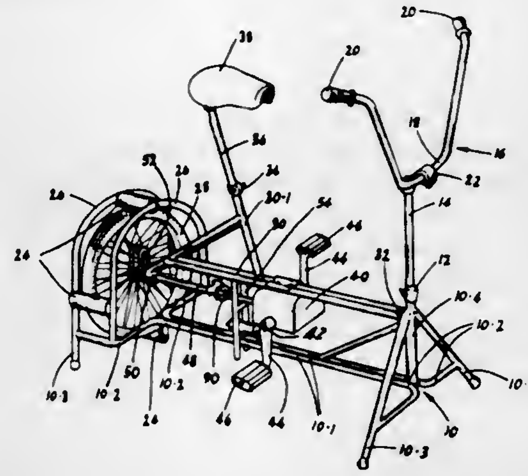
**Jacobus Daniel Potgieter, 948 Crots St., Rietfontein, Pretoria, Transvaal Province, South Africa**

**Filed Oct. 26, 1970, Ser. No. 83,872**

**Claims priority, application South Africa, Oct. 24, 1969, 697499**

**Int. Cl. A63b** *23/04*

**U.S. Cl. 272—73** **4 Claims**



The invention is directed to a stationary exercising apparatus of a cycle type whereby a person is cyclically raised and lowered causing his weight to produce a restraint on his pedalling. The apparatus comprises a frame on a base structure for tilting movement in upward and forward, and also sideward directions. The base structure has fixed handles mounted at the forward end thereof to be grasped by a user of the apparatus. The frame has a saddle for a user to sit on and a pair of connected pedals to be driven by the user. Additionally, the frame is connected to the forward end of the base structure by a universal type connection and is further supported at its rearward end on a shaft driven by the pedals, wherein the shaft is adjustably attached at an eccentric position to a vertically and transversely disposed circular member which in turn is rotatably supported on the rearward portion of the base structure. The adjustable feature of the shaft attachment comprises an elongated slot in the circular member radially extending from the center thereof, wherein the shaft is adjustably mounted at any selected position along the length of the slot. In this manner, a user of the apparatus may experience varying degrees of being raised and lowered when exercising with the pedals depending on where the shaft is positioned. Arms extending from the frame and engageably associated with the base structure control the extent of sideward tilting of the frame.

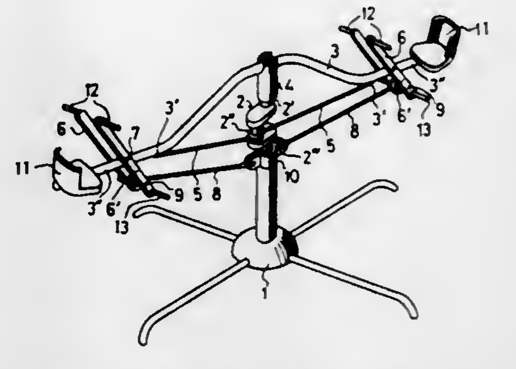
### 3,758,108
### OCCUPANT PROPELLED ROTATABLE SEESAW

**Minoru Tada, Kawaguchi-City, Japan, assignor to Kabushiki Kaisha Chuogoraku Kenkyusha, Tokyo, Japan**

**Filed June 9, 1971, Ser. No. 151,272**

**Int. Cl. A63g** *1/12, 1/32*

**U.S. Cl. 272—30** **1 Claim**



A turning seesaw which has a fulcrum unit having an upper shaft, an eccentric shaft and a lower shaft on a support. A turning lateral rod is so secured to the upper shaft of the fulcrum as to allow elevational and horizontal turning. At least one upper connecting rod is engaged at one end with a portion of the turning lateral rod intermediate the fulcrum unit and its end, and engaged at the other end with the eccentric shaft of the fulcrum unit. Two pairs of handling rods are pivotally secured to both sides of the turning lateral rod so as to rotate along the axis of the turning lateral rod in a rocking fashion. Two lower connecting rods are each pivotally secured at one end to the lower end of the handling rod and pivotally secured at the other end to the lower shaft of the fulcrum unit, and two seats are mounted at both ends of the turning lateral rod.

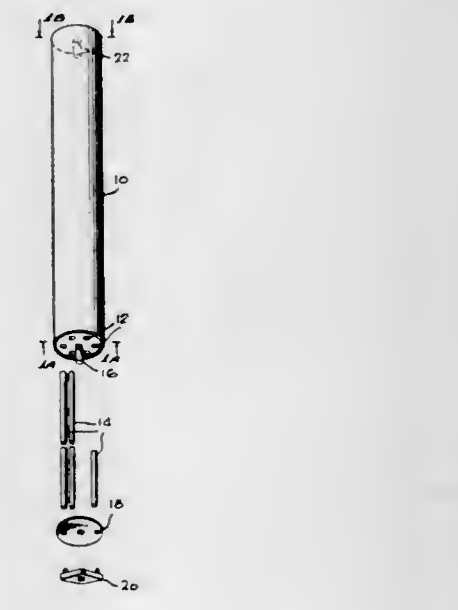
### 3,758,109
### VARIABLE WEIGHT EXERCISER

**Martin Bender, 162 N. Alta Vista Dr., Los Angeles, Calif.**

**Filed Jan. 17, 1972, Ser. No. 218,156**

**Int. Cl. A63b** *21/00*

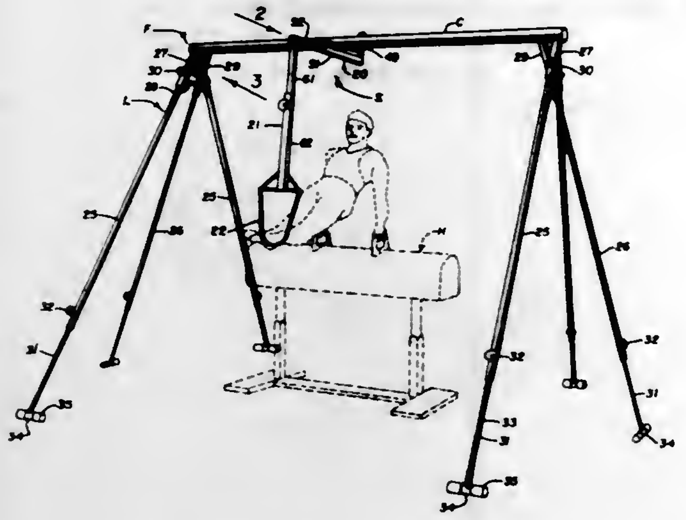
**U.S. Cl. 272—84** **11 Claims**



A variable weight exerciser which has a primary elongated bar and one or more secondary elongated bars of lesser width than the primary bar. The primary bar is adapted for insertion of the secondary elongated bars and an end cap is provided for securing the secondary bars within the primary bar.

### 3,758,110
### GYMNASTIC TRAINING AID FOR A SIDE HORSE

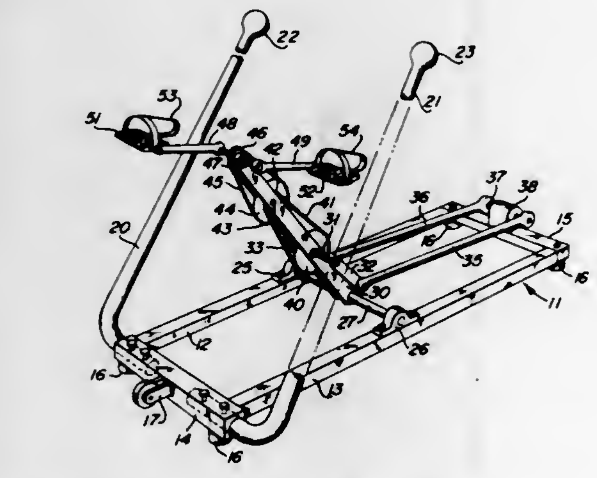
**Robert M. Fenner, 3200 S. Zuni St., Englewood, Colo., and Jack R. Harris, 1428 Teakwood, Salina, Kans.**
**Filed May 15, 1972, Ser. No. 253,329**
**Int. Cl. A63b** *5/12, 69/00*
**U.S. Cl. 272—64** **8 Claims**



The invention disclosed herein is a gymnastic training aid for developing skill in performing high double circles on a side horse. The training aid includes a rigid frame adapted to be extended above a side horse. One end of a horizontally disposed swivel arm is pivotally mounted upon this frame above the side horse so the arm will cantilever from this pivoted mounting. A stirrup bar depends from the other outward end of the swivel arm to carry a leg sling. The swivel arm and stirrup bar are adjustable in length to enable the sling to be positioned to carry the legs of a gymnast on a side horse in a proper position for the practice of high double circles or the like.

### 3,758,111
### SITU APPARATUS FOR PHYSICAL EXERCISE WITH PEDAL ACTION

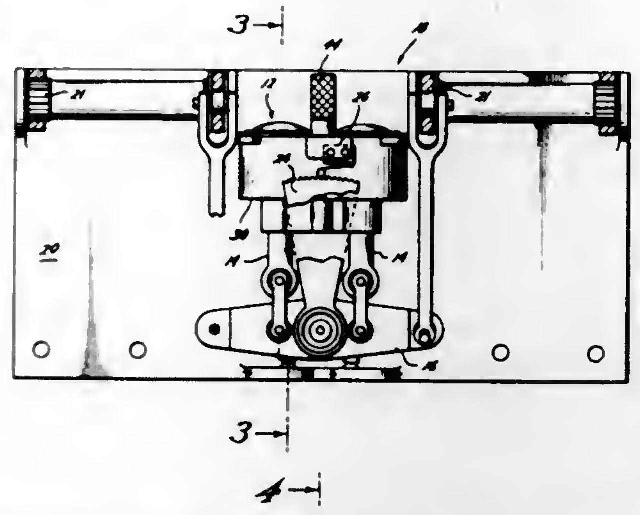
**Alexander Agamian, 1366 Kotenberg Ave., San Jose, Calif.**
**Filed May 3, 1971, Ser. No. 139,539**
**Int. Cl. A63b** *21/00*
**U.S. Cl. 272—73** **10 Claims**



In situ apparatus for exercising in which an operator grips suitable handles and actuates pedals while the angle of the body of the operator relative to a stationary frame varies continuously during each cycle. An upstanding arm is pivotally mounted on the frame. The operator actuated pedals are located on one end of the arm. Suitable linkages connect the pedals with the frame so that actuation of the pedals causes the angle of the arm to vary continuously. This arm supports the user such that when the angle of the arm with respect to the frame varies continuously, the angle of the operator with respect to the frame also varies continuously.

### 3,758,112
### FOOT PEDAL OPERATED FLUID TYPE EXERCISING DEVICE

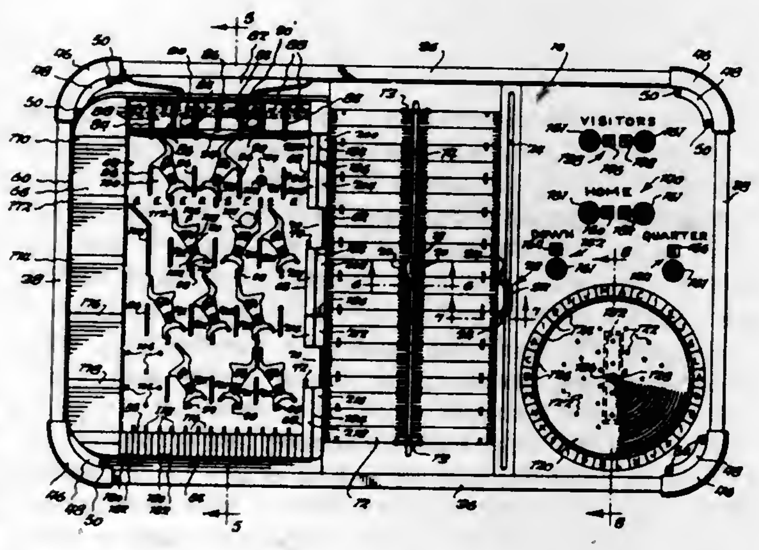
**Gerald W. Crum, Brookfield Center, Conn., and Richard J. Sauter, Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Filed May 26, 1971, Ser. No. 146,940**
**Int. Cl. A63b** *21/00*
**U.S. Cl. 272—79 C** **9 Claims**



A foot pedal operated exercising device containing a dynamometer formed of a pair of cylinders each containing a piston. The pistons are linked to each other. The upper portions of the two cylinders are joined together by a common opening to provide a common fluid reservoir and each piston is provided with a one way check valve to maintain an adequate supply of working fluid. Fluid from the driven cylinder is transmitted to the other cylinder through separate constant force spring biased valves each valve takes the predominant portion of the pressure drop thereby providing a constant force hydraulic dynamometer. A device is provided to determine the amount of movement of piston travel.

### 3,758,113
### AMUSEMENT GAME

**Nicholas D. Trbovich, West Seneca; William H. Meyer, East Aurora; Edwin T. Bean, Jr., Buffalo, and William P. Robinson, Lockport, all of N.Y., assignors to Servotronics, Inc., Buffalo, N.Y., by said Meyer, Bean and Robinson**
**Filed Mar. 18, 1971, Ser. No. 125,588**
**Int. Cl. A63f** *7/06, 7/14*
**U.S. Cl. 273—120 R** **14 Claims**



Amusement game apparatus has an inclined panel along which ball members roll and on which a plurality of pivotal members are selectively oriented for interrupting the forward motion of ball members along first paths and operable when engaged by subsequent ball members to transfer the trapped members to second paths for movement therealong. The inclined panel is usable with a game board having a simulated playing field thereon. Indicia provided on the panel and the board bear information pertaining to play results and situations, and a spring-activated random selector is used therewith.

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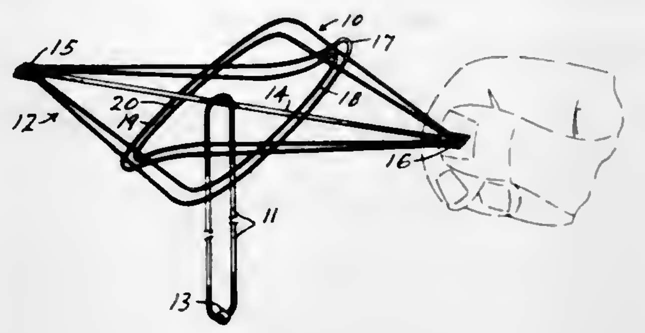
### 3,758,114
### PUZZLE

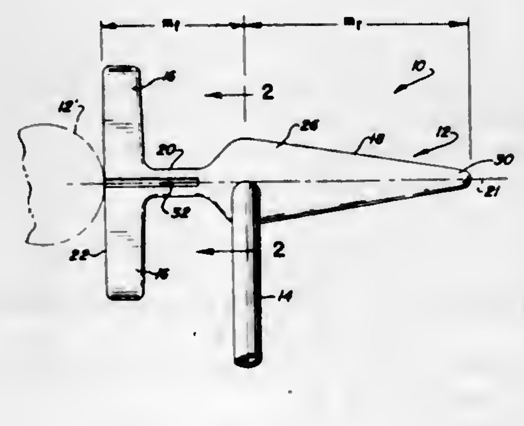
**Robert L. Ludwig, P. O. Box 26, Mt. Cory, Ohio**
**Filed Mar. 17, 1972, Ser. No. 235,528**
**Int. Cl. A63f** *9/08*
**U.S. Cl. 273—159** **7 Claims**



A puzzle including a flexible loop and a device comprising a rigid rod with first and second resilient members attached to one rod end to form first and second loops and third and fourth resilient members attached to the other rod end to form third and fourth loops. The first and third members are interlaced and the second and fourth members are interlaced. The puzzle is worked by following a program alternately to place the flexible loop on the rod and to remove the flexible loop from the rod.

### 3,758,115
### PUTTER

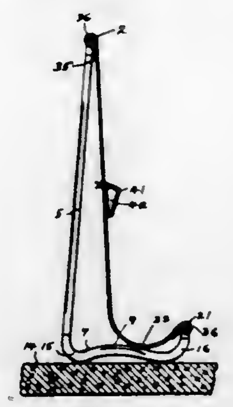
**Edward Hoglund, 1020 Lois Ave., Park Ridge, Ill.**
**Filed Mar. 23, 1972, Ser. No. 237,361**
**Int. Cl. A63b** *53/04*
**U.S. Cl. 273—164** **7 Claims**



A golf putter in which there is an enlarged somewhat elongate body and a transverse planar head connected by a narrow neck portion, the weight of the putter being balanced at least front and rear of the shaft connection and preferably laterally also, the shaft being connected substantially at the center of gravity of the putter.

### 3,758,116
### GOLF PRACTICING DEVICE

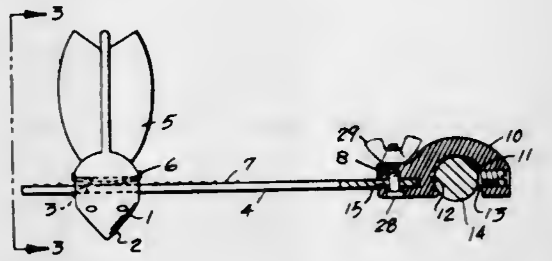
**Julius J. Pieronek, 3300 99th St., Kenosha, Wis.**
**Filed Mar. 27, 1972, Ser. No. 238,171**
**Int. Cl. A63b** *69/36*
**U.S. Cl. 273—181 A** **9 Claims**



A golf practicing device having a flexible back drop member formed of carpeting material; a self supporting frame arranged to avoid tilting; a ball receiving receptacle functioning in the nature of a target; a rim-type mounting arrangement with a substantially straight portion flush with the front face of the back drop for the receptacle to reduce to a minimum any undesirable ball deflection occurrences; a trough formed in the back drop for trapping aberrant golf balls.

### 3,758,117
### GOLF SWING TRAINING DEVICE

**John G. Harrison, 371 W. "J" St., Benicia, Calif.**
**Continuation-in-part of Ser. No. 143,916, May 17, 1971, abandoned. This application June 7, 1972, Ser. No. 260,399**
**Int. Cl. A63b** *69/36*
**U.S. Cl. 273—194 B** **8 Claims**

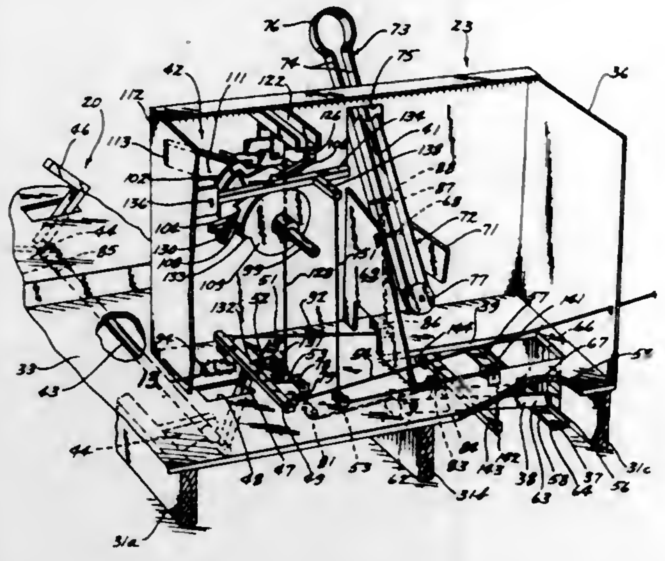


The inertia attachment includes an arm on which is a weight adjustable longitudinally of the arm and a clamp adapted to attach the arm to the shaft of a golf club which requires follow-through when swung; the weight has tail fins and is shaped to be directional in the direction into which the shaft is swung and is registerable with the head of the golf club or the like; the arm is pivoted on the clamp so as to be adjustable from an out of the way position parallel with the shaft toward and above the club head. In one embodiment, the weight may include a rotatable propeller mounted in a recess between the tail fins. In another embodiment, the weight is shiftable along a shaft and compresses a spring as the weight moves rearwardly. The weight includes a passage through which the arm extends, and the weight may be secured in various positions along the length of the arm by the provision of a spring clip located in the passage. The spring clip is adapted to selectively engage grooves provided along the length of the arm.

### 3,758,118
### GOLF BALL PRACTICE DRIVING APPARATUS

**Leland J. Willcox, Cambridge, Iowa**
**Filed Aug. 26, 1971, Ser. No. 175,271**
**Int. Cl. A63b** *57/00*
**U.S. Cl. 273—201** **5 Claims**

The apparatus has a ground support platform with an upright tee member accessible to a golfer standing on one end of the platform. The other end of the platfrom carries a ball receiving and delivering mechanism that includes an up and down pivoted ball guiding arm. In response to a single actuation of a foot operated member at the golfer's end of the platform, a single ball is released from a container and supplied to the guide arm which directs the released ball downwardly onto the tee member. On release of the foot operated member the guide arm is movable upwardly away from the tee member to permit full accessibility to the tee ball for driving purposes. A coin operated mechanism presets the number of balls to be driven during one driving round, and after such preset number of balls has been driven, the apparatus is rendered inoperative regardless of any later actuation of the foot operated member. A yardage indicating device may be associated with the apparatus for simulating competitive playing for confined or limited areas such as hotel and motel grounds, or indoor recreational rooms and the like.



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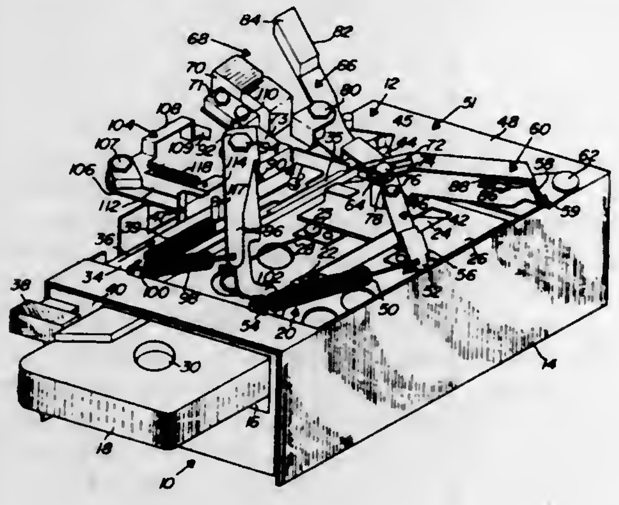
## 3,758,119
## AUTOMATIC EJECT MECHANISM FOR CASSETTE TAPE PLAYER

**Alfred R. Harlan, Glendale Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.**
**Filed July 1, 1971, Ser. No. 158,752**
**Int. Cl. G11b** *23/14, 15/24*
U.S. Cl. 274—4 E **4 Claims**



Automatic eject apparatus for use in a cassette tape player includes a pivotal, spring biased lever arm movable to an eject-ready position upon operation of a manual actuator arm from a first to a second position for the purpose of moving a cassette into the play position in the tape player. The armature of a solenoid coupled to a latch arm engageable with the lever arm upon moving the latter to the eject-ready position, is magnetically held by a holding coil to maintain the lever arm in the eject-ready position. Removal of power from the holding coil unlatches the lever arm which in turn engages the actuator arm to move the cassette out of the play position. An overcenter spring connected to the latch arm aids in moving the solenoid armature into engagement with the holding coil and returning the armature and latch arm to their initial positions upon de-energization of the holding coil. A second, spring biased pivotal lever arm movable also from an unlatched to a latched position, ejects the cassette from the player upon removal of power from the latter.

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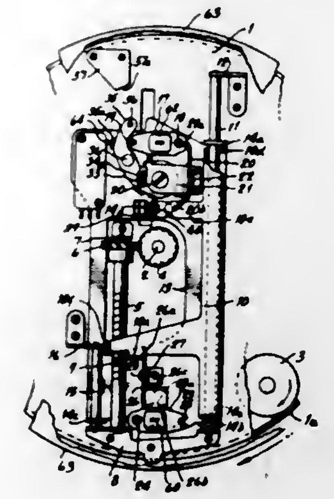
## 3,758,120
## SPIRAL TRACK MAGNETIC RECORDING AND REPRODUCING APPARATUS

**Saburo Kato, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan**
**Filed Apr. 13, 1970, Ser. No. 27,694**
**Claims priority, application Japan, Apr. 15, 1969, 44/29208**
**Int. Cl. G11b** *5/80*
U.S. Cl. 274—4 J **4 Claims**



Spiral track magnetic recording and reproducing method and apparatus employing a pair of magnetic heads for simultaneous recording or playback by both, or for recording by one head while either recording or playing back by the other head. The two heads are movably disposed on a turntable in diametrically spaced apart relation and move radially inwardly and outwardly respectively along spiral tracks of a stationary magnetic sheet. Means are provided: for automatically stopping the heads when one approaches the other's track and for returning them to initial positions; for permitting one of the heads to move from its initial position to the initial position of the other head; and for manually moving the heads to desired radial positions.

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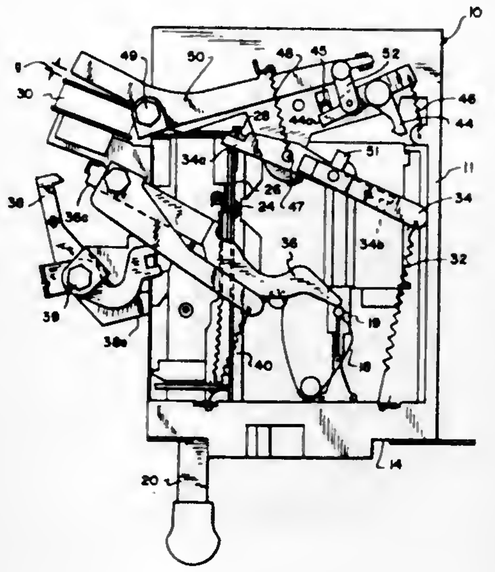
## 3,758,121
## TAPE CARTRIDGE EJECTOR SYSTEM FOR CASSETTE TAPE PLAYER

**Raymond I. Walsh, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.**
**Filed Aug. 5, 1971, Ser. No. 169,432**
**Int. Cl. G11b** *23/14, 15/24*
U.S. Cl. 274—4 E **5 Claims**

A tape cartridge ejector system for a cassette type tape player is equipped with means to automatically eject the cassette cartridge from the player upon de-energization of a low power solenoid. The de-energization of the solenoid can take place by any means as through the ignition switch, on-off switch, ejection switch, or power failure. The ejector apparatus utilizes stored mechanical energy from one or more springs and therefore even operates upon complete power failure to cause the cassette cartridge to be ejected automatically from the tape player.



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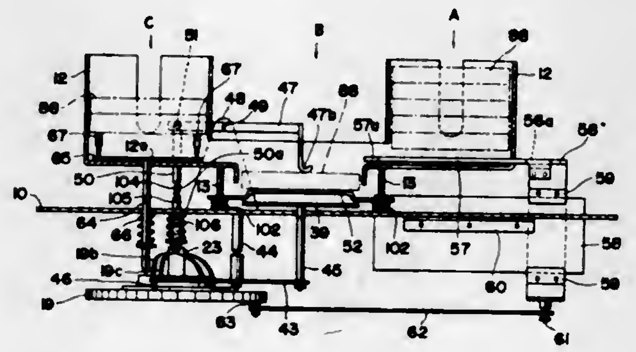
## 3,758,122
## AUTOMATIC CASSETTE CHANGING AND PLAYING APPARATUS

**Yoichi Kawaharasaki, Kamakura City, Japan, assignor to Victor Company of Japan Limited, Kanagawa-ku, Yokohama City, Japan**
**Filed Nov. 3, 1970, Ser. No. 86,483**
**Claims priority, application Japan, Nov. 5, 1969, 44/88065; Nov. 5, 1969, 44/88066; Nov. 5, 1969, 44/88067**
**Int. Cl. G11b** *23/12*
U.S. Cl. 274—4 F **6 Claims**



An automatic cassette changing and playing apparatus for automatically playing a plurality of cassettes one after another by automatically changing them after completion of playing. A predetermined cassette is taken out from a first cassette case in which cassettes yet to be played are housed and moved to a playing position for performance. After completion of performance, the cassette is moved from the playing position to a second cassette case. This cycle is repeated till all the cassettes in the first cassette case have been played.

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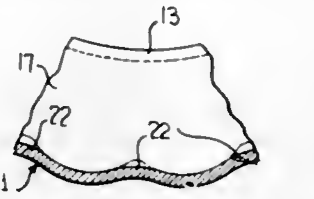
## 3,758,123
## OMEGA SEAL

**Kazimierz T. Ksieski, Inglewood, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio**
**Filed Feb. 29, 1970, Ser. No. 12,544**
**Int. Cl. F16j** *15/08*
U.S. Cl. 277—206 **7 Claims**

This disclosure relates to a seal of omega cross sectional shape having a middle portion or central loop which is reinforced by being radially corrugated thereby providing a higher elastic deflection and a higher recovery than a conventional omega seal of like dimensions.



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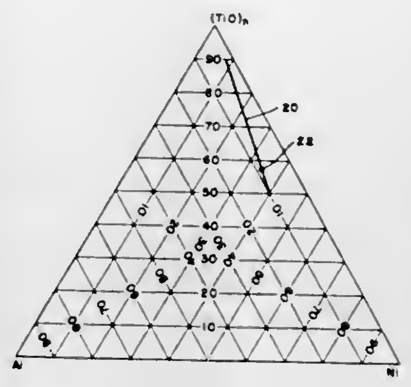
## 3,758,124
## NICKEL-ALUMINUM-TITANIUM OXIDE FLAME-SPRAY COATING FOR BEARING AND PISTON RING MEMBER WEAR SURFACES

**Carl S. Weinberger, Timonium, and William T. Hale, Freeland, both of Md., assignors to Koppers Company, Inc.**
**Continuation-in-part of Ser. No. 800,671, Feb. 9, 1969, abandoned. This application May 17, 1971, Ser. No. 144,193**
**Int. Cl. F16j** *9/22;* **B05b** *5/20*
U.S. Cl. 277—224 **9 Claims**



A bearing member, e.g., a piston ring, for use in an internal combustion engine at temperatures up to 1,200° F having a wear-resistant coating from 0.010 to 0.020 inches finished thickness flame-sprayed on a wear surface thereof, such coating, before spraying, preferably consisting of an admixture of 34.4 parts by weight of elemental nickel particles jacketed with 8.6 parts by weight of elemental aluminum with the balance being 57 parts by weight of titanium dioxide, such particles sized to pass through a 120 mesh screen but not through a 325 mesh screen.

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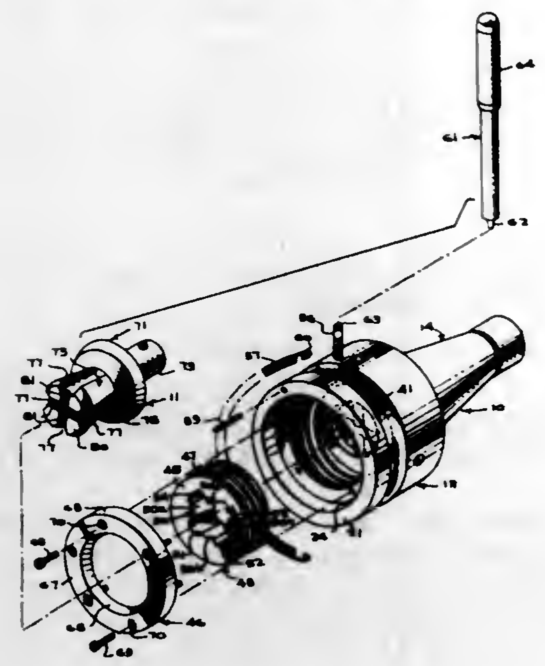
## 3,758,125
## TOOL HOLDING DEVICE

**Donald E. Cornelia, 115 Orchard Dr., St. Clairsville, Ohio**
**Filed Oct. 21, 1971, Ser. No. 191,241**
**Int. Cl. B23b** *31/04*
U.S. Cl. 279—103 **30 Claims**

A tool holding device mountable on the spindle of a machine tool generally including a tool holder support mountable on the spindle for rotation therewith, the tool holder support having a socket disposed axially when the tool holder support is mounted on the spindle, a tool holder having a protruding portion received within the socket of the tool holder support for mounting the tool holder on the tool holder support, the tool holder having means for mounting a tool thereon, the tool holder and tool holder support having means operatively engageable when the tool holder is mounted on the tool holder support, for transmitting torque therebetween, and the tool holder support and the protruding portion of the tool holder having relatively movable portions provided with conical surface sections engageable in wedging relation when the protruding portion is received within the socket of the tool holder support and the engageable portions are relatively displaced helically to lock said tool holder and tool holder support together.



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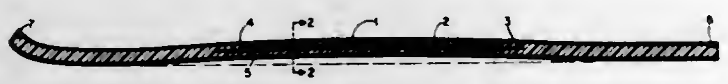
3,758,126

### SKI CONSTRUCTION AND METHOD OF FORMING THE SAME

**John C. Zemlin, Reading, and Glenn W. Dow, Newburyport, both of Mass., assignors to Graves Corporation, Newburyport, Mass.**

**Filed May 21, 1971, Ser. No. 145,619**
**Int. Cl. A63c** *5/12*

U.S. Cl. 280—11.13 L **8 Claims**



A multi-layer ski that changes stiffness automatically responsive to snow temperature. The ski has an inner layer, a bottom layer and an outer layer on the top and side surfaces. The outer layer is formed from an elastomer, preferably a polyurethane having a thermal expansion coefficient between about 200 and 300 in/in/°C$\times 10^{-6}$

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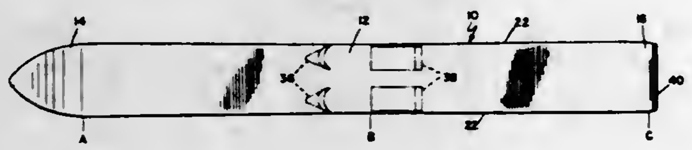
3,758,127

### SINGLE SNOW SKI

**Michael D. Doyle, 1002 Hermes St., Leucadia, Calif., and William L. Bahne, Jr., 128 Daphne St., Leucadia, Calif.**

**Filed May 6, 1971, Ser. No. 140,679**
**Int. Cl. A63c** *5/00*

U.S. Cl. 280—11.13 S **6 Claims**



A snow ski of sufficient width to hold both feet in close side by side position in conventional bindings or boot retainers. The ski has a stiff central body portion, with a flexible tail and an even more flexible nose or tip, and a minimum bottom camber. The relationship of the stiffness and flexibility is important to the performance of the ski. Advantages of the snow ski are extreme maneuverability, good pivot turn ability, controlled turns at all speeds and good support on powder snow due to the large surface area.

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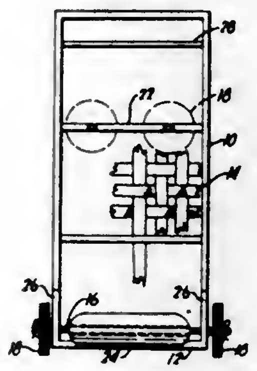
3,758,128

### COMBINED BEACH CHAIR AND SHOPPING CART

**Lauri Stenwall, 28 White Ter., Ramsey, N.J.**

**Filed June 24, 1971, Ser. No. 156,386**
**Int. Cl. B62b** *1/20*

U.S. Cl. 280—47.25 **4 Claims**



A device which can be used either as a beach chair or a beach, shopping and laundry cart comprising an open frame having vertical and horizontal sections covered with webbing and having means for detachably storing packages to be transported.

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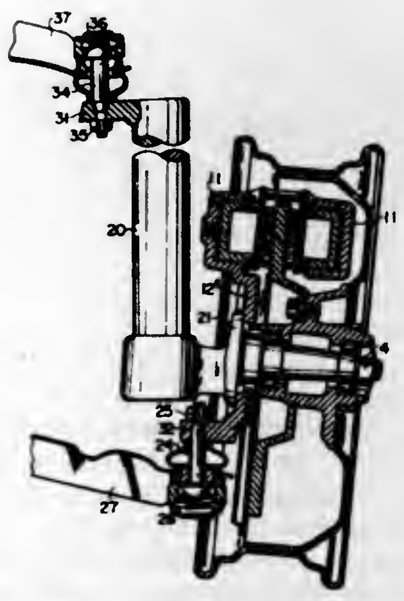
3,758,129

### SUSPENSION SYSTEM FOR VEHICLES

**Masakazu Ishikawa; Jyuichi Shibatani, and Masanao Shiomi, all of Aichiken, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan**

**No Drawing. Filed Feb. 3, 1971, Ser. No. 112,236**
**Claims priority, application Japan, Feb. 18, 1970, 45/13427**
**Int. Cl. B62d** *7/14, 7/18*

U.S. Cl. 280—96.1 **4 Claims**



In a ball-joint type front-wheel suspension system, a disc wheel is supported in a vertically oscillatable manner by a knuckle and a spindle connected to the vehicle body. A brake supporting plate is secured to a flange of the spindle, or to the mounting portion of the knuckle in the case of a front wheel drive. A caliper of a disc brake is formed integrally with the brake supporting plate at one side thereof. A lower mounting seat is formed integrally with the brake supporting plate at the other side thereof. By way of the lower mounting seat and a ball joint or a joint pin, a lower arm is installed so that steering of the wheel is possible.

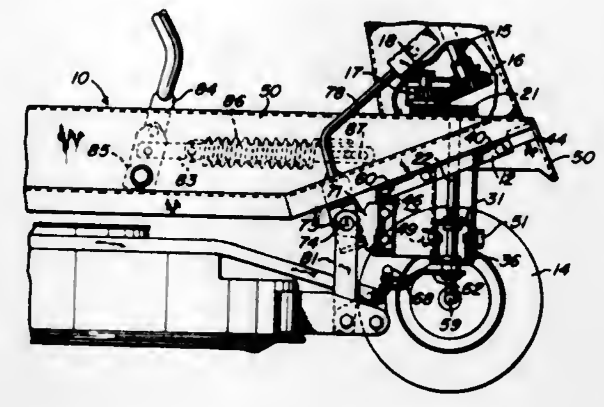
3,758,130

### RIDING MOWER

**Robert B. Mead, Wilmington, Ohio, assignor to Boise Cascade, Boise, Idaho**

**Filed July 19, 1971, Ser. No. 163,881**
**Int. Cl. B62d** *7/10*

U.S. Cl. 280—96 **11 Claims**



A front end suspension and steering system for a ground traversing vehicle providing a deck elevated relatively to ground level. A beam-like wheel support member in an underlying relation to the deck is capable of relative rocking motion in a transverse plane and carries spaced apart wheel axles. A steering mechanism accessible from above the deck connects to the wheel axles for rotary adjustment thereof. The steering mechanism incorporates universal means enabling rocking movement of the support member responsive to changes in terrain in any position of angular adjustment of the wheel axles.

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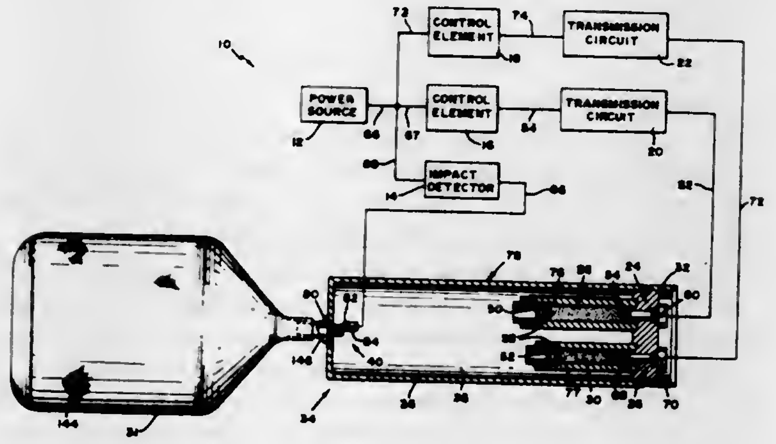
3,758,131

### INFLATION APPARATUS FOR SAFETY DEVICE

**Robert L. Stephenson, Sterling Heights, and Donald G. Radke, Rochester, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Jan. 11, 1972, Ser. No. 217,052**
**Int. Cl. B60r** *21/08*

U.S. Cl. 280—150 AB **14 Claims**



Safety apparatus disposed within a motor vehicle subject to impact for transmitting an electrical current from a power source to a gas releasing means connected to a gas containing portion of a gas source during a fixed time interval and to a plurality of gas generating charges within a gas generating portion of the gas source during successive time intervals at least two of which are caused to vary in inverse proportion to the impact velocity of the vehicle by means differently responsive to the impact velocity. Pressurized gas is released from the gas containing portion upon receipt of the electrical current by the gas releasing means. Gas generated by each charge receiving an electrical current enters the gas containing portion and admixes with the pressurized gas therein. As a result, the combined pressurized and generated gases pass into a bag, which inflates during a controlled time interval varying inversely with the impact velocity to a controlled pressure varying directly with the impact velocity.

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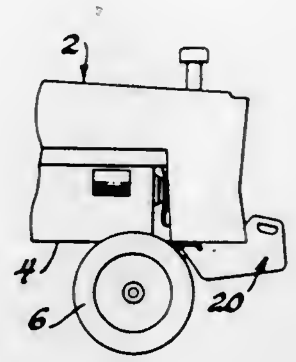
3,758,132

### TRACTOR COUNTER WEIGHT ASSEMBLY

**Lee Eugene Elfes, Bloomfield Hills, and Leo John Lorenz, Farmington, both of Mich., assignors to Massey-Ferguson, Inc., Detroit, Mich.**

**Filed May 7, 1971, Ser. No. 141,123**
**Int. Cl. B60r** *27/00*

U.S. Cl. 280—150 E **16 Claims**



A tractor counter weight assembly including weight members each having a body with a supporting lip formed thereon and a clamping portion spaced from the supporting lip. A supporting frame member on the tractor body is engageable by the supporting lip of each weight member. Clamping means on the tractor body spaced from the supporting frame engages the clamping portion of each weight member when the supporting lip thereof is engaged with the supporting frame to prevent disengagement of the lip from the supporting frame.

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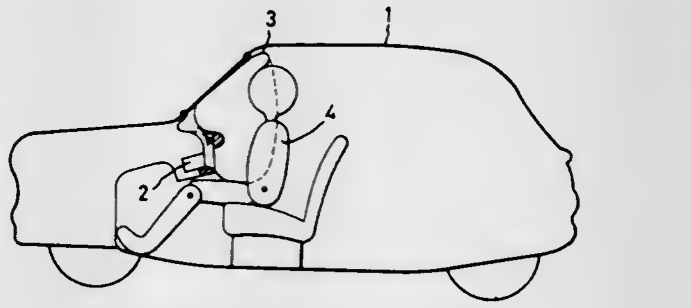
3,758,133

### SHOCK ABSORBING AIR BAG APPARATUS IN A MOTOR CAR

**Motohiro Okada, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed June 3, 1971, Ser. No. 149,695**
**Claims priority, application Japan, June 4, 1970, 45/47581**
**Int. Cl. B60r** *21/08*

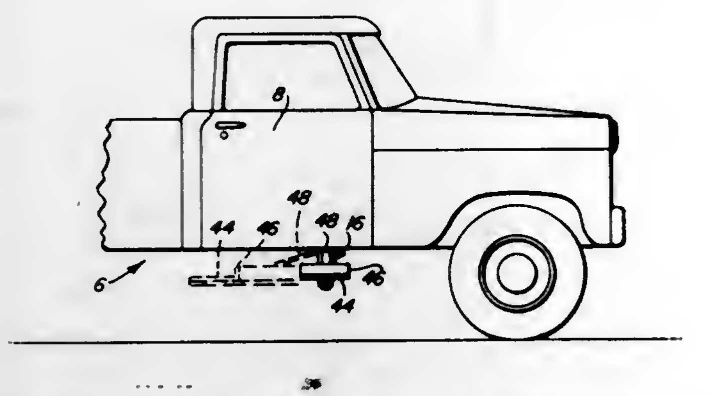
U.S. Cl. 280—150 AB **6 Claims**



To prevent rebound of a driver from an inflated air bag in a motor vehicle at the time of a collision, a valve or escape device is coupled to the air bag to permit expulsion of air from the bag as the driver is thrust against the bag. The valve may be connected to an air chamber through which the bag is inflated by a gas generating apparatus, and the valve is subjected to operation by an actuation which acts to open the valve when the air bag presses against the actuator upon impact of the driver with the air bag. The valve may also be formed by a thin portion of the air bag which is pressed against a cutter when the driver impacts against the air bag whereby the bag is cut and the air can escape.

### 3,758,134
### BREAKAWAY STEP FOR HIGH-CLEARANCE VEHICLES

**George E. Stewart, R.F.D. 1, Hamilton, Kans.**
**Filed Oct. 18, 1971, Ser. No. 189,961**
**Int. Cl. B60r** *3/021*
**U.S. Cl. 280—163** **2 Claims**



A breakaway step construction which lends itself to reliably safe use on the frame structure of a high-clearance wheel supported vehicle. It comprises a mounting bracket supported in a vertical position from the vehicle frame, said bracket supporting the a horizontal arm. An ample but suitably small step is fixedly mounted on an outward end of the arm. Novel means serves to pivotally mount the inward end of the arm on the bracket in a manner to permit the arm and step to swing through an arcuate path in the event the step strikes an object while the vehicle is moving. Pressure responsive means fixedly joins the inner pivoted end of the arm to the bracket. It functions to retain the arm and step in an outstanding normally accessible position and permits the same to swing and retract to an out-of-the-way position, whenever necessary or desired.

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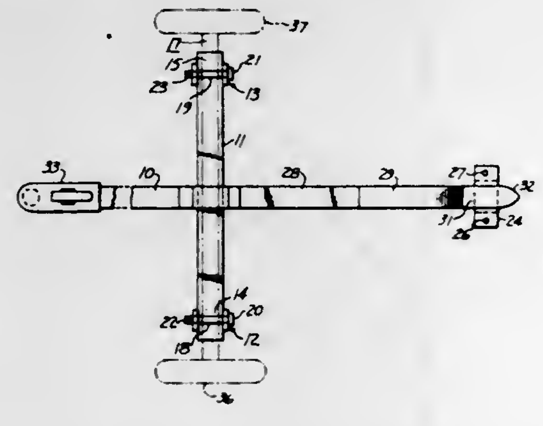
### 3,758,135
### AUTOMOBILE TOW BAR

**August A. Kniff, 137 S. Eucla, San Dimas, Calif.**
**Filed June 21, 1972, Ser. No. 264,766**
**Int. Cl. B60p** *3/06;* **B60d** *1/14*
**U.S. Cl. 280—402** **11 Claims**



An automobile tow bar for rear-engine vehicles which comprises a central member having an offset area that permits slipping the tow bar under a front axle area into a clip fixed to the center of the frame of an automobile. A cross member is fixed to the longitudinal central member, and the cross member has clevis members which can nest the torsion bar and axle assemblies of the front vehicle suspension to carry the weight of the front of the vehicle off the ground. The forward end of the central longitudinal shaft of the tow bar is equipped with linkage for attachment to a towing vehicle. Lifting the tow bar, to engage the tow vehicle's hitch, raises the front wheels of the towed vehicle from the ground and supports the weight of the towed vehicle on its torsion rod axle assembly, thus relieving other more critical parts from excessive strain.

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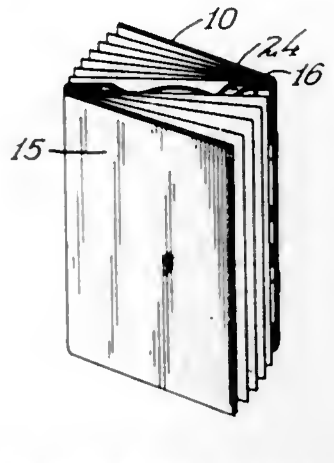
### 3,758,136
### DUPLEX BOOK

**Reynolds Guyer, 1060 33rd Ave. S.E., Minneapolis, Minn.**
**Filed Nov. 26, 1971, Ser. No. 202,262**
**Int. Cl. B42d** *1/00, 3/12*
**U.S. Cl. 281—16** **4 Claims**



Two page cover member each having one cover member secured in face contact. A pocket for receiving a disc record is provided between the attached cover members.

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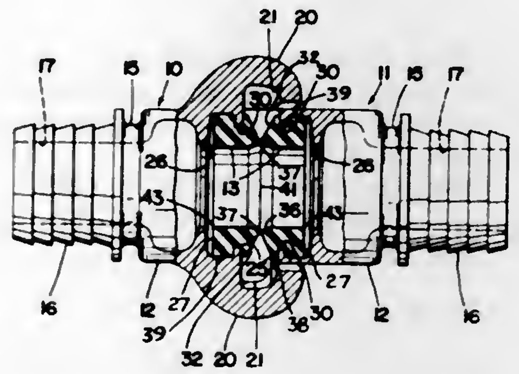
### 3,758,137
### QUICK DISCONNECT COUPLING

**Sydney L. Kershaw, South Euclid, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio**
**Filed Nov. 3, 1971, Ser. No. 195,096**
**Int. Cl. B60d** *1/08*
**U.S. Cl. 285—70** **6 Claims**



A quick coupling comprising a pair of coupling elements adapted to be connected to each other, each element having a deformable gasket retained at an end thereof for sealing engagement with each other at their outer faces when the coupling elements are connected, the outer faces being frusto-conical and surrounding a bore through the gasket. The gaskets at their inner ends have an initial clearance with the coupling elements to permit axial deflection of the gaskets whereby during axial connecting movement of the two elements the frusto-conical outer faces swing into a planar position with a minimum of mass deformation during a major part of the connecting movement and with the gasket inner ends engaging walls of the coupling elements near the completion of the connecting movement whereby sufficient mass deformation of the gaskets occurs to increase the sealing contact between the gaskets and to ensure adequate resistance to disconnect movement of the elements.

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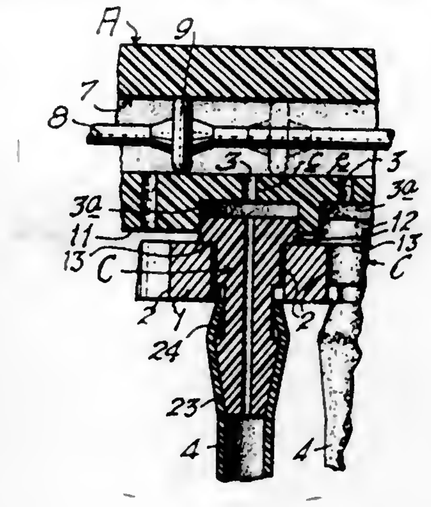
### 3,758,138
### TUBE CONNECTION FOR FLUID HANDLING APPARATUS

**Richard J. Roseman, 72 Stafford Rd., Colonia, N.J.**
**Filed Oct. 21, 1971, Ser. No. 191,245**
**Int. Cl. F16l** *3/04, 5/00*
**U.S. Cl. 285—158** **1 Claim**

In fluid handling apparatus, a block has a chamber and ports opening from said chamber through one side of the block, a support plate has a hole alined with each port, a connector for a flexible tube is located in each hole and is formed at one end for connection thereto of a flexible tube and has at its other end a head clamped between said support plate and said side of the block with a fluid-tight joint.



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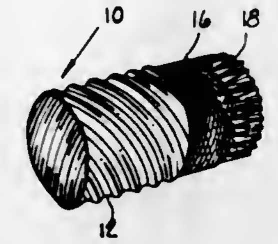
### 3,758,139
### CONNECTION ENDS ON DUCT OR CONDUIT SECTION

**Robert H. Meserole, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.**
**Division of Ser. No. 88,816, Nov. 12, 1970, Pat. No. 3,708,867.**
**This application Sept. 8, 1972, Ser. No. 287,372**
**Int. Cl. F16l** *25/00, 35/00*
**U.S. Cl. 285—332** **2 Claims**



A method of reforming ends of tubular sheet metal duct or conduit sections having helically grooved walls so as to enable such sections to be connected in end-to-end relationship.

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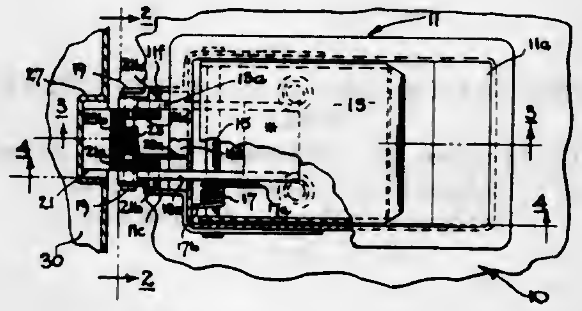
### 3,758,140
### DOOR LATCHING MECHANISM

**Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.**
**Filed May 24, 1972, Ser. No. 256,412**
**Int. Cl. E05c** *3/08*
**U.S. Cl. 292—223** **11 Claims**



A door latching mechanism has a frame with a recessed portion in which a handle for operating the latching mechanism is pivotally mounted. A pair of arms extend from the frame, these arms pivotally supporting a bolt. Spring means are provided to urge the bolt towards its latching position. Actuator means is provided on the handle which extends therefrom and engages projections which extend from the bolt. When the handle is rotatably drawn out of the recessed portion of the frame, the actuator means drives against the bolt projections to rotatably withdraw the bolt away from the striker plate, thereby unlatching the door with which the mechanism is used. If the bolt should inadvertently become jammed in its unlatched position, a flagging signal is provided indicating the failure of the bolt to properly latch.

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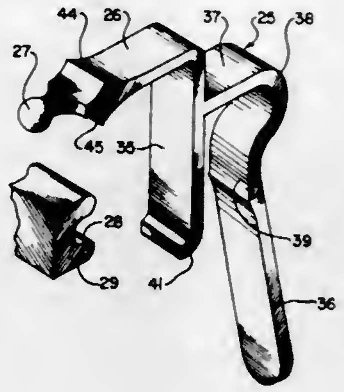
### 3,758,141
### DOOR CHECK

**Morris Weinberger, 387 Amsterdam, New York, N.Y.**
**Filed Dec. 16, 1970, Ser. No. 98,834**
**Int. Cl. E05c** *17/04*
**U.S. Cl. 292—262** **14 Claims**



A door check is provided with a laterally extending nose portion and depending clamping portions adapted to engage the upper edge of a door and have easy and free contact with the side faces of the door and with one of the clamp portions having downwardly and outwardly extending handle permitting the grasping of the door check for the removal of the door check from the upper edge of the door for the placing of the same thereover. The opposing faces of the clamp portions are provided with rounded door face engaging surfaces having one form with laterally extending rows opposing one another. Also there is provided on the nose portion adjustable devices to alter the effective length of the nose portion so that an adjustment can be made without a change in the position of the door check upon the door. Certain other forms of the invention are adapted for use with spring biased doors to normally hold the doors in their closed positions and this door check mainly serving to hold the door open against the action of their springs. With one form of the invention the effective length of the forwardly extending nose portion can be altered from the rear of the door check without changing the position of the door check upon the door. With one form of the invention a velcro like retaining arrangement is used for the engagement of the nose end of the laterally extending nose portion with cooperating velcro like keeper located upon the door frame.

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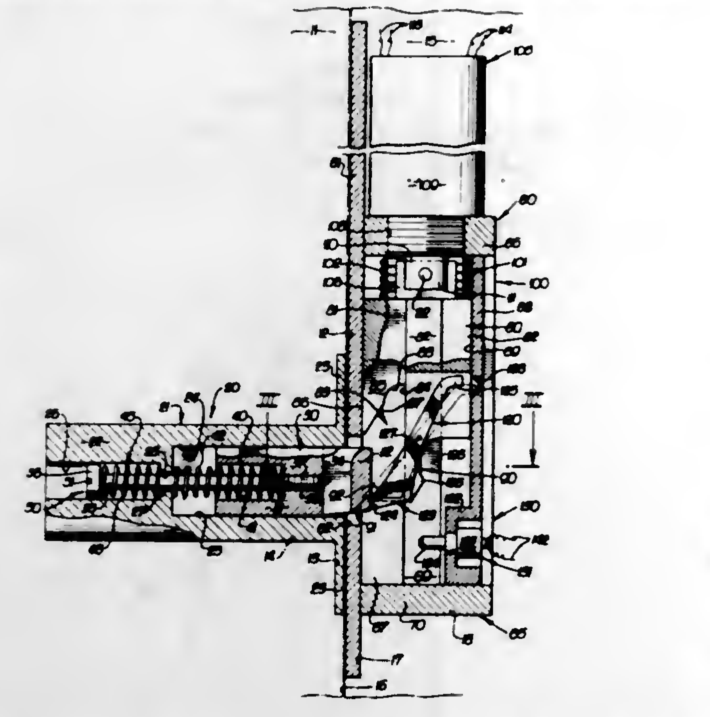
### 3,758,142
### LOCK CONSTRUCTION

**Klaus W. Gartner, 5711 Ravenspur Dr., Palos Verdes Peninsula, Calif.**
**Filed Aug. 6, 1971, Ser. No. 169,750**
**Int. Cl. E05c** *1/08*
**U.S. Cl. 292—254** **10 Claims**

The lock, includes a door mounted striker assembly comprising a housing; a striker, movably mounted in the housing for movement between a flush position, a normally extended position, and an extreme extended position; an indented nose on the striker; opposed springs in the housing and engaging the striker for biasing the striker to the normally extended position; and a threaded screw for adjusting the location of the normally extended position relative the housing, and includes a jamb mounted striker plate assembly comprising a striker plate; a hollow housing mounted on the back of the striker plate; a cross bolt, movably mounted in the housing for movement between retracted and protruding positions; a lug protruding from the cross bolt; oppositely acting spring and solenoid in the housing and engaging the cross bolt to move it between positions; a dog in the cross bolt for temporarily holding the cross bolt in the retracted position while the door is open; and a switch connected to a light and being operated by the cross bolt whereby the insertion of the nose of the striker into the striker plate, moves the dog to release the cross bolt which is moved by the spring to the extended position while the lug thereof enters the identation to pull the striker to the extreme extended position for locking, with energizing of the solenoid returning the cross bolt to the retracted position to free the striker for being returned to the normally extended position so that opening of the door will move the striker to the flush position.



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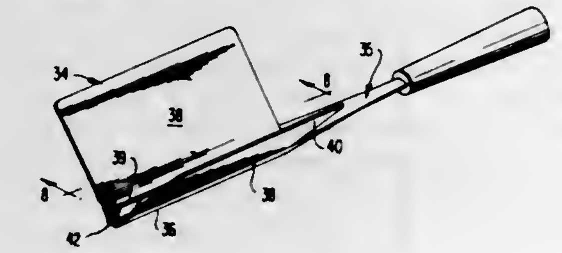
### 3,758,143
### SPATULA

**Joseph F. Godlewski, Gaithersburg, Md., assignor to Vincent K. McMahon, Gaithersbury, Md., a part interest**

**Filed Nov. 30, 1971, Ser. No. 203,368**

**Int. Cl. A47j** *43/28*

**U.S. Cl. 294—8** **7 Claims**



A spatula for lifting and turning food items on a grill or the like embodies a pair of spatula blades arranged substantially at right angles. A manipulating handle is secured to the blade structure and extends beyond one end thereof along a line parallel to the vertex of the dihedral angle formed by the blade. The construction of the spatula assists in the turning over of eggs, hamburgers and the like and tends to shield the user from splattering by hot grease. The device may also be used as a scoop for certain foods in particle form.

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### 3,758,144
### VACUUM CENTER LIFT

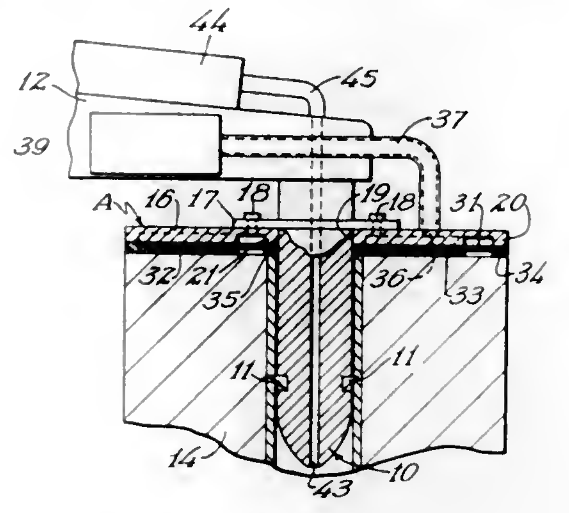
**Herbert Francis Dalglish, 284 Cherokee Ave., St. Paul, Minn.**

**Filed Jan. 6, 1972, Ser. No. 215,760**

**Int. Cl. B66c** *1/02*

**U.S. Cl. 294—64 R** **6 Claims**

An apparatus for lifting rolls of sheet material comprising a probe with expansible jaws for engaging the center of the roll of material in combination with a vacuum disc which prevents roll of material from telescoping.



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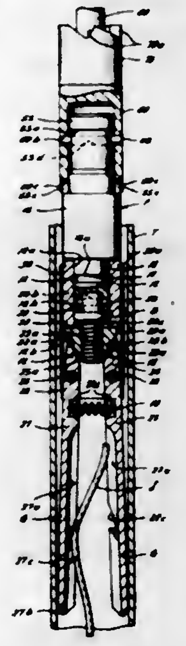
### 3,758,145
### FISHING TOOL

**Myron M. Kinley, 103 Maple Lane Ave., Chickasha, Okla.**

**Filed Feb. 23, 1972, Ser. No. 228,517**

**Int. Cl. E21b** *31/12*

**U.S. Cl. 294—86.29** **10 Claims**



A fishing tool adapted to be lowered, raised and manipulated to retrieve cables, wirelines, tubing, tools or other fish or junk from a well, wherein means are provided to automatically release the gripping action on the fish when a predetermined gripping force is applied thereto for thereby preventing damage to the tool from the application of excess torque.

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### 3,758,146
### GRIPPING DEVICE FOR USE IN LAYING PIPES AND TUBES

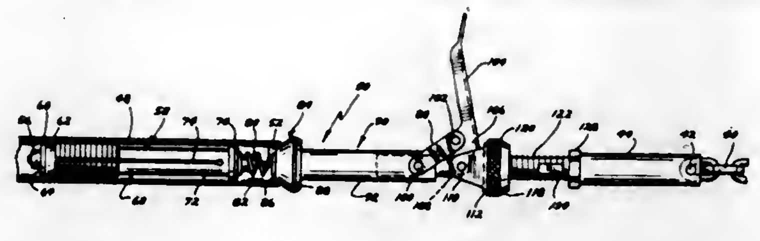
**William C. Kaercher, Jr., Minneapolis, Minn., assignor to Jacobsen Manufacturing Company, Racine, Wis.**

**Filed Aug. 9, 1971, Ser. No. 170,044**

**Int. Cl. B66c** *1/56*

**U.S. Cl. 294—94** **15 Claims**

The gripping device comprises an expansible mandrel mechanism, an over-center toggle mechanism, a coil spring between the mechanisms, and a flexible cable extending through both mechanisms as well as the interposed spring. The mandrel mechanism includes a plurality of resilient jaws, manual actuation of the toggle mechanism into its over-center position causing the cable to pull a cone in a direction to wedge the jaws outwardly against the interior of the pipe or tube to be buried. The toggle mechanism reacts against an adjusting nut so that the amount of cone movement, and hence the amount of jaw expansion, can be altered. The toggle mechanism connects, via a chain, to a mole that is oscillated forwardly and rearwardly to form a tunnel through which the gripping device and the clamped pipe or tube is pulled.



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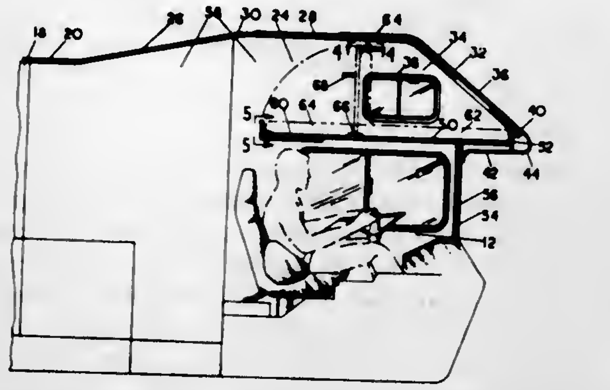
### 3,758,147
### MOBILE UNIT WITH OVERHEAD COMPARTMENT

**Maurice G. Burton, 1958 E. 70th South, Salt Lake City, Utah**

**Filed Nov. 30, 1971, Ser. No. 203,141**

**Int. Cl. B60p** *3/38*

**U.S. Cl. 296—23 R** **6 Claims**



A mobile home unit having an overhead compartment therein including a hump portion disposed above the driver's cab with a foldable bed means therein forming the bottom of the compartment and having a streamline nosepiece member forming the front end of the compartment.

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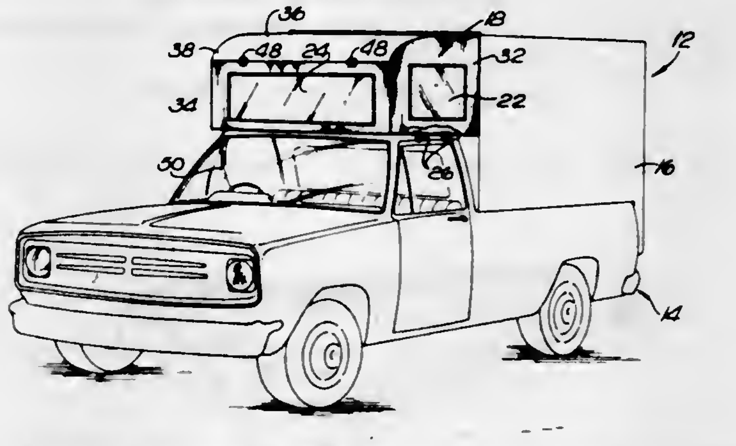
### 3,758,148
### CONVERTIBLE CAMPER

**Julia A. Sowma, 1947 Vista Del Mar, Hollywood, Calif.**

**Filed Jan. 24, 1972, Ser. No. 220,145**

**Int. Cl. B60p** *3/32*

**U.S. Cl. 296—23 MC** **6 Claims**



A camper having enclosing walls and a roof which define an openable air compartment. A terminal portion is displaced with respect to the roof so as to expose the air compartment. The terminal portion may be releasably secured to the roof at one end and hinged at the other end so as to enable movement of the terminal portion with respect to the roof. The open-air compartment may be the cab-over portion of a camper. Moreover, the side walls of the compartment may also be made movable.

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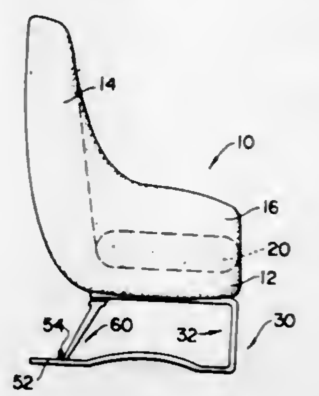
### 3,758,149
### CHAIR WITH U-SHAPED WOODEN SUPPORT BEAMS

**Harry G. Emold, Milwaukee, Wis., assignor to Relaxaway, Inc., Milwaukee, Wis.**

**Filed Dec. 23, 1971, Ser. No. 211,398**

**Int. Cl. A47c** *7/00, 7/20, 3/02*

**U.S. Cl. 297—259** **9 Claims**



A chair seat and back structure is supported for rocking motion by a pair of U-shaped molded plywood beams of substantially constant cross-section, each beam having a floor engaging portion with a long intermediate upwardly bowed part. A pivoted locking member is provided for selective positioning to prevent rocking.

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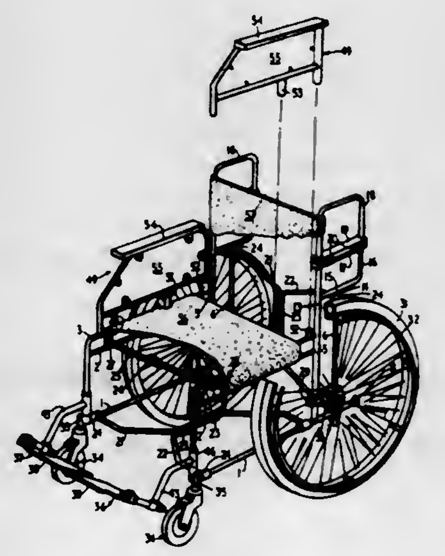
### 3,758,150
### COLLAPSIBLE WHEEL CHAIR

**Patrick Yelverton Williams, 2 Morotai Cres., Castlecrag, New South Wales, Australia**

**Filed June 28, 1972, Ser. No. 267,203**

**Int. Cl. A61g** *5/02;* **A47c** *5/10*

**U.S. Cl. 297—45** **3 Claims**



A collapsible wheel chair the weight of which is of the order of 30 lbs and in its collapsed position its width is of the order of 7½ inches. The chair comprises two tubular side frames each formed of a bottom rail and two top rails joined by a single front post and the front member of two rear posts, said side frames being coupled together by two tubular toggle members and a brace, each said toggle member comprising two U members articulated at the base of the U's and having mounting sleeves on the ends of the U limbs, one said toggle member being mounted by said sleeves on the bottom rails between the front posts and the front members of the rear posts, the other said toggle member being mounted on the rear members of the rear posts, said brace being an articulated bar incorporating an off centre lock stop, a sleeve on each end of said brace, each sleeve mounted on a post between the respective top rails adjacent the front ends thereof; axle blocks one mounted on each pair of rear posts with an axle projecting outwardly therefrom, wheels each with a hand manoeuvering ring thereon and the hub offset outwardly mounted on the respective axles; castor wheels, a footrest, a seat and back rest are included.

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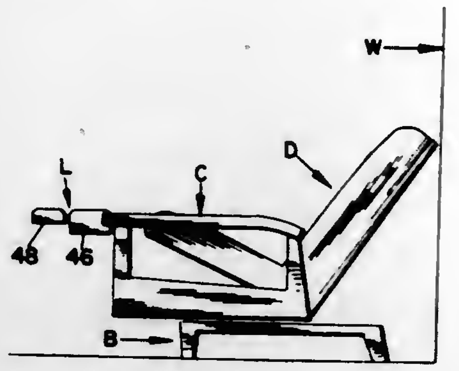
### 3,758,151
### RECLINING CHAIR

**Frank Manuel Re, Holyoke, Mass., assignor to Dual Manufacturing and Engineering, Incorporated, Holyoke, Mass.**
**Filed Feb. 1, 1972, Ser. No. 222,563**
**Int. Cl. A47c** *1/02*
**U.S. Cl. 297—83** **10 Claims**



A reclining chair adapted to be positioned in close adjacency to a room wall when in the upright sitting position and yet so structured as to allow ready assumption of any of a variety of reclined positions of occupancy without physical contact of any element thereof with the same room wall, the chair concept envisioning a fixed platform, a chassis movable linearly relative to the platform, and a body-supporting unit movable between the sitting and reclining positions relative to the chassis with a concomitant movement of a leg supporting unit between the retracted and extended positions respectively, a propeller link or other means connecting between the body-supporting unit and platform for propelling the body-supporting unit relative to the platform, with the chassis moving forwardly and progressively away from the wall as transition is made from upright sitting position to progressive positions of reclination, wherefore the body supporting unit is concomitantly moved forwardly away from the room wall, and with the chassis moving rearwardly and progressively toward the wall as transition is made from positions of reclination to upright sitting position, wherefore the body-supporting unit is concomitantly moved rearwardly and toward the room wall.

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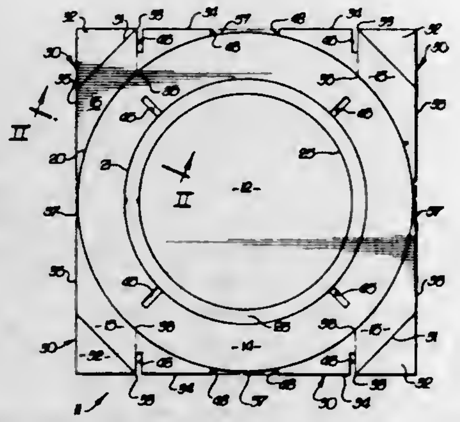
### 3,758,152
### CIRCULAR TABLE AND SEAT CONSTRUCTION

**Gary F. Lake, 487 Short St., Bishop, Calif.**
**Filed Oct. 21, 1971, Ser. No. 191,532**
**Int. Cl. A47b** *3/06*
**U.S. Cl. 297—157** **6 Claims**



A circular table construction made from a rectangular sheet of material by cutting a minimum number of table parts and with the material waste reduced to a minimum, said table construction having a circular table top and a continuous annular seat member therearound and secured in assembly by a plurality of support means diametrically arranged; the table construction affording virtually unobstructed leg space beneath the table top and being readily relocatable as by rolling on the outer circumferential edge of the annular seat member.

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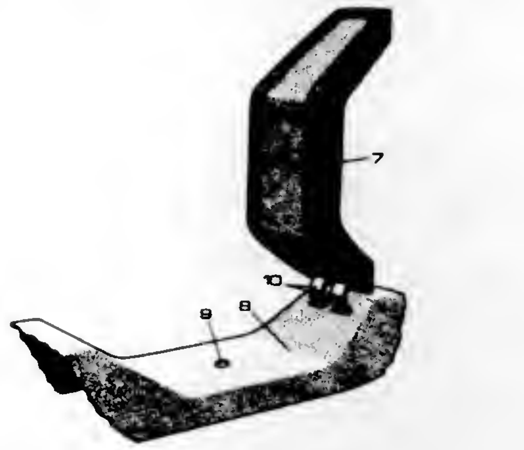
### 3,758,153
### PNEUMATIC SEAT FOR CYCLES

**Gary Wayne Bonikowsky, c/o Shalom Conference Centre RR2, Schomberg, Ontario, Canada**
**Filed Mar. 31, 1972, Ser. No. 240,160**
**Int. Cl. B62j** *1/26*
**U.S. Cl. 297—199** **1 Claim**



In a seat for cycles, it is most commonly known to have a resilient, porous foam cushion supported by a rigid base and usually protected by a durable weatherproof and chemical resistant fabric covering, the degree of firmness of the seat being inherently constant and dictated by the density and thickness of the foam. In this invention, a flexible, durable, weatherproof and chemical resistant non-porous molded upper shell is bonded to a rigid or semi-rigid underside portion having an air valve, so as to form a cushion assembly enclosing an inflatable, airtight cavity which rests on a rigid supporting base. With this invention, the degree of firmness of the seat may be adjusted to suit individual comfort requirements by increasing or decreasing the air pressure within the cushion assembly cavity by way of the air valve. Moreover, due to the ideal for-mentioned properties of the molded upper shell, the need for a protective durable fabric covering is eliminated. The cushion assembly may be hinged on the supporting base to raise or have similar accomodation for convenient access to the air valve.

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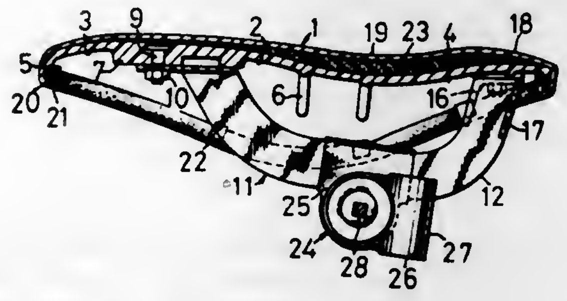
### 3,758,154
### PLASTIC SADDLE FOR BICYCLE

**Katuhiko Kitaguchi, Osaka, Japan, assignor to Taihei Industries Co., Ltd., Osaka-fu, Japan**
**Filed Nov. 30, 1971, Ser. No. 203,265**
**Int. Cl. B62j** *1/08*
**U.S. Cl. 297—214** **3 Claims**



A plastic saddle comprises a plastic saddle top and a plastic support therefor. The saddle top is gently inclined upward, extends sidewise in width, has a peripheral flange and is provided on its back face with a thick abutting portion in front and two thick abutting portions at rear opposite sides. The support principally comprises two support strips which are spaced apart sidewise by a greater distance at their rear portions than at their upwardly inclined front portions providing an abutment corresponding to the front abutting portion of the saddle top. The rear portions are abruptly inclined upward and are formed at their ends with abutments extending sidewise in facing relation to the rear abutting portions of the saddle top. Extending between the abutments and the outer walls of the support strips are reinforcing plates approximately triangular as seen from the rear. The support strips are interconnected by a deflection preventing plate in the vicinity of the reinforcing plates. The saddle top is supported on the support at three points by face-to-face contact between the corresponding abutting portions and abutments with these parts detachably secured together by connecting means such as bolts and nuts. At an intermediate portion of the support strips means is provided for fixedly mounting the saddle on the seat post at an adjustable angle.

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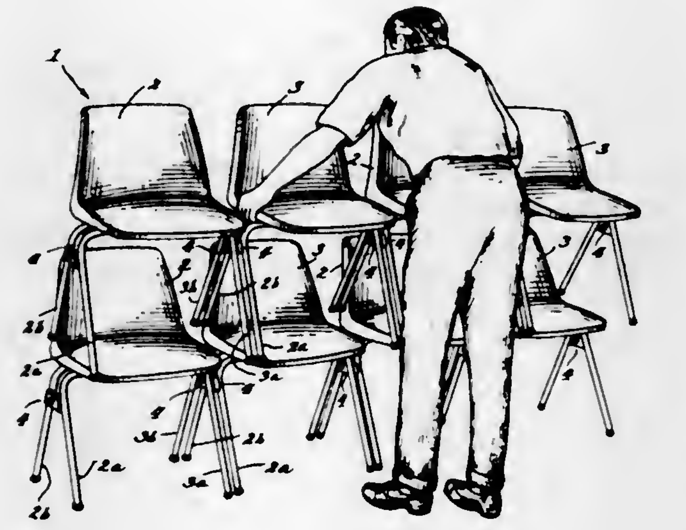
### 3,758,155
### GANG CHAIR CONSTRUCTION

**Ernest J. Straits, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.**
**Continuation of Ser. No. 87,799, Nov. 9, 1970. This application Mar. 16, 1972, Ser. No. 235,447**
**Int. Cl. A47c** *1/124*
**U.S. Cl. 297—248** **1 Claim**



A connector means for temporary or permanent ganging of chairs arranged in side-by-side relationship. The connector means having a removable hook member intermediate adjacent identical connector members on adjacent chairs which hook members provides a hook type engagement between the connector members. The hook and the two connector members can be fastened together as an assembly to provide a permanent connection.

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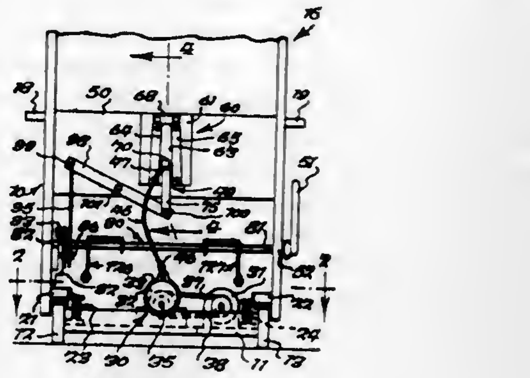
### 3,758,156
### AUTOMATIC ROCKER AND GLIDER

**Antoni Zawadzki, 18 Hirschbeck, Buffalo, N.Y.**
**Filed Oct. 7, 1970, Ser. No. 78,817**
**Int. Cl. A47c** *3/02*
**U.S. Cl. 297—260** **10 Claims**

A rocking chair assembly including a flexible line connected at one end to a drive means on the chair base and movably connected at the other end in a housing mounted on the movable rocking chair member. A manually operated control mechanism has a first position tightening the line thereby providing a driving connection between the drive means and the rocking chair member. The mechanism has a second position loosening the line thereby permitting free movement of the rocking chair member. The chair assembly can include manually operated tension adjusting means operatively connected to the line to compensate for the different weights and sizes of persons using the chair.



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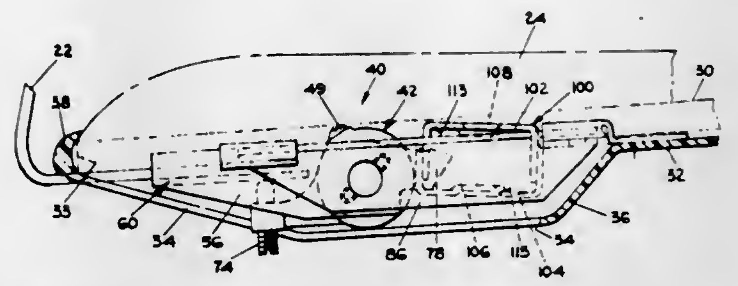
### 3,758,157
### CHAIR

**Bernard J. Fries, Jenison, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.**
**Filed Sept. 20, 1971, Ser. No. 182,064**
**Int. Cl. A47c** *3/00*
**U.S. Cl. 297—300** **31 Claims**



A tension control member controls tilting movement of the chair, or at least a portion thereof such as seat or back, relative to the chair support. The chair seat has an internal body supporting shell whose bottom portion is enclosed by a cover member. The tension control mechanism is anchored to the shell and fully enclosed by the cover to preclude its visual appearance when the chair is viewed in profile. The low profile arrangement of the chair control provides a relatively flat and smooth appearing cover member.

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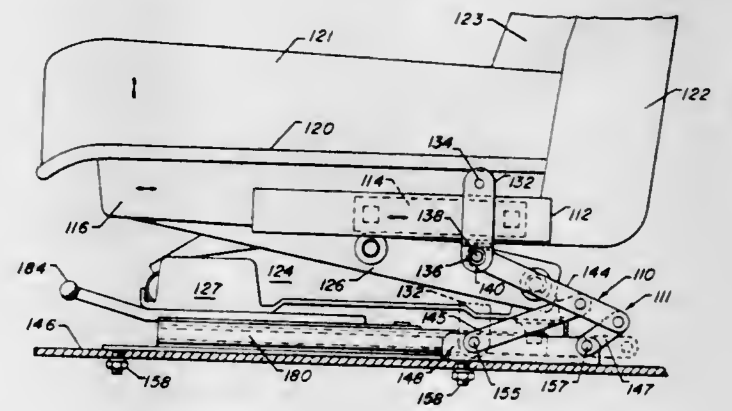
### 3,758,158
### SEAT BELT ANCHOR MECHANISM FOR ADJUSTABLE SEAT

**Arthur O. Radke, and Donald C. Galbraith, both of Milwaukee, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.**
**Filed Dec. 29, 1971, Ser. No. 213,621**
**Int. Cl. A62b** *35/00;* **B60n** *21/10, 1/00*
**U.S. Cl. 297—385** **4 Claims**



Seat belt anchor mechanism for vertically movable suspension seat having fore and aft adjustment feature provides an anchor point for a lap belt which is spaced from the floor and movable vertically relative to the floor. The anchor point is carried by a slide on the upper movable seat frame and is movable vertically with the seat suspension but remains stationary when the upper movable seat frame is adjusted fore and aft. Thus, a tether belt connecting the slide to the floor can be kept taut when the suspension is at the upper end of its ride zone, irrespective of the position of the seat in a fore and aft direction. The mechanism includes a plurality of pivot links which are related to each other in such a manner that the anchor point for the lap belt has no horizontal component of movement as the seat suspension goes up and down through its entire movement range.

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### 3,758,159

### VEHICLE SEAT CONSTRUCTION

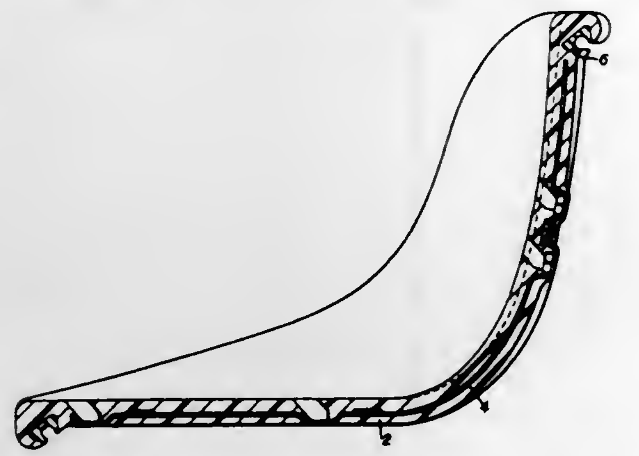
**Anthony R. Morris, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Mar. 12, 1971, Ser. No. 123,802**

**Claims priority, application Great Britain, Mar. 11, 1970, 11,604/70**

**Int. Cl. A47c** *7/14*

**U.S. Cl. 297—455** **3 Claims**



A seat pan for a vehicle seat is moulded from a rigid foam plastics and has an insert for coupling the pan to another part of the seat incorporated within the pan during the moulding process. The insert can comprise a pre-formed channel for receiving the edge portion of a seat cover or a suspension mounting.

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### 3,758,160

### METHOD AND APPARATUS FOR MINING VEIN MATERIAL ONLY

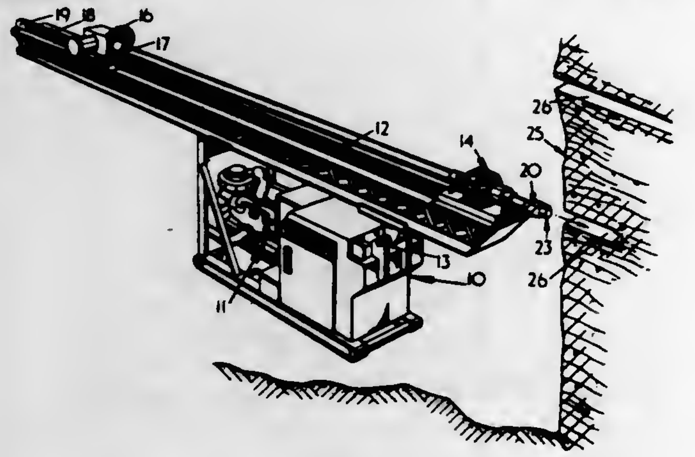
**Allan Richard Hilton, Westhoughton, England, assignor to Mining Developments AG, Zug, Switzerland**

**Filed Dec. 23, 1970, Ser. No. 101,082**

**Claims priority, application Great Britain, Dec. 30, 1969, 63,237/69**

**Int. Cl. E21c** *37/02, 3/30*

**U.S. Cl. 299—15** **4 Claims**



A method of mining vein or reef type mineral deposits in which a series of elongate holes are cut or drilled above and below or to each side of the mineral vein or reef. The holes may be contiguous to form a continuous slot or adjacent but spaced, a wedging tool being used to remove the intervening pillars when the slots have been cut to the desired depth, the mineral deposit is removed by bursting out or the like.

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### 3,758,161

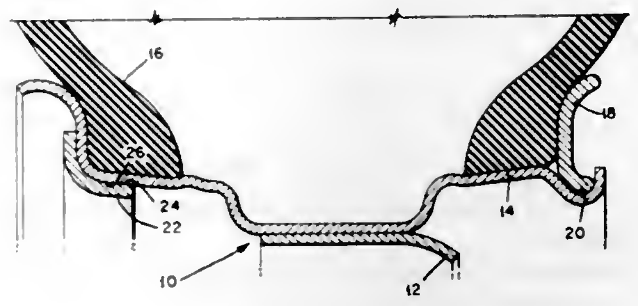
### REINFORCED WHEEL RIM

**John N. Bradley, Grosse Pointe Woods, and J. Edward Haug, Grosse Pointe Farms, both of Mich., assignors to The Budd Company, Philadelphia, Pa.**

**Filed Aug. 2, 1971, Ser. No. 168,308**

**Int. Cl. B60b** *1/06*

**U.S. Cl. 301—63 R** **4 Claims**



A rim for supporting a tire on a wheel having reinforcing ring means secured thereto to provide additional strength to the rim in high stress areas.

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### 3,758,162

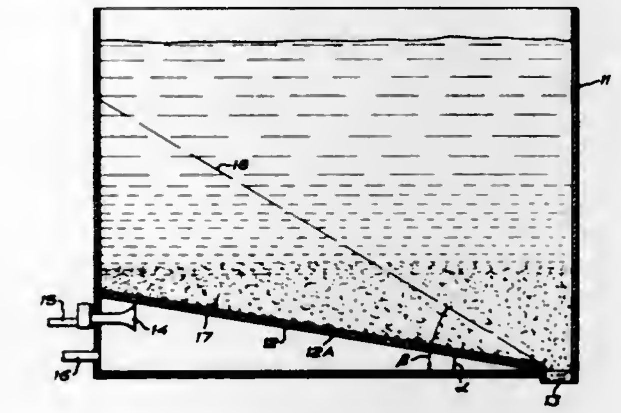
### METHOD AND APPARATUS FOR FLUIDIZING ACTIVATION OF PARTICULATE, GRANULAR, VISCOUS AND SIMILAR MATERIALS

**Bengt Lennart Holm, Sagoliden 11, and Sven Ivan Arvid Tornmarck, Rosentigen 5, both of Malmo, Sweden**

**Continuation-in-part of Ser. No. 788,111, Nov. 22, 1968, Pat. No. 3,519,310. This application Dec. 3, 1969, Ser. No. 881,651**

**Int. Cl. B65g** *53/40*

**U.S. Cl. 302—53** **8 Claims**



System for fluidizing and agitating material by introducing modulated gas into the material to reduce the internal friction thereof.

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### 3,758,163

### METHOD OF PNEUMATIC SUCTION CONVEYING OF DISINTEGRATED MATERIALS AND AN ARRANGEMENT FOR APPLICATION OF THIS METHOD

**Witold Kalisiak, Warsaw, Poland, assignor to Biuro Konstrukeyjno-Technologiozne Maszyn i Urzadzen Budowlanych, Warszawa, Poland**

**Filed Nov. 24, 1969, Ser. No. 879,425**

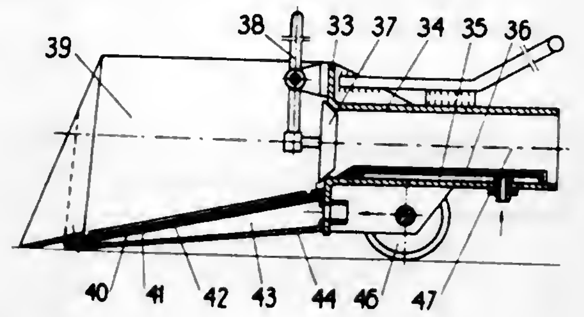
**Claims priority, application Poland, Nov. 25, 1968, P 130 231**

**Int. Cl. B65g** *53/14, 53/42*

**U.S. Cl. 302—58** **9 Claims**

A method and apparatus for pneumatic suction conveying in which a suction conduit has connected to it a suction nozzle

which fluidizes granular material to be conveyed by forcing gas under superatmospheric pressure through a porous partition forming part of the nozzle. The nozzle is connected to a pneumatic suction conduit including a linearly extending porous partition through which such gas is forced to maintain the material in fluidized state while being conveyed through the conduit.



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### 3,758,164

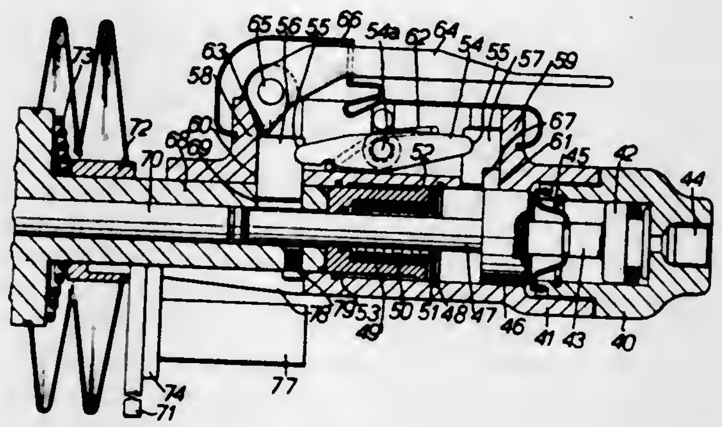
### COUPLING MEANS FOR HYDRAULIC BRAKE SYSTEMS

**Richard Thomas Fowler, 145 Walkwood Rd., Hunt End, Redditch, Worcestershire, England**

**Division of Ser. No. 839,331, July 7, 1969, Pat. No. 3,630,575. This application Mar. 26, 1971, Ser. No. 128,504**

**Int. Cl. B60t** *11/24*

**U.S. Cl. 303—7** **4 Claims**



The tractor part of a coupling between the braking systems of a tractor and trailer is an auxiliary piston and cylinder, the cylinder carrying a safety member which prevents movement of the piston in the brake-applying direction when the coupling is disconnected and forms part of the means for connecting the coupling.

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### 3,758,165

### TRAILER SWAY CONTROL APPARATUS

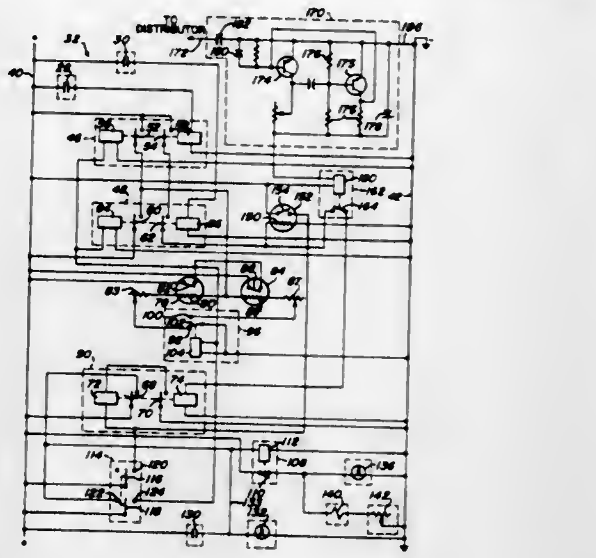
**Joseph A. Savelli, 14 Coquina, St. Augustine, Fla.**

**Filed Dec. 2, 1971, Ser. No. 204,200**

**Int. Cl. B60t** *7/20*

**U.S. Cl. 303—20** **13 Claims**

Apparatus for use in regard to a tow vehicle and a trailer vehicle for automatically applying retardation of movement to the trailer vehicle to eliminate a sway condition which may occur in the trailer vehicle. Sway action of a trailer can be eliminated by applying forces which tend to urge relative movement between the tow vehicle and the trailer vehicle in a direction one from the other. Therefore, momentary retardation of the rate of movement of the trailer vehicle eliminates the sway of the trailer. Sensing mechanism senses that the trailer is in a sway condition and the sensing mechanism causes operation of mechanism which operates the brakes of the trailer for retarding the rate of movement of the trailer with respect to the rate of movement of the tow vehicle. The sensing mechanism is capable of distinguishing between a sway condition of the trailer, in which the trailer moves angularly with respect to the tow vehicle, and an angular condition which exists when the tow vehicle is pulling the trailer around a curve or corner or the like. The sensing mechanism is also capable of sensing the rate of operation of the tow vehicle and does not sense or attempt to prevent angular movement between the trailer vehicle and the tow vehicle if the tow vehicle operation is less than a predetermined rate, such as occurs in parking of the trailer, etc.



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### 3,758,166

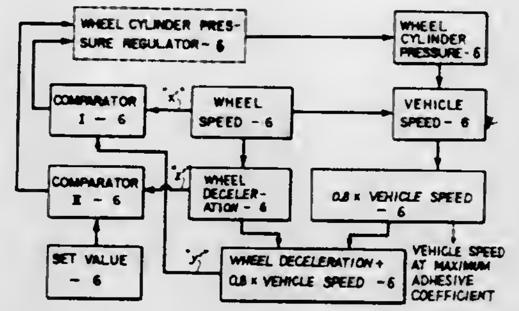
### PROCESS AND APPARATUS FOR ANTISKID CONTROL MECHANISM

**Kazutaka Kuwana, Kariya; Hayao Yamazaki, and Takefumi Sato, both of Osaka, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City and Sharp Corporation, Osaka, Japan**

**Filed Oct. 19, 1970, Ser. No. 82,040**

**Int. Cl. B60t** *8/10*

**U.S. Cl. 303—21 P** **25 Claims**


WHEEL CYLINDER PRESSURE REGULATOR - 6
WHEEL CYLINDER PRESSURE - 6
COMPARATOR I - 6
WHEEL SPEED - 6
VEHICLE SPEED - 6
COMPARATOR II - 6
WHEEL DECELERATION - 6
0.8 × VEHICLE SPEED - 6
SET VALUE - 6
WHEEL DECELERATION + 0.8 × VEHICLE SPEED - 6
VEHICLE SPEED AT MAXIMUM ADHESIVE COEFFICIENT

This invention presents an improved method and apparatus for an antiskid brake control which provides the shortest possible brake application period and maximum adhesive force between the vehicle tires and the road surface under all conditions by utilizing an electronic circuit into which input signals representing vehicle speed, wheel speed and hydraulic brake apply pressure are fed. The electronics control circuit computes the rate of vehicle deceleration and the ratio of the wheel speed to the vehicle speed and compares this ratio with a constant value. An output signal from the electronic circuit is used to control an electric solenoid valve in the hydraulic brake circuit to modulate the hydraulic pressure and obtain an optimum vehicle braking effort under all conditions and prevent a vehicle skid condition from arising.

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### 3,758,167

### BRAKE ANTI-LOCK MECHANISM

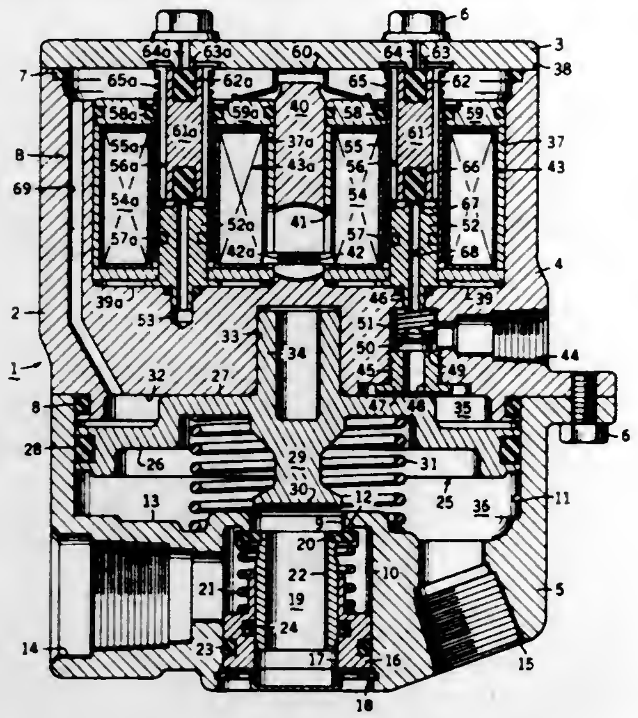
**John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.**

**Filed Jan. 17, 1972, Ser. No. 218,293**

**Int. Cl. B60t** *8/12*

**U.S. Cl. 303—40** **39 Claims**

An electro-pneumatic control valve for use in a brake antilock system is provided with a relay portion for controlling fluid pressure applied to the system in response to predeterminately selected fluid pressure samples supplied thereto and electric sampling means responsive to signals supplied thereto upon the occur-rence of pre-selected conditions in the brake system for controlling the fluid pressure samples supplied to said relay portion.



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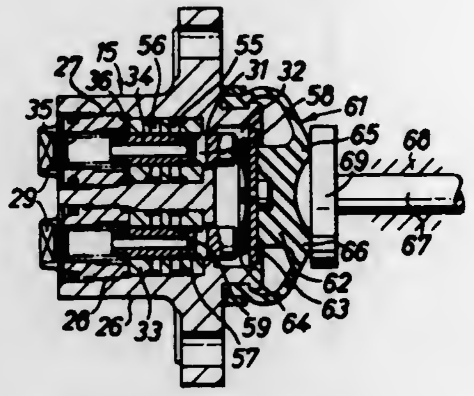
### 3,758,168
### CONTROL VALVES FOR LIQUID PRESSURE BRAKING SYSTEMS

**David Parsons, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England**
**Filed Dec. 22, 1970, Ser. No. 100,628**
**Claims priority, application Great Britain, Jan. 5, 1970, 469/70**
**Int. Cl. B60t** *15/06*
**U.S. Cl. 303—52** **3 Claims**



A brake application control valve for a dual line fluid pressure braking system comprises a valve body defining two closed ended bores, two plungers, slidable in the bores, and a common actuating member for the plungers. Each bore has a fluid pressure inlet port, one outlet port for connection to a motor cylinder and another outlet port for connection to drain. Each inlet port is connected to one outlet port or the other by an annular recess in the plunger. An axial passage in the plunger connects the annular recess with the closed end of the bore. To apply brakes, the common actuating member is moved to connect the pressure source to the motor cylinders through the valve. In one form of the valve, the common actuating member acts through a beam on the plungers. When pressure at one motor cylinder is lost, the end of the beam nearer the corresponding plunger engages an abutment and the beam fulcrums about the abutment so that a greater proportion of the effort applied to the actuating member is transmitted to the other plunger. In another form of the valve, the common actuating member is guided for movement parallel to the plungers so that, when pressure is lost at one motor cylinder, the effort exerted by the driver is applied to the other valve plunger and the opposing thrust thereon is equal to the opposing thrust exerted on both valve plungers when fluid pressure was supplied to both motor cylinders.

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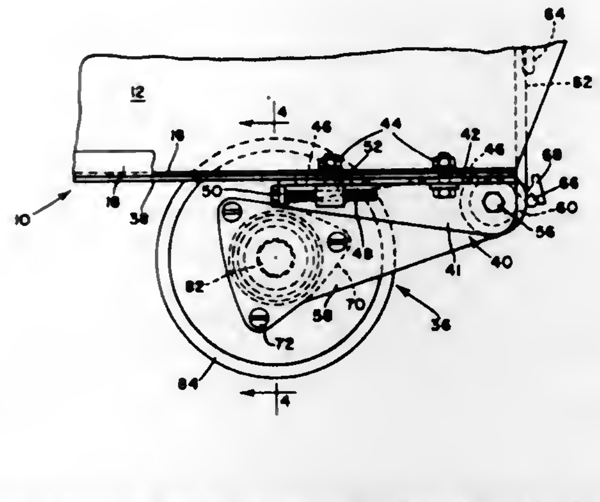
### 3,758,169
### SNOWMOBILE IDLER WHEEL MOUNTING

**Robert Lee Trapp, Horicon, Wis., assignor to Deere & Company, Moline, Ill.**
**Filed Nov. 22, 1971, Ser. No. 201,097**
**Int. Cl. B62m** *27/00*
**U.S. Cl. 305—32** **2 Claims**



A snowmobile has an inverted U-shaped main frame with opposite depending side walls and an endless flexible track disposed between the side walls and connected to the main frame by a bogie wheel track suspension system and a rear idler wheel assembly, which includes a transverse pivot shaft having its opposite ends mounted for fore-and-aft adjustment on the opposite side walls, a pair of arms swingably mounted on the shaft and carrying a transverse axle on which a number of idler wheels are mounted, the rearward end of the track being trained around the idler wheels. The axle has its opposite ends journaled in bearings carried by the opposite arms in bearing retainers removably attached to the arms, and annular rubber bushings are mounted in the bearing retainers between the retainers and the bearings.

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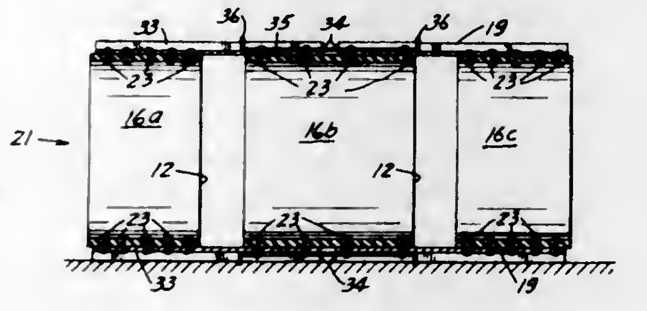
### 3,758,170
### SNOWMOBILE TRACK

**Edward A. Mazurek, Thief River Fall, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.**
**Filed Dec. 27, 1971, Ser. No. 212,033**
**Int. Cl. B62d** *55/24;* **B62m** *27/02*
**U.S. Cl. 305—35 EB** **10 Claims**



A track assembly for a snowmobile is provided wherein an endless flexible belt has joined thereto a plurality of cleat assembly members extending transversely across the belt, said cleat assembly includes at least two cleat members having a flange portion extending outwardly from the belt with each of said cleat members being joined to opposite ends of a spring steel member to form a unitary cleat assembly.

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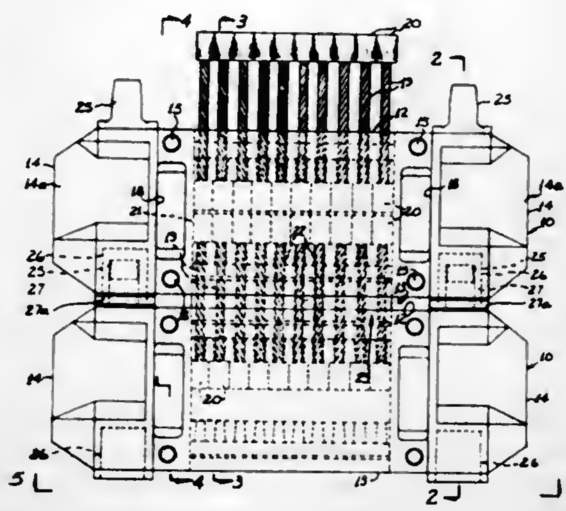
### 3,758,171
### VEHICLE TRACK ELEMENT

**Dominic Plastino, 1315 Jules Poitras, Apt. 418, Ville St. Laurent, Montreal, Quebec, Canada**
**Filed Feb. 23, 1971, Ser. No. 118,129**
**Claims priority, application Canada, Jan. 18, 1971, 102,997**
**Int. Cl. B62d** *55/18*
**U.S. Cl. 305—40** **7 Claims**



A track of a track laying vehicle consists of a set of identical track elements which are serially connected together by wire rope connectors extending between adjacent elements. An elastomeric seal protectively and supportably encloses portions of the wire rope connectors between opposing side edges of the adjacent track elements. The track elements are kept in alignment by gear teeth provided on each element and received in sockets formed in the adjacent element. The sockets have elastomeric inserts, portions of which serve to seal the space between the opposing side edges of the adjacent elements. Each track element is formed from two complemental parts which are separably secured together and are complementally recessed to accommodate the wire rope connectors.

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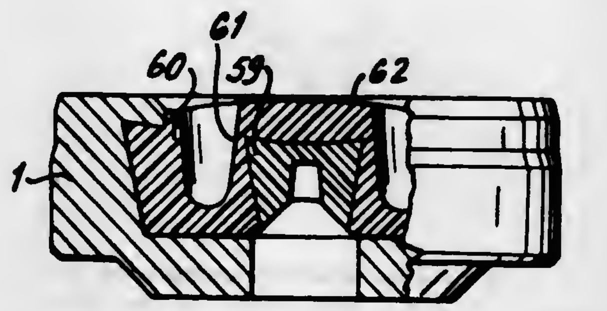
### 3,758,172
### ELASTIC PIVOT BEARINGS

**Henry Quaile, and Paul Piguet, both of La Chaux de Fonds, Switzerland, assignors to Portescap, La Chaux de Fonds, Switzerland**
**Filed June 22, 1971, Ser. No. 155,580**
**Claims priority, application Switzerland, June 25, 1970, 9626/70; July 6, 1970, 10177/70**
**Int. Cl. F16c** *11/00*
**U.S. Cl. 308—2** **4 Claims**



A bearing for use in a bearing housing of a precision instrument has a central zone formed of a self-lubricating plastic material and an aperture therein for receiving the end of a shaft. Means is provided surrounding the central zone for elastically securing the bearing member to the housing whereby limited movement of the central zone with respect to the housing is permitted to dampen shocks to which the housing and shaft may be subjected. In one embodiment of the invention the means for securing the central zone of the bearing comprises a separate mounting member having the self-lubricating plastic central zone embedded therein. In another embodiment, the entire bearing is formed as a one piece member of self-lubricating plastic material and has at least one hollow space therein of predetermined configuration selected to provide a desired elasticity in the mounting member in both axial and radial directions with respect to the shaft to permit the desired limited movement of the central zone.

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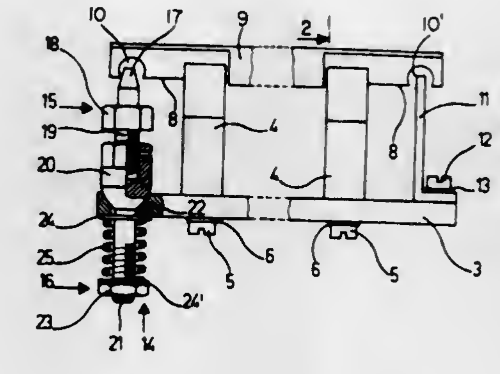
### 3,758,173
### KNIFE EDGE BEARING FOR BALANCE BEAM

**Hans Bucher, Gaignen, Switzerland, assignor to Mettler Instruments AG, Greifensee-Zurich, Switzerland**
**Filed Mar. 14, 1972, Ser. No. 234,505**
**Claims priority, application Switzerland, Aug. 26, 1971, 12506/71; Jan. 18, 1972, 701/72**
**Int. Cl. F16c** *11/00*
**U.S. Cl. 308—2 R** **8 Claims**



The knife edge member of the bearing for a balance beam has two notches in its edge. A fixed abutment on the bearing seat is received with sufficient clearance in one notch to permit only limited movement of the knife edge member on the bearing seat in the direction of its pivot axis, and a conical end portion of a stop is received in the second notch. The stop is adjustable on the bearing seat at right angles to the pivot axis inward and outward of the second notch to permit engagement of the end portion with the rim of the second notch even after wear of the respective contact surfaces, and a helical compression spring yieldably opposes displacement of the end portion of the stop and of the engaged knife edge member from an axial position on the bearing seat in which the abutment is approximately centered in the first notch.

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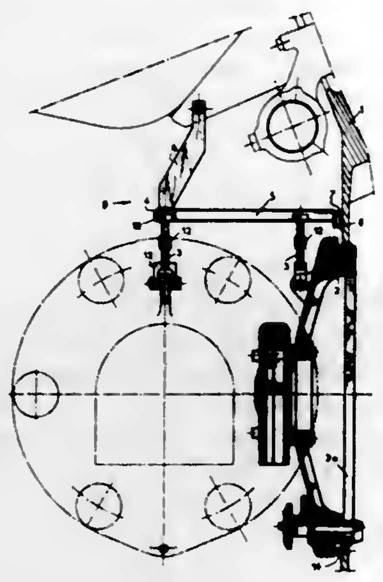
### 3,758,174
### HANDLING DEVICE FOR MOUNTING OR REMOVING AN ACCESS DOOR

**Karl Walter Kuhn, Saint-Germain-En-Laye, France, assignor to Societe d'Etudes de Machines Thermiques, Saint-Denis, France**
**Filed May 18, 1972, Ser. No. 255,301**
**Claims priority, application France, June 7, 1971, 7120517**
**Int. Cl. F16c** *17/00*
**U.S. Cl. 308—3 R** **2 Claims**

Handling device for mounting or removing an access door of a case or housing of a structure such as a machine or the like, characterized in that it comprises a substantially horizontal system of slide guides secured preferably removably against the lateral wall of the case outside of the latter and at least one movable suspension member supported and guided



by the said system of slide guides and adapted to be removably secured to the said door.

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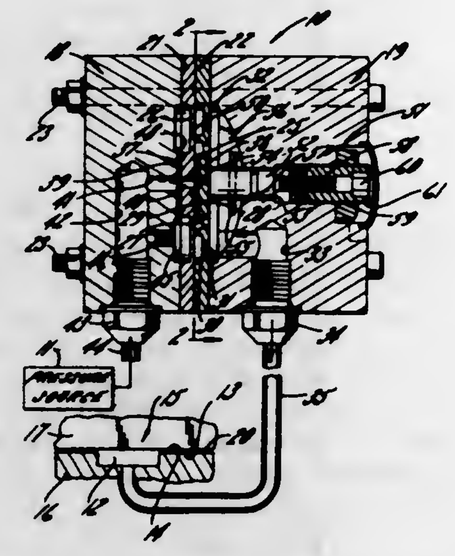
### 3,758,175
### MEMBRANE TYPE FLUID FLOW REGULATOR FOR A HYDROSTATIC BEARING

**Jan Van Roojen, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.**
**Filed Feb. 28, 1972, Ser. No. 230,004**
**Int. Cl. F16c** *17/00*
**U.S. Cl. 308—5** **6 Claims**



A membrane type controller for regulating the flow of pressure fluid to the pad of a single hydrostatic bearing includes means for hydraulically applying a snubbing force to the back side of the membrane to prevent objectionable vibration thereof, means for precluding complete closure of the flow restricting gap during initial build-up of the supply pressure, and means for adjusting the initial width of the gap preparatory to service use of the controller.

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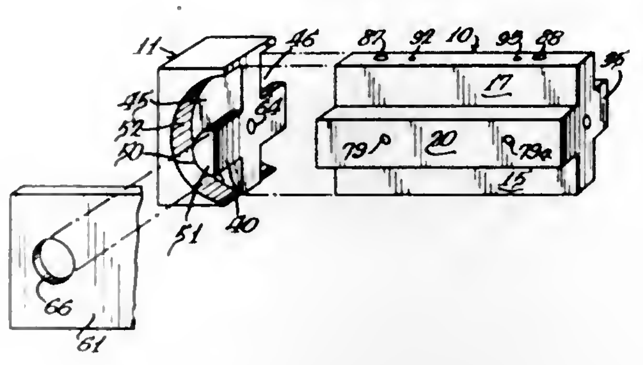
### 3,758,176
### BEARING PACK

**Derek E. Stapley, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.**
**Filed Nov. 19, 1971, Ser. No. 200,419**
**Int. Cl. F16c** *29/06*
**U.S. Cl. 308—6 C** **5 Claims**

A bearing pack for load support of moving parts wherein a plurality of rolling elements, and more particularly roller bearings, are mounted for travel along a load zone and a return path with the load zone and a major part of the return path being defined by a body member of one-piece construction. A pair of end caps extend from the body member and each have a curved guide channel interconnecting the load zone and the return path to provide a complete circuit for the rolling elements whereby the body member may be constructed of an easily machined shape and material to provide the necessary strength in use, while the end caps of more complex shape may be made of non-machined material because of the lower strength requirements thereof.



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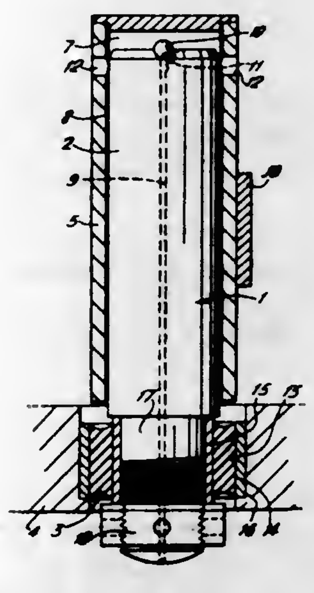
### 3,758,177
### AIR BEARINGS

**Raymond Williams, Appleton, England, assignor to United Kingdom Atomic Energy Authority, London, England**
**Filed Mar. 9, 1971, Ser. No. 122,491**
**Claims priority, application Great Britain, Mar. 12, 1970, 12,053/70; Jan. 1, 1971, 13,471/71; Jan. 1, 1971, 13,571/71**
**Int. Cl. F16c** *17/16*
**U.S. Cl. 308—9** **31 Claims**



A journal gas bearing assembly comprising a shaft and a bearing sleeve rotatable one relative to the other. Longitudinal movement of the shaft and 1 bearing sleeve relative to each other in the direction is limited by a hydrostatic thrust bearing formed by a cushion of gas trapped under pressure in a closed volume defined between the shaft and the bearing sleeve. Relative longitudinal movement between the shaft and the bearing sleeve in the reverse direction may be limited by providing for venting the closed volume at the beginning of relative longitudinal movement between the shaft and the bearing sleeve in the reverse direction or by providing a hydrodynamic thrust bearing between the shaft and the bearing sleeve acting in the opposite sense to the hydrostatic thrust bearing.

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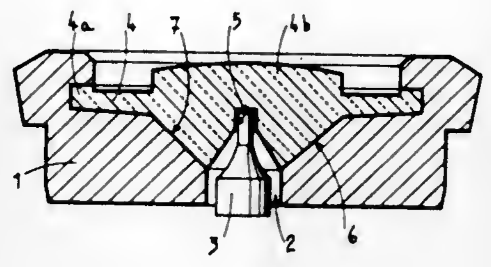
### 3,758,178
### SHOCK ABSORBING BEARING FOR TIMEPIECE AND SMALL APPARATUS

**Andre Meylan-Rochat, La Brassus, Switzerland, assignor to Pareohoc S.A., Canton of Vaud, Switzerland**
**Filed Feb. 23, 1972, Ser. No. 228,579**
**Int. Cl. F16c** *17/10*
**U.S. Cl. 308—159** **2 Claims**



A shock absorbing bearing for timepieces and small mechanical apparatus including a plastic bearing body of disc-like configuration having a peripheral thin ring shaped portion secured to a bearing support and a central thickening having a bearing surface. A recess is formed in said thickening opening to the bearing surface for receiving the end of a shaft. The bearing surface has a frusto-conical configuration and the bearing support has a seat of conforming configuration to assure centering. Axial shocks are absorbed by the elastic deformation of the ring shaped portion and lateral shocks are absorbed by elastic deformation of the thickening.

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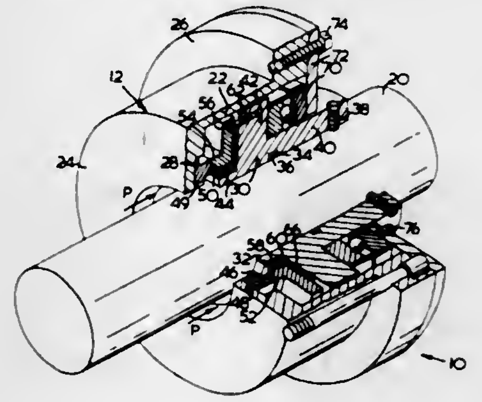
### 3,758,179
### MECHANICAL SHAFT SEAL

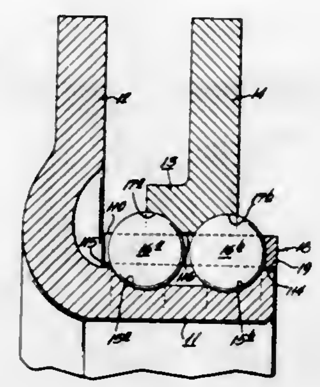
**Basil G. Smith, Kentville, Nova Scotia, Canada, assignor to Basil Smith Seals Limited, Kentville, Nova Scotia, Canada**
**Filed Dec. 14, 1971, Ser. No. 207,935**
**Claims priority, application Canada, Sept. 24, 1971, 123627**
**Int. Cl. F16c** *33/76*
**U.S. Cl. 308—187.1** **17 Claims**



An externally mounted axial mechanical shaft seal includes a housing having a rotor adapted to sealingly engage a shaft mounted therein. A rotating seal ring mounted on said rotor is biased by a Belleville spring washer towards a stationary seal ring on said housing. A thrust bearing disposed between a portion of the rotor and the housing prevents the rotor from moving away from the stationary seal ring, maintains alignment of the seal rings and absorbs axial shock loads. As wear of the seal rings takes place, adjustment screws are tightened against the thrust bearing to move the rotor toward the stationary seal ring to compress the Belleville spring washer to the required degree.

### 3,758,180
### CAGE FOR ROLLING BODIES IN A DOUBLE-ROW ROLLING BEARING

**Sture Lennart Asberg, Savedalen, and Erik Edvin Eriksson, Goteborg, both of Sweden, assignors to SKF Industrial Trading and Development Company, Amsterdam, Netherlands**
**Filed Aug. 27, 1971, Ser. No. 175,654**
**Claims priority, application Sweden, Aug. 27, 1970, 11621/70**
**Int. Cl. F16c** *33/46*
**U.S. Cl. 308—201** **3 Claims**



A cage for rolling elements of a double row rolling bearing comprising a circumferentially-extending annular member, a plurality of generally parallel fingers projecting axially from said annular member and circumferentially spaced apart to define a plurality of pockets for the rolling elements, each of said pockets including a means for spacing the rolling elements in side-by-side relation to form the two rows of rolling elements, each of said fingers being spaced apart adjacent the terminal ends remote from said annular member and being formed adjacent to the terminal ends thereof to retain the rolling elements in side-by-side relation, said fingers being resilent so that the cage may be assembled axially relative to the rolling elements.

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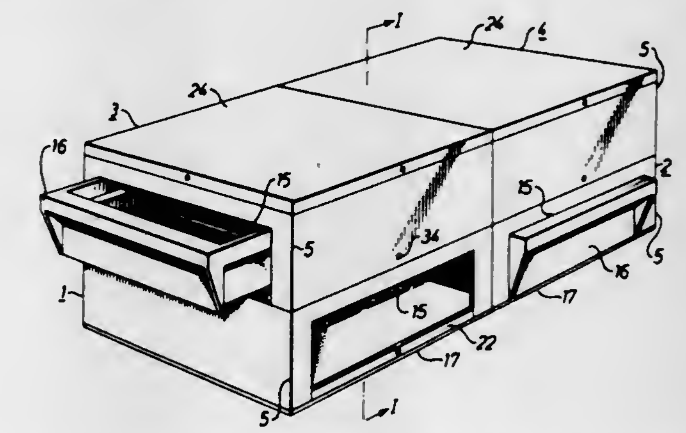
### 3,758,181
### PEDESTAL SYSTEM FOR TABLES, BOOKSHELVES, SHOP FURNISHINGS AND THE LIKE

**Imre Bolyos, Kevingeringen 25, .8 18233 Danderyd, Sweden**
**Filed Oct. 28, 1971, Ser. No. 193,282**
**Claims priority, application Sweden, Nov. 16, 1970, 15493/70**
**Int. Cl. A47b** *77/00*
**U.S. Cl. 312—107** **3 Claims**



A modular pedestal construction composed of a plurality of like modules which may be stacked and/or disposed laterally adjacent one another to form a unit. Each module comprises a bottomless box frame of square horizontal cross section with thin side walls and peripherally extending shoulders having abutment surfaces whose width is equal to the thickness of the side walls so that the module frames may be stacked while their side walls are flush with each other. A thin-walled bottom plate of the same square cross section closes off each bottom module of the unit, each bottom plate having peripherally extending shoulders having abutment surfaces whose width is equal to the thickness of the side walls.

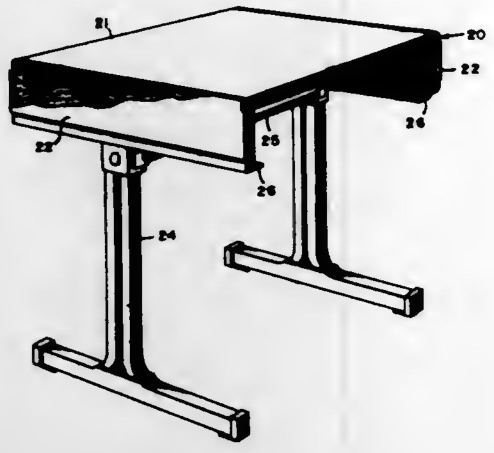
### 3,758,182
### DESK AND TRAY STRUCTURE

**Chester J. Barecki; Arthur L. Van Ryn, both of Grand Rapids, and Kenneth W. Hozeski, Grandville, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.**

**Filed June 3, 1971, Ser. No. 149,726**

**Int. Cl. A47b** *17/00, 19/00, 91/00*

**U.S. Cl. 312—194** **6 Claims**



A desk is firmly and adjustably supported on each side by twin square legs equipped with enclosed diverging foot runners, the upper ends of the legs being forced into right angle corners of brackets fixed to the desk by a V-clamping rib and the desk being open at its front and provided along its inner sides with ledges for receiving a carry tray also open at its front and useful as a writing board or floor desk.

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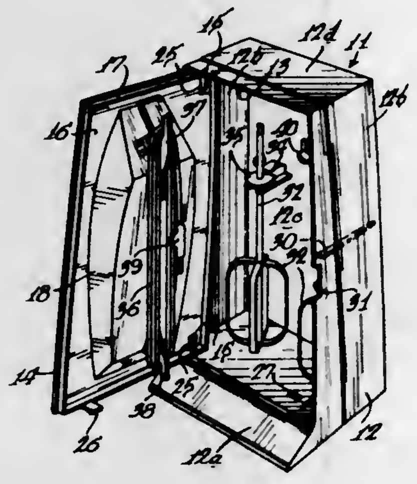
### 3,758,183
### FOOD MIXER STORAGE RACK

**Norman A. Steinkamp, Chicago Heights, and John M. Stipanuk, Elmhurst, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.**

**Filed Aug. 26, 1971, Ser. No. 175,154**

**Int. Cl. A47b** *81/00, 67/02*

**U.S. Cl. 312—292** **8 Claims**



A storage rack for an electric food mixer wherein the mixer is nested in a hingable door of a compartment in which the beaters and cord for the mixer are stored with the cord supported on the inside of the door and the beaters mounted on the compartment wall on either side of the mixer. The rack is adapted for either wall mounting or table surface support and includes simplified means for detachably retaining the mixer on the rack. The door to the storage compartment is hinged so that the weight of the mixer tends to retain the door in the closed position.

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### 3,758,184
### METHOD OF MANUFACTURING AN ELECTRODE FOR A GAS DISCHARGE TUBE

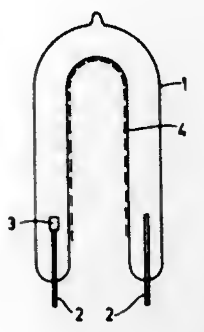
**Max Menzel, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 26, 1971, Ser. No. 202,401**

**Claims priority, application Germany, Dec. 3, 1970, P 20 59 572.6**

**Int. Cl. H01j** *7/18*

**U.S. Cl. 316—25** **3 Claims**



Quench tubes are switching which are used in electronic flash devices so as to reduce the quantity of light emitted by the flash lamp of that device. The electrodes of known quench tube became unusable after a short period. According to the invention a quench tube having a long lifetime and a reliable ignition is obtained when an electrode body consisting inter alia of sintered nickel powder is manufactured by means of a method in which the nickel powder is first mixed with a given material comprising an alkali metal or alkaline earth metal, whereafter the assembly is moulded to the desired form and is then sintered at a given temperature whereafter it is secured to a current supply rod and is subsequently activated by an electrical current pulse after it has been sealed in a discharge vessel.

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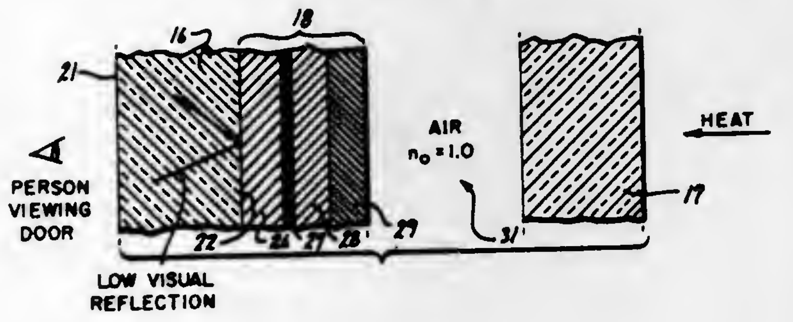
### 3,758,185
### THERMAL CONTROL FILTER

**Robert M. Gelber, Healdsburg, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.**

**Filed Apr. 1, 1971, Ser. No. 130,183**

**Int. Cl. G02b** *13/16, 5/28*

**U.S. Cl. 350—1** **20 Claims**



Thermal control filter having a substrate capable of transmitting visible energy and having a surface with a coating thereon with the coating being formed of a first layer of dielectric material on the substrate side of the coating and a bilayer consisting of a thin layer of a material different from the substrate and a metal layer of either copper or gold. The thin layer serves as a nucleating layer for the metal layer and is on the substrate side of the bilayer. The coating has a second dielectric layer formed on the atmosphere side of the metal layer.

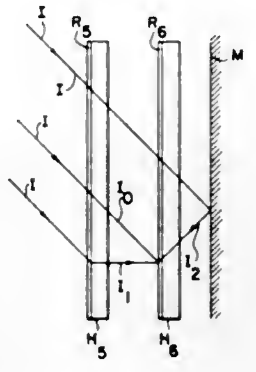
### 3,758,186
### METHOD OF COPYING HOLOGRAMS

**Douglas B. Brumm, Ann Arbor, Mich., assignor to The Battelle Development Corporation, Columbus, Ohio**

**Filed Nov. 30, 1966, Ser. No. 598,008**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—3.5** **2 Claims**



A method of copying holograms wherein the original hologram and the detector are spaced apart at least a couple of wavelengths during the copying so that the undiffracted or 0-order wavefront transmitted by the original hologram can serve as the reference beam thus eliminating the need for introducing a separate beam.

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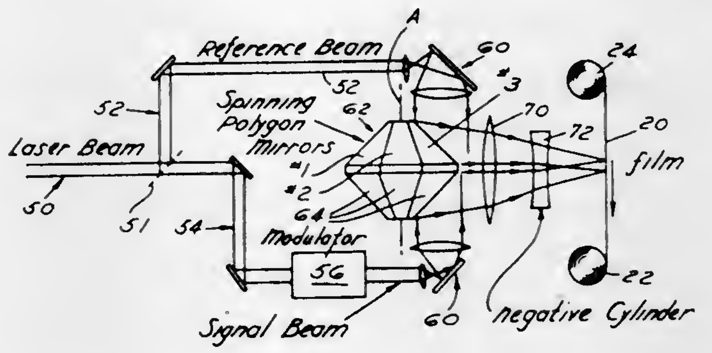
### 3,758,187
### METHOD AND APPARATUS FOR RECORDING INTELLIGENCE ON A SHEET MATERIAL

**Carlton E. Thomas, Van Nuys, Calif., and Norman G. Massey, Ypsilanti, Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.**

**Filed June 9, 1971, Ser. No. 151,458**

**Int. Cl. G02b** *5/18*

**U.S. Cl. 350—3.5** **8 Claims**



A method and apparatus for recording intelligence on a moving sheet such as a light sensitive strip. The data is modulated into a coherent light reference or a signal beam of a holographic recording system while one of the beams is altered in angle for each pass across the recording strip to record a series of holograms, each adjacent series on the strip having a spatial frequency different from the next wherein overlap will not interfere with readout which isolates each frequency in turn.

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### 3,758,188
### IMAGE-TRANSMITTING OPTICAL SYSTEM

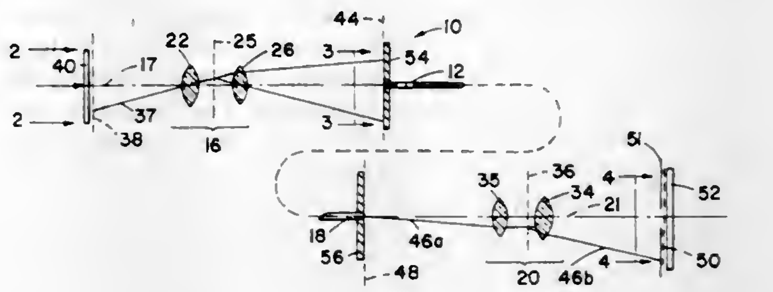
**Charles O. Koester, Sudbury, Mass., assignor to American Optical Corporation, Southbridge, Mass.**

**Filed June 6, 1972, Ser. No. 260,239**

**Int. Cl. G02b** *5/16*

**U.S. Cl. 350—96 B** **10 Claims**

Optical system for transmitting two-dimensional achromatic images from one location to another location spaced therefrom using a single sheet-like layer, or no more than a few adjacent sheet-like layers, of elongated fiber optical components and light diffraction and image-forming means in conjunction therewith.



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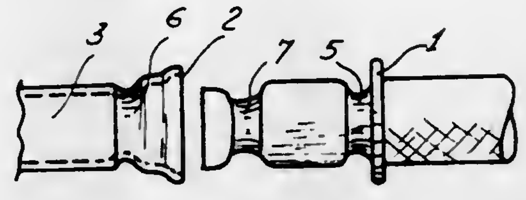
### 3,758,189
### METAL CABLE TERMINAL FOR LIGHT GUIDING CABLE

**Giuseppe Codrino, Via Stazione, Quattordio, Alessandria, Italy**

**Filed Nov. 9, 1971, Ser. No. 197,061**

**Int. Cl. G02b** *5/16*

**U.S. Cl. 350—96 B** **5 Claims**



A metal cable terminal for light guiding cable, particularly adapted for application to a light diffuser, provided with one or more attachment members.

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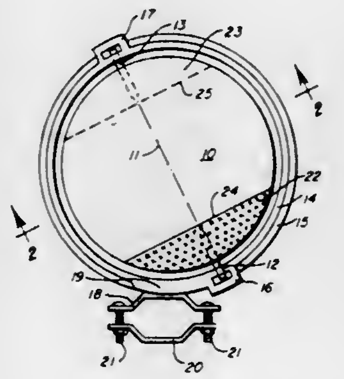
### 3,758,190
### JUMPING REFLEX-REFLECTION

**Donald J. Douglas, White Bear Lake, Minn., assignor to Nu-Pro, Inc., St. Paul, Minn.**

**Filed May 8, 1972, Ser. No. 251,431**

**Int. Cl. G02b** *5/12*

**U.S. Cl. 350—97** **22 Claims**



The jumping reflex-reflectors disclosed are eye-catching attention-getting safety devices. They have at least one primary rotatable part, an axis means establishing a predetermined axis for rotation of the primary rotatable part, and holding means for the axis means to permit the rotation, especially a wind-actuated rotation. The primary rotatable part comprises a form-retaining body, preferably a base sheet material. This base sheet is aligned with substantially all portions of it extending substantially parallel with the predetermined axis for its rotation. It is contoured at least in portions outwardly from the axis; and patterned areas of reflex-reflecting material and of non-reflex-reflecting material (preferably fluorescent) are disposed on opposite sides of it. The patterned area of reflex-reflecting material on one side is relatively displaced in axial relationship from the patterned area of reflex-reflecting material on the other side. In all cases, at least 50 percent of the area coverage of each reflex-reflecting pattern on opposite sides of the sheet material is in locations relative to the axis which do not coincide as viewed during rotation of the rotatable part. The patterned areas of non-reflex-reflecting material on opposite sides of the sheet material also are relatively displaced in axial relationship to each other. The arrangement is such that, at substantially all practical rotation speeds for the primary rotatable part about the predetermined axis, a viewer under reflex-reflecting conditions gains the impression of shifting flash patterns of light return suggestive of the patterns of the areas of reflex-reflecting material. A variety of rotatable bodies and reflex-reflecting pattern arrangements are disclosed.

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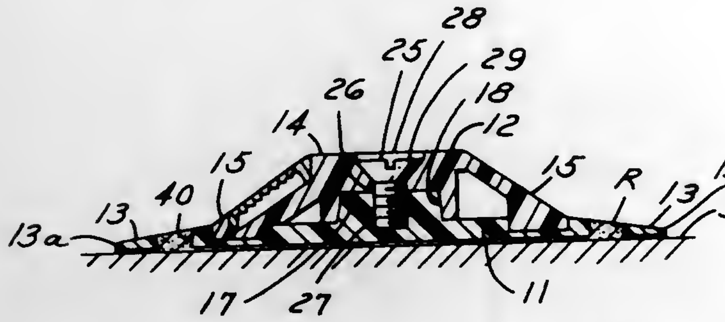
### 3,758,191
## ROADWAY MARKER

**Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada**
**Filed Apr. 5, 1971, Ser. No. 130,942**
**Int. Cl. G02b** *5/12*
**U.S. Cl. 350—103 9 Claims**



A roadway marker comprising a substantially flat base plate and a housing mechanically interlocked to said base plate. The housing includes an outer surface that is inclined to the roadway when the marker is applied to the roadway. The outer surface has a recess into which a reflector is mounted. The reflector has a substantially smooth outer surface and a plurality of retro-reflective prisms on the inner surface which are adapted to reflect light from the light beams of the automotive vehicle back to the eyes of the driver.

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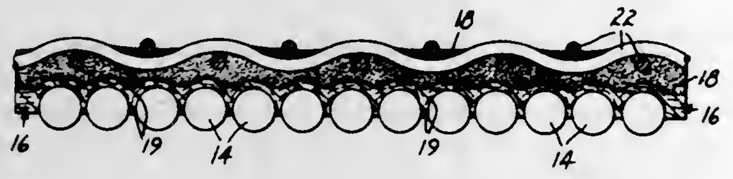
### 3,758,192
## REFLEX-REFLECTIVE STRUCTURES INCLUDING FABRIC AND TRANSFER FOILS

**Wallace Karl Bingham, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**Continuation of Ser. No. 792,542, Jan. 21, 1969, abandoned. This application Aug. 20, 1970, Ser. No. 65,531**
**Int. Cl. G02b** *5/12*
**U.S. Cl. 350—105 16 Claims**



A reflex-reflecting structure in which glass beads, preferably within the size range of 25 to 250 microns and having a refractive index of at least 1.8, are hemispherically surrounded by a binder containing specularly reflective nacreous pigment particles which have maximum dimensional sizes falling within the range of eight to 30 microns and thicknesses within the range of 25 to 200 millimicrons. Pigmented color layers and adhesive layers may be provided over the binder layer.

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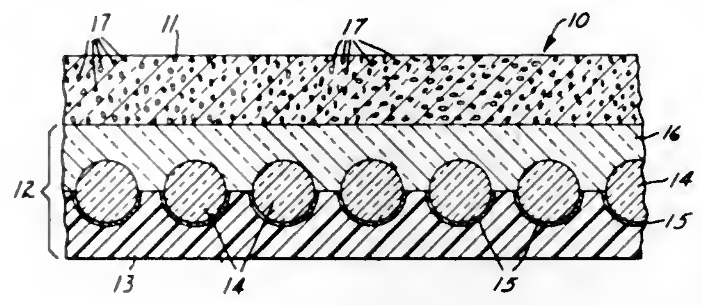
### 3,758,193
## INFRARED-TRANSMISSIVE, VISIBLE-LIGHT-ABSORPTIVE RETRO-REFLECTORS

**Chi Fang Tung, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**
**Filed July 2, 1971, Ser. No. 159,196**
**Int. Cl. G02b** *5/12*
**U.S. Cl. 350—105 6 Claims**



Retro-reflectors that incorporate, between the outer surface of the reflector and a reflective surface within the reflector, a thin layer of a material that transmits infrared radiation and substantially absorbs visible light. The layer comprises discrete, water-insoluble, organic, infrared-transmissive, visible-light-absorptive pigment particles dispersed in a matrix film having an index of refraction substantially the same as the index of refraction of the pigment particles and not substantially greater than the index of refraction of any material between the thin layer and said reflective surface.

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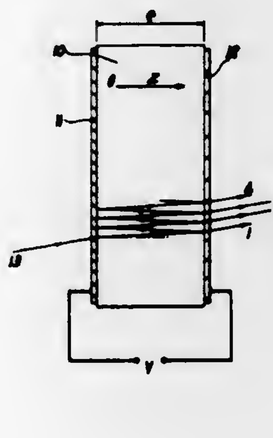
### 3,758,194
## INTERFEROMETRIC MODULATOR FOR USE IN NATURAL LIGHT

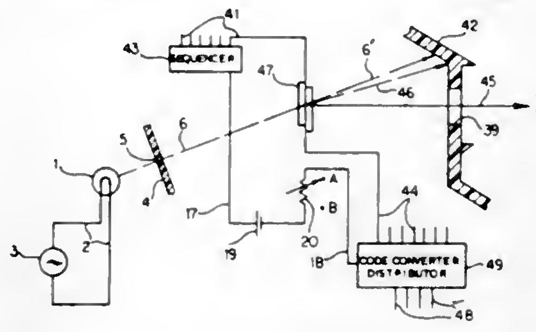
**Jacques Daval, Meylan, and Francis Forrat, Grenoble, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France**
**Filed May 5, 1972, Ser. No. 250,817**
**Int. Cl. G02f** *1/36*
**U.S. Cl. 350—160 R 4 Claims**



The interferometric modulator comprises a plate having parallel faces and cut at right angles to the optic axis in a uniaxial crystal of the type which produces an electro-optical effect and retains its uniaxial character for an electric field applied along the optic axis, and two flat, semi-transparent electrodes placed at right angles to the faces of the plate. A variable voltage is applied between the electrodes so as to vary the refractive index of the crystal for a beam of natural light which strikes the optical system in a direction close to the optic axis and undergoes a series of internal reflections from the electrodes.

### 3,758,195
## VOLTAGE-CONTROLLED SPECTRAL SEPARATION OF LIGHT WITH LIQUID CRYSTALS

**Clarence L. Hedman, Jr., Campbell; Karl-Dieter S. Myrenne, Los Altos, and Perry H. Vartanian, Jr., Woodside, all of Calif., assignors to SCM Corporation, New York, N.Y.**
**Filed Apr. 10, 1972, Ser. No. 242,709**
**Int. Cl. G02f** *1/16*
**U.S. Cl. 350—160 LC 9 Claims**



Light of different colors is produced by using as a "diffraction grating" a cell containing a liquid crystal material, with selectively variable fields being applied across the cell to present the different colors at a viewing station. Application is made to monochromators, symbol displays, and other devices.

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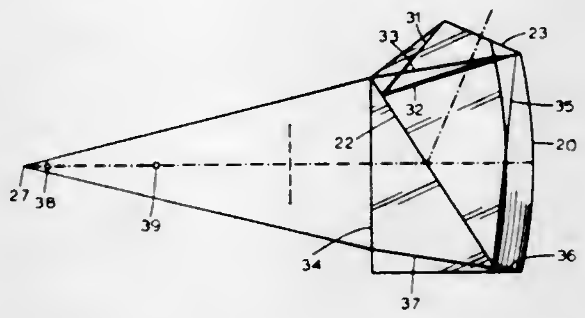
### 3,758,196
## OPTICAL MAGNIFYING SYSTEM AND APPARATUS FOR VIEWING SMALL OBJECTS

**Helmut Weiss, 1230 Berkshire Ln., Newport Beach, Calif.**
**Filed Apr. 12, 1971, Ser. No. 133,191**
**Int. Cl. G02b** *17/00*
**U.S. Cl. 350—241 22 Claims**



A compact, portable, readily handled magnifying system and apparatus including an optical system employing a concave mirror surface reflecting light from a subject or objective means located adjacent one edge of the mirror surface and reflected to the mirror surface by a light transmitting and reflecting surface which permits passage of the reflected light from the concave mirror surface to a viewing zone, the optical elements being arranged to provide high magnification and a wide viewing zone or span of substantial length along the viewing axis whereby eye fatigue is reduced and minimized. A compact, readily manually handled apparatus for presenting small subjects to be viewed, such as microfilm frames, to such an optical magnifying system by advancing the subjects to be viewed along a helical path.

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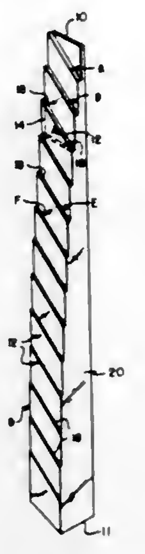
### 3,758,197
## LIGHT COLLECTING AND TRANSMITTING APPARATUS

**Daniel M. Klang, Huntington Station, and Roger Mosciatti, Coram, Long Island, both of N.Y., assignors to Bucode, Inc., Hauppauge, N.Y.**
**Filed Nov. 15, 1971, Ser. No. 198,588**
**Int. Cl. G02b** *5/04*
**U.S. Cl. 350—286 14 Claims**

An optical device for collecting and transmitting light is described. It consists of a longitudinal bar which is composed of transparent material and which has a plurality of totally reflecting prisms arranged in step-like fashion along an inclined surface of the bar. Light incident on one side of the bar is reflected within the bar toward the base of the bar and light incident on the base of the bar is reflected out one side of the bar.



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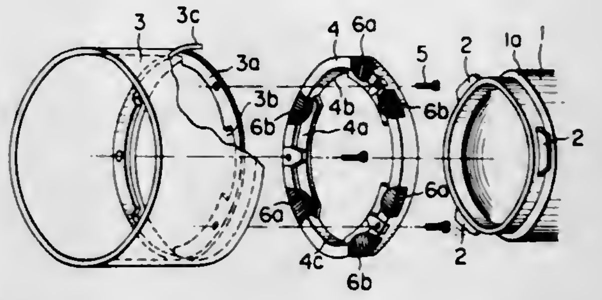
### 3,758,198
## FITTING DEVICE FOR THE ACCESSORIES OF A CAMERA

**Shiomi Kanie, Midori-ku, Higashi Hongo Daini Jutaku, Yohohama; Takeo Shoji, Meguro-ku, Tokyo; Isao Nogi, Kanagawa-ku, Yokohama, and Taizo Mitani, Kohuku-ku, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan**
**Filed Apr. 4, 1972, Ser. No. 241,034**
**Claims priority, application Japan, Apr. 16, 1971, 46/24781**
**Int. Cl. G02b** *7/02*
**U.S. Cl. 350—257 8 Claims**



Fitting device for the accessories such as lens hood, etc. by means of a revolving bayonet mount system, comprising projections for fitting on the periphery of lens tube, the accessories having brims engageable with said projections and elastic pieces made of synthetic material, and at an engaged position of said projections with said brims, said elastic pieces are compressed between said projections of the lens tube and the accessories, thus the latter is held on the former by the resiliency of said elastic pieces.

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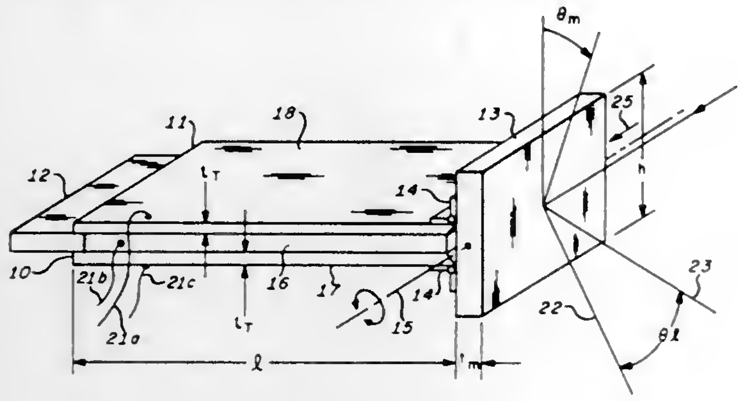
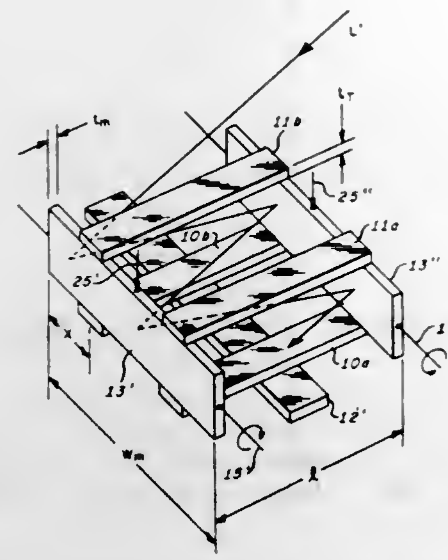
### 3,758,199
## PIEZOELECTRICALLY ACTUATED LIGHT DEFLECTOR

**James B. Thaxter, Townsend, Mass., assignor to Sperry Rand Corporation, New York, N.Y.**
**Filed Nov. 22, 1971, Ser. No. 200,672**
**Int. Cl. G02f** *1/34*
**U.S. Cl. 350—285 9 Claims**

A piezoelectrically actuated type light deflector comprising a pair of piezoelectric transducers rigidly cantilevered at one end from a support member and articulately connected at the other end to a mirror. Electrodes affixed to the transducers provide for application of electrical signals in a manner to utilize an extensional mode of the transducers in which one transducer elongates and the other contracts, or conversely, so as to rotate the mirror about an axis passing therethrough and thereby produce deflection of a light beam impinging on the mirror.





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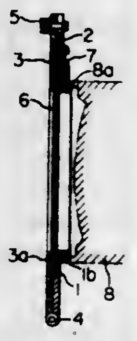
### 3,758,200
### FILTER HOLDER

**Yutaka Saito, Koganei-shi, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan**
**Filed Oct. 4, 1971, Ser. No. 185,952**
**Claims priority, application Japan, Oct. 6, 1970, 45/98747 (utility model)**
**Int. Cl. G02b** *7/00*
**U.S. Cl. 350—318** **4 Claims**



A filter holder for holding a gelatin filter in front of a photographic lens consists of a filter ring having a threaded portion for attaching the lens barrel, a filter mounting device relatively rotatable with respect to the ring and spring means interposed between the filter ring and the filter mounting device. Between the spring means and the filter ring there is provided means for rotating the holder together with the ring to mount them on the lens barrel, and at the final stage against the spring action of the spring means only the filter mounting device rotates while the ring is kept stationary so as to adjust the location of the filter mounting at a position suitable for changing the filter or for phototaking. However, when the filter holder is removed from the lens barrel, said means acts to rotate the ring together with the filter mounting device so as to secure the removal of the filter holder from the lens barrel.

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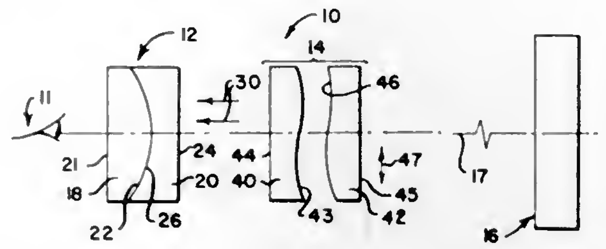
### 3,758,201
### OPTICAL SYSTEM FOR IMPROVED EYE REFRACTION

**Stephen M. MacNeille, Southborough, Mich., assignor to American Optical Corporation, Southbridge, Mass.**
**Filed July 15, 1971, Ser. No. 162,960**
**Int. Cl. A61b** *3/02;* **G02b** *3/04, 15/16*
**U.S. Cl. 351—25** **10 Claims**



Eye refraction optical system including birefringent and variable power lens means in optical alignment with target structure providing target area to be viewed simultaneously in light of two different groups of polarized light rays, said birefringent and variable power lens means including birefringent means for effecting a slightly different dioptric power for the viewed target area for one of said groups from that of the other and also including movable refractive lens means for changing the effective dioptric power of both target areas simultaneously for choice by patient of image of best focus.

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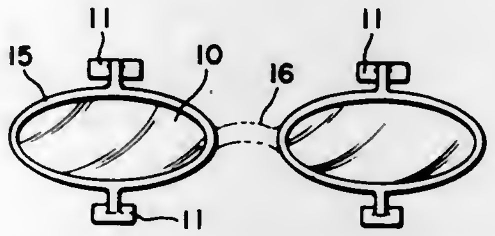
### 3,758,202
### EYEGLASS FRAMES

**Lorenzo Chunga, Sr., Brooklyn, N.Y., assignor to Creative Product Lines INc., Somerset, N.J.**
**Filed Aug. 16, 1971, Ser. No. 171,816**
**Int. Cl. G02c** *1/02, 5/04, 3/00*
**U.S. Cl. 351—41** **4 Claims**



Eyeglass frames for supporting lenses adjacent the eyes of the wearer consisting of a plurality of supporting members, having their longitudinal axes disposed vertically with respect to the face of the wearer, mounted on the upper and lower edges of the lenses. The members engage the skin adjacent the eye socket of the individual wearing the glasses and provide a movable support for the lenses adjacent the eye of the user. If desired, the frames may also include a nose bridge member to furnish additional support on the nose of the wearer. The support members are secured to the face of the wearer by adhesive means disposed on the ends of the support members, and are slidably engaged on the edges of the lenses so as to be adjustable during use.

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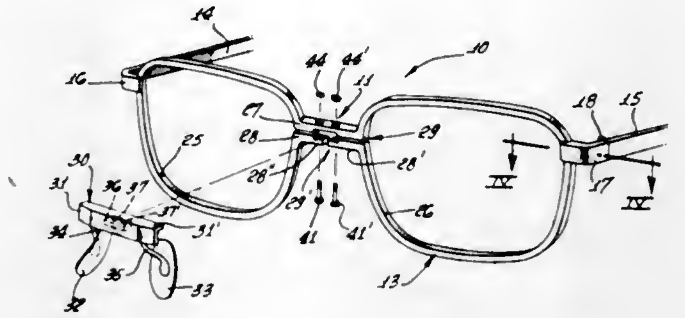
### 3,758,203
### EYEGLASSES FRAME CONSTRUCTION

**Harold Lipchik, Encino, and Ernest G. Racicot, La Crescenta, both of Calif., assignors to Halco Industries, Inc., Glendale, Calif.**
**Filed Jan. 27, 1972, Ser. No. 221,159**
**Int. Cl. G02c** *1/08, 5/02, 5/12*
**U.S. Cl. 351—98** **8 Claims**

A one-piece front is stamped out of aluminum material with a central bridge portion interconnecting a pair of lens rim portions having inner-peripheral grooves for receiving beveled edge lenses. The bridge portion is split by a longitudinally extending narrow gap between upper and lower bridge segments to facilitate insertion of the lenses, retention of the lense therein being effected by mechanical fastening means associated with the bridge segments. One of the bridge segments is vertically split to allow insertion and retention of each lense independent from the other. A combination nose pad mounting and bridge masking means is of a weldable material and has a plate portion overlying and concealing the bridge gap and split and has a pair of nose pads welded via associated nose pad arms thereto. A tang extending laterally of the masking plate is received within a slot formed in the bridge segments in marginal areas adjacent said gap and said mechanical fastening means passes through said tang to hold the construction in assembled relation.



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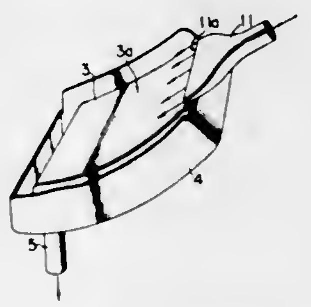
### 3,758,204
### DEVELOPING DEVICE OF THE WET DEVELOPING AGENT TYPE FOR ELECTROPHOTOGRAPHIC DUPLICATION

**Nobuo Mochizuki, Matsudo, Chiba-ken, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan**
**Filed Nov. 28, 1972, Ser. No. 310,154**
**Claims priority, application Japan, Dec. 7, 1971, 46/99226**
**Int. Cl. G03g** *15/10*
**U.S. Cl. 355—10** **6 Claims**



A device wherein a coat of a developing agent adhesion preventing material is applied to the surface of an opposed electrode plate disposed in juxtaposed relation to a photosensitive body. A viscous developing liquid of high toner concentration is supplied to a space between the photo-sensitive body and the developing agent adhesion preventing material layer of this opposite electrode plate by a liquid circulating mechanism so as to conver. an electrostatic latent image on the photosensitive body into a toner image capable of being transferred to copy sheets.

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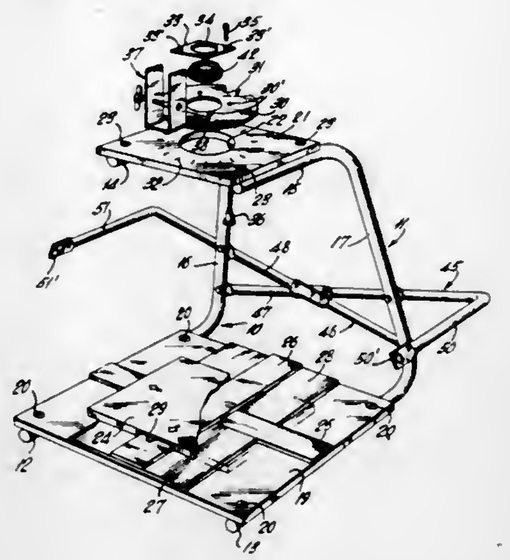
### 3,758,205
### PHOTOGRAPHIC STAND

**John W. Oxbery, New Rochelle, N.Y., assignor to Ox Products Inc., Mamaroneck, N.Y.**
**Filed July 3, 1972, Ser. No. 268,629**
**Int. Cl. G03b** *27/32*
**U.S. Cl. 355—18** **2 Claims**

A photographic stand having a work surface including a plate universally movable in the plane of the work surface for supporting the images and articles to be photographed, a camera supporting plate positioned centrally and above the work surface, a frame carrying both the work surface and camera supporting plate and having means for holding light sources for illuminating the work surface and a rotatable camera mount on the camera supporting plate. In this way a variety of interesting and unusual effects can be obtained by both rotation of the camera and displacement of the image or article during the photographic operation.



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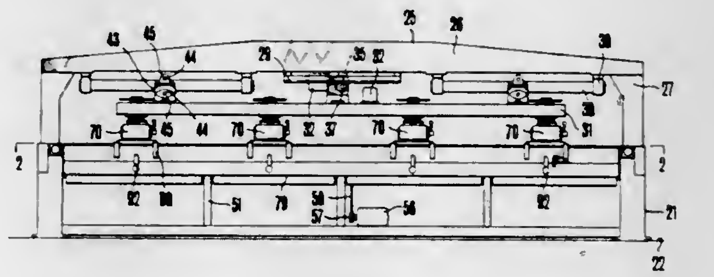
### 3,758,206
### DEVICE FOR SETTING A HALF-TONE NEGATIVE FOR PRODUCING A HALF-TONE PLATE FOR USE IN POLYCHROME PRINTING TO A PREDETERMINED POSITION ON A SHEET FILM

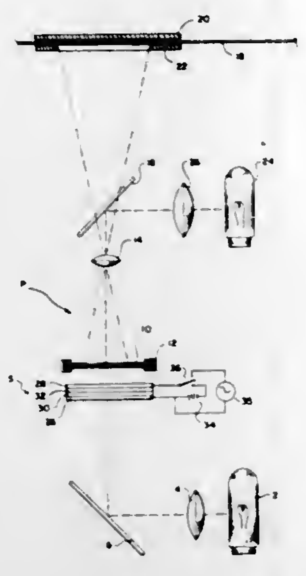
**Yoshio Inoue, No. 10, 2-chome, Tanabehigashino-cho, Higashisumiyoshi-ku, Osaka, Japan**
**Filed Feb. 24, 1972, Ser. No. 228,986**
**Claims priority, application Japan, Mar. 4, 1971, 46/12080; May 10, 1971, 46/32132**
**Int. Cl. G03b** *27/66*
**U.S. Cl. 355—75** **3 Claims**



A device for positioning a half-tone negative at a predetermined position on a sheet film for production of polychrome printing plates. The device has a base box with a gate-shaped frame thereon which is slidable longitudinally on rails on both sides of the base box. An arm is slidable transversely of the frame in parallel with an upper horizontal member of the gate-shaped frame. Negative shifting boxes are suitably spaced between the ends of the arm, the boxes having vertically positioned rotary drive shafts adapted to rotate synchronously to turn the boxes. Pins are provided on the boxes to fit into holes provided in half-tone negatives. Sheet film clipping elements are provided on the table directy under each box. Driving means drives the frame back and forth along the base box and drives the base back and forth along the frame synchronously. Synchronized drive means in the respective negative shifting boxes adjust the rotational positions of the boxes. Proper manipulation of the frame and arm and the synchronized drive means enables precise synchronizes positioning of a plurality of negatives carried by the respective negative shifting boxes relative to a negative sheet on the base box.

### 3,758,207
### MASKING PRINTER

**Edward K. Letzer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Continuation of Ser. No. 81,960, Oct. 10, 1970, abandoned.**
**Filed June 14, 1972, Ser. No. 262,854**
**Int. Cl. G03b** *27/76*
**U.S. Cl. 355—80** **4 Claims**



A masking device is provided for reducing contrast of a projected slide transparency image which includes a photoconductive-liquid crystal layer which is exposed to the slide transparency image by a masking light to form a masking image thereon. Subsequently, a projection light is projected through the masking image formed on the sandwich structure and through the slide transparency to form a reduced contrast image on a photosensitive surface.

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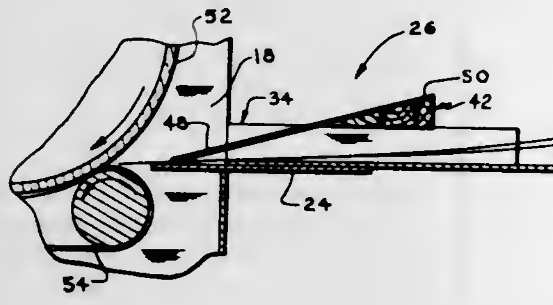
### 3,758,208
### ENTRY DEVICE FOR REPRODUCTION MACHINE

**Wilber B. Robnolte, 920 E. Elm St., Lima, Ohio**
**Continuation-in-part of Ser. No. 82,738, Oct. 21, 1970, Pat. No. 3,634,010. This application Jan. 10, 1972, Ser. No. 216,657**
**Int. Cl. G03b** *27/02*
**U.S. Cl. 355—97** **10 Claims**



An entry device is provided for a reproduction or copying machine, particularly of the type capable of copying large sheets of material. The entry device is mounted on a feed table adjacent an entry opening into the machine. The device includes a pair of supports located adjacent the ends of the entry opening with a bar supported at its ends by the supports and located above the table surface. An entry strip having an edge portion affixed to the bar has a forward edge extending near or into the opening. The strip flattens and smooths sheet material being fed into the machine and also supports material coming out of the machine above the feed table so that new sheet material can be fed into the machine as other material is emerging.

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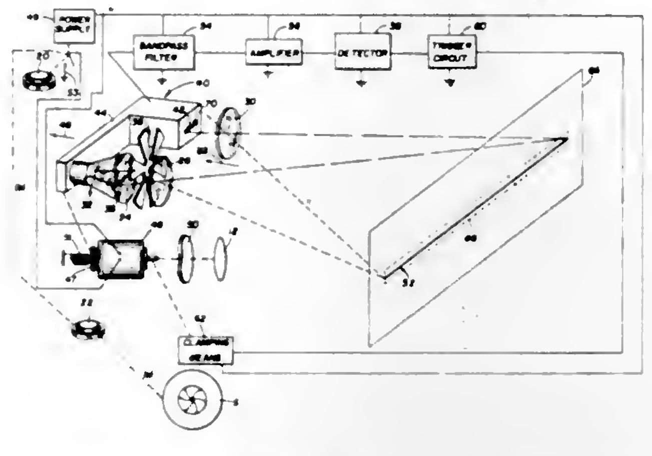
### 3,758,209
### AUTOMATIC FOCUSING DEVICE

**Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Division of Ser. No. 853,093, Aug. 26, 1969, Pat. No. 3,599,552. This application Feb. 10, 1971, Ser. No. 114,335**
**Int. Cl. G01c** *3/08*
**U.S. Cl. 356—4** **16 Claims**



An apparatus for use with a camera or the like for determining the distance to a subject of interest. First and second lenses are provided. Modulated radiant energy of predetermined frequency is transmitted through the first lens toward the subject. The reflected image from the subject is passed by the second lens and received by a light sensitive transducer. The energy emitting source and the light sensitive transducer are displaced in unison to vary the modulated radiant energy received by the light sensitive transducer. Electronic detection circuitry is coupled to the light sensitive transducer to develop an output signal when the modulated radiant energy incident on the light sensitive transducer is at a maximum. The output signal is applied to arrest further displacement of the energy emitting source and the light sensitive transducer.

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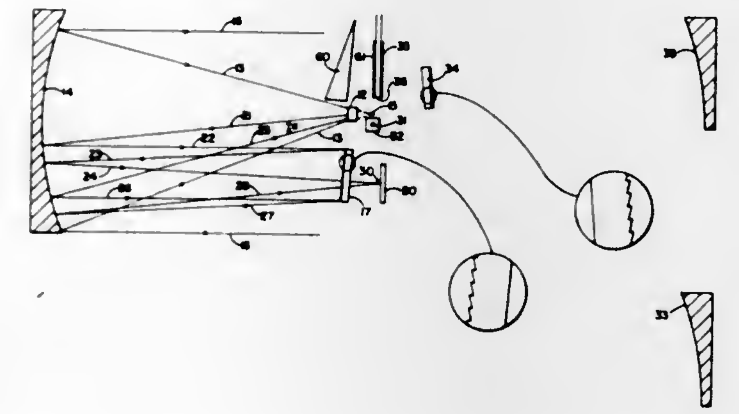
### 3,758,210
### SUPERVISORY APPARATUS FOR SPECTRAL ANALYSIS

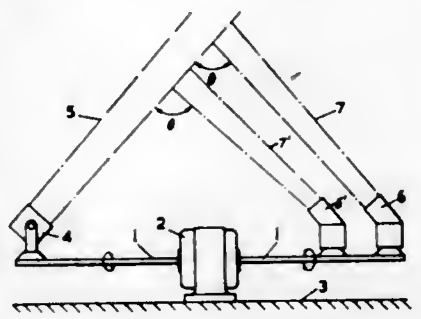
**Robert A. Weagant, Chelmsford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.**
**Filed Aug. 6, 1970, Ser. No. 61,756**
**Int. Cl. G01j** *3/18;* **G01n** *21/34*
**U.S. Cl. 356—51** **10 Claims**



An assemblage of diffractors and detector arrays associated with off-axis paraboloidal reflecting means to give a multispectral scanner of unprecedentedly wide wavelength range. Light from the source to be scanned is distributed to detection channels in the visible, near infrared, and thermal or far infrared wavelength regions by a novel spatial beam splitter, and common to two of the detector channels is a component which functions as a simple reflector in one channel and a diffracting reflector in the other, thus performing a further beam splitting function on the basis of wavelength rather than spatial position.

### 3,758,211
### ATMOSPHERIC VISIBILITY MEASURING APPARATUS

**Douglas Alfred Bateman, Berkshire, Crowthorne; Geoffrey John Burrell, Hampshire, Fleet, and Donald Edward Killick, Surrey, Camberley, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**
**Filed Jan. 13, 1972, Ser. No. 217,596**
**Int. Cl. G01n** *21/00, 21/48*
**U.S. Cl. 356—103** **8 Claims**



The apparatus comprises a light projection means for projecting a beam of light into the atmosphere along a prescribed beam path, an optical detection means arranged to respond to light scattered by particles in the atmosphere from within another beam path surrounding an optical axis of the detector, and control apparatus for turning the light beam and the optical axis of the detection means in unison about a horizontal axis which extends substantially from the projection means to the detection means. The light projection means and the optical detection means are relatively mounted so that the optical axis of the detection means always intersects the light beam at a constant angle and at a constant range from the detection means. The control apparatus may comprise a rotatable horizontal shaft supporting the light projection means and the optical detection means. Alternatively a fixed light projector and detector may be arranged to co-operate with two mirrors provided on a rotatable horizontal shaft the mirrors being arranged to direct the light beam into the prescribed beam path and to reflect the scattered light onto the detector. The projection means and the detection means, or just the mirrors which form a part thereof, may be mounted separately and maintained in relative alignment by a follow-up servo system.

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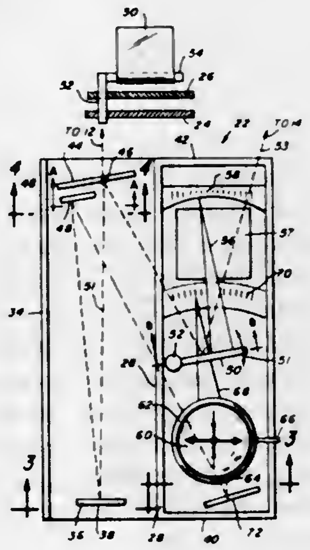
### 3,758,212
### HAND-HELD OPTICAL TRIANGULATION POSITION-DETERMINING INSTRUMENT

**Tom E. Messler, 5740 S. 72 East Ave., and J. P. Messler, 4410 E. 46 Pl., both of Tulsa, Okla.**
**Filed Oct. 21, 1971, Ser. No. 191,362**
**Int. Cl. G01c** *1/00*
**U.S. Cl. 356—145** **6 Claims**



A self-contained, hand-held instrument for determining geographic position in terms of the compass bearing to a first landmark, and the horizontal angle between the bearings to the first and a second landmark, comprises a frame, proximal and distal sighting indices, a first mirror adjacent the distal index and a seond mirror rotatable about a vertical and a horizontal axis for presenting an image of the second landmark in the first mirror, the first landmark is sighted over the top of the first mirror. Means are provided to read the angle of the second mirror.

A compass has a casing which is rotatably mounted in the frame. An index and a pointer are mounted on the casing. Mirror means are provided for presenting an image of the compass index and graduations near the area of the first mirror. The compass pointer is long compared to the radius of the compass graduation circle.

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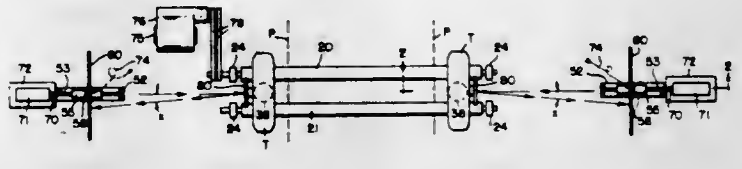
### 3,758,213
### METHOD AND APPARATUS FOR TESTING FRONT WHEEL ALIGNMENT OF AUTOMOTIVE VEHICLES

**Roger MacPherson, 148 Millbank St., Rochester, N.Y., and Pierre A. Alsina, 3480 Elmwood Ave., Rochester, N.Y.**
**Filed July 27, 1971, Ser. No. 166,392**
**Int. Cl. G01b** *11/26*
**U.S. Cl. 356—155** **10 Claims**



The front wheels of the vehicle are driven onto a pair of spaced, parallel rollers, one of which may be driven by an electric motor to effect rotation of the front wheels while the vehicle is standing motionless. The hubcaps are removed and a plane mirror is secured by a magnet to the hub of each front wheel to rotate therewith in a plane perpendicular to the associated spindle. A beam of light is shone onto each mirror through a small central hole in a chart that is positioned outwardly from the wheel, and this beam is reflected back onto the associated chart as a point of light which is offset horizontally and vertically from the hole in proportion to the toe and camber of the wheel. A removable fixture is provided for aligning the reference light beams and charts.

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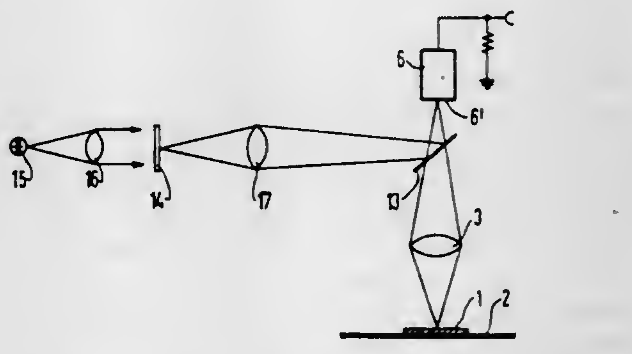
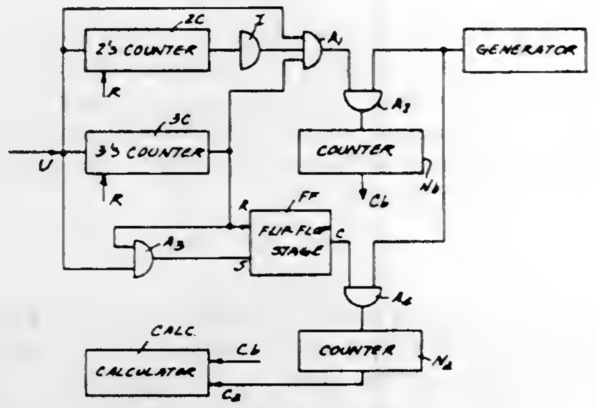
### 3,758,214
### METHOD AND APPARATUS FOR THE AUTOMATIC MEASUREMENT OF DISTANCES SUCH AS LINE WIDTH OR EDGE DISTANCES OF SMALL OBJECTS

**Dietmar Mangelsdorf, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**
**Filed Nov. 24, 1971, Ser. No. 201,696**
**Claims priority, application Germany, Dec. 1, 1970, P 20 59 106.4**
**Int. Cl. G01b** *11/04*
**U.S. Cl. 356—160** **10 Claims**



A method and apparatus for automatic measurement of distances such as line width or edge dimensions of small objects, utilizing an optical system, for example a microscope, in which the resulting image is transferred to the photo-sensitive layer of a vidicon tube of a television camera and dissected thereby into picture lines for evaluation, in which the number of predetermined pulses suitably produced during the scanning from one end to the other of a calibrated distance,



and the number of pulses so produced during the scanning of a distance to be measured are respectively counted and the quotient of the pulse totals so obtained is multiplied by a factor derived from the optical and electrical constants involved in the respective optical and electrical systems utilized.

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### 3,758,215

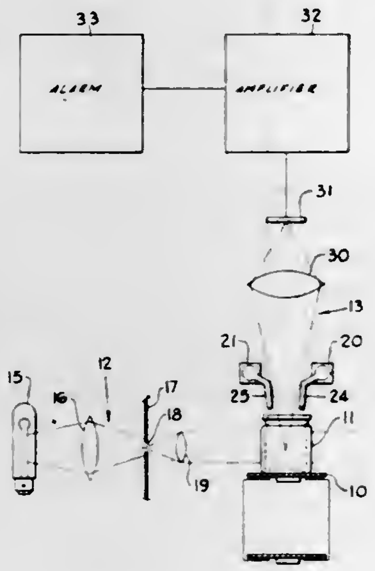
### AERODYNAMIC MEANS FOR RAISING AND SWIRLING LOOSE OBJECTS IN EMPTY GLASS CONTAINERS AND OPTICAL MEANS FOR DETECTING THE PRESENCE OF SAME

**Miller J. Paruolo; John J. McMackin, and James H. McMeekin, all of Brockway, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.**

**Filed June 1, 1972, Ser. No. 258,865**

**Int. Cl. G01n** *21/16, 21/24*

**U.S. Cl. 356—196** **9 Claims**



Optical inspection apparatus, particularly for detecting the presence of loose objects, usually fragments of broken glass, in glass containers. Light is directed against the side wall of a container and an air or gas jet is directed into the container to create a swirling action and raise loose objects in the container from the bottom thereof for more effective illumination. Light sensitive means is positioned above the container to pick up reflected light from such illuminated fragments and the light sensitive means produces an electrical signal which may be employed to actuate an alarm, to stop the operation of the conveyor or other mechanism, or to operate a rigid mechanism for diverting containers which may have loose glass therein.

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### 3,758,216

### ELECTRONIC APPLIANCE FOR SETTING AND CHECKING ELECTRONIC YARN CLEARERS

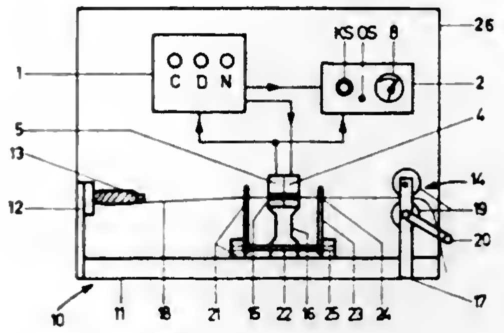
**Hansruedi Stutz, Dietlikon, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Zurich, Switzerland**

**Filed Apr. 21, 1972, Ser. No. 246,303**

**Claims priority, application Switzerland, May 27, 1971, 7674/71**

**Int. Cl. G01n** *21/32*; **D01h** *13/22*

**U.S. Cl. 356—200** **13 Claims**



An electronic apparatus for setting and checking electronic yarn clearer systems, comprising a controllable d.c. amplifying channel having a signal input terminal and at least one control input terminal; a negative feedback loop operatively coupled to said controllable d.c. amplifying channel for compensating for a signal level representing a constant base signal produced by a yarn sensing means of said electronic yarn clearer, said negative feedback loop comprising a switch and a condenser for holding or storing temporarily a compensation potential.

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### 3,758,217

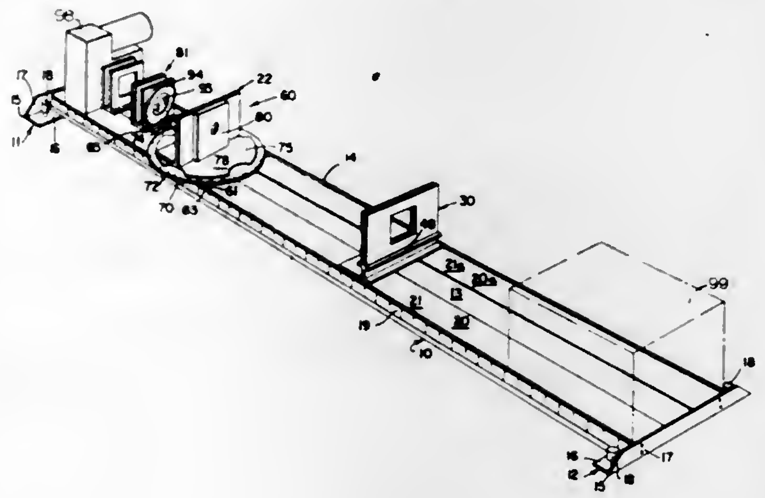
### OPTICAL BENCH AND COMPONENTS THEREFOR

**Paul A. Stokstad, 85 Estabrook, San Leandro, Calif.**

**Filed Oct. 20, 1971, Ser. No. 190,806**

**Int. Cl. G02b** *27/32*

**U.S. Cl. 356—256** **23 Claims**



An optical bench having a horizontal flexible plastic magnetic surface and a longitudinal guide rail. Each of a plurality of component carriers has a flat ferromagnetic metal pad on its bottom surface and means such as a straight edge for engagement with the guide rail. Thus, the component carriers are held in any desired position by the attraction of the magnetic plastic for the metal pad, while its engagement with the guide rail provides lateral alignment. Some, at least, of the component carriers have a vertical frame supported by the flat pad, a central opening, and flexible magnetic plastic surfaces on at least one face of the frame. The components comprise plates having on one face an area of ferromagnetic metal, and an optical instrument that aligns with the opening on the carrier. Similar attachments include a disc component parallel to the bottom pad and having a plastic magnetic surface for engagement by another disc that has a metal pad and carries a component and is aligned by a center pin to the magnetic disc and is held in any position thereon by magnetic attraction. Also rotatable components are provided which are circumscribed within the optical opening and aligned by it.

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### 3,758,218

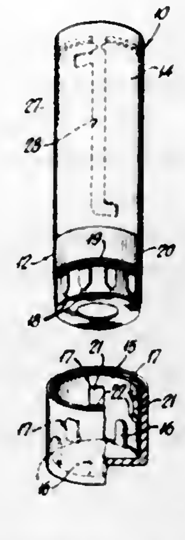
### CARTRIDGE-TYPE LIPSTICK CONTAINER OR THE LIKE

**John W. Pfrommer, Cheshire, and Robert C. Geisel, Windsor, both of Conn., assignors to Eyelet Specialty Company, Wallingford, Conn.**

**Filed Jan. 26, 1972, Ser. No. 220,770**

**Int. Cl. A45d** *40/06*

**U.S. Cl. 401—86** **21 Claims**



The invention contemplates an improved base-end construction for a basic lipstick assembly, whereby the basic lipstick assembly may serve universally for a relatively wide variety of different customer requirements, in some of which the basic assembly is a replaceable refill cartridge, and in some which the basic assembly receives merely a decorative or plain shell, which may be of metal or of plastic. Whatever the ultimate application, the invention features coacting formations on the base end of the basic assembly, and in the bore of the base housing or casing member to which it is assembled, whereby coaxially stabilized positioning of the parts is assured while at the same time achieving a circumferentially distributed axial-locating abutment reference and a driving (i.e., non-rotative) relation between the outer and inner assembled parts.

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### 3,758,219

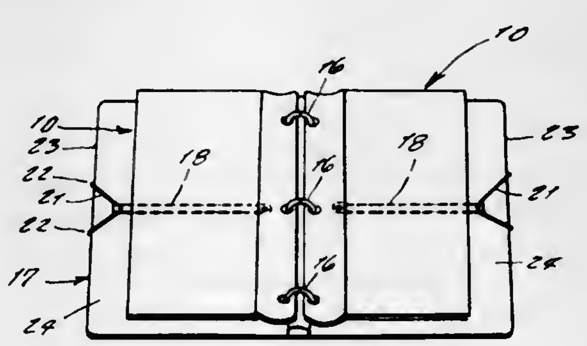
### LOOSE LEAF NOTEBOOK SHEET LIFTER

**Robert Stasio, 2302 85th St., and Thomas Butera, Jr., 182 Bay 11th St., both of Brooklyn, N.Y.**

**Filed Mar. 23, 1971, Ser. No. 127,137**

**Int. Cl. B42f** *3/00*

**U.S. Cl. 402—80 L** **1 Claim**



A device for lifting or turning the pages of a loose leaf notebook simultaneously so that the openings of the individual pages do not get caught and torn by the notebook rings, the device consisting of tensioning hook units which at one end are anchored to the notebook rings and at their other ends are hooked over the notebook edges so that when the notebook is closed, all the pages move on the rings simultaneously as one unit to prevent individual sheets or pages getting hung up on the hooks.

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### 3,758,220

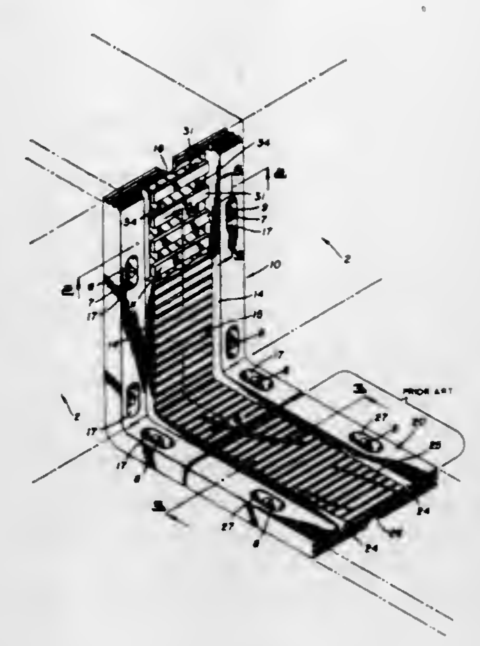
### ELASTOMERIC EXPANSION JOINT

**Richard D. Hein, Wabash, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio**

**Filed Jan. 27, 1972, Ser. No. 221,342**

**Int. Cl. E01c** *11/12*

**U.S. Cl. 404—67** **3 Claims**



A reinforced elastomeric expansion joint is constructed so as to flex or bend by utilizing, as an internal rigid reinforcement, a series of spaced narrow plates joined by flexible means such as wire cable. The narrow plates combine to effect sufficient support, but the presence thereof within the joint does not preclude the joint from being bent when required, such as for connecting the intersection of a curb and gutter on a bridge or roadway.

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### 3,758,221

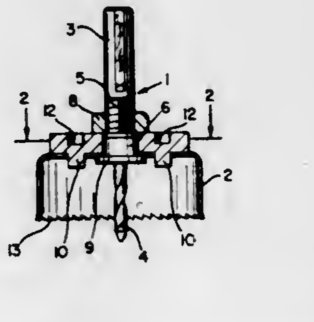
### HOLE SAW ASSEMBLY

**Avram M. Meshulam, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Dec. 29, 1971, Ser. No. 213,359**

**Int. Cl. B23b** *51/04*

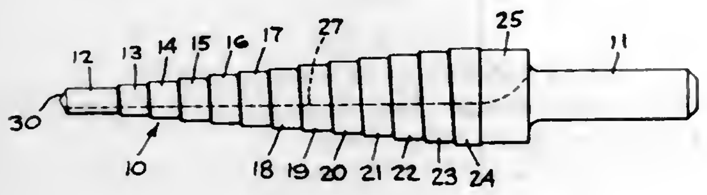
**U.S. Cl. 408—204** **1 Claim**



A hole saw assembly comprising a mandrel adapted to receive a variety of cup-shaped hole saws. The mandrel includes a pilot drill and a spindle adapted to be mounted within the chuck of a power tool. The assembly also includes a lock plate for providing a drive connection between the mandrel and the hole saw.

### 3,758,222
### DRILL BIT

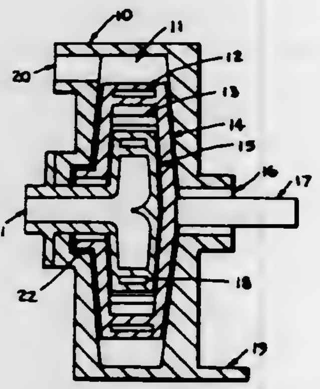
**Harry C. Oakes, P.O. Box 331, Wyoming, N.Y.**
**Filed Dec. 30, 1971, Ser. No. 214,054**
**Int. Cl. B23b** *51/00*
**U.S. Cl. 408—224** **1 Claim**



A drill bit for drilling holes in metal sheets or panels in which the drill is of generally conical form having a series of cylindrical drill portions increasing progressively in diameter from the point end of the drill whereby a single drill may be employed to drill holes of various diameters within a given range. The drill has a single flute of generally right-angle form in cross section with the apex of the right angle extending generally along the axis of the bit. Each cylindrical portion has a beveled end connecting it with the next smaller cylindrical portion and this beveled end extends helically at a relatively small angle to provide the usual axial clearance and to limit the rate of feed of the drill into the work.

### 3,758,223
### REACTION ROTOR TURBINE

**Michael Eskell, 6220 Orchid Ln., Dallas, Tex.**
**Filed Sept. 30, 1971, Ser. No. 185,060**
**Int. Cl. F01d** *1/00, 1/06*
**U.S. Cl. 415—1** **6 Claims**

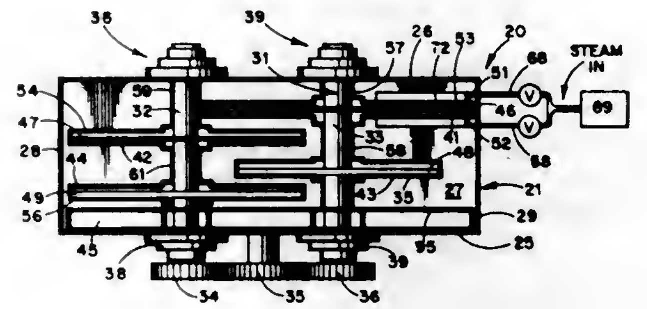


A method and apparatus for a reaction type turbine rotor, employed in power generation devices, such as steam turbines, hydraulic turbines, or gas turbines. The pressurized fluid is supplied to within said turbine reaction rotor by employing a fluid nozzle arranged to discharge within said wheel in a direction that is approximately the same as the direction of rotation of said rotor wheel. The fluid is then discharged from the rotating rotor wheel nozzles backward away from the direction of rotation; said fluid then will generate a torque on said rotor wheel; said torque is then passed to the rotor shaft as the work output of the device.

### 3,758,224
### MULTI-STAGE STEAM TURBINE

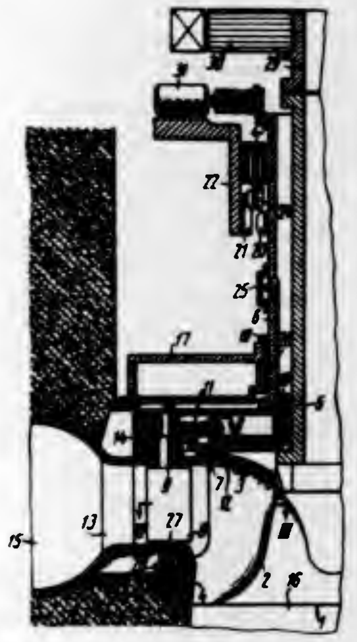
**Maurice Migneault, 69 Bowers St., Nashua, N.H.**
**Filed Oct. 28, 1971, Ser. No. 193,397**
**Int. Cl. F01d** *1/24*
**U.S. Cl. 415—66** **10 Claims**

A multi-stage steam turbine, about the size of an automobile engine, is contained in a lightweight, separable housing, the housing having a driven shaft in the lower half with the bladed rotors thereon. Each disc-like rotor is encircled by an individual, cylindrical housing which forms a turbine blade chamber therewith and the housings are supported on the lower half of the casing. Each successive stage is of decreasing volume. Only the first stage rotor has blades on both side faces; the first stage blades are driven by multiple solenoid controlled steam jets; and the other rotors are driven by steam from preceding stages.



### 3,758,225
### HYDRAULIC PUMP-TURBINE

**Lev Yakovlevich Kazachkov, and Jury Abramovich Lesokhin, both of Leningrad, U.S.S.R.**
**Continuation of Ser. No. 836,434, June 25, 1969, abandoned.**
**This application Aug. 16, 1971, Ser. No. 172,217**
**Claims priority, application U.S.S.R., July 8, 1968, 1254747**
**Int. Cl. F01d** *1/24;* **F04d** *25/16*
**U.S. Cl. 415—69** **10 Claims**

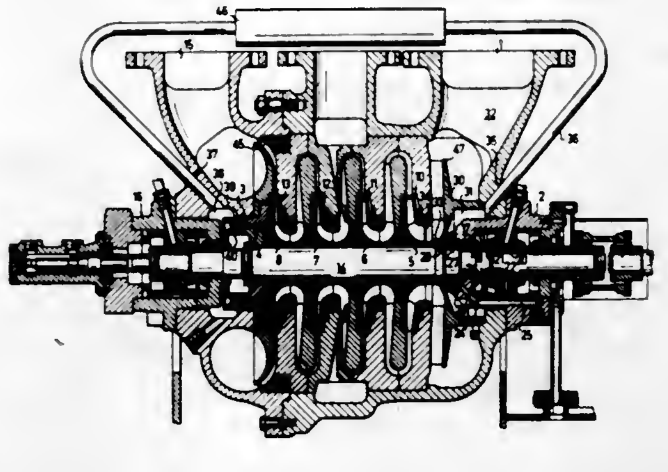


A hydraulic pump-turbine in which the blades of the guiding apparatus during turbine operation are arranged in a holder which during pump operation rotates at a higher speed than the number of revolutions of the main runner with the help of an independent electric motor.

### 3,758,226
### TURBO-COMPRESSOR HAVING MEANS FOR DRAWING IN WORKING MEDIUM AT LOW TEMPERATURE

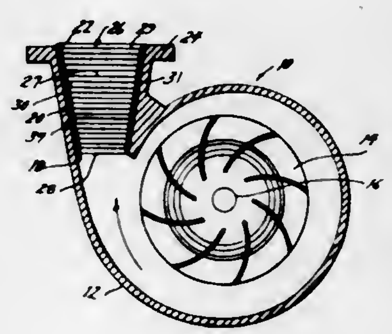
**Gabor Gyurech, Zurich, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland**
**Filed July 10, 1972, Ser. No. 269,917**
**Int. Cl. F01d** *3/00*
**U.S. Cl. 415—104** **9 Claims**

The bearing housing on the delivery side of the turbocompressor is surrounded in spaced relation by a bulkhead to define a chamber which communicates at one end with the suction branch. The opposite end of the chamber is connected to a source of working medium of high temperature so that heated working medium can flow over the bearing housing to maintain the lubricant therein in a fluid state and thereby prevent clogging in the drain-off ducts.



### 3,758,227
### DEVICE FOR VARYING THE VOLUTE AND THROAT OF A CENTRIFUGAL PUMP

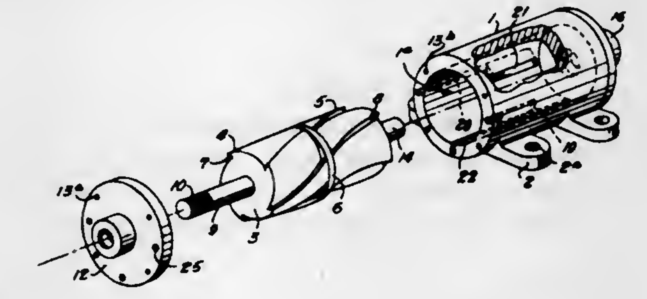
**Henry M. Pollak, and Robert S. Pollak, both of c/o American Machine and Tool Co., Inc. Fourth Ave. and Spring St., Royersford, Pa.**
**Filed Nov. 15, 1971, Ser. No. 198,928**
**Int. Cl. F04d** *17/00, 29/44*
**U.S. Cl. 415—121** **12 Claims**



A device for varying the discharge area perpendicular to the normal flow in the passage in a centrifugal pump comprising a coiled member.

### 3,758,228
### ROTARY ENGINE

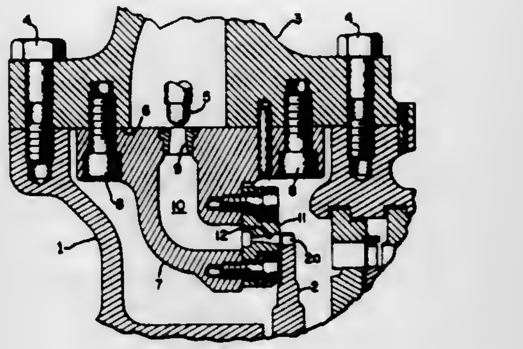
**Daniel H. Post, P.O. Box 186, 536 Bentley Dr., Nash, Tex.**
**Continuation-in-part of Ser. No. 20,194, May 11, 1970, abandoned. This application Mar. 17, 1972, Ser. No. 235,727**
**Int. Cl. F01d** *1/30*
**U.S. Cl. 415—153** **2 Claims**



A rotary engine which may be driven by pressure fluid such as compressed air, steam or hydraulic fluid under pressure comprising an integral rotor rotatably mounted in a housing. The rotor has forward and reverse vanes machined or cast thereon, which vanes are uniform in depth from the ends of the rotor to the center thereof where they terminate. Appropriate grooves are formed in the wall of the housing to admit fluid under pressure to the forward and reverse ends thereof, and an exhaust groove is formed in the wall of the housing running the full length thereof to provide a common exhaust groove for the fluid admitted to both the forward and reverse ends of the rotor. An accelerator valve is provided for regulating the admission of pressure fluid, and a forward and reverse valve is provided between the accelerator valve and the housing which may be actuated by an appropriate lever or petal to direct the pressure fluid to either the forward or reverse end of the rotor.

### 3,758,229
### TURBINE VALVE CHEST AND NOZZLE PLATE CONSTRUCTION

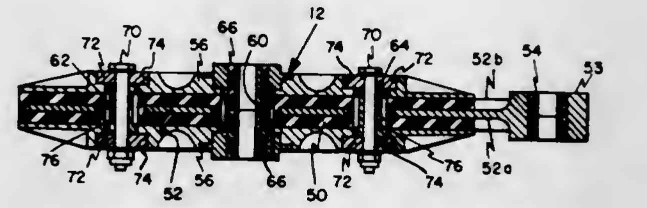
**Philip N. Price, Leominster, and Herbert N. Hoffman, Lunenburg, both of Mass., assignors to General Electric Company, Schenectady, N.Y.**
**Filed Nov. 19, 1971, Ser. No. 200,305**
**Int. Cl. F03b** *1/04*
**U.S. Cl. 415—217** **4 Claims**



A small steam turbine with a separate external bolted-on valve chest is arranged to support an internally mounted nozzle box with an adjustable nozzle plate. The valve chest, nozzle box and nozzle plate are manufactured as a sub-assembly and attached to the turbine casing as a separate unit. The nozzle plate can subsequently be adjusted for concentric alignment with the first-stage turbine buckets to compensate for accumulated dimensional variations due to manufacturing tolerances.

### 3,758,230
### ROTOR SYSTEM HAVING VISCOELASTIC LEAD-LAG DAMPER

**James L. Potter, 2014 W. 8th St., Erie, Pa.**
**Continuation-in-part of Ser. No. 84,003, Oct. 26, 1970, abandoned. This application May 13, 1971, Ser. No. 142,953**
**Int. Cl. B64c** *27/42*
**U.S. Cl. 416—107** **5 Claims**



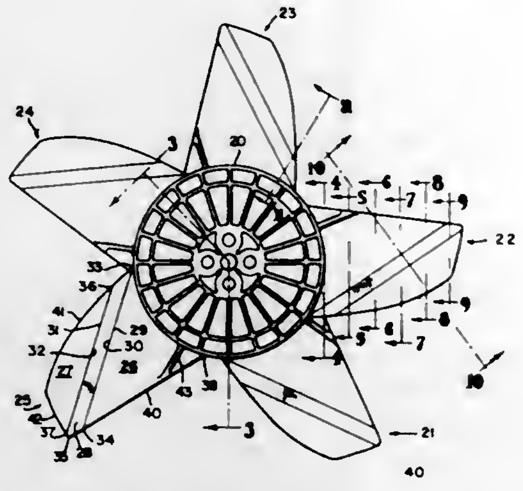
A rotor system for a helicopter or the like vertical lift aircraft in which lead-lag motions of a blade are effectively damped by a body of viscoelastic material that is stressed preferentially in shear by the lead-lag movement of the blade.

### 3,758,231
## FLEXIBLE FAN

**John W. Barnstead, Brazil, Ind., assignor to Vernco Corporation, Columbus, Ind.**

**Filed July 15, 1971, Ser. No. 162,912**
**Int. Cl. F01d** *5/28*

**U.S. Cl. 416—132** **28 Claims**



A fan which, because of the particular construction of its blades, will automatically "unload" by flexure of portions only of its blades as its speed of rotation is increased, whereby the volume of air moved by the fan does not increase proportionally as the speed of the fan increases. Each of the identical blades has a reverse twist and consists of a stiff leading region formed as a portion of a cone, a resiliently flexible trailing region formed as a portion of a cylinder, and an intermediate region formed as a continuation of the same cylinder and rectilinearly extending from an area near the trailing edge of the blade root to an area near the leading edge of the blade tip, the axis of the cylinder being parallel with the intermediate region. Ideally, the fan is an integral plastic molding and the difference in flexibility of the several regions is achieved by making the leading region uniformly thick, the trailing region uniformly thin and the intermediate region of increasing thickness as it progresses between the trailing region and the leading region. The reverse twist feature is obtained by having the pitch at the tip of each blade greater than the pitch at its root.

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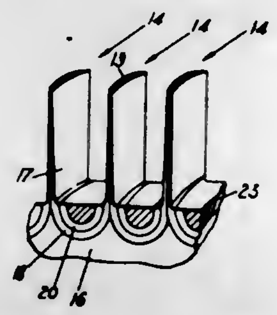
### 3,758,232
## BLADE ASSEMBLY FOR GAS TURBINE ENGINES

**John Stanley Wallett, Allestree, England, assignor to The Secretary of State for Defence, London, England**

**Division of Ser. No. 794,138, Jan. 27, 1969, Pat. No. 3,616,508. This application Apr. 23, 1971, Ser. No. 136,705**
**Int. Cl. F01d** *5/34*

**U.S. Cl. 416—213** **4 Claims**



A blade assembly for a gas turbine engine comprising an annulus of blades in which a blade row is formed from an annular array of pieces, each comprising a blade flank, an interconnecting portion, and an opposing flank of an adjacent blade. The pieces are made from fiber reinforced material and filament winding techniques are utilized in making the individual pieces. The blade assembly may be used for compressor or turbine rotors or stators.

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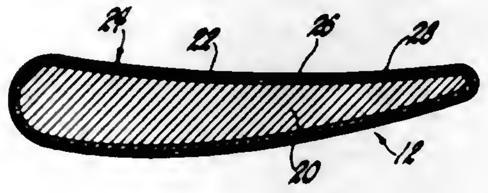
### 3,758,233
## VIBRATION DAMPING COATINGS

**Kenneth R. Cross, Indianapolis; John R. Cavanagh, Brownsburg, and Richard L. Newman, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 17, 1972, Ser. No. 218,219**
**Int. Cl. F01d** *5/10*

**U.S. Cl. 416—229** **5 Claims**



Nickel, cobalt, aluminum, iron-nickel, molybdenum, and titanium alloy articles are provided with a plasma sprayed coating for increasing the vibration damping capacity thereof. The coating consists of a outermost layer portion formed of an oxide ceramic or refractory carbide and an intermediate portion formed of a mixture of one of the above alloys and the material forming the outermost layer. In the preferred embodiment, the intermediate portion consists of two or more discrete layers, with the layers having decreasing alloy content and increasing oxide ceramic content toward the outermost layer portion.

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### 3,758,234
## FIBER BLADE WITH LEADING EDGE REINFORCEMENT

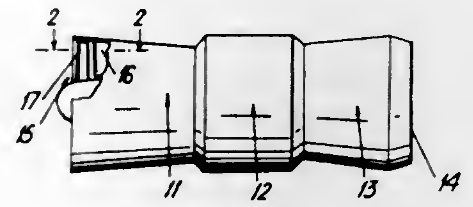
**John R. Goodwin, Ockbrook, England, assignor to The Secretary of State for Defence, London, England**

**Continuation of Ser. No. 867,653, Oct. 20, 1969, abandoned. This application May 5, 1972, Ser. No. 250,744**

**Claims priority, application Great Britain, Oct. 22, 1968, 50,058/68**

**Int. Cl. F01d** *5/14*

**U.S. Cl. 416—230** **3 Claims**



This invention concerns a leading edge reinforcement for a fiber reinforced blade suitable for use in a gas turbine engine. The reinforcement comprises two strips of metal joined together at and adjacent to an edge which is shaped to form the leading edge of the blade. At least a part of the remaining portion of the metal strip serves for the attachment of the reinforcement to the blade.

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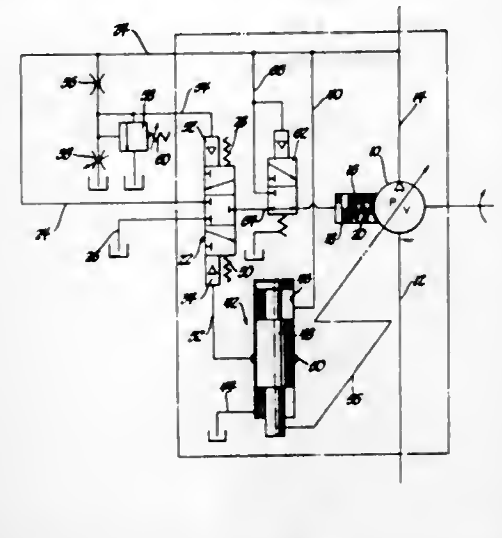
### 3,758,235
## POWER TRANSMISSION

**Robert H. Breeden, Metamora, Mich., assignor to Sperry Rand Corporation, Troy, Mich.**

**Filed Sept. 22, 1971, Ser. No. 182,677**
**Int. Cl. F04b** *1/26*

**U.S. Cl. 417—222** **10 Claims**

A displacement adjusting system for a variable displacement pump utilizes a pair of bleed circuits connected as a hydraulic bridge to control the servomotor of the pump so as to maintain a balance between the pressure levels generated in the command bleed circuit and in the feedback bleed circuit. The adjustable restriction in the feedback circuit is of the laminar flow type, its length being adjusted with changes in pump displacement. Input torque is limited by a relief valve acting on the control pressure in the command circuit. Pump outlet pressure is limited by a valve which disables the bleed circuits. The system is applicable to both one-way and reversible displacement pumps.



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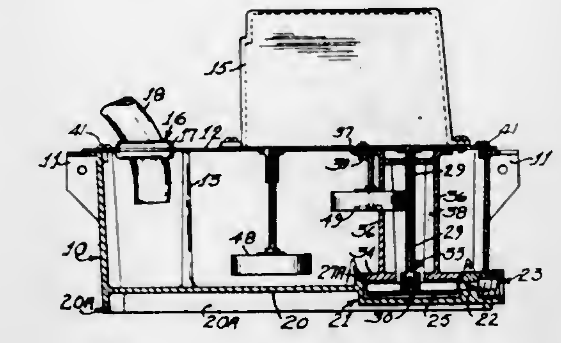
### 3,758,236
## CONDENSATE PUMP

**Frederick N. Zimmerman, Deerfield, Ill., assignor to March Manufacturing Company, Glenview, Ill.**

**Filed Oct. 14, 1971, Ser. No. 189,122**
**Int. Cl. F04b** *35/00*

**U.S. Cl. 417—360** **13 Claims**



A condensate pump unit for use with air-conditioning equipment and the like. A reservoir or sump is molded from plastics material with a pump chamber well formed as an integral part of the bottom wall. A pump motor is carried on a cover plate for the sump and has a shaft descending to the well to rotate an impeller therein. The pumping chamber is completed by a closure formation which is an integral part of an elongated pillar construction attaching to, and also lending support to the sump cover plate, in such manner that the motor and impeller are removable with the cover as a subassembly.

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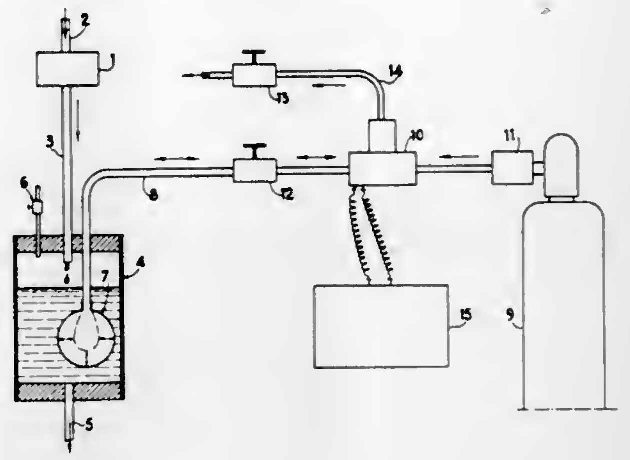
### 3,758,237
## DEVICE FOR PRODUCING A PULSATING FLOW OF A FLUID

**Jean Kachelhoffer, Strasbourg-Cronenbourg, France, assignor to Institut National De La Sante Et De La Recherche Medicale, Paris, France**

**Filed Jan. 18, 1972, Ser. No. 218,719**
**Claims priority, application France, Jan. 18, 1971, 7101448**
**Int. Cl. F04b** *43/00*

**U.S. Cl. 417—394** **5 Claims**

Device for producing a pulsating flow of a fluid. The device comprises a vessel receiving the fluid and an inflatable bag within the vessel. The interior of the bag is connected to means for producing a pulsating gas flow including a gas valve controlled electrically by a pulse generator, the frequency and ratio between the work time and rest time of the generator being variable. The resulting pulsating fluid issues from the vessel by way of an outlet.



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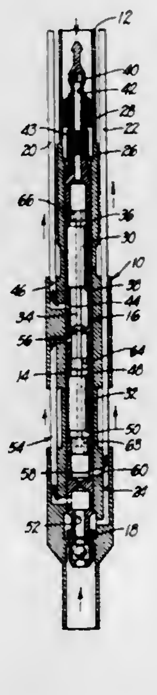
### 3,758,238
## FREE TURBINE PUMP

**John W. Erickson, Huntington Beach, and Francis Barton Brown, La Crescenta, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.**

**Filed July 24, 1972, Ser. No. 274,594**
**Int. Cl. F04b** *47/14*

**U.S. Cl. 417—408** **7 Claims**



A turbine oil well pump capable of being run into and out of the well hydraulically. The pump includes an axial flow turbine and an axial flow pump interconnected in end-to-end relation with the turbine above the pump. The turbine has a power fluid intake adjacent its upper end and a spent power fluid exhaust adjacent its lower end. The pump has a well fluid inlet adjacent its upper end, and adjacent the power fluid exhaust, and has a production fluid outlet adjacent its lower end.

### 3,758,239
### CONTROLLED PERISTALTIC PUMP

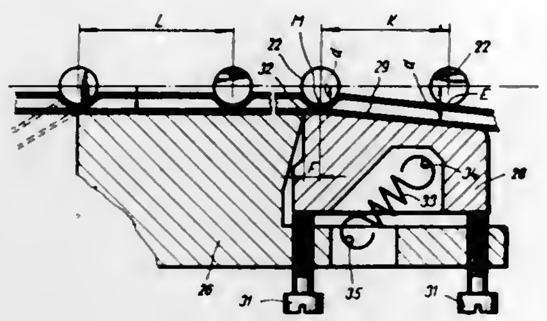
**Jiri Hrdina, Praha, Czechoslovakia, assignor to Cskoslovenska akademie ved, Praha, Czechoslovakia**

**Filed Dec. 21, 1971, Ser. No. 210,371**

**Claims priority, application Czechoslovakia, Dec. 23, 1970, 8746/70**

**Int. Cl. F04b** *43/08, 43/12, 45/06*

**U.S. Cl. 417—477** **6 Claims**



In peristaltic pumps, using a number of mobile occluding organs which press a resilient hose against a support and which cause the advance of a medium within this hose, an additional support is provided from the limit point of occlusion up to the last contact point with the hose. The distance of the support from the track of the occluding organs being in inverse proportion to the required speed of advance of the medium in this hose.

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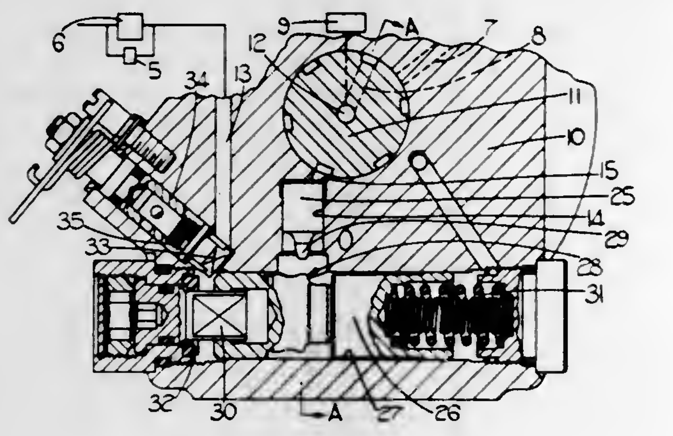
### 3,758,240
### LIQUID FUEL INJECTION PUMPING APPARATUS

**Kenneth Albert Walters Kemp, and Stanislaw Jan Antoni Sosnowski, both of Ealing, London, England, assignors to C.A.V. Limited, Birmingham, England**

**Filed Aug. 31, 1971, Ser. No. 176,607**

**Int. Cl. F04b** *29/00*

**U.S. Cl. 417—462** **2 Claims**



A fuel injection pumping apparatus for an internal combustion engine includes a piston movable under the action of a fluid pressure which varies in accordance with the speed at which the apparatus is driven. The piston controls the maximum amount of fuel which can be fed to the engine by acting as a stop for a shuttle piston. A spring is provided to load the piston against the action of fuel pressure and a resilient seal is provided to engage the end of the piston subjected to the fluid pressure to initially shield a portion of the piston from the fluid pressure. In this manner a higher initial value of fluid pressure is required to effect initial movement of the piston.

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### 3,758,241
### FUEL INJECTION PUMP FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

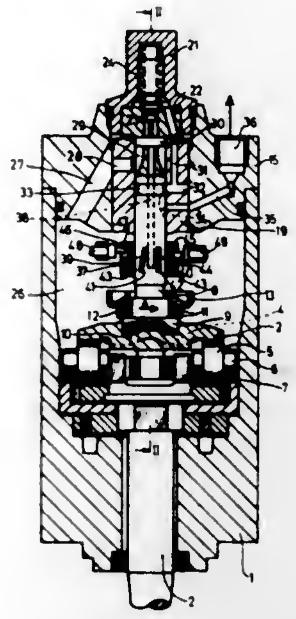
**Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

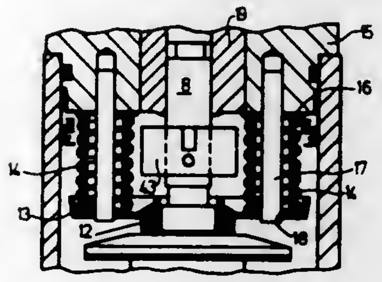
**Filed Aug. 1, 1972, Ser. No. 277,116**

**Claims priority, application Germany, Aug. 26, 1971, P 21 42 704.3**

**Int. Cl. F04b** *7/04, 7/06, 39/10*

**U.S. Cl. 417—494** **6 Claims**





In a fuel injection pump a pump-and-distributor member is axially movably and rotatably disposed between two axially parallel compression springs which are spaced apart 180° with respect to the pump axis and which, through a common yoke, oppose the pressure strokes of said member. A control sleeve is slidably and rotatably arranged on said pump-and-distributor member for altering the starting moment and the period of injection. The angular and axial displacement of the control sleeve is effected by actuating elements connected to said control sleeve and arranged radially outwardly thereof.

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### 3,758,242
### ROTARY PISTON MACHINE

**Carl Verner Ohrberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

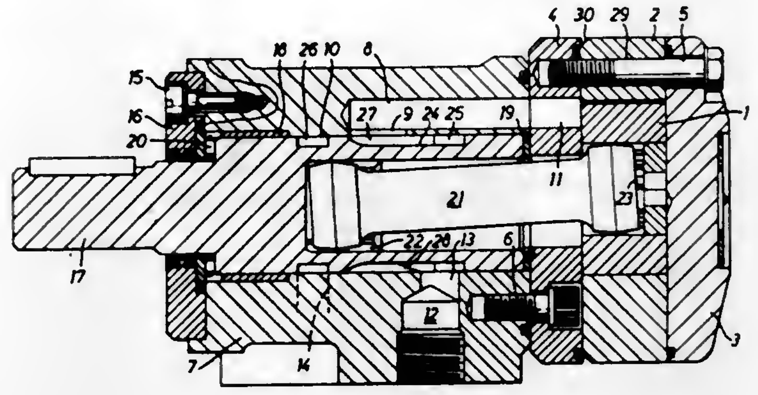
**Filed Feb. 25, 1972, Ser. No. 229,271**

**Claims priority, application Germany, Mar. 8, 1971, P 21 10 863.4**

**Int. Cl. F03c** *1/02*

**U.S. Cl. 418—61** **4 Claims**

The invention relates to a rotary piston machine in which an externally toothed wheel and an internally toothed ring between them form displacement chambers, the toothed wheel being connected by a universal joint shaft to a rotary slide valve. The connection between the toothed wheel and the associated rotary slide valve results in a certain amount of play. In the case of a pump, the rotary slide valve leads the toothed wheel in the rotary direction. In the case of a motor, the rotary slide valve lags the toothed wheel in the rotary direction. This leading and lagging, although only slight, e.g., 1°, results in the machine suffering a loss in capacity because of imprecise control of the rotary slide valve. Means are provided wherein the lead or lag is compensated for by offsetting the ring or wheel member a predetermined circumferential distance from a neutral position.



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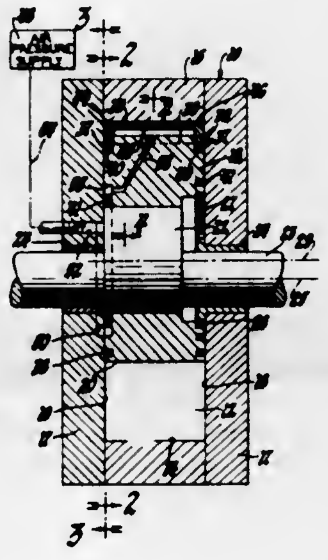
### 3,758,243
### ROTARY MACHINE APEX SEAL

**Ralph G. Fox, Jr., Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Apr. 24, 1972, Ser. No. 247,189**

**Int. Cl. F01c** *19/02;* **F04c** *15/00, 27/00*

**U.S. Cl. 418—76** **5 Claims**



A rotary machine apex seal having an air directing passage connected by communicating passages in the rotor and housing to an external air pressure supply for directing air pressure to impinge upon the machine's internal peripheral wall to provide a cushion of air between the apex seal and this wall.

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### 3,758,244
### ROTARY PISTON ENGINE

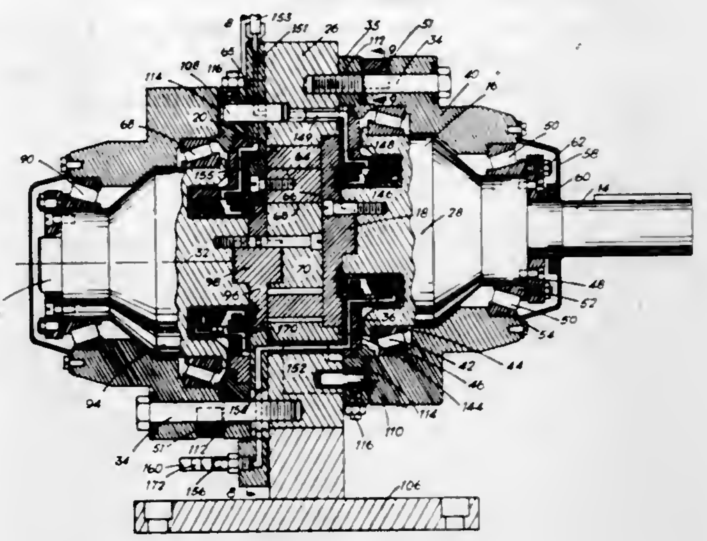
**Karol Gerber, Cudahy, Wis., assignor to Koerper Engineering Associates, Inc., Brookfield, Wis.**

**Filed Apr. 8, 1971, Ser. No. 132,306**

**Int. Cl. F01c** *1/10;* **F03c** *3/00;* **F04c** *1/06*

**U.S. Cl. 418—107** **7 Claims**

Crown teeth of a driving rotor are received between the spur teeth of an idler rotor which rotates on an offset axis. The respective rotors are disposed in a casing provided with a crescent-shaped baffle disposed between the teeth of the respective rotors where the teeth have clearance due to the offset. Transmission of rotary motion may either be effected by contact between the said teeth or through an external jack shaft. Rotary seals are close to the axes of the respective rotors, anti-friction bearings being close to the plane in which the rotor teeth mesh but radially outside of the seals to minimize the moment arms to which the rotors are subject. The rotary seals are provided with flushing and drainage connections.



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### 3,758,245
### HYDRAULIC PRESS FOR COMPRESSION OF POWDER

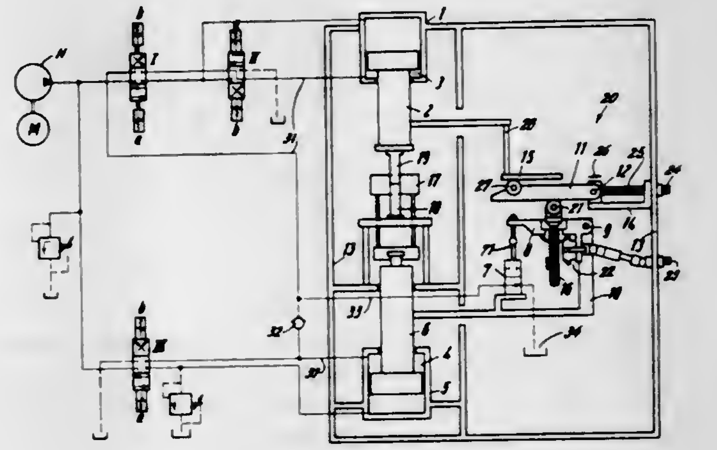
**Rolf Hermes, Rheydt-Giesenkirchen, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany**

**Filed July 1, 1971, Ser. No. 158,783**

**Claims priority, application Germany, July 3, 1970, P 20 33 891.4**

**Int. Cl. B30b** *11/02, 15/14*

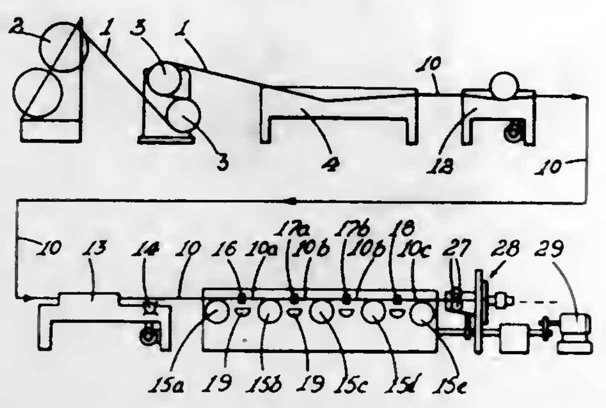
**U.S. Cl. 425—78** **10 Claims**



Hydraulic press for compression of powder having upper punch, lower punch and die; die and upper punch operated by pistons respectively in two cylinders, there being hydraulic conduit means interconnecting the two cylinders for operating the die moving piston in dependency upon upper punch movement. A valve is connected to the conduit means and controlls a hydraulic bleeder path. The valve is actuated by means connected to be responsive to the relative positions of the first and second pistons, to control the characteristics of that defining the dependency of die movement upon movement of the upper punch.

### 3,758,246
### APPARATUS FOR PRODUCING WAX MATCH SHAFTS

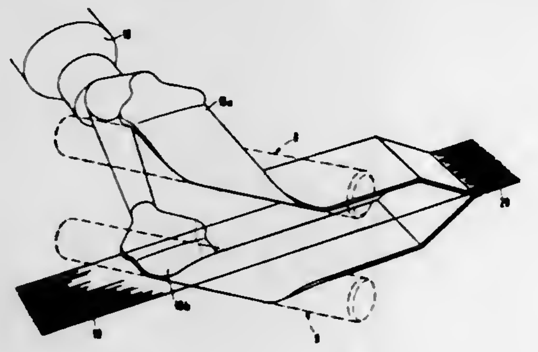
**Cecil Kessler, Johannesburg, Republic of South Africa, assignor to Chet Industries (proprietary) Limited, Transvaal, Republic of South Africa**
**Division of Ser. No. 863,948, Oct. 6, 1969, Pat. No. 3,626,047.**
**This application Sept. 22, 1971, Ser. No. 182,645**
**Claims priority, application South Africa, Oct. 14, 1968, 68/6627**
**Int. Cl. B31f** *1/00*
**U.S. Cl. 425—93** **3 Claims**



Apparatus for producing wax match shafts, comprising a shaping die having an aperture at least part of which has a polylateral, preferably a quadrilateral, cross-sectional configuration with convex sides.

### 3,758,247
### APPARATUS FOR MAKING FLAT CABLES BY EXTRUSION

**Axel W. Deegen, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Apr. 23, 1971, Ser. No. 136,934**
**Claims priority, application Germany, Apr. 23, 1970, P 20 19 629.6**
**Int. Cl. B29f** *3/10*
**U.S. Cl. 425—114** **8 Claims**

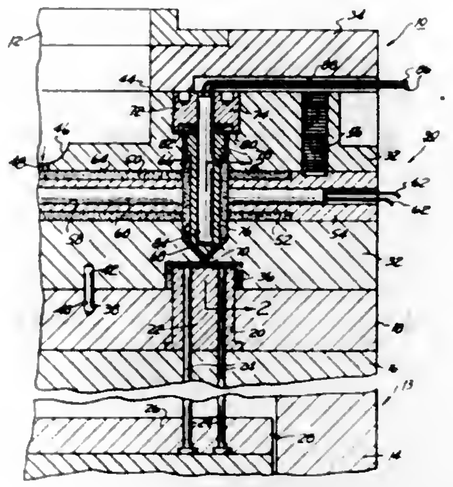


Crosshead die for coating flat cables, in which the melt flow is split into two partial flows and two diversion rollers with helical grooves are provided to guide and divert the partial flows after conversion of their cross-sections.

### 3,758,248
### INJECTION PLASTIC FEEDER

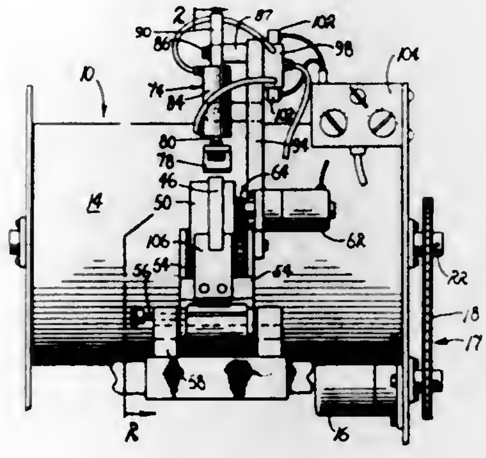
**Herman J. Drazick, 34480 Commerce Rd., Fraser, Mich.**
**Continuation of Ser. No. 118,688, Feb. 25, 1971, abandoned.**
**This application Dec. 20, 1972, Ser. No. 316,773**
**Int. Cl. B29f** *1/08, 1/05*
**U.S. Cl. 425—145** **1 Claim**

An injection molding apparatus including upper and lower die plates and at least one die cavity therein; a main feeder channel is provided in one of the die plates to feed plasticized material to the die cavity; the feeder channel intersects a valve assembly having a chamber in communication with the die cavity through a metering orifice; a needle valve is disposed in the valve assemble adapted to selectively open and close the orifice in response to a pressure differential for shut-off of plastic material flow from the valve chamber into the die cavity at the parting line of the cavity to prevent drooling of material and flash production.



### 3,758,249
### CHOPPER FOR FORMING RUBBER SLUGS

**Gordon L. Newby, 320 Industrial St., Bakersfield, Calif.**
**Filed Feb. 7, 1972, Ser. No. 224,115**
**Int. Cl. B29c** *3/06*
**U.S. Cl. 425-155** **6 Claims**

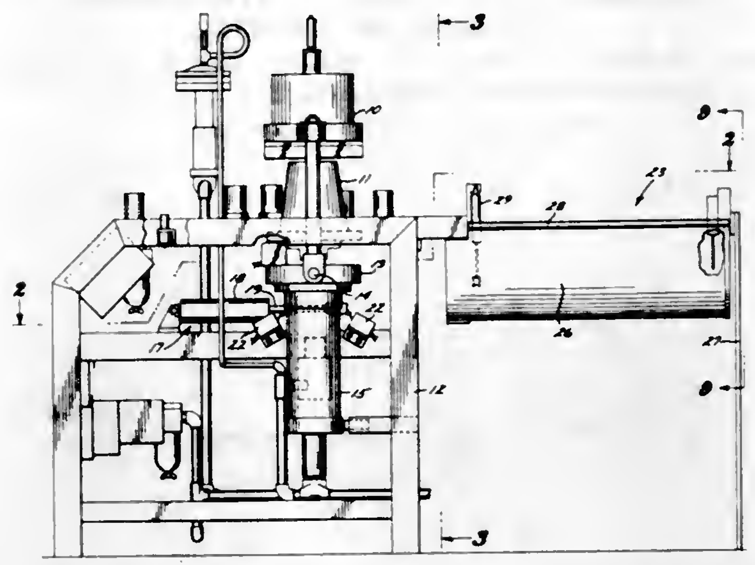


A chopper for forming rubber slugs of precisely determined masses, characterized by a stripper unit for extracting a continuous, uniformly dimensioned strip of rubber from an endless sheet provided about a roller of a rubber mill, a platen roller adjacent to the rubber mill and driven at a substantially constant angular velocity for receiving the strip in an adhering relationship at its periphery, and a reciprocating knife for transversely severing the strip into slugs of predetermined lengths. A particular feature of the invention resides in the use of a driven platen roller for uniformly tensioning a uniformly dimensioned, continuous strip of rubber as it is derived from a rubber mill, and cyclically operable knife for severing the strip at selected intervals, whereby the mass of each of the resulting slugs is precisely determined.

### 3,758,250
### TUB FORMING MACHINE

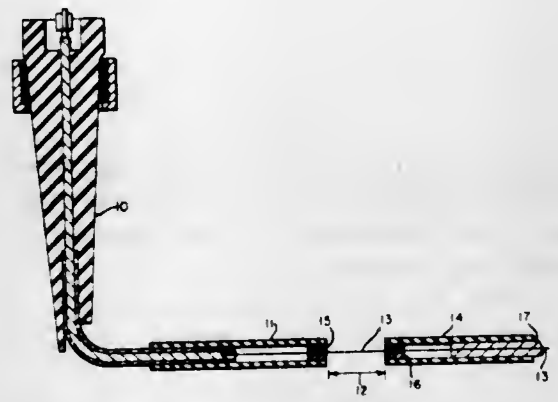
**Richard William Schuff, 810 W. Glenn Dr., Phoenix, Ariz.**
**Division of Ser. No. 23,584, March 30, 1970, abandoned. This application Aug. 12, 1971, Ser. No. 171,370**
**Int. Cl. B29c** *3/06;* **B29d** *27/04*
**U.S. Cl. 425—165** **5 Claims**

A technique, including a method and apparatus, for forming containers from expanded plastic material wherein a male mold member withdraws the formed container from the female mold member and carries the container to a position where it can be removed.



### 3,758,251
### ELECTROSTATIC PINNING OF POLYMERIC FILM

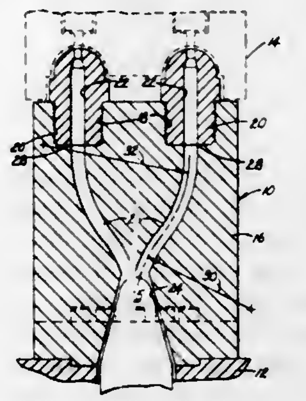
**Emile Gillyns, Sandweiler, and Norbert Thill, Itzig, both of Luxembourg, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**Filed Dec. 2, 1971, Ser. No. 204,072**
**Int. Cl. B29h** *5/24*
**U.S. Cl. 425—174.8 E** **3 Claims**



An apparatus for electrostatic edge pinning of thermoplastic film to a quench surface comprising a pinning wire positioned substantially parallel to the quenching surface and over each edge of the polymeric film.

### 3,758,252
### NOZZLE HEAD ASSEMBLY FOR INJECTION MOLD

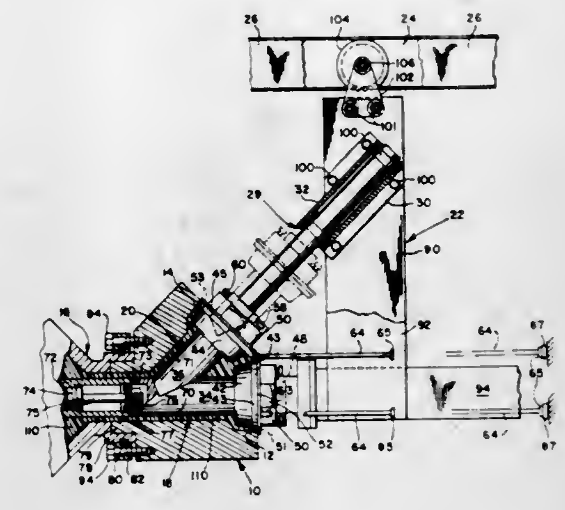
**Arthur Kohler, Willowick Towers, Apartment 511, 31900 N. Marginal Rd., Willowick, Ohio**
**Filed Nov. 8, 1971, Ser. No. 196,536**
**Int. Cl. B29f** *1/02, 1/03*
**U.S. Cl. 425—242** **4 Claims**



A nozzle head assembly for plastic injection molding is provided which has a body with at least two nozzles secured thereto at one end. The other end of the head is provided with plastic receiving opening. Individual passages connect each plastic receiving opening with each nozzle. The nozzles are axially offset with respect to a plastic receiving opening and the passages are formed to a curved configuration to minimize turbulence.

### 3,758,253
### CLAY PIPE FITTING MOLDING APPARATUS

**Frank S. Pearne, San Gabriel, Calif., assignor to Aircraft Mechanics, Inc., Los Angeles, Calif.**
**Continuation-in-part of Ser. No. 27,045, April 9, 1970, abandoned. This application Dec. 13, 1971, Ser. No. 207,315**
**Int. Cl. B28b** *7/14, 7/18*
**U.S. Cl. 425—249** **17 Claims**

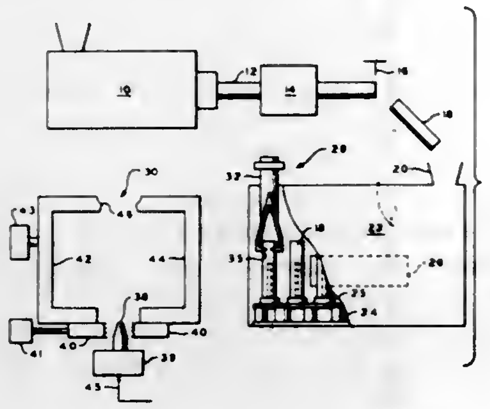


This invention provides apparatus for molding clay pipe fittings that connect intersecting conduits. The apparatus comprises a female mold that only partially defines the exterior of a plurality of angularly intersecting conduit branches, both having bell ends formed in contiguous terminal sockets of the mold that are encompassed by a single, large, mold opening. A corresponding plurality of retractable assemblies are respectively mounted for retractable movement axially through the sockets and into the mold to dispose core bodies in intersecting relationship therein in spaced relationship with the mold walls and closing the large mold opening for more completely defining the fitting. Each retractable assembly includes a plug for mold-closing coaction with the corresponding mold socket when the plug member is so positioned in the mold. Clay forced into the closed mold about the core members forms all but a spigot end portion of one conduit branch of the fitting to be molded. Continued feeding of clay into the mold completes the molding of the fitting by extrusion of that spigot end portion of one conduit branch while moving the fitting partially out of the mold. All but one of the plug members is withdrawn from the molded fitting before, during, or after completing the fitting by extrusion and moving it entirely out of the mold. Thereafter, the molded fitting is stripped from that one plug member.

### 3,758,254
### GRASPING PARISON PREFORM AT RIGHT ANGLE TO MOLD PARTING LINE

**Jimmies L. Dean, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**
**Filed Jan. 26, 1972, Ser. No. 220,970**
**Int. Cl. B29d** *23/03*
**U.S. Cl. 425—387B** **7 Claims**

An open end parison preform is heated to molding temperature preparatory to transfer to a molding station. The thus heated parison is grasped by a means which pinches one end together along a line which, on transfer of said thus grasped parison to said molding station, is perpendicular to the parting line of mold halves of said molding station.



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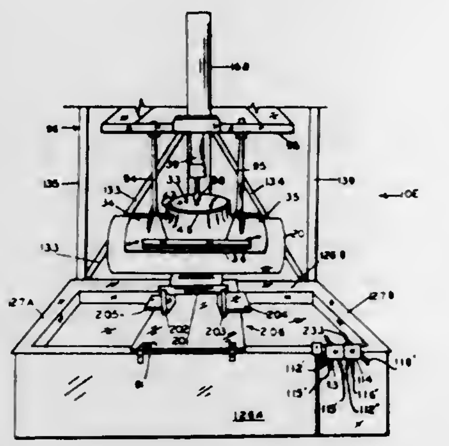
### 3,758,255
### PLASTIC TEE MANUFACTURING APPARATUS

**Frank J. Rogers, Waka, and Joe MacClose, Spearman, both of Tex., assignors to Rogers Sales & Service, Inc., Waka, Tex.**
**Continuation-in-part of Ser. Nos. 831,814, May 22, 1969, abandoned, and Ser. No. 55,113, July 15, 1970, Pat. No. 3,654,008. This application Sept. 13, 1971, Ser. No. 180,023**
**Int. Cl. B29c** *17/02*
**U.S. Cl. 425—392** **2 Claims**



A fixed main frame and tank assembly cooperate with a movable frame assembly having a movable piston assembly, a pipe support seat, a sput drawing assembly and a guide frame thereon, for forming a sput on a plastic conduit while supporting the conduit.

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### 3,758,256
### METHOD FOR PROCESSING A VITAL, FLAVOURED EGG

**Kinji Terada, 40, Miyamaru-machi, Wahamatu-ku, Kitakyushu-shi, Fukuoka-ken, Japan**
**Filed July 21, 1971, Ser. No. 164,668**
**Claims priority, application Japan, July 25, 1970, 45/064775**
**Int. Cl. A23b** *5/00*; **A23l** *1/32*
**U.S. Cl. 426—281** **4 Claims**

The present invention relates to a method for processing a vital, flavoured egg with uniform distribution of the salt content therein, characterized by immersing an egg in a near-saturation salt water, having therein a non-ion surface active agent, applying pressure for a short time to make the salt penetrate the structure of the egg, lifting the egg out of the water and allowing it to stand still for at least 24 hours.

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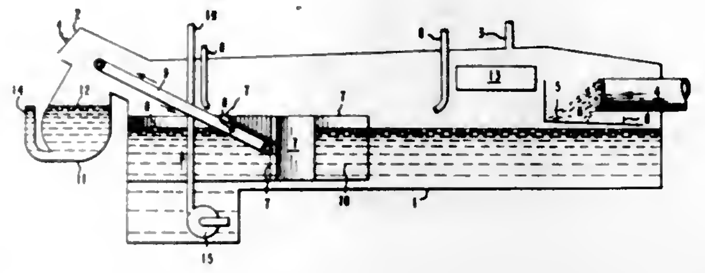
### 3,758,257
### REDUCTION OF MICROORGANISM POPULATIONS OF FOOD ARTICLES BY CONTACT WITH A LIQUID CHLOROHYDROCARBON

**Kavsy D. Dastur, Yorklyn, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**Filed July 1, 1970, Ser. No. 51,609**
**Int. Cl. A23l** *3/34, 3/36*
**U.S. Cl. 426—331** **14 Claims**



A continuous process for reducing microorganism populations of articles, especially food, comprising effectively contacting the surfaces of the articles with a liquid, saturated fluorinated chlorohydrocarbon having a normal boiling point of 50°C. to −50°C., collecting liquid chlorohydrocarbon which has contacted the articles, reducing the microorganism population of the collected liquid, and recycling the liquid of reduced microorganism population to the article contacting step.

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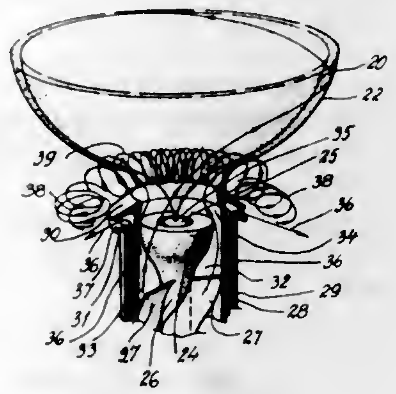
### 3,758,258
### A METHOD FOR COMBUSTING FUELS IN A SUBSTANTIALLY CONICALLY SHAPED CURTAIN

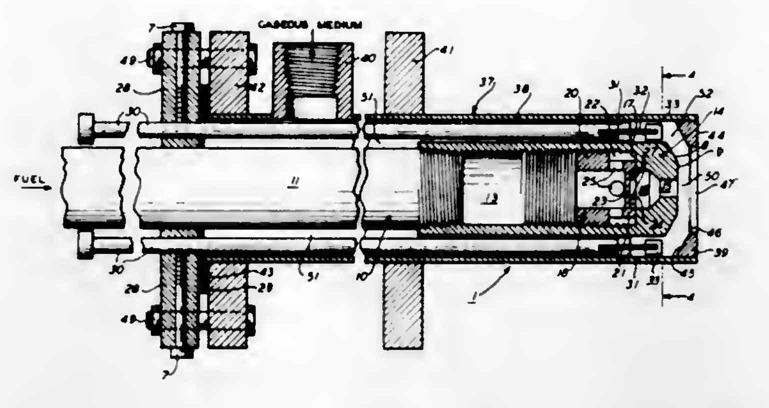
**Martti Ilmari Kolhi, Stenhamra, Sweden, assignor to R. Collin Consulting AB, Stockholm, Sweden**
**Filed Mar. 23, 1971, Ser. No. 127,228**
**Claims priority, application Sweden, Mar. 24, 1970, 4010/70**
**Int. Cl. F23m** *3/10*
**U.S. Cl. 431—9** **10 Claims**



A device and method for improving the combustion of fuels which emerge from the orifice of a burner nozzle in the form of a conically shaped fuel curtain, around which and coaxial with is a connecting envelope of combustion air. Extending coaxially with the main burner tube are further tubes which form air passages. The further tubes are provided at the ends thereof adjacent the fuel nozzle with air nozzle means which give the air a determined direction of flow relative to the radial plane, thereby creating a subpressure externally of the fuel and air cones, whereupon the cones are drawn rearwardly and outwardly with respect to the burner nozzle tip.

### 3,758,259
### METHODS FOR PREPARING FUELS AND ALSO FOR THEREAFTER FEEDING THEM INTO FURNACES AND BURNING THEM THEREIN

**James T. Voorheis, 18 Smull Ave., Lake Hiawatha, N.J.**
**Filed Nov. 26, 1971, Ser. No. 202,415**
**Int. Cl. F23m** *3/02*
**U.S. Cl. 431—9** **9 Claims**



Methods for preparing fuels comprising continuously discharging from the discharge orifice of an atomizing nozzle at a linear velocity of about 4–200 ft/sec. swirling liquid fuel particles in the form of a spray cone which under surrounding atmospheric conditions is about 50° - 100° and the average diameter of the particles is 25 - 150 microns, and simultaneously through means surrounding the nozzle, spaced therefrom, extending downstream thereof and having a discharge opening spaced from the orifice, continuously feeding a stream of a swirling gaseous medium against the cone at a linear velocity sufficient, and in the range of 100 - 2000 ft/sec., to reduce the angle of the cone to such a value that the wall defining the opening will not be wetted thereby and to reduce the size of the fuel particles of the spray to such value that all of them emerging from the opening are no greater than 10 microns in diameter, but when the cone is under surrounding atmospheric conditions, the wall defining the opening will become wetted thereby.

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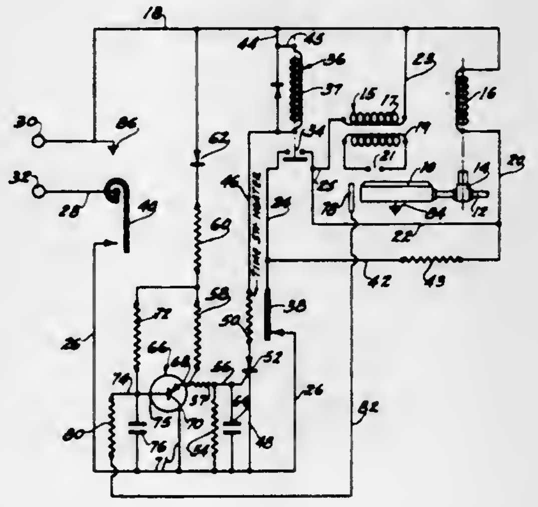
### 3,758,260
### BURNER FLAME DETECTION CIRCUIT

**Harry E. Newport, Jr., Crestwood, and James A. Wright, Webster Groves, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.**
**Filed June 19, 1972, Ser. No. 263,986**
**Int. Cl. F23n** *5/00*
**U.S. Cl. 431—78** **8 Claims**



A control system for gas burners operating on a.c. power in which a first circuit including a normally open relay and the heater for a thermal time switch is completed through a normally conducting SCR and a space thermostat and a second circuit including an igniter, a normally closed solenoid fuel valve, and the thermal time switch is completed through the relay contacts and the thermostat. A normally conducting transistor is operative to shunt the gating of the SCR and effect its cutoff, but a capacitor charged through a diode and a high resistance when the thermostat closes cuts off transistor conduction, whereby the SCR conducts. When combustion occurs, the capacitor discharges through burner flame, whereby the transistor again conducts and SCR conduction is cut off. A holding circuit completed through the thermal time switch maintains the solenoid fuel valve open when burner flame appears, but operation of the igniter is cut off.

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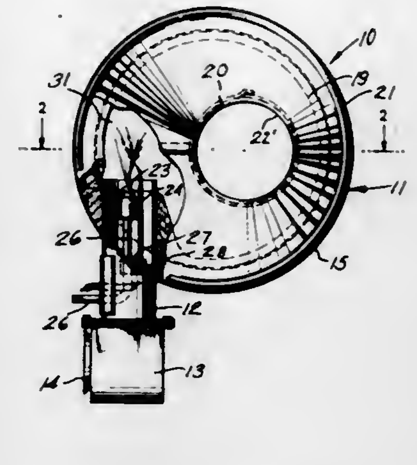
### 3,758,261
### ATOMIZING BURNER

**Bruno J. Galliano, Jr., 1810 S.E. Exeter Dr., Portland, Oreg.**
**Filed Mar. 30, 1971, Ser. No. 129,368**
**Int. Cl. F23c** *5/18*
**U.S. Cl. 431—116** **4 Claims**



A burner device employing modern space technology, lightweight felt-type refractories and metal alloys, the structure allowing the complete burning of a fuel mixture so that the products of combustion upon leaving the fire-box are clear, smokeless, and entirely consumed.

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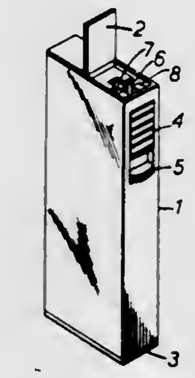
### 3,758,262
### PORTABLE GAS LIGHTER WITH MAGNETICALLY OPERATED LID

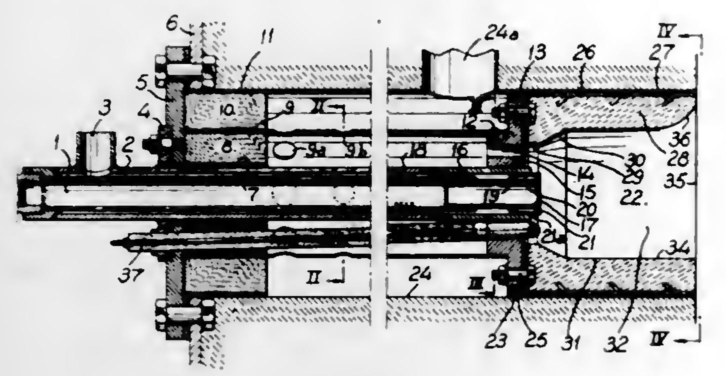
**Anthony Roberts Harris, Hanworth, England, assignor to Dunhill Lighters Limited, London, England**
**Filed July 14, 1972, Ser. No. 271,671**
**Int. Cl. F23g** *3/01*
**U.S. Cl. 431—130** **5 Claims**



The lid of a smoker's lighter is retained normally closed by means of a magnet. The lid is spring biassed towards an open position and the magnet acts directly against the lid which is of a ferromagnetic material. A slide switch is provided to move the magnet away from the lid so as to cause the lid to open. The slide switch also makes an electrical contact which actuates an electric ignition system.

### 3,758,263
### FLUID-FUEL BURNERS

**Roland Roger Kissel, Le Vesinet, France, assignor to Societe Anonyme Heurtey, Paris, France**
**Filed Dec. 2, 1971, Ser. No. 203,955**
**Claims priority, application France, Dec. 16, 1970, 7045328**
**Int. Cl. F23r** *1/00*
**U.S. Cl. 431—158** **3 Claims**



A fluid-fuel burner having an annular injection system wherein the oxidant is caused to undergo a forced rotation and the fuel is fed to the center of the injected oxidant. The injection system is positioned at the entrance of a tunnel which is initially divergent and thereafter cylindrical over a length between 0.5 and 1 times the tunnel diameter. The cylindrical portion being followed by a passage of evolutive section at least one-half of which has walls converging up to an outlet formed by a pseudo-rectangular slit at least one of the smaller sides of which is joined to the corresponding tunnel surface by a convex rounded portion.

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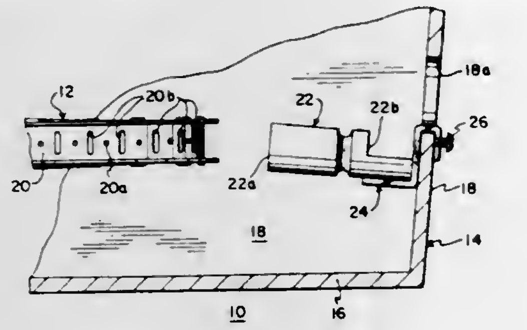
### 3,758,264
### GAS FIRED COOKER IGNITION SYSTEM

**Joseph J. Fijalkowski, Hickory Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.**
**Filed Feb. 14, 1972, Ser. No. 225,727**
**Int. Cl. F23q** *21/00*
**U.S. Cl. 431—191** **10 Claims**



A gas fired cooker ignition system including, in combination, a gas burner mounted in a housing and adapted to be lighted from a flame source generated externally of the housing. The housing includes an upstanding wall having an ignition port therein and the burner includes at least one gas outlet directing gas flow in the general direction of said ignition port. A hollow flash tube is mounted in said housing and includes an inner, open end spaced apart and generally facing said gas outlet of said burner. The flash tube is mounted to slope upwardly towards said inner end and includes an outer end provided with an ignition opening adjacent said ignition port of said housing wall. The flash tube is detachably secured to the housing wall, the ignition opening of the tube spaced closely adjacent the ignition port so that a flame source introduced into the housing through said port will flash through the tube and ignite the gas from the burner.

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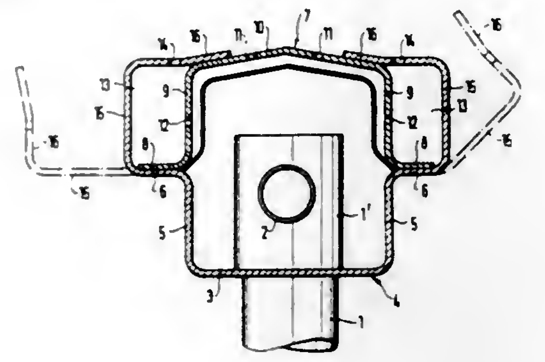
### 3,758,265
### GAS BURNER OF SHEET METAL

**Georg Hein, Huckeswagen, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany**
**Filed May 15, 1972, Ser. No. 252,976**
**Int. Cl. F23d** *13/36*
**U.S. Cl. 431—349** **4 Claims**



A gas burner is formed of two elongated channels. The lower channel has a bottom, sides with outwardly extending steps forming ledges therealong, and distal flanges along the top of said sides. The upper channel is inverted. It has a top, two downwardly extending side walls and outwardly extending foot flanges along the bottoms of the side walls. The foot flanges rest on and are welded to the ledges. The distal flanges overlie and are welded to the top of the upper channel. This assembly defines a central main chamber into which gas is introduced, and two side expansion chambers. There are holes through the top from the main chamber to release gas for the main burner flames. There are throttle openings through the side walls of the upper channel to permit gas to flow from the main chamber to the expansion chambers. There are openings through the distal flanges to permit gas to flow from the expansion chambers to form holding flames.

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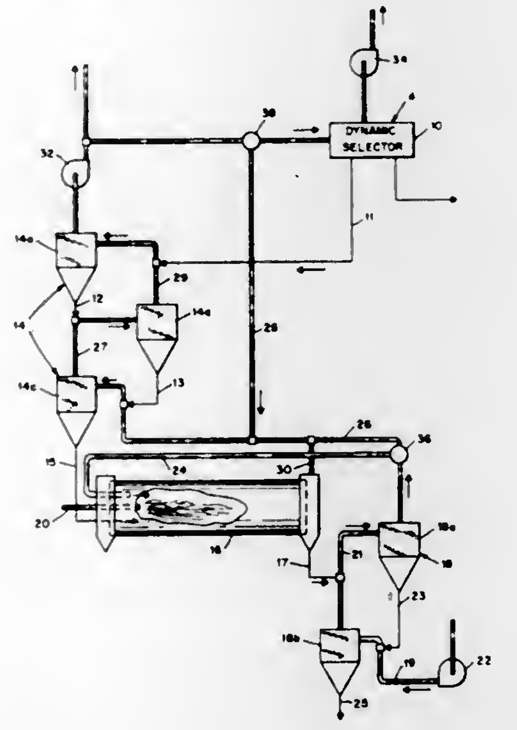
### 3,758,266
### CALCINING PROCESS AND INSTALLATION

**Roger Retali, 14 Parc Bearn Rue Dailly, 92 Saint Cloud, and Philippe Pithois, 660 avenue de la Republique, 59 Lille, both of France**
**Filed June 23, 1972, Ser. No. 265,756**
**Claims priority, application France, June 25, 1971, 7123205**
**Int. Cl. F27b** *7/02*
**U.S. Cl. 432—14** **7 Claims**



A phosphate or like mineral material is calcined in a rotary kiln after having been dried and preheated to a temperature lower than the normal reaction temperature of the material. The preheated material is introduced into the hottest zone of the kiln and passed therethrough in the same direction as hot calcining gases. The calcined material is cooled with a current of fresh air, a portion of the cooling air is mixed with the gases removed from the kiln, and the gas mixture is used to preheat the material.

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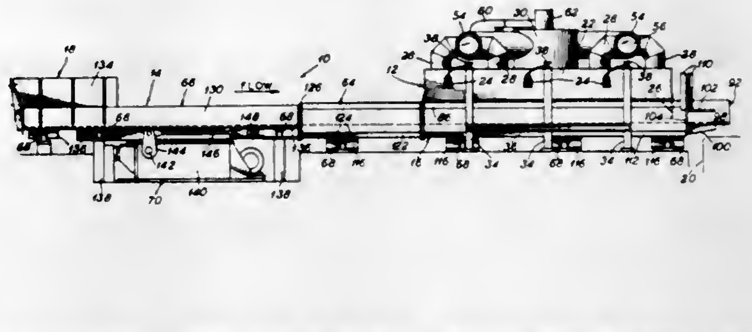
### 3,758,267
### APPARATUS FOR PREHEATING SCRAP MATERIAL OR THE LIKE

**Edward J. Berk, Chicago, Ill., assignor to Goodman Equipment Corporation, Chicago, Ill.**
**Filed Jan. 6, 1972, Ser. No. 215,846**
**Int. Cl. F27b** *3/00*
**U.S. Cl. 432—134** **11 Claims**



An apparatus is provided for delivering preheated scrap to a furnace and includes, in a preferred embodiment, an insulated shaker conveyor trough and means for heating the scrap material within the trough while containing gases produced incident to the heating of the scrap to hinder such gases from escaping to the atmosphere surrounding the trough.

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## CHEMICAL

### 3,758,268
### DYEING KERATINOUS FIBERS AND SETTING HAIR WITH INDAMINES, SALTS THEREOF AND COSMETIC RESIN AND COMPOSITIONS THEREFOR

**Gregoire Kalopissis, Paris, Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societé Anonyme dite: L'Oreal, Paris, France**
**No Drawing. Continuation-in-part of application Ser. No. 52,739, July 6, 1970, now Patent No. 3,677,690. This application July 12, 1971, Ser. No. 161,887**
**Claims priority, application Luxembourg, July 17, 1969, 59,119; July 17, 1970, 61,354; Jan. 15, 1971, 62,426, 62,429**
**The portion of the term of the patent subsequent to July 18, 1989, has been disclaimed**
**Int. Cl. D06p** *3/04*
**U.S. Cl. 8—11** **21 Claims**

The invention pertains to indamines and salts thereof which are usefully employed in a dye composition for coloring keratinous fibers, especially human hair and in hair setting lotions which also includes a film-forming cosmetic resin.

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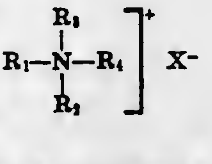
### 3,758,269
### CATION DYES AND LONG CHAIN ALKYL QUATERNARY AMMONIUM SALT APPLIED TO ANIONICALLY MODIFIED NYLON IN A JUTE-BACKED CARPET

**Friedrich F. Bartsch, Westfield, and Robert Feigin, West Orange, N.J., assignors to Sybron Corporation, Rochester, N.Y.**
**No Drawing. Filed Oct. 12, 1971, Ser. No. 188,559**
**Int. Cl. D06p** *3/82*
**U.S. Cl. 8—21 B** **8 Claims**

**The staining of cationic dyeable nylon carpet face fiber by cationic dyestuffs used in dyeing jute-backing is prevented without significant loss of color yield on the jute by dyeing the jute below about 90° F. in the presence of a cationic surface active agent of the formula:**



$$\left[\begin{array}{c} R_3 \\ | \\ R_1-N-R_4 \\ | \\ R_2 \end{array}\right]^+ X^-$$

**where $X^-$ is any water-soluble anion, $R_1$ is an aliphatic hydrocarbon group containing at least 8 carbon atoms, $R_4$ is —H, —$CH_3$ or other hydrocarbon alkyl group, $R_2$ and $R_3$ are either hydrogen aliphatic hydrocarbon groups, cycloaliphatic groups or 2-hydroxy-propyl groups, and $R_1$, $R_2$, $R_3$ and $R_4$ contain a total of 16 to 45 carbon atoms.**

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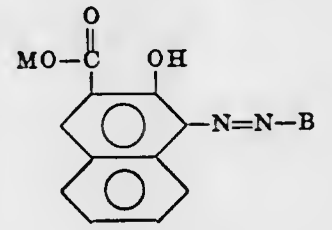
### 3,758,270
### COLORING NICKEL MODIFIED OLEFINIC POLYMERS WITH AN AROMATIC ORTHOHYDROXY CARBOXYLIC ACID AND AZO PIGMENT, PRINT PASTE COMPOSITION AND FIBERS COLORED THEREBY

**Harold C. Will, Reading, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.**
**No Drawing. Filed Oct. 5, 1970, Ser. No. 78,173**
**Int. Cl. C09b** *45/22;* **D06p** *1/18*
**U.S. Cl. 8—42 D** **15 Claims**

Compositions coloring for nickel stabilized olefinic polymers comprising an aromatic orthohydroxy carboxylic acid and a compound having the structure—



wherein M is —H, —K, —Na, —½ Ca, —½ Mg, —½ Mn or —½ Ba and B is an azo coupling component free of groups such as —$SO_3H$, —COOH, —OH, and —$OCH_3$, or combinations of substituent groups which impart water solubility of the order provided by such groups. Other aspects of the disclosure deal with a coloring process using the composition, to the colored fibers produced by the process and to a print paste which employs the composition.

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### 3,758,271
### COMPOSITIONS AND PROCESSES

**Robert Lauren Tichenor, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Sept. 14, 1971, Ser. No. 180,448**
**Int. Cl. D06p** *5/06*
**U.S. Cl. 8—172** **6 Claims**

An anionically-modified acrylic fiber coated with a small amount of a selected poly(secondary amine) or poly(tertiary amine) such as poly(diethylaminoethyl methacrylate), or protonated salt thereof, such as protonated poly(diethylaminoethyl methacrylate) acetate. The polyamine or protonated salt thereof acts as a dye retarder along the surface of the acrylic fiber to promote efficient dye use and uniformity of dye levels.

## 3,758,272
## PROCESS FOR DYEING HYDROPHOBIC TEXTILE MATERIAL

**Keshav V. Datye, Goregaon-Bombay, India, and Branimir Milicevic, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 762,143, Sept. 24, 1968. This application Sept. 14, 1971, Ser. No. 180,486**
**Claims priority, application Switzerland, Sept. 29, 1967, 13,651/67**
**Int. Cl. D06p** *1/68*
**U.S. Cl. 8—172** **20 Claims**

In a process for dyeing textile material made from hydrophobic synthetic polymers containing polar groups, wherein dyeing is carried out in a homogeneous solution of a dyestuff or mixture of dyestuffs in an organic solvent or solvent mixture, an improvement is disclosed which comprises diluting the dyebath, either continuously or in portions, during said dyeing process with a second solvent or with water which may contain a maximum of 30% of organic or inorganic impurities, without precipitating the dyestuff, said second solvent or water being miscible with the first organic solvent, said process being characterized by improved dyeings.

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## 3,758,273
## PROCESSES FOR STERILIZING POLYPROPYLENE OBJECTS

**Richard Johnston and Raymond Clarke, Reading, Berkshire, England, assignors to The Gillette Company, Boston, Mass.**
**No Drawing. Filed Apr. 1, 1971, Ser. No. 130,516**
**Claims priority, application Great Britain, Apr. 3, 1970, 15,919/70**
**Int. Cl. A61l** *1/00*
**U.S. Cl. 21—54 R** **5 Claims**

If the sterilization of polypropylene objects by irradiation with $\gamma$-rays is carried out in a non-oxidizing (inert) atmosphere the brittleness and breakdown in the molecular weight of the polypropylene polymer which usually occurs as a result of the irradiation is substantially reduced. The results are further enhanced if the polypropylene objects are stored in the non-oxidizing atmosphere subsequent to irradiation.

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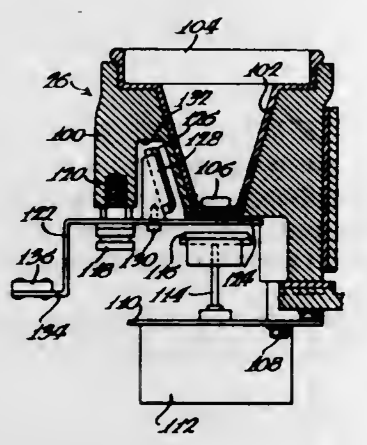
## 3,758,274
## REAGENT RESERVOIR AND MAGNETIC STIRRING SYSTEM

**David Alan Ritchie and James S. Kuciejcik, St. Louis, Mo., assignors to Sherwood Medical Industries Inc.**
**Filed July 30, 1971, Ser. No. 167,378**
**Int. Cl. B01f** *7/16, 13/08*
**U.S. Cl. 23—259** **8 Claims**



A testing apparatus for automatically determining prothrombin times and other similar factor assays. A turntable conveyor moves successive blood plasma samples in containers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Preliminary to the testing station is a first reagent dispenser where a reagent is dispensed to each sample and a second reagent dispenser is located at the testing station for adding a second reagent. Intermediate the two reagent dispensers is a sample incubation device which intimately contacts each container to apply heat thereto to incubate the sample contained therein. Each reagent dispenser is provided with a reagent reservoir and associated magnetic stirring system. A unique system for decoupling the magnetic stirring system from a magnetic stirrer and moving the magnetic stirrer out of the path of a pipette forming part of each reagent dispenser is provided. At the testing station, a unique photosensitive detection device is provided for sensing the formation of clots after the second reagent is added.

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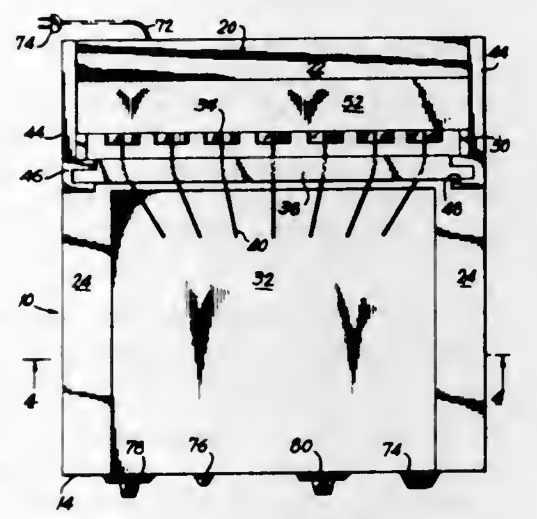
## 3,758,275
## APPARATUS FOR PROVIDING TEST SPECIMENS IN THE FORM OF SPOTS

**Babington A. Quame, 331 E. 29th St., New York, N.Y. 10016**
**Filed July 2, 1971, Ser. No. 159,346**
**Int. Cl. G01n** *1/14*
**U.S. Cl. 23—259** **10 Claims**



An apparatus for providing test specimens in the form of spots. The apparatus includes a supporting structure for supporting a sheet material which is to receive the spots. A rack is provided to hold beakers or other containers in which the specimen material is situated dissolved in suitable liquid solvent. A carrier structure carries a plurality of capillary tubes which have receiving ends situated in the beakers in communication with the solvent therein when the rack is placed at a predetermined position with respect to the carrier structure for the capillary tubes. These tubes respectively have discharge ends which are spaced suitably from each other and located over the supporting structure for the sheet material so that through capillary action the specimens dissolved in the solvent will be deposited on the sheet material to form thereon specimens in the form of dry spots resulting from evaporation of the solvent.

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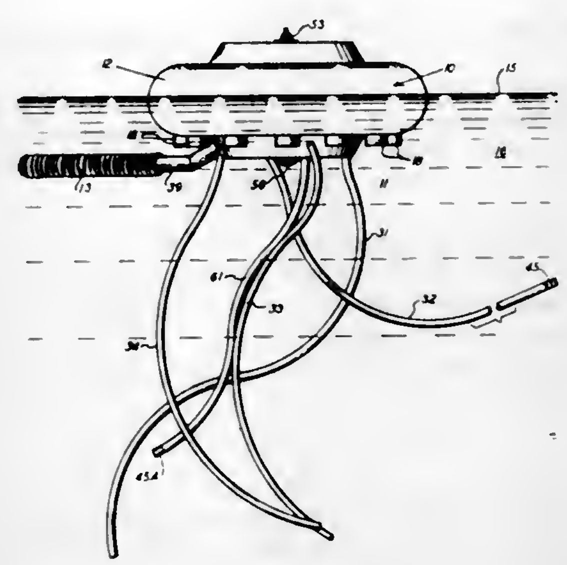
## 3,758,276
## WATER-PROPELLED POOL PURIFYING FLOAT

**Willliam D. Bond, 147 McKinley Place, Arcadia, Calif. 91016, and Ray Wesley Patterson, 22099 Waite, Elsinore, Calif. 92330**
**Filed Apr. 5, 1971, Ser. No. 131,250**
**Int. Cl. B01d** *11/02;* **B01f** *1/00*
**U.S. Cl. 23—267 A** **6 Claims**

A foam plastic flotation ring containing a plurality of soluble chlorine capsules supports a pool water manifold into which return water from the pool circulation system flows from a long flexible hose linked to the pool return system. A plurality of flexible tube agitators extend from the manifold. The agitators whip randomly beneath the floating manifold to agitate sediment from the pool walls and bottom for removal through the pool drain. A jet extends from the manifold and reaction to the discharge of pool return water through the jet moves the chlorinator and agitators about the pool.



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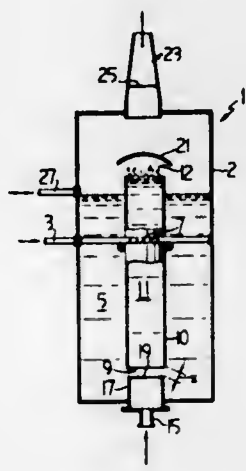
## 3,758,277
## AMMONIUM NITRATE NEUTRALIZER

**Toby M. Cook, Gerald L. Tucker, and Marion L. Brown, Jr., Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo, Miss.**
**Filed June 11, 1971, Ser. No. 152,063**
**Int. Cl. B01j** *1/00;* **C01c** *1/18*
**U.S. Cl. 23—285** **4 Claims**



Highly dilute nitric acid is neutralized with ammonia by feeding the acid into an aqueous first reaction zone of a thermal siphon-pressure pump neutralizer, feeding ammonia into proximity to an aqueous second reaction zone, which is contiguous with said first reaction zone, and in circulating communication therewith in the neutralizer, circulating the nitric acid into the second reaction zone such that when the acid enters the second reaction zone its concentration is less than 15% and preferably less than 0.5 to 1%. A predominant proportion of the nitric acid is neutralized with the ammonia in the second reaction zone so as to form an ammonium nitrate containing solution. This solution is removed from the second reaction zone, recirculated to the first reaction zone, and is recovered as an ammonium nitrate product. Circulation for the process is facilitated by a thermal siphon and pressure effect caused by the exothermal heat of neutralization of the nitric acid with the ammonia and by the density differential between the product solution and the reacted solution.

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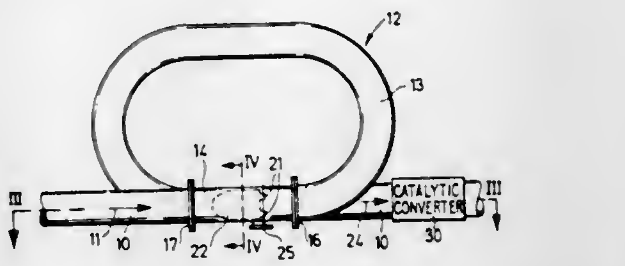
## 3,758,278
## INTERNAL COMBUSTION ENGINE EXHAUST GAS EMISSION CONTROL APPARATUS

**Rainer Jorg Weber, Hessenring, Germany, assignor to General Motors Corporation, Detroit, Mich.**
**Filed Feb. 22, 1972, Ser. No. 228,074**
**Claims priority, application Germany, Mar. 12, 1971, P 21 11 906.2**
**Int. Cl. B01j** *9/04;* **F01n** *3/14*
**U.S. Cl. 23—288 F** **4 Claims**



A valve unit controls the flow of exhaust gases either directly to a catalytic converter or indirectly through a cooling loop to a catalytic converter and includes a pair of parallel tangentially disposed conduits. The inlet of one conduit receives exhaust gases from the engine, the outlet of the other conduit discharges exhaust gases to the converter, and a cooling loop connects the outlet of the one conduit to the inlet of the other conduit. An opening in the partition between the conduits joins the conduits intermediate their inlets and outlets. A valve member controls flow to alternatively direct exhaust flow either from the inlet of the one conduit to its outlet and through the cooling loop or from the inlet of the one conduit through the opening to the outlet of the other conduit.

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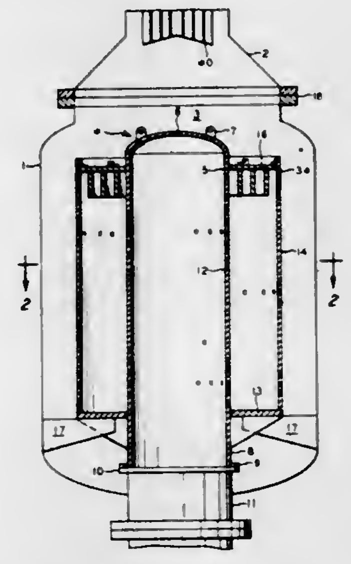
## 3,758,279
## RADIAL FLOW REACTOR

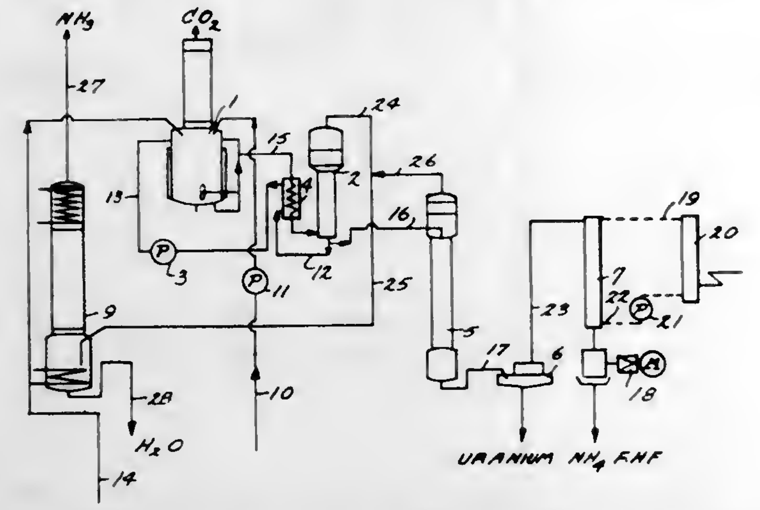
**John S. Whitesides, Borger, Tex., assignor to Phillips Petroleum Company**
**Filed Apr. 26, 1971, Ser. No. 137,439**
**Int. Cl. B01j** *9/04*
**U.S. Cl. 23—288 R** **1 Claim**



A radial flow reactor having a removably positionable catalyst basket positionable peripherally to an upwardly-extending conduit closed at its upper end and having an apertured wall for exit of reactants flowing through the catalyst bed.

### 3,758,280
### FILTRATE AND WASTE GAS PROCESSING

**Hans Pirk, Dornigheim, and Henricus Muller and Karl Hackstein, Hanan am Main, Germany, assignors to Nukem Nuklear-Chemie und -Metallurgie, GmbH, Hanau, Germany**
**Filed June 23, 1969, Ser. No. 835,509**
**Claims priority, application Germany, Apr. 23, 1969, P 19 20 479.6**
**Int. Cl. C01g** *43/00*
**U.S. Cl. 423—15** **5 Claims**



As shown in the single figure of the drawing $NH_3$, $CO_2$, ammonium hydrogen fluoride and uranium are recovered from $NH_4^+$, $CO_3^=$ and fluoride containing waste water as the filtrate from the precipitation of tetraammonium uranyl tricarbonate and $NH_3$ and $CO_2$ containing waste gases from the decomposition of tetraammonium uranyl tricarbonate by employing a circulatory process having a first phase in which the filtrate and waste gases are reacted with a strongly acid solution of ammonium fluoride and ammonium hydrogen fluoride to liberate carbon dioxide and bind ammonia and a second phase wherein the resulting weakly acid carbonate free solution is evaporated to set free ammonia and regenerate the strongly acid solution and a part of the stream of strongly acid solution is withdrawn from the circuit to maintain the fluorine content of the circuit constant and the withdrawn stream is concentrated and the ammonium hydrogen fluoride separated from the uranium material by volatilizing the ammonium hydrogen fluoride.

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### 3,758,281
### SINTERED ALLOY AND WEAR-RESISTING SLIDING PARTS MANUFACTURED THEREFROM

**Kenya Motoyoshi, Aza Miyahigashi, and Takao Kawakita, Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan**
**No Drawing. Filed Apr. 30, 1971, Ser. No. 139,130**
**Int. Cl. B22f** *7/00*
**U.S. Cl. 29—182** **10 Claims**

A sintered alloy consisting of Fe, Cr, and Pb having a structure in which Pb is dispersed into a Fe-Cr-C matrix, and sliding parts or members manufactured from the sintered alloy.

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### 3,758,282
### FUEL COMPOSITIONS

**Keith Owen, Brightwell-cum-Sotwell, near Wallingford, and Geoffrey A. H. Roberts, Oxford, England, assignors to Esso Research and Engineering Company**
**No Drawing. Filed Dec. 17, 1969, Ser. No. 886,006**
**Claims priority, application Great Britain, Dec. 24, 1968, 61,250/68; Aug. 15, 1969, 40,977/69**
**Int. Cl. C10l** *1/20*
**U.S. Cl. 44—69** **22 Claims**

Fuel compositions for spark ignition engines which comprise organo-metal anti-knock additives comprise, in addition, an ester of a selected type to mitigate the formation of deposits in the combustion chamber of the engine. Specific examples of suitable esters are benzyl salicylate, aryl phthalates, phenylacetates, benzyl halogenated aliphatic carboxylates and benzyl nitro- or halo-benzoates.

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### 3,758,283
### CONDUCTIVITY ADDITIVE FOR LIQUID HYDROCARBONS

**John Walter Matt, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Sept. 24, 1971, Ser. No. 183,621**
**Int. Cl. C10l** *1/26*
**U.S. Cl. 44—62** **4 Claims**

A composition consisting essentially of a trivalent chromium salt of an organic phosphate, a nitrogen containing copolymer and an amine neutralized alkyl phosphate increases the conductivity of liquid hydrocarbons and prevents accumulation of static charge in hydrocarbon fuels and solvents.

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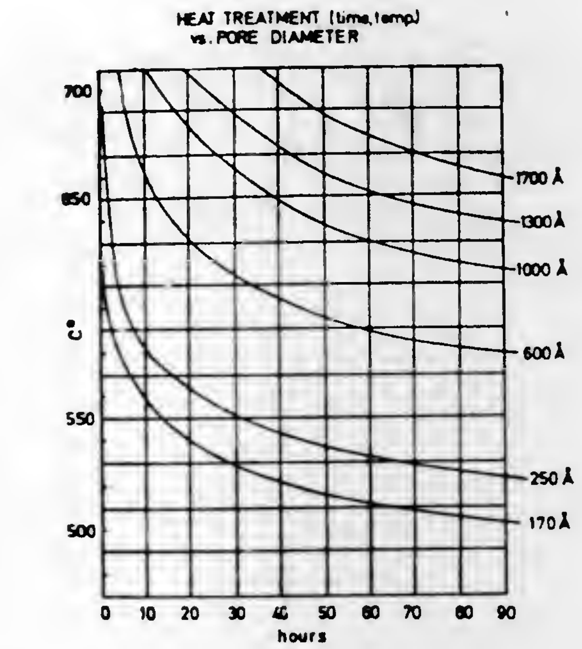
### 3,758,284
### POROUS MATERIAL AND METHOD OF MAKING THE SAME

**Wolfgang Haller, 5400 Pooks Hill Road, Apt. 912, Bethesda, Md. 20014**
**Original application Nov. 10, 1965, Ser. No. 507,092. Divided and this application Dec. 17, 1970, Ser. No. 99,218**
**Int. Cl. C03c** *15/00;* **C03b** *5/16*
**U.S. Cl. 65—31** **14 Claims**



A porous glass having a more uniform pore size distribution useful, e.g., as a separation medium, is produced from a melt of a ternary system which can be separated by heat treatment into two immiscible phases. After cooling one phase is leached out. The heat treatment is in accordance with the formula

$$r^n = kte^{-m/T}$$

where $r$ is desired pore radius (A.), $t$ is time in hours, T is temperature (° K.), and $m$, $n$ and $k$ are experimentally determined constants.

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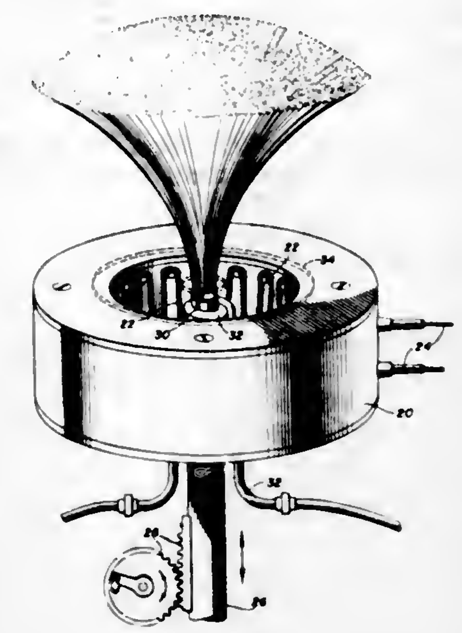
### 3,758,285
### METHOD AND APPARATUS FOR MAKING GLASS FIBER SPRAYS

**Keith L. Knowlton, Mill Lane Road, Brimfield, Mass. 01010**
**Filed Nov. 8, 1971, Ser. No. 196,699**
**Int. Cl. C03b** *23/06*
**U.S. Cl. 65—64** **9 Claims**

Making a glass fiber spray by securing together a bundle of fibers at one end, leaving the other end unsecured, and heating the bundle adjacent the secured end to a point where the outermost fibers in the bundle are caused to sag outwardly with a permanent set, and fibers located inwardly thereof sag to a decreasing degree toward the center portion of the bundle where the fibers are substantially unaffected by the heat.



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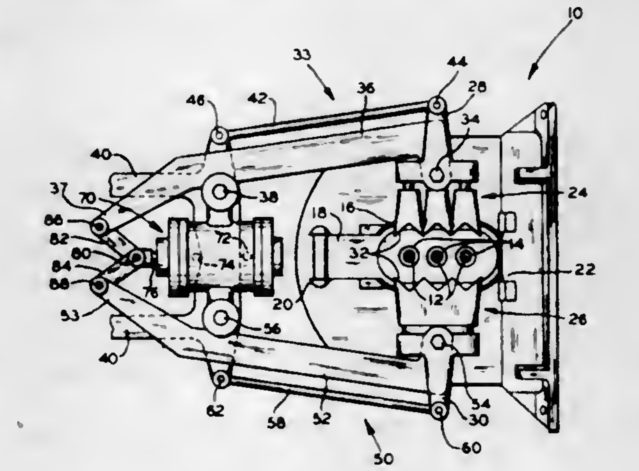
### 3,758,286
### GLASS FEEDER SHEAR MECHANISM

**Clarence A. Heyne, Toledo, Ohio, assignor to Owens-Illinois, Inc.**
**Filed Apr. 30, 1971, Ser. No. 138,887**
**Int. Cl. C03b** *5/38*
**U.S. Cl. 65—334** **15 Claims**



In preferred embodiments of the invention illustrated herein there is shown method and apparatus for shearing a plurality of gobs aligned in a row and issuing from a molten glass feeder. A pair of opposed shear carriages are provided which are movable toward and away from each other between open and shearing positions with respect to a row of a gobs. A pair of opposing gob cutting surfaces for each gob to be severed are mounted on the opposed shear carriages. A lever is provided for each shear carriage having one end pivotally connected to its carriage and a portion remote from the carriage end pivotally supported on a frame structure. Each lever is operable to pivot the carriage toward and away from a gob shearing position. Means are connected to each of the shear carriages for pivoting the shear carriages on their levers to translate the arcuate motion imparted to the carrier by the levers to substantially linear motion enabling the gob cutting surfaces to substantially simultaneously engage and sever the plurality of gobs. The motion translating means preferably includes a steering link having one end pivotally connected to the shear carriage a predetermined distance from the lever connection to the carriage, and a means for pivotally supporting the other end of the steering link a fixed distance from the pivotally supported other end of the lever. Novel blade structures, alignment and cooling features are also shown.

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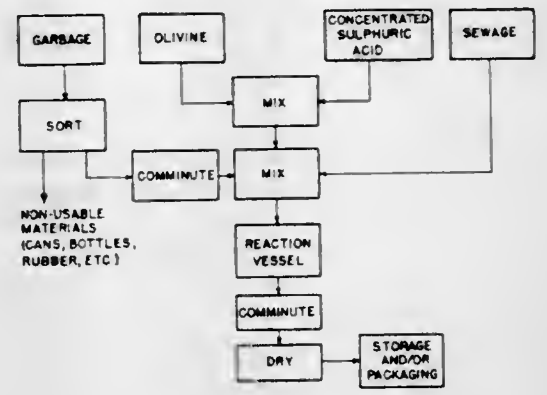
### 3,758,287
### PROCESS OF TREATING ORGANIC WASTE

**Hans P. Scheel, Seattle, Wash., assignor to Western Minerals, Inc.**
**Continuation-in-part of application Ser. No. 138,763, Apr. 29, 1971. This application Aug. 28, 1972, Ser. No. 283,987**
**Int. Cl. C08f** *3/00*
**U.S. Cl. 71—12** **8 Claims**



Conversion of organic waste into organic plant food is carried out by subjecting the waste to heat sufficient to sterilize, deodorize, and de-water the waste, the heat being generated by the chemical reaction of a mixture principally of magnesium oxide and sulfuric acid. Although commercial magnesium oxide may be used, a preferable source is finely ground olivine, a less highly refined and less expensive material containing a large percentage of magnesium oxide. Olivine is a mineral composed essentially of the oxides of magnesium and iron but also containing aluminum, nickel, and other trace elements. When the olivine is mixed with concentrated sulfuric acid, a paste is formed which is then mixed with the waste. The exothermic reaction which takes place produces a compost-like material which is valuable as a plant food.

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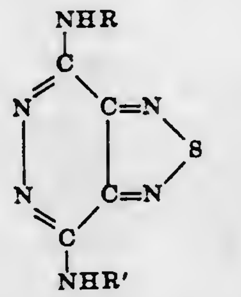
### 3,758,288
### SELECTED THIADIAZOLO[3,4-d]PYRIDAZINE COMPOUNDS FOR PROTECTING PLANTS AGAINST AIR POLLUTION

**Edward Levant Jenner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Apr. 13, 1971, Ser. No. 133,723**
**Int. Cl. A01n** *9/12*
**U.S. Cl. 71—90** **3 Claims**

Thiadiazolo[3,4-d]pyridazines of the formula



are useful in protecting plants against the damaging effects of various pollutants found in the air, as ozone.

**3,758,289**

### PREREDUCTION PROCESS

**James M. Wood, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.**

**No Drawing. Filed May 1, 1970, Ser. No. 33,953**

**Int. Cl. C22b** *21/02;* **C22c** *1/00;* **C22d** *7/06*

**U.S. Cl. 75—10** **18 Claims**

Aluminum-silicon alloy is produced from aluminum-containing ores in a two-step process. The first step includes heating aluminum-containing ore to a temperature of from about 1500° C. to about 1800° C., the heat being supplied by a fossil fuel. The second step of the process includes transferring the product of the first step to an electric arc furnace and heating the product to a temperature of from about 2000 to about 2300° C.

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**3,758,290**

### CARBOTHERMIC PRODUCTION OF ALUMINUM

**Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.**

**Continuation-in-part of application Ser. No. 799,672, Feb. 17, 1969, now Patent No. 3,607,221. This application July 21, 1971, Ser. No. 164,769**

**Int. Cl. C22b** *21/02;* **C22d** *7/02*

**U.S. Cl. 75—10 R** **6 Claims**

A process for preparing an accurately controlled feed, having a 2:1 ratio of aluminum:carbon monoxide and a 1:1 atomic ratio of carbon:oxygen, for a carbothermic process wherein the feed, consisting essentially of aluminum monoxycarbide, is introduced into a heating zone and maintained therein at an elevated temperature sufficient to quickly vaporize all products to a vaporous mixture of essentially only gaseous aluminum and carbon monoxide. The vaporous mixture is then contacted in the absence of a reactive environment with a layer of liquid aluminum at a temperature sufficiently low that the vapor pressure of the liquid aluminum is less than the partial pressure of the aluminum vapor in contact with it and sufficiently high to prevent the reaction of carbon monoxide and aluminum, and finally, the substantially pure aluminum is recovered.

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**3,758,291**

### METHOD FOR PRODUCING METAL ALLOY FOAMS

**William J. Ptashnik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Oct. 29, 1971, Ser. No. 193,937**

**Int. Cl. C22c** *1/08*

**U.S. Cl. 75—20 F** **6 Claims**

A method of producing foamed metal alloy products is disclosed including the steps of heating the alloy to a temperature between its solidus temperature and its liquidus temperature, mixing into the alloy a particulate material which decomposes to release a substantial amount of gas at a temperature above the heating temperature but below the liquidus temperature, and solidifying and working the alloy to an article of desired shape. Thereafter, to effect foaming the article is reheated to a temperature above the decomposition temperature of the foaming agent but below the liquidus temperature to cause the generation of gas in situ and resulting foaming. The foamed article is then rapidly cooled to stabilize the foam.

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**3,758,292**

### METHOD OF QUENCHING SLAG

**John B. Kuntz, Monroeville, and Anthony A. Spinola, Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation**

**No Drawing. Filed May 21, 1971, Ser. No. 145,966**

**Int. Cl. C21b** *3/08*

**U.S. Cl. 75—24** **5 Claims**

A method of reducing hydrogen sulfide emission during the quenching of hot blast furnace slag. More particularly, the addition of an alkali or alkaline earth metal or aluminum oxide or carbonate to the water used to quench molten blast furnace slag is found to reduce hydrogen sulfide emission.

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**3,758,293**

### PROCESS FOR PURIFYING PYRITE ASHES OF NON-FERROUS METALS, ARSENIC AND SULFUR

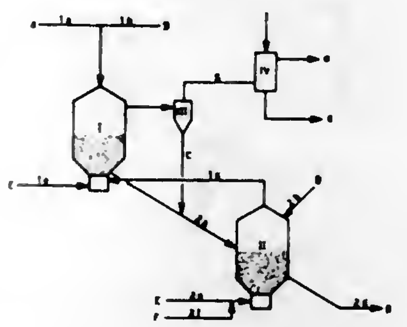
**Bruno Viviani, Giuseppe Sironi, and Ariano Colombini, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy**

**Filed Dec. 4, 1970, Ser. No. 95,087**

**Claims priority, application Italy, Dec. 9, 1969, 25,507/69**

**Int. Cl. C21b** *1/04*

**U.S. Cl. 75—23** **7 Claims**



A process for purifying pyrite or pyrrhotite ashes by removal therefrom non-ferrous metals, arsenic and sulfur. The process which comprises admixing pyrite with said pyrite ashes coming from a roasting furnace at 500°–800° C., said pyrite being in quantities of from 25–200 kg. of $FeS_2$ per ton of ash, depending on the temperature of the ashes. Treating the pyrite ash/pyrite admixture in a fluid bed at 850°–950° C. with a mixture of chlorine and oxygen containing gases in which the chlorine is equal to 105–120% of the stoichiometric with respect to the non-ferrous metals and to the arsenic present in the ashes and in the admixed pyrite. The oxygen is in such a quantity that the outflowing gases contain from 0.5 to 5% by volume $O_2$.

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**3,758,294**

### REFRACTORY IRON-BASE ALLOY RESISTANT TO HIGH TEMPERATURES AND TO RECARBURIZATION

**Jean Bellot, Pompey, and Michel Hugo, Custines, France, assignors to Societe des Acieries du Manoir-Pompey, Paris, France**

**No Drawing. Filed Aug. 3, 1970, Ser. No. 60,658**

**Claims priority, application France, Mar. 23, 1970, 7010371**

**The portion of the term of the patent subsequent to Dec. 14, 1988, is disclaimed**

**Int. Cl. C22c** *39/20, 39/50*

**U.S. Cl. 75—122** **1 Claim**

An iron-base alloy having a good creep resistance at high temperature, a good corrosion resistance up to at least 1,200° C. and a high resistance to carbon restoration or recarburization by carburizing agents and containing carbon, nickel, chromium, manganese, silicon, niobium with the usual impurities and wherein the improvement consists in that said alloy contains 0.3 to 4.5% of tungsten, 1.0 to 8% of niobium and 0.02 to 0.25% of nitrogen.

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**3,758,295**

### NICKEL-CHROMIUM-IRON ALLOYS

**Michael Morley, Kingsthorn, and Allan Roy Knott, Fayre Oaks, England, assignors to The International Nickel Company, Inc., New York, N.Y.**

**No Drawing. Filed Jan. 20, 1971, Ser. No. 108,171**

**Claims priority, application Great Britain, Jan. 26, 1970, 3,643/70**

**Int. Cl. C22c** *19/00, 39/20*

**U.S. Cl. 75—122** **6 Claims**

Nickel-chromium-iron alloys of special composition and containing carbon, molybdenum, titanium, aluminum,

boron, etc., are particularly suitable for wrought rotor discs for gas turbine engines and for other articles and parts that are subjected in use to high stress at temperatures up to about 700° C., e.g., 550° C. to 700° C.

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**3,758,296**

### CORROSION RESISTANT ALLOY

**Thomas E. Johnson, Milwaukee, Wis., assignor to Chas. S. Lewis & Co., Inc., Affton, Mo.**

**No Drawing. Filed Oct. 29, 1970, Ser. No. 85,252**

**Int. Cl. C22c** *19/00, 39/20*

**U.S. Cl. 75—122** **8 Claims**

A highly corrosion-resistant, workable, durable, strong, hardenable, relatively inexpensive nickel-based, high chromium, high iron, austenitic alloy, containing, in approximately the quantities indicated: Ni 26–48 (preferably to 38%) (balance); Cr 30–34%; Mo 4–5.25%; Co 4–7.5%; Fe 3–25% (but preferably 10–25%); Cu 2.5–8%; C .05–.25%; Si to 4%; B to .10%; and with the preferable range of Si about 2–3.5% so that the alloy is age hardenable. All percentages herein are by weight.

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**3,758,297**

### SAW BLADE MADE FROM W-Cr-W-Mo CONTAINING TOOL STEEL

**Jacques L. J. Demurger, 36 Place des Promenades Populle, Roanne 42, France**

**No Drawing. Filed June 29, 1970, Ser. No. 50,946**

**Int. Cl. C22c** *39/14, 39/20*

**U.S. Cl. 75—126 C** **5 Claims**

A saw blade made from alloy steel which consists essentially of about 0.75–0.90% carbon, about 3–4% chromium, about 1.3–1.6% molybdenum, about 1.5–2.5% vanadium, about 5–7% tungsten and less than 0.80% of impurities, the remainder being iron.

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**3,758,298**

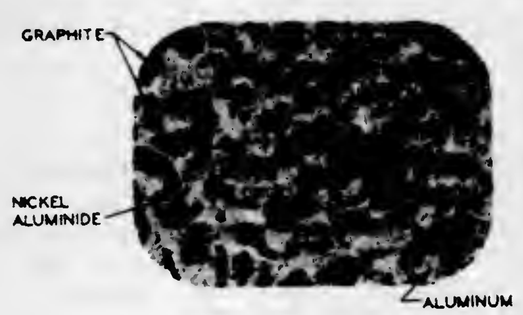
### METHOD OF PRODUCING GRAPHITIC ALUMINUM CASTINGS

**Robert E. Eppich, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed July 2, 1970, Ser. No. 51,750**

**Int. Cl. C22c** *1/10*

**U.S. Cl. 75—138** **5 Claims**



A method of producing graphitic aluminum castings comprising first reacting nickel coated graphite powder with aluminum at an elevated temperature in a non-oxidizing environment to form on cooling a briquet consisting essentially of graphite particles and a discrete nickel aluminide intermetallic phase in an aluminum matrix and then immersing the briquet in an aluminum melt whereby the briquet melts and the graphite particles become suspended in the molten aluminum. The aluminum melt having a predetermined quantity of graphite dispersed therein is thereafter cast to form a graphitic aluminum casting.

**3,758,299**

### CHROMIUM-NICKEL ALLOYS AND ARTICLES AND PARTS MADE THEREFROM

**Philip James Ennis and Philip James Parry, Birmingham, England, assignors to The International Nickel Company, Inc., New York, N.Y.**

**No Drawing. Filed Mar. 10, 1971, Ser. No. 123,068**

**Int. Cl. C22c** *19/00*

**U.S. Cl. 75—171** **9 Claims**

Corrosion-resistant cast articles and parts made from chromium-nickel alloys containing one or more of the elements columbium, titanium and tantalum in carefully controlled amounts to obtain improved room-temperature ductility after prolonged service at high-temperatures and, in some cases, improved strength.

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**3,758,300**

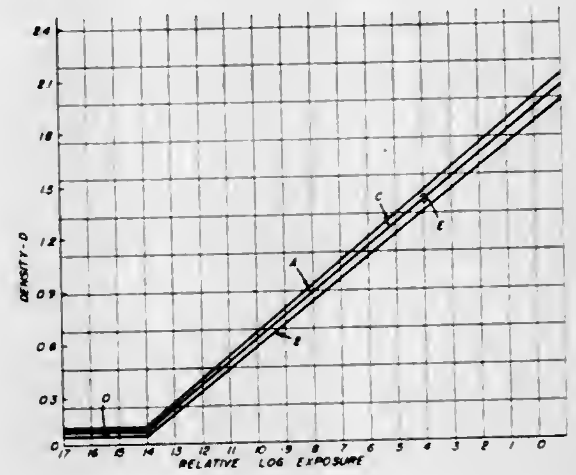
### COLOR SOUND MOTION PICTURE FILM PRINTS WITH MINIMAL FOGGED GRAIN RELATED NOISE IN SOUND TRACK

**Edward J. Walsh, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Dec. 16, 1971, Ser. No. 208,777**

**Int. Cl. G03c** *5/14, 5/30*

**U.S. Cl. 96—4** **6 Claims**



Sound track fogged grain related noise in printed silver sound track images of developed reversal print films is reduced by incorporation of a fogged grain related noise suppressing amount of 2-benzimidazolethiol into the silver sound track redeveloper solution used for redeveloping the silver image of the sound track in a color picture and silver sound track developing process.

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**3,758,301**

### ELECTROPHOTOGRAPHIC USES OF SELENIUM CONTAINING POLYMERS

**Wolfgang H. H. Gunther, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

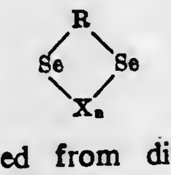
**Original application July 30, 1970, Ser. No. 59,495, now Patent No. 3,671,467. Divided and this application Dec. 20, 1971, Ser. No. 210,273**

**Int. Cl. G03g** *5/06, 13/22*

**U.S. Cl. 96—1.5** **63 Claims**

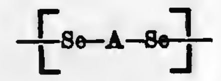
This invention relates to organic diselenides and polyselenides among which are cyclic compounds represented by the formula:

(I)



wherein R is selected from divalent hydrocarbylene radicals of 5 to 20 carbon atoms, divalent heterocyclic, alicyclic and aromatic radicals having from 3 to 50 carbon atoms, *n* is a positive integer and X is the radical —Se—R—Se—; linear polymers having a repeating unit represented by the formula:

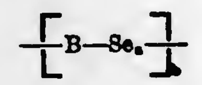
(II)



$$\left[\text{Se}-\text{A}-\text{Se}\right]$$

wherein A is selected from divalent alkylene radicals having from 9 to 20 carbon atoms, divalent aromatic radicals from 6 to 50 carbon atoms and divalent heterocyclic radicals and polymers having a repeating unit represented by the formula:

(III)



$$\left[\text{B}-\text{Se}_a\right]_b$$

wherein B is selected from the group consisting of divalent hydrocarbylene radicals and divalent heterocyclic radicals, *a* is a positive integer of at least 3 and *b* is a positive integer greater than 1. This invention also relates to the use of these compounds in the production of electrophotographic plates.

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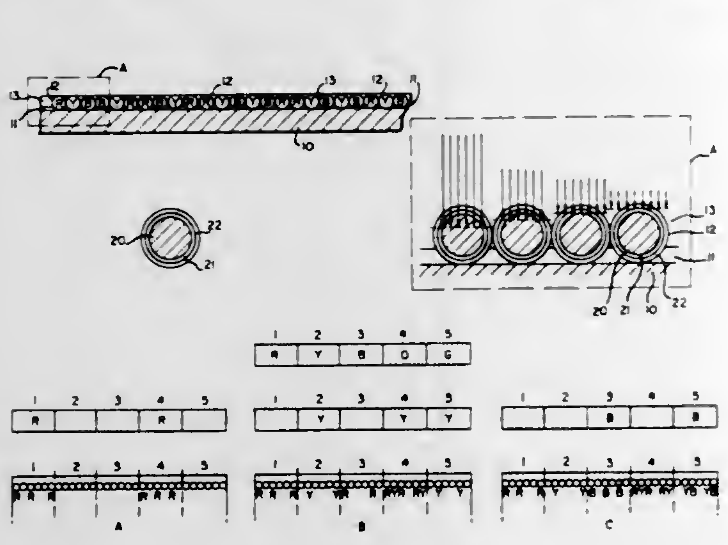
### 3,758,302
## SINGLE IMPRESSION MULTICOLOR PRINTING
**Stephen F. Grohe, 1 Haven St.,**
**Boston, Mass. 02118**
**Filed Feb. 10, 1972, Ser. No. 225,147**
**Int. Cl. B41m** *5/12;* **G03c** *7/00*
**U.S. Cl. 96—2** **21 Claims**



This invention relates to the art of color printing wherein multi-color reproductions are made with a conventional black and white first printing plate and a second, single, multicolor printing plate. The invention is characterized, in part, by the second plate which comprises a base layer, a layer of microbeads distributed over said base layer and, in a preferred embodiment, an over-coating of a neutral density filter. The microbeads comprises a source of a color-forming material coated first with a layer of a light sensitive material and a second layer of a photographic color filter. Three distinct types of microbeads are used, one responsive to each of the three primary colors, red, yellow and blue. The printing process comprises forming separate color separation negatives in conventional manner, exposing the single, multicolor printing plate to each of the color separation negatives using the appropriate colored light and processing said plate to remove light exposed portions of the light sensitive material thereby making available red color-former from those microbeads exposed to red light, yellow color-former from those microbeads exposed to yellow light and blue color-former from those microbeads exposed to blue light. The amount of color-former made available determines the depth of color of the final print and this is in turn governed by the quality of light passing through the neutral density filter to the microbead. The printing plate so developed is then contacted with an ink which contains a second component of the color-former capable of reacting with the first component to thereby provide the primary colors red, yellow and blue in the corresponding, exposed and developed microbead. Upon contact of the first component of the color-former on the printing plate with the second component of the color-former in the ink, a color is produced in each of the developed microbeads which color is equivalent to a color dot in a conventional printing process. Consequently, a colored illusion is obtained having all of the colors and hues ready for transfer to a transfer surface.

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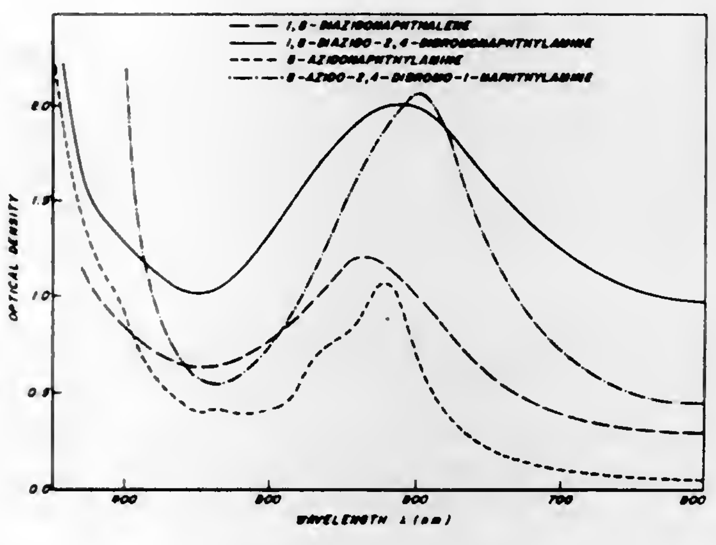
### 3,758,303
## PHOTOGRAPHIC IMAGING OF MATERIAL CONTAINING HALO AZIDO NAPHTHALENES
**Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.**
**Original application May 26, 1971, Ser. No. 147,117, now Patent No. 3,699,130. Divided and this application Aug. 2, 1972, Ser. No. 277,453**
**Int. Cl. G03c** *5/18*
**U.S. Cl. 96—27 R** **6 Claims**



Novel halo azido naphthalenes and dry photoimaging processes and compositions employing said naphthalenes are disclosed.

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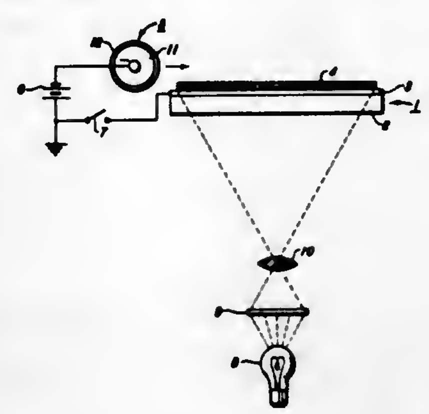
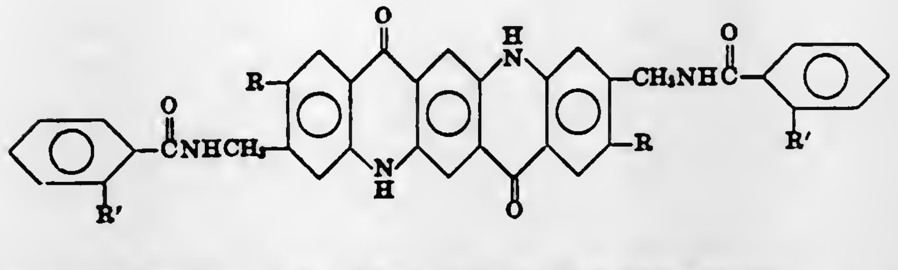
### 3,758,304
## METHOD OF PRODUCING ELECTRICALLY CONDUCTIVE METAL LAYERS
**Casper Johannes Gerardus Ferdinand Janssen, Hendrik Jonker, Lambertus Postma, and Angustinus Joseph Geurts, Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**No Drawing. Filed Feb. 8, 1971, Ser. No. 113,664**
**Claims priority, application Netherlands, Feb. 10, 1970, 7001820**
**Int. Cl. G03c** *5/00, 11/00, 5/24*
**U.S. Cl. 96—38.4** **11 Claims**

Method of manufacturing conductive metal patterns on a preferably insulating substrate with the aid of a curable, light-sensitive adhesive layer containing a semiconductor, light-sensitive oxide such as $TiO_2$. Prior to exposure the layer is partly cured and then superficially chemically roughened lightly. After exposure metal nuclei are formed by the contact with a metal salt solution, metal being subsequently deposited on said nuclei.

### 3,758,305
## PHOTOELECTROPHORETIC IMAGING PROCESS
**Lester Weinberger, Brighton, N.Y., assignor to Xerox Corporation, Rochester, N.Y.**
**Original application Nov. 1, 1968, Ser. No. 772,596, now Patent No. 3,635,981. Divided and this application May 7, 1971, Ser. No. 141,125**
**Int. Cl. G03g** *5/06, 13/00*
**U.S. Cl. 96—1.3** **12 Claims**



A novel composition having the formula:



wherein $R{=}CH_3$, $C_2H_5$, $OCH_3$, $OC_2H_5$ or a halogen and wherein $R'{=}COOH$, $COOCa/2$, $SO_3H$, or $SO_3Ca/2$ is disclosed. Methods of preparing said composition and of using said composition in electrophoretic imaging processes are also disclosed.

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### 3,758,306
## PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS CONTAINING ORGANOSILANES
**Leo Roos, New Shrewsbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Mar. 25, 1971, Ser. No. 128,191**
**Int. Cl. G03c** *1/68*
**U.S. Cl. 96—83** **10 Claims**

Photopolymerizable elements having improved adherence to a substrate, e.g., a metal, glass, or organic polymer film of a layer of an ethenically unsaturated photopolymerizable monomer and a macromolecular organic polymer binder, preferably a polyacrylate or methacrylate containing a small amount of an organosilane. The organosilane may be an alkyl, vinyl, or aryl, trialdoxy, trichloro, or trihydroxy silane or a condensed, polymeric silane. The organosilane can be admixed with the photopolymerizable composition just prior to coating it onto the substrate. The elements can be used to make printed circuit boards.

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### 3,758,307
## DIAZOTYPE LIGHT-SENSITIVE COMPOSITIONS CONTAINING A 4 - (N-PYRROLIDINO)-3-SUBSTITUTED BENZENE DIAZONIUM SALT
**Rafiqul Islam, Sidney G. Garnish, Murray Figov, and Henry Mustacchi, London, England, assignors to GAF Corporation, New York, N.Y.**
**No Drawing. Continuation-in-part of application Ser. No. 548,840, May 10, 1966. This application Mar. 12, 1969, Ser. No. 806,742**
**Int. Cl. C07c** *113/00;* **G03c** *1/52*
**U.S. Cl. 96—91 R** **2 Claims**

Diazotype materials and sensitizing compositions therefor wherein the sensitizer is a 4-(N-pyrrolidino)-3-substituted benzene diazonium salt wherein the substituent in 3-position is mononuclear aryl, mononuclear aryloxy, aralkyl, mononuclear alkoxyaryl, alkylthio, haloalkyl, an aldehyde group, a cyano group, a carboxyl group, a carboxy ester group or a carboacyloxy group.

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### 3,758,308
## SILVER HALIDE EMULSION CONTAINING PARA-FLUORO PHENOLS
**Leo E. Beavers, Philip T. S. Lau, and Ilmari F. Salminen, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Filed Feb. 18, 1971, Ser. No. 116,624**
**Int. Cl. G03c** *1/40*
**U.S. Cl. 96—100** **9 Claims**

A group of para-fluoro substituted phenols having substituted carbonamido moieties in ortho and meta position thereon, the described compounds and materials incorporating the same having particular advantages in efficiently producing stable cyan dyes in excellent yield when reacted with an oxidized phenylene diamine, particularly in the capacity of a 2-Equivalent Color Photographic Coupler Compound.

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### 3,758,309
## SILVER HALIDE EMULSIONS CONTAINING SENSITIZING DYES DERIVED FROM A 1H-PYRAZOLO[3,2-c]-s-TRIAZOLE
**Joseph Bailey, Bushey Heath, and Edward B. Knott, Harrow, Middlesex, England, and Peter A. Marr, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 778,333, Nov. 12, 1968. This application Jan. 15, 1971, Ser. No. 106,893**
**Claims priority, application Great Britain, Jan. 15, 1970, 1,957/70**
**Int. Cl. G03c** *1/18*
**U.S. Cl. 96—136** **16 Claims**

Dyes derived from 1H-pyrazolo[3,2-c]-s-triazoles are advantageously used in photographic silver halide elements as spectral sensitizing dyes for the silver halide or as light-absorbing dyes for filter layers.

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### 3,758,310
## METHOD OF PRESERVING HOPS
**Fritz Briem, Au-Hallertau, Germany, assignor to Marietta Briem and Zita Binkert, nee Briem**
**No Drawing. Filed May 8, 1967, Ser. No. 642,279**
**Claims priority, application Germany, May 6, 1966, B 87,022, B 87,023; Mar. 30, 1967, B 91,850**
**The portion of the term of the patent subsequent to June 11, 1988, has been disclaimed**
**Int. Cl. C12c** *9/02*
**U.S. Cl. 99—50.5** **9 Claims**

Hops can be stored for a long period of time by drying and crushing freshly picked hops, and sealing the crushed hops in an air-tight film envelope which has an atmosphere consisting essentially of a carbon dioxide-nitrogen mixture.

### 3,758,311
### PREPARING OF BAKED GOODS WITH COATED SALT

**Karl L. Fortmann, Towaco, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.**

**No Drawing. Continuation-in-part of application Ser. No. 742,509, July 5, 1968, which is a continuation-in-part of application Ser. No. 651,714, July 7, 1967, both now abandoned. This application Nov. 27, 1970, Ser. No. 93,401**

**Int. Cl. A21d** *8/00*

**U.S. Cl. 99—90 R** **11 Claims**

A salt-liberating composition for use in a dough preparation, permitting substantial savings in the amount of work required for mixing the dough, wherein a film-forming emulsifier, fat, hydrogenated oil or wax (largely releasable from the salt only late in the mixing cycle and during subsequent dough preparation periods, but prior to baking), is used as a coating upon the salt particles. Where a coarse salt particle is employed any fat, hydrogenated oil or wax must have a dispersing agent distributed throughout it to prevent formation of salt spots in the top crusts of the baked product.

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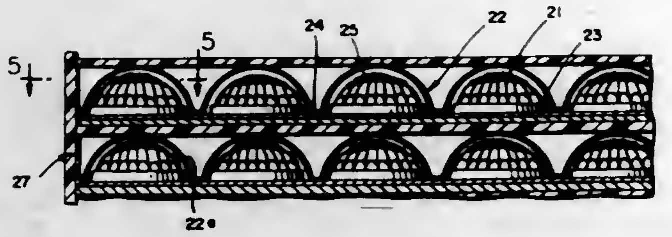
### 3,758,312
### PACKAGING EMBOSSED-SURFACED BUTTER AND MARGARINE

**Leo Peters, 750 Plymouth Road SE.,**
**Grand Rapids, Mich. 49506**

**Filed Mar. 4, 1971, Ser. No. 121,010**

**Int. Cl. A23d** *3/02*

**U.S. Cl. 99—179** **9 Claims**



Packaging multi-cubic-dimensioned embossed surfaces of butter or margarine underneath, within, and in spaced relationship away from a generally shape-conforming, but non-surface-conforming, pre-formed cover or cap.

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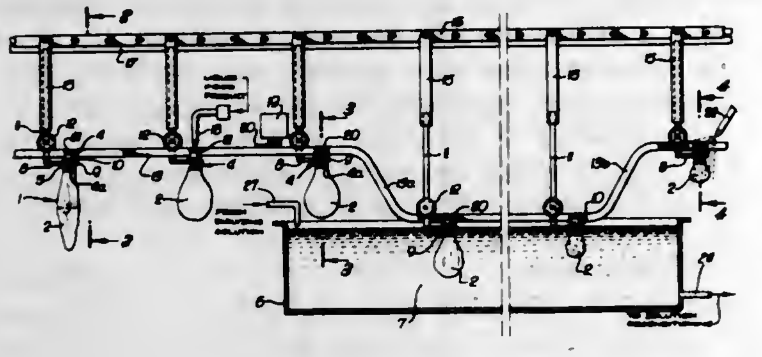
### 3,758,313
### DEHYDRATION AND PACKAGING OF FOODSTUFFS BY DIALYSIS

**Robert D. Scott, 1324 S. Glenn Alan,**
**West Covina, Calif. 91890**

**Filed Mar. 24, 1971, Ser. No. 127,675**

**Int. Cl. A23c** *1/00;* **A23l** *1/02*

**U.S. Cl. 99—199** **4 Claims**



A food concentrate is prepared in the container by dialysis of a liquid food product portion sealed in a film bag or other container having a semi-permeable membrane wall, against a suitable aqueous salt dialyzing solution.

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### 3,758,314
### AQUEOUS BATH FOR CHEMICAL DEPOSITION OF DUCTILE COPPER COATINGS

**Wolf-Dieter Haack, Berlin, Germany, assignor to Schering AG, Berlin, Germany**

**No Drawing. Filed Mar. 2, 1972, Ser. No. 231,362**
**Claims priority, application Germany, Mar. 9, 1971, P 21 12 417.4**

**Int. Cl. C23c** *3/02*

**U.S. Cl. 106—1** **5 Claims**

Aqueous bath for the chemical deposition of ductile copper coatings is provided including alkaloid brucine in exceedingly small quantities for use on surfaces.

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### 3,758,315
### TARNISH PREVENTIVE COMPOSITION

**Thomas P. Wright, Keene, N.H., and John W. Rafferty, Marblehead, Mass., assignors to J. A. Wright & Company, Keene, N.H.**

**No Drawing. Continuation of abandoned application Ser. No. 602,524, Dec. 19, 1966. This application Dec. 1, 1970, Ser. No. 94,629**

**Int. Cl. C08h** *9/00;* **C09f; C09g**

**U.S. Cl. 106—8** **8 Claims**

A tarnish preventive metal polish composition wherein in a conventional metal polish there is included 1% to 10% by weight dithio-bis higher alkyl ester of fatty acid and 0.2% to 2% by weight alkyl polyoxyethylene thioether. The metal article having thereon a tarnish-resistant surface film of dithio-bis higher alkyl ester of fatty acid.

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### 3,758,316
### REFRACTORY MATERIALS AND PROCESS FOR MAKING SAME

**Donald M. Sowards, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 780,182, Nov. 29, 1968. This application Mar. 30, 1971, Ser. No. 129,585**

**Int. Cl. C04b** *35/00*

**U.S. Cl. 106—55** **8 Claims**

Small dimensional changes during gelling, curing, and drying, and high modulus of transverse rupture strengths in refractory materials prepared from refractory powders, binder precursors, and gelling agents are obtained by careful control of the amount of acid present during the gelation step.

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### 3,758,317
### MONOLITHIC INORGANIC STRUCTURES

**Earl P. Moore, Jr., Wilmington, and Donald M. Sowards, Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed May 20, 1971, Ser. No. 145,533**

**Int. Cl. C04b** *35/14*

**U.S. Cl. 106—65** **15 Claims**

Monolithic inorganic structures of positively charged colloidal particles and negatively charged colloidal silica particles are formed by combining a negatively charged colloidal silica dispersion and a positively charged colloidal dispersion.

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### 3,758,318
### PRODUCTION OF MULLITE REFRACTORY

**Robert E. Farris, Pleasanton, and James C. Hicks, Walnut Creek, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**

**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,157**

**Int. Cl. C04b** *35/10*

**U.S. Cl. 106—65** **13 Claims**

Method of making high purity synthetic mullite wherein finely divided aluminous (e.g., aluminum trihydrate) and aluminosilicate (e.g., kaolin clay) raw materials are lightly calcined, at a temperature between 750 and 1150° C., and milled prior to firing to form a mullite refractory. Preferably the milled calcined materials are compacted prior to firing.

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### 3,758,319
### METHOD FOR FORMING FOAMED CONCRETE STRUCTURES

**Mehmet T. Ergene, Hartford, Conn., assignor to The Stanley Works, New Britain, Conn.**

**Filed Oct. 22, 1970, Ser. No. 83,043**

**Int. Cl. C04b** *21/00*

**U.S. Cl. 106—88** **13 Claims**

Cellular concrete structures are made by admixing water and cement under conditions sufficient to produce a high degree of hydration of the cement particles, followed by the introduction of a foam formed under pressure from a mixture of water, air, foaming agent and chloride accelerator. The foam mixture and cement admixture are blended to a substantially homogeneous, foamed cement slurry, which is cast into a mold and cured to form a lightweight cellular concrete structure.

In the structure, the voids are relatively spherical in shape and have an average diameter of about 0.05 to 0.050 inch. The foaming agent and cure accelerator are concentrated at the surface of the concrete matrix about the voids, and the structure has a uniform density of about 25 to 75 pounds per cubic foot.

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### 3,758,320
### MANUFACTURE OF PIGMENTS

**Robert Joseph Flores, Alsip, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio**

**No Drawing. Filed May 26, 1972, Ser. No. 257,117**

**Int. Cl. C08h** *17/02*

**U.S. Cl. 106—288 Q** **28 Claims**

Crude organic solid particles are conditioned to develop pigmentary properties. A partial milling step in which the crude pigment is subjected to particle size reduction by dry milling to an extent less than that ordinarily required to develop full tinctorial strength is followed by a breaching treatment in which the partially milled pigment is contacted with a phenol breaching agent to further condition the pigment. The resulting pigment has tinctorial strength substantially equal to that obtained by fully milling the crude particles without the breaching treatment. The phenol breaching agent may be separated from the conditioned pigment by treatment with a solubilizing base. This process is useful in the manufacture of phthalocyanines, quinacridones, etc., with substantial improvement in equipment utilization in milling.

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### 3,758,321
### CONDITIONING OF PHTHALOCYANINE COMPOUNDS

**John F. Santimauro, Wyckoff, N.J., and Herman Gerson, New York, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.**

**No Drawing. Filed Jan. 25, 1971, Ser. No. 109,662**

**Int. Cl. C08h** *17/14*

**U.S. Cl. 106—288 Q** **11 Claims**

Phthalocyanine compounds, especially halogenated phthalocyanine compounds, are conditioned to pigment form by grinding the unconditioned compounds while suspended in an aqueous medium comprising a minor amount of a water-immiscible volatile organic liquid and a major amount of water. The resulting pigments are softer in texture and of superior light-fastness compared to conventionally obtained phthalocyanines. The process for their preparation is substantially free of corrosion and pollution problems which are characteristic of many prior art conditioning processes.

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### 3,758,322
### RUTILE $TiO_2$ SLURRIES

**George Leathwhite Roberts, Jr., Savannah, Ga., and John David Rowland, Amherst, Va., assignors to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Filed July 21, 1971, Ser. No. 164,939**

**Int. Cl. C09c** *1/36*

**U.S. Cl. 106—300** **4 Claims**

Pigment slurries of at least about 60% to 80% by weight solids content are obtained by flocculating a grit-free anhydrous pigment slurry of about 20% by weight solids, which after intermediate washing and dewatering is reslurried in the presence of a dispersant such as 2-amino-2-methyl-1-propanol. Such slurries, preferably of rutile pigment, are highly useful in the production of coated papers and water based paints.

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### 3,758,323
### DEXTRIN-EXTENDED GELATIN COMPOSITIONS

**Chester D. Szymanski, Martinsville, and Gerald J. Helmstetter, Somerville, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.**

**No Drawing. Filed Oct. 19, 1972, Ser. No. 298,843**

**Int. Cl. C08b** *25/02;* **C08h** *7/00*

**U.S. Cl. 106—129** **4 Claims**

Extended gelatin film-forming compositions are disclosed comprising 40 to 97 percent, by weight, of gelatin and 3 to 60 percent, by weight, of certain dextrins chosen by means of a compatibility test. The extended gelatin compositions are useful in films, capsules, and protective coatings.

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### 3,758,324
### CROSS-LINKING AGENTS FOR PAPER BINDERS AND PAPER COATED THEREWITH

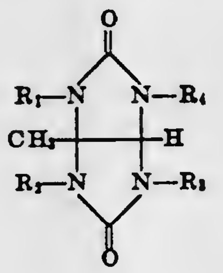
**Richard C. Barrett, New Milford, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**

**No Drawing. Filed Dec. 23, 1971, Ser. No. 215,937**

**Int. Cl. C08b** *25/02;* **C08f** *45/24;* **C08h** *1/00*

**U.S. Cl. 106—146** **15 Claims**

Cross-linking agents for paper binder coating compositions, which agents comprise compounds having the general formula:



wherein $R_1$, $R_2$, $R_3$ and $R_4$ are hydrogen or hydroxyalkyl of 1 to 10 carbon atoms, with the proviso that at least one of $R_1$, $R_2$, $R_3$ and $R_4$ is hydroxyalkyl of 1 to 10 carbon atoms. Preferred compounds include mono-, di-, tri- and tetra-N-hydroxymethyl methylglycolurils.

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### 3,758,325
### NITROCELLULOSE CONTAINING ADHESIVE COMPOSITIONS

**Craig E. Johnson, Indian Head, and Larry D. Henderson, Bryans Road, Md., assignors to the United States of America as represented by the Secretary of the Navy**

**No Drawing. Filed June 23, 1972, Ser. No. 265,934**

**Int. Cl. C08b** *21/12, 27/42, 27/52*

**U.S. Cl. 106—180** **8 Claims**

A nitrocellulose containing adhesive composition comprising two components which are mixed together and cured. Component A comprises nitrocellulose, metriol trinitrate and ethyl centralite while component B comprises triethylene glycol dinitrate, ethyl centralite and dibutyltin dilaurate. The invention also includes the method of applying the composition to the system to be used, namely the mixing of the two components together and applying to the surfaces to be adhered before the mixture completely cures.

### 3,758,326

### MASK OR ORIGINAL FOR REPRODUCING PATTERNS ON LIGHT SENSITIVE LAYERS

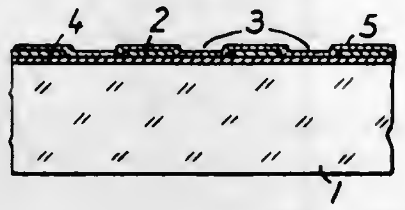
**Klaus Hennings and Hans Meyer, Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany**

**Filed Jan. 29, 1970, Ser. No. 6,881**

**Claims priority, application Germany, Jan. 31, 1969, P 19 04 789.3**

**Int. Cl. B44c** *1/50;* **C03c** *17/22*

**U.S. Cl. 117—37 R** **1 Claim**



A mask or original for reproducing patterns on light sensitive layers comprises a transparent substrate and a pattern layer on the substrate containing the pattern to be reproduced. This layer has a light transmission depending on the light wavelength and consists of a III/V or a II/VI compound. A method of producing such a mask or original includes applying the layer to the substrate by vapour deposition, cathode sputtering, or pyrolytic deposition.

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### 3,758,327

### TRANSFER OF LIQUID DEVELOPED ELECTROGRAPHIC IMAGES

**William C. York and Orville C. Rodenberg, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,147**

**Int. Cl. G03g** *13/16*

**U.S. Cl. 117—37 LE** **14 Claims**

A method of transferring a liquid-developed electrostatic charge image from a wet, hydrophobic image-bearing surface of a charge-image-bearing member to a hydrophilic, swellable receiving surface carried on an electrically insulating support which comprised moistening the receiving surface prior to transfer with a hydrophilic liquid of water-containing compositions or alcohol-containing compositions, in an amount effective to increase the electrical conductivity of said receiving surface to a value less than about 106 ohm/sq., electrically biasing the moist receiving surface utilizing an applied potential greater than about 50 volts to a level sufficient to effect migration of the liquid-developed imaged to the receiving surface during contact of the receiving surface with the image-bearing surface, and contacting together the moist receiving surface and the image-bearing surface, said transfer occurring during contact.

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### 3,758,328

### METHOD OF STRENGTHENING ALUMINA AND SPINEL BODIES

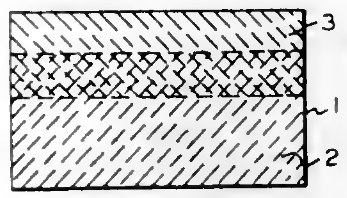
**Henry P. Kirchner, State College, and Ralph E. Walker, Julian, Pa., assignor to Henry P. Kirchner, State College, Pa.**

**Continuation-in-part of abandoned application Ser. No. 669,859, Sept. 22, 1967. This application Aug. 25, 1970, Ser. No. 66,785**

**Int. Cl. C23c** *17/00*

**U.S. Cl. 117—107.2 P** **11 Claims**

A method of strengthening alumina and spinel bodies by forming at an elevated temperature on at least one surface of the body a coating of a low expansion material. The method comprises the steps of packing the ceramic body in a mixture of $Cr_2O_3$ and $CrF_3$, $CrCl_3$, $AlF_3$, $CaF_2$ or $NH_4F$. The thus packed ceramic body is then refired.



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### 3,758,329

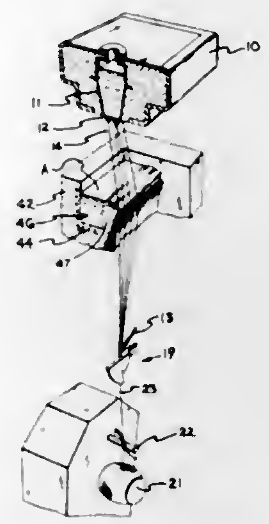
### METHOD OF COATING METAL, GLASS OR SYNTHETIC RESIN FILAMENTS WITH A HEAT-SOFTENABLE MATERIAL

**Bordie B. Garick, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation**

**Continuation of abandoned application Ser. No. 777,001, Nov. 19, 1968. This application May 24, 1971, Ser. No. 146,429**

**Int. Cl. C03c** *25/02;* **B44d** *1/09, 1/22, 1/42*

**U.S. Cl. 117—126 GM** **19 Claims**



A method of achieving complete enveloping coating of metal, glass or synthetic resin fibers by a heat-softenable material, wherein a plurality of said filaments are moved downwardly past a marginal exposed edge of a reservoir pool of softened heat-softenable material and to pick up an amount of the softened heat-softenable material and thence continuously move downwardly into contact with a surface or member, causing the heat-softened material carried on one side of the individual filament to move into substantially complete enveloping relationship with the individual filament.

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### 3,758,330

### PROCESS FOR MAKING A PRINTING MASTER

**Edward B. Richman, Shaker Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**No Drawing. Filed Oct. 26, 1971, Ser. No. 192,584**

**Int. Cl. B41n** *3/00;* **G03g** *13/22*

**U.S. Cl. 117—37 LE** **7 Claims**

A process for making a printing master wherein a photoconductive layer is selectively charged to a desired area configuration. The charged layer is then immersed in an emulsion of a conducting conversion solution in a nonconverting non-conducting liquid. If the solution is oppositely charged from the area configuration it is attracted to the charged areas and converts them while the noncharged areas remain unconverted. If the solution is of the same charge as the charged areas, it will be repelled by them and they will remain unconverted and the noncharged areas, after a period of time, will be converted.

### 3,758,331

### COVERING

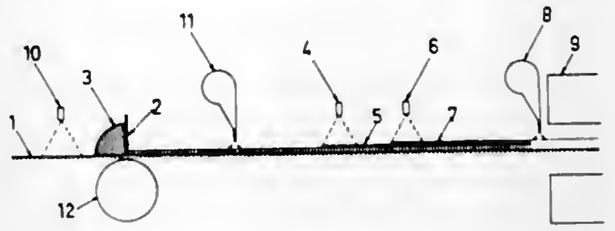
**Jacques Denojean, Lyon, France, assignor to Les Etablissements Marechal, Paris, France**

**Filed Oct. 13, 1970, Ser. No. 80,419**

**Claims priority, application France, Oct. 15, 1969, 6935293**

**Int. Cl. B44d** *1/02, 1/44*

**U.S. Cl. 117—39** **3 Claims**



Decorative surface coverings are produced by depositing differently colored plastisols on a surface support, subjecting the plastisols to a blowing action to provide ripples or other undulations on their surface, and then heating to cause gelling of the plastisols.

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### 3,758,332

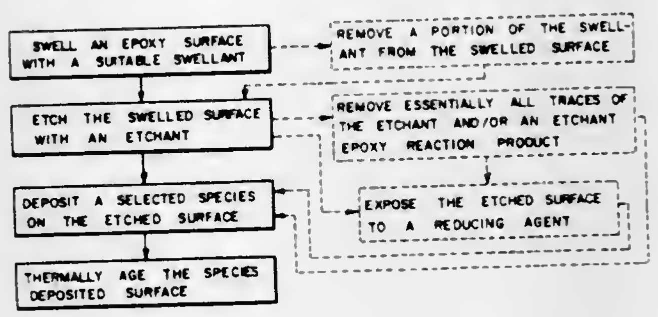
### METHOD OF METAL COATING AN EPOXY SURFACE

**Donald Dinella, Clark Township, Union County, and John Thomas Kenney, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.**

**Filed Aug. 20, 1971, Ser. No. 173,551**

**Int. Cl. B44d** *1/092;* **C07b** *13/00;* **C23c** *3/00*

**U.S. Cl. 117—47 A** **17 Claims**


SWELL AN EPOXY SURFACE WITH A SUITABLE SWELLANT
REMOVE A PORTION OF THE SWELLANT FROM THE SWELLED SURFACE
ETCH THE SWELLED SURFACE WITH AN ETCHANT
REMOVE ESSENTIALLY ALL TRACES OF THE ETCHANT AND/OR AN ETCHANT EPOXY REACTION PRODUCT
DEPOSIT A SELECTED SPECIES ON THE ETCHED SURFACE
EXPOSE THE ETCHED SURFACE TO A REDUCING AGENT
THERMALLY AGE THE SPECIES DEPOSITED SURFACE

A method of improving adhesive properties of a cured epoxy surface resulting from curing an uncured bisphenol A-epichlorohydrin epoxy is disclosed. The method comprises exposing the cured epoxy surface to a suitable swellant to swell the surface. Some typical suitable swellants are methyl ethyl ketone, tetrahydrofuran, dioxane, pyridine, dimethylformamide and a mixture of methyl ethyl ketone, ethyl alcohol and methyl alcohol. The swelled surface is then exposed to a suitable acidic etching solution comprising $H_2SO_4$, $H_3PO_4$ and $Cr^{+6}$ ions, to etch the surface.

### 3,758,333

### METHOD FOR GALVANIZING

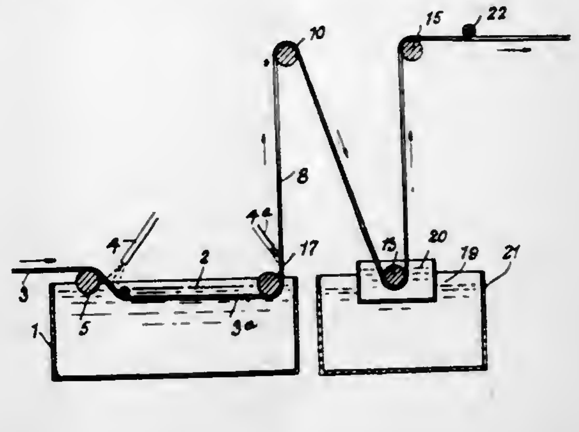
**Joseph L. Herman, Pompano Beach, Fla., assignor to Emily Herman Thompson, Palos Park, Ill.**

**Filed July 7, 1969, Ser. No. 847,486**

**The portion of the term of the patent subsequent to Nov. 6, 1989, has been disclaimed**

**Int. Cl. C23c** *1/02*

**U.S. Cl. 117—62** **3 Claims**



A method and apparatus for galvanizing wire, in which the wire received directly from the drawing operation and without any annealing or acid cleaning is placed in contact with an electric charge bar or is otherwise heated to a relatively high temperature such as of the order of 1500 degrees F. The heated wire is then passed through a molten zinc bath, the temperature of which may be about one-half of that of the wire or of the order of 850–900 degrees F. The temperature of the molten zinc bath is maintained as low as possible so as to obtain the greatest temperature differential between the outer surface of the wire and the temperature of the molten zinc bath. After having been passed through the zinc bath to receive a primary coating of the zinc the wire is passed out of the bath in a vertical direction, again placed in contact with an electric charge bar which maintains the wire at a high temperature during its vertical travel, then changing the direction of travel and allowing the wire to cool. Thereafter it is again subjected to immersion in a molten zinc bath for a relatively short time to receive another zinc coating over the primary coating received from its first immersion. The twice-coated wire is then treated to an electrical charge and is then cooled and moved away for further disposition.

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### 3,758,334

### PROCESS FOR PROVIDING SOLID PARTICLES WITH A COATING HAVING REACTIVE SURFACE ISOCYANATE GROUPS

**Henry C. Dehm, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.**

**No Drawing. Original application Nov. 17, 1969, Ser. No. 877,473, now Patent No. 3,658,763. Divided and this application Sept. 8, 1971, Ser. No. 178,801**

**Int. Cl. B32b** *1/00, 27/14*

**U.S. Cl. 117—100 A** **8 Claims**

Solid particles are provided with a cross-linked polymeric coating having a high concentration of reactive surface isocyanate groups. An organic polyisocyanate with an NCO functionality of at least 3 is dissolved in an aprotic solvent, inert to the particles to be coated and then mixed with a limited amount of water. The particles to be coated are contacted with the reaction mixture formed above until a cross-linked polymer is absorbed over the entire surface of the particles. The particles are then recovered from the reaction mixture and stored in an inert atmosphere until further use. A catalyst may be used. The solid particles coated may be organic, inorganic, polymeric or siliceous. The coated particles are useful as fillers in polymeric systems.

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### 3,758,335

### RENDERING HYDROPHOBIC FIBERS FIRE RETARDANT AND DYE RECEPTIVE

**Sylvester Bergman and Richard Garth Pews, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**
**No Drawing. Filed July 26, 1971, Ser. No. 166,248**
**Int. Cl. C09d** *5/18*
**U.S. Cl. 117—136** **3 Claims**

Polyester, cellulose triacetate, and polyamide fibers are made fire-retardant by contacting with an aqueous dispersion of 2-(2,4,6-tribromophenoxy)ethanol. This compound also functions as a dye assistant for polyester and cellulose triacetate and can be used in an aqueous dyebath to serve both purposes for those fibers. The treated fibers are resistant to loss of the brominated compound during laundering and dry cleaning processes.

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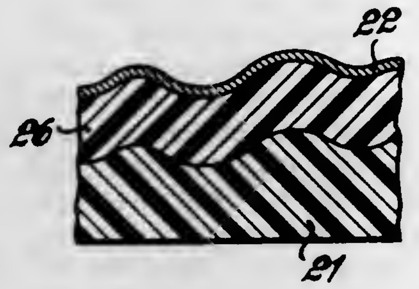
### 3,758,336

### INFORMATION CARRIER CONSTRUCTION

**Rolf Reichle, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**
**Filed Apr. 29, 1971, Ser. No. 138,670**
**Claims priority, application Germany, May 2, 1970, P 20 21 502.5**
**Int. Cl. G01d** *15/08*
**U.S. Cl. 117—217** **10 Claims**



An information carrier has at least one substrate support layer of dielectric material and, on an exposed face thereof at least one metallic registration layer which is adapted to have an information-denoting track of predetermined width formed therein during use. The face of the substrate support layer and correspondingly the exposed surface of the metallic registration layer—which latter is of constant thickness—have unevenesses in form of hills and valleys the height-differential between which is greater than the predetermined thickness of the registration layer and smaller than the predetermined width of the track to be formed.

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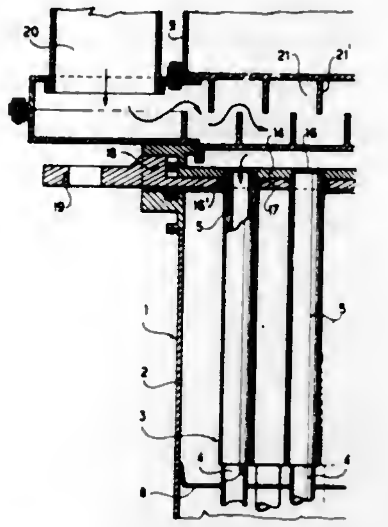
### 3,758,337

### SODIUM-SULPHUR ACCUMULATOR WITH TEMPERATURE CONTROLLING MEANS

**Jacques Fally, Orsay, Jacques Richez, Clamart, Claude Lasne, Antony, and Yvon Lazennec, Saint Michel-sur-Orge, France, assignors to Compagnie Generale d'Electricite, Paris, France**
**Filed Dec. 21, 1971, Ser. No. 210,345**
**Claims priority, application France, Dec. 21, 1970, 46,046**
**Int. Cl. H01m** *43/00*
**U.S. Cl. 136—6 FS** **8 Claims**

Sulphur-sodium accumulator for producing electrical energy comprises a container having a plurality of tubes of which at least the lower portion is intended to be used as a solid electrolyte. An electronic conductive material, such as graphite felt, impregnated in the charged state, with sulphur, is arranged in the container at least around that portion of the tubes forming the electrolyte. All the tubes are connected to a common sodium tank, while cooling means is positioned between the tubes and the tank.



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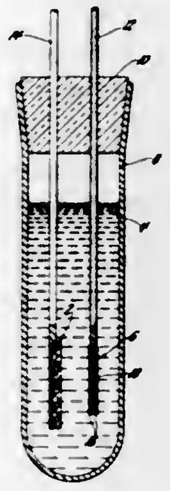
### 3,758,338

### POSITIVE ELECTRODE FOR A LITHIUM-CHARGE STORAGE ELECTROCHEMICAL CELL

**Sidney M. Selis, deceased, late of Oak Park, Mich., by Betty Selis, executrix, Oak Park, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Apr. 277, 1972, Ser. No. 247,947**
**Int. Cl. H01m** *35/02*
**U.S. Cl. 136—6 F** **2 Claims**



A thin, positive electrode for a lithium-charge storage electrochemical cell and a method for its manufacture. A thin layer of conductive carbonized fabric is bonded to the surface of a graphite sheet and then impregnated with an aqueous, polyvinylidene chloride emulsion followed by the in situ pyrolysis of the polyvinylidene in the interstices of the fabric to produce a high surface area electrode having a thin active layer and low electronic resistance.

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### 3,758,339

### METHOD OF OPERATING FUEL CELL WITH HYDROGEN PEROXIDE OXIDANT

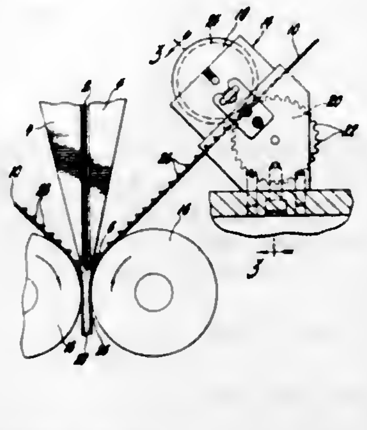
**Jean P. Manion, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.**
**Continuation-in-part of application Ser. No. 639,589, Mar. 27, 1967, which is a continuation-in-part of application Ser. No. 366,934, May 7, 1964, which in turn is a continuation of application Ser. No. 111,516, May 22, 1961, all now abandoned. This application Sept. 10, 1969, Ser. No. 870,346**
**Int. Cl. H01m** *27/30*
**U.S. Cl. 136—86 E** **4 Claims**

A method of operating a fuel cell with a liquid oxidant, hydrogen peroxide, wherein the hydrogen peroxide is sprayed against the surface of the fuel cell oxidant electrode. Excess hydrogen peroxide is permitted to run off the oxidant electrode surface to be collected and reused.

### 3,758,340

### LEAD ACID STORAGE BATTERY PLATES AND PROCESS FOR PASTING THEM

**Morris E. Adams, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Oct. 27, 1971, Ser. No. 192,929**
**Int. Cl. H01m** *35/26*
**U.S. Cl. 136—67** **2 Claims**



A lead-acid storage battery plate and process for pasting a continuous strip of grids including continuously sandwiching a fiber-laden paste and grid strip between layers of perforated paper.

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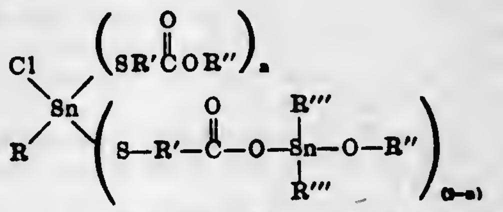
### 3,758,341

### HALO (ORGANO) TIN THIOCARBOXYLATES

**Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., New York, N.Y.**
**No Drawing. Original application June 15, 1970, Ser. No. 46,483, now Patent No. 3,655,613. Divided and this application Oct. 29, 1971, Ser. No. 193,981**
**Int. Cl. C07f** *7/22*
**U.S. Cl. 260—429.7** **4 Claims**

This invention comprises novel compounds exhibiting the formula:



$$\mathrm{Cl}(\mathrm{R})\mathrm{Sn}\left(\mathrm{SR'}\overset{\overset{\displaystyle \mathrm{O}}{\|}}{\mathrm{C}}\mathrm{OR''}\right)_n\left(\mathrm{S{-}R'{-}}\overset{\overset{\displaystyle \mathrm{O}}{\|}}{\mathrm{C}}\mathrm{{-}O{-}}\underset{\underset{\displaystyle \mathrm{R'''}}{|}}{\overset{\overset{\displaystyle \mathrm{R'''}}{|}}{\mathrm{Sn}}}\mathrm{{-}O{-}R''}\right)_{(1-n)}$$

wherein R, R', R'' and R''' are hydrocarbons and *n* is 0 or 1, methods of preparing these novel compounds, and polymers stabilized by these novel compounds against the deteriorative effects of heat and light.

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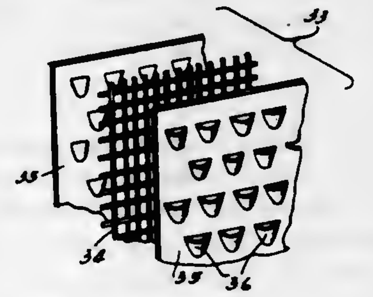
### 3,758,342

### METAL FUEL BATTERY AND SYSTEM

**Hideo Baba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan**
**Continuation-in-part of application Ser. No. 776,548, Nov. 8, 1968. This application Feb. 23, 1971, Ser. No. 117,901**
**Claims priority, application Japan, Nov. 20, 1967, 42/74,625; Apr. 7, 1970, 45/29,689**
**Int. Cl. H01m** *29/04*
**U.S. Cl. 136—86 A** **21 Claims**



A metal fuel battery having a number of cells, each cell having at least one gas diffusion electrode (positive electrode) and one cathode collector electrode (negative electrode) periodically between which a liquid electrolyte having powder metal fuel dispersed therein is caused to flow in a downward direction. The battery is used in a system in which the metal fuel is replenished from time to time as is also the electrolyte.

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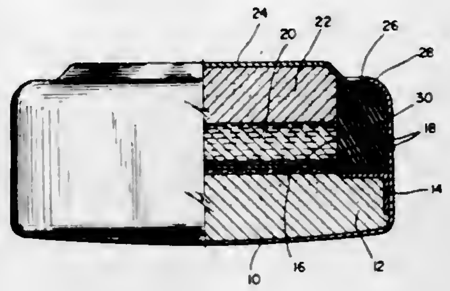
### 3,758,343

### SILVER ZINC BUTTON CELL

**Steven A. Magritz, Madison, Wis., assignor to ESB Incorporated**
**Filed Mar. 22, 1972, Ser. No. 236,848**
**Int. Cl. H01m** *3/04*
**U.S. Cl. 136—111** **4 Claims**



A silver oxide zinc cell is described having dual separation comprising an absorbent mat placed adjacent the silver oxide cathode and a semipermeable membrane barrier adjacent the anode. The cell is distinguished in having an opening through the semipermeable membrane barrier. The purpose of the opening in the barrier is to permit equalization of gas pressure between the cathode side of the barrier and the anode side.

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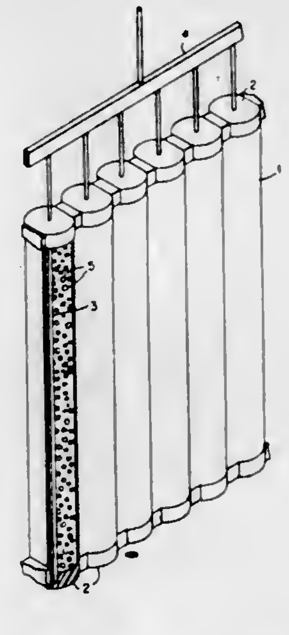
### 3,758,344

### METHOD OF PRODUCING AN ELECTROLYTIC-CELL ELECTRODE WITH ACTIVE IRON MASS

**Antony Oliapuram, Frankfurt am Main, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany**
**Filed Aug. 10, 1971, Ser. No. 170,446**
**Claims priority, application Germany, Oct. 30, 1970, P 20 53 362.4**
**Int. Cl. H01m** *13/08*
**U.S. Cl. 136—120 FC** **7 Claims**



An electrode for metal-air battery or like electrolytic cells is made by filling a granular active iron mass into a microporous and lye-resistant envelope tube of synthetic plastic web material and thereafter subjecting the iron-filled envelope tube to a currentless nickel bath to thereby coat the iron mass with a nickel layer permeable to electrolyte.

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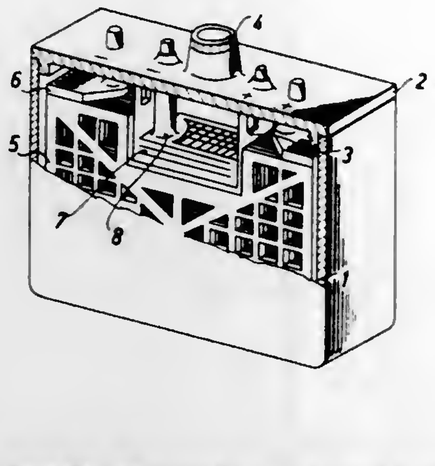
### 3,758,345
### AUXILIARY BATTERY FOR MOTOR VEHICLES

**Laszlo Toth, Budapest, Hungary, assignor to Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary**
**Filed Nov. 9, 1971, Ser. No. 198,010**
**Claims priority, application Hungary, Nov. 20, 1970, TO–831**
**Int. Cl. H01m** *39/00*
**U.S. Cl. 136—181** **5 Claims**



An electric storage battery for motor vehicles is composed of two subunits which are a main storage battery and an auxiliary storage battery. Both subunits are interconnected by a switch which, in one operational position, disconnects the auxiliary battery from the main battery and connects it directly to ignition terminals of the ignition system of a motor vehicle. Thus, the spark plugs of the engine receive the full voltage of the electric storage battery undiminished by voltage drops such as caused by operating the electric starting motor of the system. Thereby, the disadvantage of starting difficulties experienced with motor vehicles having normal electric storage batteries in cold weather is successfully avoided. The main unit has U-shaped plates, and these define a recess in which the auxiliary unit is received.

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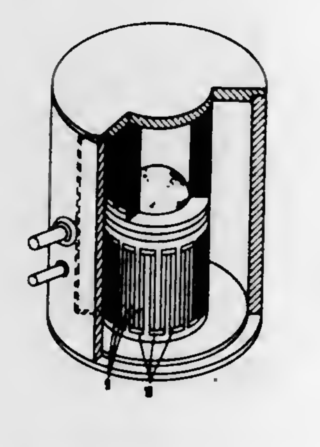
### 3,758,346
### THERMOELECTRIC GENERATOR

**Dieter Falkenberg, Erlangen, Theodor Renner, Nuremberg-Reichelsdorf, Gerhard Rittmayer, Erlangen, and Josef Winkler, Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**
**Filed May 16, 1972, Ser. No. 253,854**
**Claims priority, application Germany, May 17, 1971, P 21 24 465.1**
**Int. Cl. G21h** *1/10*
**U.S. Cl. 136—202** **24 Claims**



A thermoelectric generator for supplying current for heart pacemakers is disclosed. The thermoelectric generator has a radioactive heat source and a plurality of thermocouple elements formed using microfilm technology. The container of the isotope heat source is arranged between two thermocouple units having thin-film thermocouple elements. These elements are evaporated onto a foil of plastic which is coiled up to form a hollow cylinder. The container is configured as a body of rotational symmetry and is fixed between the ends of the thermocouple units. The thermoelectric generator affords the advantages of low structural height and high efficiency.

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### 3,758,347
### METHOD FOR IMPROVING A METAL CASTING

**Kenneth W. Stalker, Cincinnati, Ohio, assignor to General Electric Company**
**No Drawing. Filed Dec. 21, 1970, Ser. No. 100,426**
**Int. Cl. C21d** *1/74*
**U.S. Cl. 148—4** **6 Claims**

A metal casting of an alloy based on an element selected from the group consisting of Ni, Co, Fe and Ti and having internal discontinuities, such as porosity, microfissures and internal tears, is improved by applying pressure to an outer surface of the casting surrounding the discontinuities while at the same time heating the casting, at least in its portion including the discontinuities, at a temperature less than that which will cause substantial degradation of the mechanical properties of the metal. The casting outer surface is coated with a coating of sufficient thickness to bridge the surface openings of the surface-connected discontinuities and to prevent penetration of the pressurizing fluid into such surface discontinuities. The combined amount of and time of application of pressure and the heating is sufficient to press together and to diffusion bond walls of the discontinuity.

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### 3,758,348
### METHOD FOR PREPARING SOLAR CELLS

**Dale M. Whigham, Ruffsdale, Pa., and Michael F. Amsterdam, Stirling, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Continuation-in-part of abandoned application Ser. No. 729,645, May 16, 1968. This application Aug. 13, 1970, Ser. No. 63,411**
**Int. Cl. H01m** *17/02;* **H01l** *7/44, 7/46*
**U.S. Cl. 148—175** **1 Claim**

This invention provides a process for making a solar cell. Material for the solar cell is deposited on the substrate. A wrap around electrical contact shunts or short circuits any P-N junction formed between the deposited material and the substrate but not the P-N junction within the deposited material. The wrap around electrical contact is alloyed to the substrate and to the deposited material at the same time that a diffusion is being carried out in the deposited material to form a P-N junction therein.

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### 3,758,349
### METHOD OF PRODUCING CHEMICAL CONVERSION COATINGS ON METAL SURFACES

**Rudolf Engesser, Frankfurt am Main, Germany, assignor to Oxy Metal Finishing Corporation, Warren, Mich.**
**No Drawing. Filed Sept. 24, 1971, Ser. No. 183,695**
**Int. Cl. C23f** *7/08*
**U.S. Cl. 148—6.15 Z** **2 Claims**

A method of producing a chemical conversion coating on metal surfaces using an aqueous coating solution and keeping the solution active by periodically adding supplementing chemicals comprising contacting the metal surface to be coated at the beginning of the layer forming treatment with a coating solution which contains a majority of the supplementary chemicals and after contacting the metal passing the unused supplementary chemicals into the coating solution.

### 3,758,350
### METHOD OF MAKING A DIE FOR STAMPING OUT CIRCUIT BOARDS

**Walter Weglin, Seattle, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.**
**Filed May 21, 1971, Ser. No. 145,623**
**Int. Cl. G03c** *5/00*
**U.S. Cl. 156—8** **12 Claims**

A process of making an improved die for stamping out from a foil sheet circuit board elements onto a substrate. The particular die configuration made by this process is a "modified flat face die," wherein the middle portion of an individual die element is moderately recessed.

The process is as follows:

(a) First a conventional flat face die, comprising flat face die elements with intervening recess areas, is formed;

(b) The recess areas are filled with an acid-resisting epoxy, and a photo-resist is applied over the epoxy in a manner to overlap the outer edge portions of the die elements so that the middle portion of each die element is exposed;

(c) The die is placed in an etching solution to form a moderate recess in the middle portion of each die element, with shoulders being formed along the outer portions of each die element;

(d) Then the acid-resist material is removed, and the die surface is again etched for a short period of time;

(e) The epoxy filler is removed.

In a first embodiment, the die is etched the second time only enough to round off the inner edge of each shoulder of the die element to leave flat face shoulder portions on the die element. In a second embodiment, the inner portion of each of the two shoulders is etched away to leave a knife edge at the outer edges of each die element.

To provide the acid-resist coating which overlaps the outer portions of the die elements as described in Step (b) above, an accurate photographic reproduction is made by placing the flat faced die in a developing solution and pressing a fully exposed film against the die. After the film portions exposed to the developing solution are developed, the film is placed in a fix solution to make a photographic reproduction. Then a positive is made from this reproduction and this positive is placed against an unexposed film and light is directed through the positive onto the film. Simultaneously the reproduction is rotated laterally to a very moderate extent while maintaining the same orientation of the reproduction, so that the transparent portions of the reproduction (corresponding to the recess areas of the die) are widened moderately to make a modified reproduction. Then an acid-resist coating corresponding to the transparent areas in this modified pattern is placed on the die face so as to form the photo-resist coating used in Step (b) above.

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### 3,758,351
### PREFERENTIAL ETCHING METHOD FOR FERROUS BASE METALS

**Walter J. Striedieck, Port Matilda, and George Daniel Woodring, Bellefonte, Pa., assignors to Chemcut Corporation, State College, Pa.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 749,591, Aug. 2, 1968. This application July 15, 1971, Ser. No. 163,036**
**Int. Cl. C23b** *3/02*
**U.S. Cl. 156—18** **7 Claims**

Liquid compositions for etching metals and alloys and methods of etching employing these compositions are disclosed in which selected metal stock or metal objects, preferably of a ferrous base, are preferentially etched to remove portions of metal from the workpiece in the production of final etched articles. The composition contains as major ingredients a (1) pH regulator component comprising an acidic precursor and (2) an undercut protector component comprising cupric ions and/or oxygen-bearing salts of phosphorous or arsenic in particular combinations and proportions with the pH regulator. A preferred embodiment of the invention utilizes a particular combination of these components which interact compatibly to produce a synergistic effect in that a vastly superior result is obtained as compared to that which would be expected.

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### 3,758,352
### POROUS FIBROUS SUBSTRATE STRUCTURE PRODUCED IN OXIDIZING ATMOSPHERE

**Clarence E. Northway, Lake View Terrace, and Ronald L. Pegg, Costa Mesa, Calif., assignors to Haveg Industries, Inc., Wilmington, Del.**
**No Drawing. Filed May 23, 1972, Ser. No. 256,069**
**Int. Cl. B44d** *1/02*
**U.S. Cl. 156—60** **18 Claims**

A fibrous graphite unit is made by taking plies of cloth of at least 80% carbon assay (carbon or graphite cloth) which is impregnated with a B-stage resin and stacking one on another to form a substrate unit. The unit is then cured and is then treated in an oxygen containing atmosphere to decompose the resin to obtain a more porous substrate than if the resin were pyrolyzed in an inert atmosphere. An alternate method is to pyrolyze the unit in an inert atmosphere and then place the pyrolyzed unit in an oxygen containing atmosphere to produce a more porous unit. The unit may be left in its present state or be carbonized or graphitized, depending upon desired results. The unit is also infiltrated with pyrolytic carbon which may be converted to pyrolytic graphite.

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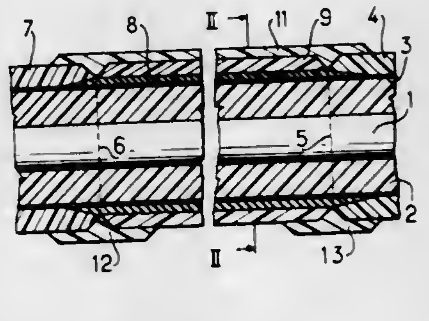
### 3,758,353
### METHOD OF WELDING AN ELECTRIC CABLE SHEATHING, EMPLOYING A HEAT-SHRINKABLE THERMAL SCREEN

**Claude Huriez, Calais, France, assignor to Cables de Lyon Alsacienne, Lyon, France**
**Filed Aug. 13, 1970, Ser. No. 63,373**
**Claims priority, application France, Aug. 13, 1969, 6927889**
**Int. Cl. B32b** *31/00;* **H01b** *13/06*
**U.S. Cl. 156—52** **9 Claims**



A heat-shrinkable thermal screen of thermoplastic material is positioned on a portion of a cable requiring reconstitution, and thermally controlled prior to welding a fresh sheathing portion about the screen covered cable portion.

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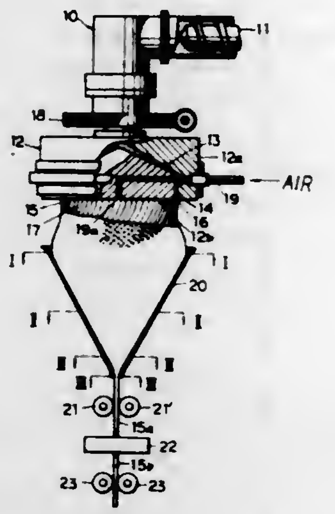
### 3,758,354
### MANUFACTURE OF MULTI-PLY BOARD OF THERMOPLASTIC MATERIAL

**Masao Sakurai, Yokohama, and Kikuo Muto, Kawasaki, Japan, assignors to Gunze Kobunshi Kogyo Kabushiki Kaisha, Kanagawa, Japan**
**Filed Oct. 15, 1970, Ser. No. 80,935**
**Claims priority, application Japan, Oct. 18, 1969, 44/83,064; Oct. 22, 1969, 44/84,064; Dec. 18, 1969, 44/101,311; Jan. 29, 1970, 45/7,455; Feb. 2, 1970, 45/8,569; May 8, 1970, 45/38,900**
**Int. Cl. B29d** *9/00;* **B32b** *5/18, 31/02*
**U.S. Cl. 156—79** **5 Claims**

A method of manufacturing a multi-ply board of thermoplastic material, the board being highly resistant to bending stresses in different directions, the method including extruding one or two continuous tubing or tubings, forming spaced, linear projections or ribs on the inner surface of the tubing or tubings, expanding the tubing or tubings to a predetermined outside diameter through introduction theretinto of compressed air whereby, if two tubings are extruded, the two tubings are adhered to each other to form an integral tubing, twisting the tubing or tubings so that the linear projections are deviated sidewardly from the longitudinal direction, and forming the thus expanded tubing into a flat sheet which has at least one intermediate layer of spaced projections which are sandwiched by two external layers. The last step of forming the flat sheet may include the steps of deforming the expanded tubing progresively into a substantially flat sheet and cooling and setting the resultant sheet or the steps of cutting the expanded tubing in the longitudinal direction so that the tubing is opened into the form of a sheet and pressing the facing sides of the opened sheet upon each other to form a sheet which has at least one intermediate layer of spaced partition walls which are sandwiched by external layers. If desired, in the latter instance, a sheet of foaming material may be interposed between the external layers. The above mentioned projections to be finally formed on the inner surface of the tubing or tubings may be either linear or meandering ones depending upon the mode of rotating the mold structure from which the tubing or tubings are extruded. Where two tubings are extruded and formed into an integral tubing, the resultant multi-ply board may include two layers each of a group of partition walls, the two groups of the partition walls intersecting each other.



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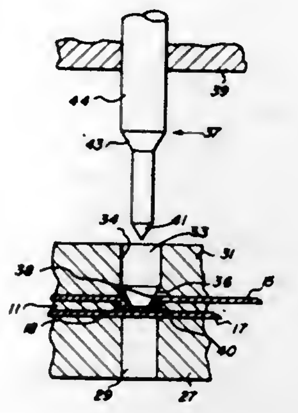
### 3,758,355
### METHOD AND APPARATUS FOR SPLICING WEBS OF PHOTOGRAPHIC FILM OR PAPER

**Lawrence R. Witherow, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Sept. 23, 1971, Ser. No. 183,001**
**Int. Cl. B31f** *5/00;* **B32b** *3/10;* **G03d** *15/04*
**U.S. Cl. 156—157** **8 Claims**

A method for splicing together first and second webs in end-to-end relationship comprising the steps of (a) providing at least one hole through each web; (b) juxtaposing said webs end-to-end; (c) positioning two splicing patches comprising thermoplastic material on opposite surfaces of said webs and overlying end portions of both webs and said holes therein; (d) passing through both of said patches and each of said holes a hot pin to soften and merge together in each hole softened plastic from said patches. A plurality of joinders can be preformed in this way simultaneously. A joinder can also be provided in the space between the ends of the webs. The initial holes in the webs can be pierced by the hot pin prior to splicing. The apparatus for performing the method includes a first plate having a first hole therein adapted to support the webs and patches, a second plate having a second hole therein aligned with the first hole, a pin movable axially through the two holes, and means for heating the pin. The second plate has an annular boss on the periphery of its hole to force the patch into the second hole slightly before penetration by the heated pin. The two spliced webs as an article of manufacture are also within the invention.



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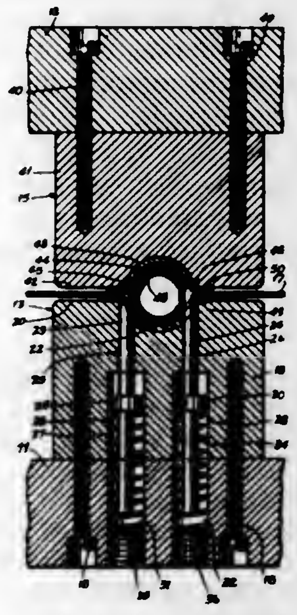
### 3,758,356
### METHOD OF BONDING FLEXIBLE PLASTIC TUBES TO FABRICS

**John C. Hardy, Weatogue, Conn., assignor to Angelica Corporation, St. Louis, Mo.**
**Filed Feb. 11, 1971, Ser. No. 114,599**
**Int. Cl. B29c** *17/07, 27/00;* **B32b** *3/20*
**U.S. Cl. 156—160** **5 Claims**



Flexible plastic tubing is bonded to open-mesh stretch fabric between heat-sealed plastic discs. Blocks on a fixed lower plate and blocks on a movable upper plate of a heat and pressure bonding machine have grooves between retractable pins for receiving the tubing. Retractable pins project upwardly from the blocks on opposite sides of the grooves in the bottom blocks and receive the two plastic discs with the fabric and the tubing positioned between the discs. The upper plate of the machine applies pressure and heat to cause the plastic discs to extrude together through the pores of the fabric to produce the bond.

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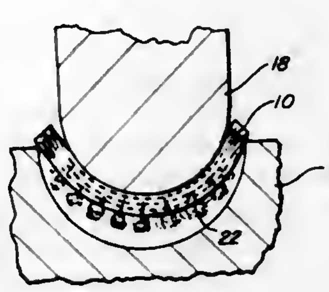
### 3,758,357
### MAKING MOLDED FIBER BOARD

**David W. Akerson, Roseville, Minn., and Duer L. Miller, Deerfield, Ill., assignors to Conwed Corporation**
**Filed Aug. 11, 1971, Ser. No. 170,807**
**Int. Cl. B27m** *1/02;* **B31f** *1/36*
**U.S. Cl. 156—196** **1 Claim**



A method of molding a curved or other like form from a flat wood fiber insulation board containing at least 5% starch is disclosed. The method requires wetting with water at least one side of the board prior to the molding step.

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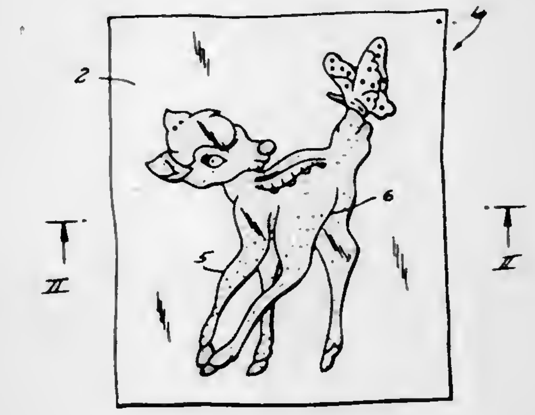
### 3,758,358
### METHOD OF AND APPARATUS FOR MAKING A PADDED THREE-DIMENSIONAL APPLIQUE

**Minoru Kuroda, Amagasaki-shi, Hyogoken, Japan, assignor to Nishizawa Shoji Co., Ltd., Osaka, Japan, and The Dimension Weld International Corporation, New York, N.Y.**
**Continuation of application Ser. No. 793,929, Jan. 21, 1969, which is a continuation-in-part of application Ser. No. 662,962, Sept. 21, 1967, both now abandoned. This application Feb. 3, 1971, Ser. No. 112,404**
**Claims priority, application Japan, Dec. 19, 1966, 41/115,532**
**Int. Cl. B32b** *31/00, 31/18, 31/20*
**U.S. Cl. 156—222** **8 Claims**



A method of making a three-dimensional foam-filled applique and an apparatus for carrying out the method. A layer of synthetic plastic foam material having an exposed surface of predetermined appearance is placed onto a support. A layer of sheet material portions of which may be light-transmissive, is superimposed upon the exposed surface of the foam material. At least one of the materials is latently adhesive. At least the layers are severed inwardly of the edges along the contour line of the desired applique. Simultaneously the layer of sheet material is pressed against the support at least along a narrow zone inwardly of the contour line and the latently adhesive material is activated to thereby adhere the sheet material in the narrow zone to the support across the layer of foam material.

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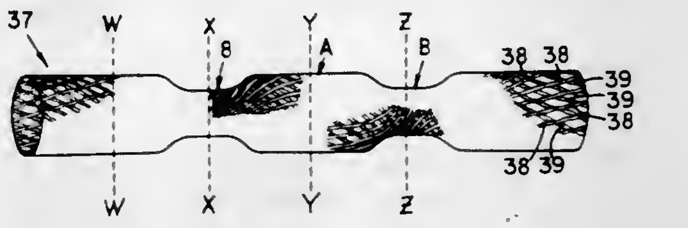
### 3,758,359
### METHOD OF MANUFACTURING FOAMED PLASTIC TUBULAR NETS

**Kimikazu Azuma, 3–18 Matsugaoka 3-chome Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan**
**Filed Mar. 30, 1971, Ser. No. 129,445**
**Claims priority, application Japan, Apr. 2, 1970, 45/28,086, 45/28,087**
**Int. Cl. B29h** *9/02*
**U.S. Cl. 156—244** **3 Claims**



A tubular network structure in which the size, spacing and/or orientation of the strands is changed at regular intervals along the lengthwise direction thereof. The strands of the network structure are made of foamed plastic. The network structure can be made into a protective cover or sleeve for objects. The network structure is made by extruding a foamable plastic through an annular rotary head die comprising a pair of rotary members which are rotatable relative to each other in a direction transverse to the direction of extrusion. The relative rate of rotation of the rotary members is changed at regular intervals to change the size, spacing and/or orientation of the strands so that the pattern of the network structure changes at regular intervals along the length thereof.

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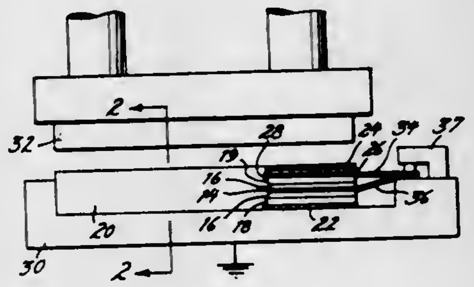
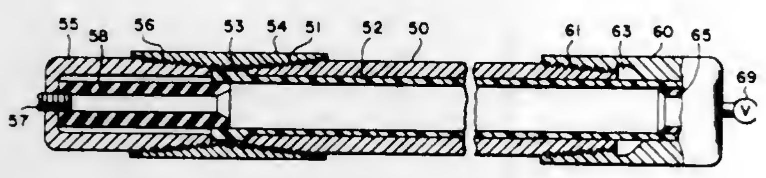
### 3,758,360
### SHEATHED SOFT-FEEL HANDLE AND METHOD OF MAKING SAME

**Marton J. Szabo, Camden, N.J., assignor to Philadelphia Handle Company, Inc., Camden N.J.**
**Original application Aug. 4 1971, Ser. No. 168,828, now Patent No. 3,736,621. Divided and this application May 8, 1972, Ser. No. 251,415**
**Int. Cl. B23k** *13/02;* **B29c** *19/04*
**U.S. Cl. 156—273** **4 Claims**



A soft-feel handgrip for a handle construction in which cushioning members for the top and bottom of the grip are provided with a flexible conductive member on the outer face of the bottom cushioning member and an open thermoplastic sheath wrapped around the members to provide overlapped sheath ends directly against the conductive member whereby the overlapped sheath ends can be effectively sealed dielectrically. The handgrip may include non-metallic fillers or stiffeners and/or a spring metal bar spaced from the overlapped sheath ends by the bottom cushioning member.

### 3,758,361
### PROCESS FOR LINING PIPE JOINTS
**John J. Hunter, 1801 N. Willis, Abilene, Tex.**
**Filed Nov. 16, 1970, Ser. No. 89,639**
**Int. Cl. B29c** *17/04;* **B32b** *31/20*
**U.S. Cl. 156—287** **7 Claims**



Disclosed is a process for bonding plastic liners in metal pipe joints. The bore of the pipe and the exterior of a tubular liner are coated with a thermal adhesive, the liner inserted into the pipe bore, and the liner heated internally by passing steam through the liner under pressure. The flow of steam through the liner is controlled to cause heating of the liner to progress axially from one end of the pipe. The liner is then expanded to intimately contact and bond to the bore of the pipe by pressurizing the liner while hot.

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### 3,758,362
### DUAL LATEX ADHESIVE SYSTEM
**Martin L. Brown, Elkton, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Mar. 26, 1971, Ser. No. 128,557**
**Int. Cl. B32b** *7/00, 7/04*
**U.S. Cl. 156—310** **7 Claims**

Rapid bonding of substrates is accomplished by (a) coating a surface of a substrate with an anionic elastomeric latex and coating a surface of a second substrate with a cationic elastomeric latex, (b) contacting the coated surfaces of the substrates while the latex coatings remain uncoagulated, and (c) maintaining contact between the coated surfaces until coagulation of both latex layers occurs.

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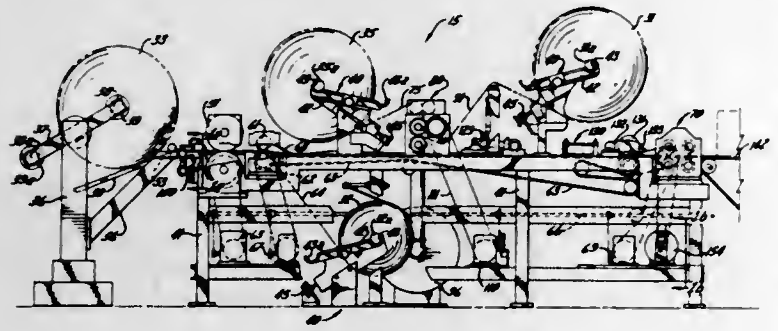
### 3,758,363
### APPARATUS FOR FORMING DISPOSABLE DIAPERS
**Richard H. Frick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.**
**Original application Nov. 18, 1968, Ser. No. 776,580, now Patent No. 3,629,039. Divided and this application June 24, 1971, Ser. No. 156,467**
**Int. Cl. B32b** *7/00, 31/10*
**U.S. Cl. 156—383** **5 Claims**



A method and apparatus for inserting a leak preventing barrier of thin impervious material between the fluid pervious cover sheet and the absorbent core of a disposable diaper is disclosed. The barrier, which preferably comprises a narrow strip of thin plastic film affixed between the cover sheet and the backing sheet along a transverse heat-seal line at each end of the diaper, is first drawn from a continuous supply roll and cut into lengths twice as long as desired. Each cut length is then placed across the ends of two adjacent core pads moving along a conveyor path in end-to-end relation prior to applying a continuous cover sheet over the pads. When the material between pads is heat-sealed and cut transversely to form the individual diapers, the strip is also cut in half so that one half forms the barrier for the rear end of the leading diaper, while the other half forms the barrier for the front end of the next following diaper. In its preferred form the barrier supply, cutting and placing apparatus includes a pair of vacuum rolls with valving driven in timed relation to movement of the core pads. Also disclosed is a method and apparatus for preliminarily applying limited quantities of perfume to discrete locations on the core pads before application of the barrier strip such that the perfumed portion of the pad is sandwiched between the impervious backing sheet and the impervious barrier strip.

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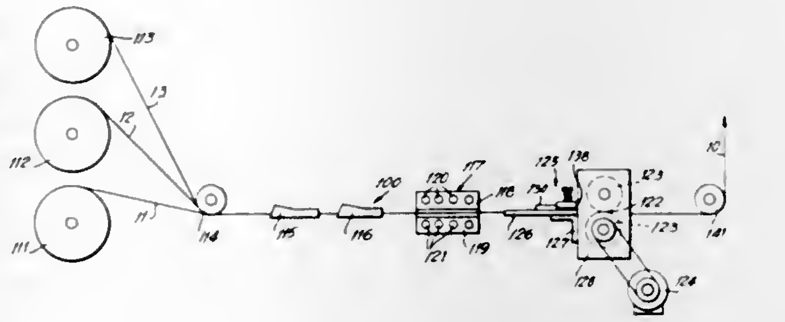
### 3,758,364
### APPARATUS FOR THE MANUFACTURE OF LAMINATED SHOULDER STRAP MATERIAL
**Irving Edelman, Long Island City, N.Y., assignor to Maidrite Novelty Corp., Long Island City, N.Y.**
**Original application June 22, 1970, Ser. No. 47,984, now Patent No. 3,616,148. Divided and this application Apr. 26, 1971, Ser. No. 137,569**
**Int. Cl. B31f** *1/00*
**U.S. Cl. 156—463** **4 Claims**



A shoulder strap material for articles of feminine wearing apparel has an outer shell or envelope of nylon tricot fabric enclosing a cotton fabric tape to which such shell or envelope is bonded by a hot melt or thermoplastic. In the apparatus for producing such strap material, folded side portions of a nylon tricot fabric tape which constitutes the shell or envelope are urged laterally toward each other to close a longitudinal medial seam of the strap material before the bonding is completed by passage through a set of nip or pressure rollers.

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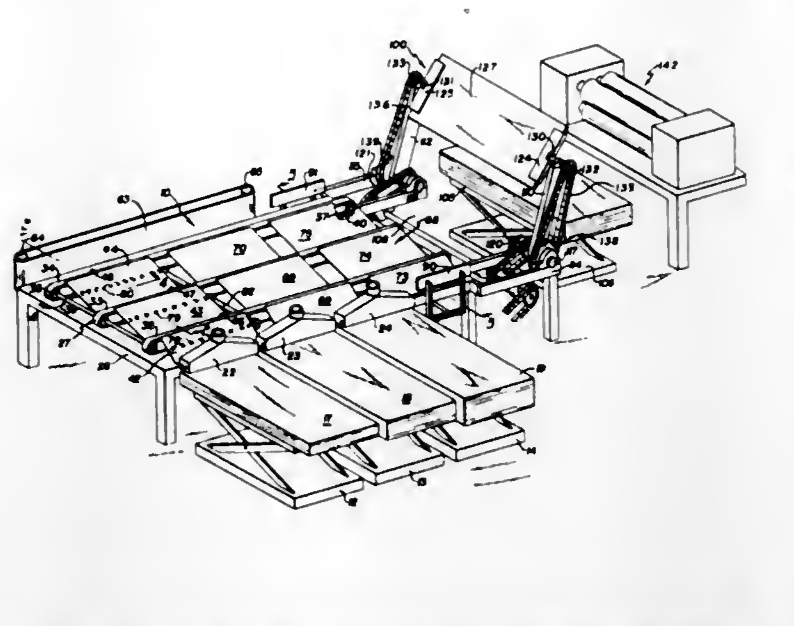
### 3,758,365
### SHEET FEEDING APPARATUS
**Walter W. Schilling, Ladner, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada**
**Original application Mar. 21, 1969, Ser. No. 809,295, now Patent No. 3,617,054. Divided and this application June 10, 1971, Ser. No. 151,733**
**Int. Cl. B32b** *31/10, 31/12*
**U.S. Cl. 156—538** **13 Claims**

Apparatus for feeding sheets or veneers from stacks thereof and located side-by-side to a station either singly or in superimposed pairs. At the station there is apparatus for gripping the sheets or veneers along opposite edges thereof and substantially throughout the length of said edges, and swinging these over a lay-up table where they are released.



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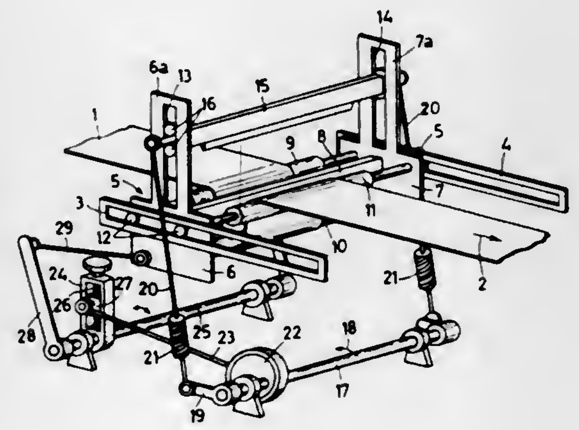
### 3,758,366
### DEVICE FOR WELDING AND CUTTING FILMS OF PLASTICS MATERIALS IN APPARATUS FOR PACKING GOODS
**Aris Ballestrazzi, Via Plessi 19; Lamberto Tassi, Via G. di Vittorio 60; and Gianni Tosarelli, Via 1° Maggio 217, all of Vignola (Modena) Italy**

**Filed Feb. 26, 1970, Ser. No. 14,585**

**Claims priority application Italy, Feb. 26, 1969, 13,375/69, Patent 858,011**

**Int. Cl. B32b** *31/18*
**U.S. Cl. 156—515** **2 Claims**



A device for welding and severing a film of plastics materials as used in wrapping articles is disclosed, which permits that the welding and severing operations be satisfactorily carried out in spite of the fact that the plastics material film is moved continuously on and by a conveyor belt or a similar conveyance mechanism. The improvement consists essentially in that the carriage which supports the welding tools proper is guided on fixed horizontal ways, the reciprocation stroke of the carriage being adjustable, the carriage having also vertical guides to limit the motion of the welding rod.

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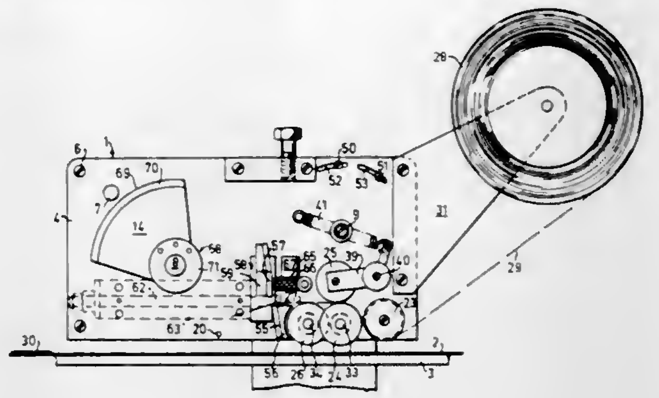
### 3,758,367
### APPARATUS FOR APPLYING ADHESIVE TAPE, PARTICULARLY SELF-ADHESIVE TAPE, TO A MOVING SUPPORT SURFACE IN THE FORM OF A CONTINUOUS WEB, A SHEET OR AN ARTICLE
**Bror Hugo Olof Berg, Goteborg, Sweden, assignor to Molnlycke AB, Goteborg, Sweden**
**Filed Oct. 27, 1969, Ser. No. 869,702**
**Claims priority, application Sweden, Nov. 19, 1968, 15,721/68**
**Int. Cl. B32b** *31/20*
**U.S. Cl. 156—519** **2 Claims**



Apparatus for applying adhesive tape to a moving recipient surface in the form of a continuous web, a sheet or an article, having means for advancing the leading end of the tape into contact with the recipient surface and an applicator foot which has an arcuate working surface and secures firstly the leading end of the tape to the recipient surface and then presses successively the remainder of the tape into adhering engagement with the surface as the tape accompanies the same. The applicator foot has essentially the form of a sector of a circle, the arc of which constitutes the working surface and at the apex of which there is arranged a hub, by which the foot is journalled to a driven shaft which is in rotary engagement with the foot through an idling or free wheel movement corresponding at least to the length of the arcuate working surface of the foot.

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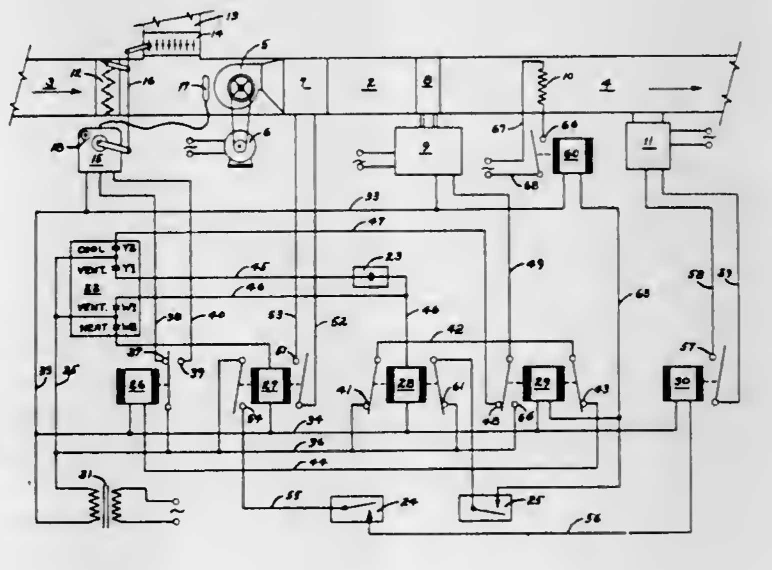
### 3,758,368
### AUTOMATIC AIR CONDITIONING SYSTEM
**Allen Trask, Utica, N.Y., assignor to The Mechaniwatt Corporation, Utica, N.Y.**
**Filed Oct. 4, 1971, Ser. No. 186,312**
**Int. Cl. F24f** *3/14*
**U.S. Cl. 165—21** **3 Claims**



An air conditioning system wherein the functions of heating, cooling, humidifying, dehumidifying, ventilation, and natural cooling are automatically controlled during all types of weather by standard control instruments including an indoor 4-stage thermostat, an outdoor thermostat, and two humidistats, programmed in coordinated functional sequence through electrical control circuits and relays.

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### 3,758,369

### RESISTANCE AND MODULUS REINFORCING MATERIALS

**Michel Jacques Marie Sindzingre, Cachan, Michel Villamayor, Fontenay-aux-Roses, and Alain Robert, Morsang-sur-Orge, France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S., Paris, France**

**No Drawing. Filed Feb. 23, 1971, Ser. No. 118,187**

**Int. Cl. B32b** *5/16*

**U.S. Cl. 161—60** **4 Claims**

This invention relates to new composite materials having, along a director plane, noteworthy mechanical properties, wherein they comprise a resistant material, in flat form disposed parallel to the director plane and flakes or bands or substantially flat form, constituted of or comprising a material with high modulus, said flakes or bands also being disposed parallel to the director plane.

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### 3,758,370

### METHOD FOR MANUFACTURING A MULTI-PLY BOARD OF THERMOPLASTIC MATERIAL AND PRODUCT RESULTING THEREFROM

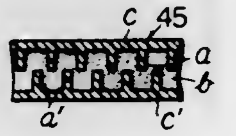
**Masao Sakurai, Yokohama, Kikuo Muto, Kawasaki, and Noritsugu Sugimoto, Sagamihara, Japan, assignors to Gunze Kobunshi Kogyo Kabushiki Kaisha, Kanagawa, Japan**

**Filed May 7, 1971, Ser. No. 141,193**

**Claims priority, application Japan, May 8, 1970, 45/38,900; Sept. 11, 1970, 45/79,333; Nov. 26, 1970, 45/103,635; Feb. 2, 1971, 46/3,605; Feb. 12, 1971, 46/5,564; Feb. 15, 1971, 46/6,365**

**Int. Cl. B32b** *5/18*

**U.S. Cl. 161—69** **10 Claims**



A multi-ply thermoplastic board is manufactured by steps comprising producing two flat strips of a thermoplastic material, each of said strips having on at least one side thereof a ribbed surface which is formed with a plurality of spaced ribs, the ribs on one strip being angularly deviating from the ribs on another strip, extruding a tubing of said thermoplastic materials, forming on at least one side thereof a ribbed peripheral surface with a plurality of spaced parallel ribs extending substantially in parallel to an axis of said tube, drawing the strips with the ribbed surface thereof facing each other, heating tops of said ribs to the fused condition, and combining the strips together through fusion of the facing top of the ribs.

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### 3,758,371

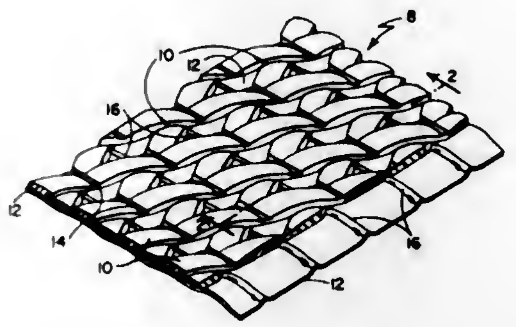
### PLASTIC NET LAMINATE MATERIAL

**Theo O. Lang, Leominster, and Thomas A. Lane, East Pepperell, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.**

**Filed Apr. 17, 1970, Ser. No. 29,596**

**Int. Cl. B32b** *7/00*

**U.S. Cl. 161—88** **2 Claims**



A laminate material and method of manufacture thereof wherein one of the layers comprises a plastic net made of a foamed or expanded plastic and a layer of preformed continuous sheet material is joined thereto.

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### 3,758,372

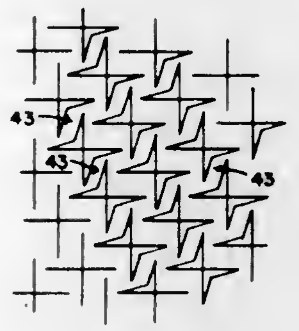
### FORAMINOUS STRUCTURES

**Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.**

**Original application Feb. 16, 1970, Ser. No. 11,510. Divided and this application July 22, 1971, Ser. No. 165,285**

**Int. Cl. B32b** *3/10*

**U.S. Cl. 161—109** **6 Claims**



A foraminous structure having a plurality of walls, each extending between pairs of spaced surfaces which are disposed in staggered relationship along a common plane. The walls are pivotally connected to edges of the spaced surfaces between which they extend and may be disposed, relative thereto, at an angle approaching 180°.

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### 3,758,373

### SPRAY-SPUN CONTINUOUS TUBULAR STRUCTURE

**Ernest Joseph Rich, Glen Gardner, N.J., assignor to Celanese Corporation, New York, N.Y.**

**Original application July 10, 1968, Ser. No. 743,863, now abandoned. Divided and this application Apr. 12, 1971, Ser. No. 133,443**

**Int. Cl. B32b** *5/08;* **D04h** *3/07*

**U.S. Cl. 161—169** **5 Claims**

A spray-spun nonwoven tubular structure is produced by spray spinning a fiber-forming polymer onto the inner surface of a circular forming base and withdrawing the tube continuously as it is formed.

### 3,758,374

### RUBBER-POLYESTER COMPOSITIONS

**Boris Nicholas Leyland and Neil Frederick Wood, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed May 4, 1971, Ser. No. 140,297**

**Claims priority, application Great Britain, May 14, 1970, 23,414/70**

**Int. Cl. B32b** *25/02, 27/36*

**U.S. Cl. 161—231** **10 Claims**

Acids of the formula $R_2P\cdot OH$, wherein each R is a hydrogen atom or a hydroxy, optionally substituted hydrocarbyl or heterocyclic group, are incorporated into polyester-reinforced rubbers to prevent thermal degradation of the polyester.

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### 3,758,375

### METHOD AND APPARATUS FOR INSERTING VITREOUS FIBROUS MATERIAL INTO LIQUID BATH IN WEB FORMING SYSTEM

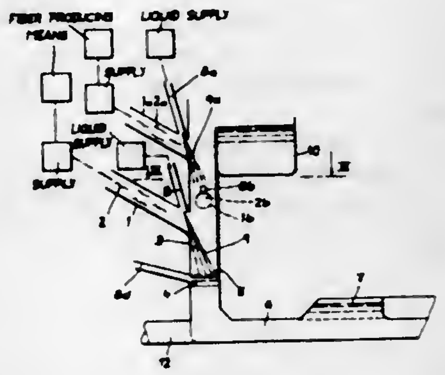
**Heinz Keib, Wertheim (Main), and Karl Veeh, Hasloch, Unterfranken, Germany, assignors to Glaswerk Schuller GmbH, Wertheim, Germany**

**Filed Oct. 6, 1970, Ser. No. 78,349**

**Claims priority, application Germany, Oct. 8, 1969, P 19 50 612.8**

**Int. Cl. D21f** *1/02, 11/02;* **D21h** *5/18*

**U.S. Cl. 162—156** **9 Claims**



Vitreous fibers are dispersed in a predetermined ratio in a liquid bath. From the liquid bath quantities of the liquid and of the fibers are continuously withdrawn for supply to a user device, and the liquid and the fibers must be replenished to maintain the predetermined ratio between them. An enclosed space is located above and open to the upper level of the bath and into this space there is continuously blown at least one stream of carrier gas carrying replacement fibers to replenish those withdrawn from the bath. In order to prevent the newly incoming fibers from forming knots above or at or below the surface of the bath, a stream of liquid is continuously directed into the enclosed space towards the upper level of the bath in such a manner that it intersects the stream of carrier gas. The stream of liquid has a cross-sectional area smaller than the surface area of the bath which is exposed to the enclosed space and a velocity which is greater than the stream of carrier gas and which is so selected that the stream of liquid straightens and accelerates the fibers in the stream of carrier gas sufficiently to insert them into the bath and to depress them below the upper level thereof.

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### 3,758,376

### OPAQUE PAPERS AND PHOTOGRAPHIC PAPERS PREPARED THEREFROM

**Carol R. Beckner, Watertown, and Klaus B. Kasper, Pulaski, N.Y., assignors to Schoeller Technical Papers, Inc., Pulaski, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 857,237, Sept. 11, 1969. This application June 29, 1970, Ser. No. 50,999**

**Int. Cl. D21h** *3/80, 3/82*

**U.S. Cl. 162—162** **27 Claims**

Gray opaque papers suitable for use in the photographic art are prepared by adding to a suspension of fibers, prior to forming, a light absorbing colorant, titanium pigment particles and a small amount of colloidal material carrying a surface electrical charge. In such papers, smaller than usual amounts of the light absorbing material are necessary to produce opacity to actinic light. Such papers can be basecoated with a white pigment coating, coated with a diffusion transfer positive emulsion and backcoated with a curl, water and solvent resistant coating to produce a positive print paper for use in pod development in diffusion type photographic processes.

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### 3,758,377

### TREATED PAPER SHEET

**Rodger L. Fife, San Jose, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.**

**No Drawing. Filed May 6, 1971, Ser. No. 141,014**

**Int. Cl. D21h** *3/02*

**U.S. Cl. 162—163** **7 Claims**

An aqueous mixture of lignosulfonate and isoprene resin ground to particulate form having a melting point of 80–130° C. in the ratio of lignosulfonate to isoprene resin in the range of 0.5:1 to 4:1 based on dry weights, said lignosulfonate and isoprene resin being mixed in the presence of from 0.1 to 5% based upon the dry weights of a urea formaldehyde resin having a viscosity range of 200 to 1500 centipoises prior to intermixing with cellulosic fibers.

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### 3,758,378

### METHOD AND APPARATUS FOR MANUFACTURING NON-WOVEN FABRICS

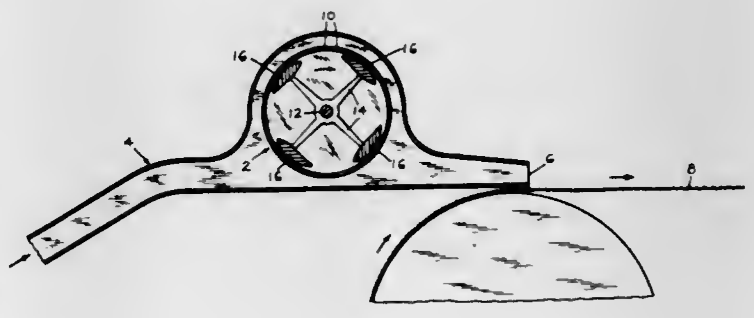
**Dieter Berger, Lahnstein, Eberhard Hahnlein, Braubach (Rhine), and Horst Seeliger, Lahnstein, Germany, assignors to Feldmuhle Anlagen- und Produktionsgesellschmit mit beschrankter Haftung, Dusseldorf, Germany**

**Continuation-in-part of abandoned application Ser. No. 840,921, July 11, 1969. This application Dec. 8, 1971, Ser. No. 205,955**

**Claims priority, application Germany, July 15, 1968, P 17 61 853.0**

**Int. Cl. D21f** *11/00*

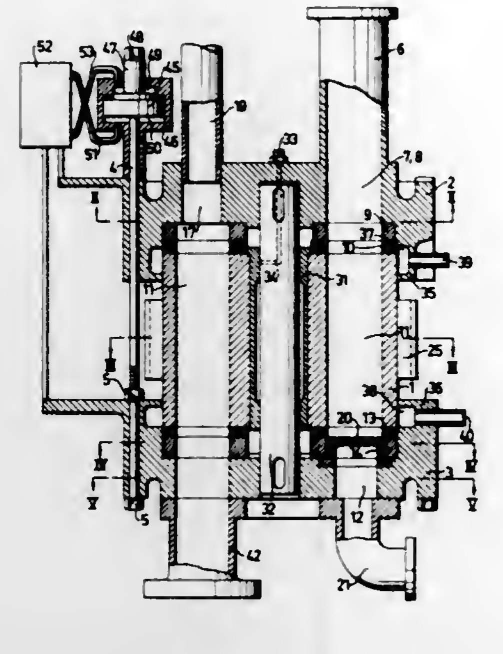
**U.S. Cl. 162—216** **8 Claims**



Non-woven fabrics are prepared on a paper machine from aqueous dispersions of relatively long synthetic fibers which are separated from each other in an axially slotted, cylindrical drum by means of a rotary agitator carrying airfoil sections on arms radially extending from a drive shaft. The airfoil sections sweeping the apertured, stationary wall of the drum produce cyclic pressure changes in the liquid within the drum which loosen any fiber bundles present. As the loosened bundles are discharged from the drum through the slots which flare outwardly at a small angle, the fiber bundles are fully broken up, and a dispersion substantially free from bundles reaches the paper machine. The dwell time in the drum can be held to a minimum to avoid the formation of new bundles by the agitator.

### 3,758,379
## REVOLVER FEEDER FOR CELLULOSIC MATERIALS

**Rolf Bertil Reinhall, Killingevagen 16, Lidingo, Sweden**
**Filed Feb. 3, 1971, Ser. No. 112,326**
**Claims priority, application Sweden, Feb. 12, 1970, 3,307/70**
**Int. Cl. D21c** *7/06*
**U.S. Cl. 162—246** **3 Claims**



A revolver feeder for treatment of cellulose containing material comprising a rotor having a plurality of spaces for the material extending axially through the rotor and adapted in different positions of the rotor to be brought into communication with openings formed in, respectively, a feed end plate and a discharge end plate so as during rotation of the rotor to be fed with material and subsequently with treating fluid under high pressure to be discharged upon further rotation of the rotor, said end plates being interconnected by draw bars equally spaced about the circumference of said end plates outside said rotor. Unbalanced pressure forces acting on the end plates due to pressure variations in the spaces of the rotor are equalized by traction force producing devices disposed individually for all or those draw bars positioned adjacent the areas exposed to high outwardly directed pressure forces from said spaces so as to balance the pressure forces and maintain a substantially uniform bearing play between the end plates and the ends of the rotor along the circumference of the rotor. Preferably, each individual traction force producing device contains an automatically operative pressure control device for causing production of a traction force counterbalancing an outwardly directed increased pressure from the adjacent space of the rotor. In order to establish a predetermined bearing play or a floating contact, removable bearing discs or sealing discs are interposed between the opposing faces of the rotor and the end plates.

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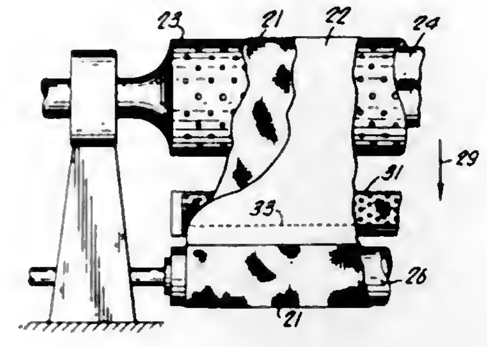
### 3,758,380
## PAPER MACHINE COUCHING BOX WITH A MULTIPERFORATE SURFACE

**William E. Hawkings, Alma, Quebec, Canada, assignor to The Price Company, Limited, Quebec, Canada**
**Filed July 6, 1971, Ser. No. 159,599**
**Int. Cl. D21f** *2/00*
**U.S. Cl. 162—306** **5 Claims**

A couching box for facilitating separation of a paper web from the forming wire includes means adapted to act momentarily on the moving wire and web to withdraw air and water from a supported area of the wire and web between the couch roll and the turning roll, and to release the web quickly and evenly from such action just prior to its separating from the web. This facilitates separation of the web, reduces stress on the paper, minimizes web breaks, and increases production efficiency. The couching box has a hard plane multiperforate surface which is separated from an imperforate surface by an intersecting groove. Vacuum for air and water removal from the web is effective through the multiperforate surface and in the groove.



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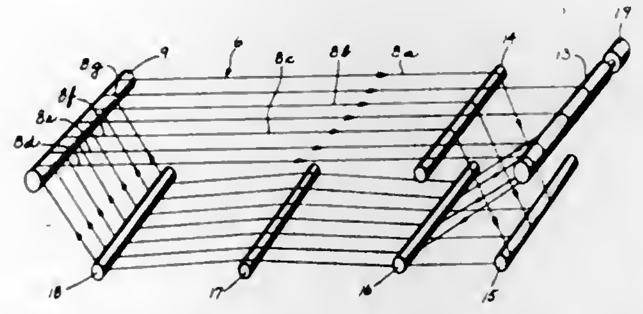
### 3,758,381
## SINGLE ENDLESS STRAND MOUNTED IN SELF CENTERING FASHION IN A SERIES OF PARALLEL CONVOLUTIONS AS A FIBROUS WEB SUPPORTING SURFACE IN A PAPERMAKING MACHINE

**Daniel R. Knoke, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.**
**Filed Mar. 29, 1972, Ser. No. 239,206**
**Int. Cl. B65g** *15/12;* **D21f** *1/10, 7/12*
**U.S. Cl. 162—348** **13 Claims**



A porous, moving, supporting structure for a fluid-impregnated web or sheet, having particular use as a supporting structure for a paper web in a papermaking machine. The web supporting structure is composed of a series of adjacent machine direction convolutions of a single strand mounted to travel in an endless path over a roll assembly. To prevent lateral displacement of the strand in the direction of the roll axes, the strand is wound in both left and right helices on the roll assembly. The counter-displacement tendencies of the merged left and right hand helices prevent the inherent tendency of the strand to drift laterally as it moves through its path of travel.

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### 3,758,382
## PROCESS OF FREEZING BLOOD USING A HYDROXYALKYL STARCH AS CRYOPROTECTIVE AGENT

**Charles T. Knorpp, Ann Arbor, Mich., assignor to the United States of America as represented by the Secretary of the Navy**
**No Drawing. Filed July 26, 1968, Ser. No. 747,806**
**Int. Cl. A61k** *27/10*
**U.S. Cl. 195—1.8** **10 Claims**

A water-soluble hydroxyethyl or hydropropyl starch is used as cryoprotective agent for erythrocytes in the low sub-zero freeze-preservation of blood. The cryoprotective agent is an extracellular solute and is metabolized in the blood stream.

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### 3,758,383
## PRODUCTION OF EXOTOXIN OF *BACILLUS THURINGIENSIS*

**Tsuong R. Shieh, Bannockburn, and Martin H. Rogoff, Highland Park, Ill., assignors to International Minerals & Chemical Corporation, Libertyville, Ill.**
**No Drawing. Filed June 1, 1971, Ser. No. 149,079**
**Int. Cl. C12d** *7/00*
**U.S. Cl. 195—96** **15 Claims**

Method for the production of the exotoxin of *Bacillus thuringiensis* in high yield using a high carbohydrate medium and an acrystalliferous mutant of *Bacillus thuringiensis* var. *thuringiensis*.

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### 3,758,384
## PRECIPITATING AGENT SOLUTION FOR AMYLASE ASSAY

**Arthur L. Babson and Susan R. Babson, Chester, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.**
**No Drawing. Continuation-in-part of application Ser. No. 205,294, Dec. 6, 1971. This application Apr. 5, 1972, Ser. No. 241,390**
**Int. Cl. G01n** *31/14*
**U.S. Cl. 195—103.5 R** **10 Claims**

A stable, temperature-independent precipitating agent solution comprising an aqueous solution of zinc chloride and ethylene glycol monoalkyl ether, buffered to maintain an apparent pH of 5.6 to 6.7 with a benzoate buffer, is provided for use in an improved amylase assay. In the assay, a fluid test sample containing an unknown concentration of amylase is incubated with a water-soluble, dyed starch substrate for a specified period of time, after which the precipitating agent solution of this invention is added to remove all dyed starch which has not been hydrolyzed by the amylase, and the optical density of the remaining supernatant fluid is measured to indicate amylase concentration in the test sample.

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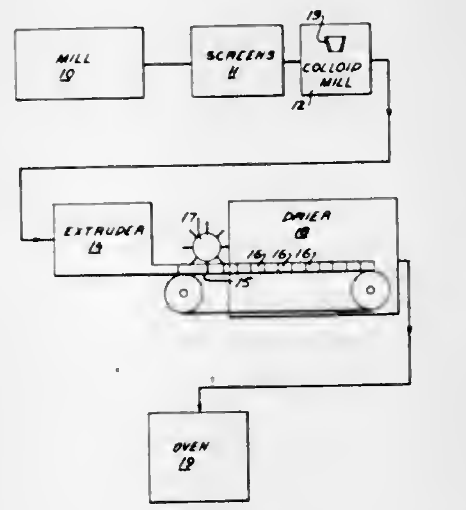
### 3,758,385
## PROCESS FOR COKING LIGNITIC COAL

**Karl Otto Paul Fischer, Chilliwack, British Columbia, Canada, assignor to Fischer Holdings Ltd., Chilliwack, British Columbia, Canada**
**Filed Dec. 3, 1970, Ser. No. 94,826**
**Int. Cl. C10b** *45/02*
**U.S. Cl. 201—6** **9 Claims**



A process for preparing coke from lignitic coal wherein a paste of coal and water is prepared. The paste is then divided into equi-axed pieces which are dried to reduce moisture content of the pieces below ten percent, and the pieces are then coked.

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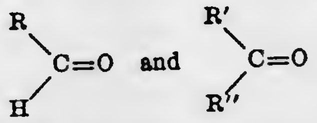
### 3,758,386
## NOVEL ZINC PLATING PROCESS

**Chee Keung Chan, Murray Hill, N.J., assignor to M&T Chemicals Inc., New York, N.Y.**
**No Drawing. Filed Nov. 2, 1966, Ser. No. 591,412**
**Int. Cl. C23b** *5/10*
**U.S. Cl. 204—55** **26 Claims**

This invention relates to novel compositions and to a process of producing bright zinc deposits which comprises passing current from an anode to a metal cathode through an aqueous alkaline pyrophosphate solution containing at least one zinc compound providing zinc ions for electroplating zinc and at least one organic carrier compound selected from the group consisting of:

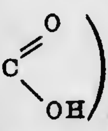
(a) bis[sulfonaphthyl] methane and salts thereof,
(b) naphthalene derivatives which contain substituents selected from the group consisting of sulfonic acids and their alkali metal salts, hydroxyl, amino, and imino radicals,
(c) benzene derivatives containing substituents selected from the group consisting of sulfonic acids and their salts with alkali metal, ammonium, alkyl, and imino radicals, and
(d) allyl sulfonic acid and its salts with alkali metals and ammonium;

at least one carbonyl compound having a structural formula selected from the group consisting of:



$$\mathrm{R{-}C({=}O){-}H} \quad \text{and} \quad \mathrm{R'{-}C({=}O){-}R''}$$

wherein R is selected from the group consisting of hydrogen, alkyl, aryl, and heterocyclic oxygen and sulfur radicals, and R′ and R″ are each selected from the group consisting of alkyl and aryl radicals; and at least one organic acid component of the formula:



$$\mathrm{R'''}\left(\mathrm{C}(=\mathrm{O})\mathrm{OH}\right)_n$$

and anhydrides thereof, wherein *n* is an integer 1–4 and R‴ is selected from the group consisting of a hydrocarbyl group and an inertly substituted hydrocarbyl group.

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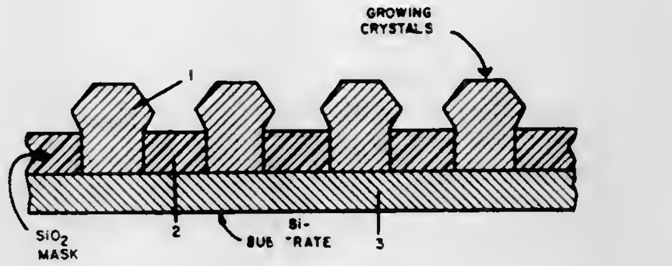
### 3,758,387
## ION DISPLACEMENT CRYSTAL GROWTH

**Walter K. Zwicker, Scarborough, and Michael L. Fucci, Ossining, N.Y., assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed May 10, 1971, Ser. No. 141,692**
**Int. Cl. B01j** *17/00;* **B44d** *1/18;* **C23b** *5/48*
**U.S. Cl. 204—15** **11 Claims**



A method of growing single crystals of a metal or a semiconductor on a substrate which may be either a metal or a semiconductor by electrolytic displacement of the metal or metalloid and deposition through holes in a mask covering the substrate, the mask consisting of a material which is inert to the material being deposited.

### 3,758,388
### ELECTROPLATING PLASTICS
**James A. Shotton, % Phillips Petroleum Company, Bartlesville, Okla. 74004**
**No Drawing. Filed May 13, 1971, Ser. No. 143,147**
**Int. Cl. C23b** *5/64*
**U.S. Cl. 204—20** **10 Claims**

Electroplating of a moldable plastic containing a siliceous filler is achieved by conditioning a preformed article of said plastic by treatment with a high chromate-phosphate conditioning agent, thereafter preplating the conditioned article with an electrolessly platable metal, and electroplating the preplated article with a final finish to obtain a metal-plated plastic product.

### 3,758,389
### PROCESS FOR NICKEL AND CHROMIUM PLATING
**Hiroshi Maekawa, Sakai, Japan, assignor to Okuno Chemical Industry Company Limited, Osaka-shi, Japan**
**No Drawing. Filed Nov. 30, 1971, Ser. No. 203,422**
**Int. Cl. C23b** *5/08, 5/46, 5/50*
**U.S. Cl. 204—41** **11 Claims**

In a process for subjecting an article to bright nickel plating and subsequently to chromium plating, the improvement in which the bath for said bright nickel plating contains a water-soluble quaternarized polymer of at least one of vinyl pyridines, vinyl quinolines and amino styrenes.

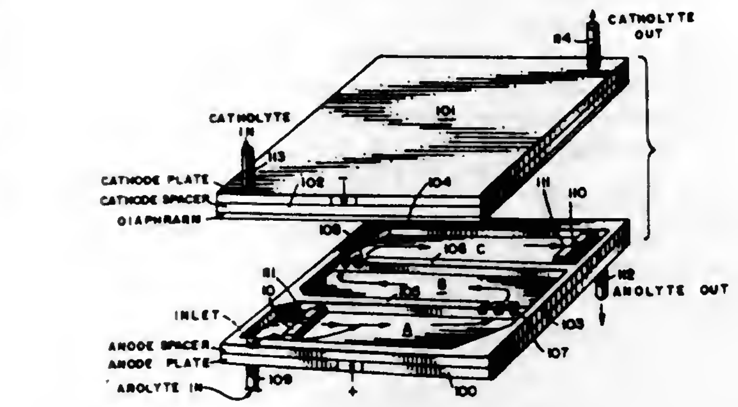
### 3,758,390
### NOVEL CHROMIUM PLATING COMPOSITIONS
**Hyman Chessin, Birmingham, Mich., and Maurice P. Best, Streetly, England, assignors to M & T Chemicals Inc., Greenwich, Conn.**
**No Drawing. Filed June 18, 1971, Ser. No. 154,703**
**Int. Cl. C23b** *5/06*
**U.S. Cl. 204—51** **14 Claims**

This invention relates to novel compositions and to a process for electroplating chromium plate onto a basis metal which comprises passing current from an anode to a cathode at least a portion of which contains a conductive metal layer through an aqueous acidic chromium plating solution containing:

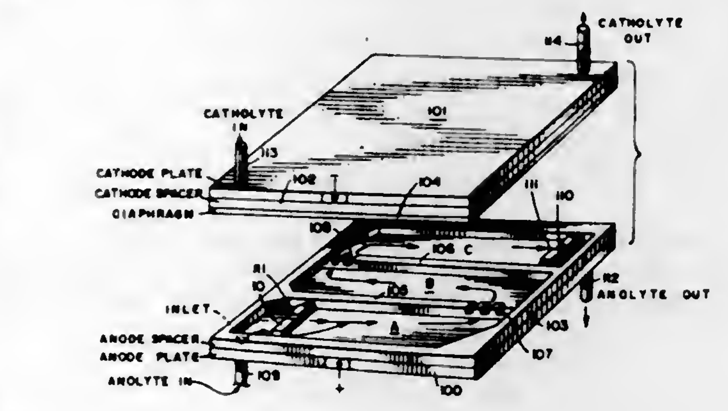
(1) at least one chromium compound providing hexavalent chromium ions for electroplating chromium; at least one catalyst selected from the group comprising sulfate ions and fluoride ions, and
(2) at least one member of the group consisting of sulfoacetic acid, isethionate and isethionic acid; for a time sufficient to deposit a chromium electroplate having a thickness of at least $1 \times 10^{-4}$ millimeter.

### 3,758,391
### CONTINUOUS RECYCLE PROCESS FOR ELECTROLYTIC CONVERSION OF BENZENE TO QUINONE
**Fred J. Anderson, La Salle, and Jack L. Kessler, Ottawa, Ill., assignors to Carus Corporation, La Salle, Ill.**
**Continuation-in-part of application Ser. No. 139,651, May 3, 1971. This application Dec. 1, 1971, Ser. No. 203,804**
**Int. Cl. B01k** *1/00;* **C07b** *3/00*
**U.S. Cl. 204—78** **6 Claims**

Quinone is produced by a continuous recycle process using electrolysis cells for anodic oxidation of benzene to quinone. During the cell operation, a polymeric material is formed which is continuously removed with the liquid components of the anolyte and separated therefrom before the anolyte liquid phases are recycled. The cells are employed with diaphragms between the anode and cathode compartments, which may be porous diaphragms or cationic permselective diaphragms. For operation with porous diaphragms, solids are also removed from the catholyte in its recycle circuit. The cells are operated at temperatures above 20° C. and current densities above 5 amps/dm.$^2$ with the production of an anode effluent gas composed predominately of carbon oxidation products.



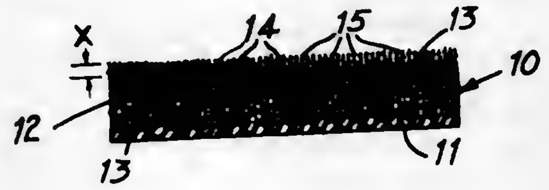
### 3,758,392
### CONTINUOUS RECYCLE PROCESS FOR ELECTROLYTIC CONVERSION OF BENZENE TO QUINONE
**Fred J. Anderson, La Salle, and Jack L. Kessler, Ottawa, Ill., assignors to Carus Corporation, La Salle, Ill.**
**Filed May 3, 1971, Ser. No. 139,651**
**Int. Cl. B01k** *1/00;* **C07b** *29/06;* **C07c** *49/64*
**U.S. Cl. 204—78** **2 Claims**



Quinone is produced by a continuous recycle process using an electrolysis cell for anodic oxidation of benzene to quinone. During the cell oxidation, a polymeric material is formed in the anolyte dispersion of benzene and aqueous electrolyte. The polymeric material is continuously removed from the electrolysis cell with the anolyte and separated from the liquid components thereof, which are also separated and recycled to the cell, after part or all of the quinone-loaded benzene is passed through a quinone removal operation. The cells are employed with a diaphragm between the anode and cathode compartments, which is preferably a cationic permselective diaphragm.

### 3,758,393
### ACTIVATING PRODUCT
**Hugh E. Smith, Troy, N.Y., assignor to Norton Company, Troy, N.Y.**
**Filed Mar. 19, 1971, Ser. No. 126,193**
**Int. Cl. B01k** *3/00;* **C23b** *5/72;* **D04h** *1/00*
**U.S. Cl. 204—279** **4 Claims**

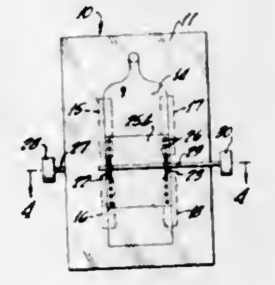
A surface activating material in the form of a sheet wherein a plurality of fine, flexible non-conductive projections, such as bristles, protrude substantially uniformly from a porous, extremely open, fluid-entrapping and circulating matrix and wherein fine, non-conductive hard particles are affixed to such projections and to the surface of the open matrix from which they protrude.



### 3,758,394
### FIXATION OF LEUCO VAT ESTER DYES BY ELECTRICAL CURRENT
**Kurt A. Dellian, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 864,049, Oct. 6, 1969. This application May 27, 1971, Ser. No. 147,685**
**Int. Cl. B01k** *1/00;* **C07b** *29/06*
**U.S. Cl. 204—134** **7 Claims**

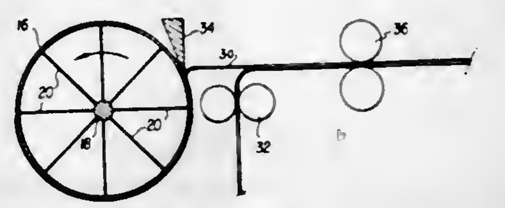
Leuco vat ester dyes are fixed onto cellulosic or polyester textile by electrical energy. The dyestuff is applied to the textile fibrous substrate in an aqueous solution and the textile is subjected to direct current from separate electrodes. Desirably, the dyed substrate is dried and heated to cause final fixation.

### 3,758,395
### RESOLUTION AND SYMMETRY CONTROL IN CONTINUOUS FREE FLOW ELECTROPHORESIS
**Allen Strickler, Fullerton, Calif., assignor to Beckman Instruments, Inc.**
**Filed May 15, 1972, Ser. No. 253,290**
**Int. Cl. B01k** *5/00*
**U.S. Cl. 204—180 R** **22 Claims**



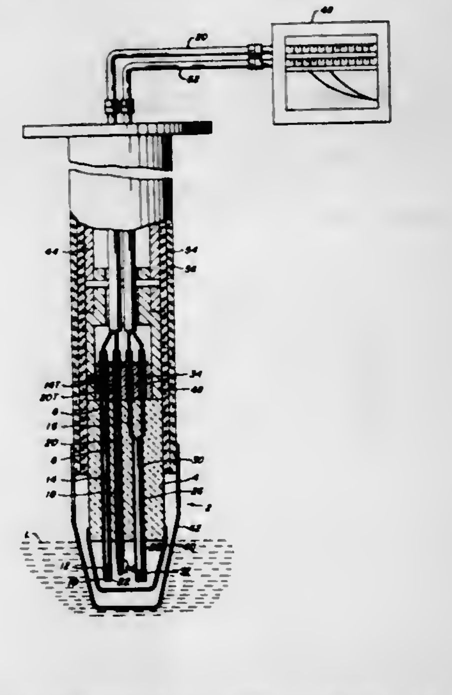
In a continuous free flow electrophoresis apparatus having a thin curtain of liquid carrier medium which flows along the length of an electrophoresis space between a pair of spaced walls, there is disclosed a method and means for adjusting the effective zeta potential of the walls to optimize resolution and to compensate for asymmetry of the cell. Resolution is optimized by providing each of the walls of the apparatus with areas spaced along the length thereof having different zeta potentials and by either mechanically or electrically adjusting the relative electroosmotic contribution of each area. Asymmetry is eliminated by mechanically or electrically adjusting the asymmetries in the areas of the apparatus to be opposite in sense to each other.

### 3,758,396
### PREPARATION OF IMMOBILIZED ENZYME-MEMBRANE COMPLEXES BY ELECTRO-CODEPOSITION
**Wolf R. Vieth, Belle Mead, Shaw S. Wang, North Brunswick, Seymour G. Gilbert, Piscataway, and Rakesh Saini, New Brunswick, N.J., assignors to Research Corporation, New York, N.Y.**
**Filed Aug. 31, 1971, Ser. No. 176,546**
**Int. Cl. B01k** *5/02*
**U.S. Cl. 204—181** **21 Claims**



Immobilized enzyme-membrane complexes are prepared by adjusting the pH of an aqueous mixture of an active enzyme and an enzyme-immobilizing carrier material so that the enzyme and the carrier material both experience charge separation at the molecular or colloidal levels, and introducing the aqueous mixture into an electro-deposition vessel provided with at least one cathode and at least one anode across which an electrical potential is applied to deposit an immobilized enzyme-membrane complex of enzyme and carrier material onto the surface of at least one of the electrodes. This process is particularly suitable for coating immobilized enzyme-membrane complexes onto geometric supports used for biocatalytic modules. The process can be adapted for continuous manufacture of enzyme-membrane complexes simply by making one of the electrodes a moving roll with a means of continuous stripping.

### 3,758,397
### APPARATUS FOR OXYGEN DETERMINATION
**Robert S. Rittiger, Allegheny Township, Westmoreland County, and Charles K. Russell, Franklin Township, Westmoreland County, Pa., assignors to United States Steel Corporation**
**Filed July 15, 1970, Ser. No. 54,986**
**Int. Cl. G01n** *27/46*
**U.S. Cl. 204—195 S** **4 Claims**



Apparatus for measuring oxygen content of fluids at elevated temperatures by means of a galvanic cell with a solid oxide electrolyte and a reference electrode of a mixture of a metal and its oxide includes a sensor which comprises a refractory body member having a first longitudinal opening for receiving a fused silica tube which has the solid electrolyte fused to the end thereof which contacts the fluid. A rod of molybdenum or other conductor extends through the tube with the reference electrode between the end of the rod and the solid electrolyte. A second fused silica tube extends through a second longitudinal opening adjacent the first opening and contains a second rod of the same material as the first. The second rod also has its first end extending into the fluid. A thermocouple extends through the body member with its first end extending into the fluid and its second end connected to a connector. A steel lance has means at one end for receiving the connector and second ends of the rods and means at the other end for connecting to a voltage measuring means. In some instances the thermocouple may be omitted.

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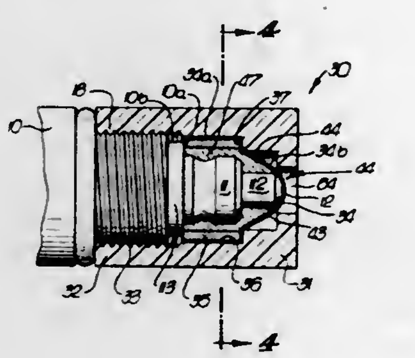
### 3,758,398
### FLUID SENSOR

**Thaddeus M. Doniguian, Laguna Beach, Calif., assignor to I.M.I., division of Becton, Dickinson and Company, Newport Beach, Calif.**
**Original application May 6, 1970, Ser. No. 35,187. Divided and this application June 30, 1971, Ser. No. 158,561**
**Int. Cl. G01n** *27/46*
**U.S. Cl. 204—195 P** **3 Claims**



Membrane type polarographic oxygen sensors are constructed to be uniformly rechargeable with electrolyte by introducing a selected quantity of electrolyte into a tubular cap for reception at the electrode side of a membrane in the cap; the cap is then assembled into the sensor body in such manner as to bring the electrolyte into contact with the cathode tip, and into a predetermined volume space adjacent the tip for current carrying purposes.

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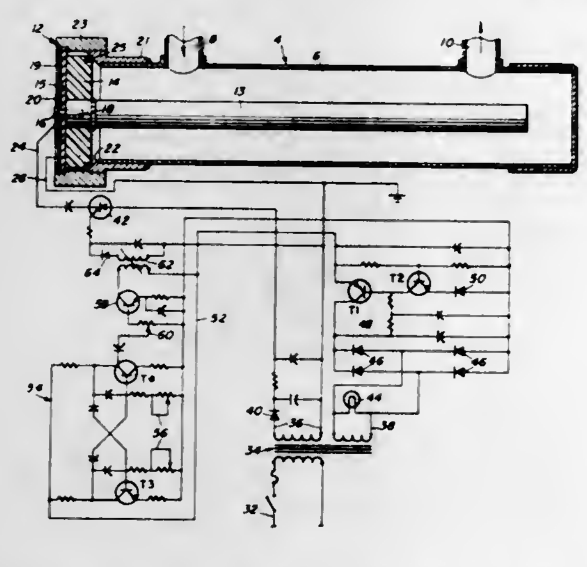
### 3,758,399
### PULSE IMPARTER

**Paul E. Pendergrass, Billings, Mont., assignor to Tri-Tron International, Billings, Mont.**
**Filed Feb. 9, 1970, Ser. No. 9,743**
**Int. Cl. B01k** *3/00;* **C22d** *1/02*
**U.S. Cl. 204—228** **2 Claims**



An apparatus for imparting an electrical pulse to a flowing stream of water having an inlet and outlet, a cathode within said housing in the path of said stream and an electric pulse generating means connected to said cathode.

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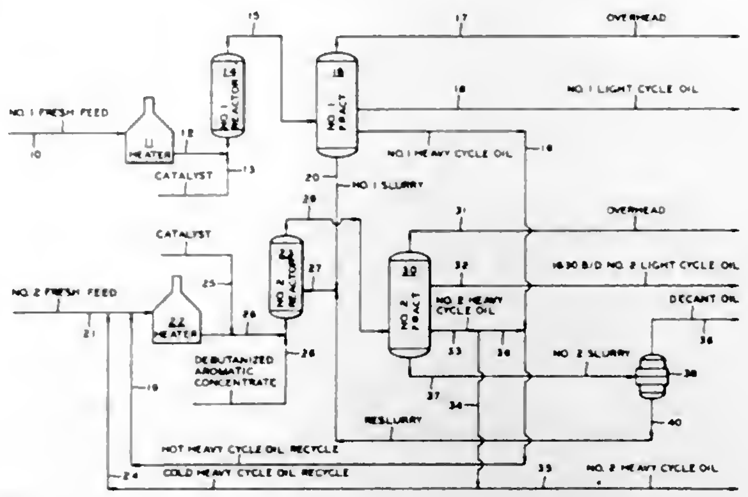
### 3,758,400
### CATALYTIC CRACKING PROCESS

**Joe B. Hampton, Sweeny, Tex., assignor to Phillips Petroleum Company**
**Filed Aug. 2, 1971, Ser. No. 167,921**
**Int. Cl. C10g** *31/14, 37/04*
**U.S. Cl. 208—72** **6 Claims**



Cracking of hydrocarbon oils in fluid catalytic cracking units in the presence of a small, but finite, amount of an aromatic concentrate containing olefinic hydrocarbons results in a substantial increase in the production of higher quality products, especially gasoline products of an increased octane number.

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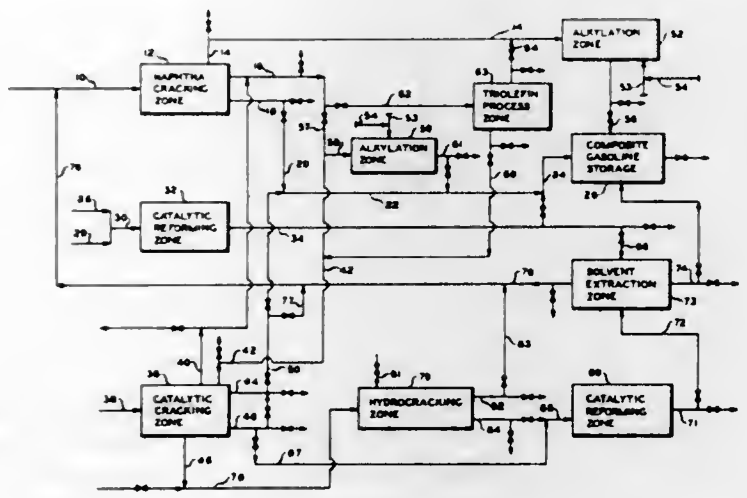
### 3,758,401
### PRODUCTION OF MOTOR FUELS

**Ronald E. Bridgeford, Greenville, S.C., and Vernon A. Cawi, Bartlesville, Okla., assignors to Phillips Petroleum Company**
**Filed May 21, 1971, Ser. No. 145,847**
**Int. Cl. C10g** *37/04, 37/00*
**U.S. Cl. 208—78** **25 Claims**



Composite motor fuels or gasoline, suitable for use as a lead-free or low-lead-content fuel, are provided by various combinations of steps comprising, in different embodiments, various novel combinations of steps comprising catalytic cracking, catalytic reforming, and solvent extraction. In some embodiments, the combination(s) include one or more additional steps such as hydrocracking, alkylation, and disproportionation.

### 3,758,402
### CATALYTIC HYDROCRACKING OF HYDROCARBONS

**Stephen M. Oleck, Moorestown, N.J., Albert B. Schwartz, Philadelphia, Pa., and William A. Stover, Woodbury, N.J., assignors to Mobil Oil Corporation**
**No Drawing. Filed Oct. 6, 1970, Ser. No. 78,572**
**Int. Cl. C10g** *11/02, 11/04*
**U.S. Cl. 208—111** **14 Claims**

Hydrocarbons are hydrocracked to products boiling in the motor fuel range by using a catalyst mixture comprising hydrogenation components, a large pore size zeolite such as zeolite X or Y and a smaller pore size zeolite of the ZSM-5 type. In a preferred embodiment, a siliceous matrix material is also used. The use of the ZSM-5 type zeolite results in obtaining a fuel having an increased octane number.

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### 3,758,403
### CATALYTIC CRACKING OF HYDROCARBONS WITH MIXTURE OF ZSM-5 AND OTHER ZEOLITES

**Edward J. Rosinski, Deptford, and Charles J. Plank, Woodbury, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Company**
**No Drawing. Filed Oct. 6, 1970, Ser. No. 78,573**
**Int. Cl. C10g** *13/02*
**U.S. Cl. 208—120** **12 Claims**

Hydrocarbons are cracked to products boiling in the motor fuel range by using a catalyst mixture comprising a large pore size zeolite such as zeolite Y and a smaller pore size zeolite of the ZSM-5 type. In a preferred embodiment, a siliceous matrix material is also used. The use of the ZSM-5 type zeolite results in obtaining a fuel having an increased octane number and in increased yields of $C_3$ and $C_4$ olefins. These olefins can be utilized in making additional gasoline or they can be used to prepare chemicals in accordance with conventional technology.

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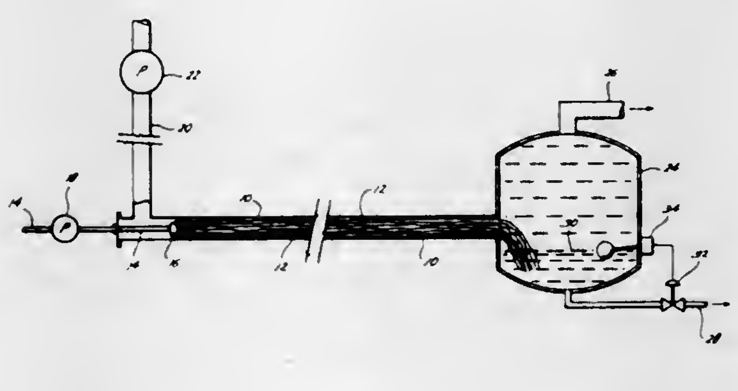
### 3,758,404
### LIQUID-LIQUID MASS TRANSFER PROCESS AND APPARATUS

**Kenyon E. Clonts, Houston, Tex., assignor to Merichem Company, Houston, Tex.**
**Filed July 9, 1971, Ser. No. 161,068**
**Int. Cl. C10g** *17/00*
**U.S. Cl. 208—263** **4 Claims**



A component of at least one of two immiscible liquids is transferred into the other liquid by introducing one of the liquids (the "first liquid") onto the surface of fibers extending generally linearly along a conduit with the fibers filling the cross-sectional area of at least a portion of the length of the conduit and being wetted preferentially by the first liquid, flowing the other liquid (the "second liquid") through the conduit past the fibers thereby dragging a film of the first liquid along the fibers, collecting the liquids in a gravity separator approximate the downstream end of the fibers and then separately removing the two liquids from the separator.

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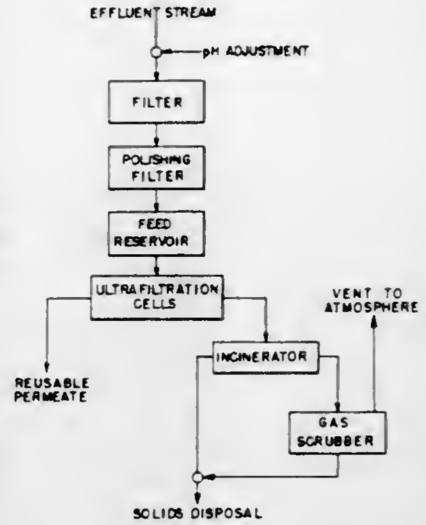
### 3,758,405
### COLOR REMOVAL FROM KRAFT MILL AQUEOUS EFFLUENTS

**Henry A. Fremont, Hamilton, Ohio, assignor to U.S. Plywood-Champion Papers, Inc.**
**Filed Nov. 3, 1971, Ser. No. 195,383**
**Int. Cl. C02c** *5/06*
**U.S. Cl. 210—23** **10 Claims**



This invention relates to an apparatus system and a continuous method of removing and disposing of color bodies in aqueous effluents from Kraft pulp manufacturing operations containing such bodies comprising adjusting the pH of said effluents to from about neutrality to about 9, subjecting the effluent to ultrafiltration to form an aqueous permeate and a retentate containing substantially all the color bodies in said effluent in a solids concentration of at least about 15%, and thermally oxidizing the retentate at a temperature and for a time sufficient to oxidize the color bodies to colorless inorganic salts and colorless inorganic gases which can be safely disposed of.

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### 3,758,406
### METHODS AND COMPOSITIONS FOR REDUCING FRICTIONAL PRESSURE LOSS IN THE FLOW OF HYDROCARBON LIQUIDS

**William T. Malone, Marlin D. Holtmyer, John M. Tinsley, and Jiten Chatterji, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 878,578, Nov. 20, 1969. This application Oct. 22, 1971, Ser. No. 191,847**
**Int. Cl. C08f** *3/66;* **E21b** *43/26;* **F17d** *1/16*
**U.S. Cl. 252—8.55 R** **15 Claims**

The present invention relates to methods and compositions for reducing the frictional pressure loss encountered in the turbulent flow of hydrocarbon liquids through a conduit. By the present invention a frictional pressure loss additive is intermixed with the hydrocarbon liquid, the additive being a homopolymer or a copolymer of alkyl acrylate and methacrylate monomers having ester groups containing from 4 to 18 carbon atoms or copolymers of such monomers and certain styrene, acrylate or methacrylate type monomers.

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### 3,758,407
### LITHIUM SOAP GREASE CONTAINING MONOLITHIUM BORATE

**Gary L. Harting, Westfield, N.J., assignor to Esso Research and Engineering Company**
**No Drawing. Filed Nov. 22, 1971, Ser. No. 201,140**
**Int. Cl. C10m** *5/14*
**U.S. Cl. 252—18** **6 Claims**

A grease composition that combines good water resistance, good mechanical stability and high oil retention with excellent oxidation stability and high dropping point is prepared by the use of a novel thickener system whose essential components include a combination of the monolithium salt of boric acid; and a lithium soap of a 9-, 10-, or 12-hydroxy $C_{12}$ to $C_{24}$ fatty acid, e.g., lithium 12-hydroxystearate. Further improvement in this type of grease results when a third thickener component is included, this being a lithium salt formed in situ in the grease from a second hydroxy carboxylic acid of from 3 to 14 carbon atoms wherein the OH group is attached to a carbon atom not more than 6 carbon atoms removed from the carboxyl group, and wherein either of those groups may be attached to either aliphatic or aromatic portions of a molecule.

**3,758,408**

### NON-YELLOWING DETERGENT FORMULATION

**Pallassana Ramachandran, Robinsville, and Joseph A. Yurko, Bayonne, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

**No Drawing. Filed Feb. 12, 1971, Ser. No. 115,106**

**Int. Cl. C11d** *3/02*

**U.S. Cl. 252—89** **4 Claims**

A method for substantially reducing or entirely eliminating the yellow discoloration usually associated with the repeated laundering of cotton fabrics with detergents containing a substantial amount of sodium carbonate builder is disclosed. The new method includes the incorporation of titanium dioxide into the carbonate containing detergent system in an approximate weight ratio of 1:4 with the sodium carbonate builder.

**3,758,409**

### CLEANING AND BLEACHING LIQUID COMPOSITION

**Yunosuke Nakagawa, Koshigaya, and Ichiro Iwasa and Ikuya Kinoshita, Wakayama, Japan, assignors to Kao Soap, Ltd., Tokyo, Japan**

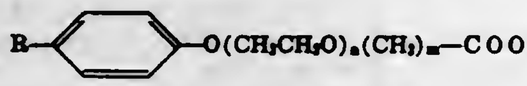
**No Drawing. Filed Dec. 2, 1971, Ser. No. 204,344**

**Claims priority, application Japan, Dec. 9, 1970, 45/109,106**

**Int. Cl. C11d** *7/54, 7/56*

**U.S. Cl. 252—99** **3 Claims**

A transparent liquid detergent composition, excellent in bleaching and cleaning properties, consisting essentially of a surface active agent represented by a general formula,



(wherein R stands for an alkyl group having 8 to 22 carbon atoms, *n* is an integer of 1 to 40, *m* is an integer of 1 or 2 and M is an alkali metal), an alkali metal hypochlorite and an alkali agent dissolved in water, said alkali metal hypochlorite containing less than $1/10$ mol of alkali metal chloride per mol of the hypochlorite and the available chlorine content of the composition being 0.5–13% by weight.

**3,758,410**

### VICINAL SUBSTITUTED ALKANES

**Shih K. Liu, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of applications Ser. No. 710,644, Mar. 5, 1968, and Ser. No. 852,898, Aug. 25, 1969, both now abandoned. This application Apr. 21, 1971, Ser. No. 136,249**

**Int. Cl. C11d** *3/075*

**U.S. Cl. 252—89** **7 Claims**

Mixtures of internal position isomers of vicinally disubstituted linear alkanes wherein the alkyl chain contains from 15 to 17 carbon atoms and the substituents are hydroxy or alkoxy groups, at least one of the substituents being alkoxy groups, are effective surfactants.

**3,758,411**

### AEROSOL COMPOSITION COMPATIBLE WITH EXCESS PROPELLANT

**Denis John Healy, 1205 Broodmeadow Road, Winnetka, Ill. 60093**

**No Drawing. Continuation-in-part of application Ser. No. 726,197, May 2, 1968, which is a continuation-in-part of application Ser. No. 468,588, June 30, 1965, both now abandoned. This application Oct. 21, 1971, Ser. No. 191,541**

**Int. Cl. C11d** *17/04*

**U.S. Cl. 252—90** **6 Claims**

An aerosol composition containing as essential ingredients a propellant, an aqueous soap solution and a fatty acid ester amide of the following structural formula:

$$RCONHCH_2CH_2OOCR_1$$

wherein R and $R_1$ independently represent alkyl containing from 12 to 20 carbon atoms.

**3,758,412**

### METHOD OF SCINTILLATION COUNTING USING TRIARYLBORANES AS SCINTILLATORS

**Frank Grum, Edwin Paul Przybylowicz, Lorenzo Federico Costa, and Raymond Sumner Miller, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed July 27, 1970, Ser. No. 58,681**

**Int. Cl. F21k** *2/02;* **C09k** *1/00;* **G01t** *1/20*

**U.S. Cl. 252—301.2 R** **10 Claims**

Highly stable, highly fluorescent triarylboranes are employed in a scintillator solution as a primary or secondary scintillator solute.

### ERRATUM

For Class 252—301.40 R see:
Patent No. 3,758,486

**3,758,413**

### TERBIUM ACTIVATED YTTRIUM SILICATE PHOSPHORS

**Thomas E. Peters, Levittown, N.Y., assignor to GTE Laboratories Incorporated**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 640,354, May 22, 1967. This application Feb. 4, 1970, Ser. No. 8,718**

**Int. Cl. C09k** *1/54*

**U.S. Cl. 252—301.4 F** **4 Claims**

Terbium activated yttrium silicate phosphors which emit green light when excited by ultraviolet, cathode ray or X-ray radiation. The phosphors may be used in fluorescent lamps and in cathodoluminescent screens for cathode-ray tubes.

**3,758,414**

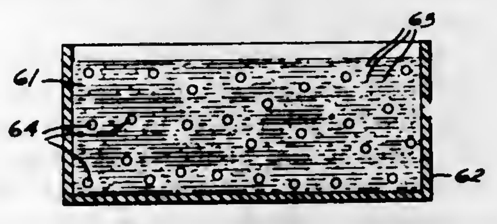
### METHOD OF FORMING AND DISPERSING A PLURALITY OF DISCRETE, NON-COALESCING LIQUID METAL PARTICLES IN AN AQUEOUS MEDIUM

**John Thomas Kenney, Lawrence Township, Mercer County, and Frederic Alan Litt, Cranford Township, Union County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.**

**Filed Aug. 19, 1971, Ser. No. 173,042**

**Int. Cl. B01j** *13/00;* **C23c** *5/00*

**U.S. Cl. 252—313 R** **5 Claims**



A method of forming and dispersing a plurality of discrete, non-coalescing liquid metal particles in an aqueous medium is disclosed. At least one liquid metal

source is combined with a stable aqueous colloidal solution, formed by a controlled hydrolysis and nucleation reaction and comprising insoluble hydrous oxide particles of one or more selected elements, such solutions being exemplified in application Ser. No. 8,022, filed Feb. 2, 1970, now U.S. Pat. No. 3,657,003. The combined source and colloidal solution are then subjected to a dispersive force to (1) fractionate the metal source to form the plurality of liquid metal particles, and (2) disperse the non-coalescing particles within the colloidal solution. Where the liquid metal source is initially fractionated in a suitable manner, the dispersive force then merely disperses the non-coalescing particles.

**3,758,415**

### METHOD FOR THE EXPANSION OF VERMICULITE

**Takeo Wada, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan**

**No Drawing. Filed July 13, 1971, Ser. No. 162,256**

**Claims priority, application Japan, July 14, 1970, 45/61,560**

**Int. Cl. B01j** *1/10;* **C04b** *31/26*

**U.S. Cl. 252—378 R** **18 Claims**

Method of expanding vermiculite by irradiating it with microwaves.

**3,758,416**

### PROCESS FOR PRODUCING CATALYSTS FOR DIMERIZATION OF PROPYLENE

**Lucio Forni, Milan, Italy, assignor to Societa Italiana Resine S.p.A., Milan, Italy**

**No Drawing. Filed Nov. 19, 1971, Ser. No. 200,508**

**Claims priority, application Italy, Nov. 26, 1970, 32,210/70**

**Int. Cl. B01j**

**U.S. Cl. 252—447** **7 Claims**

Catalysts for the production of 4-methyl-1-pentene are made by treating graphite with alkaline solutions and subsequently heating to an elevated tempertaure in nitrogen or other inert gas before adding an alkali metal, preferably potassium.

### ERRATUM

For Class 252—455 Z see:
Patent No. 3,758,539

**3,758,417**

### COPPER, ZINC, DIDYMIUM OXIDE-CONTAINING CATALYSTS

**Eugene F. Magoon, Walnut Creek, and Lynn H. Slaugh, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 86,357, Nov. 2, 1970. This application May 21, 1971, Ser. No. 145,946**

**Int. Cl. B01j** *11/06, 11/22*

**U.S. Cl. 252—462** **5 Claims**

Methanol is produced by reaction of carbon oxides and hydrogen in the presence of a novel copper-zinc-didymium containing oxide catalyst.

**3,758,418**

### PROCESS FOR PREPARING A SUPPORTED CATALYST

**William J. Leonard, Jr., San Francisco, and Howard V. Holler, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Filed Mar. 22, 1971, Ser. No. 126,983**

**Int. Cl. B01j** *11/08, 11/22*

**U.S. Cl. 252—464** **7 Claims**

Supported catalysts are prepared by coating a support with polymerized ethylenically unsaturated carboxylic acid, contacting the coated support with ions of catalytically active metals and then heating to 100–450° C. to decarboxylate the polymerized acid and convert the metal ions into discrete less than 1000 A. particles of metal or metal oxide. Silver catalysts active and selective for ethylene oxide production are prepared by this process.

**3,758,419**

### CLEANSING AND LAUNDERING COMPOSITIONS

**James W. Hayden, Richmond, Roy T. Holm, Orinda, and Rupert C. Morris, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Continuation-in-part of applications Ser. No. 138,376, Ser. No. 138,377, and Ser. No. 138,378, all Apr. 28, 1971. This application June 3, 1971, Ser. No. 149,799**

**Int. Cl. C11d** *1/08, 1/22*

**U.S. Cl. 252—551** **28 Claims**

Biodegradable detergent formulations contain as builders water soluble polycarboxylate telomers terminated with certain oxygenated end groups.

**3,758,420**

### DETERGENT COMPOSITION CONTAINING A HOMOGENEOUSLY POLYFUNCTIONALLY-SUBSTITUTED AROMATIC ACID SEQUESTERING AGENT

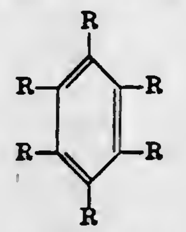
**Daniel S. Connor and Harry Karl Krummel, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio**

**No Drawing. Filed Dec. 28, 1970, Ser. No. 102,158**

**Int. Cl. C11d** *1/14, 1/22*

**U.S. Cl. 252—550** **2 Claims**

A detergent composition is provided comprising a water-soluble organic synthetic detergent, and as a detergency aid, a sequestering agent which is a water-soluble salt of a homogeneously polyfunctionally-substituted aromatic acid compound having the formula



wherein at least three R's represent $SO_3H$ substituents.

**3,758,421**

### EMULSIFYING CURING AGENTS FOR WATER DILUTABLE EPOXY RESIN SYSTEMS

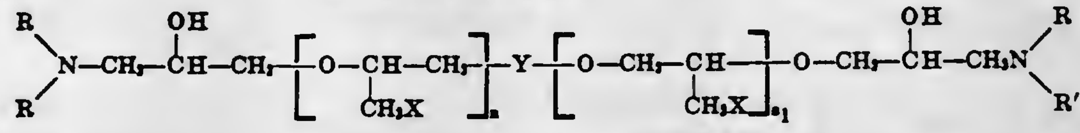
**Otho Leroy Nikles, Jr., Toms River, N.J., assignor to Resyn Corporation, Linden, N.J.**

**No Drawing. Continuation-in-part of application Ser. No. 873,501, Nov. 3, 1969. This application July 7, 1970, Ser. No. 53,010**

**Int. Cl. C08g** *30/14*

**U.S. Cl. 260—2 N** **8 Claims**

This invention relates to emulsifying curing agents for preparing water dilutable epoxy resin systems and to the preparation of these products and their use with epoxy resins. The novel curing agents are represented by the following formula



$$\begin{matrix}R\\ R\end{matrix}\!>\!N-CH_2-\overset{OH}{\overset{|}{CH}}-CH_2-\left[O-\underset{CH_2X}{\underset{|}{CH}}-CH_2-\right]_n-Y-\left[O-CH_2-\underset{CH_2X}{\underset{|}{CH}}-\right]_{n_1}-O-CH_2-\overset{OH}{\overset{|}{CH}}-CH_2N\!<\!\begin{matrix}R\\ R'\end{matrix}$$

**3,758,422**

### OXYALKYLATED DERIVATIVES OF PHENOLPHTHALEIN

**Bruce N. Wilson, Heath, Ohio, and Raymond R. Hindersinn, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 694,037, Dec. 28, 1967. This application Apr. 12, 1971, Ser. No. 133,449**

**Int. Cl. C08g** *23/10*

**U.S. Cl. 260—47 EQ** **7 Claims**

Novel derivatives of phenolphthalein are prepared by reacting the compound with ammonia or an amine, and with ammonia or an amine, followed by a 1,2-epoxide. Such polyhydric derivatives of phenolphthalein are useful in the preparation of polyurethane compositions such as foams, coatings and elastomers, for the production of saturated alkyd resins, unsaturated polyesters, and as intermediates in the preparation of other polymer compositions.

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3,758,423

### POLYMER AND PROCESS FOR PRODUCING SAME FROM AN EPOXY MONOMER AND A SILICON CONTAINING COREACTANT

**Lynn J. Taylor, Haslett, Mich., assignor to Owens-Illinois, Inc.**

**No Drawing. Filed Aug. 16, 1971, Ser. No. 172,253**
**Int. Cl. C08g** *30/10*
**U.S. Cl. 260—2 EC 7 Claims**

There is disclosed the preparation of novel polymeric compounds by the reaction of at least one epoxy monomer and at least one silicon containing coreactant, each reactant having a functionality of at least two. The resulting material is highly suitable for adhesive, coating, and like purposes.

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3,758,424

### FOAMED POLYMERIC MATERIALS

**Norman Stewart Anderson, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England**

**No Drawing. Continuation of abandoned application Ser. No. 94,563, Dec. 2, 1970. This application May 5, 1972, Ser. No. 250,654**
**Int. Cl. C08j** *1/18*
**U.S. Cl. 260—2.5 N 9 Claims**

Manufacture of polyamide foam, by mixing polyamide with a blowing agent comprising an oxalic acid derivative wherein one COOH group has been esterified with an alcohol or polyol and the other has been either esterified with an alcohol, polyol or phenol or converted to a substituted amide, and heating above the melting point. Esterification products of oxalic acid with polyols, especially ethylene glycol, are preferred.

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3,758,425

### PROCESS FOR THE PREPARATION OF FOAMABLE STYRENE POLYMERS

**Horst Jastrow, Niederhochstadt, Michael Lederer, Falkenstein, Taunus, and Elmar Heiskel, Langen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Filed Nov. 15, 1971, Ser. No. 198,943**
**Claims priority, application Germany, Nov. 16, 1970, P 20 56 217.8**
**Int. Cl. C08f** *47/10;* **C08j** *1/26*
**U.S. Cl. 260—2.5 B 6 Claims**

A process for preparing foamable styrene polymer beads containing blowing agents with a particularly favourable, narrow grain size distribution. This novel process comprises the use of copolymers of N-vinyl-N-alkyl acetamide having from 1 to 4 carbon atoms in the alkyl group with an ester of acrylic, methacrylic, maleic or fumaric acid with an aliphatic alcohol having a linear or branched chain and containing from 6 to 18 carbon atoms, as protective colloid in the homo- or copolymerization of styrene in an aqueous suspension in the presence of a blowing agent.

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3,758,426

### HYDROXY-TERMINATED POLYBUTADIENES

**Jean L. Boivin, Ottawa, Ontario, and Meude Tremblay, Quebec, Quebec, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defense**

**Filed Sept. 29, 1971, Ser. No. 184,757**
**Int. Cl. C08d** *5/02;* **C08f** *19/14;* **C08g** *45/04*
**U.S. Cl. 260—18 TN 10 Claims**

A hydroxy-terminated polybutadiene is formed by reaction with a carboxy-terminated polybutadiene and an alkylene oxide. The hydroxy polymer has application for use as a binder for solid propellants when cured with a triisocyanate or a diisocyanate and a tris (hydroxy-terminated) polyhydrocarbon.

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3,758,427

### PROCESS FOR THE MANUFACTURE OF EPOXY-MODIFIED POLYURETHANE RESINS WHICH CAN BE DILUTED WITH WATER OR DISPERSED IN WATER

**Themistoklis Katsibas, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany**

**No Drawing. Filed Dec. 7, 1970, Ser. No. 95,921**
**Claims priority, application Switzerland, Dec. 8, 1969, 18,225/69**
**Int. Cl. C08g** *5/20*
**U.S. Cl. 260—19 EP 3 Claims**

The subject of the invention is a process for the manufacture of oxidatively drying, epoxy-modified polyurethanes or polyurethane copolymers resins, which can be diluted with water or dispersed in water, characterized in that:

(I)

(a) unsaturated fatty acids, of which 0 to 25 percent by weight can be present as drying oils, with the unsaturated fatty acids and/or the drying oils optionally containing up to 6 percent by weight of maleic anhydride as an adduct, and with the mixture possessing iodine numbers of about 130 to 390,
(b) aliphatic, cycloaliphatic or aromatic carboxylic acids or hydroxy-carboxylic acids, individually or as a mixture, or their anhydrides, where these exist,
(c) monohydric and/or polyhydric hydroxy compounds,
(d) polyoxyalkylene compounds which contain at least one atom of active hydrogen and have an average molecular weight of the polyoxyalkylene chain of about 200 to 50,000, individually or as a mixture,
(e) epoxide compounds which contain at least one epoxide group, individually or as a mixture, and
(f) copolymerizable monomers, individually or as a mixture,

are reacted conjointly or stepwise by heating until the reaction product has an acid number of zero to 300,

(II)

the resulting ester and/or ester-ether, carrying hydroxyl groups and if required carrying carboxyl groups, is reacted by warming with

(g) unsaturated monoalcohols and/or polyalcohols or their mixtures, and
(h) isocyanates, individually or as a mixture,

with the reaction of the component (I) with (g) and (h) taking place conjointly, or with (g) and (h) having beforehand been reacted to give an intermediate product; in all reactions the components (I) (optionally (g)) should be employed in such a way, through selection of the amounts, that the total hydroxyl group equivalent bears a ratio of 1.01 to 1.45 to the isocyanate equivalent,

(III)

(i) and that optionally, where the polyurethane resin contains carboxyl groups, this resin is converted, by the addition of alkali and/or strong bases, into the state where it can be dispersed in water or diluted with water.

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3,758,428

### ACRYLIC COATING COMPOSITIONS

**William Connelly, Leonard Sydenham, and John Szilagyi, Toronto, Ontario, Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada**

**No Drawing. Continuation-in-part of application Ser. No. 52,064, July 2, 1970. This application Nov. 15, 1971, Ser. No. 198,945**
**Int. Cl. C08b** *21/08;* **C08f** *29/38, 45/22*
**U.S. Cl. 260—17 R 12 Claims**

Coating compositions comprising an organic solvent and as the essential film-forming materials, (1) at least 40 parts by weight of acrylic polymeric material selected from (a) copolymers of essentially, at least 75 parts by weight of methyl methacrylate and from 0.5 to 25 parts by weight of glycidyl acrylate or methacrylate, the total parts of the copolymer ingredients being 100, esterified with an aromatic monocarboxylic acid, selected from the group consisting of toluic acid, cinnamic acid, benzoic acid and benzoic acids substituted with at least one polar group, e.g. amino-benzoic acids and (b) mixtures of said esterified copolymers with homo- or copolymers of methyl methacrylate; (2) up to 50 parts by weight of at least one compatible plasticiser; and (3) up to 35 parts by weight of cellulose acetate butyrate, the total parts by weight of film-forming materials being 100; the glycidyl acrylate or methacrylate moiety of any copolymer (a) prior to esterification thereof constituting from about 0.5% to about 25% by weight of ingredient (1) of the essential film-forming materials, and when the acrylic polymeric film-forming material is a mixture (b), said esterified copolymer (a) being present in an amount exceeding 200% by weight of any pigment present in the compositions.

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3,758,429

### ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE

**William F. Fallwell, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Original application July 16, 1970, Ser. No. 55,613. Divided and this application Nov. 26, 1971, Ser. No. 202,681**
**Int. Cl. C08d** *9/06;* **C08f** *15/40, 45/24*
**U.S. Cl. 260—17.4 ST 4 Claims**

Ethylene/vinyl chloride/N-methylol acrylamide terpolymer, aqueous dispersions and starch combinations thereof.

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3,758,430

### VINYL POLYMER PLASTISOL COMPOSITION

**Joseph Winkler, Hazleton, Pa., assignor to Tenneco Chemicals, Inc., New York, N.Y.**

**No Drawing. Original application Oct. 31, 1967, Ser. No. 679,554. Divided and this application Feb. 25, 1971, Ser. No. 118,944**
**Int. Cl. C09j** *3/26*
**U.S. Cl. 260—27 R 4 Claims**

A heat-sealable polyurethane foam formed by reaction between the foam-forming ingredients, in the presence of selected plastisols is described.

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3,758,431

### HOT MELT COMPOSITIONS

**David D. Taft, 7233 Monardo Lane, Minneapolis, Minn. 55435, and Terry H. Shepler, 1900 Turquoise Trail, St. Paul, Minn. 55122**

**No Drawing. Filed June 3, 1971, Ser. No. 149,843**
**Int. Cl. C09j** *3/26*
**U.S. Cl. 260—27 11 Claims**

Hot melt compositions containing copolymer of ethylene and vinyl acetate and/or alkyl acrylate wherein the alkyl group contains 1–18 carbon atoms; ester of rosin and polyhydric alcohol; and ester of polyhydric alcohol and dimer and/or trimer of fatty acid are particularly useful as carpet backing adhesives.

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3,758,432

### METHOD OF PRODUCING LATEX PAINT

**Theodore R. Hopper, Severna Park, Md., assignor to FMC Corporation, New York, N.Y.**

**No Drawing. Continuation of application Ser. No. 12,453, Feb. 18, 1970. This application Nov. 26, 1971, Ser. No. 202,691**
**Int. Cl. C08f** *45/44;* **C09d** *5/02*
**U.S. Cl. 260—29.6 MN 2 Claims**

A method of producing pigmented latex paints in which the pigment is dispersed in water, together with, as an essential multifunctional ingredient, isooctyl carbamate, and the pigment dispersion is then added to the latex.

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3,758,433

### PRESSURE SENSITIVE ADHESIVES

**James Nelson Mullen, Kilwinning, Scotland, assignor to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed Aug. 25, 1971, Ser. No. 175,004**
**Claims priority, application Great Britain, Sept. 1, 1970, 41,734/70**
**Int. Cl. C08f** *37/00*
**U.S. Cl. 260—29.6 E 16 Claims**

A pressure sensitive adhesive of particular use with regard to "wash-off" labels comprises a blend of a 1:1 alternating copolymer of maleic acid and methyl vinyl ether with an alkyl phenol polyethylene oxide condensate as plasticiser.

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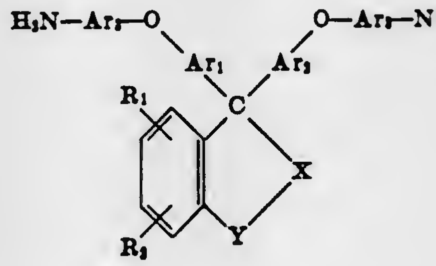
3,758,434

### AROMATIC POLYIMIDES WITH INCREASED SOLUBILITY

**Hans-Egon Kunzel, Dormagen, Francis Bentz, Cologne, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Feb. 25, 1971, Ser. No. 118,960**
**Claims priority, application Germany, Mar. 3, 1970, P 20 09 739.6**
**Int. Cl. C08g** *20/32*
**U.S. Cl. 260—30.2 10 Claims**

New high molecular weight aromatic polyimides which are soluble in polar organic solvents. Obtained by reaction of a tetracarboxylic acid dianhydride with at least one diamine of the general formula



The polyimides are useful for the production of films, foils, fibers, coatings and moulded products.

### 3,758,435

### RUBBER BONDING CEMENT FOR BONDING EPDM TO GENERAL PURPOSE RUBBER

**Charles F. Paddock, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.**

**No Drawing. Original application May 13, 1970, Ser. No. 37,030, now Patent No. 3,653,423. Divided and this application Jan. 12, 1972, Ser. No. 217,269**

**Int. Cl. B32b** *25/04;* **C08k** *1/22*

**U.S. Cl. 260—33.6 A** **6 Claims**

A rubber bonding cement which comprises a solution of a compounded graft copolymer in a volatile organic solvent, said graft copolymer having an ethylene-propylene-ethylidene norbornene spine to which butadiene and styrene have been grafted, said spine comprising 55 to 95% by weight of the graft copolymer.

### 3,758,436

### CROSS-LINKED POLY (ARYLSULPHONE ETHERS)

**Michael Edward Benet Jones, 45 Richmond Crescent, Vicars Cross, Chester, England, and Brian Edmund Jennings, Cherry Way, 40 Harmer Green Lane, Digswell, Welwyn, Hertfordshire, England**

**No Drawing. Application Feb. 22, 1971, Ser. No. 117,807, which is a division of application Ser. No. 12,141, Feb. 17, 1970, now Patent No. 3,579,475, which in turn is a continuation of abandoned application Ser. No. 755,491, Aug. 7, 1968. Divided and this application Feb. 29, 1972, Ser. No. 230,481**

**Claims priority, application Great Britain, Mar. 8, 1964, 11,428/64**

**Int. Cl. C08g** *51/10*

**U.S. Cl. 260—37 R** **5 Claims**

A cross-linkable composition which comprises a thermoplastic polymer containing aromatic residues in the polymer chain, the polymer itself containing per chain at least two groups of the formula $—SO_2X$ each attached directly to an aromatic carbon atom, X being, for example, chlorine or bromine.

### 3,758,437

### NORMALLY SOLID CRYSTALLINE POLYPROPYLENE STABILIZED BY AROMATIC ESTERS OF ANTHRANILIC ACID

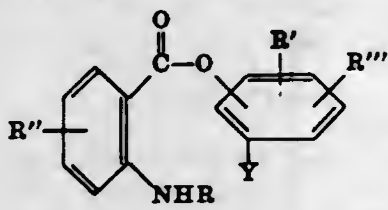
**John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 102,968, Dec. 30, 1970. This application Feb. 18, 1972, Ser. No. 227,609**

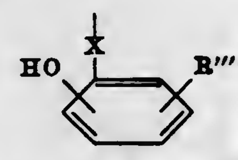
**Int. Cl. C08f** *45/60*

**U.S. Cl. 260—45.85 A** **3 Claims**

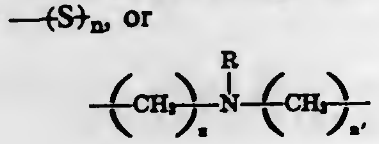
Normally solid crystalline polypropylene is stabilized by esters of anthranilic acid of the formula:



in which R is H or an alkyl group of 1 to 4 carbon atoms, R′ and R″ and H, $NO_2$, alkyl groups of 1 to 20 carbon atoms, halogens, and alkoxyl groups of 1 to 20 carbon atoms, R‴ is an alkyl group of 5 to 20 carbon atoms either straight or branched chain in structure, and Y has the structure:



wherein R'''' is H or an alkyl group of 1 to 20 carbon atoms, X is $—(S)_n$, or



$$-(CH_2)_n-\overset{R}{\overset{|}{N}}-(CH_2)_{n'}-$$

where *n* has a value from 1 to 5, said ester of anthranilic acid being present in an amount sufficient to enhance the stability of said composition against UV and heat degradation.

### 3,758,438

### PROCESS FOR THE MANUFACTURE OF FILAMENTS AND FIBERS HAVING A METALLIC GOLDEN SHADE FROM POLYESTERS

**Gerhard Freitag, Niederhofheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Filed Dec. 10, 1971, Ser. No. 206,940**

**Claims priority, application Germany, Dec. 12, 1970, P 20 61 354.1**

**Int. Cl. C08g** *51/04*

**U.S. Cl. 260—40 P** **2 Claims**

Filaments and fibers made from high molecular weight synthetic linear polyesters have a metallic golden aspect when these contain from 0.001 to 0.01% by weight of niobium based on incorporated niobium pentoxide. Such filaments and fibers are preferably obtained by adding niobium pentoxide hydrate having a determined water content during the normal polyester preparation process in an amount which yields a niobium content of from 0.001 to 0.01% by weight in the polyester end product, and by subsequently processing the polyester so obtained by melt spinning. Especially monofilaments having a golden shade are used as fastening links of zippers.

### 3,758,439

### THERMOSETTING COMPOSITIONS CONTAINING MONOMERIC HYDROXYALKYL ACRYLIC ESTER AND POLYMER OF ACRYLONITRILE

**Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company**

**No Drawing. Filed Apr. 23, 1971, Ser. No. 137,017**

**Int. Cl. C08f** *15/00*

**U.S. Cl. 260—41 R** **22 Claims**

Thermosetting compositions comprising a polymer of acrylonitrile and a hydroxyalkyl ester of an unsaturated acid are readily converted to novel thermoset resins at elevated temperatures and pressures in the presence of free radical initiators.

### 3,758,440

### SULFUR-CONTAINING POLYARYL POLYPHENOLIC STABILIZERS FOR ELASTOMERIC POLYMERS

**Howard A. Hageman, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.**

**No Drawing. Original application Mar. 17, 1969, Ser. No. 807,956, now Patent No. 3,668,258, dated June 6, 1972. Divided and this application Sept. 9, 1971, Ser. No. 179,232**

**Int. Cl. C08c** *27/66;* **C08d** *11/04;* **C08f** *45/58*

**U.S. Cl. 260—45.95 C** **7 Claims**

The compounds are of the class of thiobis(beta-arylalkylene)diphenols and chain-extended polythiopolyphenols derived therefrom. They are useful as antioxidants in compositions containing unsaturated rubbers—that is, so-called diene rubbers. A typical compound of the class is 4,4′-thiobis(beta-phenylethylene)diphenol, made by condensing bis(beta-chlorophenethyl) sulfide (one mole) with phenol (two moles). Chain extension is apt to occur by reaction of the first-formed mono-thio diphenol with additional amounts of the dichloro coupling agent and the starting phenol, forming polythio polyphenolic compounds having repeated alternating units of the coupler and the phenol moieties.

### 3,758,441

### ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER STOCKS

**Siegfried Nitzsche, Wolfgang Kaiser, Ernst Wohlfarth, and Paul Hittmair, Burghausen, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany**

**No Drawing. Continuation-in-part of application Ser. No. 63,608, Aug. 13, 1970, now Patent No. 3,674,738. This application Feb. 24, 1972, Ser. No. 229,187**

**Int. Cl. C08f** *11/04*

**U.S. Cl. 260—46.5 G** **6 Claims**

A room-temperature vulcanizable silicone rubber stock is prepared by admixing an essentially linear diorganopolysiloxane having reactive end groups, preferably hydroxyl end groups, and as a crosslinker a mixture of an aminosilane and an oxime substituted silane. These materials can be stored in the absence of moisture and will cure to form elastomeric products upon exposure to moisture.

### 3,758,442

### NOVEL POLYETHERESTERS OF HYDROXYALKOXYL DIPHENYL-4-CARBOXYLIC ACID PROCESS FOR PREPARATION THEREOF, AND ARTICLES THEREOF

**Takeo Shima, Seiichi Yamashiro, and Hiroo Inata, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan**

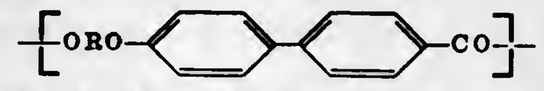
**No Drawing. Filed Feb. 5, 1971, Ser. No. 113,084**

**Claims priority, application Japan, Feb. 9, 1970, 45/11,654; July 2, 1970, 45/57,873; July 31, 1970, 45/67,194**

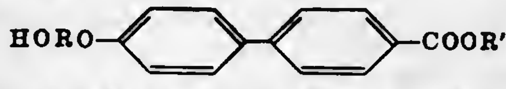
**Int. Cl. C08g** *17/02*

**U.S. Cl. 260—47 C** **11 Claims**

A novel linear polyetherester containing at least 70 mole percent recurring units expressed by the following formula



wherein R is an alkylene linkage having 2 to 10 carbon atoms, is produced by polycondensing a member selected from the group consisting of 4′-(ω-hydroxyalkoxy)diphenyl-4-carboxylic acid or its ester-forming derivatives of the formula



and mixtures of 4′-(ω-hydroxyalkoxy)diphenyl-4-carboxylic acid or its ester-forming derivatives with less than 30 mole percent of a copolymerizable third component such as a diol ester of an aromatic carboxylic acid, a diol ester of an aliphatic carboxylic acid, a diol ester of an alicyclic dicarboxylic acid, an aromatic hydroxycarboxylic acid, a polyethylene glycol, a trifunctional or tetrafunctional ester-forming compound, or a nuclear hydrogenated product of 4′-hydroxy-diphenyl-4-carboxylic acid.

### 3,758,443

### PROCESS FOR THE PRODUCTION OF POLYURETHANE ELASTOMERS BASED ON A PARTICULAR POLYOL POLYCARBONATE

**Klaus Konig, Erwin Muller, and Cornelius Muhlhausen, Leverkusen, and Uwe Jens Dobereiner, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Continuation of abandoned application Ser. No. 98,928, Dec. 16, 1970. This application Apr. 24, 1972, Ser. No. 247,212**

**Int. Cl. C08g** *22/10, 17/13*

**U.S. Cl. 260—75 NP** **5 Claims**

A process is provided for the production of polyurethane elastomers by reacting higher molecular weight hydroxy compounds which have a molecular weight of 800 to 2500, diisocyanates and low molecular weight compounds which have a molecular weight of up to 400 and which contain at least two hydrogen atoms reactive with isocyanates, characterized in that the higher molecular weight hydroxy compounds are condensation products of 1,6-hexane diol, adipic acid and diaryl carbonate.

### 3,758,444

### POLYURETHANES BASED ON ACTIVATED-LACTAM CROSS-LINKERS

**Kuno Wagner, Leverkusen, Gerhard Mennicken, Opladen, and Klaus Noll, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

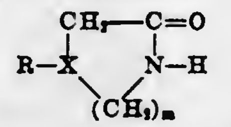
**No Drawing. Filed Apr. 5, 1972, Ser. No. 241,396**

**Claims priority, application Germany, Apr. 10, 1971, P 21 17 576.8**

**Int. Cl. C08g** *22/16*

**U.S. Cl. 260—75 NH** **10 Claims**

Linear thermoplastic polyaddition products which are soluble in organic solvents are provided and a process for their preparation in which (1) diisocyanates are reacted with (2) compounds having a molecular weight of 400 to about 8000 and two terminal hydroxy groups and (3) the reaction product of (A) water and/or diols having a molecular weight below about 400 and/or diamines having a molecular weight below about 400 and/or hydrazines having a molecular weight below about 400 and (B) a lactam having the formula



wherein X is CH or nitrogen with the proviso that when X is CH, R is hydrogen and *m* is an integer of from 0 to 9 and when X is nitrogen, R is an aliphatic radical, an araliphatic radical or a pyridine radical which may also be substituted with a lower alkyl radical and *m* is 3; the molar ratio of chain lengthening agent (A) and lactam (B) being from about 0.1:1 to about 10:1. The products are eminently suitable for coatings, lacquers and impregnations.

### 3,758,445

### NOVEL POLYMERS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

**Hyman L. Cohen, James R. King, Jr., and Louis M. Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 709,812, Mar. 1, 1968. This application Dec. 21, 1970, Ser. No. 100,487**

**Int. Cl. C08f** *27/08*

**U.S. Cl. 260—78 SC** **24 Claims**

Polymers comprising quaternary nitrogen atoms and at least two aromatic nuclei in the polymer cation for each quaternary nitrogen atom are described. In one embodiment at least ⅓ of the units of said polymer comprise quaternary nitrogen atoms. In another embodiment polymers comprising at least two aromatic nuclei in the polymer cation, such as aryl groups, for each quaternary nitrogen atom can be used in photographic elements to provide excellent mordants for dyes.

### 3,758,446

### PROCESS FOR CONTROLLING MOLECULAR WEIGHT OF ALPHA-OLEFIN POLYMERS

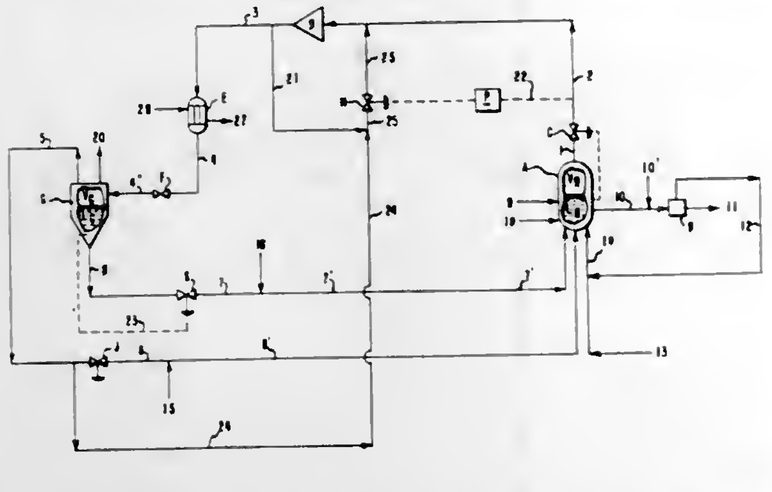
**Joseph F. Coughlin, Wilmington, and Richard J. Ruszkay, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed June 10, 1971, Ser. No. 151,649**

**Int. Cl. C08f** *15/40, 15/04, 3/02*

**U.S. Cl. 260—80.78** **11 Claims**

In a continuous process for polymerizing at least one gaseous $C_2$–$C_7$ alpha-olefin with a coordination catalyst in the presence of molecular hydrogen as a molecular weight regulator in a reactor containing a liquid and a gaseous phase, the improvement consisting essentially of compressing and partially condensing reactor off-gas, passing the resulting condensate and uncondensed gas to a reservoir from which both materials are recycled to the reactor, said reservoir containing sufficient condensate and uncondensed gas such that molecular hydrogen is present in the reservoir in an amount of at least 10% of the weight of molecular hydrogen in the reactor, and regulating polymer molecular weight by controlling the fraction of off-gas condensed.



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### 3,758,447

### FREE RADICAL POLYMERIZATION USING PERFLUOROALKYL MERCAPTANS AS CHAIN TRANSFER AGENTS

**Robert Allan Falk, New City, and Eduard Karl Kleiner, New York, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Filed Nov. 17, 1971, Ser. No. 199,791**

**Int. Cl. C08f** *15/16*

**U.S. Cl. 260—78.5 B 18 Claims**

Polymers having low free surface energies are derived from monomers which are capable of free radical polymerization and novel perfluoroalkyl mercaptans which act as chain transfer agents.

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### 3,758,448

### COPOLYMERS AND HYDROGELS OF UNSATURATED ESTERS

**Paul Stamberger, Baltimore, Md., assignor to Union Optics Corporation, Verona, Pa.**

**No Drawing. Filed Oct. 5, 1971, Ser. No. 186,821**

**Int. Cl. C08f** *15/16*

**U.S. Cl. 260—86.1 E 4 Claims**

Bulk polymerized, water insoluble but water swellable polymer of monomers comprising water soluble monoester of acrylic or methacrylic acid with a polyhydric alcohol; and glycidyl methacrylate, and/or glycidyl acrylate, and/or glycidyl crotonate. The polymer may be swelled in aqueous solution to provide a transparent hydrogel having excellent physical properties, and suitable in an ophthalmic lens.

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### 3,758,449

### DRILLING FLUID STABILIZER

**Lutz Hoppe, Walsrode, and Dieter Dobbertin, Fallingbostel, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany**

**No Drawing. Filed June 29, 1971, Ser. No. 158,065**

**Claims priority, application Germany, June 29, 1970, P 20 31 972.6**

**Int. Cl. C08f** *3/76, 15/38, 27/14*

**U.S. Cl. 260—85.5 R 7 Claims**

A drilling fluid stabilizer comprising a hydrolysis product of polyacryonitrile with an amount of hydrolysed and nonhydrolysed nitrile groups, the hydrolysed nitrile groups consisting of carboxylic acid amide groups and ammonium carboxylate groups.

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### 3,758,450

### PROCESS FOR THE PRODUCTION OF HYDROLYTICALLY RESISTANT FLUOROCARBONS

**John L. Margrave, Houston, Tex., and Richard J. Lagow, Cambridge, Mass., assignors to R. I. Patents, Inc., Houston, Tex.**

**Continuation-in-part of abandoned application Ser. No. 718,128, Apr. 2, 1968. This application Apr. 14, 1971, Ser. No. 133,865**

**Int. Cl. C08f** *27/03*

**U.S. Cl. 260—94.9 H 25 Claims**

A process for the treatment of fluorinated aliphatic and aromatic hydrocarbons, so as to produce hydrolytically resistant fluorocarbons which are color and thermally stable. The production of hydrolytically resistant fluorocarbons involves the elimination of easily hydrolyzable groups—fluorine atoms or $CF_3$ groups attached to tertiary carbon atoms. By treating fluorinated aliphatic and aromatic materials with a basic solution, preferably at a temperature above 50° C., these hydrolyzable groups are replaced by hydroxyl groups. After washing with water, the hydrolyzed materials are then placed in a reaction chamber and refluorinated to produce fluorocarbons without any hydroxyl groups or any easily hydrolyzable sites. In the refluorination of the hydrolyzed materials, fluorine gas or an inorganic fluoride gas is introduced into the atmosphere surrounding the hydrolyzed materials at a slow rate such that the initial concentration of the fluorinating gas is a mere trace and such concentration is less than 6% at the end of 30 minutes of fluorination. The introduction of the fluorinating gas is then continued at a slow rate to gradually increase the concentration thereof in said atmosphere until the concentration of the fluorinating gas is about 100%. The fluorination process is preferably conducted at atmospheric pressure and room temperature; however, higher temperatures up to the decomposition temperature of the material may be used. Aliphatic and aromatic compounds may also be initially fluorinated by the direct action of a fluorinating gas as outlined above, and then treated with a basic solution and refluorinated to eliminate easily hydrolyzable groups.

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### 3,758,451

### MAGNESIUM RESINATE OF DISPROPORTIONATED ROSIN

**Henry P. Weymann, Pensacola, Fla., assignor to Tenneco Chemicals Inc.**

**No Drawing. Filed June 14, 1971, Ser. No. 153,110**

**Int. Cl. C09f** *1/00*

**U.S. Cl. 260—105 4 Claims**

Disproportionated rosin having a Ball and Ring Softening Point below 60° C. is reacted with from 3 percent to 8 percent of its weight of a reactive magnesium compound in the presence of an acidic catalyst and a hydrocarbon solvent. The resulting magnesium resinates have high softening points and are compatible with a wide variety of elastomers.

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### 3,758,452

### DETOXIFICATION AND ISOLATION OF RAPESEED PROTEIN BY AQUEOUS SALINE EXTRACTION AND ISOELECTRIC PROTEIN PRECIPITATION

**David F. Owen, 18657 San Fernando Mission Blvd., Northridge, Calif. 91324**

**No Drawing. Filed Dec. 1, 1971, Ser. No. 203,842**

**Int. Cl. A23j** *1/14*

**U.S. Cl. 260—123.5 8 Claims**

A bland, non-toxic rapeseed protein isolate is produced by contacting rapeseed presscake with an aqueous saline extraction medium to extract rapeseed protein from the presscake, isoelectrically precipitating rapeseed protein from the extraction medium, washing the precipitated protein, and spray drying the protein. The spray dried rapeseed protein isolate has a high protein content, is substantially free of toxic material, and is suitable for use in food formulations intended for human consumption. The rapeseed presscake, after extraction, has a low level of toxic materials and is suitable for use as a feed supplement for animals.

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### 3,758,453

### STABLE FREE-RADICAL STRUCTURES PREPARED FROM SERUM ALBUMIN AND NITROSYL DISULFONATE

**Byrel D. Polis, Wyndmoor, Pa., assignor to the United States of America as represented by the Secretary of the Navy**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 74,487, Sept. 22, 1970. This application Feb. 22, 1972, Ser. No. 228,286**

**Int. Cl. C07g** *7/00*

**U.S. Cl. 260—121 1 Claim**

Subject disclosure relates to a stable free-radical product, its use to produce brain excitation in mammals when intravenously administered, and a method of preparing the free-radical product. The free-radical product is prepared from purified plasma proteins, pituitary peptides and other structures containing tyrosine or tryptophan by oxidation with a free-radical nitrosyl disulfonate product in alkaline solution under controlled conditions. Intravenous administration of the free-radical product into mammals causes a sudden electroencephalographic arousal accompanied by behavioral changes indicative of brain excitation. Illumination of the free-radical product by visible light prior to administration substantially enhances the arousal and brain excitation effects.

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### 3,758,454

### LINCOMYCIN-TYPE COMPOUNDS AND PROCESS FOR MAKING THEM

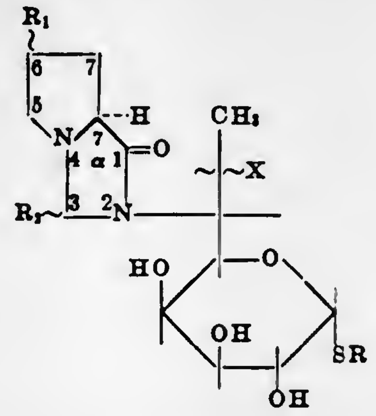
**Alexander D. Argoudelis and Barney J. Magerlein, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**No Drawing. Filed Mar. 12, 1971, Ser. No. 123,891**

**Int. Cl. C07c** *47/18*

**U.S. Cl. 260—210 R 20 Claims**

A 1′-demethyllincomycin-type compound is reacted with an aldehyde to form an antibacterially active alkyl 6 - deamino - 6-(tetrahydro-1-oxo-pyrrolo-imidazolyl)-α-thiolincosaminide of the formula



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where R, $R_1$ and X are radicals of the 1′-demethyllincomycin-type compound and $R_2$ is the radical of the aldehyde.

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### 3,758,455

### MYCOPHENOLIC ACID GLUCURONIDE AND THE PROCESS FOR THE PREPARATION THEREOF

**Masahiko Arita, Tokyo, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan**

**Filed May 4, 1971, Ser. No. 140,210**

**Claims priority, application Japan, May 14, 1970, 45/40,524**

**Int. Cl. C07c** *47/18*

**U.S. Cl. 260—210 R 2 Claims**

A novel compound 6 - [4′-O-(β-D-glucopyranuronosido) - 6′ - methoxy - 7′ - methyl-3′-oxophthalanyl-(5′)]-4-methyl-4-hexenoic acid which may be referred to as mycophenolic acid glucuronide having improved antitumor activity against mouse myeloid leukemia X-5563 and chemotherapeutic index is disclosed. The compound is prepared by reacting a mycophenolic acid alkyl ester or a salt thereof with a lower-alkyl-(2,3,4-tri-O-acetyl-α-D-glucopyranosyl halide)-uronate followed by hydrolysis.

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### 3,758,456

### BETA-D-RIBOHEPTOFURANOSYL NUCLEOSIDES

**Pieter C. Bax, Cupertino, and Margaret S. Henderson and David H. Rammler, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama**

**No Drawing. Filed July 16, 1971, Ser. No. 163,488**

**Int. Cl. C07d** *51/52, 51/54*

**U.S. Cl. 260—211.5 R 19 Claims**

Novel β-D-riboheptofuranosyl nucleosides and methods of preparing such compounds. The compounds are generally prepared via a Wittig type reaction with the corresponding known 5′-aldehyde ribofuranosyl nucleoside, thereby yielding the corresponding 5′, 6′-dideoxy-β-D-ribo-hepto-5′-enofuranosyluronate ester nucleoside or 6′ - cyano - 5′,6′-dideoxy-β-D-ribo-hepto-5′-enofuranosyl nucleoside. Derivatives of this nucleosides are then prepared by a number of selective reactions described herein. The novel nucleosides have the ability to inhibit the growth of microorganisms or are intermediates for such compounds.

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### 3,758,457

### PROCESS FOR RECOVERING REGENERATED CELLULOSE

**James Samuel Ten Broeck, Jr., Robert Bruce Perry, and Dale Roderic Laurance, Lawrence, Kans., and John Richard Fisher, Clinton, Iowa, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Jan. 25, 1972, Ser. No. 220,649**

**Int. Cl. B29h** *19/00*

**U.S. Cl. 260—212 14 Claims**

An improved process for recovering regenerated cellulose from softened and coated regenerated cellulose. The process comprises: (a) comminuting the softened and coated regnerated cellulose to chips, (b) humidifying the chips by adding water to the chips wherein the water swells the chips, (c) extracting both water and softener from the chips by flushing with a softener extraction agent, (d) removing the coating from the chips by flushing the chips with a coating solvent, (e) slurrying the chips in water and coating solvent, (f) selectively drying the slurry to remove the coating solvent leaving recovered regenerated cellulose chips. These recovered chips can be used in various ways such as an ingredient used in the preparation of carboxymethylcellulose or recycled back through a process of making regenerated cellulose. The softener, softener extraction agent, coating and coating solvent are also recovered and reused.

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### 3,758,458

### LOW D.P. HIGH D.P. VISCOSE MIXTURE USING HIGH CELLULOSE CONCENTRATION

**John Dyer, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa.**

**No Drawing. Filed Dec. 8, 1971, Ser. No. 206,204**

**Int. Cl. C08b** *9/00;* **D01f** *3/10*

**U.S. Cl. 260—212 10 Claims**

A mixture of viscose solutions suitable for preparing shaped regenerated cellulose articles wherein one viscose contains a medium to low cellulose content and the cellulose has a high molecular weight and the other viscose contains a large amount of cellulose which has a medium to low molecular weight, is disclosed herein.

**3,758,459**

### NOVEL DERIVATIVES OF 1-CINNAMYL BENZIMIDAZOLE, THEIR PROCESS OF PREPARATION AND THEIR THERAPEUTIC APPLICATION

**Claude P. Fauran, Paris, Jeannine A. Eberle, Chatou, Guy M. Raynaud, Paris, and Yves J. Bailly, Nanterre, France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine), France**

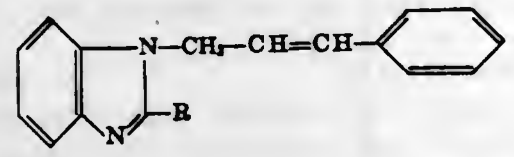
**No Drawing. Filed Nov. 26, 1971, Ser. No. 202,596**

**Claims priority, application France, Nov. 27, 1970, 7042636**

**Int. Cl. C07d** *49/38*

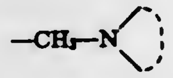
**U.S. Cl. 260—240 K** **9 Claims**

A compound of the formula

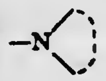


wherein

R is alkyl or hydroxyalkyl having 1 to 3 carbon atoms, or phenyl substituted with at least one alkoxy or at least one halogen, or benzyl disubstituted on the benzene ring with halogen and alkoxy, or



in which



is dialkylamino in which the two alkyls are identical, or piperidino, morpholino or pyrrolidino

is prepared by reacting the corresponding 2-substituted benzimidazole with cinnamyl chloride. The compounds possess hypotensive, vasodilatric, respiratory analeptic, analgesic, antiinflammatory, spasmolytic and diuretic properties.

**3,758,460**

### STYRYL COMPOUNDS

**Josef Schroeder, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

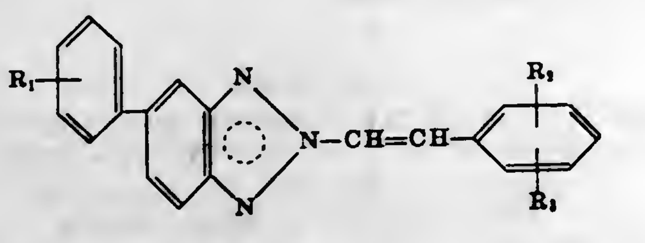
**No Drawing. Filed Oct. 22, 1970, Ser. No. 83,241**

**Claims priority, application Germany, Nov. 3, 1969, P 19 55 068.6**

**Int. Cl. C07d** *55/04*

**U.S. Cl. 260—240 D** **6 Claims**

2-styryl-compounds of the formula



in which $R_1$ denotes hydrogen, halogen, alkyl and alkoxy; and $R_2$ and $R_3$, independently of one another, stand for hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, aralkyl, aralkoxy, amino, acylamino, cyano, carboxy, alkoxycarbonyl, carbamoyl, sulpho, sulphamoyl, sulphonyl, or for optionally substituted pyrazole and triazole radicals, as well as their preparation and their use as optical brightening agents.

**3,758,461**

### DYES AND PHOTOGRAPHIC MATERIALS

**Arthur Fumia, Jr., Hilton, Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Application Mar. 25, 1970, Ser. No. 22,708, which is a continuation-in-part of application Ser. No. 860,395, Sept. 23, 1969, now abandoned. Divided and this application July 9, 1971, Ser. No. 161,333**

**Int. Cl. C09b** *23/00*

**U.S. Cl. 260—240.1** **5 Claims**

Novel tricarbocyanine dyes are provided having a 1-piperazinyl group attached to the meso carbon atom of the methine linkage of the dye. Light sensitive silver halide grains are spectrally sensitized with the tricarbocyanine dyes of this invention.

**3,758,462**

### TRI-ARYL-AZINES AS FLUORESCENT WHITENING AGENTS

**Adolf Emil Siegrist, Basel, Peter Liechti, Binningen, Erwin Maeder, Aesch, Basel-Land, Leonardo Guglielmetti, Birsfelden, and Hans Rudolf Meyer and Kurt Weber, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

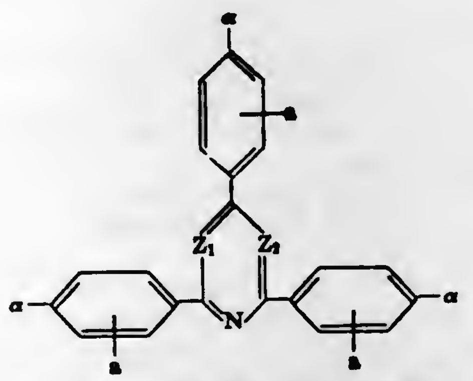
**No Drawing. Continuation-in-part of application Ser. No. 588,318, Oct. 21, 1966. This application Aug. 28, 1970, Ser. No. 67,967**

**Claims priority, application Switzerland, Oct. 28, 1965, 14,902/65; July 4, 1966, 9,649/66**

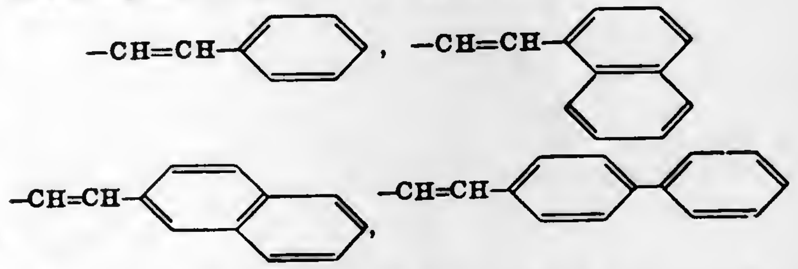
**Int. Cl. C09b** *23/00*

**U.S. Cl. 260—240 CA** **8 Claims**

The present invention relates to new compounds of the formula



in which a represents hydrogen, halogen, the methyl group or the methoxy group, $Z_1$ and/or $Z_2$ denotes a ring member =CH— or =N— and α represents a hydrogen atom, a phenyl residue or a residue of the series



in which (I) at least one residue α differs from hydrogen or phenyl and has the significance of one of the other residues quoted for α, and in which (II) terminal phenyl or naphthyl residues may contain alkyl, halogen or alkoxy groups. These new compounds represent valuable optical brightening agents.

**3,758,463**

### DICHLOROISOCYANURATE MANUFACTURE

**Sidney Berkowitz, Highland Park, N.J., and Milton A. Cohen, Nitro, and Paul R. Yochum, South Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.**

**Filed Dec. 29, 1970, Ser. No. 102,351**

**Int. Cl. C07d** *55/40*

**U.S. Cl. 260—248 C** **7 Claims**

A process is provided for producing salts of dichloroisocyanuric acid from cyanuric acid, including the improvement of recovering dissolved salt of dichloroisocyanuric acid from a process mother liquor by acidification. Dichloroisocyanuric acid is produced from cyanuric acid, chlorine and a suitable base. The dichloroisocyanuric acid is neutralized to the salt, which results in formation of a precipitate of the salt of dichlorocyanuric acid and in an aqueous mother liquor containing dissolved salt. Washing of the precipitated salt results in additional mother liquor containing dissolved salt. The mother liquor is acidified with a strong acid by the improved process of this invention and the dissolved salt is recovered as dichloroisocyanuric acid precipitate.

**3,758,464**

### PROCESS FOR PREPARING A STABILIZED BIOCIDAL COMPOSITION

**Hershel B. Prindle and Jack A. McElreath, Lake Jackson, and David R. Elliott, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Filed Oct. 27, 1969, Ser. No. 869,901**

**Int. Cl. C07d** *55/52*

**U.S. Cl. 260—248.5** **9 Claims**

Adducts of certain unsaturated halides with hexamethylenetetramine are known to be effective germicides when present in concentrations as low as 0.01 percent in water-containing organic mixtures. However, under certain conditions the compounds may undergo detrimental spontaneous exothermic decomposition. A composition which is stable while packaged and/or during storage is realized by the process of the present invention which comprises blending with adduct, during adduct preparation, an additament which eliminates or suppresses any self-propagating exothermic decomposition of the adduct.

**3,758,465**

### TRINUCLEAR COMPLEX MEROCYANINE DYES

**Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Original application July 31, 1967, Ser. No. 657,082, now Patent No. 3,576,639, dated Apr. 27, 1971. Divided and this application June 1, 1970, Ser. No. 54,044**

**Int. Cl. C09b** *23/10*

**U.S. Cl. 260—240.1** **13 Claims**

Trinuclear complex merocyanine dyes derived from 2-midazolin-4-ones, 2-imidazolin-4-thiones and 2-imidazolin-4-selenones are used advantageously as spectral sensitizing dyes in photographic image-forming materials.

**3,758,466**

### PYRROLE METHINE CATIONIC DYES

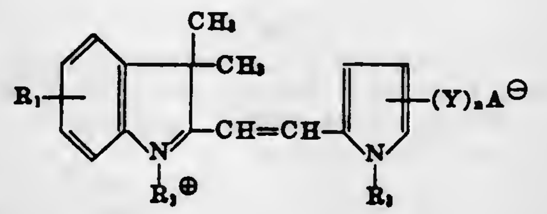
**John G. Fisher and Clarence A. Coates, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Dec. 13, 1971, Ser. No. 207,539**

**Int. Cl. C09b** *23/10*

**U.S. Cl. 260—240 E** **8 Claims**

Compounds of the formula



wherein

$R_1$ represents hydrogen, halogen, lower alkyl, lower alkoxy, or alkoxycarbonyl;

$R_2$ represents lower alkyl, lower substituted alkyl, or aryl;

$R_3$ represents hydrogen, lower alkyl, lower substituted alkyl, or aryl;

Y represents hydrogen, alkyl, alkoxy or phenyl;

*n* is 1, 2 or 3; and

A is a basic dye anion.

These compounds are useful as dyes for acrylic, modacrylic and acid-modified polyester textile fibers, yarns and fabrics.

**3,758,467**

### ANTHRAQUINONE DYESTUFFS

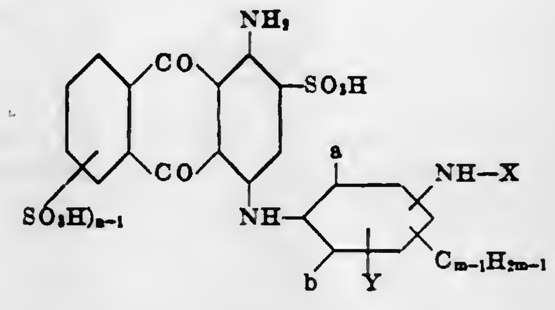
**Karl Seitz, Oberwil, Basel-Land, Guenter Klahre, Reinach, Basel-land, and Hans-Ulrich Schuetz, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 825,079, May 15, 1969. This application Aug. 11, 1971, Ser. No. 178,527**

**Int. Cl. C07d** *55/18*

**U.S. Cl. 260—249** **12 Claims**

Anthraquinone dyestuffs which correspond to the general formula



in which *m* and *n* each represents an integer not greater than 2, *a* and *b* each represents a low-molecular alkyl residue, X represents a 4-halogeno-1,3,5-triazine residue bound at 6-position to the NH group through the ring carbon atom and which carries an etherified hydroxyl group at 2-position, and Y represents a sulphonic acid group, a low-molecular alkyl group or a hydrogen atom, are valuable dyestuffs of increased reactivity suitable for printing cotton and regenerated cellulose. The prints obtained with said dyestuffs are distinguished by their very good fastness to light and by their outstanding properties of wet fastness.

**3,758,468**

### 1-ALKYL-6-AZAURACIL COMPOUNDS AND PREPARATIONS

**Jasper Daams and Johannes Kuipers, Weesp, and Christoffel Willem Pluijgers, Utrecht, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**No Drawing. Filed June 17, 1970, Ser. No. 47,175**

**Claims priority, application Netherlands, June 18, 1969, 6909255**

**Int. Cl. C07d** *55/10*

**U.S. Cl. 260—248 AS** **4 Claims**

It has been found that 1-alkyl-6-azauracil compounds in which the alkyl group contains from 1 to 12 carbon atoms have a strong growth-inhibiting effect in plants, in particular grasses. After being worked up into the usual preparations the compounds can be used for keeping short vegetation, in particular turf. The practical use on lawns has the further advantage that the quality of the turf is improved.

**3,758,469**

### s-TRIAZINES

**Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.**

**No Drawing. Filed Oct. 14, 1971, Ser. No. 189,405**

**Int. Cl. C07d** *55/20*

**U.S. Cl. 260—249.9** **50 Claims**

Novel 2-amino-4-anilino - 6 - substituted 1,3,5-triazines, processes for preparing the same and their method of treatment of hypertension as medicinal agent are described. The compounds of this invention are useful in the treatment of gastrointestinal hyperacidity and ulceration. These compounds also have utility as antihypertensive agents.

### 3,758,470
### TRIAZINYL-ANTHRAQUINONES

**Hans Ackermann, Bottmingen, Herbert Seiler, Riehen, and Paul Dussy, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

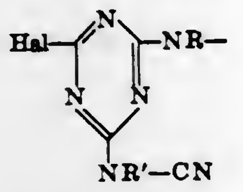
**No Drawing. Filed Oct. 16, 1970, Ser. No. 81,598**

**Claims priority, application Switzerland, Oct. 17, 1969, 15,581/69**

**Int. Cl. C07d** *55/20*

**U.S. Cl. 260—249** **2 Claims**

New fibre reactive azo, anthraquinone, formazane and phthalocyanine dyestuffs are described which possess as fibre reactive moiety a cyanamide-triazinyl grouping of the formula



wherein R and R′ represent hydrogen or lower alkyl, bound via the —NR-grouping to a ring carbon atom of the aforesaid dyestuff.

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### 3,758,471
### TRIAZINE DERIVATIVES

**Tsutomu Irikura, Yasuo Abe, Kyuya Okamura, Kyoichi Higo, Akitoshi Maeda, and Fumihiko Morinaga, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha**

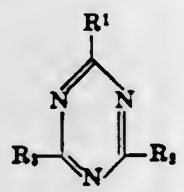
**No Drawing. Continuation of abandoned application Ser. No. 808,683, Mar. 19, 1971. This application June 15, 1971, Ser. No. 153,396**

**Claims priority, application Japan, Apr. 10, 1968, 43/23,906, 43/23,907; June 6, 1968, 43/38,831; June 28, 1968, 43/44,996**

**Int. Cl. C07d** *55/20, 55/22*

**U.S. Cl. 260—249.6** **3 Claims**

Novel s-triazine derivatives having anti-inflammatory and anti-atherosclerotic activity and of the formula



wherein

- $R_1$ stands for phenethylamino, aralkylamino, pyrrolidino, piperidino, 2-ketopiperazine-4-yl, cyclohexylamino or straight or branched hexylamino;
- $R_2$ stands for amino, aralkylamino, pyrrolidino, piperidino, 2-ketopiperazine-4-yl, cyclohexylamino or straight or branched hexylamino; and
- $R_3$ stands for straight or branched alkyl of from 1–6 carbon atoms, pyrrolidino, piperidino, 2-ketopiperazine-4-yl or $NR_4R_5$ in which $R_4$ is hydrogen or straight or branched alkyl of from 1–6 carbon atoms and $R_5$ is straight or branched alkyl with from 1–6 carbon atoms, with the proviso that
  - (a) when $R_1$ is phenethylamino, $R_2$ is amino and $R_3$ is straight or branched alkyl of from 2–6 carbon atoms;
  - (b) when $R_1$ is aralkylamino, pyrrolidino, piperidino or 2-ketopiperazine-4-yl, $R_2$ is the same or one of said groups and $R_3$ is straight or branched alkyl of from 1–6 carbon atoms;
  - (c) when $R_1$ is cyclohexylamino or straight or branched hexylamino, $R_2$ is the same or one of said groups and $R_3$ is straight or branched alkyl of from 1–6 carbon atoms; and
  - (d) when $R_1$ is cyclohexylamino, $R_2$ is amino and $R_3$ is pyrrolidino, piperidino, 2-ketopiperazine-4-yl or $NR_4R_5$, wherein $R_4$ and $R_5$ have the above meaning.

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### 3,758,472
### PREPARATION OF 2-ALKOXY-4-HYDROXYPYRIMIDINES

**Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed Dec. 9, 1970, Ser. No. 96,578**

**Claims priority, application Great Britain, Dec. 10, 1969, 60,324/69**

**Int. Cl. C07d** *51/38*

**U.S. Cl. 260—251 R** **4 Claims**

2 - alkoxy - 4 - hydroxypyrimidines (useful as intermediates in the production of 2-alkylamino - 4 - hydroxypyrimidines) are obtained by interaction of O - alkyl isoureas and 2-substituted-aminoalk-1-ene-1-carboxylates in the presence of a base.

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### 3,758,473
### 2-ACYLIMINO-1,3-DIAZACYCLOALKANES

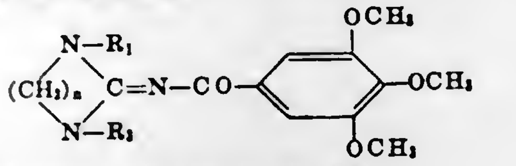
**Robert Armistead Lucas, Mendham, and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 129,185, Mar. 29, 1971, which is a continuation-in-part of application Ser. No. 26,433, Apr. 7, 1970, which is a continuation-in-part of application Ser. No. 884,322, Dec. 11, 1969, now Patent No. 3,627,889, which in turn is a continuation-in-part of application Ser. No. 839,704, July 7, 1969, now Patent No. 3,655,895. This application June 29, 1971, Ser. No. 158,115**

**Int. Cl. C07d** *49/30, 51/18, 53/07*

**U.S. Cl. 260—256.4 H** **5 Claims**

1 - $R_1$-2-trimethoxybenzoylimino-1,3-diazacycloalkanes, e.g. those of the formula



$R_1$=aliphatic or cycloaliphatic radical.
$R_3$=H, alkyl or alkanoyl
$n$=2–4
or salts thereof exhibit hypnotic effects.

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### 3,758,474
### PROCESS FOR THE PRODUCTION OF 2-ARYL-3-IMINO-s-TRIAZOLO-[4,3-α] - 5 - METHYL-7-HYDROXY-PYRIMIDINES

**Erik Herkenrath, Litterna, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais (Direction), Basel, Switzerland**

**No Drawing. Filed Jan. 22, 1971, Ser. No. 108,949**

**Claims priority, application Switzerland, Jan. 27, 1970, 1,084**

**Int. Cl. C07d** *51/46*

**U.S. Cl. 260—256.4 F** **5 Claims**

Process for the preparation of 2-aryl-3-imino-s-triazolo-[4,3-α]-5-methyl-7-hydroxy pyrimidines by reaction of diketene with 3,5-diamino-1-aryl-1,2,4-triazoles, which may be formed by reaction of an aryl hydrazine and dicyano-diamide. The compounds are useful in the photographic arts as fog inhibitors.

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### 3,758,475
### PYRIDO[2,3-d]PYRIMIDIN-2-ONES

**Goetz E. Hardtmann, Florham Park, N.J., and Hans Ott, Pfeffingen, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.**

**No Drawing. Continuation-in-part of application Ser. No. 870,445, Oct. 20, 1969, which is a continuation-in-part of application Ser. No. 782,743, Dec. 10, 1968, both now abandoned. This application July 20, 1971, Ser. No. 164,453**

**Int. Cl. C07d** *57/20*

**U.S. Cl. 260—256.4 F** **15 Claims**

Compounds are of the class of 1-substituted-4-aryl-pyrido[2,3-d]pyrimidin-2-ones, which are useful as anti-inflammatory agents. Intermediates for preparation include 1 - unsubstituted-4-aryl-pyrido[2,3-d]pyridimin-2-ones and pyridyl-phenyl ketone imines.

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### 3,758,476
### 2-(THIENYL-3′-AMINO)-1,3-DIAZACYCLOALKENES

**Robert Rippel, Hofheim, Taunus, Heinrich Ruschig, Bad Soden, Taunus, and Ernst Lindner and Manfred Schorr, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

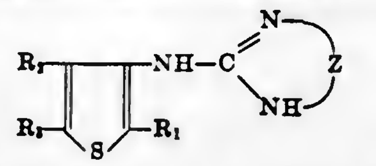
**No Drawing. Filed Aug. 6, 1970, Ser. No. 61,853**

**Claims priority, application Germany, Aug. 16, 1969, P 19 41 761.9**

**Int. Cl. C07d** *99/06*

**U.S. Cl. 260—256.5 R** **1 Claim**

2-(thienyl-3′-amino)-diazacycloalkenes of the formula



having hypotensive properties, in which $R_1$, $R_2$ and $R_3$ are hydrogen, lower alkyl, halogen, cyano or phenyl or $R_2$ and $R_3$ together are trimethylene or tetramethylene, Z is alkylene of 2–4 carbon atoms of which 2–3 are in the ring, and their acid addition salts. Processes for the preparation of the above compounds.

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### 3,758,477
### 1-ACYL-URACIL HERBICIDAL COMPOUNDS

**Adolf Zeidler, Ludwigshafen, Hans Kiefer, Wachenheim, Adolf Fischer, Mutterstadt, and Hans-Dieter Hoffmann and Franz Merger, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed July 30, 1971, Ser. No. 167,844**

**Claims priority, application Germany, Aug. 25, 1970, P 20 41 996.9**

**Int. Cl. C07d** *51/30*

**U.S. Cl. 260—260** **4 Claims**

Uracil compounds which are substituted in the 1-position by substituted acyl radicals and which have a good herbicidal action.

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### 3,754,478
### PROCESS OF OBTAINING TABERSONINE

**Jacques Emile Poisson, 6 Avenue Georges Clemenceau, Sceaux, France**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 810,845, Mar. 26, 1969. This application July 16, 1971, Ser. No. 163,506**

**Int. Cl. C07d** *33/48*

**U.S. Cl. 260—287 R** **6 Claims**

Multi-step extraction process for obtaining tabersonine from alkaloid containing plant seeds of the Apocynaceae family: containing plant seeds Voacanga, Amsonia, and Stemadenia. Extraction is performed successively by solvents of decreasing selectivity in relation to the amounts of non-alkaloid materials, fatty materials, and other harmful substances in the drug or vegetable raw material.

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### 3,758,479
### NITRO AND SULPHAMOYL SUBSTITUTED DIBENZODIAZEPINES

**Jean Schmutz and Fritz Hunziker, Bern, Switzerland, assignors to Sandoz-Wander, Inc.**

**No Drawing. Application Oct. 21, 1968, Ser. No. 769,373, now Patent No. 3,539,573, dated Nov. 10, 1970, which is a continuation-in-part of abandoned application Ser. No. 712,956, Mar. 14, 1968. Divided and this application July 6, 1970, Ser. No. 60,976**

**Claims priority, application Switzerland, Mar. 22, 1967, 4,103/67; May 9, 1967, 6,557/67; July 14, 1967, 10,115/67; Nov. 3, 1967, 15,453/67**

**Int. Cl. C07d** *51/70*

**U.S. Cl. 260—268 TR** **3 Claims**

2 nitro and 2 - dimethylaminosulfonyl-11-(piperazinyl and 4 - methyl piperazinyl)-dibenzo[b,e][1,4]diazepines are prepared. They are useful as C.N.S. agents.

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### 3,758,480
### s-TRIAZOLO[5,1-a]ISOQUINOLINES AND DERIVATIVES THEREOF

**Hans K. Reimlinger, Brussels, and Jan Joseph Maurice Vandewalle, Mortsel, Belgium, assignors to Mallinckrodt Chemical Works, St. Louis, Mo.**

**No Drawing. Filed July 10, 1968, Ser. No. 743,628**

**Int. Cl. C07d** *35/34*

**U.S. Cl. 260—288 R** **1 Claim**

s-Triazolo[5,1-a]isoquinolines are prepared by cyclization of a N-(1-isoquinolyl)amidine. 5,6-dihydro-s-triazolo [5,1-a]isoquinolines are prepared by reducing the s-triazolo[5,1-a]isoquinolines. The novel compounds of the invention are useful as antioxidants, corrosion inhibitors, as reaction intermediates, and as acid acceptors.

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### 3,758,481
### N-[2,4-DICHLORO - 5-(HALOALKOXY)-PHENYL-CARBAMOYL]-PYRROLIDINE OR PIPERIDINE

**Masahiro Hya, Junichi Saito, Nobu Fukazawa, Tatsuo Tamura, Kazuo Kurihara, and Norihisa Morishima, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

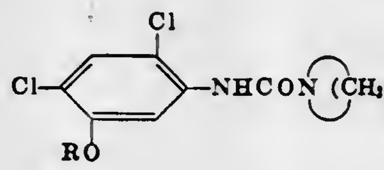
**No Drawing. Filed June 16, 1972, Ser. No. 263,510**

**Claims priority, application Japan, June 30, 1971, 46/47,164**

**Int. Cl. C07d** *29/30*

**U.S. Cl. 260—293.77** **11 Claims**

New urea compounds of the formula



wherein

R is halogen-substituted lower alkyl, i.e., alkyl of from 1 to 6, preferably 1 to 4, carbon atoms, and
$n$ is 4 or 5

are cxcellent herbicides, particularly selective herbicides usable in rice cultivation.

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### 3,758,482
### HALOPYRIDYL THIOCYANATES

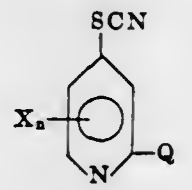
**Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Filed June 30, 1971, Ser. No. 158,568**

**Int. Cl. C07d** *31/48*

**U.S. Cl. 260—294.8 G** **7 Claims**

Compounds corresponding to the formula



wherein each X independently represents chloro or bromo; $n$ represents an integer of from 1 to 3; and Q represents cyano (—CN), trifluoromethyl (—$CF_3$), methylsulfonyl (—$SO_2CH_3$), chloro or bromo are prepared and are useful as bactericides and fungicides.

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### 3,758,483
### TETRAHYDROPYRIDINE DERIVATIVES

**Albrecht Edenhofer, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**No Drawing. Filed May 28, 1971, Ser. No. 148,119**

**Int. Cl. C07d** *31/44*

**U.S. Cl. 260—295 AM** **6 Claims**

Tetrahydropyridine derivatives and processes for the preparation thereof are disclosed. These tetrahydropyridine compounds are useful as psychosedative agents.

### 3,758,484

## 3-β-ACETOXY 11-OXO NOROLEANENE-(12) 20β-CARBOXYLIC ACID N-METHYL PIPERIDOL-(4) ESTER

**Helmut Kraft, Neckarhausen, Frank Zimmermann, Mannheim, and Hans-Peter Hofmann, Ludwigshafen, Germany, assignors to Knoll AG, Chemische Fabriken, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed Aug. 25, 1971, Ser. No. 174,924**

**Claims priority, application Germany, Sept. 2, 1970, P 20 43 479.1**

**Int. Cl. C07d** *29/24*

**U.S. Cl. 260—293.56** **3 Claims**

3-β-acetoxy 11-oxo noroleanene-(12) 20β-carboxylic acid N-methyl piperidol-(4) ester and physiologically tolerable acid addition salts thereof that are orally administerable and have superior inflammation inhibiting effects are prepared by reacting 3β-acetoxy 11-oxo noroleanene-(12) 20β-carboxylic acid or a functional derivative thereof with N-methyl piperidol-(4).

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### 3,758,485

## FURAN CARBOXYLIC ACID PYRIDYLAMIDES

**Stanislaw Biniecki, Platnicza str. 38; Piotr Kubikowski, Kredytowa str. 8, m. 7; Wojciech Kostowski, Kredytowa str. 2, m. 20; Wanda Modrzejewska, Grochowska str. 221, m. 13; and Pawel Nantka-Namirski, Swierczewskiego str. 82, m. 122, all of Warsaw, Poland**

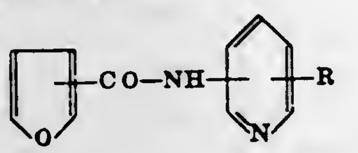
**No Drawing. Filed Mar. 8, 1971, Ser. No. 122,022**

**Claims priority, application Poland, Mar. 7, 1970, P 139,266; Aug. 26, 1970, P 145,224**

**Int. Cl. C07d** *31/44*

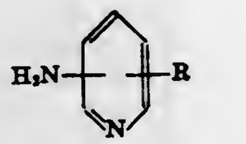
**U.S. Cl. 260—295 AM** **6 Claims**

Compounds of the formula:



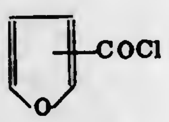
(I)

wherein R is hydrogen or a lower alkyl group of 1–4 carbon atoms and salts thereof are prepared by reacting a compound of the formula:



(II)

with a furan carboxylic acid chloride of the formula:



(III)

These compounds have long lasting pressure action and they are also central nervous system stimulants.

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### 3,758,486

## RARE EARTH NIOBATE COMPOSITION

**Richard C. Ropp, Warren, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**No Drawing. Filed May 13, 1969, Ser. No. 824,300**

**Int. Cl. C09k** *1/46*

**U.S. Cl. 252—301.4 R** **6 Claims**

Luminescent compositions of the system comprising yttrium, lanthanum, gadolinium, or combinations thereof, niobate activated by selected rare earth metals are specified. The orthoniobate is the preferred composition and is provided by utilizing a 1:1 gram atom ratio of yttrium, lanthanum, and gadolinium to niobium. Luminescent compositions of the system are all excited by ultraviolet radiation with the emission characteristic depending upon the particular selected rare earth metal activator.

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### 3,758,487

## THIAZOLO(THIONO)-PHOSPHORIC(PHOSPHONIC) ACID ESTERS

**Hellmut Hoffman, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

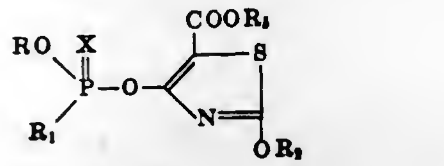
**No Drawing. Filed Dec. 16, 1971, Ser. No. 208,901**

**Claims priority, application Germany, Dec. 29, 1970, P 20 64 307.6**

**Int. Cl. C07d** *19/32*

**U.S. Cl. 260—302 E** **8 Claims**

Thiazolo(thiono)-phosphoric(phosphonic) acid esters of the general formula



(I)

in which

$R$, $R_2$ and $R_3$ are alkyl radicals with 1 to 6 carbon atoms,

$R_1$ is an alkyl or alkoxy radical with 1 to 6 carbon atoms, and

X is oxygen or sulfur,

which possess activity against acarids, bacteria, fungi, yeasts and insects.

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### 3,758,488

## PROCESS FOR PREPARING THIAZOLE DERIVATIVES

**Stephan P. Kukolja and Robert B. Morin, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**No Drawing. Original application May 16, 1969, Ser. No. 825,401, now Patent No. 3,702,328. Divided and this application July 1, 1971, Ser. No. 159,024**

**Int. Cl. C07d** *91/32, 99/10*

**U.S. Cl. 260—302 R** **5 Claims**

Process for preparing thiazolecarbonylamino-substituted butenoic acids and new thiazolecarbonylamino-substituted oxazolone compounds, e.g., 2 - [N-(2-phenoxymethyl-4-thiazolyl)carbonyl]amino-3-methyl-butenoic acid, and 2-(2' - phenoxymethyl-4'-thiazolyl)-4-isopropylidene-5-oxazolone by treating a 2-(2-substituted-amido-1-thioacetyl-2-ethenyl)-4-isopropylidene-5-oxazolone with acid or base, in an inert organic solvent, or in admixture with the alcohol of the desired ester, which products of the process can be used as antibiotics and anti-fungal agents, as intermediates in the synthesis of penicillin and cephalosporin compounds and as antiradiation chemicals.

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### 3,758,489

## 1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

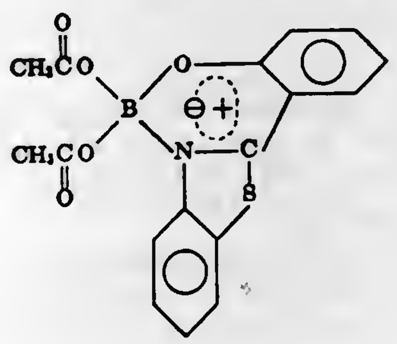
**Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Original application May 27, 1968, Ser. No. 732,045, now Patent No. 3,621,023, dated Nov. 16, 1971. Divided and this application Apr. 19, 1971, Ser. No. 135,360**

**Int. Cl. C07d** *107/02*

**U.S. Cl. 260—304** **1 Claim**

The 1,3,2-oxazaborinide of the formula



is characterized by affinity for polyesters, nylon and acetate when applied by disperse dyeing methods and fluoresces on the fibers.

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### 3,758,490

## PERFLUOROALKYLSULFONAMIDOBENZOTHIAZOLES

**Joseph Kenneth Harrington, Edina, Donald C. Kvam, North Oaks, Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**No Drawing. Application June 30, 1969, Ser. No. 837,900, now Patent No. 3,642,817, which is a continuation-in-part of abandoned application Ser. No. 588,338, Oct. 21, 1966. Divided and this application May 11, 1971, Ser. No. 142,379**

**Int. Cl. C07d** *91/46*

**U.S. Cl. 260—305** **2 Claims**

N-substituted perfluoroalkanesulfonamides in which the sulfonamide nitrogen substituent is benzothiazolyl, i.e. perfluoroalkylsulfonamidobenzothiazoles. Also included are processes for the preparation and use of said compounds. The compounds are active as anti-microbial agents and polymerization catalysts.

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### 3,758,491

## NOVEL ANTI-INFECTIVE AGENTS AND MEANS OF PRODUCING THE SAME

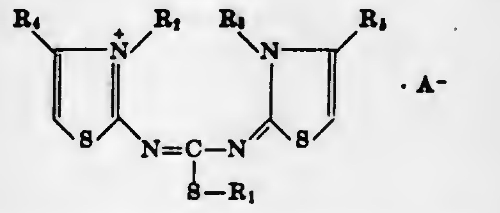
**David B. Capps, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 111,094, Jan. 29, 1971. This application Jan. 7, 1972, Ser. No. 216,281**

**Int. Cl. C07d** *99/06*

**U.S. Cl. 260—306.7** **21 Claims**

Novel thiazolium salts (I) having pharmacological



(I)

activity and being particularly useful as anti-infective agents, are provided by: (a) reacting the corresponding 2-[[bis(methylthio)methylene]amino]thiazolium salt and 2-imino-4-thiazoline, (b) reacting methyl iodide and a salt of the corresponding dithio-4-thiazoline-$\Delta^{2,N}$-carbamic acid with 2-imino-4-thiazoline, (c) reacting a compound $R_2X$ and the corresponding 3-(4-thiazolin-2-ylidene)-2-$R_1$-1-(2-thiazolyl)-2-thiopseudourea, (d) reacting a compound $R_1X$ and the corresponding 1,3-bis(3-substituted-4-thiazolin)-2-thiourea, or (e) converting a salt (I) or hydroxide thereof by means of anion exchange; where $R_1$ is a $C_1$–$C_{10}$ alkyl, —$CH_2CON$(lower alkyl)$_2$, —$CH_2COO$(lower alkyl), phenethyl, 2-phenoxyethyl, benzyl, α-methylbenzyl, mono- or dichlorobenzyl, or allyl group; $R_2$ and $R_3$ are the same or different and independently represent a $C_1$–$C_{10}$ alkyl, —$CH_2CH_2OCH_3$, —$CH_2CH_2OH$, benzyl, mono- or dichlorobenzyl, phenethyl, or 2-phenoxyethyl group, one of $R_2$ and $R_3$ additionally representing a —$CH_2CON$(lower alkyl)$_2$ or —$CH_2COO$(lower alkyl group); $R_4$ and $R_5$ are the same or different and independently represent H or $CH_3$; A is an anion; and X is a chloride, bromide or iodide ion or a tosylate or methanesulfonate group.

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### 3,758,492

## 1-(1,3,4-THIADIAZOL-2-YL)-IMIDAZOLIDINONE-(2) COMPOUNDS

**Carl Metzger, Wuppertal-Elberfeld, Dietrich Rucker, Bietigheim, near Ludwigsburg, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

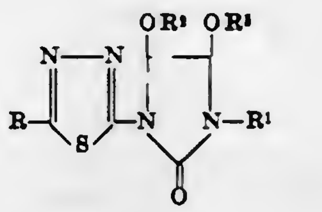
**No Drawing. Filed Mar. 16, 1971, Ser. No. 124,917**

**Claims priority, application Germany, Mar. 20, 1970, P 20 13 407.0**

**Int. Cl. C07d** *99/10*

**U.S. Cl. 260—306.8 D** **16 Claims**

Certain novel 1-(1,3,4-thiadiazol-2-yl)-imidazolidinone-(2) of the formula:

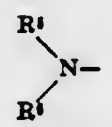


in which

R is hydrogen, alkyl, haloalkyl, cycloalkyl, alkoxy, alkoxyalkyl, halocycloalkyl, alkoxyalkylthio, optionally substituted aryl, alkenyl, alkynyl, alkylthio, alkenylthio, alkynylthio, aralkylthio, alkylsulfonyl, alkylsulfonyl, alkenylsulfoxy, alkenylsulfonyl, alkynylsulfonyl, alkynylsulfonyl, aralkylsulfoxyl or aralkylsulfonyl,

$R^1$ is lower alkyl, alkenyl or alkynyl,

$R^2$ is an acyl radical of the formula $R^4$ —CO— wherein $R^4$ is lower alkyl, haloalkyl, optionally substituted aryl, lower alkoxy or a radical of the formula



wherein $R^5$ is hydrogen, lower alkyl or possibly substituted aryl, and $R^6$ is alkyl or possibly substituted aryl, and

$R^3$ stands for any of the radicals for which $R^2$ may stand or lower alkyl or alkenyl;

are outstandingly effective herbicides with particularly selective action.

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### 3,758,493

## CARBOXYLIC ACID SALTS OF 1-AMINOALKYL-2-POLYMERIZED CARBOXYLIC FATTY ACID IMIDAZOLINES

**Jim Maddox, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.**

**No Drawing. Original application June 29, 1967, Ser. No. 649,823, now Patent No. 3,629,104. Divided and this application Dec. 17, 1970, Ser. No. 99,229**

**Int. Cl. C07d** *49/36*

**U.S. Cl. 260—309.6** **2 Claims**

Normal and acid salts of substituted imidazolines and saturated aliphatic mono- and dicarboxylic acids for use in compositions of water soluble corrosion inhibitors. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals in contact with sweet and sour petroliferous well fluids, form persistent films which afford protection against corrosion, even at elevated temperature.

### 3,758,494

### PROCESS FOR THE PREPARATION OF 5-(4-AMINOBUTYL)-HYDANTOIN

**Geertrudes H. Suverkropp, Geleen, and Werner Reichrath, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands**

**No Drawing. Filed Dec. 23, 1971, Ser. No. 211,712**

**Claims priority, application Netherlands, Dec. 23, 1970, 7018703**

**Int. Cl. C07d** *49/32*

**U.S. Cl. 260—309.5** **6 Claims**

A process is disclosed whereby 5-(4-aminobutyl)-hydantoin is prepared by the liquid phase hydrogenation of 5-(3-cyanopropyl)-hydantoin or a mixture of 5-(3-cyanopropyl)-hydantoin and 1-ureido-4-cyanovaleramide, in the presence of an inert solvent suspension of a hydrogenation catalyst.

### 3,758,495

### STABLE FREE RADICALS AND CORRESPONDING FREE RADICAL PRECURSORS

**Rein Virkhaus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 95,331, Dec. 4, 1970. This application Feb. 25, 1971, Ser. No. 119,052**

**Int. Cl. C07d** *49/34*

**U.S. Cl. 260—309.6** **10 Claims**

The preparation of certain novel aminoaryl-substituted 1-oxyl-3-oxide-2-imidazoline free radicals and the corresponding 1,3-dihydroxy-tetrahydroimidazole stable free radical precursors, useful in direct positive or negative image-forming systems, and methods for their preparation are disclosed.

### 3,758,496

### BENZYL 1,2,3,4-TETRAHYDROCARBAZOLE-3 OR 4-CARBOXYLATES

**Ernest John Alexander, East Greenbush, and Aram Mooradian, Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 42,620, June 2, 1970, now Patent No. 3,687,969. This application Nov. 18, 1971, Ser. No. 200,205**

**Int. Cl. C07d** *27/68*

**U.S. Cl. 260—315** **36 Claims**

Novel 9-aroyl-1,2,3,4-tetrahydrocarbazoles bearing a carboxy substituent at position 3 or 4 and corresponding esters having antiinflammatory activity, the preparation thereof and novel intermediates therefor are described.

### 3,758,497

### PROCESS FOR THE PRODUCTION OF DEEPLY COLOURED, TRANSPARENT PIGMENTS OF THE ISOINDOLINE SERIES

**Andre Pugin and Jost von der Crone, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 807,918, Mar. 17, 1969. This application July 12, 1971, Ser. No. 162,023**

**Claims priority, application Switzerland, Mar. 21, 1968, 4,328/68**

**Int. Cl. C08b** *45/66;* **C08c** *11/76;* **C09b** *7/02*

**U.S. Cl. 260—325** **8 Claims**

A process for the production of deeply coloured, transparent isoindoline pigments is described which comprises production of a salt of the pigment by reaction with a base, and subsequent conversion of the salt to the pigment in its free, acidic form. Processes of colouring printing inks, lacquers and synthetic plastics materials with the aid of the thus treated pigments of increased color-depth and transparency are also disclosed.

### 3,758,498

### PREPARATION OF MALEIMIDES

**Peter Pfuller, Burgkirchen an der Alz, and Wenzel Kuhn, Feldkirchen, near Munich, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Continuation of abandoned applications Ser. No. 718,254, Apr. 2, 1968, and Ser. No. 757,470, Sept. 4, 1968. This application Mar. 22, 1971, Ser. No. 126,990**

**Claims priority, application Germany, Apr. 27, 1967, F 52,260; Sept. 9, 1967, F 53,461**

**Int. Cl. C07d** *27/18*

**U.S. Cl. 260—326.5 FM** **9 Claims**

Preparation of N-substituted maleimides by heating the corresponding N-substituted maleamic acids or mono-ammonium maleic acid salts in the presence of steam to a temperature within the range of from about 100° to 400° C.

### 3,758,499

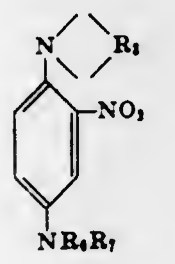
### HETEROCYCLIC NITRO-p-PHENYLENEDIAMINES

**Milos S. Bil, Forest Hills, N.Y., assignor to Clairol Incorporated, New York, N.Y.**

**No Drawing. Original applications Nov. 2, 1967, Ser. No. 683,758, now abandoned, and Apr. 8, 1968, Ser. No. 719,682, now Patent No. 3,632,582. Divided and this application Nov. 25, 1970, Ser. No. 92,868**

**Int. Cl. C07d** *27/04*

**U.S. Cl. 260—326.5 L** **1 Claim**



wherein:

(a) $R_1$ is a divalent aliphatic radical, and
(b) $R_6$ and $R_7$ are selected from the group consisting of hydrogen, alkyl and hydroxyalkyl, at least one of $R_6$ and $R_7$ being other than hydrogen.

### 3,758,500

### N-SULFONYL-INDOLE-3-ACETAMIDES

**Clarence Stanley Rooney, Beaconsfield, Quebec, and Clarence Henry Gleason, Montreal, Quebec, Canada, assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.**

**No Drawing. Filed Nov. 23, 1970, Ser. No. 92,210**

**Claims priority, application Canada, Feb. 3, 1970, 73,875**

**Int. Cl. C07d** *27/56*

**U.S. Cl. 260—326.12 R** **7 Claims**

Derivatives of indole-3-acetamide and indole-3-methylsulfonyl compounds are prepared which have utility as skeletal muscle stimulants.

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### 3,758,501

### SUBSTITUTED HETEROCYCLIC DERIVATIVES OF AZEPINE

**Martin Joseph Weiss, 975 Phyliss Lane, Oradell, N.J. 07649; Gabriel Joseph Gibs, 87 Violet Drive, Pearl River, N.Y. 10965; John Frank Poletto, 35 Nanuet Ave., Nanuet, N.Y. 10954; and William Alan Remers, 108 Pawnee Drive, West Lafayette, Ind. 47906**

**No Drawing. Filed Oct. 1, 1971, Ser. No. 185,876**

**Int. Cl. A61k** *27/00;* **C07d** *27/54*

**U.S. Cl. 260—326.9** **6 Claims**

This disclosure describes compounds of the class of substituted heterocyclic derivatives of azepine useful as antimicrobial agents.

### 3,758,502

### ORGANIC COMPOUNDS

**Fritz Seemann, 52 Spalenring, 4000 Basel, Switzerland, and Franz Troxler, 39 Drosselstrasse, 4103 Bottmingen, Switzerland**

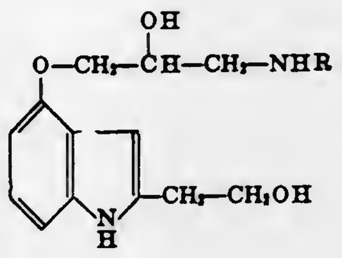
**No Drawing. Filed Sept. 22, 1971, Ser. No. 182,911**

**Claims priority, application Switzerland, Sept. 30, 1970, 14,465/70**

**Int. Cl. C07d** *27/52*

**U.S. Cl. 260—326.15** **2 Claims**

The invention concerns novel indole derivatives of the formula:



wherein R is alkyl of 1 to 6 carbon atoms, or alkinyl of 3 to 6 carbon atoms, wherein the carbon atom attached to the nitrogen atom is saturated.

A process for the production of the said compounds as well as intermediates therefor are described.

The compounds are useful in the prophylaxis and treatment of coronary diseases, such as angina pectoris, and heart rhythm disorders.

### 3,758,503

### 1,3-DITHIOLE DERIVATIVES FROM ACETYLENIC COMPOUNDS SUBSTITUTED WITH AT LEAST ONE ELECTRON-WITHDRAWING GROUP AND CARBON DISULFIDE

**Harris Dale Hartzler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed June 17, 1970, Ser. No. 47,111**

**Int. Cl. C07d** *71/00*

**U.S. Cl. 260—327 M** **5 Claims**

Acetylenic compounds $R^1C\equiv CR^2$, in which at least one of the $R^1$ and $R^2$ substituents is an electron-withdrawing group react with carbon disulfide to give dithiole compounds of three different formulas, their ratio depending on the reaction parameters. In the presence of a coreactant HX, a dithiole substituted with the X group in the 2-position is formed. In the presence of a carboxylic acid or of an ethylenic compound, acetylenic compounds $R^1C\equiv CR^1$ react with carbon disulfide to form other 2-substituted dithioles. The novel compounds of this invention are useful in removing tarnish from silverware.

### 3,758,504

### VINYLCYCLOPROPANECARBOXYLATES

**Masanao Matsui, Tokyo, and Yositose Okuno, Toyonaka, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan**

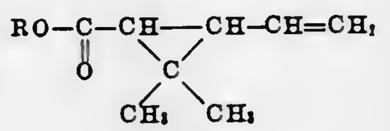
**No Drawing. Filed Mar. 16, 1971, Ser. No. 124,951**

**Claims priority, application Japan, Mar. 19, 1970, 45/23,731**

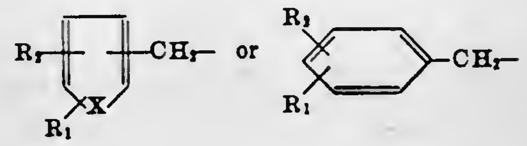
**Int. Cl. C07d** *63/12, 5/16;* **C07c** *69/74*

**U.S. Cl. 260—332.2 R** **7 Claims**

Vinylcyclopropanecarboxylates having an excellent insecticidal activity and a property harmless to mammals and cattles, of the formula,



wherein R is 2-propargyl-3-methyl-2-cyclopentene-1-one-4-yl,



wherein $R_1$ is allyl, propargyl, benzyl, thenyl, furylmethyl or phenoxy, $R_2$ is hydrogen, or $R_1$ and $R_2$ are bonded at respective ends to form a polymethylene group having 3 to 4 carbon atoms, and X is oxygen or sulfur.

### 3,758,505

### ANTHRAQUINONE DYES CONTAINING N-METHYLENELACTAM

**Charles H. Chang, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.**

**No Drawing. Filed Apr. 16, 1971, Ser. No. 134,852**

**Int. Cl. C07d** *27/08*

**U.S. Cl. 260—326.5 C** **4 Claims**

New anthraquinone compounds having an aryl radical bearing an N-methylenelactam substituent thereon. These compounds are used as dyes with excellent light and sublimation fastness for textile fibers such as polyesters.

### 3,758,506

### PHENOXYACETIC ACID DERIVATIVES

**Jean Jacques Godfroid, Noisy-le-Sec, and Jean Eugene Thuillier, Paris, France, assignors to C.E.R.P.H.A. (Centre Europeen de Recherches Pharmacologiques), Arcueil, Val-de-Marne, France**

**No Drawing. Filed Oct. 7, 1970, Ser. No. 78,976**

**Claims priority, application France, Oct. 10, 1969, 6934760**

**Int. Cl. A61k** *27/00;* **C07d** *63/12*

**U.S. Cl. 260—332.2 A** **5 Claims**

4 (2-furyl keto), (2 - thienyl keto) or 2(5 methyl thienyl keto), 2,3 dichloro phenoxyacetic acids, their alkali metal salts and pharmaceutically acceptable base addition salts, are valuable as strong diuretics.

### 3,758,507

## 1,2 - EPOXYMETHANO-A-NORSTEROID COMPOUNDS AND PROCESS FOR PREPARATION THEREOF

**Masaru Ogata, Kobe-shi, Japan, assignor to Shionogi and Company, Ltd., Osaka, Japan**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 583,054, Sept. 29, 1966. This application Dec. 30, 1969, Ser. No. 889,288**

**Claims priority, application Japan, Sept. 29, 1965, 40/59,897**

**Int. Cl. C07d** *3/00*

**U.S. Cl. 260—333** **11 Claims**

1,2-epoxymethano-A-norsteroid compounds containing 17 to 26 carbon atoms in the steroid nucleus and being optionally substituted at C–7 with methyl, C–9 with fluorine, C–11 with oxo or hydroxy, C–16 with methyl, hydroxy or esters or ethers thereof, C–17 with oxo or C–17$\alpha$ with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, hydroxy or esters or ethers thereof, C–17$\beta$ with hydroxy, esters or ethers thereof, acetyl, hydroxyacetyl, or conventional side chains or cholic acid or cholestane compounds, having hormonic activity, are prepared from the corresponding 2-lower hydrocarbonsulfonyloxymethyl- or halomethyl-A-norsteroid having a 1-hydroxy or ester substituent under basic conditions.

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### 3,758,508

## PROCESS FOR THE PREPARATION OF DESA-ANDROSTANES, PREGNANES, AND UNSATURATED DERIVATIVES THEREOF

**Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**No Drawing. Application June 17, 1968, Ser. No. 737,361, now Patent No. 3,704,324, which is a division of application Ser. No. 499,094, Oct. 20, 1965, now Patent No. 3,574,761, which in turn is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application May 24, 1971, Ser. No. 146,483**

**Int. Cl. C07d** *11/00*

**U.S. Cl. 260—338** **28 Claims**

This invention is directed to processes for the preparation of desA-androstanes, pregnanes and unsaturated derivatives thereof by pyrolyzing the alkali metal salt of the corresponding 3,5-seco-3-oic acid. The intermediates prepared in accordance with the process of this invention enable the preparation of 9$\beta$,10$\alpha$-steroids which are pharmacologically useful as anabolic, anti-androgenic, progestational and salt-retaining agents.

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### 3,758,509

## ARYL KETALS OF POLYCYCLIC OXO COMPOUNDS AND PROCESSES

**Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**No Drawing. Continuation-in-part of application Ser. No. 11,023, Feb. 12, 1970, which is a continuation-in-part of application Ser. No. 824,319, May 13, 1969, now Patent No. 3,544,600, dated Dec. 1, 1970, and abandoned application Ser. No. 825,389, May 16, 1969. This application Sept. 22, 1970, Ser. No. 74,519**

**Int. Cl. C07d** *13/13*

**U.S. Cl. 260—340.5** **13 Claims**

The intermediates and processes of this disclosure provide a new stereo-specific total synthesis of steroidal materials having known valuable pharmacological properties. A fundamental feature of this disclosure is the utilization of aryl ketals, preferably phenylenedioxy ketals derived from catechol as protective groups for oxo moieties in the polycyclic intermediates used in the aforesaid total synthesis.

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### 3,758,510

## PROCESS FOR PRODUCING FLUORINATED CYCLIC KETALS

**Serge Yvon Delavarenne, Wemmel, Belgium, assignor to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Filed July 30, 1970, Ser. No. 59,723**

**Int. Cl. C07d** *13/04*

**U.S. Cl. 260—340.9** **6 Claims**

Fluorinated cyclic ketals are produced by cyclizing a fluorinated hemiketal chloroformate with a base. For instance, 2,2-bis(trifluoromethyl)-1,3-dioxolane is produced by cyclizing the monochloroformate ester of 1,1-bis(trifluoromethyl)-1-(2-hydroxyethoxy)methanol by using a base such as triethylamine as the cyclizing agent.

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### 3,758,511

## PREPARATION OF d,l-ZEARALENONES

**Norman L. Wendler, Summit, David Taub, Metuchen, and Narindar Nath Girotra, Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**No Drawing. Original application Jan. 18, 1967, Ser. No. 609,995, now Patent No. 3,624,144. Divided and this application June 5, 1970, Ser. No. 57,392**

**Int. Cl. C07d** *9/00*

**U.S. Cl. 260—343.2 F** **6 Claims**

d,l-Zearalenone and mono- and di-ethers thereof, compounds havng anabolic, esterogenic and fertility control properties, are prepared by a total chemical synthesis. An aromatic ring component, a diether of 2-formyl-4,6-dihydroxy benzoic acid, is prepared by selective reduction of a diether of 3,5-dihydroxy phthalic anhydride; an aliphatic component, 2 - loweralkoxy-6-methyltetrahydropyran-2-butyl triphenyl phosphonium halide, is prepared via a sequence of reactions involving the condensation of 2-hydroxyhexanoic acid -$\delta$-lactone with pent-4-enyl magnesium bromide, subsequent treatment with alcoholic acid to form 2-(pent-4-enyl)-2-loweralkoxy-6-methyl tetrahydropyran, which substance is in turn ozonized, reduced with alkali metal borohydride, reacted with an alkyl or aryl sulfonyl halide, and then with sodium bromide or iodide to afford 2-($\delta$-halobutyl)-2-loweralkoxy-6-methyl tetrahydropyran, which latter substance is reacted with tri-aryl phosphine to afford the above-stated aliphatic component. The aromatic and aliphatic components are coupled and the resulting 1-(3,5-diether-6-carboxyphenyl)-10-hydroxy-1-undecen-6-one ring-closed with trifluoroacetic anhydride to yield d,l-zearalenone di-ether, which is cleaved with boron tribromide or pyridine hydrochloride to d,l-zearalenone.

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### 3,758,512

## HYDROGENATION CATALYST

**Junichi Kanetaka, Takashi Shimodaira, and Shoichiro Mori, Ibaragi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan**

**No Drawing. Continuation of abandoned application Ser. No. 865,966, Oct. 13, 1969. This application Feb. 22, 1972, Ser. No. 228,226**

**Claims priority, application Japan, Oct. 26, 1968, 43/78,068**

**Int. Cl. C07d** *5/06*

**U.S. Cl. 260—343.6** **1 Claim**

Nickel hydrogenation catalyst comprising nickel, molybdenum and rhenium.

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### 3,758,513

## CYCLO-SUBSTITUTED GAMMA-BUTYROLACTONES

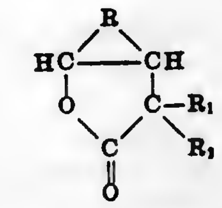
**El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of applications Ser. No. 799,944, Feb. 17, 1969, now abandoned, and Ser. No. 30,582, Apr. 21, 1970, which is a continuation-in-part of abandoned application Ser. No. 714,447, Mar. 20, 1968. This application Aug. 31, 1971, Ser. No. 176,687**

**Int. Cl. C07d** *5/34*

**U.S. Cl. 260—343.3** **8 Claims**

This specification discloses cyclo-substituted gamma-butyrolactones having the formula:



In this formula, R may be $\leftarrow CH_2 \rightarrow_n$ wherein *n* is a whole number and is at least 6 but not greater than 15, an alkylene group containing at least 3 but not more than 10 carbon atoms, or a butyrolactone connected through its beta and gamma carbon atoms with 1 to 8 —$CH_2$— groups interposed between either or both its beta or gamma carbon atoms. $R_1$ and $R_2$ may be hydrogen, chlorine, or a hydrocarbyl, carboxyl, amido, cyano, isocyano, or nitro group or may be an alkyl group substituted by any of the latter five groups. $R_1$ may be the same as or different from $R_2$. These lactones have various uses such as antiwear additives for hydrocarbon fuels, as inhibitors of oxygen corrosion of iron, and as a precursor for the preparation of antioxidants for hydrocarbon fuels and lubricants.

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### 3,758,514

## SUBSTITUTED BUTYROLACTONES DERIVED FROM NON-CONJUGATED POLYOLEFINS

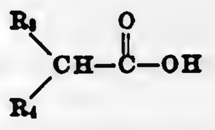
**El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of applications Ser. No. 799,938, Feb. 17, 1969, now abandoned, and Ser. No. 30,582, Apr. 21, 1970, which is a continuation-in-part of abandoned application Ser. No. 714,447, Mar. 20, 1968. This application Oct. 15, 1971, Ser. No. 189,741**

**Int. Cl. C07d** *5/06*

**U.S. Cl. 260—343.6** **5 Claims**

This specification discloses substituted butyrolactones having as substituents on the gamma carbon atom an alkenyl group, a butyrolactone-substituted alkyl group, or a butyrolactone-substituted alkenyl group. These compounds are formed by reacting an aliphatic non-conjugated polyolefin of 6 or more carbon atoms with a carboxylic acid having the formula



$$\begin{matrix} R_3 \\ R_4 \end{matrix}\!\!>\!CH-\overset{\overset{\displaystyle O}{\|}}{C}-OH$$

in the presence of a reducible metal ion of higher valent form such as managanic ion, $Mn^{+3}$. $R_3$ and $R_4$ may be hydrogen or an alkyl or cyano group containing in both groups a total of not more than 3 carbon atoms. $R_3$ may be the same as or different from $R_4$. Certain of these compounds can be polymerized, or copolymerized, with other olefinic materials, to form polymers, or copolymers, which can be employed in the manufacture of fibers. Certain of these compounds also can be reacted with an O,O-(dialkyl)phosphorodithioic acid to form an addition product which is useful as an antifriction agent for lubricating oils or as an insecticide or a herbicide. Other of these compounds can be hydrolyzed with an acid such as hydrochloric acid to form polyhydroxy, polycarboxylic acids which can be used for preparing alkyd resins.

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### 3,758,515

## METHOD FOR MANUFACTURING TETRONIC ACID

**Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland**

**No Drawing. Filed May 26, 1970, Ser. No. 40,699**

**Int. Cl. C07d** *5/06*

**U.S. Cl. 260—343.6** **8 Claims**

Process for the preparation of tetronic acid in an alkyl ester of gamma-chloro-acetoacetic acid is reacted with an aryl amine to form a beta-arylamino crotonic acid lactone. This is reacted with an alkali metal hydroxide to form a salt of tetronic acid from which tetronic acid is obtained by acidification.

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### 3,758,516

## EPOXIDIZED HYDROCARBON AMIDES

**John B. Siddall and Jean Pierre Calame, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.**

**No Drawing. Application Apr. 21, 1969, Ser. No. 818,130, which is a continuation-in-part of application Ser. No. 618,339, Feb. 24, 1967, both now abandoned. Divided and this application Mar. 19, 1971, Ser. No. 126,270**

**Int. Cl. C07d** *1/20*

**U.S. Cl. 260—348 A** **6 Claims**

Hydrocarbon amides and N-substituted hydrocarbon amides containing at least 12 carbon atoms in the hydrocarbon backbone chain and alkyl substituents at the C–3, 7 and 11 positions and/or double bond unsaturation between C–2,3, C–6,7, and C–10,11, and/or substituents at at each of positions C–2,3,6,7,10 and 11 which are arthropod maturation inhibitors.

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### 3,758,517

## PREPARATION OF C-17$\alpha$ ALKYL SUBSTITUTED PROPADIENYL STEROIDS

**John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama**

**No Drawing. Continuation-in-part of application Ser. No. 45,566, June 11, 1970, which is a continuation-in-part of application Ser. No. 877,521, Nov. 17, 1969, which in turn is a continuation-in-part of application Ser. No. 817,563, Apr. 18, 1969. This application Nov. 23, 1971, Ser. No. 201,559**

**Int. Cl. C07c** *169/20*

**U.S. Cl. 260—397.4** **18 Claims**

Disclosed is a process for the preparation of alkyl substituted propadienyl steroids of the estrogen, estrane, and androstane series which contain optional substitution at other positions of the nucleus. This process involves treating a corresponding 3-(substituted propynyl) steroid wherein the substituent is halo, hydroxy or a conventional hydrolyzable ester or ether thereof, preferably bromo, chloro, or iodo, with a lithium dialkyl copper reagent. The 17$\alpha$-propadienyl products are useful as estrogenic, anti-androgenic, progestational and anti-fertility agents. Those in the 6,6-difluoro series are novel.

### 3,758,518

### CHLORINATED ALPHA-AMINOANTHRAQUINONES AND PROCESS FOR THEIR MANUFACTURE

**Hans Rudolf Rickenbacher, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

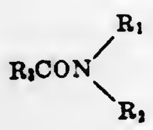
**Continuation-in-part of Ser. No. 798,787, Feb. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 488,242, Sept. 17, 1965, abandoned. This application Jan. 4, 1971, Ser. No. 103,787**

**Claims priority, application Switzerland, Sept. 29, 1964, 12682/64; Aug. 23, 1965, 11824/65**

**Int. Cl. C08b** *1/22*; **C09b** *1/50*

**U.S. Cl. 260–381** **7 Claims**

The invention relates to a process for the manufacture of a chlorine containing aminoanthraquinone, wherein a 1-monoaminoanthraquinone is subjected to the action of chlorine in the presence of N-methyl-pyrrolidone or a carboxylic acid amide of the formula



in which $R_1$ and $R_2$ denote alkyl or cycloalkyl groups of the groups $R_1$ and $R_2$ together with the nitrogen atom may form a 5- or 6-membered heterocyclic ring and $R_3CO$- represents the radical of an aliphatic-carboxylic acid.

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### 3,758,519

### DERIVATIVES OF DIPHENYLAMINE

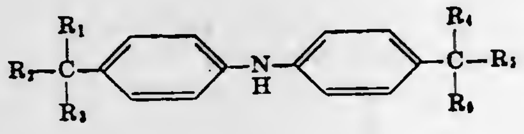
**Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.**

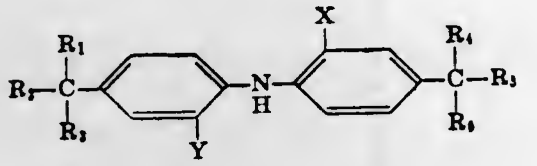
**Division of Ser. No. 787,577, Dec. 27, 1968, Pat. No. 3,649,690, which is a division of Ser. No. 540,817, April 7, 1966, Pat. No. 3,505,225. This application July 16, 1971, Ser. No. 163,443**

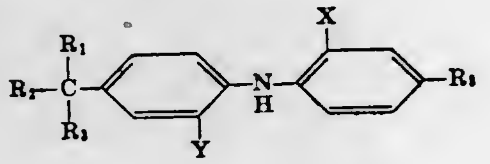
**Int. Cl. C09b** *11/12*

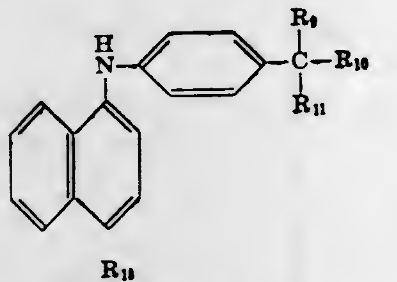
**U.S. Cl. 260—390** **3 Claims**

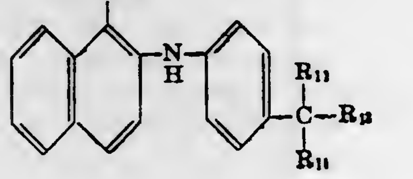
Derivatives of diphenylamine or phenylnapthyl-amine of the types











where $R_1$, $R_9$ and $R_{12}$ are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substituents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g., polypropylene) especially in combination with a dialkyl thiodipropionate. A typical antioxidant is 4,4'-bis-(alpha,alpha,p-trimethylbenzyl)diphenylamine made by reacting p,alpha-dimethylstyrene with diphenylamine.

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### 3,758,520

### PROCESS FOR THE PREPARATION OF BETA-NAPHTHOQUINONE SEMICARBAZONE

**Camille Alphonse Beaudet, Avenue A. Lancaster, 86 Uccle, Belgium**

**Filed July 23, 1971, Ser. No. 165,399**

**Int. Cl. C07c** *133/08*

**U.S. Cl. 260—396 N** **4 Claims**

A process for the preparation of β-naphthoquinone semicarbazone, which comprises reacting an aqueous solution of semicarbazide hydrochloride with a boiling ethanolic solution of β-naphthoquinone and taking care that the relative amounts of water and ethanol in the reaction mixture be in a volume ratio of from 40:100 to 360:100.

In this way, the β-naphthoquinone semicarbazone is obtained with great purity and high yield.

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### 3,758,521

### 17A-(5'-SUBSTITUTED-5'-HYDROXY-PENTA-1', 3'-DIYNYL)-STEROIDS

**Colin M. Burgess, Rickmansworth; Peter Feather, Guildford, and Philip H. Goatly, Buckhurst Hill, all of England, assignors to BDH Pharmaceuticals Limited, Edinburgh, England**

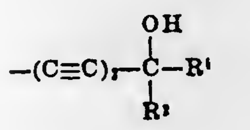
**Filed May 13, 1970, Ser. No. 37,035**

**Claims priority, application Great Britain, May 16, 1969, 25,228/69**

**Int. Cl. C07c** *169/08*

**U.S. Cl. 260—397.5** **7 Claims**

Compounds having sex hormonal activity consisting of steroid compounds processing a 17β-oxygen function and being substituted in the 17α-position by a group of the structure



$$-(C\equiv C)_2-\overset{OH}{\underset{R^2}{C}}-R^1$$

wherein

$R^1$ is selected from the group consisting of carbocyclic aryl, aralkyl, heterocyclic having 5 or 6 members and containing at least one hetero atom selected from O, N and S, alicyclic, alkenyl having two-five carbon atoms and alkyl having one-five carbon atoms;

$R^2$ is selected from the group consisting of hydrogen, carbocyclic aryl, aralkyl, heterocyclic having 5 or 6 members and containing at least one hetero atom selected from O, N and S, alicyclic, alkenyl having two-five carbon atoms and alkyl having one-five carbon atoms; or

$R^1$ and $R^2$ together with the carbon atom to which they are attached form an alicyclic ring.

The compounds exhibit an unusual separation of oestrogenic and anti-fertility activities (in rats) compared with ethynyl oestradiol.

### 3,758,522

### CERTAIN SULFAMYLBENZOIC ACIDS, ESTERS THEREOF, AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

**Peter Werner Feit, Gentofte, and Ole Bent Ivaermose Nielsen, Vanlose, both of Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark**

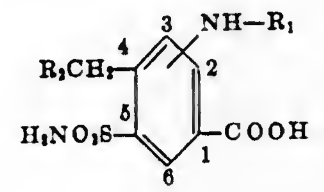
**Filed June 16, 1971, Ser. No. 153,879**

**Claims priority, application Great Britain, June 18, 1970, 29,742/70**

**Int. Cl. C07c** *143/78*

**U.S. Cl. 260—397.7** **24 Claims**

The invention relates to a series of new compounds, their salts and esters and to methods for the preparation of the compounds having the general formula:



in which the NH—$R_1$ group can be in the 2- or 3-position, $R_1$ represents an aliphatic radical with from three to eight carbon atoms in the chain, or a mononuclear aromatically or a mononuclear heterocyclically substituted methyl or ethyl group, and $R_2$ represents an unsubstituted or substituted phenyl group.

The compounds of the invention possess pronounced diuretic and saluretic activities.

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### 3,758,523

### PROCESS FOR THE PREPARATION OF DELTA 4-3-OXO-1-ALPHA-METHYL STEROIDS

**Rainer Philippson, Bergkamen, and Emanuel Kaspar, Kamen, both of Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany**

**Filed Sept. 10, 1971, Ser. No. 179,537**

**Claims priority, application Germany, Sept. 14, 1970, P 20 46 640.4**

**Int. Cl. C07c** *169/20*

**U.S. Cl. 260—397.3** **5 Claims**

$\Delta^4$-3-Oxo-1α-methyl steroids are produced by the reaction of $\Delta^{1,4}$-3-oxo steroids with dimethyllithium copper.

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### 3,758,524

### PROCESS FOR THE MANUFACTURE OF 21-FLUOROSTEROIDS

**Georg Anner, Basel, and Peter Wieland, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

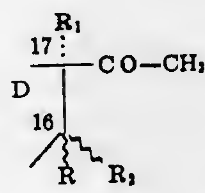
**Filed Dec. 30, 1970, Ser. No. 103,010**

**Claims priority, application Switzerland, Jan. 9, 1970, 241/70**

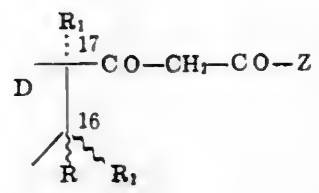
**Int. Cl. C07c** *169/30*

**U.S. Cl. 260—397.47** **27 Claims**

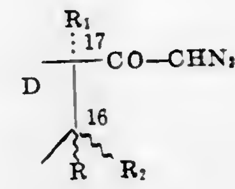
Process for the manufacture of 21-fluoro-20-oxopregnane compounds of the partial formula



wherein R denotes hydrogen and $R_1$ and $R_2$ each denote hydrogen or a hydrocarbon radical or $R_1$ together with R denotes a double bond, wherein a steroid of the following partial formula



wherein R, $R_1$ and $R_2$ have the same meaning as above and Z represents hydrogen or an esterified carboxyl group, is reacted with an agent which transfers diazo groups, the resulting 21-diazo 20-ketone of partial formula



is reacted with hydrogen fluoride and, if desired, functionally modified hydroxyl groups are converted into free hydroxyl groups or free hydroxyl groups are functionally modified at any desired stage.

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### 3,758,525

### PROCESS FOR PREPARING N-HIGHER ALIPHATIC ACYL ACIDIC AMINO ACIDS

**Ryonosuke Yoshida, Kanagawa; Ippei Yoshimura, Tokyo, and Masahiro Takehara, Kanagawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan**

**Filed Mar. 20, 1970, Ser. No. 21,283**

**Claims priority, application Japan, Apr. 1, 1969, 44/25036**

**Int. Cl. C08h** *3/00*

**U.S. Cl. 260—402.5** **6 Claims**

The halides of aliphatic carboxylic acids having 8 to 22 carbon atoms can be reacted with acidic amino acids to form N-acyl amino acids in very good yields if the reaction is carried out in an alkaline solvent medium of 20 – 85 percent (vol.) water and 80 – 15 percent acetone, methylethylketone, dioxane, tetrahydrofuran, tert-butanol, or cyclohexanone.

---

### 3,758,526

### PROCESS FOR PREPARATION OF B-CYANOETHYL ESTERS OF CARBOXYLIC ACIDS

**Yasuhiro Fujita, Otake, and Teijiro Morimoto, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan**

**Filed May 27, 1970, Ser. No. 41,043**

**Int. Cl. C09f** *7/00*

**U.S. Cl. 260—404** **1 Claim**

A process for the preparation of beta-cyanoethyl esters of carboxylic acids which comprises heating and reacting acrylonitrile and a carboxylic acid selected from the groups consisting of saturated aliphatic carboxylic acids having one to 20 carbon atoms, unsaturated aliphatic carboxylic acids having one to 20 carbon atoms, alicyclic carboxylic acids having six to 20 carbon atoms and aromatic carboxylic acids having seven to 20 carbon atoms in the presence of a copper derivative and metallic copper.

**3,758,527**

### ESTERS OF 1-AMINOALKYL-CYCLOALKANOLS

**Adrian Marxer, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

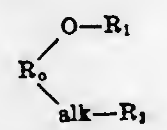
**Filed June 23, 1970, Ser. No. 49,184**

**Claims priority, application Switzerland, July 4, 1967, 10263/69; May 27, 1970, 8026/70**

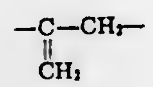
**Int. Cl. C07c** *91/00, 93/00, 93/24*

**U.S. Cl. 260—404** **6 Claims**

Compounds of the formula



in which $R_o$ stands for a cycloalkylidene radical with 10 to 14 ring members, $R_1$ stands for an acyl radical or hydrogen, alk stands for lower alkylene or the radical



$$-\underset{\underset{CH_2}{\|}}{C}-CH_2-$$

and $R_2$ for a tertiary amino group, are useful as antimicrobial agents.

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**3,758,528**

### TRICYCLIC COMPOUNDS

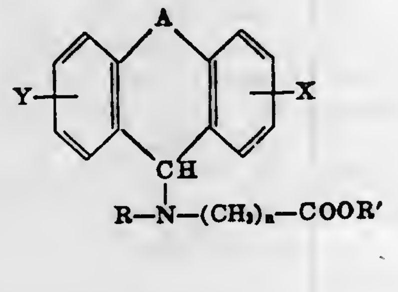
**Charles Malen, Fresnes; Bernard Danree, St. Germain en Laye, and Jean-Claude Poignant, Wissous, all of France, assignors to Societe en nom collectif Science Union Et Cie and Societe Francaise De Recherche Medicale, Suresnes, France**

**Filed Mar. 13, 1970, Ser. No. 19,503**

**Int. Cl. C11c** *3/00*

**U.S. Cl. 260—404** **5 Claims**

Tricyclic compounds of the formula :



wherein:

A is $-(CH_2)_m-$, $-CH=CH-$, $-(CH_2)_p-O-$, $-(CH_2)_p-S-$, $-(CH_2)_p-SO_2-$, $-(CH_2)_p-NR_1$ or $-SO_2-NR_2-$ in which $m$ is 1, 2 or 3, $p$ is 1 or 2, $R_1$ is hydrogen or lower alkyl and $R_2$ is lower alkyl ;

X and Y are hydrogen or halogen ;

R and R′ are hydrogen or lower alkyl, and

$n$ is an integer of from 1 to 12 inclusive.

These compounds possess psychostimulant, antidepressive, analgesic, antitussive, antihistaminic and gastric antisecretory properties.

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**3,758,529**

### ANTIBIOTIC THERMOZYMOCIDIN AND A PROCESS FOR ITS PREPARATION

**Renato Craveri, Milan; Pier Luigi Manachini, Cologno Monzese, Milan, and Fabrizio Aragozzini, Milan, all of Italy, assignors to Societa Italiana Resive S.I.R. S.p.A., Milan, Italy**

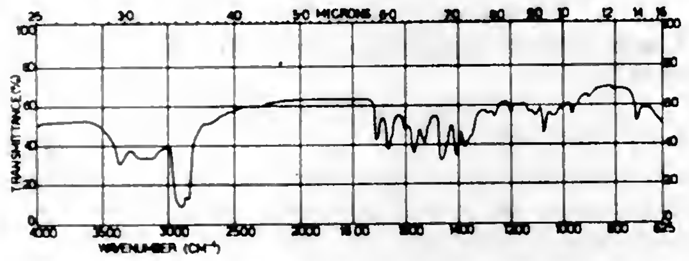
**Filed Mar. 15, 1972, Ser. No. 234,744**

**Claims priority, application Italy, Mar. 23, 1971, 22111 A/71**

**Int. Cl. C08h** *17/36*

**U.S. Cl. 260—404** **1 Claim**

A process for the manufacture of the antibiotic thermozymocidin which comprises the steps of cultivating the micro-organism belonging to the thermophilic eumycetes group and designated as ATCC No. 20349 in an aqueous nutrient medium containing a source of organic carbon and a source of organic or inorganic nitrogen, at a temperature of about 40°C, at a pH of from 6.5 to 7.5 and under submerged aerobic conditions and with agitation until a substantial antibiotic activity is imparted to the said medium, and isolating said thermozymocidin from the fermentation broth, is disclosed.



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**3,758,530**

### DIRECTED INTERESTERIFICATION OF GLYCERIDES OF FATTY ACIDS AND PRODUCTS THEREOF

**George Barsky, 50 E. 41st St., New York, N.Y.**

**Filed June 30, 1971, Ser. No. 158,617**

**Int. Cl. C11c** *3/10;* **A23d** *5/00*

**U.S. Cl. 260—410.7** **7 Claims**

In fatty glycerides prepared by esterification of mixed fatty acids and glycerine, the fatty acid radicals are randomly distributed among the glycerine molecules. Random distribution occurs when natural glycerides or mixtures of natural or other glycerides are interesterified, for example, by the addition of sodium methylate. To make a glyceride of a specific or a nonrandom distribution of fatty acid radicals, elaborate and costly methods must be used. This invention discloses that by conducting interesterification under high pressure, the distribution of the fatty acid radicals can be directed away from the random.

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**3,758,531**

### FUNCTIONAL BIS (PERFLUOROALKYLSULFONYL) ALKYL COMPOUNDS

**Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Division of Ser. No. 807,408, March 14, 1969, Pat. No. 3,704,311. This application May 1, 1972, Ser. No. 249,244**

**Int. Cl. C07c** *143/90*

**U.S. Cl. 260—400** **1 Claim**

Bis(perfluoroalkanesulfonyl)substituted methanes possessing reactible groups such as halogen, hydroxyl, carboxyl or ester groups or possessing carbon-to-carbon unsaturation are provided. The residual hydrogen of the methane is relatively acidic and the compounds form metallic and organic salts which are recoverable. The molecule with acid hydrogen can be further reacted by the reactible group to incorporate an acidic hydrogen in another molecule such as a polymer. The acidic hydrogen effects absorption of basic vapors such as ammonia, amines, etc. Bis(perfluoroalkylsulfonyl) bromomethanes add to olefinic double bonds.

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**3,758,532**

### PROCESS FOR IMPROVING THE COOKING STABILITY OF SOYBEAN OIL

**Walter P. Gibble, La Habra, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.**

**Filed Sept. 11, 1970, Ser. No. 71,328**

**Int. Cl. C09f** *5/10*

**U.S. Cl. 260—420** **19 Claims**

Unhydrogenated or partially hydrogenated refined soybean oil is degassed under vacuum to remove a substantial proportion of the air dissolved in the oil; the degassed oil is gassed with carbon dioxide and heated to a temperature above 100° C. in the presence of a copper chromite catalyst, optionally in the presence of activated charcoal. After the heat treatment the oil is cooled, filtered, bleached, and deodorized to yield the finished treated oil. The finished treated oil exhibits a frying and odor stability far surpassing soybean oil treated in any other manner.

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**3,758,533**

### TREATMENT OF TALLOW AND LIKE FATTY MATERIALS

**Sydney Lee, Worsley, England, assignor to Colgate-Palmolive Company, New York, N.Y.**

**Filed June 3, 1971, Ser. No. 149,760**

**Claims priority, application Great Britain, June 4, 1970, 27,026/70**

**Int. Cl. C09f** *1/02*

**U.S. Cl. 260—428** **8 Claims**

Fatty material such as tallow contaminated by synthetic polymeric impurities such as polyethylene is purified by adjusting the temperature to above the melting point of the fatty material but not above about 95°C, thereby rendering the impurities insoluble in the fatty material, and separating such insoluble materials.

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### ERRATUM

For Class 260—429 see:
Patent No. 3,758,341

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**3,758,534**

### PRODUCTION OF METAL CHELATES

**Felix B. Popper, and Albert H. Levesque, both of Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.**

**Division of Ser. No. 81,177, Oct. 15, 1970, Pat. No. 3,644,444, which is a continuation-in-part of Ser. No. 740,488, June 27, 1968, abandoned. This application Sept. 15, 1971, Ser. No. 180,836**

**Int. Cl. C07f** *3/00, 15/00*

**U.S. Cl. 260—429 J** **7 Claims**

An alkali metal salt of a polyvalent metal chelate of a chelating aminoacetic acid is formed by:

1. Boiling a mixture of; (a) water; (b) an amine precursor of the said acid; (c) formaldehyde; (d) a cyanide of the polyvalent metal; and (e) an alkali metal cyanide, and adding thereto the chelating aminoacetic acid in its free form to react with unreacted polyvalent metal cyanide
2. Boiling a mixture of; (a) water; (b) an amine precursor of the said acid; (c) formaldehyde; (d) a polyvalent metal hydroxide or oxide; (e) an an alkali metal hydroxide; and (f) hydrogen cyanide and adding thereto the chelating aminoacetic acid in its free form to react with unreacted polyvalent metal hydroxide or oxide.

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**3,758,535**

### PROCESS OF REACTING A SILICON COMPOUND WITH A TITANIUM COMPOUND

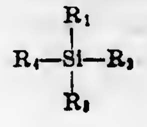
**Luis Vizurraga, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.**

**Continuation-in-part of Ser. No. 879,618, Nov. 24, 1969, abandoned. This application Nov. 2, 1970, Ser. No. 86,302**

**Int. Cl. C07f** *7/28*

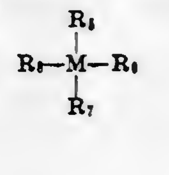
**U.S. Cl. 260—429.5** **6 Claims**

There is provided an improved polymerization catalyst which is the product of the process of reacting a first compound of the formula



$$R_4-\overset{\overset{R_1}{|}}{\underset{\underset{R_2}{|}}{Si}}-R_3$$

with a second compound of the formula



$$R_8-\overset{\overset{R_5}{|}}{\underset{\underset{R_7}{|}}{M}}-R_6$$

wherein:

1. M is selected from the group consisting of titanium, zirconium, germanium, silicon, antimony, lead, and tin;
2. $R_2$ and $R_4$ are selected from the group consisting of chlorine and hydroxy;
3. the remaining R substituents are selected from the group consisting of alkyl of 1 to about 18 carbon atoms, acyl of 1 to about 18 carbon atoms, alkoxy of 1 to about 18 carbon atoms, aryl of 6 to about 18 carbon atoms, aryloxy of 6 to about 18 carbon atoms, and hydrogen, provided that at least one of $R_5$, $R_6$, $R_7$, and $R_8$ is not hydrogen; and
4. in said reaction from about 1.1 to about 20 moles of said second compound per mole of said first compound are reacted for from about 2 to about 6 hours.

This catalyst is especially useful for the preparation of polyesters particularly linear fiber-forming polyesters.

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**3,758,536**

### PROCESS FOR PREPARING POLYMERIC HALO TIN THIOHYDROCARBYL CARBOXYLATES

**Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.**

**Continuation-in-part of Ser. No. 43,230, June 3, 1970, abandoned. This application July 16, 1971, Ser. No. 163,452**

**Int. Cl. C07f** *7/22*

**U.S. Cl. 260—429.7** **3 Claims**

This invention relates to novel compounds, oligomers, and polymers exhibiting at least one direct carbon to tin bond, at least one direct halogen to tin bond, at least one direct oxygen to tin bond, and at least one direct sulfur to tin bond, methods of preparing these novel compounds, and to polymers stabilized against the deteriorative effects of heat and light by two component compositions comprised at least in part of the novel compounds of this invention.

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**3,758,537**

### BIS[HYDROCARBYL(HALO)(MERCAPTO)TIN]OXIDE

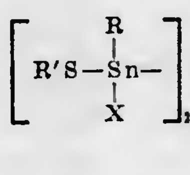
**Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., New York, N.Y.**

**Division of Ser. No. 43,231, June 3, 1970, abandoned. This application June 24, 1971, Ser. No. 156,527**

**Int. Cl. C07f** *7/22*

**U.S. Cl. 260—429.7** **8 Claims**

This invention comprises novel compounds of the formula:



$$\left[R'S-\overset{\overset{R}{|}}{\underset{\underset{X}{|}}{Sn}}-\right]_2O$$

wherein R and R′ are hydrocarbons and X is halogen, methods of preparing these novel compounds, and polymers stabilized by these novel compounds against the deteriorative effects of heat and light.

### 3,758,538

### $(CF_3)_2CFO^-AG^+$

**Morton H. Litt, and Francis W. Evans, both of Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Division of Ser. No. 492,276, Oct. 1, 1965, Pat. No. 3,453,333. This application Sept. 3, 1968, Ser. No. 778,887**

**Int. Cl. C07f** *1/10*

**U.S. Cl. 260—430** **1 Claim**

This invention relates to novel salts which are prepared by the reaction of a fluorine-containing perhalogenated ketone with a compound selected from the group consisting of potassium fluoride, silver fluoride, cesium fluoride, rubidium fluoride and tetraalkylammonium fluoride. These salts are useful for the preparation of fluorinated ethers which can be employed in the preparation of surfactants.

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### 3,758,539

### OFFRETITE SYNTHESIS FROM MINERALS

**William H. Flank, Broomall, Pa., assignor to Air Products and Chemicals Inc., Philadelphia, Pa.**

**Filed Mar. 9, 1971, Ser. No. 122,553**

**Int. Cl. B01j** *11/40*

**U.S. Cl. 252—455 Z** **3 Claims**

A synthetic offretite having a capacity for sorbing benzene and other large molecules is prepared from an aqueous nutrient containing tetramethyl ammonium hydroxide, potassium hydroxide, and a suitable mixture of reactive aluminosilicate minerals, usually comprising sorptive silica.

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### 3,758,540

### FERRIC CHELATES OF N-(2-HYDROXYBENZYL) SUBSTITUTED AMINOPOLY CARBOXYLIC ACIDS

**Arthur E. Martell, 1211 Orr St., College Station, Tex.**

**Continuation-in-part of Ser. No. 705,005, Feb. 13, 1968, Pat. No. 3,632,637. This application Oct. 9, 1970, Ser. No. 79,695**

**Int. Cl. C07f** *15/02;* **C07c** *101/72*

**U.S. Cl. 260—439 R** **3 Claims**

Soluble iron (III) chelates of N-(2-hydroxybenzyl) substituted aminopolycarboxylic acid ligands useful in plant nutrition as a source of iron.

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### 3,758,541

### ORGANOSILICON COMPOUNDS

**Grish Chandra; William John Owen, both of Renarth; Norman Cecil Lloyd, Radyr, and Bryan Ewart Cooper, Bridgend, all of Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England**

**Division of Ser. No. 59,701, July 30, 1970, Pat. No. 3,699,140. This application May 19, 1972, Ser. No. 254,983**

**Int. Cl. C07f** *7/08, 7/18*

**U.S. Cl. 260—448.2 Q** **5 Claims**

Organosilicon compounds, polymers and copolymers have been prepared containing acetylenic linkages between adjacent silicon atoms. The basic compounds are defined by the general formula $R'(R_2Si)_m(C\equiv C)—(C\equiv C)\ (SiR_2)_nR''$ where R' and R'' are each H, halogen, hydrocarbonoxy or $—NO_2$ as above defined, monovalent hydrocarbon or monovalent halogenohydrocarbon, *m* is 1 to 4, *n* is 0 to 4, R'' being H, alkyl, aryl or trihydrocarbylsilyl when *n* is 0. The polymers can be defined by the unit formula $(OSiR_2—C\equiv C—C\equiv C—SiR_2—)$ and may be copolymers containing units of the formula $Q_nSiO_{4-n}/2$ where Q is monovalent hydrocarbon or halogenohydrocarbon and *a* is 0 to 3.

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### 3,758,542

### PROCESS OF MAKING SILYL ESTERS OF PROSLAGLANDIN $E_2$

**William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed July 2, 1971, Ser. No. 159,489**

**Int. Cl. C07f** *7/18*

**U.S. Cl. 260—448.8 R** **9 Claims**

Reductive ring-opening of a salt form of certain epoxide intermediates using amalgamated aluminum metal and a hydrolytic solvent yields prostaglandin $E_2$-type products. The products have pharmacological utility.

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### 3,758,543

### NOVEL SULFATES AND METHOD FOR THEIR PREPARATION

**Louis G. Anello, Basking Ridge, and Richard F. Sweeney, Randolph Twp., Morris Cty., both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Apr. 25, 1967, Ser. No. 633,368**

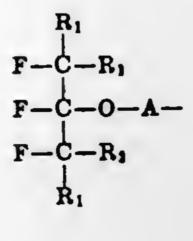
**Int. Cl. C07c** *141/02*

**U.S. Cl. 260—458** **14 Claims**

Novel sulfate compounds of the formula:

$$R\text{-}(C)_m\text{-}(D)_n\text{-}(CH_2)_r\text{-}(OSO_2)_u\text{-}O\text{-}(CH_2)_r\text{-}(D)_n\text{-}(C)_m\text{-}R$$

wherein R is a polyhaloisoalkoxyalkyl group having the formula:

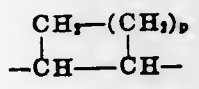


wherein:

a. $R_1$ and $R_2$ are F, Cl, alkyl or haloalkyl groups or, when taken together, are alkylene or haloalkylene groups forming a cycloaliphatic structure, which $R_1$ and $R_2$ groups may each have from 1 to 9 carbon atoms and which halogen atoms, if any, have an atomic weight not exceeding about 79.92, with the proviso that no more than two of the four $R_1$ and $R_2$ groups are alkyl groups and

b. A is a member selected from the group consisting of radicals of the formulae:

$—CHR_3—CHR_4—,\ CFR_5—CR_6R_7—$ and



wherein $R_3$ and $R_4$ are independently selected from the group consisting of Cl, H and alkyl; $R_5$ and $R_6$ are independently selected from the group consisting of F and H; $R_7$ is selected from the group consisting of F, H, Cl, Br and perfluoroalkyl; *p* is an integer of from 1 to 9; with the proviso that when both $R_6$ and $R_7$ are F, $R_5$ is always F,

and wherein C is a bifunctional group which may be derived from a telomerizable acetylenically or ethylenically unsaturated compound, *m* is an integer from 0-75, D is a bifunctional group which may be derived from a telomerizable acetylenically or ethylenically unsaturated compound, *n* is an integer from 0–75, *u* is an integer of from 1–6 and *v* is an integer of from 0–1; with the proviso that each carbon atom which is directly bonded to the $—(OSO_2)_u—0—$ moiety, contains at

least one hydrogen atom, are prepared by reacting a polyhaloisoalkoxyalkyl halide corresponding to the general formula:

$$R—(C)_m—(D)_n—(CH_2)_r—E$$

wherein R, C, D, *m*, *n* and *v* are each above defined and where E is a bromine atom or an iodine atom, with sulfur trioxide in at least about the stoichiometric proportions for the reaction.

The novel polysulfate compounds of the invention may be esterified, with an acrylic reagent, to the corresponding polyhaloisoalkoxyalkyl acrylate which in turn may be polymerized to produce useful oil, water and stain repellent agents.

The novel polysulfate compounds of the invention may also be hydrolyzed to the corresponding polyhaloisoalkoxyalkyl alcohols which in turn may be esterified and polymerized to the polyacrylate oil, water and stain repellent agents mentioned above. The alcohols may also be used to prepare useful surfactants.

The novel monosulfate compounds of the invention may be converted to the novel polysulfate compounds of the invention by reaction with $SO_3$.

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### 3,758,544

### 2-HYDROXY-2(6'-METHOXYNAPHTH-2'- YL) PROPIONITRILE AND 5'-HALO DERIVATIVES THEREOF

**Francisco Sanchez Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama**

**Division of Ser. No. 748,603, July 30, 1968, Pat. No. 3,637,767. This application June 10, 1971, Ser. No. 151,921**

**Int. Cl. C07c** *121/66*

**U.S. Cl. 260—465 F** **1 Claim**

New compounds, 2-(6'-methoxynaphth-2'-yl)-propylene oxide, 2-(6'-methoxynaphth-2'-yl)pro-pionaldoxime, 2-hydroxy-2-(6'-methoxynaphth-2'-yl)-propionitrile, 2-(6'-methoxynaphth-2'-yl)acrylo-nitrile, 2-(6'-methoxynaphth-2'-yl)acrylic acid, the corresponding 5'-halo compounds and 2-(5'-halo-6'-methoxynaphth-2'-yl) propionaldehyde are useful intermediates in producing 2-(6'-methoxy-naphth-2'-yl) propionic acid and the corresponding 5'-halo acids from 6-methoxy-2-acetylnaphthalene and the corresponding 5-halo compounds. The 2-propionic acids are anti-inflammatory, analgesic, anti-pyretic and anti-pruritic agents. The 2-propionaldehydes, obtained from the 2-acetyl compounds by way of the 2-propylene oxide, can be converted directly to the 2-propionic acids by way of the 2-propionaldoximes and the 2-propio-nitriles or more directly by Jones oxidation. Alternatively the 2-acrylonitriles, obtained from the 2-acetyl compounds by way of the 2-hydroxy-2-propionitrile, can be converted to the 2-propionic acid by way of the 2-acrylic acid or 2-propionitrile.

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### 3,758,545

### PURIFICATION OF ADIPONITRILE

**Maurice George Pounder, and Kenneth Ross Wilkins, both of Kingston, Ontario, Canada, assignors to Du Pont of Canada Limited, Montreal, Quebec, Canada**

**Filed Oct. 12, 1971, Ser. No. 188,578**

**Claims priority, application Canada, Oct. 15, 1970, 095,669**

**Int. Cl. C07c** *121/26*

**U.S. Cl. 260—465.8 R** **3 Claims**

A process for the purification of adiponitrile wherein adiponitrile containing impurities is treated with a polymer of formaldehyde, such as paraformaldehyde, containing from about six to about one hundred formaldehyde units, to reduce the level of impurities. The treatment can be carried out at a temperature in the range of 50 to 100°C.

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### 3,758,546

### METHOXY AMINE DERIVATIVES AND PROCESS FOR PREPARING THEM

**Endre Kasztreiner; Laszlo Vargha; Zsuzsanna Huszti; Jozsef Borsi; Geza Szilagyi; Judit Szakaly; Sandor Elek, and Istvan Polgari, all of Budapest, Hungary, assignors to Gyogyszerkutato Intezet, Budapest, Hungary**

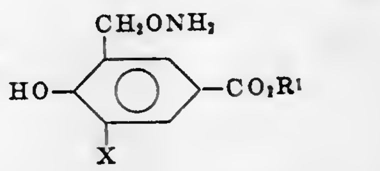
**Filed June 3, 1971, Ser. No. 149,789**

**Claims priority, application Hungary, Dec. 14, 1970, GO1152**

**Int. Cl. C07c** *101/42*

**U.S. Cl. 260—471 R** **4 Claims**

New substituted methoxy amines of the general formula I



(I)

wherein $R^1$ stands for a methyl or ethyl group, and X is a hydrogen atom or an OH group, and their pharmaceutically acceptable acid addition salts.

The new compounds considerably inhibit the specific (histidine-) and non-specific (DOPA-) decarboxylase and have a low toxicity.

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### 3,758,547

### PROCESS OF REACTING A BENZOIC ACID WITH AMINO ALCOHOL

**Michael Robin, Colonia; Sheldon R. Schulte, Highland Park, both of N.J., assignors to Ashland Oil, Inc., Houston, Tex.**

**Filed Feb. 2, 1970, Ser. No. 8,001**

**Int. Cl. C07c** *79/46, 93/20*

**U.S. Cl. 260—472** **33 Claims**

An improved process for reacting a benzoic acid with an amino alcohol by the use of certain catalysts.

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### 3,758,548

### LIQUID ESTERS OF NAPHTHALENE DICARBOXYLIC ACIDS

**Robert H. Reitsema, Denver, Colo., and Nylen L. Allphin, Jr., Pinole, Calif., assignors to Marathon Oil Company, Findlay, Ohio**

**Continuation-in-part of Ser. No. 544,419, April 22, 1966, Pat. No. 3,624,133, which is a continuation-in-part of Ser. No. 292,495, July 2, 1963, abandoned, which is a continuation-in-part of Ser. No. 144,527, Oct. 12, 1961, abandoned. This application Oct. 7, 1971, Ser. No. 188,690**

**Int. Cl. C07c** *69/76*

**U.S. Cl. 260—475 FR** **1 Claim**

The present invention comprises esters selected from the group consisting of esters of 1,6-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol having 4-8 carbon atoms; esters of 2,3-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol containing 5-8 carbon atoms; and esters of a naphthalene dicarboxylic acid and a branch chain alkane alcohol having at least 2 carbon atoms in the branch when the branch is closer to the hydroxyl-substituted carbon atom than the gamma position.

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### 3,758,549

### POLY ALKANOL ESTERS OF ALKYLTHIO-ALKANOIC ACIDS

**Martin Dexter, Briarcliff Manor, and David Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Oct. 12, 1971, Ser. No. 188,436**

**Int. Cl. 260** *45.85;* **C07c** *149/20*

**U.S. Cl. 260—481 R** **3 Claims**

Alkyl esters derived from alkylthioalkanoic acids and alkane polyols are stabilizers of organic material normally subject to thermal and oxidative deterioration. They are prepared by conventional esterification techniques. Typical embodiments are pentearythritol tetrakis (3-n-dodecylthiopropionate) and ethylene bis (3-n-didecylthiopropionate). The esters are used in conjunction with phenolic antioxidants to effectively stabilize organic materials from the deliterious effects of heat and oxygen.

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### 3,758,550
### PROCESS FOR PRODUCING METHYLENE MALONIC ESTERS

**Herbert Eck; Josef Heckmaier, and Hellmuth Spes, all of Burghausen-Obb., Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany**

**Filed July 27, 1971, Ser. No. 166,571**

**Claims priority, application Germany, Aug. 27, 1970, P 20 42 610.2**

**Int. Cl. C07c** *619/52*

**U.S. Cl. 260—485 R** **2 Claims**

A process for producing methylene malonic esters of the general formula $CH_2= C(-CO_2R)_2$ , where R represents a branched or unbranched aliphatic residue of one to six C atoms, which comprises reacting a malonic ester of the general formula $CH_2(-CO_2R)_2$ dissolved in glacial acetic acid, where R has the meaning mentioned above, with paraformaldehyde in the presence of a catalyst at temperature stages between 0°C and the boiling point of the mixture, distilling off the solvent, and cracking the resulting product, in which process the reaction mixture contains 0.5 – 1.5 mol percent of acetic acid anhydride referred to the malonic ester.

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### 3,758,551
### PROCESS FOR THE PREPARATION OF ACRYLATE AND METHACRYLATE ESTERS

**Jawad H. Murib; Charles E. Frank, and Ben Seeskin, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 99,251, Dec. 17, 1970, abandoned. This application Nov. 10, 1971, Ser. No. 197,523**

**Int. Cl. C07c** *69/54*

**U.S. Cl. 260—486 R** **12 Claims**

Process for the preparation of acrylate or methacrylate esters involving the reaction of propylene or isobutylene with a primary alcohol and molecular oxygen in the vapor phase at temperatures of up to 250° C. and in the presence of a catalyst composition containing phosphoric acid and a catalytically effective amount of palladium metal. The acrylate or methacrylate esters are selectively produced in the single step vapor phase oxidation.

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### 3,758,552
### DERIVATIVES OF THE 2-(LOWER ALKYL)-3-(LOWER ALKYL)-4-ARYL-3- OR 4-CYC LOHEXENECARBINOLA

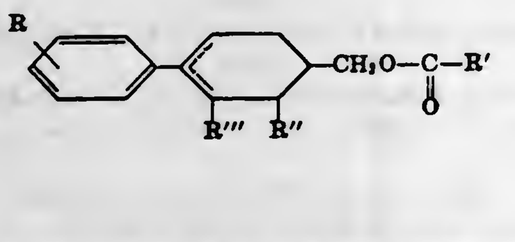
**George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.**

**Division of Ser. No. 728,900, May 14, 1968, Pat. No. 3,557,129. This application Sept. 14, 1970, Ser. No. 72,222**

**Int. Cl. C07c** *69/40, 103/14*

**U.S. Cl. 260—482 R** **5 Claims**

Compounds of the general formula



are disclosed wherein -R is selected from the group consisting of hydrogen, hydroxy, lower alkoxy of up to eight carbon atoms, lower alkyl of up to eight carbon atoms, and lower alkyl anilino of up to four carbon atoms; —R′ is selected from the group cinsisting of alkyl and alkenyl of up to 20 carbon atoms, cycloalkyl lower alkyl of up to three carbon atoms in the alkyl portion, adamanthyl, pyridyl, furyl, lower alkyl carboxylic acids and their alkali metal salts, esters and carbamates; and R″ and R‴ are selected from the group consisting of lower alkyl of up to three carbon atoms. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

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### 3,758,553
### PROCESS FOR THE PREPARATION OF B-FORMYLAMINOPROPIONIC ACID ESTERS

**Hans Dieter Winkelmann, Opladen; Friedrich Karl Rosendahl, Leverkusen; Harald Oertel, Odenthal-Gloebusch, and Heinrich Rinke, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Jan. 28, 1971, Ser. No. 110,747**

**Claims priority, application Germany, Feb. 3, 1970, P 20 04 698.4**

**Int. Cl. C07c** *101/04*

**U.S. Cl. 260—482 R** **14 Claims**

This invention relates to a process for the production of β-formylaminopropionic acid esters by reacting formamide with acrylic acid esters in the presence of a basic catalyst at normal pressure and at a relatively low temperature. The β-formylaminopropionic acid esters produced in accordance with the invention are valuable intermediate products for the production of derivatives of β-alanine and for the production of β-alanine itself, both of which are of pharmaceutical interest or may be used as starting materials in the making of polyamides or polyurethanes.

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### 3,758,554
### PHOSPHORUS-CONTAINING CARBAMATES

**Bernard J. Gaj, Montclair, and Stephen B. Sello, Cedar Grove, both of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.**

**Filed June 18, 1971, Ser. No. 154,690**

**Int. Cl. C07c** *125/06*

**U.S. Cl. 260—482 B** **3 Claims**

This invention relates to phosphorus-containing carbamates having at least one N-methylol or N-alkoxymethyl group. These compounds can be used to impart durable flame-retardant properties to cellulose-containing substrates.

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### 3,758,555
### DIFLUOROAMINO COMPOUNDS

**Robert J. Koshar, Lincoln Township, Washington County; Donald R. Husted, St. Paul; Charles D. Wright, White Bear Lake, and Joseph La Mar Zollinger, Woodbury Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Jan. 8, 1965, Ser. No. 425,113**

**Int. Cl. C07c** *101/00*

**U.S. Cl. 260—482 R** **7 Claims**

1. A compound of the formula

$$R_g-C(NF_2)_2$$

wherein $R_g$ is a member of the group consisting of polyfluoroalkyl radicals of fron one to 18 carbon atoms and hydrocarbon radicals having from one to 30 carbon atoms, said radicals being free from reducing substitutents.

### 3,758,556
### POLYESTERS CONTAINING TERTIARY NITROGEN ATOMS

**Erich Elmers, Krefeld; Hans Rudolph, and Werner Kloker, both of Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 64,822, Aug. 18, 1970, Pat. No. 3,646,160. This application Oct. 28, 1971, Ser. No. 193,553**

**Claims priority, application Germany, Aug. 29, 1969, P 19 43 954.4**

**Int. Cl. C07c** *69/44*

**U.S. Cl. 260—485 G** **2 Claims**

The invention relates to novel linear polyesters containing hydroxy end groups and an N,N-bis-(β-sec.hydroxy-alkyl)-p-alkylphenylamine and certain dicarboxylic acids condensed therein. These novel polyesters are useful as accelerators for mixtures of unsaturated polyesters and copolymerizable monomers which harden at room temperature after the addition of a diacyl peroxide catalyst.

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### 3,758,557
### PROCESS FOR THE OXIDATION OF PARAFFINS

**Pierre M. J. G. De Radzitzky d'Ostrowick; Jacques D. V. Hanotier, and Joseph M. E. Vaerman, all of Bruxelles, Belgium, assignors to Labofina, Soc. An., Bruxelles, Belgium**

**Filed July 24, 1969, Ser. No. 844,616**

**Int. Cl. C07c** *27/16, 45/02, 67/00*

**U.S. Cl. 260—488 F** **11 Claims**

Straight-chain paraffins are non-destructively and selectively oxidized to introduce oxy and oxo functions predominantly at the 2 position by an oxidizing system comprising a compound of group II – VI metals in higher valent form and an acidic activator of dissociation constant gerater than $5.10^{-3}$ or boron trifluoride, with or without molecular oxygen and with or without a solvent.

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### 3,758,558
### ORTHO-DIPHENYLPHOSPHINOBENZOIC ACID PRODUCTION

**Ronald F. Mason, Mill Valley, and Gordon E. Wicker, Orinda, both of Calif., assignors to Shell Oil Company, Houston, Tex.**

**Filed Jan. 13, 1972, Ser. No. 217,635**

**Int. Cl. C07c** *63/44*

**U.S. Cl. 260—515 M** **6 Claims**

Ortho-dihydrocarbylphosphinobenzoic acids are produced in high yield substantially free of the corresponding meta-isomer by substantially immediate intimate contacting of sodium dihydrocarbyl phosphide and phenyl sodium with an ortho-chlorobenzoate in an inert solvent solution to produce the sodium salt of o-dihydrocarbylphosphinobenzoic acid, which is thereafter converted to the free acid by treatment with mineral acid.

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### 3,758,559
### RESOLUTION OE DL-α-METHYLPHENYLALANINE

**Frederick W. Bollinger, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.**

**Filed Jan. 30, 1970, Ser. No. 7,261**

**Int. Cl. C07c** *101/08*

**U.S. Cl. 260—518 R** **1 Claim**

DL-α-methylphenylalanine is resolved by the cinchonine and cinchonidine salts to give pure D(+) and L(−) isomers. This resolution results in the isolation of the pharmacological properties exhibited by the DL mixture and further shows a reduction of undesirable side effects.

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### 3,758,560
### N-ACYL-α-HYDRAZINO-HYDROCINNAMIC ACID AND DERIVATIVES

**Sandor Karady, Elizabeth; Seemon H. Pines, Murray Hill; Manuel G. Ly, New Brunswick, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Division of Ser. No. 9,052, Feb. 5, 1970, Pat. No. 3,715,382. This application June 24, 1971, Ser. No. 156,547**

**Int. Cl. C07c** *101/72, 101/78*

**U.S. Cl. 260—519** **5 Claims**

Diastereomers of N-acyl α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid derivatives which can be separated and hydrolyzed to give compounds useful as decarboxylase inhibitors.

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### 3,758,561
### 2-LOWERALKYLAMINO-4-AMINO BENZOIC ACIDS, THEIR SALTS AND ESTERS, AND ACID ADDITION SALTS THEREOF

**Edward F. Rogers, Middletown, and Robert L. Clark, Woodbridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Division of Ser. No. 768,933, Oct. 18, 1968, Pat. No. 3,560,624. This application Apr. 3, 1970, Ser. No. 29,379**

**Int. Cl. C07c** *101/68*

**U.S. Cl. 260—518 R** **2 Claims**

The 2-loweralkylamino-4-amino benzoic acids are prepared by catalytic hydrogenation of 2-loweralkylamino-4-nitrobenzoic acid. These compounds, as well as their loweralkyl esters, alkaline metal or alkaline metal earth salts, and the non-toxic acid addition salts thereof are useful for controlling coccidiosis.

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### 3,758,562
### HYDROXYLATION OF AROMATIC ACIDS

**Jerome A. Vesley, Park Ridge, and George L. Hervert, Woodstock, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Sept. 29, 1969, Ser. No. 862,006**

**Int. Cl. C07c** *65/02*

**U.S. Cl. 260—520** **8 Claims**

The nuclear hydroxylation of a nuclearly substituted aromatic acid is accomplished by treating the acid with hydrogen perioxide in the presence of a catalyst comprising a hydrogen fluoride-carbon dioxide complex at a temperature in the range of from about −10° to about 100°C. and a pressure in the range of from about ambient to about 100 atmospheres.

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### 3,758,563
### PROCESS FOR PRODUCING GRANULAR POTASSIUM SORBATE

**Eiji Uematsu; Katuharu Nakada, and Toshihumi Arakawa, all of Niigata, Japan, assignors to Daicel Ltd., Osaka, Japan**

**Filed June 21, 1967, Ser. No. 647,663**

**Claims priority, application Japan, June 22, 1966, 41/40523**

**Int. Cl. C07c** *51/00*

**U.S. Cl. 260—526 N** **8 Claims**

A granular potassium sorbate, for use as a food and drink preserving material, which is higher than powdery potassium sorbate in apparent specific gravity, is very easily soluble and is sufficiently hard as not to break in handling. A process for producing the above-mentioned granular potassium sorbate by properly wetting powdery potassium sorbate with water alone or with a mixture of water and an organic solvent, molding it with particular types of extruding granulators under proper conditions and drying it.

### 3,758,564

## PROCESS FOR PREPARATION OF STRAIGHT CHAIN ALKANE DICARBOXYLIC ACIDS

**Darwin Darrell Davis, Victoria, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed July 8, 1971, Ser. No. 160,757**

**Int. Cl. C07c** *55/02, 55/14, 51/18*

**U.S. Cl. 260—531 R** **4 Claims**

A process for preparation of a $C_8 - C_{12}$ dicarboxylic acid in high purity by oxidizing a cyclic ketone or alcohol or a mixture thereof in a reactor with aqueous nitric acid, with all reactants in the liquid phase, holding the substantially oxidized ketone or alcohol under oxidizing conditions to oxidize and remove undesired by-products, recovering the dicarboxylic acid from the nitric acid mother liquor which contains a minor amount of urea and/or ammonia and thereafter adding at least a stoichiometric amount of nitrous acid to the mother liquor and returning the mother liquor to the reactor.

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### 3,758,565

## PROCESS FOR PREPARING CRYSTALLINE SODIUM NITRILOACETIC ACID

**Robert B. Agee, Baker, and William R. Cooke, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.**

**Filed Dec. 7, 1970, Ser. No. 95,540**

**Int. Cl. C07c** *101/20*

**U.S. Cl. 260—534 E** **14 Claims**

It is disclosed that the particle size distribution of crystalline sodium nitrilotriacetate (NTA) can be controlled to achieve a desired bulk density of the product and to provide a product that centrifuges readily. The control is obtained by conducting the crystallization and/or crystal growth of NTA in the presence of a centrifugal impeller operative at a peripheral velocity of from about 20 to about 80 feet per second whereby the crystals are selectively abraded or fractured to limit growth of the periphery of the crystals enhancing the relative growth rate of the crystals in the thickness dimension.

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### 3,758,566

## REMOVAL OF IRON IMPURITIES

**Glenn Edward Organ, Bay City, Tex., assignor to Celanese Corporation, New York, N.Y.**

**Filed Apr. 21, 1971, Ser. No. 136,195**

**Int. Cl. C07c** *55/14*

**U.S. Cl. 260—531 R** **9 Claims**

Iron impurities are removed from an aqueous nitric acid solution containing copper and vanadium catalyst ions by solvent extraction with an organic solution of an organophosphate prior to passing the aqueous nitric acid solution through an ion exchange zone for recovery of the copper and vanadium.

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### 3,758,567

## FLUOROSULFONATED THIOPENOLS AND METHOD OF PREPARATION

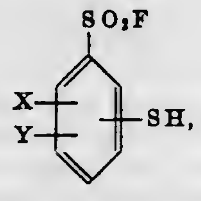
**Ivan Christoff Popoff, Ambler, and Chandrakant Bhagwandas Thanawalla, Norristown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.**

**Filed June 21, 1971, Ser. No. 155,360**

**Int. Cl. C07c** *149/40, 149/42, 149/39*

**U.S. Cl. 260—543 F** **11 Claims**

A fluorosulfonated thiophenol



, useful as a plant response agent, and a process for its preparation are provided.

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### 3,758,568

## OXAMOYL SULFENYL CHLORIDES

**Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, Saint Louis, Mo.**

**Filed Sept. 1, 1971, Ser. No. 177,096**

**Int. Cl. C07c** *145/00;* **C07d** *29/34*

**U.S. Cl. 260—543 H** **15 Claims**

Oxamoyl sulfenyl chlorides are prepared from dichloromethane sulfenyl chlorides by reaction with sulfuric acid and water. The oxamoyl sulfenyl chlorides are pesticidally active and particularly useful as pre-emergent herbicides.

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### 3,758,569

## PREPARATION OF MONOHALOACETYL HALIDES

**Donald E. Bissing, and Virgil W. Gash, both of Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.**

**Continuation-in-part of Ser. No. 185,449, Sept. 30, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 277,960**

**Int. Cl. C07c** *51/58, 53/14, 63/10*

**U.S. Cl. 260—544 Y** **18 Claims**

A process for the preparation of monohaloacyl halides by halogenating ketenes in the presence of a lactone.

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### 3,758,570

## PROCESS FOR THE PRODUCTION OF ACYLISOCYANIDE DICHLORIDES AND CARBOXYLIC ACID CHLORIDES

**Kurt Findeisen, and Kuno Wagner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed July 19, 1971, Ser. No. 164,038**

**Claims priority, application Germany, July 21, 1970, P 20 36 171.1**

**Int. Cl. C07c** *51/58*

**U.S. Cl. 260—544 C** **9 Claims**

Acylisocyanide dichlorides and carboxylic acid chlorides are obtained by reacting a carboxylic acid anhydride and an isocyanide dichloride in the presence of a Lewis acid at a temperature of from 0° to 300° C.

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### 3,758,571

## PREPARATION OF MONOHALOACETYL HALIDES

**Donald E. Bissing, and Virgil W. Gash, both of Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.**

**Continuation-in-part of Ser. No. 192,647, Oct. 26, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 277,961**

**Int. Cl. C07c** *53/14, 51/58*

**U.S. Cl. 260—544 Y** **15 Claims**

A process for the preparation of monohaloacyl halides by halogenating ketenes in the presence of an alicyclic carbonate.

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### 3,758,572

## PROCESS FOR RECOVERING UREA FROM PYROLYSIS SYSTEMS

**Irby C. Jones, Jr., and Aubrey J. Rhymes, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Apr. 26, 1971, Ser. No. 137,208**

**Int. Cl. C07c** *127/24*

**U.S. Cl. 260—553 B** **4 Claims**

In a process of pyrolyzing urea in a reactor system through which a stream of inert gas is passed to accelerate the rate of pyrolysis by purging evolved ammonia therefrom, an improved method for recovering unreacted vaporized urea also purged by the gas stream with the ammonia which comprises passing the condensable vapors of an inert compound through the reactor (s), cooling the purged ammonia and urea containing vapor mixture to a temperature low enough to condense

the vapors of the inert compound thereby minimizing the concentration of this component in the vapor mixture, but high enough to preclude urea condensation, feeding the resulting concentrated vapor mixture to a gas/liquid contacting column and contacting the same with fresh urea melt feedstock, thereby condensing a substantial amount of the urea vapor contacted, feeding the condensed urea along with the urea melt feedstock to the pyrolysis reactor(s), and passing the urea depleted effluent vapor mixture to a conventional ammonia recovery unit.

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### 3,758,573

## N-(HALOALKYL)-BENZENE AND PARA-TOLUENE SULFORAMIDES

**Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, both of France, assignors to L'Oreal, S.A., Paris, France**

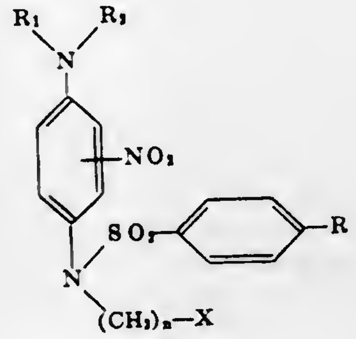
**Continuation-in-part of Ser. Nos. 568,148, July 27, 1966, abandoned, and Ser. No. 568,118, July 27, 1966, abandoned, and Ser. No. 607,898, Jan. 9, 1967, Pat. No. 3,617,163, and Ser. No. 798,192, Feb. 10, 1969, abandoned, and Ser. No. 862,614, Sept. 8, 1969, abandoned. This application June 20, 1972, Ser. No. 264,457**

**Claims priority, application Luxembourg, July 30, 1965, 49,213; Jan. 10, 1966, 50,233; June 24, 1966, 51,408; July 30, 1965, 49,214; Jan. 27, 1966, 50,348; Dec. 9, 1966, 52,555; July 4, 1966, 51,474**

**Int. Cl. C07c** *143/78*

**U.S. Cl. 260—556 AR** **9 Claims**

Disubstituted N-halo-alkyl sulfonamide compounds suitable for use as intermediates for making hair dyes having the formula



wherein R is hydrogen or methyl, *n* is an integer from 2–6 inclusive, X is chlorine or bromine, $R_1$ is hydrogen or lower alkyl of 1–4 carbon atoms, $R_2$ is hydrogen, lower alkyl of 1–4 carbon atoms or acetyl, provided that $R_2$ is hydrogen and $R_1$ is lower alkyl when the $NO_2$ group is ortho to the $NR_1R_2$ group, and that $R_2$ is acetyl when the $NO_2$ group is meta of the $NR_1R_2$ group, are disclosed.

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### 3,758,574

## N-(ARALKYL) MALONAMIDE DERIVATIVES

**Timothy Melton, Harlow, and David Edward Thorne, Crowthorne, both of England, assignors to Beecham Group Limited, Brentford, Middlesex, England**

**Filed Oct. 21, 1971, Ser. No. 191,540**

**Claims priority, application Great Britain, Oct. 22, 1970, 50,169/70**

**Int. Cl. C07c** *103/32*

**U.S. Cl. 260—558 A** **18 Claims**

N-aralkyl-N'-alkylmalonamides and N-aralkyl-N',N'-dialkyl-malonamides are useful as CNS depressants and anti-convulsants.

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### 3,758,575

## BROMINATION OF SALICYLANILIDE

**Nathan N. Crounse, Cincinnati; Raymond E. Werner, Wyoming, and Harold L. Dimond, Evendale, all of Ohio, assignors to Sterling Drug Inc., New York, N.Y.**

**Filed Oct. 20, 1969, Ser. No. 867,908**

**Int. Cl. C07c** *103/20*

**U.S. Cl. 260—559 S** **15 Claims**

In the process for preparing 3,4',5-tribromosalicylanilide by the interaction of bromine with salicylanilide, the use of an inert reaction medium consisting of chlorobenzene, water and a surface active agent provides 3,4',5-tribromosalicylanilide essentially free of 4',5-dibromosalicylanilide and 2',3,4',5-tetrabromosalicylanilide.

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### 3,758,576

## PROCESS FOR THE PREPARATION OF N,N-DIALKYLAMIDES

**Yasunobu Takahashi, and Yohei Fukuoka, both of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka-City, Osaka-Prefecture, Japan**

**Continuation of Ser. No. 735,591, June 10, 1968, abandoned. This application June 15, 1970, Ser. No. 48,877**

**Claims priority, application Japan, June 16, 1967, 42/38230; Aug. 15, 1967, 42/52081; Aug. 15, 1967, 42/52082; Nov. 16, 1967, 42/73364**

**Int. Cl. C07c** *103/08*

**U.S. Cl. 260—561 R** **6 Claims**

N,N-dialkyl carboxylic acid amides are prepared by reacting a primary amine, second amine or tertiary amine, or a mixture thereof, with a nitrile at elevated temperatures and pressures, with or without the use of a catalyst.

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### 3,758,577

## STABILIZATION OF DIMETHYLFORMAMIDE

**Kornelius Dinbergs, North Royalton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.**

**Filed Nov. 1, 1971, Ser. No. 194,512**

**Int. Cl. C07c** *103/00*

**U.S. Cl. 260—561 R** **2 Claims**

Dimethylformamide having certain alkyl halide compounds dissolved therein has an extended storage life before use as a solvent for polymers and resins in the manufacture of films, fibers and coatings and as an analytical solvent and does not require treatment with acidic ion exchange resin before use.

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### 3,758,578

## HYDRATION OF NITRILES TO AMIDES USING CUPREOUS CATALYSTS

**Clarence E. Habermann, and Ben A. Tefertiller, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 835,765, June 23, 1971, Pat. No. 3,631,104. This application June 28, 1971, Ser. No. 157,648. The portion of the term of this patent subsequent to Dec. 28, 1988, has been disclaimed.**

**Int. Cl. C07c** *103/00*

**U.S. Cl. 260—561 N** **10 Claims**

Aliphatic nitriles are converted to the corresponding amides by contacting the nitrile in the presence of water with a cupreous catalyst containing copper prepared by reducing copper hydroxide or a copper salt.

## 3,758,579

## ALPHA-BROMOACRYLIC ACID TOLUIDIDES

**Henry Martin, Basel, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Filed July 27, 1971, Ser. No. 166,575**

**Claims priority, application Switzerland, July 31, 1970, 11589/70**

**Int. Cl. C07c** *103/58*

**U.S. Cl. 260—562 B** **3 Claims**

α-Bromo-acrylic-acid-anilides which are substituted in the phenyl nucleus by at least one substituent have been found to be effective compounds for influencing the plant development. They may be used for regulating fruit abscission.

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## 3,758,580

## SEPARATION OF TERTIARY CHELATING POLYAMINES

**Arthur W. Lancer, Jr., Watchung; Thomas A. Whitney, Linden, and Lawrence P. Klemann, Somerville, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed Nov. 26, 1971, Ser. No. 202,658**

**Int. Cl. C07c** *85/16*

**U.S. Cl. 260—563 R** **7 Claims**

Tertiary chelating polyamines are separated and purified from their complex mixtures by selective complexation with metal salts wherein the metal is one selected from the group consisting of sodium, magnesium, iron, zinc, cadmium and mercury. The pure polyamines are thereafter recovered by destabilization of the complex. This invention is particularly useful for separating N-peralkylated commercial polyamine mixtures.

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## 3,758,581

## PROCESS FOR THE MANUFACTURE OF KETONE DERIVATIVES

**Robert Fuhrmann, Morris Plains; Stylianos Sifniades, Madison, and Allen Abraham Tunick, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 852,881, Aug. 25, 1969, abandoned. This application Mar. 24, 1972, Ser. No. 237,886**

**Int. Cl. C07c** *131/02*

**U.S. Cl. 260—566 A** **2 Claims**

The nitrosation of α-nitrocycloalkanones with alkyl nitrites, nitrogen oxides or nitrosyl halides is advantageously carried out utilizing liquid sulfur dioxide as a reaction solvent. Most advantageously, a strong acid catalyst is also present.

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## 3,758,582

## OXIME ETHER ANTI-DEPRESSANTS

**John G. Moffatt, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama**

**Filed Aug. 14, 1970, Ser. No. 63,920**

**Int. Cl. C07c** *131/00*

**U.S. Cl. 260—566 AE** **6 Claims**

Compositions containing and methods employing novel alkylthioalkyl oxime ethers and the corresponding nitrones, useful as CNS agents, particularly anti-depressants. Methods for preparing these compounds and compositions are also disclosed. O-(Methylthiomethyl)-benzophenone oxime is illustrated as representative of the class.

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## 3,758,583

## 2-(2-HYDROXY-3-AMINOPROPYL-1-YLOXY)-1,6-DILFUORO-AND-1,6-METHANO-[10]ANNULENES AND THE SALTS THEREOF

**Peter H. Nelson; Karl G. Untch, both of Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex Corporation, Panama, Panama**

**Filed Jan. 21, 1971, Ser. No. 108,611**

**Int. Cl. C07c** *93/06*

**U.S. Cl. 260—570.7** **20 Claims**

Disclosed herein are certain 2-(2-hydroxy-3-amino or substituted aminoprop-1-yloxy)-1,6-methano- or -1,6-difluoromethano[10]eannulene compounds and various ring substituted derivatives thereof. Methods for the preparation of these compounds and novel intermediates useful in these methods are also disclosed. The product compounds, described above, are useful β-adrenergic blocking agents. 2-(2-Hydroxy-3-isopropyl-aminoprop-1-yloxy)-1,6-methano[10]annulene and 2-(2-hydroxy-3-isopropylaminoprop-1-yloxy)-1,6-difluoromethano[10]annulene are illustrated as representative of the compound class.

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## 3,758,584

## HYDROGENATION OF ADIPONITRILE

**Donald Bernard Bivens; Leo Wesley Patton, and William Erbie Thomas, Jr., all of Orange, Tex., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Dec. 23, 1970, Ser. No. 101,167**

**Int. Cl. C07c** *85/12*

**U.S. Cl. 260—583 K** · **7 Claims**

Process for the catalytic hydrogenation of adiponitrile to hexamethylenediamine at elevated temperatures and pressures in the presence of a catalyst derived from an iron or cobalt compound which has been activated in a mixture of hydrogen and ammonia at a temperature in the range of about 300° C. to about 600° C.

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## 3,758,585

## COMPLEXES OF INORGANIC SODIUM COMPOUNDS AND CHELATING AMINES

**William M. Bunting, Baton Rouge, La., assignor to Arthur W. Langer, Jr., Watchung, and Esso Research and Engineering Company, Linden, both of N.J.**

**Filed July 27, 1970, Ser. No. 58,660**

**Int. Cl. C07c** *87/20, 87/34, 87/54*

**U.S. Cl. 260—583 P** **6 Claims**

Chelated inorganic sodium compounds are prepared by mixing an inorganic sodium salt having a lattice energy of not more than about 180 kcal/mole with an aliphatic or cycloaliphatic chelating agent having at least one functionality which is nitrogen and, separated therefrom by two to four carbon atoms, at least one other functionality which is either nitrogen or oxygen. Such compounds have utility as catalysts, as additives, in separations, in making batteries, and in synthetic chemistry.

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## 3,758,586

## CATALYTIC ADDITION OF SECONDARY ALIPHATIC AMINES TO ETHYLENE IN PRESENCE OF RHODIUM OR IRIDIUM SALTS

**Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Mar. 16, 1970, Ser. No. 20,146**

**Int. Cl. C07c** *85/00*

**U.S. Cl. 260—583 R** **11 Claims**

Ethylene is reacted with a secondary aliphatic amine in the presence of rhodium or iridium catalysts to produce tertiary amines. The process is characterized in producing little or no by-products.

## 3,758,587

## NEW POLYFLUORINATED AMINOALCOHOLS

**Louis Foulletier, Oullins, and Jean-Pierre Lalu, La Mulatiere, both of France, assignors to Ugine Kuhlmann, Paris, France**

**Filed Dec. 15, 1969, Ser. No. 885,257**

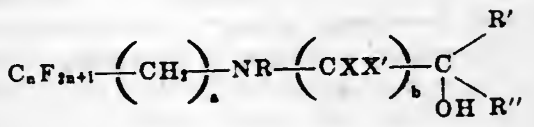
**Claims priority, application France, Dec. 17, 1968, 68178566**

**Int. Cl. C07c** *91/06*

**U.S. Cl. 260—584 R** **5 Claims**

Polyfluorinated aminoalcohols having the following general formula:

(I)

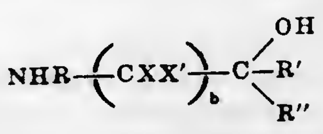


$$C_nF_{2n+1}-(CH_2)_a-NR-(CXX')_b-C(OH)(R')(R'')$$

in which:

$C_nF_{2n+1}$ represents a straight or branched perfluorinated hydrocarbon chain and in which *n* represents a whole number between one and 20; a is an even number of two or four; R represents a hydrogen atom, an alkyl radical containing from one to nine carbon atoms, a cycloalkyl radical containing from five to nine carbon atoms or an aryl radical containing from six to ten carbon atoms; X and X' represent a hydrogen atom or an alkyl radical containing from one to four carbon atoms in which X and X' can be identical or different; *b* is a whole number between one and four; R' represents a hydrogen atom or an alkyl radical having one to four carbon atoms and R'' is an alkyl radical having from one to nine carbon atoms, and to a process for preparing the products of formula (I) which comprises reacting an amino-alcohol having the following general formula:

(II)

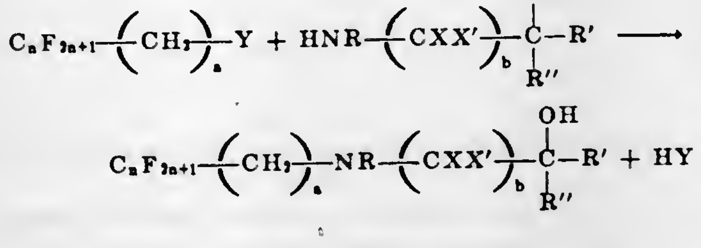


$$NHR-(CXX')_b-C(OH)(R')(R'')$$

with a polyfluoroalkane halide having the following general formula;

(III) $C_nF_{2n+1}-(CH_2)_a-Y$ in which Y represents bromine or iodine and in which *n*, *a*, R, X, X', *b*, R', R'' correspond to the definitions given above at a temperature of between about 0° and 200° C in the presence of a solvent according to the following equation:

(IV)



$$C_nF_{2n+1}-(CH_2)_a-Y + HNR-(CXX')_b-C(OH)(R')(R'') \longrightarrow C_nF_{2n+1}-(CH_2)_a-NR-(CXX')_b-C(OH)(R')(R'') + HY$$

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## 3,758,588

## NEW A-NOR-B-HOMO-STEROIDS

**Oskar Jeger, and Kurt Schaffner, both of Zurich, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

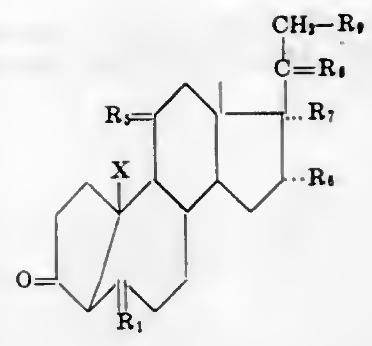
**Division of Ser. No. 382,643, July 14, 1964, Pat. No. 3,504,603, which is a continuation-in-part of Ser. No. 226,524, Feb. 3, 1963, abandoned. This application July 8, 1969, Ser. No. 840,025**

**Claims priority, application Switzerland, Mar. 23, 1962, 3533/62**

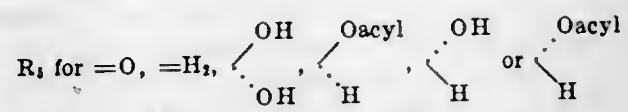
**Int. Cl. C07c** *49/28*

**U.S. Cl. 260—586 H** **8 Claims**

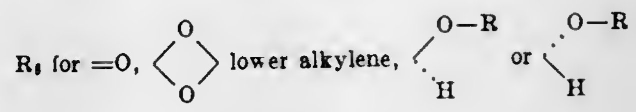
A-Nor-B-homo-steroids corresponding to the general formula



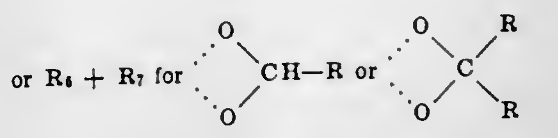
wherein X stands for hydrogen or methyl,
$R_1$ for $H_2$ or O



$R_6$ for . . H, . . lower alkyl or . . OR
$R_7$ for . . H, . . lower alkyl or . . OR



$R_9$ for -H, -OR



R being -H, an acyl group or a hydrocarbon radical.

These compounds have progestative, anti-inflammatory and/or glucocorticoid action.

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## 3,758,589

## AROMATIZATION OF CYCLOHEXENE DERIVATIVES

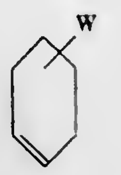
**Mahmoud S. Kablaoui, c/o Texaco Inc. P.O. Box 509, Beacon, N.Y.**

**Filed Dec. 3, 1970, Ser. No. 94,995**

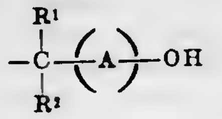
**Int. Cl. C07c** *49/76*

**U.S. Cl. 260—590** **6 Claims**

A method of aromatizing substituted cyclohexene to the corresponding aromatic compound comprising contacting a substituted cyclohexene of the formula:

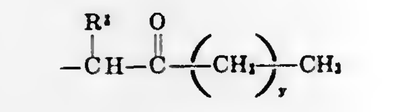


where W is a monovalent radical selected from the group consisting of a hydroxyl group of from one to 10 carbons of the formula:



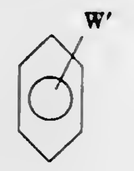
$$-C(R^1)(R^2)-(A)-OH$$

where $R^1$ and $R^2$ are hydrogen or alkyl, A is alkanediyl of from 0 to 9 carbons and a keto group of from three to 22 carbons of the formula:

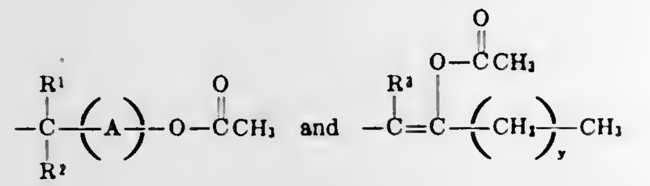


$$-\overset{R^3}{\overset{|}{C}}H-\overset{O}{\overset{\|}{C}}-\left(CH_2\right)_y-CH_3$$

where $R^3$ is hydrogen or alkyl of from one to 9 carbons and y is an integer of from 0 to 10 with a mixture of acetic anhydride and concentrated sulfuric acid optionally in the additional presence of acetic acid at a temperature between about 30 and 145°C. utilizing a mole ratio of sulfuric acid to substituted cyclohexene of between about 1.1:1 and 3:1 and a mole ratio of acetic anhydride to cyclohexene of between about 1:1 and 10:1 to form an intermediate aromatic acetate derivative of the formula:

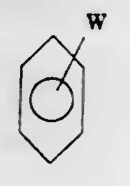


where W′ is a monovalent radical selected from the group consisting of



$$-\underset{R^2}{\underset{|}{\overset{R^1}{\overset{|}{C}}}}-\left(A\right)-O-\overset{O}{\overset{\|}{C}}CH_3 \quad \text{and} \quad -\overset{R^3}{\overset{|}{C}}=\overset{O-\overset{O}{\overset{\|}{C}}CH_3}{\overset{|}{C}}-\left(CH_2\right)_y-CH_3$$

where $R^1$, $R^2$, $R^3$, A and y are as heretofore defined, and subsequently hydrolyzing said acetate derivative to form an aromatic compound of the formula:



where W is as heretofore defined.

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### 3,758,590

## HYDROLYZED DIELS-ALDER ADDUCTS OF OCIMENOL

**James O. Bledsoe, Jr., and John M. Derfer, both of Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio**

**Filed Nov. 24, 1969, Ser. No. 879,578**

**Int. Cl. C07c** *47/46*

**U.S. Cl. 260—598** **4 Claims**

Hydrolyzed Diels Alder adducts of ocimenol have been synthesized and found to have good olfactory and perfumery properties. The hydrolyzed adducts are made by reacting ocimenol and an $\alpha,\beta$-unsaturated carbonyl compound, preferably acrolein, methacrolein or crotonaldehyde, in a Diels-Alder reaction, followed by hydrolysis.

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### 3,758,591

## FUNCTIONAL BIS(PERFLOUROALKYLSULFONYL)ALKYL COMPOUNDS

**Robert J. Koshar, Mahtomedi Village, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**

**Division of Ser. No. 807,408, March 14, 1969, Pat. No. 3,704,311. This application May 1, 1972, Ser. No. 249,116**

**Int. Cl. C07c** *47/02*

**U.S. Cl. 260—607 A** **2 Claims**

Bis(perfluoroalkanesulfonyl)substituted methanes possessing reactible groups such as halogen, hydroxyl, carboxyl or ester groups or possessing carbon-to-carbon unsaturation are provided. The residual hydrogen of the methane is relatively acidic and the compounds form metallic and organic salts which are recoverable. The molecule with acid hydrogen can be further reacted by the reactible group to incorporate an acidic hydrogen in another molecule such as a polymer. The acid hydrogen effects absorption of basic vapors such as ammonia, amines, etc. Bis(perfluoroalkylsulfonyl) bromomethanes add to olefinic double bonds.

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### 3,758,592

## FUNCTIONAL BIS (PERFLUOROALKYLSULFONYL)ALKYL COMPOUNDS

**Robert J. Koshar, Mahtomedi Village, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**

**Division of Ser. No. 807,408, March 14, 1969, Pat. No. 3,704,311. This application May 1, 1972, Ser. No. 249,117**

**Int. Cl. C07c** *147/02*

**U.S. Cl. 260—607 A** **2 Claims**

Bis(perfluoroalkanesulfonyl)substituted methanes possessing reactable groups such as halogen, hydroxyl, carboxyl or ester groups or possessing carbon-to-carbon unsaturation are provided. The residual hydrogen of the methane is relatively acidic and the compounds form metallic and organic salts which are recoverable. The molecule with acid hydrogen can be further reacted by the reactible group to incorporate an acidic hydrogen in another molecule such as a polymer. The acidic hydrogen effects absorption of basic vapors such as ammonia, amines, etc. Bis(perfluoroalkylsulfonyl) bromomethanes add to olefinic double bonds.

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### 3,758,593

## FUNCTIONAL BIS(PERFLUOROALKYLSULFONYL)ALKYL

**Robert J. Koshar, Mahtomedi Village, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**

**Division of Ser. No. 807,408, March 14, 1969, Pat. No. 3,704,311. This application May 1, 1972, Ser. No. 248,900**

**Int. Cl. C07c** *147/02*

**U.S. Cl. 260—607 A** **2 Claims**

Bis(perfluoroalkanesulfonyl)substituted methanes possessing reactible groups such as halogen, hydroxyl, carboxyl or ester groups or possessing carbon-to-carbon unsaturation are provided. The residual hydrogen of the methane is relatively acidic and the compounds form metallic and organic salts which are recoverable. The molecule with acid hydrogen can be further reacted by the reactible group to incorporate an acidic hydrogen in another molecule such as a polymer. The acidic hydrogen effects absorption of basic vapors such as ammonia, amines, etc. Bis(perfluoroalkylsulfonyl) bromomethanes add to olefinic double bonds.

### 3,758,594

## PROCESS FOR PRODUCING SULPHONIUM COMPOUNDS

**Jan P. Campen; Ernest L. T. M. Spitzer; Wilhelmus A. A. Senden, and Jeffrey S. Hill, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.**

**Filed Aug. 18, 1971, Ser. No. 172,908**

**Claims priority, application Great Britain, Aug. 26, 1970, 41,067/70**

**Int. Cl. C07c** *149/46*

**U.S. Cl. 260—607 B** **6 Claims**

Dialkyl-methyl sulfonium chlorides, having at least one alkyl group of at least four carbon atoms are produced by the reaction of a higher dialkyl sulfide with methyl chloride at 60°–100° C in the presence of specified quantities of hydrofluoric or hydrochloric acid.

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### 3,758,595

## DETERGENT

**Vincent Lamberti, Upper Saddle River, N.J., and Henry Lamaire, Fairfield, Conn., assignors to Lever Brothers Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 764,362, Aug. 7, 1968, Pat. No. 3,562,337, which is a division of Ser. No. 502,299, Oct. 22, 1965, Pat. No. 3,427,248. This application Feb. 5, 1971, Ser. No. 113,079**

**Int. Cl. C07c** *149/14*

**U.S. Cl. 260—609 R** **3 Claims**

This specification relates to a detergent. More particularly, it is concerned with a detergent which is a sulfur analog of a polyolether or polyolpolyether.

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### 3,758,596

## PROCESS FOR THE PRODUCTION OF PHENOLIC COMPOUNDS AND INTERMEDIATES FOR USE THEREIN

**Hugh Wilma Boulton Reed; John Smith, and Ian Hirst, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Apr. 7, 1970, Ser. No. 26,445**

**Claims priority, application Great Britain, Apr. 21, 1969, 20,220/69**

**Int. Cl. C07c** *43/22, 41/00*

**U.S. Cl. 260—613 D** **14 Claims**

Specified cyclic dienones are converted to substituted phenols, for example 4-methoxy-2,6-di-tert.butyl phenol, by treatment with acids.

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### 3,758,597

## 2-(HYDROXYPHENYL)-2-(ISOPROPENYLPHENYL)-PROPANES, PROCESS FOR THEIR MANUFACTURE

**Hans-Josef Buysch; Heinrich Krimm, both of Krefeld-Bockum, and Dieter Margotte, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

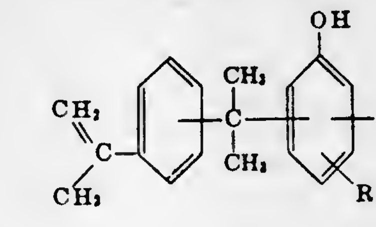
**Filed Sept. 39, 1970, Ser. No. 76,978**

**Claims priority, application Germany, Oct. 9, 1969, P 29 50 982.1**

**Int. Cl. C07c** *43/20, 39/18*

**U.S. Cl. 260—613 R** **9 Claims**

The present invention relates to a 2-(2-or 4-hydroxyphenyl)-2-(3- or 4-isopropenyl-phenyl)-propanes of the formula



in which

$R^1$ and $R^2$ are identical or different and denote hydrogen, halogen, hydroxyl, alkyl, cycloalkyl or alkoxy with up to 6 carbon atoms, and a process for their manufacture and their use for the manufacture of polymers.

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### 3,758,598

## SYNTHESIS OF ALIPHATIC AND ALICYCLIC ETHERS

**John O. Turner, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 873,093, Oct. 31, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 98,036**

**Int. Cl. C07c** *41/00*

**U.S. Cl. 260—614 R** **8 Claims**

Aliphatic and alicyclic hydroperoxides may be converted to their corresponding ethers by reacting said hydroperoxides with a suitable alcohol in the presence of an acid and a metal catalyst.

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### 3,758,599

## PRODUCTION OF ALKYL BENZENES

**Nicholas Bernard Lorette, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed May 26, 1972, Ser. No. 257,102**

**Int. Cl. C07c** *5/18, 5/02*

**U.S. Cl. 260—668 D** **12 Claims**

Process for the production of alkyl benzenes wherein norbornenes are passed under superatmospheric pressure through a hydrogenation catalyst in the presence of hydrogen at a relatively low temperature i.e. 50°–250°C. and then passed through a reforming catalyst at a higher temperature i.e. 400°–600°C. and the alkyl benzenes are recovered.

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### 3,758,600

## AROMATIZATION CATALYST AND PROCESS

**Paul E. Eberly, Jr., Baton Rouge; Neville L. Cull, Baker, both of La., and Fred J. Buchmann, deceased, late of Baton Rouge, La. (by Cordelia Atkeson Buchmann, legal represenative and heir), assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed Sept. 24, 1971, Ser. No. 183,381**

**Int. Cl. C07c** *5/27*

**U.S. Cl. 260—673.5** **19 Claims**

An aromatization catalyst is provided comprising from about 0.5 to about 30 percent of a Group VI B metal oxide on a support comprising a mixture of titania and alumina, wherein said titania is present in amounts ranging from about 1 to about 60 percent by weight. The catalyst is employed to promote the conversion of paraffins, olefins, cycloparaffins, cycloolefins and mixtures thereof to aromatics by contacting said paraffins and/or olefins with said catalyst at temperatures ranging from about 400° to about 1200°F.

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### 3,758,601

## THREE-PHASE ORGANICS SEPARATION PROCESS

**Roger Wylie, Baytown, Tex.**

**Filed Nov. 17, 1971, Ser. No. 199,459**

**Int. Cl. C07c** *7/14*

**U.S. Cl. 260—674 A** **9 Claims**

Closely boiling hydrocarbon mixtures in which one of the components forms a solid phase, e.g. crystals, preferably xylene and/or ethylbenzene mixtures, are separated by providing a three-phase zone. One of the phases comprises the crystals of desired product. Another phase is organic material from which the crystals have separated; and the third phase is an immiscible phase.

The material constituting the immiscible phase is chosen so that it is lighter than the crystals but heavier than the remaining organic component. Moreover, it must be able to withstand crystallization itself at the subzero temperatures utilized to form the organic crystals.

Specifically, paraxylene is separated from a mixture of xylene isomers utilizing water plus methyl alcohol or water plus methyl alcohol plus glycol as the immiscible phase.

### 3,758,602
### SELECTIVE CATALYSIS

**Nai Yuen Chen, Cherry Hill, and Stanley J. Lucki, Runnemede, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Division of Ser. No. 531,045, March 2, 1966, Pat. No. 3,535,398. This application Mar. 11, 1970, Ser. No. 877,578**

**Int. Cl. C07c** *9/00, 11/00*

**U.S. Cl. 260—676 R** **3 Claims**

The invention relates to a process for selectively cracking polar compounds from non-polar saturated hydrocarbons in the presence of a crystalline aluminosilicate catalyst having a pore size of about 5 Angstrom units wherein a mixture of polar compounds and non-polar saturated hydrocarbon species having dimensions no greater than 5 Angstrom units are contacted with the aluminosilicate. The molecular species which is capable of being sorbed within the internal pores of the aluminosilicate at a faster rate than the other species is selectively cracked to a chemical species which is distinct from the species admitted.

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### 3,758,603
### PROCESS FOR SEPARATION OF UNSATURATED HYDROCARBONS

**Edward F. Steigelmann, and Robert D. Hughes, Park Forest, both of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed May 12, 1972, Ser. No. 252,607**

**Int. Cl. C07c** *11/12, 9/00*

**U.S. Cl. 260—677 A** **20 Claims**

There is described the separation of aliphatically unsaturated hydrocarbons from mixtures by the combined use of liquid barrier permeation and metal complexing techniques. The liquid barrier is in contact with a film membrane, and the barrier contains complex-forming metal ions in aqueous solution. The metal ions may be, for example, noble metal, mercuric, cuprous or other metal ions, and mixtures of these metal ions, with or without other cations, may be used. The separation of ethylene from ethane and methane is of particular interest.

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### 3,758,604
### ISOMERIZATION-FRACTIONATION PROCESS

**Nathan Sprecher, Waterloo, Belgium, and John Thomas Cotter, Randolph, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed Mar. 15, 1972, Ser. No. 234,734**

**Claims priority, application Great Britain, Mar. 19, 1971, 7,309/71**

**Int. Cl. C07c** *11/12*

**U.S. Cl. 260—677 A** **13 Claims**

A process for separating isobutylene from $C_4$ feeds by subjecting the feed to isomerization using a low-temperature active isomerization catalyst, reducing the butene-1 level followed by fractionation of the isomerized feed and again isomerizing the top fraction containing isobutylene and remaining butene-1 and isolating isobutylene therefrom. Preferably the isomerization of the feed is carried out in two stages under adiabatic conditions, with cooling in between.

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### 3,758,605
### PROCESS

**Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Continuation-in-part of Ser. No. 252,607, May 12, 1972. This application Sept. 13, 1972, Ser. No. 288,781**

**Int. Cl. C07c** *11/02;* **B01d** *53/22*

**U.S. Cl. 260—677 A** **24 Claims**

There is described the separation of aliphatically-unsaturated hydrocarbons from mixtures by the combined use of liquid barrier permeation and metal complexing techniques. The liquid barrier is within a hydrophilic film membrane, and the barrier contains complex-forming metal ions in aqueous solution. The metal ions may be, for example, noble metal, nickel, mercurous, cuprous or other metal ions, and mixtures of these metal ions, with or without other cations, may be used. The separation of ethylene from ethane and methane is of particular interest.

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### 3,758,606
### CORROSION INHIBITORS FOR CUPROUS TETRACHLOROALUMINATE COMPLEXES

**Hugh H. Horowitz, Elizabeth, and Charles E. Jahnig, Rumson, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed June 2, 1972, Ser. No. 259,258**

**Int. Cl. C07c** *7/00, 11/12*

**U.S. Cl. 260—677 A** **12 Claims**

A method is described wherein soluble compounds of antimony, arsenic, and bismuth are dissolved in aromatic hydrocarbon solutions containing cuprous halide-Lewis acid combinations such as cuprous tetrachloroaluminate to prevent the pitting corrosion of carbon steel. Particularly the method is useful in combination with a process for ligand recovery by means of complexing with aromatic sorbent solutions containing said cuprous tetrachloroaluminate complexes.

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### 3,758,607
### INHIBITORS FOR OLEFIN COMPLEXING PROCESS

**Hugh H. Horowitz, Elizabeth, N.J., and Helmut W. Ruhle, Dormagen, Germany, assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed June 2, 1972, Ser. No. 259,219**

**Int. Cl. C07c** *11/12, 7/00*

**U.S. Cl. 260—677 A** **11 Claims**

Combinations of organic phosphines and organic nitrogen bases help stabilize complexing solutions containing cuprous and silver salts whose anionic components are Lewis acids, said salts being dissolved in aromatic solvents, when the solutions are in the presence of olefins, to prevent side reactions from occurring during olefin complexing processes in which the above complexing solutions are employed.

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### 3,758,608
### PROCESS FOR ACID TREATING OF OLEFINS

**Orville W. Rigdon, Groves; Anthony Macaluso, Sr., and William J. Powers, III, both of Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed Aug. 26, 1971, Ser. No. 175,333**

**Int. Cl. C07c** *11/12*

**U.S. Cl. 260—677 AD** **9 Claims**

Olefins, such as $C_8$ to $C_{30}$ olefins formed by thermal cracking of long chain normal paraffins, are subjected to acid treatment by contacting the olefins in liquid phase at a temperature of about 0° to about 225°F. and, preferably, from about 50° to about 100°F., with an adsorbent supported sulfuric acid composition. The process can be conducted, for example, by passing the olefin in liquid phase through a bed of free-flowing, granular, solid adsorbent supported sulfuric acid composition prepared, for example, by contacting an adsorbent, such as silica gel, with sulfuric acid. The spent treating composition can be conveniently reclaimed by burning off the accumulation of adsorbed materials or through solvent action and the recovered silica gel reused in preparing an additional amount of the silica gel supported sulfuric acid material. The acid treated olefins are highly useful for production of olefin sulfonate detergents having an improved color.

### 3,758,609
### PROCESSES FOR THE OXIDATIVE DEHYDROGENATION OF HYDROCARBON FEEDSTOCKS

**Robert S. Cichowski, Arroyo Grande, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Jan. 11, 1971, Ser. No. 105,730**

**Int. Cl. C07c** *5/18, 11/18*

**U.S. Cl. 260—680 E** **4 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase in the presence of an oxygen-containing gas with a catalyst containing cobalt, iron and antimony in an oxidized state or nickel-iron-antimony in an oxidized state. Representative of such conversions is the oxidative dehydrogenation of isopentane to isoprene over a nickel-iron-antimony-oxygen catalyst having a nickel:iron:antimony atomic ratio of 1:3:1. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

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### 3,758,610
### PREPARATION OF ISOPRENE FROM ISOBUTYLENE AND METHYLAL

**John O. Turner, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.**

**Filed Mar. 22, 1971, Ser. No. 126,934**

**Int. Cl. C07c** *1/20, 11/18*

**U.S. Cl. 260—681** **12 Claims**

The reaction of isobutylene and methylal to form a mixture 1,3-dimethoxy-3-methyl butane and 4-methoxy-2-methylbutene-1 and rearrangement of the same to yield isoprene and methanol is disclosed herein. The isobutylene and methylal may be obtained by the oxidation of isobutane to form t-butylhydroperoxide, followed by rearrangement of the hydroperoxide to yield methylal and t-butyl alcohol and dehydration of the alcohol to produce isobutylene.

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### 3,758,611
### METHOD OF REMOVING ALDEHYDES

**Rokuro Denda, and Toshio Kawaguchi, both of Kurashiki, Japan, assignors to Kuraray Co. Ltd., Okayama Prefecture, Japan**

**Filed Sept. 24, 1971, Ser. No. 183,709**

**Claims priority, application Japan, Sept. 29, 1970, 45/85438**

**Int. Cl. C07c** *7/00*

**U.S. Cl. 260—681.5 R** **4 Claims**

A method of removing aldehydes from an organic layer separated from a condensate of a reaction mixture resulting from the vapor phase catalytic decomposition of 4,4-dimethyl-1,3-dioxane to isoprene, which comprises bringing the organic layer and water into liquid-liquid contact at an elevated temperature of 45°C. or higher to extract the aldehydes out of said organic layer.

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### 3,758,612
### DEHYDRATION OF DIOLS USING LITHIUM PHOSPHATE CATALYST

**Jean Maurin, Montivilliers, France, assignor to Compagnie Francaise de Raffinage, Paris, France**

**Division of Ser. No. 30,276, April 20, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 245,798**

**Claims priority, application France, Apr. 22, 1969, 6912684**

**Int. Cl. C07c** *1/24*

**U.S. Cl. 260—681** **3 Claims**

As a new dehydration catalyst for epoxides or diols, lithium phosphate having a ratio of the numbers of Li to P atoms between 2,2 and 3; a process for preparing the catalyst and its uses have also been disclosed.

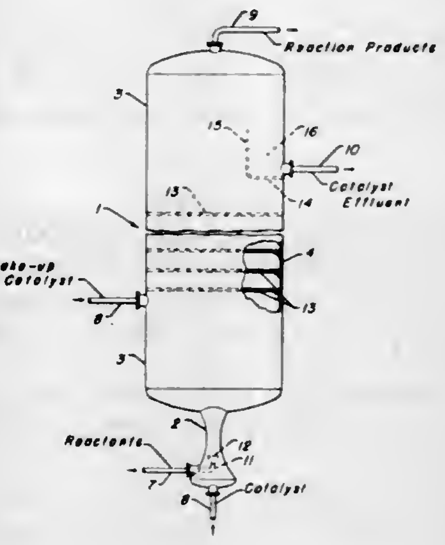
### 3,758,613
### HYDROGEN FLUORIDE-CATALYZED ALKYLATION WITH A VENTURI-SHAPED REACTOR

**Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.**

**Filed June 3, 1971, Ser. No. 149,594**

**Int. Cl. C07c** *3/54*

**U.S. Cl. 260—683.48** **6 Claims**



A process and apparatus for producing an alkylation reaction product from an alkylatable reactant and an olefin-acting reactant utilizing a fluid catalyst. The reactants are introduced into a catalyst stream flowing vertically through a venturi-shaped chamber, the mixture of catalyst and reactants so formed is charged through the venturi-shaped chamber into a retention chamber, and the effluent from the retention chamber is separated in a settling chamber to provide a catalyst phase and a reaction products phase. The product is recovered in the reaction products phase.

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### 3,758,614
### HYDROGENATION OF ORGANIC COMPOUNDS

**Joseph K. Mertzweiller, and Horace M. Tenney, both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 1,282, Jan. 7, 1970, Pat. No. 3,677,970, which is a continuation-in-part of Ser. No. 674,097, Oct. 10, 1967, abandoned. This application May 16, 1972, Ser. No. 253,762**

**Int. Cl. C07c** *5/02*

**U.S. Cl. 260—683.9** **12 Claims**

Novel hydrogenation catalysts are formed by impregnating a suitable support material with an aqueous solution of a salt of a transition metal; heat-treating the impregnated support at a temperature above 500°F. to form chemical complexes on the surface of the support and to drive off moisture and absorbed oxygen; activating the surface complex by contacting the impregnated support with a soluble organometallic compound wherein the metal constituent is selected from Groups I, II and III of the Periodic Chart of the Elements; treating the activated support material in the presence of hydrogen at a temperature of at least 300°F., and thereafter reacting the hydrogen treated activated support material with hydrogen sulfide. The so-formed novel supported sulfided catalysts are highly active for the hydrogenation of organic feedstocks containing relatively high concentration of sulfur in the feedstocks.

### 3,758,615
### PROCESS FOR THE PREPARATION OF ALCOHOLS

**Yusuke Izumi, Yamaguchi-ken; Yuzo Kawasaki, Tokuyama, and Mitsuo Tani, Yamaguchi-ken, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisa, Yamaguchi-ken, Japan**
**Filed May 5, 1970, Ser. No. 34,872**
**Claims priority, application Japan, May 8, 1969, 44/34798**
**Int. Cl. C07c** *29/04*
**U.S. Cl. 260—641** **10 Claims**

A process for the preparation of mono hydric alcohols from olefins which comprises contacting a monoolefin having two to four carbon atoms with an aqueous solution containing silicotungstic radicals at a concentration higher than a molar concentration of 1/40,000 but not exceeding the saturation concentration and having a pH of 2.0 to 4.5, at an elevated temperature sufficient to initiate the hydration of said olefin.

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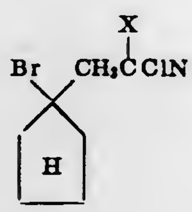
### 3,758,616
### 1-BROMO-1-(2,2-DICHLORO OR (2-BROMO-2-CHLORO)-2-NITROETHYL)-CYCLOPENTANE

**Wilson F. Gum, Jr., and David A. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**
**Filed Sept. 15, 1972, Ser. No. 289,323**
**Int. Cl. C07c** *79/08*
**U.S. Cl. 260—644** **3 Claims**

1-Bromo-1-(2,2-dichloro or (2-bromo-2-chloro)-2-nitroethyl)cyclopentane which corresponds to the formula



wherein X represents chloro or bromo are prepared. These compounds have been found to have fungicidal, bacteriocidal and nematocidal activity.

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### 3,758,617
### HALOGEN SUBSTITUTED POLYCYCLIC HYDROCARBONS

**Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**Filed Aug. 27, 1970, Ser. No. 67,611**
**Int. Cl. C07c** *17/00, 23/46*
**U.S. Cl. 260—648 C** **14 Claims**

Novel compositions of matter comprising halogen substituted polycyclic hydrocarbons containing a vinylene bridge as exemplified by 4,8,9,10-tetrachloro-4,8-vinylene-perhydro-s-indacene are useful as flame retardant agents when composited with polymeric substrates.

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### 3,758,618
### PRODUCTION OF TETRAFLUOROETHYLENE OLIGOMERS

**William Roy Deem, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England**
**Filed Feb. 27, 1973, Ser. No. 15,275**
**Claims priority, application Great Britain, Mar. 3, 1969, 11,137/69**
**Int. Cl. C07c** *17/26;* **C08f** *3/22*
**U.S. Cl. 260—653.1** **10 Claims**

Tetrafluoroethylene is advantageously oligomerized by interacting fluoride ions with tetrafluoroethylene in the presence of quaternary ammonium ions from the chloride, bromide or iodide salts. The preferred source of fluoride ions is potassium fluoride.

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### 3,758,619
### HYDROCARBON CONVERSIONS IN THE PRESENCE OF ONIUM COMPOUNDS

**Francis T. Wadsworth, Trenton, N.J., and Charles G. McAlister, deceased, late of Lake Charles, La. (by Bernice McAlister, heir), assignors to Cities Service Company, New York, N.Y.**
**Filed Dec. 30, 1970, Ser. No. 102,999**
**Int. Cl. C07c** *17/06*
**U.S. Cl. 260—659 A** **1 Claim**

A variety of hydrocarbon conversions including chlorinations, oxychlorinations, oxidations and oxidative dehydrogenations are carried out using onium compounds as catalysts or catalyst-reaction media. Generally, the reactants are passed through a melt of the onium compound or, alternatively, through a bed of the onium compound. The onium compound is preferably either a simple salt or a complex salt.

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### 3,758,620
### PROCESS FOR THE PREPARATION OF GRIGNARD REAGENTS

**Jaroslav Vit, New York, N.Y., assignor to National Patent Development Corporation, New York, N.Y.**
**Continuation-in-part of Ser. No. 874,711, Nov. 6, 1969, Pat. No. 3,629,288. This application June 11, 1971, Ser. No. 152,365**
**Int. Cl. C07f** *3/02, 5/06*
**U.S. Cl. 260—665 G** **11 Claims**

Homogeneous catalyst solvent systems for the preparation of Grignard reagents and the running of Grignard reactions are disclosed. These systems are superior to existing techniques for running Grignard reactions in that they significantly reduce or completely eliminate the induction periods which occur in most Grignard reagent [RMgX; where R=Alkyl or Aryl and X = Cl,Br or I] preparations and make possible the use of alkyl chlorides in the Grignard preparations instead of the more expensive alkyl bromides or iodides. The catalyst solvent systems are formed by the addition of small percentages of reducing hydrides, for example, $LiAlH_4$, $NaAlH_4$, $NaAlH_2(OCH_2CH_2OCH_3)_2$ or $NaAlH(OCH_2CH_2OCH_3)_3$ to the ether solvents, such as diethyl ether, tetrahydrofuran, dibutyl ether or 1,2 dimethoxyethane.

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### 3,758,621
### PROCESS FOR PRODUCING CYCLODODECATRIENES

**Hiroyuki Morikawa; Akiya Nakamura; Noriyoshi Tamura, and Kazuo Yamagishi, all of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan**
**Filed Dec. 14, 1971, Ser. No. 207,955**
**Claims priority, application Japan, Dec. 25, 1970, 45/117720**
**Int. Cl. C07c** *3/00*
**U.S. Cl. 260—666 B** **7 Claims**

Crude butadiene-1,3 which is a B-B fraction is subjected to catalytic trimerization to produce cyclododecatriene-1,5,9 in the presence of a Ziegler-type catalyst comprising a Ti-compound, e.g., Ti $(OPrCl)Cl_3$, an Al-compound, e.g., $AlEt_2Cl$, and electron-donor compounds containing S and containing P, e.g., dimethyl sulfoxide and triphenyl phosphate.

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### 3,758,622
### PREPARATION OF ALKYNYL ARYL COMPOUNDS

**James M. Watson, and Birt Allison, both of Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.**
**Filed May 25, 1971, Ser. No. 146,797**
**Int. Cl. C07c** *15/04*
**U.S. Cl. 260—668 R** **7 Claims**

A process for the conversion of alkyl aryl compounds to alkynyl aryl compounds which comprises subjecting said alkyl aryl compounds to chlorination under conditions suitable for the dichlorination of at least one carbon atom of an alkyl substituent to said alkyl aryl compound or monochlorination of adjacent carbon atoms of said alkyl substituent, subjecting the resulting chlorinated alkyl aryl compound to dehydrochlorination in the presence of a basic medium, and thereafter recovering alkynyl aryl compounds.

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### 3,758,623
### ISOMERIZATION SOLVENTS

**George M. Kramer, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.**
**Continuation-in-part of Ser. No. 28,039, April 13, 1970, abandoned. This application June 2, 1971, Ser. No. 149,368**
**Int. Cl. C07c** *5/24*
**U.S. Cl. 260—668 A** **19 Claims**

Benzene, which contains at least four substituted halogens, is an effective solvent for a Lewis acid catalyst employed in the isomerization of hydrocarbons. A particularly preferred isomerization solvent is 1,2,3,4-tetrachlorobenzene and is used in conjunction with aluminum bromide. In another aspect of this invention, if hydrogen, with or without added hydrogenation components, is added to the catalyst system, the isomerization selectivity of the reaction is greatly improved and the life of the catalyst system itself is greatly enhanced. When substantial amounts of benzene are present in the feed, a hydrogenation component is added to the system so that the benzene is hydrogenated to cyclohexane which is then subsequently isomerized to methylcyclopentane.

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### 3,758,624
### GASOLINE COMPOSITIONS

**Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.**
**Division of Ser. No. 828,753, May 28, 1969, abandoned. This application May 26, 1971, Ser. No. 147,235**
**Int. Cl. C07c** *15/04, 3/56*
**U.S. Cl. 260—668 R** **2 Claims**

A method of reducing intake valve deposits formed in a spark ignition gasoline-fueled internal combustion engine is disclosed. The method features the use of gasoline containing a deposit reducing amount of a high molecular weight alkyl aromatic hydrocarbon or mixture of alkyl aromatic hydrocarbons.

The gasoline compositions and gasoline additive concentrates are also disclosed.

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### 3,758,625
### DEHYDROGENATION CATALYST

**Abraham D. Cohen, Sarnia (Lambton), Ontario, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.**
**Filed Apr. 30, 1971, Ser. No. 138,938**
**Int. Cl. C07c** *5/18, 15/10*
**U.S. Cl. 260—669 R** **10 Claims**

In the dehydrogenation of an organic compound in the vapor phase in the presence of a sulfur compound over a low surface area dehydrogenation catalyst, the initial conversion and thus overall yield to the desired dehydrogenated product is significantly increased by depositing a controlled amount of carbonaceous material, i.e., coke, on the surface of the said catalyst before introducing said catalyst into the dehydrogenation zone. Preferably, about 0.01 to about 20 wt. percent carbonaceous materials, i.e., coke, is deposited on the surface of the low surface area dehydrogenation catalyst before introduction into the dehydrogenation zone in order to initially increase the conversion and thus the overall yield to the desired dehydrogenated product.

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### 3,758,626
### DIMERIZATION OF OLEFINS WITH SUPPORTED PALLADIUM CATALYSTS

**Robert P. Arganbright, and Edward J. Miklas, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.**
**Filed July 29, 1970, Ser. No. 59,370**
**Int. Cl. C07c** *3/12, 3/18*
**U.S. Cl. 260—683.15 R** **16 Claims**

Palladium salts supported on material such as alumina or silica alumina provide effective catalysts for the dimerization or codimerization of α-olefins such as ethylene or propylene in a heterogenous reaction system. The products are easily separated from the catalyst which has a high degree of activity for long periods of time.

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### 3,758,627
### POLYMERIZATION OF OLEFINS USING A SILICA-PHOSPHORIC ACID CATALYST

**Bernard Juguin, and Jean Francois Le Page, both of Rueil Malmaison, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France**
**Division of Ser. No. 869,860, Oct. 27, 1969, Pat. No. 3,657,150. This application Jan. 11, 1972, Ser. No. 217,046**
**Claims priority, application France, Oct. 31, 1968, 68172358**
**Int. Cl. C07c** *3/16*
**U.S. Cl. 260—683.15 C** **7 Claims**

The polymerization, especially the oligomerization, of olefins, for example, propylene and/or butene, wherein the improvement resides in the use of a solid catalyst consisting essentially of a silica carrier and phosphoric acid, the molar ratio of $P_2O_5$ to $SiO_2$ being between 0.6 and 0.95, and the content of the crystalline C form of silicium phosphate being between 75 and 95 percent, said catalyst having been produced by heating a mixture of silica with phosphoric acid at 550 to 1,000°C, and then in a second step, contacting the resultant heated catalyst with steam at 100°—300°C so as to activate same.

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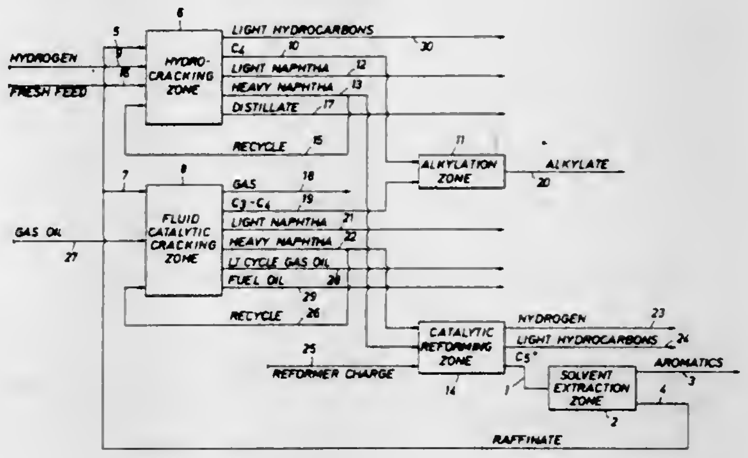
### 3,758,628
### COMBINATION CRACKING PROCESS FOR CONVERTING PARAFFINIC NAPHTHA INTO HIGH OCTANE GASOLINE

**John C. Strickland, and Dorrance P. Bunn, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.**
**Filed Dec. 20, 1971, Ser. No. 210,078**
**Int. Cl. C07c** *3/52;* **G10q** *37/06, 37/10*
**U.S. Cl. 260—683.43** **7 Claims**



A process for manufacturing high octane gasoline from a low octane paraffinic naphtha, which comprises hydrocracking a first portion of the naphtha to yield a $C_4$ fraction comprising isobutane and a hydrocracked light naphtha fraction having a relatively high octane number, catalytically cracking a second portion of the naphtha to yield a $C_3$–$C_4$ fraction comprising propylene, butylenes and isobutane and a catalytically cracked light naphtha fraction having a relatively high octane number, and reacting, in an alkylation zone the hydrocracked $C_4$ fraction and the catalytically cracked $C_3$–$C_4$ fraction to yield a high octane gasoline alkylate. The proportion of naphtha charged to the hydrocracking zone and the catalytic cracking zone are adjusted such that isobutane, butylene and propylene charge to the alkylation zone are in stoichiometric balance.

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### 3,758,629

### CROSS-LINKING OF ADDITION POLYMERS CONTAINING COMBINED FREE CARBOXYL BY REACTION WITH A DI-2-OXAZOLINE

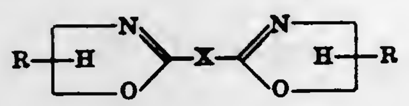
**Bruce P. Thill, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed May 7, 1971, Ser. No. 141,415**

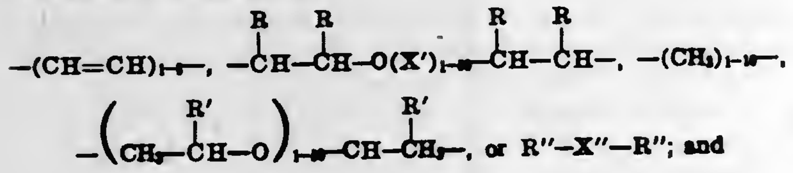
**Int. Cl. C08f** *27/08*

**U.S. Cl. 260—80.8** **4 Claims**

Cross-linking of addition polymers containing free carboxyl groups by utilizing, as a cross-linking agent, from 0.1 to 10 equivalents per equivalent of free carboxyl of a di-2-oxazoline of the formula



wherein X represents



$$-(CH{=}CH)_{1-8}-,\ -\overset{R}{\overset{|}{C}}H-\overset{R}{\overset{|}{C}}H-O(X')_{1-10}-\overset{R}{\overset{|}{C}}H-\overset{R}{\overset{|}{C}}H-,\ -(CH_2)_{1-10}-,$$

$$-\left(CH_2-\overset{R'}{\overset{|}{C}}H-O\right)_{1-10}-CH-\overset{R'}{\overset{|}{C}}H_2-,\ \text{or}\ R''-X''-R'';\ \text{and}$$

in the above formulae each R represents hydrogen or alkyl having from one to four carbon atoms; X′ represents ethyleneoxy or propyleneoxy; R′ represents hydrogen or alkyl having from one to three carbon atoms; X″ represents oxygen or sulfur; and R″ represents alkylene of from two to 20 carbon atoms, arylene of from six to 10 carbon atoms or arylakylene of from seven to 15 carbon atoms.

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### 3,758,630

### METHOD OF PREPARING RESIN COMPOSITIONS

**Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Continuation-in-part of Ser. No. 665,284, Sept. 5, 1967, abandoned. This application Jan. 7, 1971, Ser. No. 194,779**

**Int. Cl. C08g** *49/04*

**U.S. Cl. 260—823** **9 Claims**

Polyphenylene resin compositions of fused and non-fused aromatic ring compounds containing an aromatic curing agent in combination with other resinous modifying and forming material, with or without insoluble polymers, and method.

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### 3,758,631

### POLYCAPROLACTAM BLOCK POLYMERS OF POLYESTERS

**Byron H. Werner, Akron, and Robert A. Hayes, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio**

**Filed July 12, 1971, Ser. No. 161,964**

**Int. Cl. C08g** *45/12*

**U.S. Cl. 260—830 P** **10 Claims**

Block copolymers of polycaprolactam and polylactone are produced by reacting, in the presence of an anionic catalyst, caprolactam with a polylactonediol which has been end-grouped, and optionally chain-extended, with a diisocyanate. The products are useful in elastic articles such as pneumatic tires, threads, etc., and as components of melt adhesives.

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### 3,758,632

### POWDERED COATING COMPOSITION OF UNSATURATED GLYCIDYL AND ANHYDRIDE COPOLYMER AND A FLOW CONTROL AGENT

**Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 16, 1971, Ser. No. 172,235**

**Int. Cl. C08g** *45/04, 45/00*

**U.S. Cl. 260—836** **5 Claims**

Powder coating compositions are disclosed. In general, individual powder coating compositions of this invention are a mixture of several materials. The most significant materials employed in the powder coatings include the following. A copolymer containing epoxy and anhydride crosslinkale, functional groups, forms the most important constituent of the powder coating. This copolymer has a glass transition temperature in the range of 40°C to 90°C and a molecular weight ($M_n$) in the range from about 3,000 to about 10,000. Another material of an individual composition is a flow control agent which forms at least 0.05 percent by weight of the mixture. The flow control agent is a polymer having a molecular weight ($M_n$) of at least 1000. Also, the flow control agent has a glass transition temperature at least 50°C lower than the glass transition temperature of the copolymer. Other materials which may be employed in individual powder coating compositions are catalysts, pigments, antistatic agents and plasticizers.

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### 3,758,633

### POWDERED COATING COMPOSITIONS OF CARBOXY CONTAINING COPOLYMERS, EPOXY CROSSLINKING AGENTS AND FLOW CONTROL AGENTS

**Santokh S. Labana, Dearborn Heights; Amos Golovoy, Westland, and Seymour Newman, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 16, 1971, Ser. No. 172,226**

**Int. Cl. C08g** *45/04*

**U.S. Cl. 260—836** **4 Claims**

Powder coating compositions are disclosed. In general, individual powder coating compositions of this invention are a mixture of the following materials. A copolymer of an $\alpha$, $\beta$ unsaturated carboxylic acid and an ethylenically unsaturated compound is formed in such proportions as to obtain a copolymer with a glass transition temperature in the range of 40°C to 90°C and a molecular weight ($M_n$) in the range of 2,500 to 8,500. The $\alpha$, $\beta$-unsaturated carboxylic acid is present in the copolymer from at least about 3 percent by weight to not more than about 10 percent by weight. Another material of the coating composition is an epoxy resin in the amount of 0.8 to 1.1 epoxy groups for each carboxy group in the copolymer. A third material utilized in forming the powder coating mixture is a flow control agent which forms at least 0.05 percent by weight of the mixture. The flow control agent is a polymer having a molecular weight ($M_n$) of at least 1,000. The flow control agent also has a glass transition temperature at least 50°C below the glass transition temperature of the copolymer.

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### 3,758,634

### POWDERED COATING COMPOSITION OF UNSATURATED GLYCIDYL COPOLYMER, FLOW CONTROL AGENTS AND DIPHENOLIC CROSSLINKING AGENTS

**Santokh S. Labana, Dearborn Heights, and Seymour Newman, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 16, 1971, Ser. No. 172,228**

**Int. Cl. C08g** *45/04, 45/00*

**U.S. Cl. 260—836** **31 Claims**

Powder coating compositions are disclosed. In general, individual powder coating compositions are a mixture of the following materials. A copolymer of glycidyl methacrylate and an ethylenically unsaturated compound is formed in such proportions as to obtain a copolymer with a glass transition temperature in the range of 40°C to 90°C and a molecular weight ($M_n$) in the range of 2500 to 8500. The glycidyl methacrylate is present in the copolymer from at least about 8 percent by weight to no more than about 25 percent by weight. Another material of the coating composition is a cross linking agent formed of a diphenol having a molecular weight in the range of about 110 to 550, the diphenol being present in the amount of 0.8 to 1.1 phenolic hydroxyl groups for each epoxy group in the copolymer. A third material used in forming the powder coating mixture is a flow control agent which forms at least 0.05 percent by weight of the mixture. The flow control agent is a polymer having a molecular weight ($M_n$) of at least 1000. The flow control agent also has, at the baking temperature of the powder coating composition, a lower surface tension than the surface tension of the copolymer.

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### 3,758,635

### POWDERED COATING COMPOSITIONS OF UNSATURATED GLYCIDYL COPOLYMERS WITH FLOW CONTROL AGENTS

**Santokh S. Labana, Dearborn Heights; Yun Feng Chang, Plymouth, and Ares N. Theodore, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 16, 1971, Ser. No. 172,222**

**Int. Cl. C08g** *45/04*

**U.S. Cl. 260—836** **4 Claims**

Powder coating compositions are disclosed. In general, individual powder coating compositions of this invention are a mixture of the following materials. A copolymer of glycidyl methacrylate of glycidyl acrylate and an ethylenically unsaturated compound is formed in such proportions as to obtain a copolymer with a glass transition temperature in the range of 40°C to 90°C and a molecular weight ($M_n$) in the range of 2,500 to 8,500. The glycidyl compound is present in the copolymer from at least about 8 percent by weight to no more than about 25 percent by weight. Another material of the coating composition is a compound which contains tertiary nitrogen atoms in the amount of 0.5 to 10 parts by weight for 100 parts of the copolymer. A third material utilized in forming the powder coating mixture is a flow control agent which forms at least 0.05 percent by weight of the mixture. The flow control agent is a polymer having a molecular weight ($M_n$) of at least 1,000. The flow control agent also has a glass transition temperature at least 50°C below the glass transition temperature of the copolymer.

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### 3,758,636

### BLOCK COPOLYMERS OF POLYAMIDES AND AMINO TERMINATED POLYMERIZED ETHYLENICALLY UNSATURATED COMPOUNDS

**Hideichi Horikawa; Shitomi Katayama, both of Akita, and Noboru Masuda, Kawaguchi, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan**

**Filed Apr. 13, 1972, Ser. No. 243,836**

**Claims priority, application Japan, Apr. 13, 1971, 46/23347**

**Int. Cl. C08g** *41/04*

**U.S. Cl. 260—857 G** **18 Claims**

This invention provides a process for manufacturing block copolymers containing amide linkages and polymerized units of ethylenically unsaturated monomers. The process is characterized by polymerizing an ethylenically unsaturated monomer in the presence of a Lewis Acid and an acid polyhalide to give a $\omega,\omega'$-dihalopolymer, which is then converted by ammonolysis or aminolysis into a $\omega,\omega'$-diaminopolymer, which, in turn, is polymerized with a polycondensable monomer such as an amino acid, an ester of an amino acid, a diamine, a dicarboxylic acid, and ester of dicarboxylic acid, dicarboxyloyl halide to give the block copolymer. These new polymers are useful for conventional applications of polyamides and polyvinyl compounds, particularly in those instances where defects of either type of polymer require improvement. These new polymers are useful for many practical applications, since they can be cast or spun into films, fibers, plastics, etc. depending upon their compositions and types of monomers. For example, polystyrenecaproamide can be used as a plastic in a richer composition of caproamide units, and also as a film in the medium composition balance.

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### 3,758,637

### CROSSLINKED POLYUREA FROM DIHYDRAZIDES OF METHYLATED MUCONIC ACIDS

**Richard D. Cassar, West Chester, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.**

**Filed Dec. 30, 1971, Ser. No. 214,402**

**Int. Cl. C08g** *41/04*

**U.S. Cl. 260—859 R** **4 Claims**

Novel linear polymers having high melting points and suitable for use as adhesives, sealants, films, surface coatings and as chromotographic agents can be prepared from dihydrazides of methylated muconic acids either singularly or in mixtures with each other and an organic diisocyanate. The linear polymer may also be crosslinked by heat or free radicals or with ethylenically unsaturated monomers to produce useful films and coatings.

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### 3,758,638

### UNSATURATED POLYESTERS WITH REDUCED SMOKE LEVELS

**Herman P. Doerge, Oakmont, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Oct. 26, 1971, Ser. No. 192,589**

**Int. Cl. C08f** *43/00, 43/02*

**U.S. Cl. 260—865** **27 Claims**

This invention relates to unsaturated polyester resins having reduced smoke levels and/or flame spread. The invention comprises incorporating particulate organic carboxylic acid into a polyester resin. Preferably the resin is a fire-retardant formulation and the presently-preferred carboxylic acid employed in particulate form is fumaric acid.

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### 3,758,639

### STYRENE SOLUBLE CHEMICALLY RESISTANT POLYESTER

**James C. Spitsbergen, Franklin Lakes, and Young Kwon Kim, Paterson, both of N.J., assignors to Witco Chemical Company, New York, N.Y.**

**Filed Aug. 11, 1971, Ser. No. 170,965**

**Int. Cl. C08f** *21/02;* **C08g** *17/10*

**U.S. Cl. 260—870** **6 Claims**

Mixed bisphenol polyesters of the reaction product of 50–90 mol percent dialkoxylated bisphenol S (dihydroxydiphenyl sulfone), 10–50 mol percentdialkoxylated bisphenol A (isopropylidene bisphenol) and an alpha-unsaturated dicarboxylic acid, may be copolymerized with an aromatic vinyl monomer such as styrene to yield thermoset products having improved heat deformation properties (heat distortion temperatures) and solvent resistance.

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### 3,758,640

### POLYMER COMPOSITION COMPRISING VINYLMONOMER-BUTADIENE POLYMER GRAFT COPOLYMER AND A POLYESTER

**Donald H. Thorpe, Williamsville, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.**

**Continuation-in-part of Ser. No. 775,161, Nov. 12, 1968. This application July 20, 1970, Ser. No. 56,675**

**Int. Cl. C08g** *39/10*

**U.S. Cl. 260—873** **4 Claims**

Polymers are produced by reacting a polymerizable monomer having aliphatic carbon-to-carbon unsaturation and a polymer of butadiene in an emulsion-suspension polymerization system. The polymers can be blended with another polymer of butadiene such as a polymer of a polymerizable monomer and polybutadiene to produce useful products or used alone to produce molded articles, laminates, extruded products, protective coatings and the like having superior tensile strength together with high impact strength. Blends with halogen containing polyesters and phosphorous containing polyesters or other materials are particularly useful in producing fire retardant polymers.

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### 3,758,641

### ADHESION OF POLYMER GELS TO CELLULOSE

**Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Jan. 21, 1971, Ser. No. 108,585**

**Int. Cl. C08f** *33/08, 41/12, 35/06*

**U.S. Cl. 260—874** **5 Claims**

Water-swellable crosslinked polymer gels show increased adhesion to wood and other cellulosic materials and also increased water-absorbing capacity when there is incorporated in the gel up to about an equal weight of a cationic polymer such as a polyalkylenepolyamine, a polyalkylenimine, or a cationic polyacrylamide. The increased adhesion of both dry and water-swollen gels makes the invention useful in fire fighting and in the preparation of water-absorbing laminates.

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### 3,758,642

### PRODUCTION OF DENTAL PROSTHESIS

**Heino Logemann, and Paul-Gunther Bruckmann, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 844,158, July 23, 1969, Pat. No. 3,649,608. This application Nov. 15, 1971, Ser. No. 198,944**

**Claims priority, application Germany, July 23, 1968, P 17 69 840.7; July 23, 1968, P 17 69 839.4**

**Int. Cl. C08f** *15/18*

**U.S. Cl. 260—885** **23 Claims**

An improved composition for use in the production of dental prostheses, comprising 85–60 parts of a polymer of methacrylic acid and 40–15 parts of an acrylic acid ester/methyl methacrylate or methacrylic acid ester/methyl methacrylate copolymer, where the ester content in the copolymer, the molecular weight of the polymer and copolymer, and the particle size of the polymer and copolymer are required to be within specified ranges to obtain a rapid start of processing and a processing time of at least one hour when the composition is used.

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### 3,758,643

### THERMOPLASTIC BLEND OF PARTIALLY CURED MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC

**William K. Fischer, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.**

**Filed Jan. 20, 1971, Ser. No. 108,225**

**Int. Cl. C08f** *29/12, 37/18*

**U.S. Cl. 260—897 A** **45 Claims**

Thermoplastic blends of partially cured monoolefin copolymer rubber (such as EPM or EPDM rubber) with a polyolefin resin (such as polypropylene) exhibit good physical properties and are reprocessable. The partial cure of the rubber is effected by heating the rubber with a curative such as a peroxide. The blends are used to make molded or extruded articles which have good physical properties without requiring vulcanization; preferred blends have the characteristics of thermoplastic elastomers.

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### 3,758,644

### O,N-DI-ALIPHATIC HYDROCARBONS-S-(N-MONOALKYLICARBANYL-METHYL)-THIONOTHIOLPHOSPHORIC ACID ESTER AMIDES

**Claus Stolzer, Wuppertal-Vohwinkel; Ingeborg Hammann, Cologne; Gunter Unterstenhoffer, and Bernhard Homeyer, both of Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

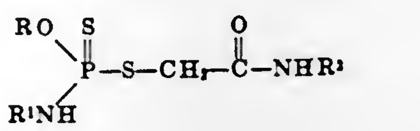
**Filed July 8, 1971, Ser. No. 160,892**

**Claims priority, application Germany, July 15, 1970, P 20 35 074.7**

**Int. Cl. A01n** *9/36;* **C07f** *9/16*

**U.S. Cl. 260—940** **8 Claims**

O,N-di-aliphatic hydrocarbon-S-[N′-monoalkylcarbamylmethyl]-thionothiolphosphoric acid ester amides of general formula



(I)

in which

R and $R^1$ are each an alkyl, cycloalkyl or alkenyl radical with up to six carbon atoms, and

$R^2$ is an alkyl radical with up to six carbon atoms carrying at least one halogen, cyano, lower alkoxy or alkylmercapto radical,

which possess insecticidal, acaricidal, and nematocidal properties.

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### 3,758,645

### CIS-THIOPHOSPHORIC ACID AMIDE ESTERS

**Jean-Pierre Leber, and Karl Lutz, both of Basle, Switzerland, assignors to Sandoz Ltd., (a/K/A) Sandoz AG, Basle, Switzerland**

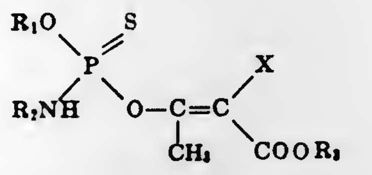
**Filed July 14, 1970, Ser. No. 54,837**

**Claims priority, application Switzerland, July 18, 1969, 11028/69; Jan. 21, 1970, 797/70**

**Int. Cl. A01n** *9/36;* **C07f** *9/16, 9/72*

**U.S. Cl. 260—941** **16 Claims**

The present invention concerns new thiophosphoric acid amide esters of the formula :



wherein $R_1$ is alkyl of one to four carbon atoms,

$R_2$ is alkyl of one to four carbon atoms,

$R_3$ is alkyl of one to five carbon atoms, and

X is hydrogen, chlorine or bromine.

The compounds are useful pesticides.

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### 3,758,646

### HALOGEN CONTAINING PHOSPHORUS MONOOLS

**Nicodemus E. Boyer, Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.**

**Filed July 16, 1970, Ser. No. 55,575**

**Int. Cl. C07f** *9/08, 9/40;* **C08g** *22/44*

**U.S. Cl. 260—953** **36 Claims**

Novel halohydrocarbyl mono hydroxy containing phosphites and phosphonates are prepared. They can be converted to fire resistant polyurethanes or used as stabilizers and fire retardant additives in various compositions.

### 3,758,647

### HALOGEN-SUBSTITUTED O,O-DIALKYL O-CYANOPHENYL PHOSPHATES

**Shigeo Kishino; Yasuo Yamada; Akio Kudamatsu, and Toyohiko Kume, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Dec. 1, 1970, Ser. No. 94,211**

**Claims priority, application Japan, Dec. 4, 1969, 44/96807**

**Int. Cl. C07f** *9/12;* **A01n** *9/36*

**U.S. Cl. 260—940** **16 Claims**

Halogen-substituted O,O-dialkyl O-cyanophenyl phosphates, i.e. O,O-dialkyl O-cyanophenyl phosphates containing one or two chlorine atoms on one of the alkyl groups and optionally containing a halogen atom on the phenyl ring which possess fungicidal, insecticidal and acaricidal properties.

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### 3,758,648

### NUCLEAR FUEL COMPACTS OF COATED PARTICLE FUEL

**Derek William James Sturge, and John Richard Cox Gough, both of Winfrith, England, assignors to United Kingdom Atomic Energy Authority, London, England**

**Filed Mar. 27, 1970, Ser. No. 23,397**

**Claims priority, application Great Britain, July 11, 1969, 35,156/69**

**Int. Cl. G21c** *21/02*

**U.S. Cl. 264—0.5** **4 Claims**

In the forming of a nuclear fuel containing body composed of fission product retaining coated fuel particles in a matrix material it has been convenient to proceed by overcoating each particle with its share of the matrix material incorporating a polymerisable resin and then to press a mass of these in a die, which is heated first to melt the resin and then to effect polymerisation. This resulted in some edge particles protruding through their overcoating and having their fission product retaining coatings damaged. The present invention reduces the risk of such damage by providing a layer of matrix material between the cavity surfaces and the overcoated particles near the edge of the mass which, on pressing, acts as a buffer during the pressing stage and becomes an integral part of the body during the polymerisation stage.

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### 3,758,649

### METHOD OF MANUFACTURING HOLOGRAPHIC REPLICAS

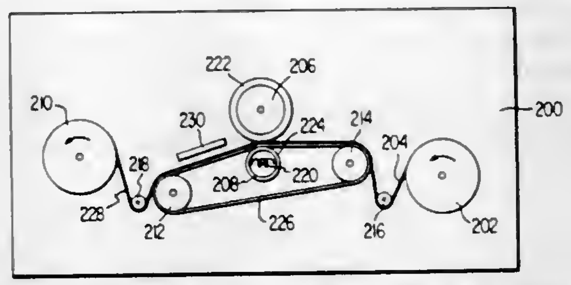
**Joseph Ralph Frattarola, Hightstown, N.J., assignor to RCA Corporation, Princeton, N.J.**

**Continuation of Ser. No. 861,608, Sept. 29, 1969, abandoned. This application June 21, 1971, Ser. No. 155,254**

**Int. Cl. B29d** *11/00*

**U.S. Cl. 264—1** **8 Claims**

A holographic replica in the form of a tape comprises a thermoplastic vinyl polymeric sheet having holographic information in the form of a relief pattern embossed on a surface thereof. The polymeric sheet generally has a thickness of 1 to 6 mils. and the embossed information generally has a contour depth of about up to 500A. The process for making the holographic replicas comprises embossing a pattern consisting of peaks and valleys from either an original holographic image or a holograph master onto a thermoplastic polymeric sheet at a temperature substantially below the flow temperature of the thermoplastic sheet and with a pressure of less than about 200 psi.



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### 3,758,650

### METHOD OF SEALING SHUTTERING AGAINST A DEFORMABLE SECTION OF AN EXTERNAL WATERSTOP FOR USE IN FORMING JOINTS IN CONCRETE

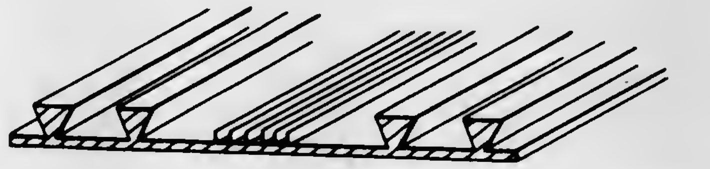
**John Hurst, c/o Servicised Division, W. R. Grace Limited, 2 Caxton St., London, England**

**Continuation of Ser. No. 4,379, Jan. 20, 1970, abandoned. Filed Jan. 13, 1972, Ser. No. 217,676**

**Claims priority, application Great Britain, Jan. 22, 1969, 3,699/69**

**Int. Cl. E04b** *1/16*

**U.S. Cl. 264—34** **7 Claims**



Method of forming joints between cast concrete sections using a external waterstop where the waterstop is provided with an easily deformable section so that placement of stop end shuttering against said easily deformable section will effect a seal sufficient to prevent seepage of the cast concrete under said stop end shuttering.

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### 3,758,651

### METHOD FOR THE CONTINUOUS FORMATION OF FORAMINOUS ELASTOMERIC SHEET MATERIAL FROM A COAGULABLE LIQUID

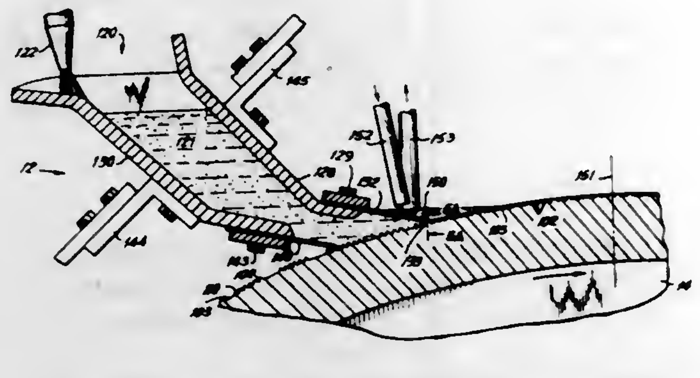
**Peter D. Kaspar, Dover, Del., assignor to International Playtex Corporation, Dover, Del.**

**Division of Ser. No. 820,044, April 8, 1969, Pat. No. 3,489,154, which is a continuation-in-part of Ser. No. 704,783, Feb. 12, 1968. This application Mar. 10, 1971, Ser. No. 122,971**

**Int. Cl. B29h** *1/02, 3/02*

**U.S. Cl. 264—39** **16 Claims**

A method is disclosed for the continuous formation of foraminous elastomeric sheet material from a coagulable liquid, such as a latex. The coagulable liquid is deposited on a forming means shown provided about the face of a rotatable cylinder, or alternatively along an endless conveyor belt. The liquid receiving surface of the forming means includes a space separated plurality of projections. The regions between these projections provide open faced locations for the reception of the coagulable liquid. A means for depositing the liquid as a layer on the forming surface is provided. This depositing means includes a spreading means at its exit which establishes the top surface of the liquid. An active gelling or coagulating agent is applied to the liquid layer immediately emerging from under the spreading means to prevent the formation of a gelled or coagulated film over the projection top surfaces, and form a hole in the deposited layer at each projection location. In the disclosed embodiments the spreading means is provided by a flexible blade member which wipes along the tops of the projections. The surface coagulant also serves to prevent the build-up of a coagulum along the blade spreading region. The liquid is coagulated and stripped from the forming surface as sheet material. In order to reduce the coagulation time, a heat-sensitive coagulable liquid may be used, with appropriate heat being applied to the forming surface.



The sheet material formed on the above-described apparatus has a high degree of uniformity and may have a substantial number of holes per unit area. The number and placing of the holes is determined by the configuration of the forming surface. Areas of contrasting numbers and sizes of holes per unit area are utilized to form a lace-like material or to provide other desired characteristics in the sheet. The hole sizes and distribution of material may be suitably modified in order to prevent the creation of undue stresses in certain regions of the stretched material.

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### 3,758,652

## FORMING COOLING CHANNELS IN HOT THERMALLY BLOATED CERAMIC BLOCK TO FACILITATE COOLING

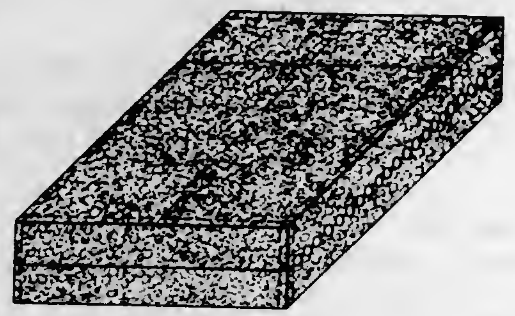
**Aksel Jebens, Hosle, Norway, assignor to Sentralinstitutt for industriell forskning, Oslo, Norway**

**Filed May 13, 1971, Ser. No. 142,993**

**Claims priority, application Norway, May 15, 1970, 1873**

**Int. Cl. C04b** *21/02, 41/02*

**U.S. Cl. 264—43** **6 Claims**



To facilitate more rapid cooling while avoiding cracking in thermally bloated ceramic block, such as foamed clay, glass, slag, etc. channels are drilled through the block after the surface has solidified and cooling air is then blown through these channels in a controlled manner.

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### 3,758,653

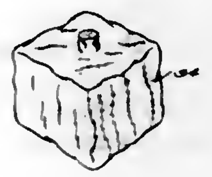
## METHOD OF FORMING CLAY ARTICLES AROUND A COMPRESSIBLE MANDREL

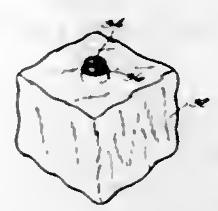
**Narendra Patel, 5074 N. Berkeley, and Bernard J. Roberts, 214 Roosevelt Rd., both of Whitefish Bay, Wis.**

**Continuation-in-part of Ser. No. 883,137, Dec. 8, 1969, abandoned. This application Sept. 17, 1971, Ser. No. 181,555**

**Int. Cl. C04b** *33/28, 33/30;* **B28b** *7/06*

**U.S. Cl. 264—56** **3 Claims**





A hollow ceramic form is made by providing a disposable armature of suitable size and shape and placing wet pliable clay around the armature. The armature or mandrel is comprised of an inner layer of compressible material such as foam rubber and an outer initially rigid layer that softens after it has been in contact with the wet clay form for a short period of time. This compressible mandrel permits the clay body to shrink without cracking while acting as a support until the clay body is self-supporting. After allowing the clay to partially dry to the extent it is self-supporting, the armature is disposed of by combustion or dissolution and the form is then completely dried by conventional drying and shrinking techniques.

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### 3,758,654

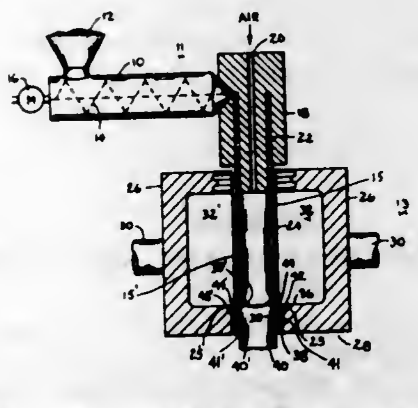
## METHOD FOR BLOW MOLDING AN ARTICLE HAVING A TAIL PORTION WHICH CAN NOT COLLAPSE AGAINST AN ADJOINING WALL OF THE ARTICLE

**Lawrence A. Martino, Trenton, N.J., assignor to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 5,682, Jan. 26, 1970. This application Oct. 14, 1971, Ser. No. 189,123**

**Int. Cl. B29c** *17/07, 17/12*

**U.S. Cl. 264—98** **3 Claims**



Method for preventing a tail portion of a blow molded article from collapsing against an adjoining wall of the article. Recesses in the walls defining the relief cavity within which the tail is shaped as the mold is closed form protrusions on both sides of the tail adjacent the adjoining wall which may be the article base, these protrusions coacting with the wall after opening the mold to prop the tail portion away from the wall and preferably maintain it in an erect position.

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### 3,758,655

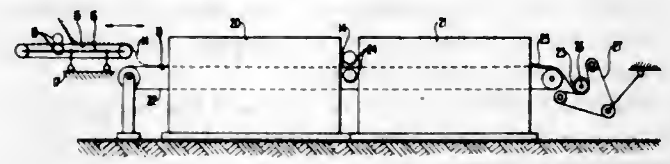
## PROCESS FOR THE MANUFACTURE OF ROUGH BLOCKS

**Michael Wienand, Sieburg, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany**

**Filed Apr. 29, 1970, Ser. No. 32,803**

**Int. Cl. C04b** *43/00;* **B29c** *24/00*

**U.S. Cl. 264—105** **25 Claims**



A process for the production of sheeting from chips of a thermoplastic material includes the steps of forming a granulated thermoplastic synthetic polymeric material transversely and longitudinally into a crude sheet, cutting the crude sheet into transverse strips, and cutting the transverse strips longitudinally into chips having approximately rectangular configurations. Thereafter the process further includes stacking the chips in a uniform distribution in a thin layer, heating the stacked chips to sinter the layer of stacked chips into a sheet, winding the sheet into a round multilayered block, radially compressing the multilayered block, cooling the compressed block and peripherally paring the compressed block into sheeting.

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### 3,758,656

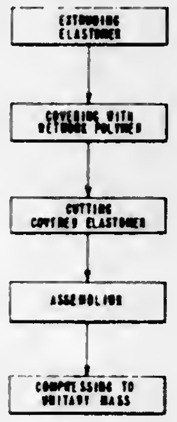
## PROCESS FOR PREPARING AN ELASTOMER WHICH IS STRUCTURALLY SUPPORTED AGAINST EXCESSIVE COLD FLOW DURING SHIPMENT OR STORAGE

**Chi-Kai Shih, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 732,872, May 29, 1963, abandoned. This application Mar. 25, 1970, Ser. No. 22,659**

**Int. Cl. B29f** *3/10;* **C08d** *13/24*

**U.S. Cl. 264—115** **5 Claims**


EXTRUDING ELASTOMER
COVERING WITH ETHYLENE POLYMER
CUTTING COVERED ELASTOMER
ASSEMBLING
COMPRESSING TO UNITARY MASS

A process comprising forming an elastomer into elongated form, covering it with a sheet of ethylene polymer having a cold-flow of less than 30 percent at 60° C., and a melt index of about 0.1–100, dividing the covered elastomer into shorter units, and assembling these units into a compact mass. The elastomeric product is structurally supported against cold-flow.

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### 3,758,657

## PRODUCTION OF A CONTINUOUS MOLDED PLASTIC STRIP

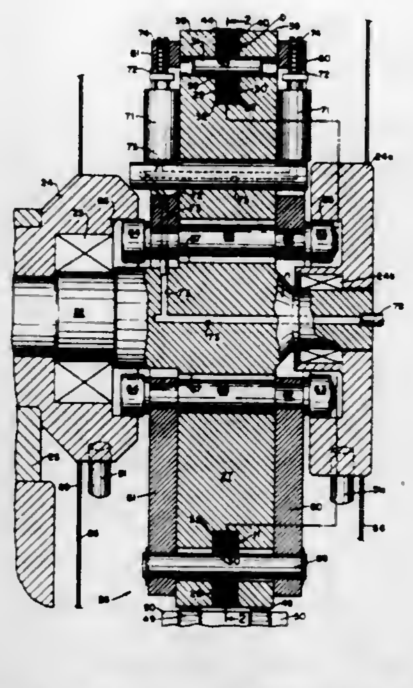
**Marvin Menzin, Waltham; John H. Blanz, Concord; Andrew C. Harvey, Boston, and Sang Soon Rhee, Burlington, all of Mass., assignors to American Velcro, Inc., New York, N.Y.**

**Continuation of Ser. No. 824,597, May 14, 1969, abandoned. This application Dec. 1, 1971, Ser. No. 203,878**

**Int. Cl. B29d** *5/00*

**U.S. Cl. 264—166** **4 Claims**

A continuous molded plastic strip is produced using mold plates which have cavities therein for molding upstanding members or pile-like formations when moldable plastic material is applied under suitable pressure. Thereafter, plastic material is applied to the exposed ends of the pile-like formations while still in the cavities and a strip constituting a base member is formed having the pile-like protuberances integrally attached.



In addition to the apparatus a special method is proposed for producing the upstanding formations or members integrally attached to the base member.

Certain related products are also proposed including a special form of hook member.

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### 3,758,658

## PROCESS FOR THE PRODUCTION OF TECHNICAL ENDLESS FILAMENTS OF HIGH-MOLECULAR WEIGHT LINEAR POLYMERS

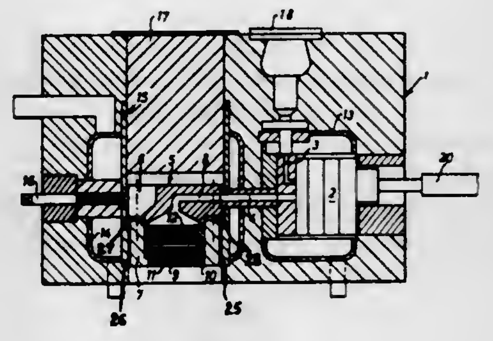
**Karlheinz Riggert, Oberstedten/Ts., Germany, assignor to Vickers-Zimmer Aktiengesellschaft, Planung und Bau von Industrienlagen, Frankfurt, Germany**

**Filed July 24, 1970, Ser. No. 58,054**

**Claims priority, application Germany, Dec. 22, 1969, P 19 64 051.8**

**Int. Cl. B28b** *3/20*

**U.S. Cl. 264—176 F** **8 Claims**



Process for production of endless filaments from high molecular weight polymers having improved properties of low. $\eta_{intr.}$ loss, and few capillary breaks per 10 Km, in a melt spinning process wherein the polymer melt is supplied to a spinning beam at high pressure, the melt is thereafter passed through a flow path constriction which effects a pressure drop of from 150 to 1200 atmospheres and a melt enthalpy increase sufficient to internally heat each of the melt particles uniformly and independently of their position in the melt flow cross section, and thereafter maintaining the increased temperature of the melt by heating all the surfaces thereafter contacted by the melt.

### 3,758,659
### METHOD OF MANUFACTURING FIBERS AND FILMS FROM AN ACRYLONITRILE COPOLYMER

**Hiromu Takeda, Otsu, Japan, assignor to Toray Industries, Inc., Tokyo, Japan**

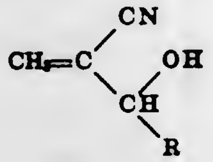
**Filed Dec. 27, 1971, Ser. No. 212,374**

**Claims priority, application Japan, Dec. 26, 1970, 45/118975**

**Int. Cl. D01f** *7/00*

**U.S. Cl. 264—182** **7 Claims**

A method is provided for manufacturing shaped articles especially fibers and films from a solvent solution of copolymer comprised of at least 85 mol % of acrylonitrile and at least one other compound of the formula



$$CH_2{=}C(CN)-CH(OH)-R$$

wherein R is hydrogen, an alkyl group, an aryl group or alkylaryl group. In the method of this invention the solvent solution is shaped and thereafter coagulated in a bath comprised of at least 60 percent by weight of methanol. The shaped articles, for example, filaments, because of their superior properties, are especially useful as textile fibers.

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### 3,758,660
### METHOD OF FORMING STRUCTURES FROM MICROCRYSTALLINE COLLAGEN

**Orlando A. Battista, Forth Worth, Tex., assignor to Avicon, Inc., Forth Worth, Tex.**

**Continuation of Ser. No. 43,942, June 5, 1970, abandoned. This application Oct. 15, 1971, Ser. No. 189,750**

**Int. Cl. D01f** *9/04*

**U.S. Cl. 264—202** **11 Claims**

Shaped structures of planar, tubular and molded three-dimensional forms are formed from concentrated dispersions of a water-insoluble, ionizable, partial salt of collagen and a small amount of water.

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### 3,758,661
### PROCESS FOR PRODUCING A SYNTHETIC PAPER

**Sadao Yamamoto, Kyoto; Seiichirou Honda, Ibaraki, and Akira Nishio, Takatsuki, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Dec. 24, 1970, Ser. No. 101,436**

**Claims priority, application Japan, Dec. 26, 1969, 44/539; Dec. 26, 1969, 44/540; Dec. 29, 1969, 44/219; Jan. 12, 1970, 45/3674; Jan. 12, 1970, 45/3675; Jan. 12, 1970, 45/3676; Jan. 16, 1970, 45/4656; Jan. 16, 1970, 45/4657**

**Int. Cl. B29c** *17/02*; **B29d** *7/22, 7/24*

**U.S. Cl. 264—230** **6 Claims**

A synthetic paper comprising an olefinic resin is produced by stretching an unstretched sheet of an olefinic resin such as polyethylene under the temperature conditions (1) or (2) below:

1. at a temperature lower than the melting temperature of said resin, the temperature of the inner layer of the sheet being different from that of both surface layers by at least 10°C., and
2. at a temperature such that either one of the surface layers and the inner layer is maintained at a temperature lower than the melting temperature of said resin, and the other is maintained at a temperature not lower than the melting temperature of said resin and higher than the melting temperature by 40°C. or less.

The synthetic paper is light in weight and has high strength in addition to other desirable properties and finds utility as packaging and printing.

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### 3,758,662
### FORMING DENSE CARBIDE ARTICLES FROM MOLTEN REFRACTORY METAL CONTAINED IN CARBONACEOUS MOLD

**Joseph M. Tobin, Pittsburgh, Pa., and Lee M. Adelsberg, Big Flats, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 777,948, Oct. 7, 1968, abandoned, which is a continuation-in-part of Ser. No. 513,448, Dec. 13, 1965, abandoned. This application Apr. 30, 1971, Ser. No. 139,229**

**Int. Cl. C04b** *41/40, 41/44, 35/62*

**U.S. Cl. 264—332** **5 Claims**

250 X

NbC, FULLY DENSE & HOMOGENEOUS

A fully dense, homogeneous, single phased refractory monocarbide is prepared by heating a body of a refractory metal such as Ti, Zr, Hf, V, Nb Ta, and alloys of two or more of these metals in a mold of carbonaceous material heating the metal and mold in an inert atmosphere to a temperature above the melting point of the metal but not exceeding the metal carbide-carbon eutectic temperature of the charge for a period of time to cause formation of a full metal carbide body, and cooling to room temperature.

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### 3,758,663
### SEPARATION OF LEAD-210 FROM POLONIUM-210 AND BISMUTH-210

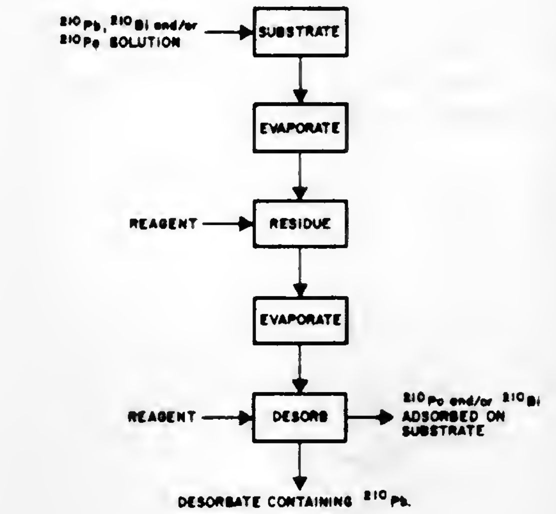
**Harold W. Kirby, Dayton, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed May 18, 1972, Ser. No. 254,703**

**Int. Cl. G01g** *57/00*

**U.S. Cl. 423—2** **4 Claims**

Separation of lead-210 from polonium-210 by disposing a solution containing at least two of the nuclides wherein one is lead-210 on a platinum substrate, evaporating the solutions and selectively leaching or desorbing the lead-210 with a reagent.


²¹⁰Pb, ²¹⁰Bi and/or ²¹⁰Po SOLUTION
SUBSTRATE
EVAPORATE
REAGENT
RESIDUE
EVAPORATE
REAGENT
DESORB
²¹⁰Po and/or ²¹⁰Bi ADSORBED ON SUBSTRATE
DESORBATE CONTAINING ²¹⁰Pb.

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## ERRATUM

For Class 423—15 see:
Patent No. 3,758,280

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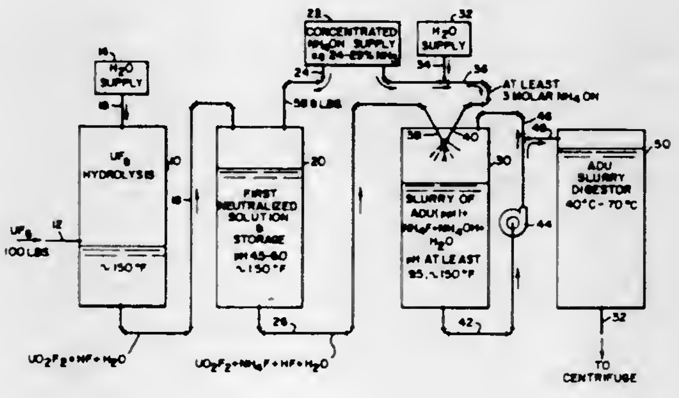
### 3,758,664
### PROCESS FOR PRODUCING AMMONIUM DIURANATE

**Lonnie D. Gerrald, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Dec. 29, 1970, Ser. No. 102,451**

**Int. Cl. C01g** *43/00*

**U.S. Cl. 423—15** **2 Claims**



A process for the recovery of uranium as ammonium diuranate from aqueous solutions having uranyl and fluoride ions such as produced by hydrolyzing $UF_6$, and for reducing soluble uranium losses in the liquid waste stream, by forming a first neutralized solution of uranyl fluoride ($UO_2F_2$), with concentrated ammonium hydroxide, at a pH of about 4.5 to 6.0, and then by precipitating essentially all of the uranium, as ammonium diuranate, $[(NH_4)_2U_2O_7]$, (ADU), from the solution by adding concentrated ammonium hydroxide under controlled conditions preventing formation of any soluble fluoride complexes that would otherwise be ordinarily formed during the precipitation of the ammonium diuranate, to produce an ADU slurry which is calcinable to $UO_2$ having good ceramic pelletizing properties.

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### 3,758,665
### RECOVERY OF REFRACTORY METAL VALUES

**Milos Vojkovic, Libertyville, Ill., assignor to Continental Ore Corporation, New York, N.Y.**

**Filed June 18, 1971, Ser. No. 154,686**

**Int. Cl. C01g** *23/00, 25/00, 31/00, 33/00, 39/00, 41/00*

**U.S. Cl. 423—56** **21 Claims**

Refractory metals such as vanadium are recovered from aqueous solutions containing the metal in the form of the oxide by adding to the solution a ferric salt and an ammonium salt of common anion, and a quantity of finely divided carbon. The vanadium is precipitated in the form of an iron-vanadium oxide complex in intimate admixture with the finely divided carbon. The admixture is recovered and can be reduced to produce a ferro-refractory metal-carbon alloy suitable for use as an additive in steel-making.

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### 3,758,666
### REMOVAL OF CARBON MONOXIDE FROM AIR

**Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Jan. 14, 1971, Ser. No. 106,555**

**Int. Cl. B01d** *53/34*

**U.S. Cl. 423—247** **9 Claims**

Air containing carbon monoxide is contacted with a palladium catalyst under ambient conditions. It is believed that carbon monoxide removal is achieved by initial adsorption and subsequent oxidation to carbon dioxide on the catalyst surface. When the catalyst loses its effectiveness, it has been further discovered that simply reducing the pressure on the catalyst restores lost activity. The catalyst may also be reactivated by purging with a gas and heating.

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### 3,758,667
### PROCESS FOR THE PREPARATION OF MORDENITE

**Herman W. Kouwenhoven, and John Cole, both of 3, Badhuisweg, Amsterdam, Netherlands**

**Filed Mar. 18, 1971, Ser. No. 125,845**

**Claims priority, application Netherlands, Apr. 3, 1970, 7015942**

**Int. Cl. C01b** *33/28*

**U.S. Cl. 423—118** **8 Claims**

High purity mordentie having a very small particle size is prepared at temperatures below 160°C by heating an aqueous mixture of amorphous silica-alumina having a silica/alumina molar ratio between 9.5 and 12.5 and one or more sodium compounds wherein at least 70 mol percent of the sodium, as $Na_2O$, originates from sodium salts of polybasic acids having a $pK$ value >10 at 18°C for the highest dissociation step. The relation between the $Na_2O/Al_2O_3$ molar ratio, $m$, in the starting mixture and the applied reaction temperature, $t$, which is 160°C or lower, is $m = 8.3 - 0.06\,(t - 100) \pm 2.3$.

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### 3,758,668
### $SO_2$ ABSORPTION SYSTEM WITH REGENERATION OF ABSORBENT

**Walter C. Lapple, and Robert E. Matty, both of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.**

**Filed Aug. 11, 1970, Ser. No. 62,930**

**Int. Cl. B01d** *47/02*; **C01b** *17/60*

**U.S. Cl. 423—242** **11 Claims**

A system for removing gaseous $SO_2$ from the flue gases resulting from the combustion of carbon and sulphur containing fuel, where the absorbent liquid contains magnesium and the product liquid consists of magnesium sulphite crystals. The magnesium sulphite crystals are treated to reduce the water of hydration, and then pelletized with carbon for subsequent thermal treatment to release reactive MgO particles reuseable in the absorption system and a gaseous effluent containing $SO_2$. The gaseous $SO_2$ can then be converted to sulphuric acid or sulphur solids.

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### 3,758,669
## PROCESS FOR THE PREPARATION OF URANIUM NITRIDE POWDER

**Ralph A. Potter, Kingston, and Victor J. Tennery, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Nov. 23, 1971, Ser. No. 201,276**
**Int. Cl. C01g** *43/00, 56/00, 57/00*
**U.S. Cl. 423—254** **9 Claims**

A process is disclosed for the preparation of finely divided uranium nitride, (uranium, plutonium) nitride, americium nitride or neptunium nitride by incrementally dehydriding the corresponding metal hydride and nitriding the dehydrided increment. The process is carried out in a cyclic manner until all of the metal hydride has been converted to metal nitride.

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### 3,758,670
## PRODUCTION OF PREDOMINANTLY CRYSTALLINE SOLS

**John P. McBride, Oak Ridge; Kenneth H. McCorkle, Powell, and William L. Pattison, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Continuation-in-part of Ser. No. 814,311, April 8, 1969, Pat. No. 3,629,133. This application Aug. 1, 1969, Ser. No. 846,835. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.**
**Int. Cl. C01g** *43/02*
**U.S. Cl. 423—261** **2 Claims**

The present invention relates to a method for forming a stable, predominantly crystalline sol from an acid-deficient solution of a hydrous metal oxide in which the metal is in the +4 oxidation state which comprises heating said solution to a crystallizing temperature to cause an increase in conductivity of said solution, removing anion at the crystallizing temperature to a condition of further acid deficiency at a rate which approximates the rate of release of free acid to the aqueous phase of the resultant sol, and then adjusting the anion-to-metal ratio of the sol to a desired anion-to-metal ratio.

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### 3,758,671
## PRODUCTION OF POLYPHOSPHATE HYDRATED TO AN EXTENT OF MORE THAN 75% AND HAVING AN APPARENT DENSITY OF BETWEEN 400 AND 600 GRAMS/LITER

**Joachim Kandler, Lechenich; Karl Merkenich, Efferen; Klaus Henning, Hurth, and Wolf-Dieter Pirig, Euskirchen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany**

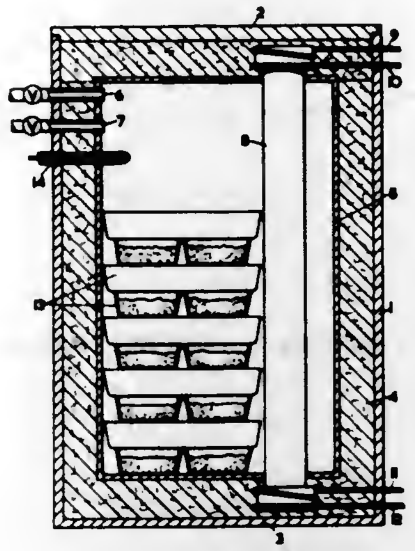
**Filed Aug. 9, 1971, Ser. No. 170,306**
**Claims priority, application Germany, Aug. 10, 1970, P 20 39 595.3**
**Int. Cl. C01b** *15/16, 25/26*
**U.S. Cl. 423—315** **4 Claims**

Production of sodium tripolyphosphate hydrated to an extent of more than 75 percent and with an apparent density of between 400 and 600 grams/liter by spraying water on to phase-Iacontaining sodium tripolyphosphate pneumatically maintained in suspension in a reactor and flowing a stream of gas through the reactor so as to dissipate reaction heat in excess. More particularly, sodium tripolyphosphate with an apparent density of more than 800 grams/liter and containing between 50 and 80 percent of phase-I, is fluidized by flowing a stream of gas through the reactor, countercurrently with respect to the sodium tripolyphosphate.

### 3,758,672
## MANUFACTURE OF SILICON CARBIDE

**Thomas John Lewis, Bishops Stortford, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Filed May 7, 1968, Ser. No. 727,160**
**Claims priority, application Great Britain, May 8, 1967, 21,197/67**
**Int. Cl. C01b** *31/36;* **B01j** *17/02*
**U.S. Cl. 423—345** **5 Claims**



A process for the manufacture of silicon carbide whiskers comprises heating solid-phase carbon and solid-phase silicon at a temperature of at least 1,100°C, said heating being carried out in the presence of a substrate heated to a temperature of at least 1,000°C and in an atmosphere comprising hydrogen and chlorine, whereby silicon carbide whiskers are formed upon the substrate.

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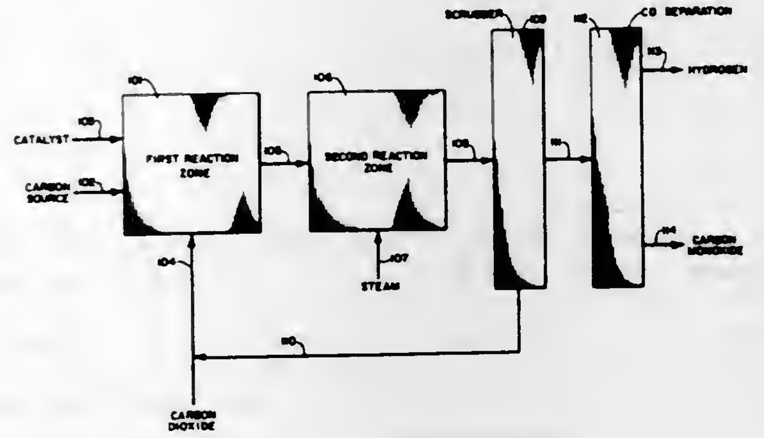
### 3,758,673
## PROCESS FOR THE PRODUCTION OF A CARBON MONOXIDE CONTAINING GAS

**David Buben, and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed Mar. 18, 1971, Ser. No. 125,582**
**Int. Cl. C01b** *31/18, 1/08, 1/02*
**U.S. Cl. 423—415** **5 Claims**

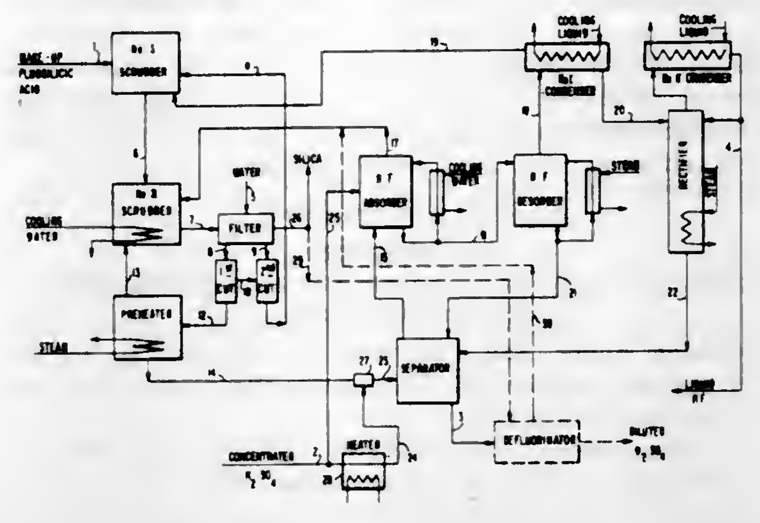


A process for producing carbon monoxide and hydrogen which comprises contacting a carbon dioxide containing gas with a carbonaceous material in the presence of a cesium salt catalyst in a reaction zone operating at temperatures below 1,600° F.

### 3,758,674
## PROCESS FOR PRODUCING ANHYDROUS HF FROM FLUOSILICIC ACID

**William R. Parish; James C. Kelley; Albert Giovanetti, all of Lakeland, Fla., and William A. Lutz, Weston, Conn., assignors to Wellman-Power Gas Incorporated, Lakeland, Fla.**

**Continuation-in-part of Ser. No. 816,229, April 15, 1969. This application Sept. 16, 1971, Ser. No. 181,187**
**Int. Cl. C01b 7/22**
**U.S. Cl. 423—483** **25 Claims**



Concentrated fluosilicic acid is premixed with concentrated sulfuric acid under superatmospheric pressure in the essential absence of a separate vapor phase. The mixture is introduced to a reduced pressure, high temperature separation zone to release a gaseous overhead mixture of HF and $SiF_4$ and a liquid bottoms of diluted sulfuric acid. The overhead mixture is contacted with cooler concentrated sulfuric acid to selectively absorb the HF. The resulting sulfuric acid is conducted to a desorption zone where it is heated to liberate the absorbed HF. The $SiF_4$ can advantageously be used to concentrate weaker fluosilicic acid feed streams, and silica is made in this reaction. The diluted sulfuric acid bottoms from the separation zone can advantageously be contacted with silica to convert any entrained HF to $SiF_4$ and water.

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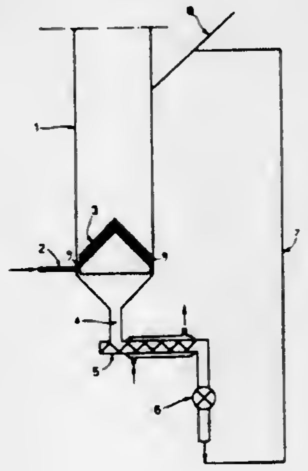
### 3,758,675
## PROCESS FOR PREPARING ALUMINUM TRICHLORIDE

**Luigi Piccolo, and Benedetto Calcagno, both of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy**

**Filed Dec. 22, 1971, Ser. No. 210,722**
**Claims priority, application Italy, Dec. 23, 1970, 33463 A/70**
**Int. Cl. C01f** *7/58*
**U.S. Cl. 423—495** **12 Claims**



A continuous process for producing aluminum trichloride by reacting in a fluid-bed reactor, at 310°–580°C, a chlorine-containing gas with a fluidised bed of aluminum particles, which comprises feeding the chlorine-containing gas at the bottom of the fluidised bed of aluminum particles, through a gas distributor whose upper surface is inclined with respect to the vertical and discharging continuously said fluidised bed of aluminum particles through an outlet means which is located at the lowermost part of said inclined upper surface. The dischared particles are then cooled and recycled to the top end of the fluidised bed with fresh aluminum particles. At the top of the fluid-bed reactor, an aluminum trichloride containing gaseous stream is discharged and aluminum trichloride is separated therefrom.

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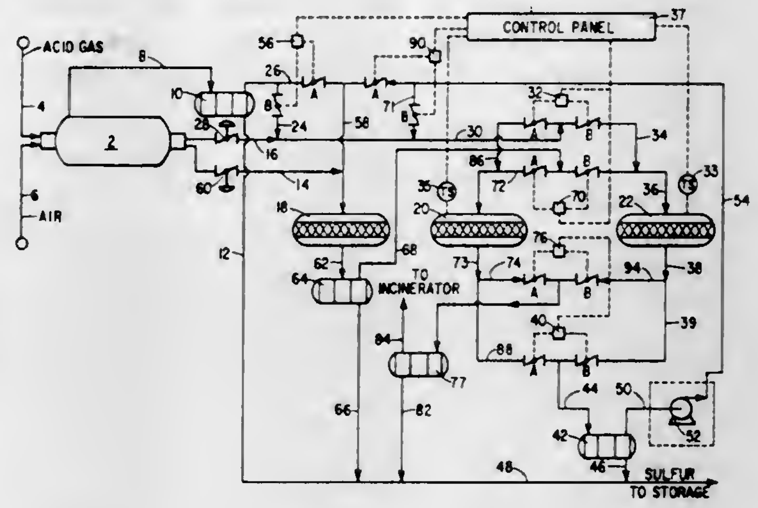
### 3,758,676
## METHOD FOR RECOVERY OF ELEMENTAL SULFUR FROM SOUR GAS

**Clifton S. Goddin, Jr., and Neal R. Montgomery, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.**

**Filed June 21, 1971, Ser. No. 155,050**
**Int. Cl. C01b** *17/04*
**U.S. Cl. 423—573** **5 Claims**



This process takes advantage of the favorable equilibrium that exists for the catalytic reaction of $H_2S$ with $SO_2$ at temperatures of the order of 270° to about 300°F while at the same time offering considerable flexibility in the manner in which the various streams can be handled. Because of the fact that one of the reactors in a multi-reactor plant can always be operated at an effluent temperature of at least 600°F, the process assures good clean up of feed streams containing $CS_2$ and COS. Also, valving and piping are simplified by allowing one reactor to operate as a conventional Claus reactor while the other two reactors operate alternately at temperatures above and below the sulfur dew point.

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### 3,758,677
## PREPARATION OF NON-SOLVATED ALUMINUM HYDRIDE

**Theodore C. Kraus, Cheshire, and Donald J. Mangold, Orange, both of Conn., assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.**

**Filed Oct. 23, 1965, Ser. No. 505,314**
**Int. Cl. C01b** *6/00*
**U.S. Cl. 423—645** **4 Claims**

1. A process for the preparation of non-solvated aluminum hydride which comprises (A) reacting hydrogen chloride with an excess of an alkali metal aluminum hydride of the formula:

$$M\,AlH_4$$

where M is an alkali metal selected from the group consisting of lithium, sodium and potassium and in the presence of a lower dialkyl ether of the formula:

$$R_1OR_2$$

wherein $R_1$ and $R_2$ are alkyl radicals having 1 to 5 carbon atoms, the mole ratio of the said hydrogen chloride reacted with the said alkali metal aluminum hydride being within the range of from about 0.33 to about 0.95; (B) separating liquid and solid phases of the resulting reaction mixture and adding from about 0.05 to 0.20 mole of lithium borohydride per mole of starting alkali metal aluminum hydride to the said liquid phase; (C) adding an aromatic hydrocarbon selected from the group consisting of benzene, toluene and xylene in an amount of from 1 to about 6 times by volume of the said liquid phase; (D) removing the major portion of the lower dialkyl ether to yield a slurry containing solvated aluminum hydride; (E) heating the said slurry at a temperature of from about 35 to about 100° C. and for a period of time sufficient to remove the lower dialkyl ether associated with the aluminum hydride whereby a non-solvated aluminum hydride product is obtained and (F) recovering the non-solvated aluminum hydride.

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### 3,758,678
### BIODEGRADABLE RADIOACTIVE POLYSACCHARIDE PARTICLES

**Thomas W. Lindsay, St. Anthony Village, and David O. Kubiatowicz, Arden Hills, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**

**Filed Sept. 26, 1968, Ser. No. 762,977**
**Int. Cl. A61k** *27/04;* **B29c** *23/00*

**U.S. Cl. 424—1** **13 Claims**

Particles, preferably substantially spherical particles having a smooth outer surface, consisting essentially of solid, cold-water insoluble vehicle comprising a physiologically acceptable, parenterally metabolizable radioactive polysaccharide, said particles being substantially non-leachable upon short term exposure to cold water. The particles can be administered parenterally for diagnositc, prophylactic or therapeutic purposes. On administration in this way, they are broken down or solubilized by the body fluids over a predeterminable period ranging from minutes to several days, whereupon the radioisotopic material is excreted from the body thus limiting exposure to the radiation.

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### 3,758,679
### PROPOXYPHENE NAPSYLATE TIMED-RELEASE PARTICLES

**Werner M. K. Seidler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianpolis, Ind.**

**Filed Feb. 22, 1972, Ser. No. 227,920**
**Int. Cl. A61k** *27/12*

**U.S. Cl. 424—19** **14 Claims**

A pharmaceutical preparation is described which comprises particles of propoxyphene napsylate having timed-release properties.

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### 3,758,680
### COMPOSITION OF MATTER AND METHOD OF USE

**Norman Leo Henderson, Park Ridge, N.J.; August Joseph Bruno, Chester, N.Y., and James Joseph Drain, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Mar. 22, 1971, Ser. No. 127,024**
**Int. Cl. A61k** *9/00*

**U.S. Cl. 424—22** **5 Claims**

A composition of matter consisting of sulfamethoxypyridazine or sulfaethoxypyridazine, a bismuth subcarbonate or bismuth subnitrate and ethylcellulose in a sustained release formulation which provides prolonged high sulfonamide blood levels in the treatment of warm-blooded and particularly ruminant animals. A method of using said compositions for controlling bacterial infections is described.

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### 3,758,681
### ANTIFUNGAL ANTIBIOTIC A-9145 AND PROCESS FOR PRODUCTION THEREOF

**Robert L. Hamill, New Ross, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation-in-part of Ser. No. 57,438, July 23, 1970, abandoned. This application May 22, 1972, Ser. No. 255,864**
**Int. Cl. A61k** *21/00*

**U.S. Cl. 424—118** **3 Claims**

Antibiotic A-9145 produced by culturing Streptomyces griseolus NRRL 3739 in a nutrient culture medium under submerged aerobic fermentation conditions is recovered therefrom and obtained as a white amorphous water-soluble powder. Antibiotic A-9145 forms acid addition salts with pharmaceutically acceptable acids and inhibits growth of bacteria and fungi, especially Candida albicans.

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### 3,758,682
### PHARMACEUTICAL COMPOSITIONS COMPRISING ORGOTEIN AND THEIR USE

**Wolfgang Huber, San Francisco, and Thomas L. Schulte, Woodside, both of Calif., assignors to Diagnostics Data, Inc., Mountain View, Calif.**

**Continuation-in-part of Ser. No. 3,538, Jan. 16, 1970, abandoned, and a continuation-in-part of Ser. No. 15,886, March 2, 1970, and a continuation-in-part of Ser. No. 576,454, Aug. 31, 1966, abandoned, and a continuation-in-part of Ser. No. 494,048, Oct. 8, 1965, abandoned. This application Mar. 23, 1972, Ser. No. 237,507**
**Int. Cl. A61k** *27/00;* **C07g** *7/04*

**U.S. Cl. 424—177** **9 Claims**

Pharmaceutical compositions comprising, in a pharmaceutically acceptable carrier, an effective unit dosage amount of orgotein, the non-proprietary name assigned to members of a family of globular, soluble metalloprotein congeners whose compact conformation is maintained by chelated divalent metals, usually about 2 GAPM each of Cu and Zn, in isolated, substantially pure or pure form, some of which metalloproteins, in various states of purity, have been named erythrocuprein, hepatocuprien, cerebrocuprien, cytocuprein and superoxide dismutase, are useful in the treatment of inflammatory, shock and toxic conditions.

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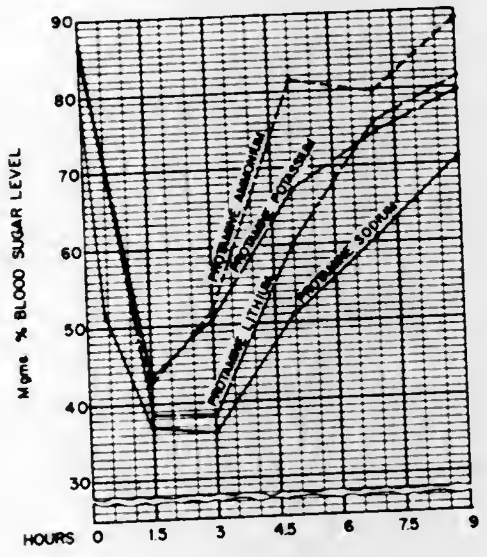
### 3,758,683
### INSULIN PRODUCT

**Richard L. Jackson, 951 N. Arlington Ave., Indianapolis, Ind.**

**Filed Apr. 30, 1971, Ser. No. 139,120**
**Int. Cl. A61k** *17/02*

**U.S. Cl. 424—178** **4 Claims**



The invention relates to a combination of protamine with an insulin salt. The insulin salt is derived by crystallization of insulin in the presence of ions of an alkali metal or metalloid such as sodium, potassium, lithium, cesium or ammonium at an alkaline pH range. The protamine is present in an amount from about 0.2 to about 1.5 mg. of protamine for each 100 units of insulin. The insulin salt and protamine form an insoluble complex at a pH from 6.5 to 8 in an aqueous medium, which complex when dried is easily reconstituted without activity loss.

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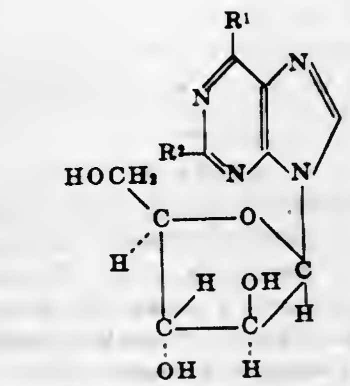
### 3,758,684
### TREATING DNA VIRUS INFECTIONS WITH AMINO PURINE DERIVATIVES

**Gertrude B. Elion, Bronxville, N.Y., and Robert A. Strelitz, Edison, N.J., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C. and The Wellcome Foundation, Ltd., London, England**

**Division of Ser. No. 877,443, Nov. 17, 1969. This application Sept. 7, 1971, Ser. No. 178,483**
**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—180** **5 Claims**

Compounds of the formula



where $R^1$ is amino or lower alkylamino, $R^2$ is amine or hydrogen and pharmaceutically acceptable salts thereof, provided that when $R^1$ is amino, $R^2$ is amino. The compounds are useful as immune suppressants and as antivirals.

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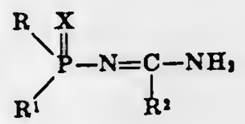
### 3,758,685
### CERTAIN PHOSPHORUS CONTAINING AMIDINE COMPOUNDS AS INSECTICIDES AND ACARICIDES

**Ferenc M. Pallos, Pleasant Hill, Calif., assignor to Stauffer Chemical Company, New York, N.Y.**

**Division of Ser. No. 885,263, Dec. 15, 1969. This application Jan. 11, 1971, Ser. No. 105,688**
**Int. Cl. A01n** *9/36*

**U.S. Cl. 424—211** **9 Claims**

Compounds of the formula:



$$(R)(R^1)P(=X)-N=C(R^2)-NH_2$$

in which R is lower alkyl or lower alkoxy; $R^1$ is lower alkoxy or lower alkylthio; $R^2$ is hydrogen, lower alkyl, phenyl, mono or di-substituted phenyl; and X is oxygen when $R^1$ is lower alkylthio and sulfur when $R^1$ is lower alkoxy as insecticides and acaricides, and a process for preparing the compounds above having X be oxygen.

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### 3,758,686
### METHOD OF USING STEROID ACETONIDES

**George Madison Sieger, Montvale, N.J.; Walter Shultz, Spring Valley, N.Y., and Charles Krieger, Clifton, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Dec. 7, 1971, Ser. No. 205,762**
**Int. Cl. A61k** *17/00*

**U.S. Cl. 424—241** **7 Claims**

A method of treating topical inflammation in mammals by the administration of triamcinolone acetonide-21-valerate in a pharmaceutically acceptable carrier.

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### 3,758,687
### CONTRACEPTIVE METHOD AND COMPOSITION

**Joachim Ufer; Karl-Heinz Kimbel, and Ursula Lachnit, all of Berlin, Germany, assignors to Schering AG, Berlin, Germany**

**Continuation of Ser. No. 721,614, Apr. 16, 1968, abandoned. Filed Apr. 20, 1971, Ser. No. 135,814**

**Claims priority, application Germany, Apr. 19, 1967, Sch 40583**

**Int. Cl. A61k** *17/00*

**U.S. Cl. 424—243** **1 Claim**

Conception is prevented in a female of reproductive age without suppressing ovulation by administering to such female within the period starting with the fifth and ending with the eighth day of the menstrual cycle an effective amount of a progestogene which when administered in such amount effective for preventing conception has at most an insignificant suspension effect on gonadotropin secretion.

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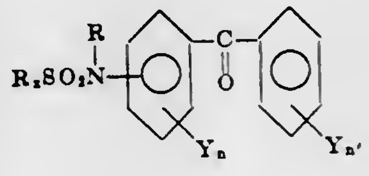
### 3,758,688
### SUBSTITUTED SULFONANILIDES IN THE TREATMENT OF INFLAMMATION

**Jerry E. Robertson, North Oaks; Joseph K. Harrington, Edina, and Donald C. Kvam, North Oaks, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.**

**Continuation-in-part of Ser. No. 45,413, June 11, 1970, abandoned, which is a division of Ser. No. 832,824, June 12, 1969, Pat. No. 3,576,866, which is a continuation-in-part of Ser. Nos. 588,338, Oct. 21, 1966, abandoned, and Ser. No. 719,741, April 8, 1968, abandoned. This application May 24, 1972, Ser. No. 256,377**
**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—324** **17 Claims**

Benzoylhaloalkanesulfonanilides of the general type



wherein $R_f$ is a haloalkyl group having up to four carbon atoms and at least one halogen atom bonded to the alpha carbon atom or if there is no halogen bonded to said alpha carbon atom, having at least 2 halogen atoms bonded to the beta carbon atom, R is hydrogen, alkyl or alkenyl containing not more than three carbon atoms, or a pharmaceutically acceptable cation; each Y is selected from hydroxy, halogen and alkyl, alkoxy, haloalkyl and haloalkoxy groups having up to 4 carbon atoms and n and *n'* are each 0–3. These compounds and their salts have valuable pharmacological activity as anti-inflammatory agents.

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### 3,758,689
### METHOD OF TREATING PERIODONTAL DISEASE
**Irving Rapfogel, 554 S. Summit, Fort Worth, Tex.**
**Filed Mar. 24, 1971, Ser. No. 127,782**
**Int. Cl. A61k** *5/00*
**U.S. Cl. 424—329** **3 Claims**

Self-administerable method of treating periodontal disease by providing a dilute aqueous benzalkonium chloride solution, pumping the solution through an orifice to provide a pulsating jet stream that is capable of penetrating directly into the periodontal pockets associated with periodontal disease, and applying the jet stream to diseased gingival tissue and into the periodontal pockets.

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### 3,758,690
### PHARMACEUTICAL COMPOSITIONS CONTAINING N-CYCLOPROPYL-1-AMINO INDANES AND USE OF SUCH N-CYCLOPROPYL COMPOUNDS AS HYPOTENSIVES
**Maurice Ward Gittos, Slough; John William James, Langley, and Leslie Frederick Wiggins, Herkshire, all of England, assignors to Aspro-Nicholas Limited, London, England**
**Division of Ser. No. 835,841, April 15, 1969, Pat. No. 3,629,463, which is a division of Ser. No. 652,029, July 10, 1967, abandoned, which is a continuation-in-part of Ser. No. 623,470, March 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 385,761, July 28, 1964, abandoned. This application June 5, 1970, Ser. No. 57,391**
**Claims priority, application Great Britain, Aug. 2, 1963, 30,832/63; July 16, 1966, 32,067/66**
**Int. Cl. A61k** *27/00*
**U.S. Cl. 424—330** **8 Claims**

N-cyclopropyl-1-aminoindanes have useful pharmacological properties in that, when administered to hypertensive animals, including humans, they lower the blood pressure of these animals. Pharmaceutical compositions containing these compounds may be administered orally, rectally or parenterally in dosage unit form, each dosage unit containing from 1 to 150 mg. of active ingredient. Up to two or three dosage units may be administered four times daily. Reduced dosages may be used for maintenance therapy.

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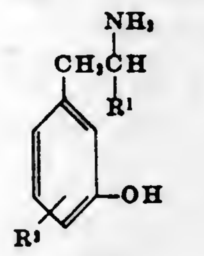
### 3,758,691
### NEW SUBSTITUTED HYDROXYPHENYL-ALKYLAMINES IN THE TREATMENT OF MENTAL ILLNESS
**Per Arvid Emil Carlsson, Goteborg; Hans Rudolf Corrodi, Askim; Sven Goran Hallihagen, Molndal, and Ulf Krister Junggren, Goteborg, all of Sweden, assignors to Aktiebolaget Hassle, Gothenburg, Sweden**
**Division of Ser. No. 811,662, March 28, 1969, Pat. No. 3,655,737. This application Aug. 11, 1971, Ser. No. 171,018**
**Claims priority, application Sweden, Apr. 1, 1968, 4332/68**
**Int. Cl. A61k** *27/00*
**U.S. Cl. 424—330** **4 Claims**

Compounds represented by the formula



wherein $R^1$ is a member of the group consisting of $CH_3$, $C_2H_5$ and $C_3H_7$, and $R^2$ in position 2, 4, 5 or 6 on the benzene nucleus is a member of the group consisting of F, Cl, Br, $CH_3$, $C_2H_5$ and $C_3H_7$, pharmaceutical compositions containing these compounds, and the use thereof for therapeutic purposes.

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### 3,758,692
### SYMPATHOMIMETIC PROCESS AND COMPOSITIONS EMPLOYING SULFONAMIDOPHENALKYLAMINES
**Aubrey A. Larsen, Evansville, Ind.; William A. Gould, deceased, late of Ontario, Canada, and Barbara E. Gould, legal representative, Toronto, Ontario, Canada, assignors to Mead Johnson & Company, Evansville, Ind.**
**Division of Ser. No. 817,272, April 14, 1969, Pat. No. 3,574,741, which is a continuation-in-part of Ser. No. 507,664, Nov. 15, 1965, abandoned. This application Dec. 14, 1970, Ser. No. 98,129**
**Int. Cl. A61k** *27/00*
**U.S. Cl. 424—321** **8 Claims**

Pharmaceutical compositions comprised of phenalkylamine compounds having both hydroxyl and sulfonamido groups in the phenyl ring are described. The sulfonamido-phenalkylamines are useful in decongestant and sympathomimetic processes.

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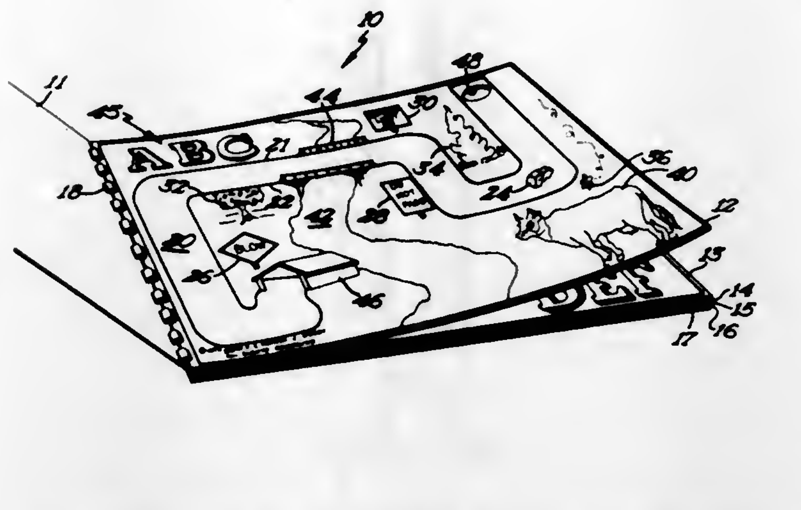
# ELECTRICAL

### 3,758,693
### INSTRUCTIONAL AND AMUSEMENT DEVICE
**David F. Ebert, 2119 S. 5th St., Apt. 4, Minneapolis, Minn.**
**Filed Nov. 13, 1972, Ser. No. 305,969**
**Int. Cl. G09b** *19/00*
**U.S. Cl. 35—8 R** **11 Claims**



An instructional and amusement device is disclosed which, in the preferred embodiment, is in the form of a book of several pages edgewise interconnected to allow the successive turning of pages in a sequential manner. Each page includes a path having a beginning on the page, having a convoluted traversal of the page, and having an end surrounding an aperture in the page. An object having significant magnetic properties is placed at the beginning of the path, and a magnet is placed under the book-like device to thus allow the object to be moved over the path under magnetic attraction between the magnet and the object under the control of a user until the object drops into an aperture in the page and onto the next page. The then exposed page is removed and the process is repeated upon the next page.

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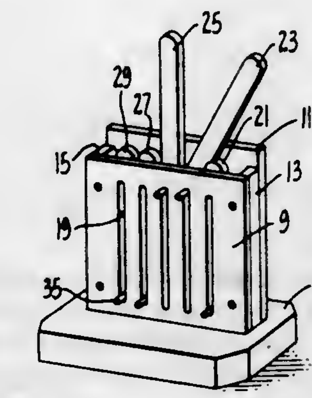
### 3,758,694
### SIMULATED HAND
**John F. Lobush, and Arlene J. Lobush, both of 709 Loma Prieta, Aptos, Calif.**
**Filed Apr. 12, 1972, Ser. No. 243,220**
**Int. Cl. G09b** *19/02*
**U.S. Cl. 35—31 R** **1 Claim**



A simulated hand is provided for use primarily as a teaching aid wherein the hand has a representation of fingers which may be raised or lowered as well as moved from side-to-side so that any combination can be made of the "fingers" to simulate the fingers of a hand.

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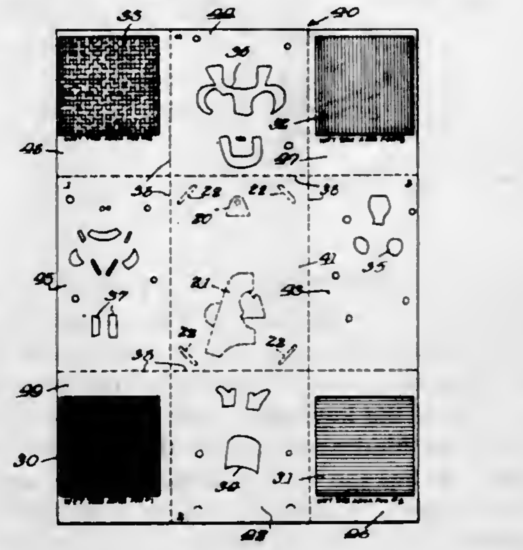
### 3,758,695
### NOVELTY AND EDUCATIONAL IMAGE TRANSFER UNIT
**Carol C. Goodman, Skokie, and William Felbel, Des Plaines, both of Ill., assignors to Chicago Display Company, Melrose Park, Ill., by said Goodman**
**Filed July 30, 1971, Ser. No. 167,611**
**Int. Cl. G09b** *11/04*
**U.S. Cl. 35—26** **3 Claims**



A novelty and educational image transfer unit is provided which includes a substrate having an inner, central area and a plurality of outer areas in surrounding relationship therewith, a folding assembly for permitting each of the outer areas to fold over and contact the inner area, and a series of individual designs on each of the outer areas, each design being capable of receiving a transferable coloring composition so that as each outer area is folded over the inner area the coloring composition carried by the design for that area is transferred to the inner area forming a composite multicolored design thereon.

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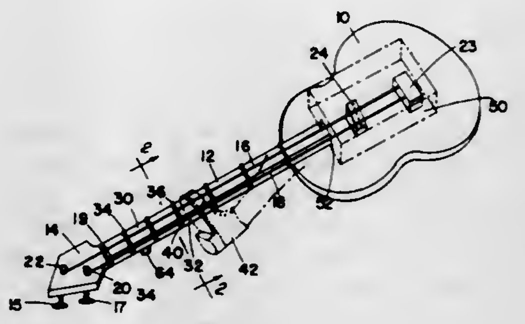
### 3,758,696
### FOOT OPERATED ELECTRIC BASS
**Meredith E. Miller, Box 73, R No. 1, Lockbourne, Ohio**
**Filed May 11, 1972, Ser. No. 252,284**
**Int. Cl. G10h** *3/00*
**U.S. Cl. 84—1.16** **15 Claims**

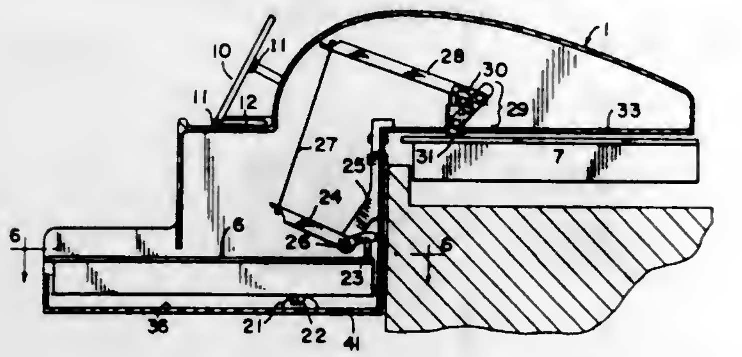


A floor mounted electric bass played solely by striking its strings with a player's shoe and thereby depressing its strings against its frets. The base is a stringed instrument with a neck having two transversely oriented fretted surfaces. One string, or one string unit comprising multiple strings tuned as a unit for playing in unison, is secured above each of the fretted surfaces and when not depressed is contacted by a vibration inhibiting pad. A magnetic pickup converts the string vibration to electrical signals when a string is depressed against a fret.

**3,758,697**

### KEYBOARD REACH EXTENDERS

**David S. Goldsmith, 8359 Crandon Ave., Chicago, Ill.**
**Filed Jan. 19, 1972, Ser. No. 218,860**
**Int. Cl. G10c** *3/12*
**U.S. Cl. 84—425** **3 Claims**



An attachment for an actual piano, for example, comprising a smaller size keyboard than that of the full-size instrument with a linkage for coupling the attached keyboard in such a way that its keys actuate those of the actual full-size keyboard. The reduced size of the keyboard permits a child to play the instrument without hindrance due to the smaller size of his hands. A second linkage is provided for the attachment keyboard for altering the lateral spaces between the keys whereby the reach of the attachment keys may be varied to accommodate the reach of a user of the attachment.

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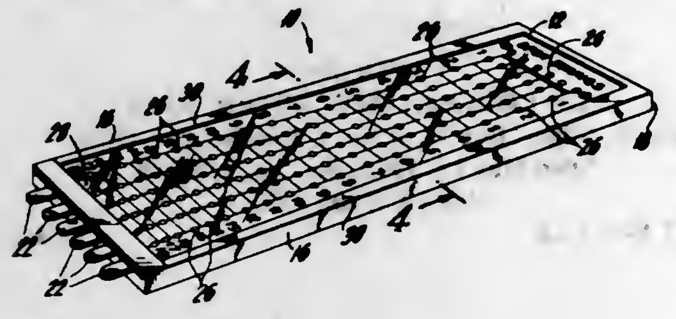
**3,758,698**

### FRETTED INSTRUMENT FINGERBOARD CHORD SLIDE RULE

**Joseph F. Matyas, 218 2nd St., Hicksville, Long Island, N.Y.**
**Filed Oct. 12, 1972, Ser. No. 296,857**
**Int. Cl. G10b** *15/00*
**U.S. Cl. 84—485** **10 Claims**



A 248/229 slide rule that simulates the finger board of fretted instruments is provided. The slide rule includes a housing having a plurality of longitudinally extending channels or guideways each of which is adapted to receiving an axially displaceable slide, one for each string of the instrument. A mask is provided having a number of openings arranged in a grid-like pattern that overlays the channels and the slides and which coincides with the strings and the frets of the instrument. One surface of each of the slides includes a reference mark that is visible as a distinctively colored dot through a selected one of the openings in the mask while the opposite or rear surface of each slide includes a sequential array of musical notes of the chromatic scale of the respective strings. The written note symbols on the rear surface of each slide successively register through openings in the rear surface of the housing in order to identify by letter the designation of the corresponding musical note indicated by the reference mark.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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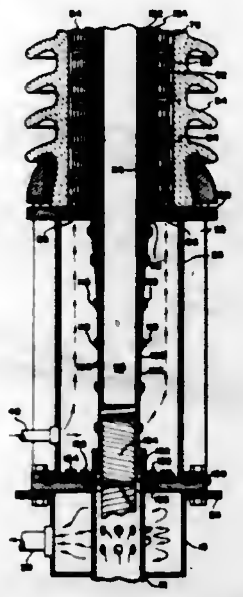
**3,758,699**

### APPARATUS AND METHOD FOR DYNAMICALLY COOLING A CABLE TERMINATION

**George E. Lusk, Downers Grove, and James H. Nicholas, Flossmoor, both of Ill., assignors to G & W Electric Specialty Company, Blue Island, Ill.**
**Filed Mar. 15, 1972, Ser. No. 234,898**
**Int. Cl. H02g** *15/22*
**U.S. Cl. 174—19** **27 Claims**



A cable termination cooling system circulates an insulating dielectric liquid through a heat exchanger and selected internal regions of a high voltage cable termination, to dynamically cool, without degradation of the dielectric characteristics of the cable termination. The current carrying capacity of the cable within the termination is thereby effectively increased, together with the energy transferring capabilities of the cable system with which it is associated.

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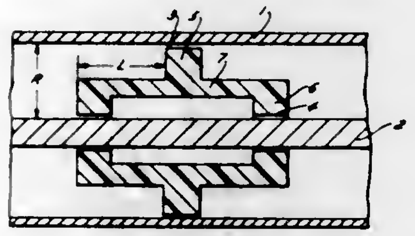
**3,758,700**

### INSULATING SPACE FOR HIGH-FREQUENCY COAXIAL CABLES AND ELECTRICAL FITTINGS ASSOCIATED WITH IT

**Hans Leo Ditscheid, Refrath, Germany, assignor to Felten & Guilleaume Kabelwerke Aktiengesellschaft, Cologne, Germany**
**Filed Oct. 6, 1971, Ser. No. 187,048**
**Claims priority, application Germany, Oct. 13, 1970, P 20 50 123.9**
**Int. Cl. H01b** *11/18*
**U.S. Cl. 174—28** **11 Claims**

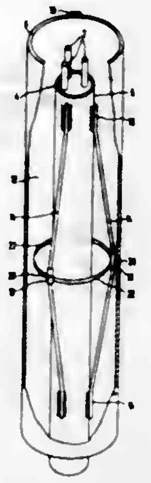


For use in high-frequency coaxial transmission cables having a tubular outer conductor and at least one inner conductor axially supported therein, an insulating spacer to maintain said conductors in coaxially spaced relationship comprised of a hollow body portion from which extend radially outwardly and inwardly a plurality of contact members in form of flanges or ribs. The contact members are axially and/or circumferentially offset from each other along the body portion and are adapted in operation of the cable to engage the inner and outer conductors of the cable. The body portion of the spacer may be a true cylinder or may be in the form of a hollow truncated cone for increased pressure resistance in instances where the cable is filled with pressurized gas.

**3,758,701**

### SPACER MEANS FOR A SUPERCONDUCTIVE ELECTRICAL CABLE

**Fritz Schmidt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Aug. 10, 1972, Ser. No. 279,393**
**Claims priority, application Germany, Aug. 17, 1971, P 21 71 202.2**
**Int. Cl. H01b** *9/04*; **H01v** *11/00*
**U.S. Cl. 174—28** **11 Claims**



An electrical cable which includes an electrical superconductor immersed in liquid coolant. The cable includes inner and outer tubular conduits with the inner conduit enclosing the electrical superconductor and the liquid coolant. At least two support elements are positioned between the conduits to provide support for the adjacent region of the inner conduit to maintain it in spaced coaxial relation within the outer conduit. Each support element includes a slender arch-shaped member having axially spaced first and second ends and an apex intermediate the ends spaced radially therefrom. The ends of each support element are fixedly connected with one of the conduits and a sliding connection is provided between its apex and the other of the conduits. At least one annular strut connects the support elements so that they are braced together.

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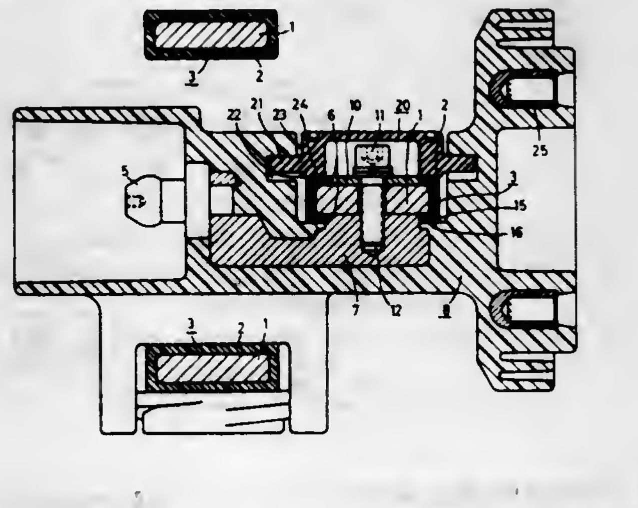
**3,758,702**

### INSULATED BUS-BAR ASSEMBLY HAVING A BRANCH CONNECTION

**Werner Kogler; Werner Kohler, and Aly Abou-Zied, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**
**Filed May 18, 1972, Ser. No. 254,737**
**Claims priority, application Germany, May 21, 1971, P 21 26 094.6**
**Int. Cl. H02g** *5/00*
**U.S. Cl. 174—71 B** **12 Claims**



An insulated bus-bar for high-voltage switching installations is equipped with a conductor member of rectangular cross-section having wide and narrow sides. The conductor member is enclosed by a layer of insulating material in which is formed a recess down to the conductor member at a wide side thereof. A branch conductor extends into the recess and presses tightly against the conductor member.

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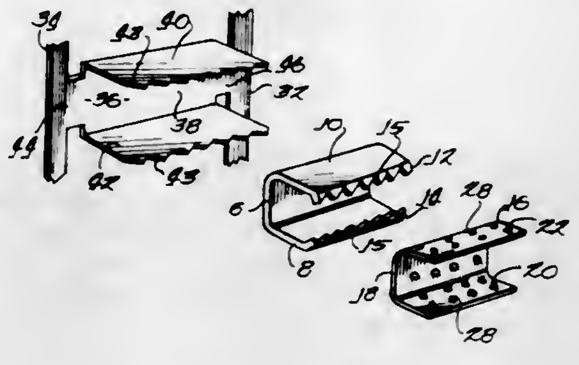
**3,758,703**

### WIRE CONNECTOR

**James E. Golden, Evanston, and James F. Taylor, Chicago, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.**
**Filed Aug. 16, 1972, Ser. No. 281,229**
**Int. Cl. H02g** *15/08*
**U.S. Cl. 174—84 C** **7 Claims**



An electrical connector for splicing insulated wires comprises a U-shaped dead soft outer shell and a U-shaped resilient insert or inner shell with inwardly projecting, insulation-piercing prongs. An outer insulated tape is disposed over the base and opposed sides of the outer shell and has portions extending beyond those opposed sides and terminating in serrated edges. The outer shell has opposed end flanges on the opposed sides that project toward each other and are serrated. The free edges of the sides of the insert terminate short of the serrated edges of the opposed flanges. When the connector is crimped over the wires, the prongs pierce the insulation thereon and the serrated edges of the in-folded tape portion provide clearance for some of the prongs. The serrated flange edges permit a wire, such as a crossover wire, to fall between the teeth of the serrations or the teeth may pierce the insulation.

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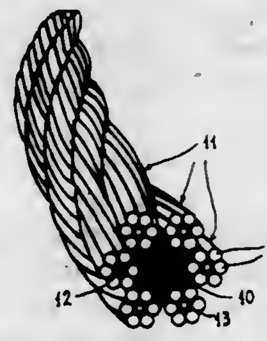
**3,758,704**

### HOISTING ROPE

**John Raymond Naud, Pierrefonds, Quebec, Canada, assignor to Wire Rope Industries of Canada Ltd., Lachine, Quebec, Canada**
**Filed Mar. 22, 1972, Ser. No. 237,072**
**Claims priority, application Canada, Jan. 31, 1972, 133600**
**Int. Cl. H01b** *5/08*, *7/22*
**U.S. Cl. 174—102 E** **8 Claims**



A hoisting rope is provided which has a core surrounded by strands having an insulated electrical conductor in their middle. The core can be a fibre core or a reinforcing steel core or any other type of core which may be found desirable. The resulting rope has a longer life and an improved overall performance.

### 3,758,705

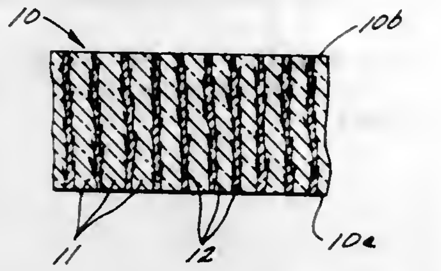
### COAXIALLY CONDUCTING ELEMENT AND PROCESS FOR MANUFACTURE

**Anthony P. Schmid, Riga, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Sept. 14, 1972, Ser. No. 289,193**

**Int. Cl. H01b** *7/00*

**U.S. Cl. 174—113 R** **13 Claims**



Disclosed is a method for forming an array of conductive crystalline dendrites of reduced rutile in a glass-ceramic insulating matrix by crystallizing certain compositions containing titania and silica in a non-oxidizing atmosphere under the influence of a thermal gradient to form a parallel array of conductive reduced rutile dendrites.

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### 3,758,706

### INSULATED COILS FOR ELECTRICAL MACHINES

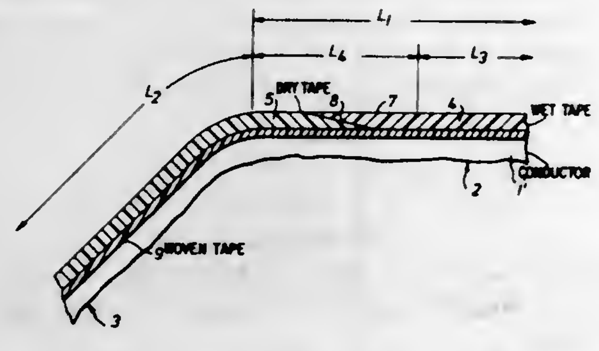
**Edmar Strauss; Siegfried Foth, and Hans-Jurgen Kaltschmidt, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**

**Filed Apr. 3, 1972, Ser. No. 240,639**

**Claims priority, application Germany, Apr. 3, 1971, P 21 17 016.1**

**Int. Cl. H01b** *7/02*

**U.S. Cl. 174—120 SR** **8 Claims**



An insulated conductor or conductor bundle for electrical machines wherein the portion of the conductor or conductor bundle which is to be installed in the grooves of a lamination packet of the machine, is enclosed with an insulation material containing mica which is bound with a high percentage by weight of binder, while the arm portion of the conductor or conductor bundle is enclosed with an insulation material containing only mica or mica bound with a low percentage by weight of binder.

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### 3,758,707

### METHOD FOR OBTAINING ELECTRONIC COLOR CORRECTION SIGNALS

**Hans Keller, Flensburger Strasse 23, 23 Kiel, and Hans-Georg Knop, Am Horn 22, 2323 Ascheberg, Germany**

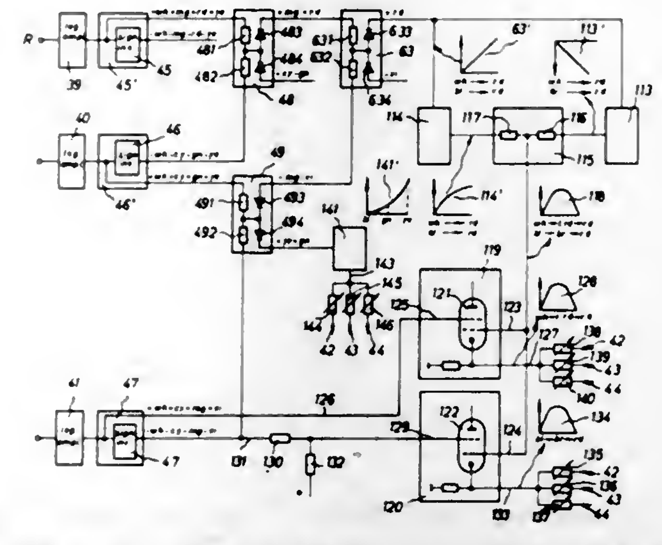
**Continuation-in-part of Ser. No. 847,970, Aug. 6, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,182**

**Claims priority, application Germany, Aug. 8, 1968, P 17 97 049.9**

**Int. Cl. H04n** *1/46*

**U.S. Cl. 178—5.2 A** **14 Claims**

A method for obtaining electronic color correction signals in which the differences with respect to compensative masking (elimination of the gray tones) are formed between the amplitudes of the logarithmic or trichromatic color measurement signals non-linearly transformed. These difference signals are split by selection according to their sign into primary partial signals from each two of which a further signal may be formed and divided into secondary partial signals according to actual sign. An emphasis of primary and/or secondary partial signals is provided wherein the signals are emphasized more strongly in definite areas of the color space than in other color areas of the region of the color space encompassed by the partial signals. Relative emphasis is effected only over a relatively limited area within the color scale extending from a neutral (non-chomatic) color to a saturated chromatic color selectively by transforming the partial signals in accordance with a non-linear function. The same partial signal may be transformed in accordance with two different functions, for example, a logarithmic and a negative linear function, and the difference signal is formed from the two resulting transformation signals. The signals are then employed to control color amplifying channels in the color correction process.



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### 3,758,708

### COLOR TELEVISION SYSTEM FOR CONVERTING SEQUENTIAL COLOR TELEVISION SIGNALS INTO SIMULTANEOUS COLOR TELEVISION SIGNALS

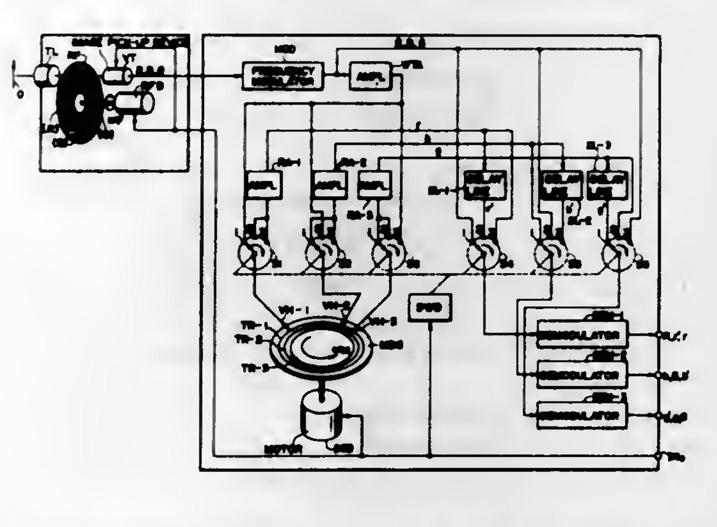
**Yasufumi Yumde, Saitama-ken; Akiyoshi Iyama, Sagamihara; Toshi Ito, Tokyo, and Toshihiko Nakajima, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Mar. 30, 1971, Ser. No. 129,535**

**Claims priority, application Japan, Mar. 31, 1970, 45/27285**

**Int. Cl. H04n** *9/42*

**U.S. Cl. 178—5.4 C** **14 Claims**



A color television system for converting sequential color television signals produced by a color television camera into simultaneous color television signals is disclosed, in which the scene is televized sequentially in red, green and blue colors one color per field after another to produce sequential color signals respectively responsible for red, green and blue colors, the produced color signals being successively recorded in a recorder. One of the red, green and blue color signals is taken out directly from the camera, while the two remaining color signals are simultaneously taken out of the recorder so as to provide three simultaneous color television signals.

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### 3,758,709

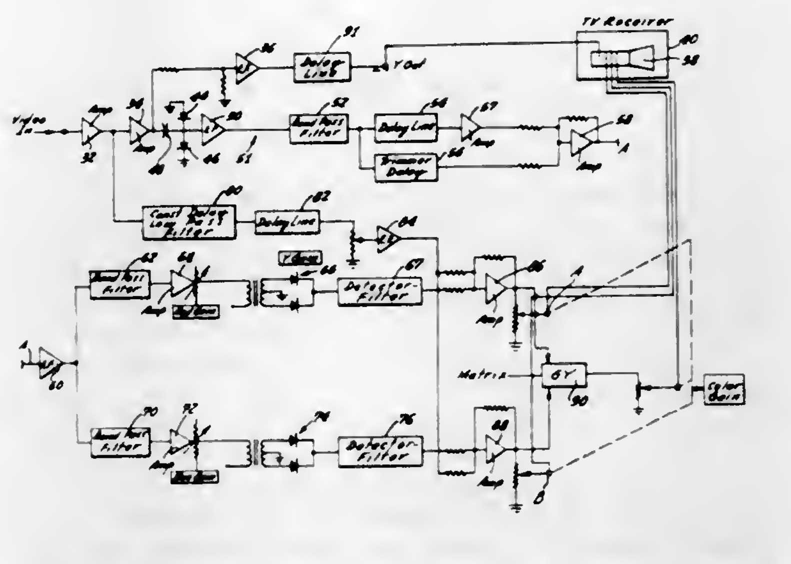
### SINGLE TUBE COLOR CAMERA WITH CROSSED GRID GRATINGS WITH ADJACENT LINE SIGNAL AVERAGING TO ELIMINATE VERTICAL SCENE MODULATION

**Alfred M. Nelson, Redondo Beach, Calif., assignor to The Magnavox Company, Torrance, Calif.**

**Division of Ser. No. 831,029, June 6, 1969, Pat. No. 3,647,943. Filed June 8, 1970, Ser. No. 44,411**

**Int. Cl. H04n** *9/06*

**U.S. Cl. 178—5.4 ST** **7 Claims**



This invention relates to a system for, and method of, reproducing a color image from a composite black-and-white image. The composite black-and-white image is formed either on an exposure or is formed from a live image. In either case, modulations are provided in a first particular line pattern to obtain a representation of a first particular color. Modulations are also provided in a second particular line pattern different from the first particular line pattern to obtain a representation of a second particular color. The third color may be unmodulated. The three colors add optically to form the image luminance.

To reproduce the color image, signals are provided by scanning the composite image. Means are provided for operating upon such signals in accordance with the modulations in the first particular line pattern to produce signals representating the first particular color. Means are also provided for operating upon the signals representing the composite image in accordance with the modulations in the second particular line pattern to produce signals representing the second particular color. The signals representing the first and second particular colors are those used in conjunction with the luminance to reproduce the color image.

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### 3,758,710

### TIME BASE ERROR CORRECTION SYSTEM, INCLUDING CONVERTER, FOR VIDEO REPRODUCER AND/OR RECORDER

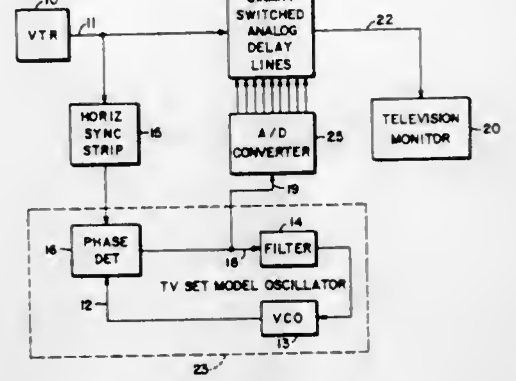
**Philip M. Crosno, Saratoga, Calif., assignor to Cartridge Television, Inc., San Jose, Calif.**

**Filed Mar. 9, 1972, Ser. No. 233,064**

**Int. Cl. H04n** *1/22, 5/78*

**U.S. Cl. 178—6.6 TC** **3 Claims**

Disclosed herein is a system for compensating for time base errors existing in helical scan video recorders. On playback horizontal synchronizing signals are stripped from the composite video output of the recorder-reproducer and the stripped horizontal sync signals are applied to the phase detector element of a phase lock loop. To another input of the phase lock loop is applied the synchronizing signal of a simulated television receiver horizontal scanning system. The resultant control signal is filtered and utilized to control the horizontal oscillator in the simulated horizontal scanning system. It is also applied to an analog to digital converter which converts the analog voltage into variable delays, preferably in binary steps. The delays are inserted between the video output of the recorder-reproducer and the input of an actual television receiver monitor.



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### 3,758,711

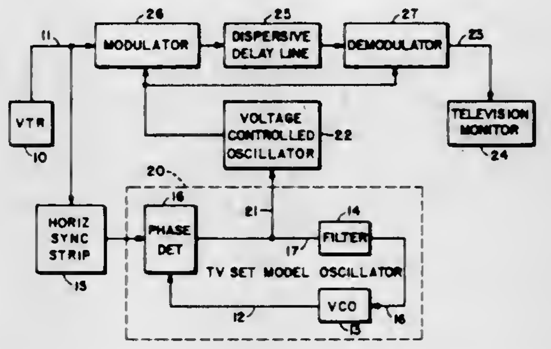
### TIME BASE ERROR CORRECTION SYSTEM INCLUDING ELECTRONICALLY VARIABLE DELAY LINE FOR VIDEO REPRODUCER AND/OR RECORDER

**Philip M. Crosno, Saratoga, Calif., assignor to Cartridge Television, Inc., San Jose, Calif.**

**Filed Mar. 9, 1972, Ser. No. 233,062**

**Int. Cl. H04n** *1/22, 5/78*

**U.S. Cl. 178—6.6 TC** **3 Claims**



Disclosed herein is a system for compensating for time base errors existing in helical scan video recorders. On playback stripped horizontal synchronizing signals and the synchronizing signal of a simulated television receiver horizontal scanning system are applied to a phase detector. The resultant control signal is filtered and utilized to control the horizontal oscillator in the simulated horizontal scanning system. The control signal is also used to control the frequency changing circuitry of a surface wave dispersive delay line in which the magnitude of delay depends on frequency. The surface wave delay line is inserted between the video output of a recorder-reproducer and the input of a television receiver monitor.

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### 3,758,712

### DIGITAL SPECIAL EFFECTS GENERATOR

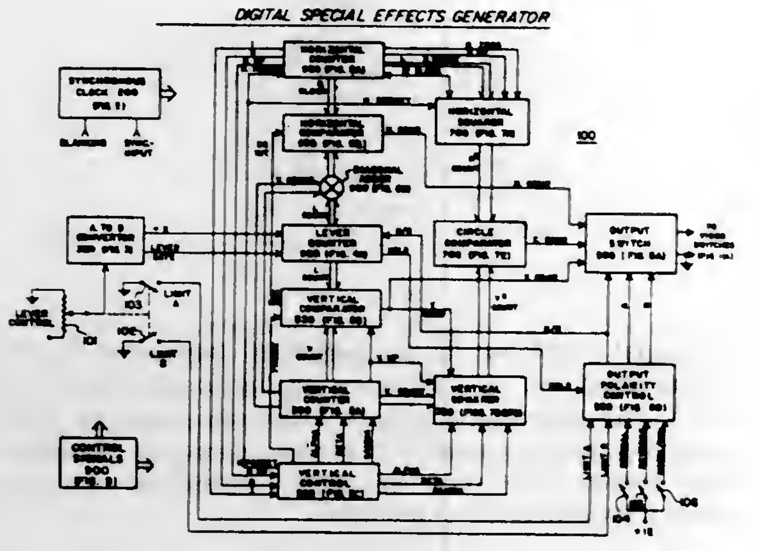
**John P. Hudson, Toronto, Ontario, Canada, assignor to Sarkes Tarzian, Inc., Bloomington, Ind.**

**Filed Mar. 27, 1972, Ser. No. 238,077**

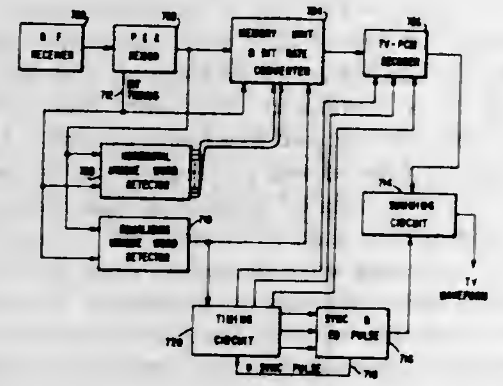
**Int. Cl. H04n** *5/22*

**U.S. Cl. 178—6.8** **8 Claims**

A special effects generator constructed primarily from digital hardware combines two input video signals into a single output video signal under the control of a single lever control. Horizontal, vertical, and diagonal wipes may be achieved, as well as exploding circular and elliptical wipes and many other highly unusual effects. The generator includes a horizontal digital counter the count output of which indicates the horizontal position of a scanning spot in the output video signal and a vertical digital counter the output of which indicates the vertical position of the scanning spot. An analog-to-digital converter presents a count proportional to the setting of the lever control. Digital computational circuitry including squaring circuitry is provided for processing these digital counts in various ways, and the resultant computed digital outputs are compared by one or more digital comparing circuits or comparators. The comparing circuit outputs then serve as a criterion for determining which of two input video signals is to be used in constructing the output video signal at any given moment.

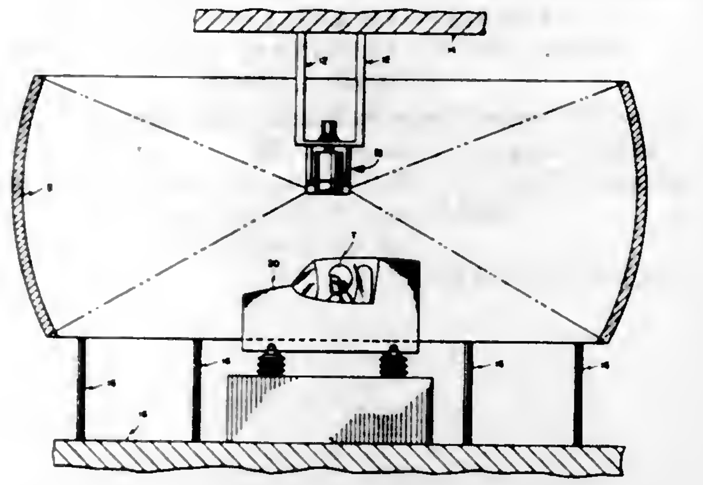


**3,758,713**
### VIDEO STORAGE SYSTEM
**Tadahiro Sekimoto, Tokyo, Japan, assignor to Communications Satellite Corporation, Washington, D.C.**
**Division of Ser. No. 740,310, June 26, 1968, Pat. No. 3,666,888.**
**This application Apr. 22, 1971, Ser. No. 136,581**
**Int. Cl. H04n** *5/76, 7/12*
**U.S. Cl. 178—6.8** **7 Claims**



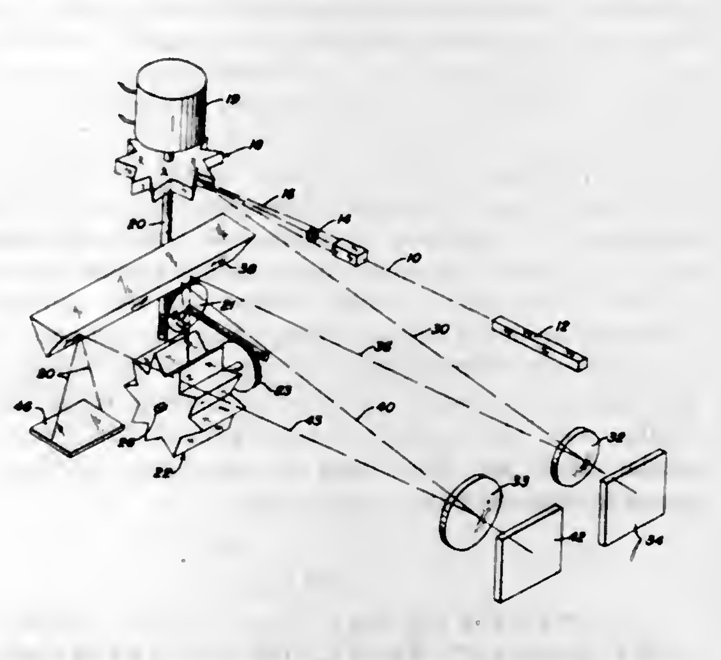
A receiver for receiving non-redundant pulse coded lines of a TV waveform. The non-redundant lines are received along with address information identifying the position of the respective lines in a TV frame. The address information controls the writing of the pulse coded lines into a frame memory. The entire contents of the frame memory is read out at the normal frame rate and converted into analog video information.

**3,758,714**
### MULTIPLE GUN ROTATABLE TELEVISION PROJECTOR HEAD FOR 360 DEGREE DISPLAY
**John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed July 11, 1972, Ser. No. 270,756**
**Int. Cl. H04n** *3/28*
**U.S. Cl. 178—7.5 D** **7 Claims**



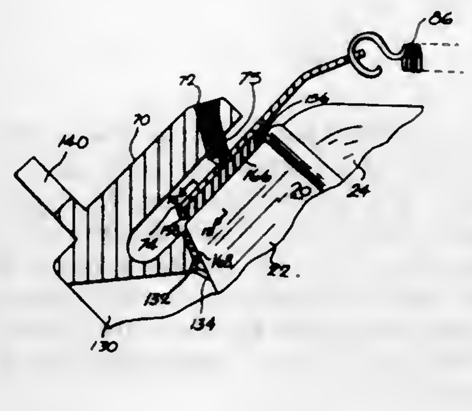
A rotating television projection tube includes multiple projection guns within a single envelope and thereby provides multiple projection beams. Each beam repeatedly produces a single stroke scan line which, when projected vertically on a 360° projection screen, and when moved horizontally by rotating the tube causes a continuous television raster to be generated through 360°.

**3,758,715**
### OPTICAL RASTER PRODUCING SYSTEM
**Willard E. Buck, Los Gatos, and Thomas E. Holland, Sunnyvale, both of Calif., assignors to Technical Operations, Incorporated, Burlington, Mass.**
**Continuation of Ser. No. 574,640, Aug. 24, 1966. This application June 16, 1969, Ser. No. 835,902**
**Int. Cl. H04n** *3/08*
**U.S. Cl. 178—7.6** **4 Claims**



This disclosure depicts laser beam scanning apparatus capable of producing a two-dimensional raster-type scan. A stationary input laser beam is brought to a focus in the locus of travel of a train of corner mirrors arranged convergent in the direction of the input beam and mounted for high speed rotation upon the periphery of a driven wheel. The effect of moving the corner mirror train through the beam focus is to produce an image of the beam focus which is displaced substantially rectilineraly a distance equal to twice the displacement of the mirror train. A lens system images the beam focus image in the locus of travel of an orthogonally driven second train of corner mirrors to produce raster. A projection lens collects light from the raster producing a real raster image for use in display, interrogation, and the like.

**3,758,716**
### TELEVISION RECEIVER MOUNTING APPARATUS
**Donald N. James, and Peter A. Nightingale, both of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.**
**Continuation of Ser. No. 780,500, Dec. 2, 1908, abandoned.**
**This application Aug. 2, 1971, Ser. No. 168,377**
**Int. Cl. H04n** *5/645*
**U.S. Cl. 178—7.8** **6 Claims**

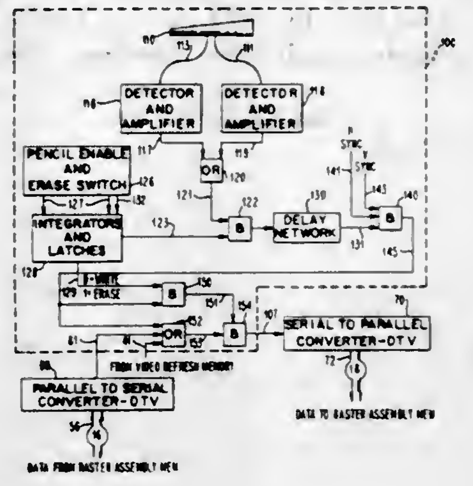


Television receiver mounting apparatus particularly adapted for mounting in broadcasting studio racks, the apparatus having a rigid metallic frame and a chassis extending rearwardly from the frame. The frame has four rearwardly extending protrusions between which the enlarged end of the kinescope is received at an opening in the frame in proper position for viewing. Cushioned brackets are secured between the frame protrusions and the kinescope to frictionally restrain the kinescope from movement and to maintain it in a fixed horizontal and vertical position. A second opening horizontally spaced from the first opening receives both externally mounted controls and readily accessible internally mounted controls - the latter being accessible by means of a movable circuit card slidable along a guide forwardly from the front of the receiver without disruption of normal receiver operation. The circuit card may also be disconnected and removed from the receiver through the second opening.

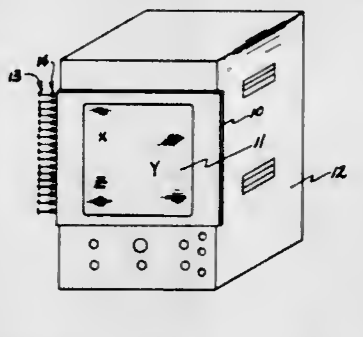
### ERRATUM
For Class 178—6.800 see:
Patent No. 3,758,723

**3,758,717**
### FREE HAND DRAWING DISPLAY SYSTEM UTILIZING LIGHT PEN TO WRITE AND ERASE INFORMATION
**Angelo N. Granzotti, Washington, D.C., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed May 28, 1970, Ser. No. 41,405**
**Int. Cl. H04n** *7/18*
**U.S. Cl. 178—6.8** **5 Claims**

A display system including a light pen adapted to write or erase either a narrow or a wide path on a CRT display device, allows an operator to draw or erase with a free hand motion by inverting the polarity of the displayed image so that non-information raster areas are bright spots and information areas are dark spots on the face of the display screen. More specifically, an image inverter is added between the image refresh memory device and the display device to free the operator from restraint due to the inherent ability of a light sensitive device to only operate on bright spots on a display screen.


DETECTOR AND AMPLIFIER
DETECTOR AND AMPLIFIER
PENCIL ENABLE AND ERASE SWITCH
INTEGRATORS AND LATCHES
OR
DELAY NETWORK
SERIAL TO PARALLEL CONVERTER-DTV
PARALLEL TO SERIAL CONVERTER-DTV
SYNC
100

**3,758,718**
### TRANSPARENT SWITCHBOARD
**James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Hans P. Rasmussen, Lierbyen, Norway**
**Filed Feb. 15, 1972, Ser. No. 226,476**
**Int. Cl. G08c** *21/00*
**U.S. Cl. 178—18** **13 Claims**



A tin oxide coating is formed on a plate of glass and the coating is then etched away from the glass in thin lines to form separate electrical conductors which extend to one end of the plate and connect to either a vertical (column) or horizontal (row) position sensing SCR circuit. A thin transparent insulating coating is formed over the oxide layer except at selected touch points which are positioned in a matrix pattern of vertical columns and horizontal rows. Touching one of these points with a finger bridges the thin line between adjacent conductors to activate trigger circuits in the particular row and column sensing circuits associated with the point touched. The row and column sensing circuits are similar and are powered with a low frequency, AC voltage source. The source for the row circuits is 180° out of phase with the source for the column circuits so that one circuit acts as ground for the other during half of the supply voltage cycle. The signals from the sensing circuits are input to a logic circuit which determines the presence of a "valid" touch (indicated by outputs of predetermined duration from only a single column circuit and a single row circuit), stores a binary matrix number associated with the touched point, signals a computer of the presence of a stored number and prevents storage of a new number before receiving an enable signal from the computer.

### 3,758,719

## METHOD AND DEVICE FOR TWO-WAY TRANSMISSION BY MEANS OF TWO-WIRE TRANSMISSION CHANNEL

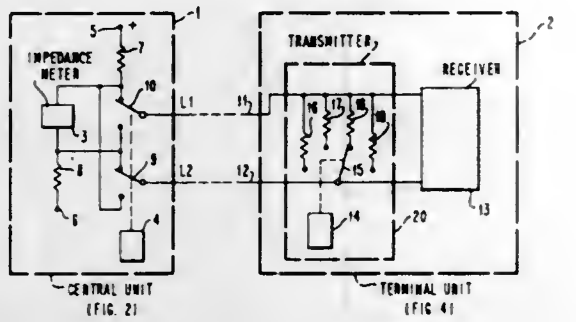
**Ulrich Konrad Wilhelm Klose, Lidingo, assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 15, 1972, Ser. No. 234,763**

**Claims priority, application Sweden, Mar. 23, 1971, 3784/71**

**Int. Cl. H04l** *5/14*

**U.S. Cl. 178—58 R** **9 Claims**



Simultaneous two-way communications over a single channel are provided by controlled time modulated polarity changes and simultaneous resistance measurements.

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### 3,758,720

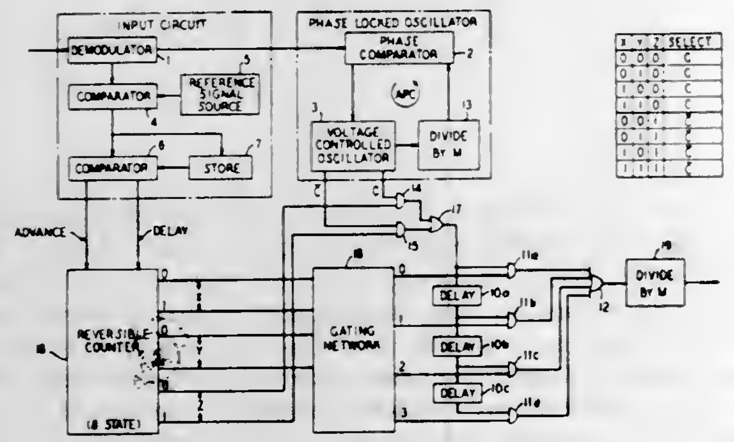
## CIRCUIT FOR INCREMENTALLY PHASING DIGITAL SIGNALS

**Neil Francis Dinn, Tewksbury, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Dec. 27, 1971, Ser. No. 211,880**

**Int. Cl. H04l** *27/24, 7/02*

**U.S. Cl. 178—67** **9 Claims**



A phasing circuit for a digital system requiring the relative phasing of two synchronous, periodic digital signals wherein the repetition rate of a generated synchronous reference signal is increased to enable the output and complementary output of this generator, and the phasing networks, to be repeatedly "recycled." The output of the phasing circuit is subsequently divided down in frequency to provide the properly phased periodic digital signal at the desired lower repetition rate. Since the phasing networks are thus "recycled," appreciable savings are obtained over the prior art structures which required individual networks for each incremental step of the desired phasing accuracy.

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### 3,758,721

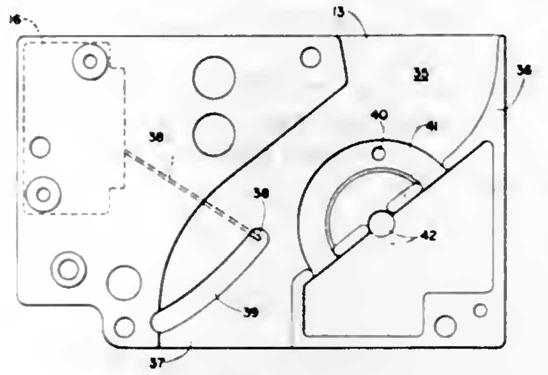
## COIN SWITCH APPARATUS

**Henry Allan Main, London, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada**

**Filed May 23, 1972, Ser. No. 256,111**

**Int. Cl. H04m** *17/02*

**U.S. Cl. 179—6.5** **8 Claims**



Coin switch apparatus having a coin channel through which at least two coins of a common denomination must pass to permit initiation of a function, for example telephone dialling, where normally the first coin would deactivate a short circuit to permit the function. The apparatus has a magnetically operated switch and a magnet is moved into operative position by the first coin. The switch maintains the short circuit when operated. The second coin removes magnet and switch opens to permit function.

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### 3,758,722

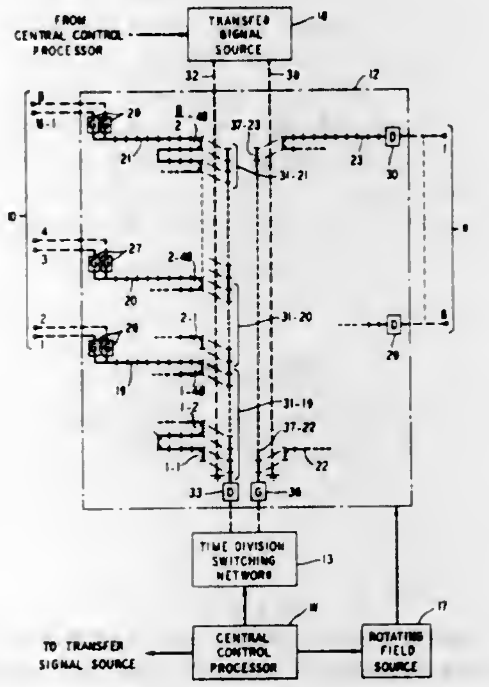
## NETWORK FOR TRANSPOSING SIGNAL BIT INTERLEAVING PATTERNS

**Peter Istvan Bonyhard, Edison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Feb. 22, 1972, Ser. No. 227,758**

**Int. Cl. H03k** *19/40*

**U.S. Cl. 179—15 A** **14 Claims**


FROM CENTRAL CONTROL PROCESSOR
TRANSFER SIGNAL SOURCE
TIME DIVISION SWITCHING NETWORK
TO TRANSFER SIGNAL SOURCE
CENTRAL CONTROL PROCESSOR
ROTATING FIELD SOURCE

Time division multiplex signals arranged in transmission time frames of multibit time slot signals are entered into a first set of plural shift registers arranged to present at predetermined signal transfer points the predetermined signal bits of corresponding bit positions in each time slot of a frame. The predetermined signal bits comprise a miniframe in which each time slot includes only a part of the bits from a time slot in a complete transmission frame. At the end of a transmission time frame, the miniframe signals are transferred to a second set of plural shift registers. The sets of registers are configured for transposing time division signals in either direction between the transmission frame format and the miniframe format depending upon the manner of operation of the transfer between the sets of registers.

The shift registers are implemented in magnetic single wall domain technology.

Arrangements for either bit-series or bit-parallel interface with other signal paths are considered.

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### 3,758,723

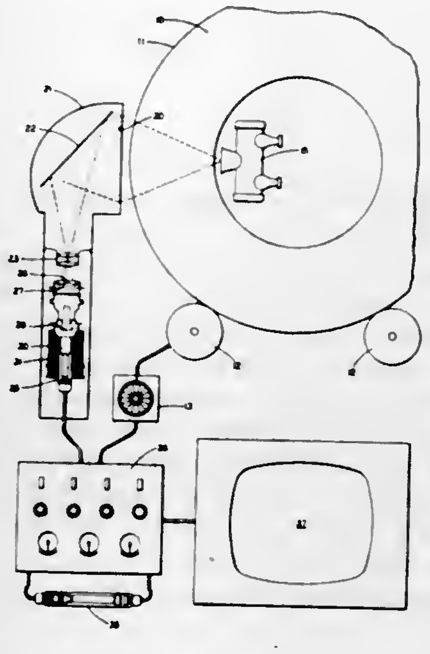
## X-RAY INSPECTION SYSTEM

**Donald T. Green, Shaker Heights, and James L. Snarr, Cleveland Heights, both of Ohio, assignors to Imagex, Inc., Mantor, Ohio**

**Filed Jan. 18, 1972, Ser. No. 218,724**

**Int. Cl. G01n** *23/18;* **H01j** *37/20;* **H04n** *7/18*

**U.S. Cl. 178—6.8** **10 Claims**



An X-ray inspection system includes placement of an article to be inspected in a stationary position between an X-ray source and a fluorescent screen, focusing the X-ray shadow picture produced on the fluorescent screen on the target of a television camera tube capable of integrating, preferably through a light intensifier, for a sufficient time to produce an intense electrostatic image, transferring the image to a storage device by snatching a single frame, and displaying the image in the storage device continuously on the picture tube of a monitor while moving the article for inspection of a different area and while producing a new electrostatic image on the target of the camera tube.

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### 3,758,724

## BUSY LINE CONTROL FOR SWITCHING SYSTEM

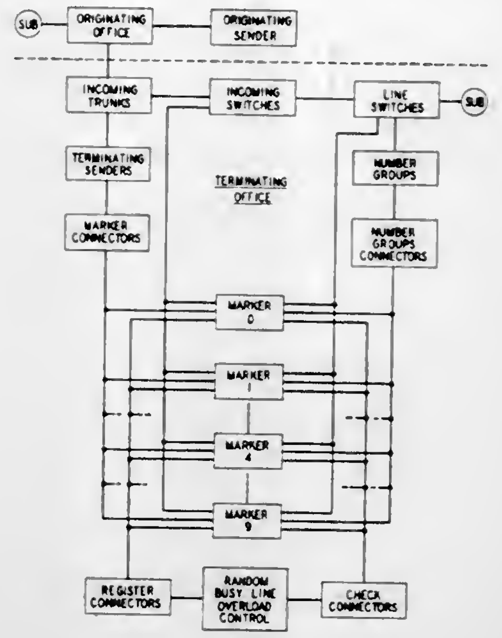
**Frank H. Anderson, Orchard Park; Louis J. Cerny, Long Island City, both of N.Y.; James J. Murphy, Teaneck, and John C. Sieglinger, Short Hills, both of N.J., assignors to American Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Dec. 20, 1971, Ser. No. 209,616**

**Int. Cl. H04m** *3/22*

**U.S. Cl. 179—18 AB** **16 Claims**

A crossbar telephone switching system wherein one of a number of markers, under the control of a called directory number registered therein, seizes a number group circuit and causes the number group circuit to translate the called number into the equipment location of the called line, the nature (class) of the called line, and the busy-idle condition of the called line. If the called line is found to be busy at a time when all markers are busy, the marker connects to a common register, registers therein the busy called number, releases from the common register, and initiates the usual busy-back switching function. All other markers having then registered therein called numbers requiring number group translation and busy-idle testing connect to the common register and compare their called numbers with the called number in the common register. Any marker having a matching called number releases from the common register and initiates a busy-back switching function without seizing a number group circuit for translation and without performing line testing. Any marker not having a matching number releases from the common register and seizes a number group circuit in the normal manner. After a suitable time delay to allow all markers to finish the comparison of called numbers, the common register clears itself of the called number registered therein and renders itself available for another such use.



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### 3,758,725

## SWITCHING SIGNAL CONVERTER FOR A TIME MULTIPLEX PCM TRANSMISSION SYSTEM

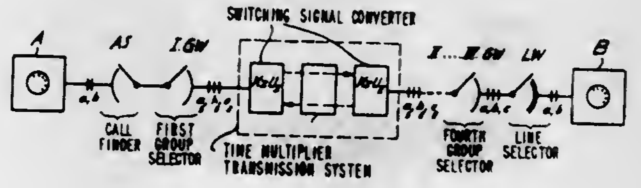
**Wolf-Henning Harms, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany**

**Filed Apr. 20, 1971, Ser. No. 135,605**

**Claims priority, application Germany, Apr. 20, 1970, P 20 18 931.5**

**Int. Cl. H04j** *3/12*

**U.S. Cl. 179—15 BY** **9 Claims**



A telecommunications circuit for a telephone exchange installation for the conversion of switching signals which occur on more than two connecting wires with more than two states. The circuit includes separate logic elements arranged to advantageously utilize the laws of a particular switching plan such that less bits are required for marking code words than would be theoretically required on the basis of the number of different switching markers.

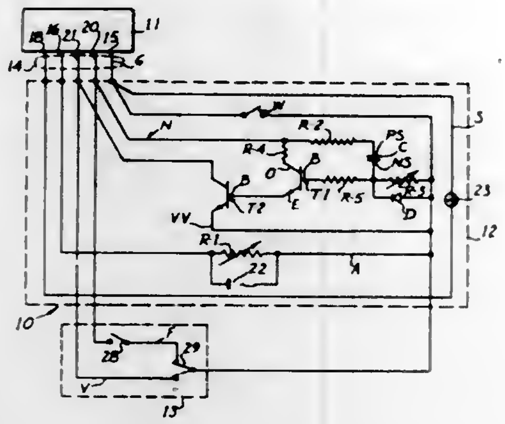
### 3,758,726
## ELECTRIC CONDITION CONTROL DEVICE FOR A TRANSCRIBING MACHINE

**Fred C. Bolick, Jr., and James B. Godwin, III, both of Atlanta, Ga., assignors to Lanier Electronic Laboratory, Inc., Atlanta, Ga.**

**Division of Ser. No. 854,428, Sept. 2, 1969, Pat. No. 3,632,893. This application Aug. 30, 1971, Ser. No. 176,310**

**Int. Cl. G11b** *15/20*

**U.S. Cl. 174—100.1 R** **6 Claims**



A control device for controlling the operation of a transcribing machine so that successive transcribing intervals are overlapped by a predetermined amount to facilitate transcription. A circuit is provided for automatically causing the dictation recording medium to move a predetermined amount in a transcribing reverse direction in response to termination of recording medium movement in a transcribing forward direction. The automatic transcribing reverse movement is controlled by a capacitor charging current which occurs when the recording medium stops moving in a transcribing forward direction. The amount of overlap of successive transcribing intervals is proportional to the duration of the capacitor charging current.

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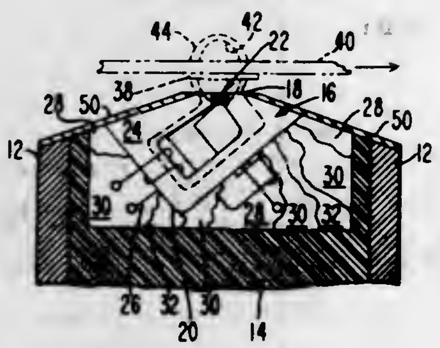
### 3,758,727
## MULTIPLE TRANSDUCER MAGNETIC HEAD

**Karlis Kruklitis, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Continuation of Ser. No. 833,909, June 17, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,897**

**Int. Cl. G11b** *5/16, 5/28*

**U.S. Cl. 179—100.2 C** **3 Claims**



A magnetic reproducing head having a plurality of electromagnetic transducers spaced within the magnetic influence of one another. Magnetic shields are interposed in the space between each transducer to eliminate the cross-coupling of magnetic lines of flux between adjacent transducers within the body of the magnetic head. An eddy current generating member is mounted to eliminate the cross-coupling of magnetic lines of flux externally to the face of the magnetic head.

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### 3,758,728
## REPEATER FAULT LOCALIZATION SYSTEM

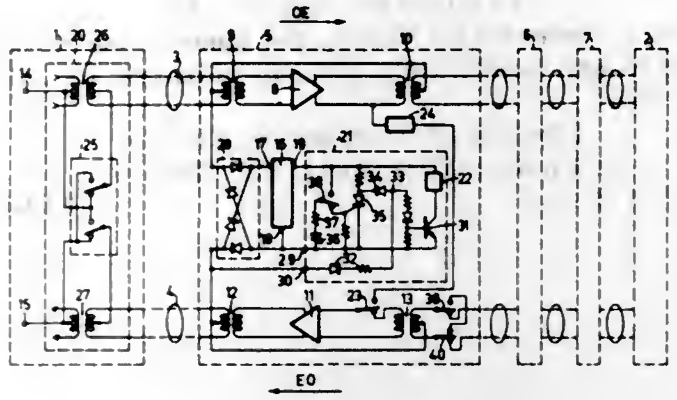
**Emile Francois Louis Le Roch, Velizy, and Robert Troncy, Antony, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T. R. T., Paris, France**

**Filed June 22, 1972, Ser. No. 265,331**

**Claims priority, application France, June 24, 1971, 7122982**

**Int. Cl. H04b** *3/46*

**U.S. Cl. 179—175.31 R** **6 Claims**



A repeater fault localization system for line repeaters which are distributed in attelecommunication network and are fed by a remote supply source which is arranged in the initial station. This station includes a transmitter for feedback command signals, which transmitter consists of an inverter for the remote supply voltage and in which a receiver for feedback command signals is arranged in each amplifier, which receiver consists of a relay for feeding back the line repeaters, the relay being connected to a store which is excited when the voltage pulses are applied with the reversed polarity to the line repeaters in order that contacts of the relay switch off the supply line behind a fed-back line repeater.

Use: localization of faulty line repeaters.

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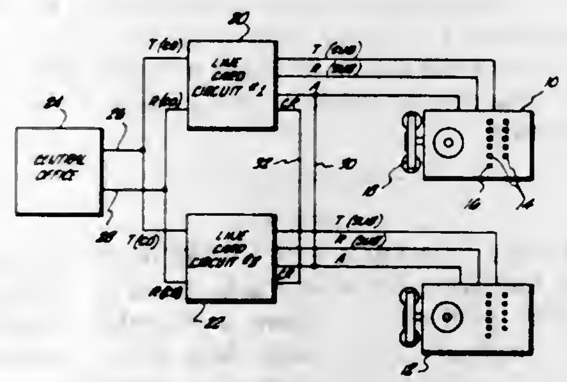
### 3,758,729
## LINE CARD CIRCUIT FOR DUAL STATION CONTROL

**Charles T. Everhart, Santa Ana, Calif., assignor to San/Bar Electronics Corp., Santa Ana, Calif.**

**Filed Dec. 6, 1971, Ser. No. 205,099**

**Int. Cl. H04m** *3/22*

**U.S. Cl. 179—99** **25 Claims**



A line card circuit for a telephone system that operates to permit each of a pair of physically distant subscriber stations to exercise full control over a telephone circuit, is disclosed. The telephone system would include a pair of subscriber stations each having a key telephone unit that is equipped to have a corresponding line card circuit. The line card circuits are both connected to a central office via the telephone circuit formed by a single pair of conventional line conductors. The line card circuits are further interconnected for dual station control and include circuitry that is responsive to ringing signals for enabling simultaneous ringing at both telephone stations. Further included in each line card circuit is circuitry to permit both subscriber stations to exercise full supervisory control over the telephone circuit, for example, by placing or answering calls at either subscriber station and placing the line conductors in a hold condition or removing the conductors from such hold condition. Also included is circuitry which provides for the simultaneous display of visual indicators at both subscriber stations.

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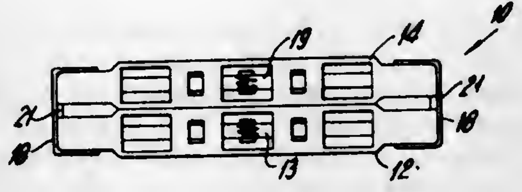
### 3,758,730
## MULTI-CHANNEL CASSETTE SYSTEM FOR SOUND RECORDING AND REPRODUCTION WITH INTERLOCKED STACKED CASSETTES

**Kenneth J. Rothschild, 44 Hooker St., Allston, Mass., and Leigh M. Rothschild, 764 Mahooney Hall, Coral Gables, Fla.**

**Filed Mar. 15, 1972, Ser. No. 234,841**

**Int. Cl. G11b** *23/04*

**U.S. Cl. 179—100.2 Z** **4 Claims**



A cassette system including first and second cassettes arranged in a stacked relationship, first removable means for interlocking aligned supply reels, second removable means for interlocking aligned take-up reels, rotatable spindle means for receiving the aligned and interlocked supply reels and take-up reels, magnetic transducer means for reproducing or recording information on the magnetic tapes of the cassettes, and means for driving the magnetic tapes of the cassettes past the magnetic transducer means. Advantageously, the spindle means may also be utilized with stacked cassettes which are not interlocked.

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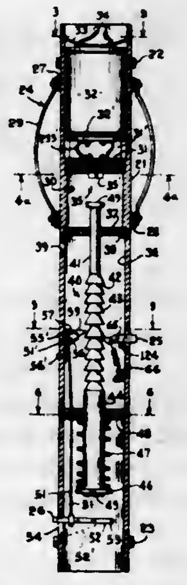
### 3,758,731
## SWITCH MEANS FOR ACTUATING DOWNHOLE DEVICES

**Roy R. Vann, and Clyde R. Vann, both of 3302 Providence Dr., Midland, Tex.**

**Filed Feb. 19, 1971, Ser. No. 146,948**

**Int. Cl. H01h** *3/16;* **E21b** *43/11*

**U.S. Cl. 200—61.69** **12 Claims**



A switch means for electrically actuating a downhole device wherein the switch means and downhole device are connected into a tool string and run into the borehole on a slick line to provide a source of electrical power at any given time. The switch means is actuated by positively reciprocating the slick line to which the tool string is attached a predetermined number of times. Provision is made for resetting the apparatus at any time prior to closure of the switch means.

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### 3,758,732
## FLUID PRESSURE ACTUATED SNAP-ACTION SWITCH WITH DIFFERENTIAL AND RANGE SPRING ADJUSTMENT MEANS

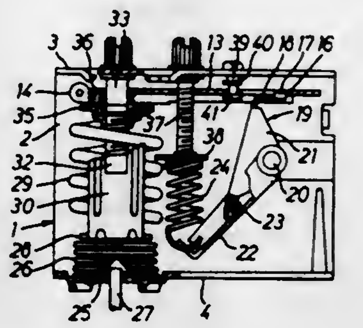
**Jens Hagedorn-Olsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

**Filed June 26, 1972, Ser. No. 266,066**

**Claims priority, application Germany, June 26, 1971, P 21 31 858.1**

**Int. Cl. H01h** *35/24, 35/32*

**U.S. Cl. 200—81 R** **6 Claims**



The invention relates to a snap action switch assembly comprising a snap action system which incorporates a main arm which is movable between two stops and to which the force of a pressurized working element and of an adjustable range defining spring is applied. A snap action arm is linked with said main arm and hinged in a bearing at its other end. This bearing is spring urged towards the snap action arm and the spring force thereof is likewise adjustable. The switch also comprising a contact system in which a movable contact is spring biased against a fixed contact and can be lifted by a drive element associated with the main arm.

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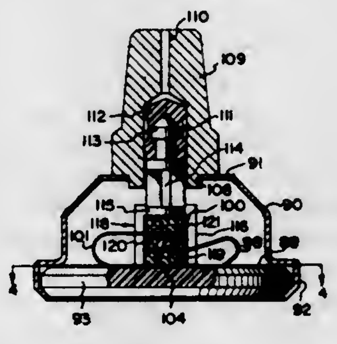
### 3,758,733
## PRESSURE SENSITIVE STEPPING SWITCHES WITH MULTI LAYER SPRING CONTACT ASSEMBLY WITH INTERPOSED LAYERS OF LUBRICATED NON-CONDUCTIVE ELASTOMERIC MATERIAL AND CONDUCTIVE PARTICLES THEREIN

**Gideon A. DuRocher, and Daniel J. DuRocher, both of Mt. Clemens, Mich., assignors to Essex International, Inc., Fort Wayne, Ind.**

**Filed Oct. 4, 1971, Ser. No. 185,957**

**Int. Cl. H01h** *35/38*

**U.S. Cl. 200—82 R** **19 Claims**



A pressure sensitive stepping switch comprises a stack of resiliently compressible, normally non-conductive elastomeric pads throughout each of which a quantity of electrically conductive particles are dispersed. Straddling each pad is a pair of conductors for connection to a source of electrical potential and to an electrical device to be operated. The pads are rendered electrically conductive in response to compression of the stack, the compressive force required to render each pad conductive being different so as to enable the pads to be rendered conductive in a predetermined sequence. Oil applied to the surface of the pad greatly increases its life.

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### 3,758,734

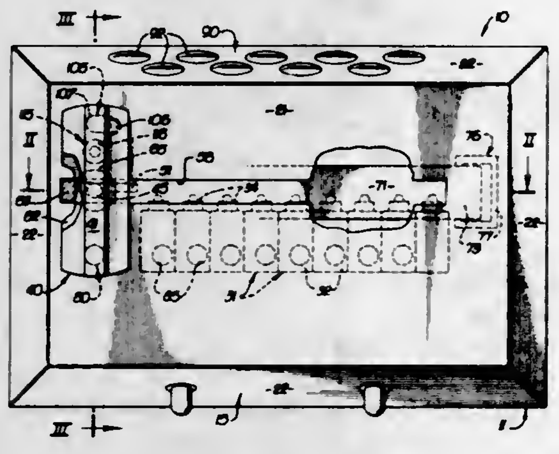
### SEQUENTIAL SWITCH MEANS WITH A LINEARLY MOVABLE AND ROTATABLE ACTUATOR MEANS

**Klaus W. Gartner, 5711 Ravenspur Dr., Palos Verdes Peninsula, Calif.**

**Filed May 24, 1971, Ser. No. 146,132**

**Int. Cl. H01h** *9/00*

**U.S. Cl. 200—5 R** **3 Claims**



The sequential signal producing means has a housing including a back wall mounting a row of a desired number of individual push button switches, and including a mating, open backed cover with a front longitudinal slot, and with a like number of upper windows; a slider assembly of a knob plate with a rectangular sleeve extending through the slot and secured to an inner plate to be thereby slideably mounted to the housing for movement along the slot; a strip spring coiled at one end, anchored to the housing at the one end, secured to the sleeve of the slider assembly mid-way thereof, and extended along the slot to be collected in a tube adjacent the other end of the slot to bias the slider assembly toward the one end to a ready position, a spring ball in the inner plate for dropping into one of a like number of indentations in the housing to precisely locate the slider assembly in a respective distinct position along the slot; an arm on the inner plate for blocking the window corresponding to the distinct position of the slider assembly; a knob with a shaft extending through the sleeve of the slider assembly to locate an eccentric over the row of switches to depress an aligned push button upon rotation of the knob to an operating position; a shoulder from the inner plate extending into an arcuate slot in the knob to limit rotation thereof; a torsion spring from the shaft to the inner plate to bias the knob to a non-operating position; a spring ball in the knob which drops into an identation in the knob plate to temporarily hold the knob in non-operating position, and a switch on the housing operated by movement of the knob away from a ready position to energize the switches whereby when the knob is located in a respective distinct position and is rotated, a respective switch is operated, upon a patterned movement between distinct positions and upon rotation in these positions, to produce a sequential signal for being sent to a means for discriminately receiving a sequential signal.

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### 3,758,735

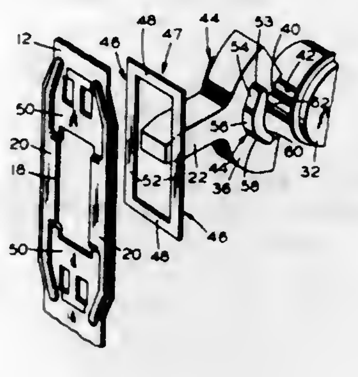
### TOGGLE MECHANISM FOR MERCURY SWITCH

**Walter C. Schumacher, Warwick, R.I., assignor to General Electric Company, Providence, R.I.**

**Filed Apr. 28, 1972, Ser. No. 248,456**

**Int. Cl. H01h** *29/20*

**U.S. Cl. 200—222** **4 Claims**



A mercury switch includes an insulating housing attached to a strap for mounting the switch in a wall box. The housing contains contact strips communicating with the insulating housing exterior and a mercury button mounted in pivoting relation between internal portions of the strips. Pivoting is actuated by a toggle mounted against the mercury button and having an externally extending trigger for control of the button pivot position from the switch exterior. Trigger movement is made smooth by an improved toggle mechanism including a longitudinal spring bearing at its ends against the underside of the strap and at its mid-portion against turnions of the toggle. The longitudinal spring also compensates for small dimensional differences of elements of the switch and provides lateral stability to the trigger.

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### 3,758,736

### EMERGENCY STOP SWITCH MEANS FOR A SNOWMOBILE OR THE LIKE

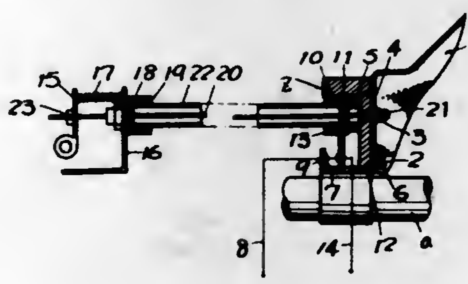
**Yoshiyuki Tanaka, Lot 9, 14-Ban, 1-chome, Sakasegawa, Takarazuka-shi, Hyogo Prefecture, Japan**

**Filed Mar. 22, 1972, Ser. No. 236,808**

**Claims priority, application Japan, Apr. 10, 1971, 46/22673**

**Int. Cl. H01h** *17/20*

**U.S. Cl. 200—157** **4 Claims**



In an emergency stop switch means for a snowmobile on the like a throttle lever is rotatably mounted on a handle through a bracket thereby controlling an operating lever of carburetor. These levers are connected with each other by an inner wire in an outer sheath the end of which is held in fixed relation while the other is adapted to permit a moving element to slidably move until a contacting element thereof abuts against a counter-element.

In an emergency, the throttle lever is released so that a spring compressed between the bracket and the moving element recovers its pressure force and contacts said contacting elements with each other whereby an electric ignition circuit is earthed to stop rotation of a snowmobile engine.

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### 3,758,737

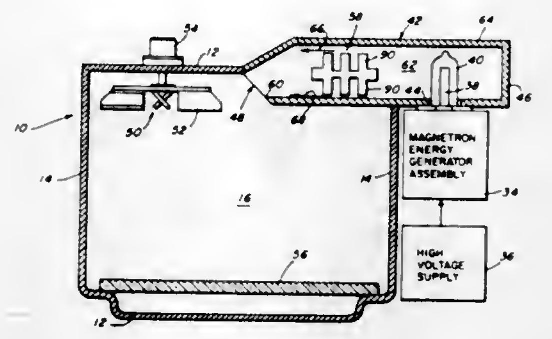
### WAVEGUIDE FILTER FOR MICROWAVE HEATING APPARATUS

**Richard Ironfield, Williamsburg, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa**

**Filed June 13, 1972, Ser. No. 262,396**

**Int. Cl. H05b** *9/06;* **H01p** *7/20*

**U.S. Cl. 219—10.55** **11 Claims**



A low pass filter is provided for rectangular waveguide of the type employed for launching electromagnetic energy in microwave ovens. The filter substantially rejects the transmission of harmonic frequencies of the fundamental generator operating frequency as well as adjacent energy oscillation modes. The structure described has a corrugated configuration with ribs defining alternate cavities and constrictions have cutoff frequency characteristics. Uniform and nonuniform spacing as well as dissimilar sections are discussed. The structure is electrically isolated from the broad waveguide walls to define two propagation paths for the electromagnetic energy. Lightweight conductive materials are suggested. The interrelationships of the alternating rib members provide a series of open and short circuit admittances which are analyzed to determine the desired electrical cutoff frequencies. Identical rib structure is defined on opposing sides of a reference plane extending along the longitudinal axis of the waveguide. Transforming means are utilized for impedance matching.

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### 3,758,738

### TEMPERATURE MEASURING APPARATUS FOR HEATING ROLLER

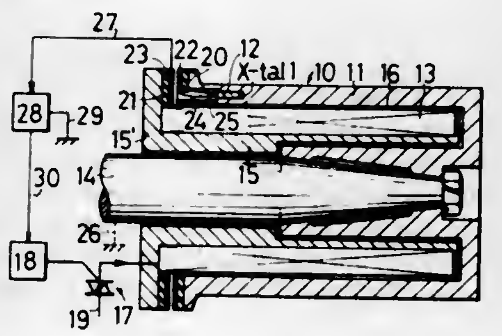
**Sigeru Otani; Fuminori Honda, both of Mihara, and Kiyoto Mitani, Fukuyama, all of Japan, assignors to Teijin Limited, Osaka-shi, Osaka, Japan**

**Filed July 6, 1972, Ser. No. 269,463**

**Claims priority, application Japan, Oct. 6, 1971, 46/091896 (utility model)**

**Int. Cl. H05b** *5/00*

**U.S. Cl. 219—10.49** **2 Claims**



A quartz crystal resonator is embedded in a circumferential wall portion of a heating roller. The heating roller is provided with a rotary electrode, while a stationary electrode is mounted to a stationary portion of the apparatus to form a rotary air capacitor in cooperation with the rotary electrode. The quartz crystal resonator has two terminals, one of which is grounded and the other of which is connected to an oscillation circuit through the air capacitor variation of impedance of the detector to the outside of the heating roller without any mechanical contact with the latter.

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### 3,758,739

### APPARATUS FOR REMOVING MATERIAL FROM AN ELECTRICALLY CONDUCTING WORKPIECE

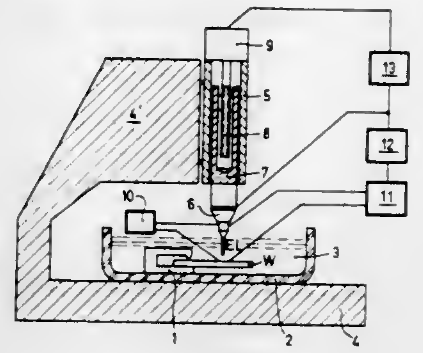
**Job Harm De Jongh; Johannes Josephus Aloisius Cornelus Maenhout, and Cornelis Van Osenbruggen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 10, 1972, Ser. No. 295,946**

**Claims priority, application Netherlands, Oct. 13, 1971, 7114048**

**Int. Cl. B23p** *1/04, 1/14*

**U.S. Cl. 219—69 G** **4 Claims**



Spark erosion machine including an electrode holder driven by a motor. A control element in the form of an electromechanical transducer is arranged within the electrode holder, permitting fast fine control of the electrode movement.

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### 3,758,740

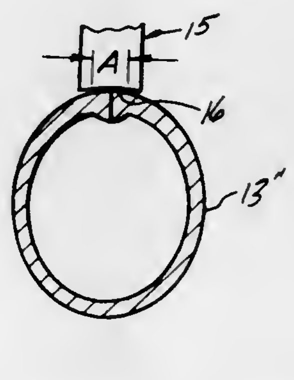
### APPARATUS FOR SCARFING WELD BEADS

**Jerome M. Dupy, 179 Ash St., Woodriver, Ill.**

**Division of Ser. No. 200,564, Nov. 19, 1971. This application Jan. 2, 1973, Ser. No. 320,182**

**Int. Cl. B23k** *31/06*

**U.S. Cl. 219—67** **2 Claims**



A process and apparatus for scarfing a longitudinally extending weld bead on the outside surface of a welded metal tube. The process comprises peaking the tubing so that the major transverse tube axis is from about 5 to 40 percent longer than the minor transverse tube axis, followed by removal of the weld bead substantially flush with the outside surface of the tube. The process and apparatus is particularly applicable to tubing having a wall thickness to diameter ratio of 2½ percent or less and, more particularly, to copper or copper base alloy tubing. The apparatus includes means for peaking the tubing as aforenoted, the preferred means being the use of adjustable side enclosure rolls.

### 3,758,741
### ENHANCED DIFFUSION WELDING

**Kenneth H. Holko, Strongsville, and Thomas J. Moore, Berea, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Sept. 14, 1972, Ser. No. 289,033**

**Int. Cl. B23k** *19/00*

**U.S. Cl. 219—91** **10 Claims**

Surfaces of unrecrystallized alloys are sanded and polished. This is followed by a two-step welding process wherein the strength of the parent metal is retained at the weld joint. The first step forces the surfaces into intimate contact at a temperature where the metal still has good ductility. The second step causes diffusion, rerystallization, and grain growth across the original weld interface.

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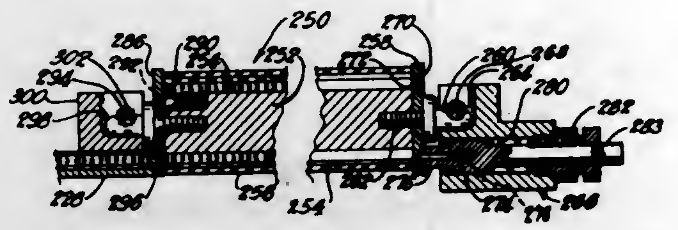
### 3,758,742
### STUD WELDING TOOL AND STUD LOADING DEVICE THEREFOR

**Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio**

**Division of Ser. No. 54,071, June 1, 1970, Pat. No. 3,679,806, which is a division of Ser. No. 358,736, April 10, 1964, Pat. No. 3,525,846. This application Jan. 17, 1972, Ser. No. 218,608**

**Int. Cl. B23k** *9/20*

**U.S. Cl. 219—98** **5 Claims**



A loading device for a stud welding tool having chuck means for receiving and holding a stud and a loading passage extending from the loading device to the chuck means. The loading device is a magazine having a plurality of stud-holding passages parallel to and rotatable about an axis parallel to the direction of movement of the chuck between its rearward stud-receiving position and its forward welding position. Compressed air is applied to the rear end of the passage aligned with the loading passage to feed studs one at a time to the chuck means.

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### 3,758,743
### CHUCK ASSEMBLY FOR STUD WELDING APPARATUS

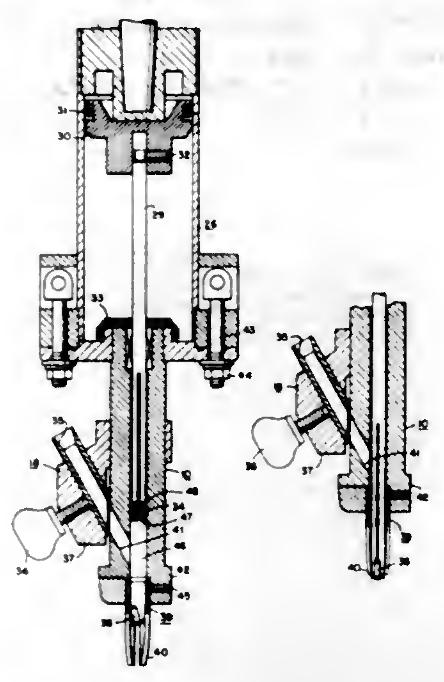
**John W. Lake, Audubon, N.J., assignor to Omark Industries, Inc., Portland, Oreg.**

**Filed June 30, 1970, Ser. No. 51,127**

**Int. Cl. B23k** *9/20*

**U.S. Cl. 219—98** **7 Claims**

A chuck assembly for automatically ram feeding large diameter flange studs. A chuck body has a first resilient chuck disposed at one end thereof and a reciprocating second resilient chuck movable through the body from a first loading position past a passageway to which the studs are loaded to the loading chamber to a second welding position concentric within the first chuck. The dimension of the first chuck is such as to retain the flange of the stud and the dimension of the second chuck is such as to pick-up the shank of the stud and support it as the stud is ram fed through the first chuck into welding position during which the fingers of the first chuck grip the fingers of the second chuck to aid in supporting the stud.



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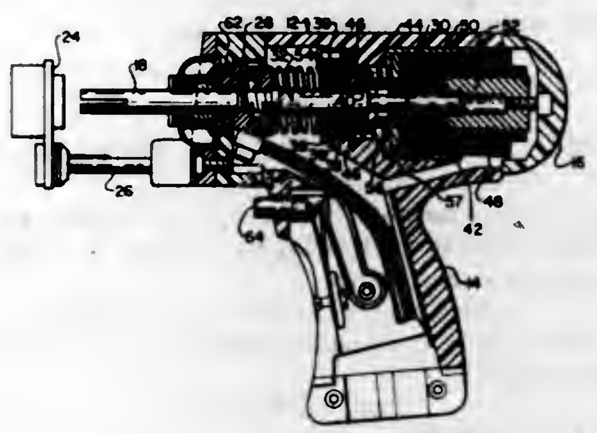
### 3,758,744
### CLUTCH MECHANISM FOR WELDING TOOLS

**Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio**

**Filed July 19, 1972, Ser. No. 273,226**

**Int. Cl. B23k** *11/14*

**U.S. Cl. 219—98** **8 Claims**



This is a mechanism for achieving constant lift. The device comprises three basic elements: a stud holder, a lift-imparting member, and a connecting member in which the connecting member has several movable balls trapped therein, the stud holder has a rod reciprocating within the connecting member urging the balls outwardly and the lift-imparting member circumscribes the connecting member and has an inner chamfered surface which on movement engages against the balls and connects the lift-imparting member with the stud holder.

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### 3,758,745
### SUBSTRATE POSITIONED DETERMINATION STRUCTURE AND METHOD

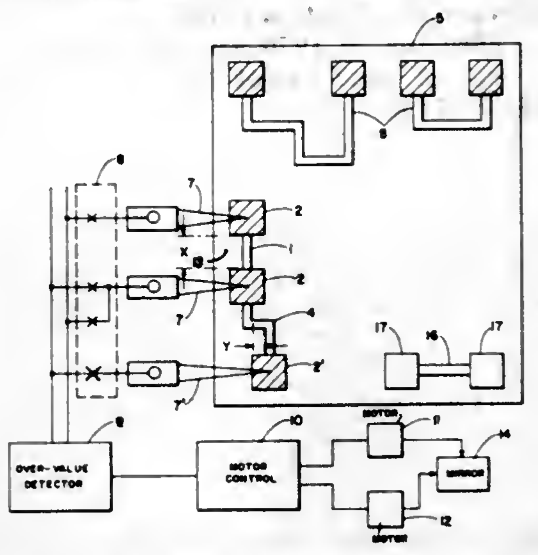
**Paul S. Wilker; William B. Kiss, and Graham A. Neathway, all of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada**

**Filed Sept. 7, 1971, Ser. No. 177,997**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 219—121 LM** **9 Claims**

A resistive strip adherently deposited on a substrate is progressively cut by a laser beam while the resistance of the strip is monitored. As the last edge becomes cut, the resistance approaches infinity, and the relative position of the laser beam with respect to the substrate is registered, providing a high resolution coordinate on the substrate which is useable as a base from which further laser trimming of circuitry deposited on the substrate may be performed.



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### 3,758,746
### HAFNIUM ELECTRODE WITH INCLUSION USED IN AN ACTIVE MEDIUM

**David Grigorievich Bykhovsky, and Alexandr Yakovlevich Medvedev, both of Leningrad, U.S.S.R.**

**Filed Dec. 23, 1969, Ser. No. 887,742**

**Claims priority, application U.S.S.R., Jan. 8, 1969, 1297701**

**Int. Cl. B23k** *35/00*

**U.S. Cl. 219—145** **16 Claims**

An object of the present invention is to provide a cathode for electric arc processes in active media which is based on hafnium and comprises additions selected from a group comprising rare earths, alkali metals and alkaline earth metals and their oxides as well as transition elements of the IV, V, VI and VIII groups of the D. I. Mendeleev Table taken separately or in a combination.

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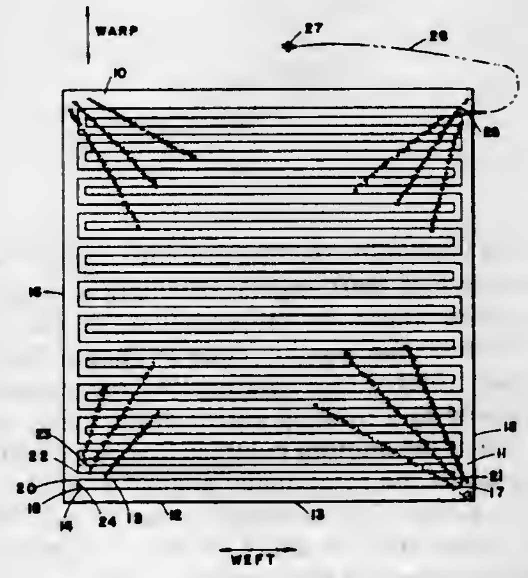
### 3,758,747
### ELECTRIC MATTRESS

**Charlotte M. Rohr, c/o General Delivery, Le Roy, Kans.**

**Filed Oct. 19, 1970, Ser. No. 81,909**

**Int. Cl. H05b** *1/00*

**U.S. Cl. 219—212** **1 Claim**



A heating cover such as a blanket for therapy having a pair of heating wires woven directly onto the cover and insulated by the fill of the cover material.

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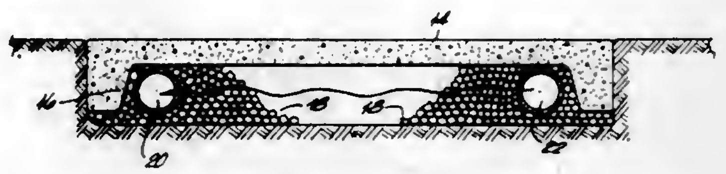
### 3,758,748
### SYSTEM FOR REMOVING SNOW AND ICE FROM PAVED SURFACES

**Thomas Reid, Ackermans Tr. Pk., RFD 2, Salem, N.H.**

**Filed Jan. 7, 1972, Ser. No. 216,209**

**Int. Cl. H05b** *1/00*

**U.S. Cl. 219—213** **8 Claims**



A closed two pipe underground system having closed end caps and side openings is disposed below the paved surface. Heated air is circulated through the system and flows between openings to heat the surface to melt snow and ice.

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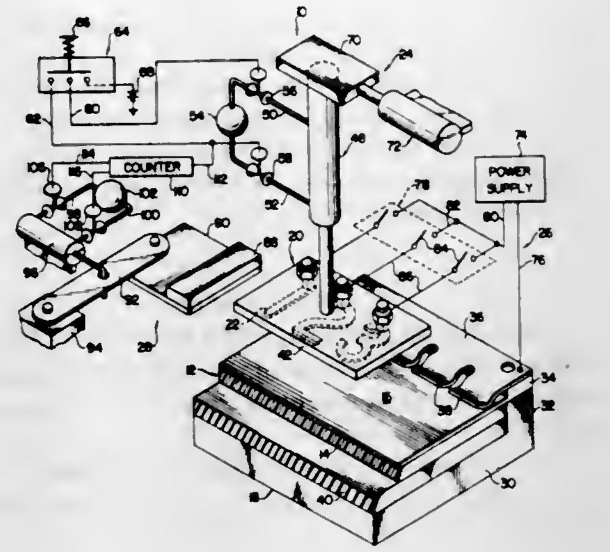
### 3,758,749
### ARC PRINTING OF CHARACTERS

**John G. Bolger, Jr., Orinda, Calif., assignor to Digilux Corporation, Oakland, Calif.**

**Filed Mar. 15, 1972, Ser. No. 234,889**

**Int. Cl. H05b** *3/16*

**U.S. Cl. 219—216** **7 Claims**



There is disclosed a system for arc printing characters such as numbers or letters on a metallic film bearing substrate. Features of the invention include perpendicularly moving a character shaped electrode into contact with the metallic film bearing substrate, wiping the character shaped electrode to remove metallic particles adhering thereto, and providing a resilient backing member for supporting the film bearing substrate when the electrode is pressed thereagainst. In addition, details of the operating parameters for arc printing characters is disclosed.

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### 3,758,750
### HEATING APPARATUS HAVING ONE OR MORE HEATING ELEMENTS IN ITS HEATING SURFACE

**Cornelis Hendrik Van Toorn, Haarlemmermeer, Netherlands**

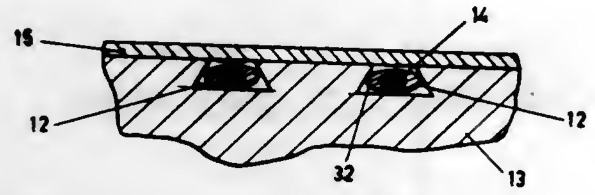
**Filed Jan. 20, 1972, Ser. No. 219,390**

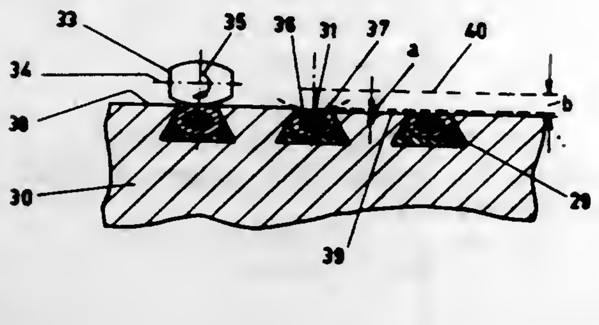
**Claims priority, application Netherlands, Jan. 21, 1971, 7100788**

**Int. Cl. H05b** *3/68*

**U.S. Cl. 219—457** **3 Claims**

Heating apparatus provided with resistance threads lying close to the temperature contact surface thereof and being embedded in grooves which show a cross-sectional area increasing towards and extending to the bottom of the groove, preferably dove-tail shaped, in which grooves the threads are rolled-in leaving clear near to the bottom a space around that thread half that is facing said groove bottom. Said space serves among other things as heat barrier and may be filled under extreme circumstances with a heat insulating material. The heating apparatus can have many applications such as a hot plate, or in calendering or rolling various kinds of material. A special application is stripping off the back-layer of a wide self-adhesive tape for which purpose a crack-back-roll has been developed in which the back-layer of the tape is caused to release from the adhesive layer by crack-building created by intensive radiation heat. Temperatures are lying in the reach between 1,000° and 2,000°C requiring special resistance threads. The invention describes how such resistance threads can be embedded into the grooves.





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3,758,751

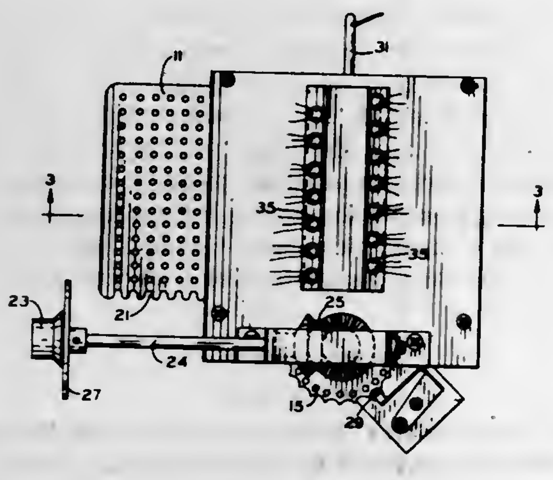
### PRESET FREQUENCY SELECTION SYSTEM

**Carl Henry Buecker, deceased, late of Fort Wayne, Ind. (by Majorie J. Buecker, executrix), assignor to Magnavox Company, Fort Wayne, Ind.**

**Filed Oct. 6, 1971, Ser. No. 186,892**

**Int. Cl. G06k** *7/10*; **E04g** *17/00*; **H03j** *5/00*

**U.S. Cl. 235—61.11 E** **16 Claims**



A system for prescribing one of a plurality of possible operating conditions for a radio device is disclosed wherein a punched card containing coded information identifying selected ones of the plurality is optically read in a static manner and the thus read information utilized to energize a visual readout identifying which of the several possible operating conditions has been defined by the specific information read from the card and the thus read information is also used to cause the system to operate under the prescribed operating condition. In the embodiment described, the condition is the frequency at which a transmitter and/or receiver is to operate.

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3,758,752

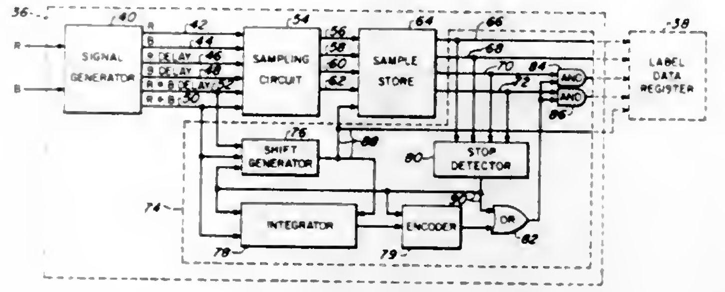
### AUTOMATIC VEHICLE IDENTIFICATION

**Christos Basil Kapsambelis, Canton, and Clyde Francis Ugalde, Marlboro, both of Mass., assignors to Computer Identics Corporation, Westwood, Mass.**

**Filed Aug. 26, 1970, Ser. No. 67,381**

**Int. Cl. G06k** *9/18*

**U.S. Cl. 235—61.11 E** **3 Claims**



Apparatus is disclosed for determining the actual size of a section of information associated with an adjacent space by comparing an apparent dimension of the section with a like apparent dimension of the space to produce a representation of the relative size of the section and space and then determining the actual size of the section using that representation of relative size.

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3,758,753

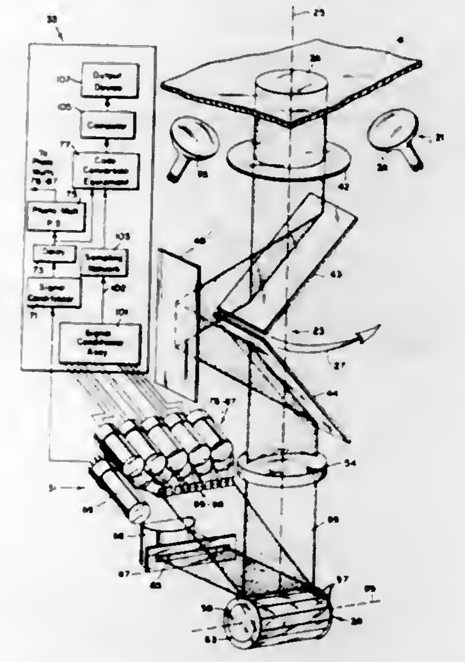
### OPTICAL CODE READER SYSTEM

**Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed July 16, 1971, Ser. No. 163,188**

**Int. Cl. G06k** *7/10*

**U.S. Cl. 235—61.11 E** **5 Claims**



An optical system for reading graphic codes in two dimensions, regardless of their angular orientation or position in a planar aperture where, in one embodiment, the image of a multibit, multicolumn graphic code is illuminated by a light source, slowly rotated by a rotating "K" mirror assembly and rapidly scanned by a rotating mirror drum which sequentially projects each of the multibit columns first onto a slit where the image of each of the rotationally aligned multibit columns is detected by a first electro-optical detector and then after a fixed time delay into an array of electro-optical detectors where the bits in each of the multibit columns are detected. In response to the rotationally aligned image of each multibit column of the graphic code, the first electro-optical detector generates a signal which allows the array of electro-optical detectors to read out the multibit information contained in each column of the graphic code.

3,758,754

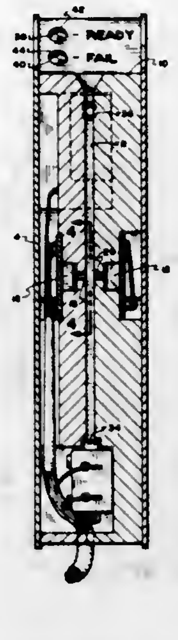
### READING OF MANUALLY MANIPULATED ENCODED DEVICES

**Billy M. Jensen, Sandy, and Clifton McDermott, Salt Lake City, both of Utah, assignors to Bio-Logics Products, Inc., Salt Lake City, Utah**

**Filed Jan. 31, 1972, Ser. No. 222,422**

**Int. Cl. G06r** *7/10*

**U.S. Cl. 235—61.11 E** **7 Claims**



Apparatus for reading manually manipulated encoding identification tags and the like, said apparatus comprising a housing mountable on or adjacent a computer or piece of automatic equipment and having a slot extending along at least one side for slidably receiving an opaque identification device having a plurality of holes extending through said device arranged in a predetermined code, a plurality of light-emitting diodes disposed transversely of said slot along one side thereof, a plurality of photodiodes correspondingly disposed along the opposite side of said slot, means connecting said light-emitting diodes for actuation from a source external to said apparatus, and a pair of limit switches disposed adjacent opposite ends of said slot and operable by engagement with said identification device upon manual movement of said device along said slot to provide signals to said external source to control actuation of said light-emitting diodes.

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3,758,755

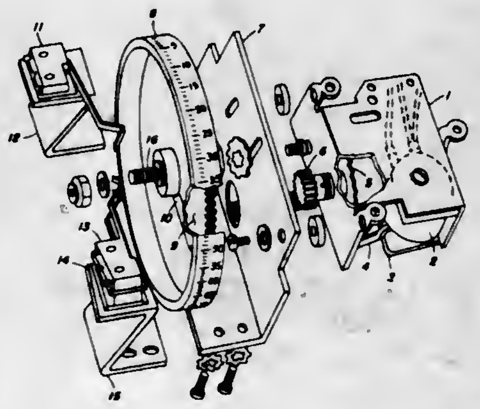
### PRE-SET COPY COUNTING DEVICE

**Delbert W. Sames, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.**

**Filed July 16, 1971, Ser. No. 163,350**

**Int. Cl. G06m** *3/02*

**U.S. Cl. 235—92 PE** **7 Claims**



The present invention is directed to a simple and efficient device for pre-setting a machine to automatically dispense any selected number of copies of material from 1 to 100; or to function in a "continuous" mode if over 100 copies are desired. A series of switches are pulsed in accordance with the number of copies to be made such that as each copy is made the selector dial reduces by one until zero is reached. Utility of the present invention has been found as part of an overall assembly in photocopying machines.

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3,758,756

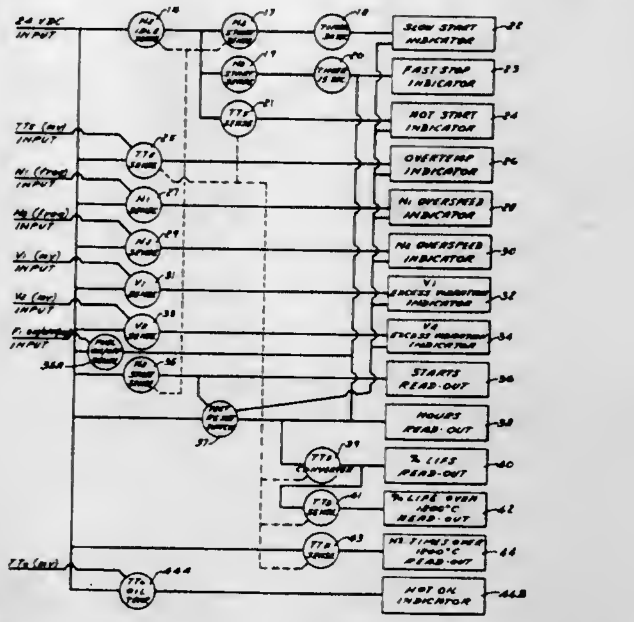
### MICROMINIATURE CENTER MOUNTABLE ON THE ENGINE

**Douglas A. Johns, Lake Worth, Fla., assignor to Scientific Instruments, Inc., Lake Worth, Fla.**

**Continuation of Ser. No. 23,607, March 30, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,168**

**Int. Cl. G06m** *3/08*

**U.S. Cl. 235—92 MT** **4 Claims**



A miniaturized recorder and display device for the compilation of engine operating parameters for mounting within or about an engine housing comprising at least one microminiature control circuit, a plurality of counters and indicators for the various engine parameters, and a heat resistant housing means attachable to the inside or about the engine housing. Input data from operating engine sensors is received by the control circuitry which activates the appropriate indicating dial.

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3,758,757

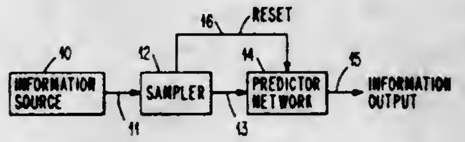
### EXPONENTIAL PREDICTOR AND SAMPLED-DATA SYSTEMS

**Otto R. Buhler, and Joseph T. Cutter, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 8, 1972, Ser. No. 232,885**

**Int. Cl. G05b** *21/02*

**U.S. Cl. 235—150.1** **25 Claims**



A sampled variable or data is modified, between sample times, by a predictor whose exponentially decaying output is continuously available for use by an analog continuous-control output device. In a hybrid digital-analog closed-loop system, having a known time constant of response, a variable condition is sampled at times to derive a sampled-data signal at each sample time. This signal is applied to an R-C differentiating circuit having a time constant of the order of said known time constant. At each sample time, the capacitor charge is reduced to zero by momentary closing of a switch which shorts the capacitor.

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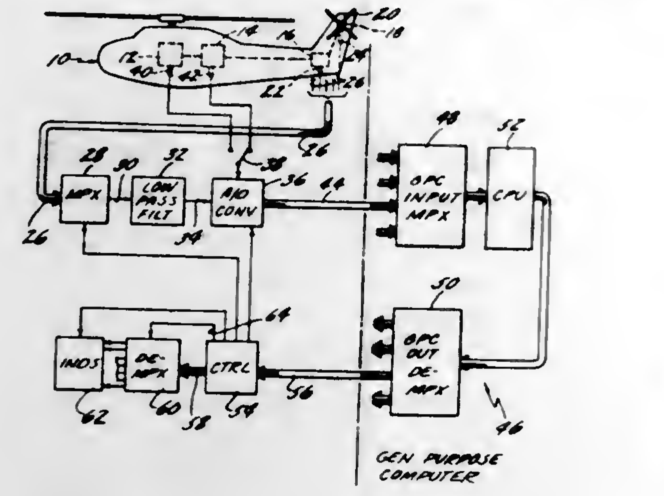
### 3,758,758
### ROTATIONAL STATISTICAL VIBRATION ANALYSIS EMPLOYING SIDEBANDS AND/OR WEIGHTING

**John E. Games, Granby, and Albert J. Wyrostek, East Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Filed Mar. 10, 1972, Ser. No. 233,654**
**Int. Cl. G06f** *15/34;* **G01m** *7/00*
**U.S. Cl. 235—151.3** **4 Claims**



A method of statistical analysis of the vibrational characteristics of rotary machinery includes a mechanical analysis of the involved machinery to identify pertinent frequencies therein, such as gear mesh frequencies, together with sidebands of pertinent frequencies created by FM modulation due to imperfections of parts; selective, narrow band filtering of vibrational response of the machinery, at frequency bands including fundamental frequencies, harmonics thereof and certain upper and lower sidebands of each; statistical analysis to determine standard deviations from normal responses and choice of integral numbers thereof to be taken as indicative of degradation; and weighting of the results of the test in accordance with analytical evaluation of the various responses in indicating the health of the apparatus under test. A typical system for performing vibrational analysis in a helicopter, with on-line airborne equipment or ground based equipment, employing a general purpose digital computer, and typical logic flow of a related general purpose computer are also disclosed.

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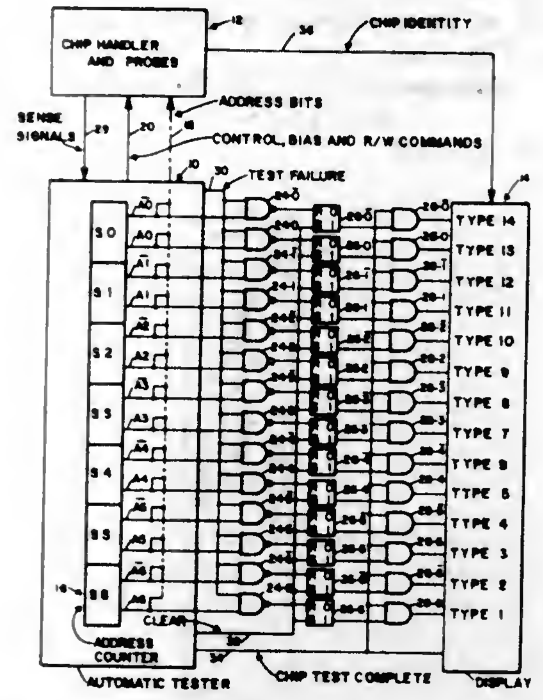
### 3,758,759
### APPARATUS FOR DETERMINING PARTIAL MEMORY CHIP CATEGORIES

**Conrad J. Boisvert, Jr., and Anthony L. Mandia, both of Wappingers Falls, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.**

**Filed Jan. 13, 1972, Ser. No. 217,458**
**Int. Cl. G11c** *29/00*
**U.S. Cl. 235—153 AC** **12 Claims**

There is disclosed an apparatus for determining partial memory chip categories. In the case of 128-cell chips having seven address bits, there are fourteen partial memory chip categories; permanently addressing any one of the seven address lines with a 1 or a 0 produces an effective 64-cell chip, any cell of which can be selected depending upon the address bits extended to the other six address lines. Each address bit of each bad cell on the chip causes a latch to be set as soon as it is determined that the cell is bad. Depending on its value, one of two respective partial chip categories is eliminated. After all cells have been tested the partial chip categories which have not been eliminated are those applicable to the chip, and they can be determined immediately from the settings of the latches.



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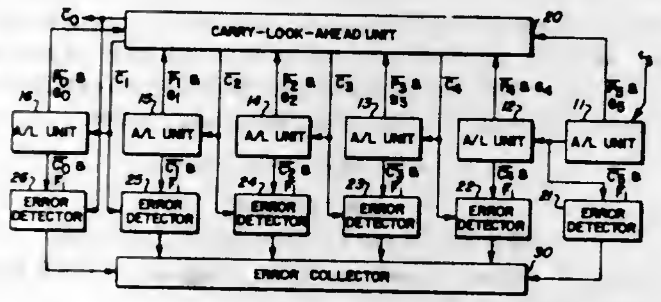
### 3,758,760
### ERROR DETECTION FOR ARITHMETIC AND LOGICAL UNIT MODULES

**Joseph Lamar Cowan, Crossville, Ala., assignor to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed Apr. 7, 1972, Ser. No. 242,175**
**Int. Cl. G06f** *11/10*
**U.S. Cl. 235—153 BB** **5 Claims**



A modular error detector for an adder of the type which provides both arithmetic and logical functions and incorporates carry-look-ahead addition is described. The error detector includes parity prediction of logical and arithmetic terms together with partial duplication. Error checking of four bit arithmetic/logic modules is integrated with error checking of the carry-look-ahead unit. Also, check parity generation and testing of the operands is integrated with the parity prediction.

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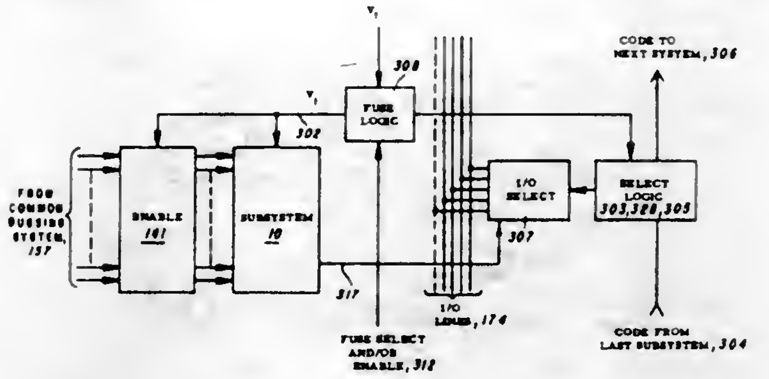
### 3,758,761
### SELF-INTERCONNECTING/SELF-REPAIRABLE ELECTRONIC SYSTEMS ON A SLICE

**W. S. Hearion, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Aug. 17, 1971, Ser. No. 172,462**
**Int. Cl. G06f** *11/00*
**U.S. Cl. 235—153 AK** **37 Claims**

A complex electronic system such as a memory, or a stored program computer has a plurality of subsystems with predetermined interconnections on a semiconductor substrate.

Subsystem selection circuits in combination with subsystem enable circuits are interposed between one or more of the subsystems or a portion thereof and one or more common bussing systems. In one embodiment the subsystems which meet desired performance specifications are automatically selected by the selection circuits and enabled to interconnect the subsystems in a desired system configuration, and the subsystems not meeting the desired performance specifications or meeting such specifications but not necessary for the desired final system configuration are left isolated from the completed system. The system may be permanently packaged or sealed. In the event that enabled subsystems thereafter malfunction, the selector circuits are operated externally of the package to automatically disable the malfunctioning subsystems and enable substitute subsystems which meet the desired performance specifications but which were not originally necessary for completion of the system.



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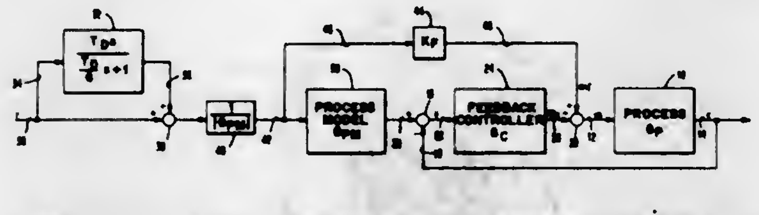
### 3,758,762
### DECOUPLED FEEDFORWARD-FEEDBACK CONTROL SYSTEM

**Bernard Littman, Philadelphia, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.**

**Filed July 10, 1972, Ser. No. 270,419**
**Int. Cl. G05b** *13/02, 17/02;* **G05d** *7/06*
**U.S. Cl. 235—150.1** **21 Claims**



A control system combining feedforward and feedback control of a manipulated variable of a process is arranged to provide a modification of the error signal to which the feedback control responds so as to effect a decoupling of the feedforward and feedback control actions. The error signal is diminished by a signal of magnitude sufficient to minimize or reduce by a predetermined amount the response by the feedback control to action by the feedforward control as reflected in changes in the controlled variable. Provision is also made to avoid unnecessary feedback control in response to set point changes when feedforward action is provided from the set point changes.

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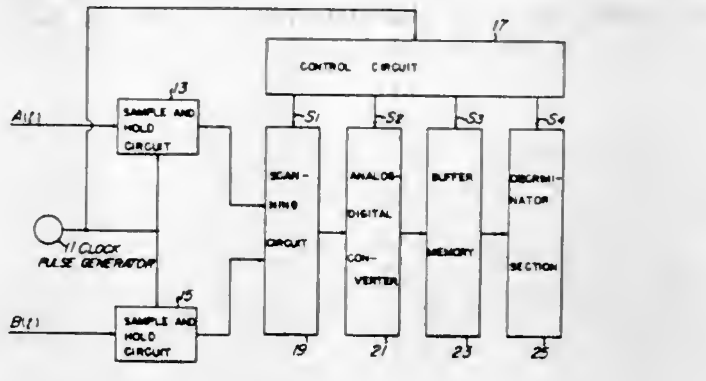
### 3,758,763
### METHOD OF DIGITALLY PROCESSING SINUSOIDAL AC SIGNALS

**Haruo Nohara, and Junichi Makino, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Nov. 5, 1971, Ser. No. 196,049**
**Claims priority, application Japan, Nov. 9, 1970, 45/97903**
**Int. Cl. G06f** *15/20;* **G01r** *13/02*
**U.S. Cl. 235—151.31** **10 Claims**

A sinusoidal ac signal is subjected to periodic sampling having a period $\Delta t$. There is made a product of one sampled value of the signal taken at a certain sampling point and another sampled value at the next sampling point apart, by an interval of time equal to the period $\Delta t$, from the previous sampling point. If the product is of negative value, a zero point of the signal must lie between the two sampling points. The zero point can equivalently be obtained by drawing a straight line passing the two sampled values. On the basis of the zero points of sinusoidal ac signals obtained in such a manner as above, the frequencies, phase differences, powers and the impedances of the associated transmission lines are obtained by means of a digital computer.



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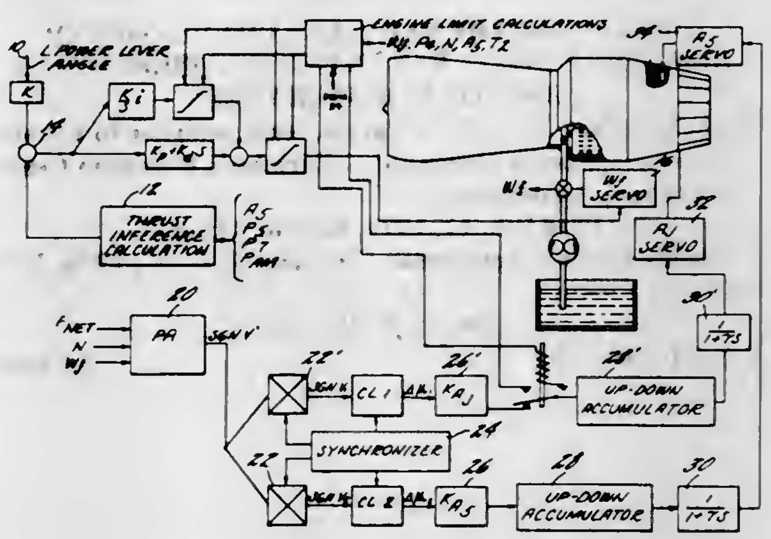
### 3,758,764
### TURBINE POWER PLANT CONTROL WITH AN ON-LINE OPTIMIZATION CONTROL

**Kermit I. Harner, Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed Oct. 29, 1970, Ser. No. 85,046**
**Int. Cl. G05b** *13/02;* **F02** *F02c*
**U.S. Cl. 235—150.2** **5 Claims**



Means for speeding up the assessment and optimization process for a turbine engine control including a factor that estimates the change in steady state fuel flow required to maintain the desired thrust level.

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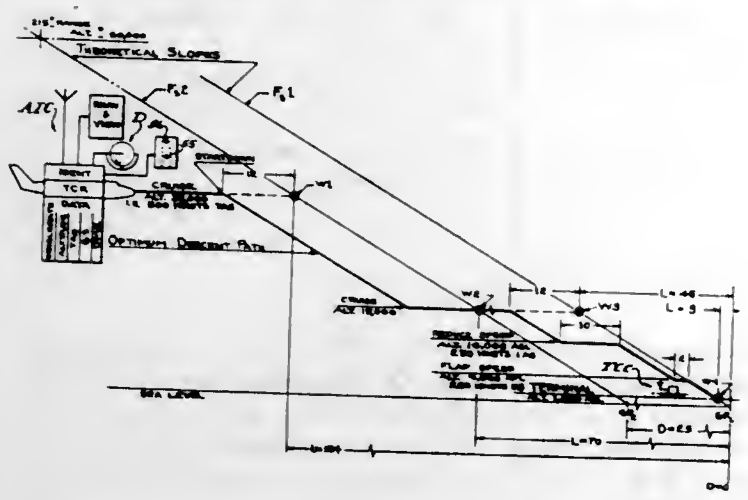
### 3,758,765
### TERMINAL AIRWAYS TRAFFIC CONTROL SYSTEM

**Carl W. Vietor, 2116 Linda Flora Dr., Los Angeles, Calif.**

**Filed May 3, 1971, Ser. No. 139,370**
**Int. Cl. G06g** *15/50, 15/48*
**U.S. Cl. 235—150.26** **45 Claims**

A system for scheduling aircraft arrivals from cruise to touchdown, and also for scheduling departures from airport to cruise altitude; wherein space considerations are reserved to the aircraft pilot and wherein time considerations are reserved to the control authority. The aircraft is navigated by the pilot along a Terminal Corridor Route (TCR) in conformance to the requirements of a ground based Traffic Control Computer (TCC). The airborne Aircraft Instrumentation Computer

(AIC) includes a programmed computer and an instrument panel display that positions the aircraft relative to an optimum time flexible energy path and responsive to in-flight data which is also telemetered to the TCC for processing. The TCC repeatedly processes all in-range aircraft on a time cycle basis and imposes and regulates time intervals between said aircraft by issuing speed-up and slow-down commands thereto as necessary to qualify said aircraft to proceed, and alerts the control authority and pilot as well of aircraft which do not qualify and/or require corrective procedures. The system identifies all in-range aircraft and sequentially programs the flight paths thereof along the required track and through waypoints; taking into account the kinetic as well as potential energies involved for executing practical and efficient flight to the ends of infallible traffic control and safety, economy, anit-pollution and noise abatement.



### 3,758,766

### CIRCUIT FOR THE PARALLEL CONVERSION OF NUMBERS A INTO A BASE A INTO NUMBERS B TO A BASE OF B OR VICE VERSA

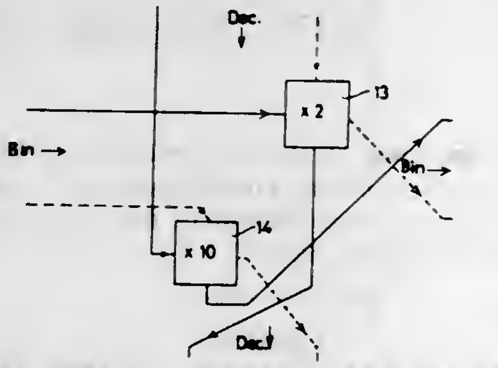
**Michel Combet, Travedona/Varese, Italy, assignor to European Atomic Energy Community (Euratom), European Center Kirchberg, Luxembourg**

**Filed Feb. 12, 1971, Ser. No. 115,037**

**Claims priority, application Germany, Feb. 27, 1970, P 20 10 428.3**

**Int. Cl. H03k** *13/24*

**U.S. Cl. 235—155** **3 Claims**



A circuit for the parallel conversion of numbers expressed in terms of one base to numbers expressed in terms of another base, typically decimal numbers to binary numbers and vice versa comprises a matrix whose lines and columns constitute oriented transmission paths for the numbers expressed to the respective bases and at the crossing points interconnecting logic elements causing the production of new line and column data by multiplication of incoming column data by a modulo b, the incoming line data being regarded as a carry over from a next lower digit value and new line data resulting from the multiplication carry forward modulo b.

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### 3,758,767

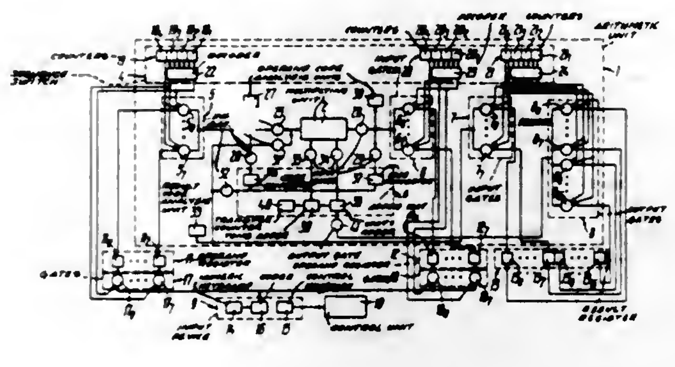
### DIGITAL SERIAL ARITHMETIC UNIT

**Leonid Vitalievich Kantorovich, ulitsa Akademicheskaya, 26; Valery Petrovich Tolstiev, ulitsa Zolotodolinskaya, 29, kv. 424, and Yakov Ilich Fet, ulitsa Akademicheskaya, 13, kv. 8, all of Novosibirsk, U.S.S.R.**

**Filed Oct. 19, 1971, Ser. No. 190,610**

**Int. Cl. G06f** *7/50, 7/52*

U.S. Cl. 235—159 **2 Claims**



Digital serial arithmetic unit comprising: a unit for multiplying one-digit figures, an adding unit, three rows of input gates and a row of output gates. The outputs of the input gate rows are connected with the respective inputs of the multiplying unit and with those of the adding unit. The outputs of the multiplying unit are connected with the respective inputs of the adding unit while the outputs of the adding unit are connected with the inputs of the output gate row.

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### 3,758,768

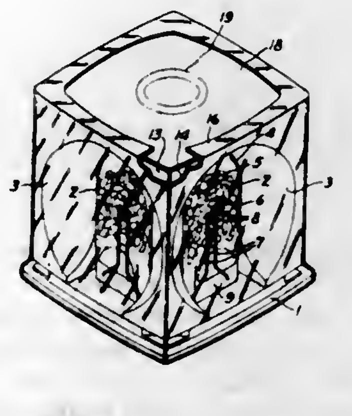
### MULTILAMP PHOTOFLASH ARRAY

**Roy A. Secura, East Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.**

**Filed July 3, 1972, Ser. No. 268,734**

**Int. Cl. G03b** *15/02*

U.S. Cl. 240—1.3 **4 Claims**



A multilamp photoflash array having a base and a rigid structured reflector unit with a protective cover therearound constituted solely of a light-transmitting plastic film tubing shrink-fitted tight around the reflector unit. The ends of the shrink-fitted tubing overlap the reflector unit and base to firmly hold them together. The array also has a supplementary cover adjacent to at least one end of the shrink-fitted tubing.

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### 3,758,769

### ROTATING LIGHT PROJECTOP

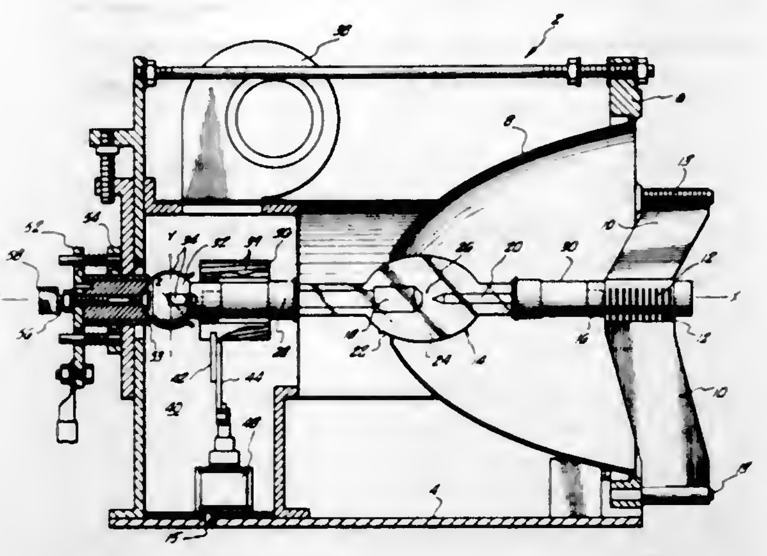
**Marlowe A. Pichel, Altadena, Calif., assignor to Pichel Industries, Inc., Pasadena, Calif.**

**Filed Apr. 14, 1972, Ser. No. 244,201**

**Int. Cl. F21m ; F21v** *19/02*

**U.S. Cl. 240—41 R** **16 Claims**

A light projector for movie projectors, search lights, slide projectors, etc. is provided with a rotating high intensity bulb that increases the life of the bulb and improves the light characteristics of the light projector. The bulb is mounted in special adapters that permit a ready alignment of the bulb with a reflector while maintaining the alignment during rotation of the bulb. A solenoid activated indexer coacts with a pinion gear mounted with respect to the bulb to provide the rotation. The rotation can be continual, a step rotation or a non-uniform rotation. A pair of slip ring bushings are provided to mount the ends of the adapters with one adapter being machined to provide a profile or camming surface, particularly matched to the light spot of the bulb. The slip ring bushings further provide electrical connections for the anode and cathode members of the bulb. The pinion gear is mounted on the bulb and coacts with a ratchet pawl that is driven by a solenoid for rotating the bulb. The pinion gear can double as a director of air flow from a fan along the axial length of the bulb member for cooling purposes. Various plates and rods are arranged to provide an alignment of the bulb member with respect to the reflector through the connection of one of the mounting slip ring bushings. Appropriate circuitry is provided for rotating the bulb, for example, for initiating the rotation upon the energization of the bulb member circuit.



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### 3,758,770

### REFLECTOR HAVING RADIAL FLUTES

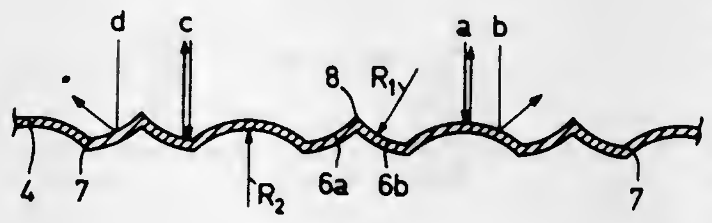
**Walter Morasz, Gmunden, Austria, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Dec. 21, 1971, Ser. No. 210,408**

**Claims priority, application Netherlands, Oct. 13, 1970, 7014953**

**Int. Cl. F21v** *7/09*

**U.S. Cl. 240—41.36** **3 Claims**



A parabaloidal reflector adapted to receive an elongate light source along the axis of the reflector includes a number of fluted portions arranged in a repeated pattern over the surface of the reflector. The reflector achieves more uniform light reflection because adjacent fluted portions are concave or convex when viewed in cross-section and which merge in a geometrically discontinuous manner. The radius of curvature of the fluted portions in cross-section is the same from the widened open portion of the reflector to the narrowed tip.

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### 3,758,771

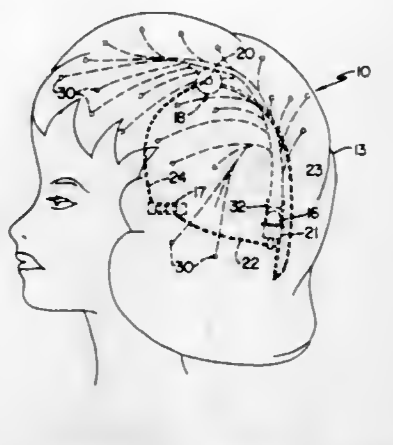
### ILLUMINATED WIG

**Esther E. Frohardt, and Melvin W. Frohardt, both of 3850 Nobles Rd., Littleton, Colo.**

**Filed Nov. 27, 1970, Ser. No. 93,059**

**Int. Cl. F21v** *33/00;* **F21l** *15/06*

**U.S. Cl. 240—6.4 W** **5 Claims**



A light source in combination with light-conducting fibers are incorporated in a wig or removable hairpiece to provide an illuminated decorative wig. Light-emitting ends of the fibers are randomly interspersed throughout the hair of the wig and a switch is included to control light source operation.

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### 3,758,772

### HEADLIGHT FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

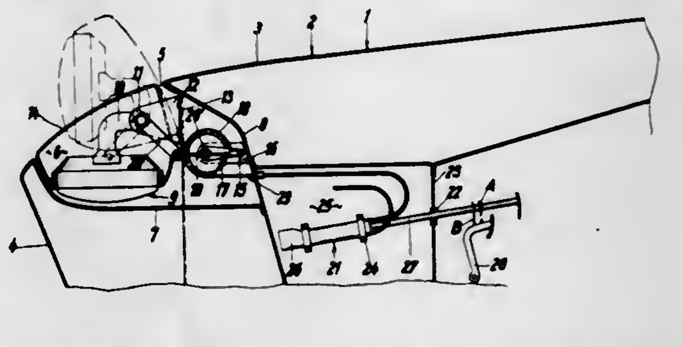
**Wolfgang Eyb, Leonberg, Germany, assignor to Firma Dr. Ing. h.e.F. Porsche KG, Stuttgart-Zuffenhausen, Germany**

**Filed Dec. 29, 1970, Ser. No. 102,373**

**Claims priority, application Germany, Jan. 13, 1970, P 20 01 227.5**

**Int. Cl. B60q** *1/06*

**U.S. Cl. 240—7.1 H** **8 Claims**



A headlight for vehicles, especially motor vehicles, which is pivotally mounted at the vehicle superstructure and includes an operating device, which is preferably operable from the passenger space, for pivoting the headlight into the operating position or the concealed rest position. The operating device includes an operating arm which is operable through unilateral movements and is held in its end position against the effect of a spring element and by means of a locking mechanism.

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### 3,758,773

### FLASHLIGHT

**Gilbert Nau, Chatellerault, France, assignor to Societe Des Accumulateurs Fixes Et De Traction (Societe Anonyme), Pont de La, Folie, France**

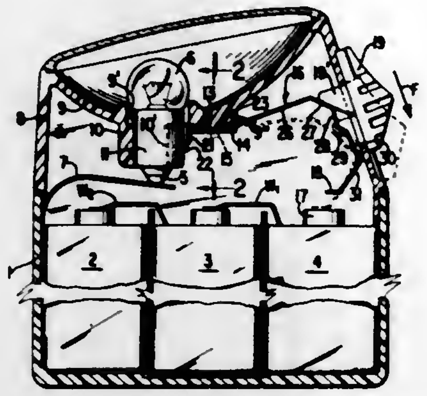
**Filed Sept. 20, 1972, Ser. No. 290,536**

**Claims priority, application France, Oct. 12, 1971, 7136667**

**Int. Cl. F21l** *15/06*

**U.S. Cl. 240—10.6 R** **7 Claims**

A flashlight including a bulb and an electric power source preferably in the form of a battery of series-connected cells within a casing having a cover, one terminal of the battery being in permanent electric connection with the center contact stud of the bulb of the flashlight via a resilient blade welded or soldered to the metal can of one of the cells which can constitute said terminal of the battery. The second terminal of the battery constituted by the center stud of another of the series-connected cells is connectable at will to the base of the bulb by deformation of a second resilient blade through the agency of a movable control means. In order to insure accurate positioning of the second blade and reliability of contact of one of its extremities with the said cell center stud on appropriate movement of the control means and reliability of contact of the other extremity of said second blade with the base of the bulb, the second resilient blade is fastened securely and permanently to an inner surface of the cover so as to position and provide proper location of the two extremities relative to said cell stud and bulb base.



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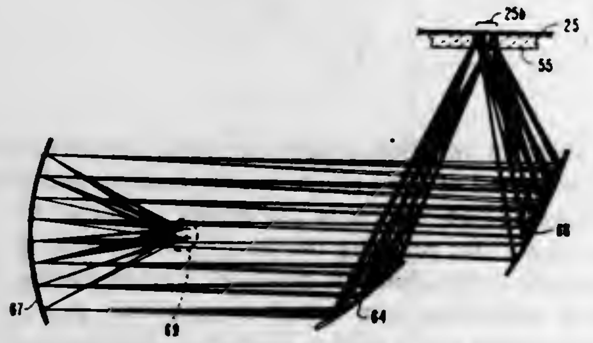
### 3,758,774
### ILLUMINATION SYSTEM FOR COPIER MACHINES ARRANGED TO MINIMIZE GLARE WITH RESPECT TO AN OPERATOR

**Leon H. Hildenbrandt, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 19, 1972, Ser. No. 264,093**

**Int. Cl. G03b** *27/54*

**U.S. Cl. 240—103 R** **4 Claims**



The present case is directed to a number of illumination systems making use of lamps and reflectors having predetermined optical configurations and arranged to insure minimal glare in the eyes of an operator using the equipment in which the illumination systems are incorporated. A first version involves a stationary paraboloid reflector cooperating with a moving parabolic cylinder reflector to illuminate an original document during a copying operation. In a second version, the moving reflector is split into two reflectors each having distinct parabolic configurations and different focal lengths. In still another version, only a single reflector is arranged for movement during scanning of an original document to project a line of light and has a predetermined configuration which is parabaloid in one direction and substantially elliptical in a direction transverse to the first direction.

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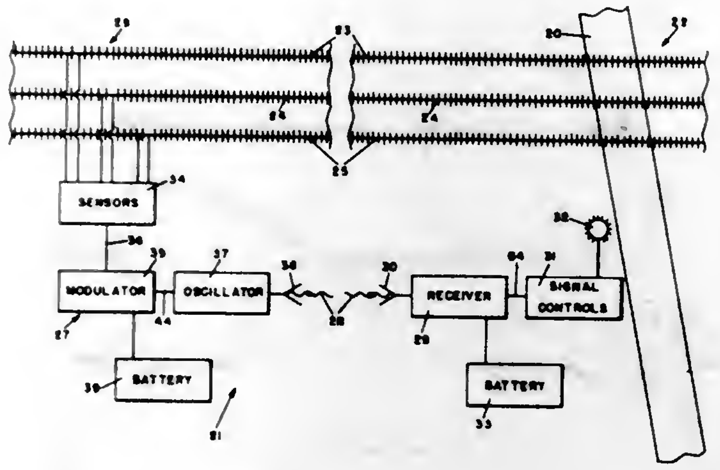
### 3,758,775
### RAILROAD CROSSING SIGNALLING SYSTEM

**John B. Hopkins, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportion, Washington, D.C.**

**Filed Sept. 29, 1971, Ser. No. 184,828**

**Int. Cl. B61l** *1/10*

**U.S. Cl. 246—125** **4 Claims**



Disclosed is a highway-railroad crossing signalling system utilizing microwave telemetry to convey control information from a remote sensing location to a receiver coupled to an active motorist warning device.

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### 3,758,776
### APPARATUS FOR DETERMINING THE MELT INDEX OF PLASTICS

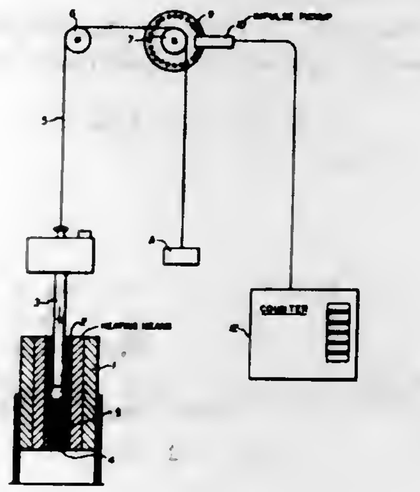
**Johann-Christian Frohne, Dorsten; Ernst Hohmann, Gelsenkirchen-Buer, and Werner Schneider, Gladbeck, all of Germany, assignors to Scholven-Chemie AG, Gelsenkirchen-Buer, Germany**

**Filed May 12, 1969, Ser. No. 823,659**

**Claims priority, application Germany, July 2, 1968, P 17 73 754.1**

**Int. Cl. G01d** *5/34*

**U.S. Cl. 250—231 R** **2 Claims**



In the determining of the melt index of plastics, a sample is forced from a cylinder through a calibrated orifice by means of a weighted plunger in a conventional manner. In this invention, the rate of movement of the plunger is converted to a series of electrical pulses which pulses are fed to a digital counter that determines the number of such pulses over a predetermined time interval. If the apparatus including the counter are suitably calibrated, the melt index of a sample can be displayed by the counter directly without the need to convert the reading.

### 3,758,777
### ION SOURCE FOR VAPORIZING AND IONIZING SOLID SUBSTANCES

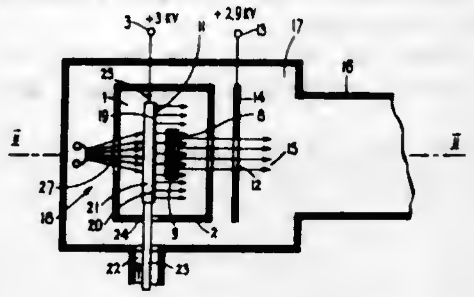
**Curt Brunnee, Platjenwerbe, and Ludolf Jenckel, Bremen-St. Magnus, both of Germany, assignors to Varian Mat GmbH, Bremen, Germany**

**Continuation of Ser. No. 888,320, Dec. 29, 1969, abandoned. This application Nov. 3, 1971, Ser. No. 195,522**

**Claims priority, application Germany, Jan. 7, 1969, P 19 00 569.7**

**Int. Cl. H01j** *39/34*

**U.S. Cl. 250—41.9 S** **19 Claims**



High vacuum ion source for use with a mass spectro-meter to analyze solid substances. A thermally conductive body having the substance to be analyzed supported on a surface thereof is disposed in the ionization chamber with the substance supporting surface facing the ionization region of the chamber. A heat source, such as an electron emitting device, is directed toward the opposite surface of the body to heat the body and cause the substance to vaporize. The heating of the body in turn heats the chamber surfaces to prevent condensation of the vaporized substance. The vaporized substance can be ionized by particle bombardment or field emission. The body may take the form of a flat plate or a cylindrical or other box-like structure.

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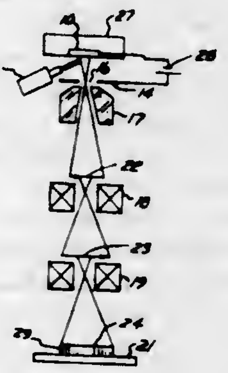
### 3,758,778
### SURFACE IMAGING EXOELECTRON MICROSCOPE

**Peter F. Braunlich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed July 29, 1971, Ser. No. 167,313**

**Int. Cl. H01j** *31/50, 37/26, 39/12*

**U.S. Cl. 250—307** **24 Claims**



An electron microscope employing the principles of exoelectron emission and induced photoemission is described. Surface variations which are microscopically and optically undetectable can be visually studied and/or photographed using the inventive microscope. Exoelectron emission from the surface of the substance is depended upon, and varies with, the characteristics of the surface even though the variations are microscopically small. The detectable characteristic variations include faults, cracks, homogeneity variations, surface variations, composition impurities, and other such surface characteristics. The exoelectrons emanate from such a surface in a pattern which includes the variations. The electron pattern is magnified to produce a visual image of the small variations.

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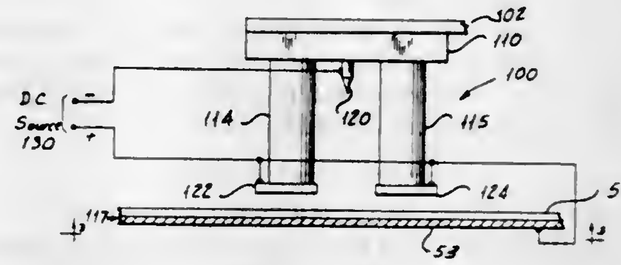
### 3,758,779
### ELECTROSTATIC CHARGING APPARATUS

**Edward P. Thicthener, Hove, Australia, assignor to Savin Business Machines Corporation, New York, N.Y.**

**Continuation of Ser. No. 12,088, Feb. 10, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,799**

**Int. Cl. G03g** *15/02*

**U.S. Cl. 250—325** **8 Claims**



I provide charging apparatus for an electrostatic copying machine of the type in which a photoconductive material is charged electrostatically and exposed to a radiation pattern to form a latent image which is developed by the application of suitable ink, ink particles or colored toner. The charge retained by the material is a function of two major variables, the strength of the field reaching the photoconductive material and the duration of its exposure to the charging field. In my apparatus the charge is emitted by the charger at or near saturation level to produce a strong field. The area of the material exposed to this field at any time is limited in proportion to the field strength by shielding the material from the charge either physically, electrostatically or both.

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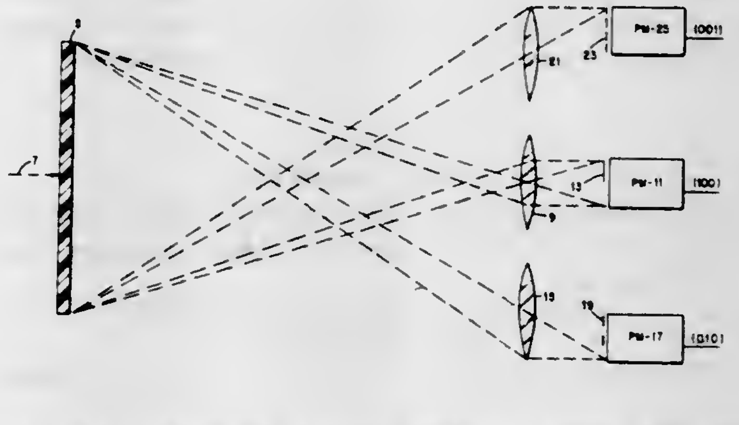
### 3,758,780
### OPTICAL-BINARY CODED POSITION-SENSITIVE RADIATION DETECTOR

**Lap Yen Lee, Houston, Tex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Nov. 8, 1972, Ser. No. 304,873**

**Int. Cl. G01t** *1/20*

**U.S. Cl. 250—221** **10 Claims**



A position-sensitive radiation detection system has been provided for use with scintillation detection mediums wherein the position of a radiation event within a block of scintillation material is determined by an optical-binary coding system such that a digital signal output is provided which is indicative of the position of a radiation event within the scintillator. The image of the scintillator is formed onto the light sensitive areas of a plurality of photomultiplier tubes by means of a corresponding plurality of lenses. A coded screen or mask is placed between each lens and its corresponding photomultiplier tube in the position of the image to obstruct a selected portion of the image from the view of each photomultiplier so that the output of each photomultiplier tube provides one digit of a multiple bit binary signal to indicate the location of the event. The first digit or least significant bit would come from a photomultiplier tube number one which would have a screen which obstructs one-half of the image so that the output would be either a binary "1" or "0" depending upon which half of the scintillator is struck by a single beam of ionized radiation to generate a light pulse with the detector medium. A second screen with two slits is placed in position of the image on a second photomultiplier tube to divide the image of the scintillator into four parts and forms the second bit of the binary signal, thereby dividing the images into four sections as would be coded at the outputs of photomultipliers one and two; and so on for additional photomultipliers. The screen may provide either rectangular or polar coordinate measurements and the outputs of the photomultipliers may be stored in a digital storage device or connected to an analog signal for oscilloscope display or other recording.

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### 3,758,781

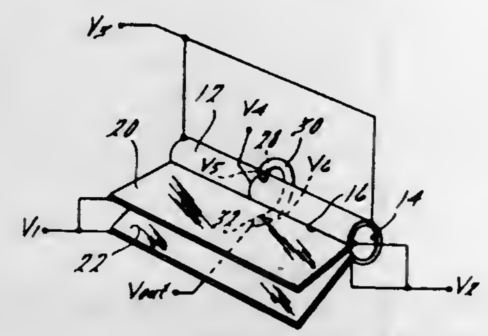
### RADIATION AND PARTICLE DETECTOR AND AMPLIFIER

**Kenneth C. Schmidt, Livonia, Mich., granted to the United States National Aeronautics and Space Administration under the provisions of 42 U.S.C. 2457**

**Filed July 15, 1969, Ser. No. 841,845**

**Int. Cl. G01t** *1/16*

**U.S. Cl. 250—207 11 Claims**



A radiation or charged particle detector which incorporates a channel multiplier structure to amplify the detected rays or particles, the channel multiplier structure having a support multiplying element, the element having a longitudinal slot formed along one side thereof, the element supporting a pair of plates positioned contiguous with the slot, the plates being adapted to funnel the particles or rays to be detected into the slotted aperture and ultimately the element, thus creating an effectively wide aperture detector of the windowless type.

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### 3,758,782

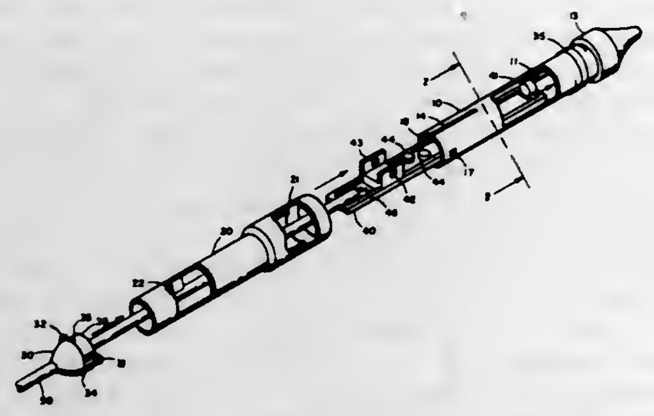
### LIGHT PEN APPARATUS

**Robert E. Radford, Nashua, and Gary N. Stapleford, Londonderry, both of N.H., assignors to Sanders Associates, Inc., S. Nashua, N.H.**

**Filed July 21, 1972, Ser. No. 273,889**

**Int. Cl. G06f** *3/00*

**U.S. Cl. 250—217 CR 7 Claims**



Light pen apparatus having a small number of parts. The light pen includes an inner barrel in which a printed circuit board is mounted. An outer barrel surrounds the inner barrel and is arranged for limited travel relative to the inner barrel in an axial direction. As the outer barrel and inner barrel are moved relative to one another a switch carried on the printed circuit board is actuated so as to allow the circuit mounted on the board to respond to light detected by a light responsive device also carried on the board.

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### 3,758,783

### READER MECHANISM FOR OPTICALLY DISCERNIBLE CHARACTERS

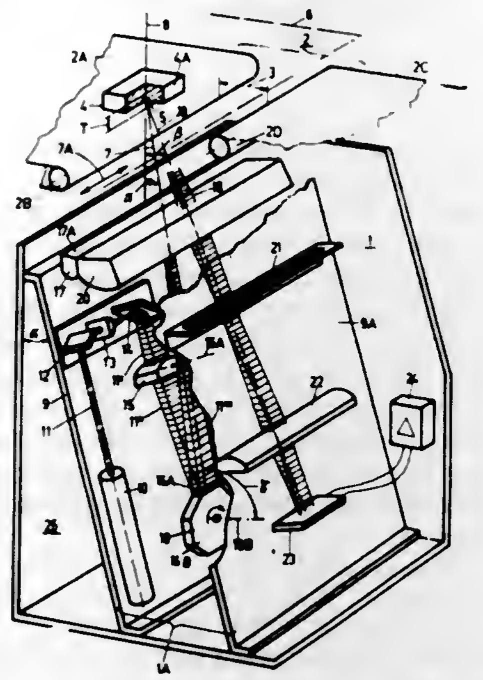
**Erwin Sick, Jcking; Gernot Pinior, Germering, and Johann Plockl, Unterhaching, all of Germany, assignors to Zellweger AG, Uster, Switzerland**

**Filed Jan. 28, 1972, Ser. No. 221,706**

**Claims priority, application Switzerland, Mar. 22, 1971, 4241/71**

**Int. Cl. G01n** *21/30;* **G06k** *7/00;* **G06m** *7/00*

**U.S. Cl. 250—219 D 15 Claims**



A reader mechanism for optically discernible characters, especially characters associated with an article and applied thereat or thereto and which can be located within a predetermined depth of focus region about a reference plane and can be scanned by means of a light spot, wherein there is also present a photoelectrical receiver which takes-up a portion of the light reflected back from the character and delivers an electrical signal corresponding to the incident light current. The invention provides for a collecting lens arranged between the reference plane and the receiver. A diaphragm arranged at the focal plane of the collecting lens confronting the receiver at the region of the light current extending to the receiver. The diaphragm is provided with an opening dimensioned such that a light beam emanating from the forwardmost situated plane of the depth of focus region and directed towards the receiver at least completely fills-out the diaphragm opening in the transverse direction.

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### 3,758,784

### OPTICAL DETECTING HEAD

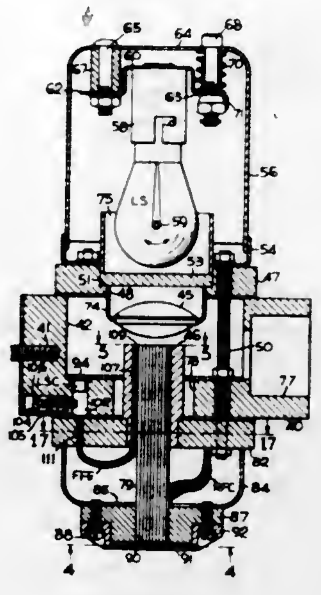
**George Vischulis, W172 N9409 Shady Ln., Menomonee Falls, Wis.**

**Filed Oct. 29, 1971, Ser. No. 193,884**

**Int. Cl. G02b** *5/14*

**U.S. Cl. 250—227 38 Claims**

An optical detecting head for a line or edge target has a light-tight housing with a target-facing aperture in one end wall and a transverse wall portion intermediate its ends having a central opening therethrough; a target-illuminating optic fiber bundle extending through the central opening and having one end positioned within the target-facing aperture end divided into a plurality of target-illuminating optic fiber sub-bundles; a lamp socket supported on the opposite housing end wall; a light source lamp within the socket; a condenser lens between the lamp and the main target illuminating fiber bundle; and a diffuser plate between the lens and the lamp. The housing transverse wall portion has a plurality of light transmitting passages each of which receives a detector photocell. First and second pairs of receiver optic fiber bundles have ends within the target-facing aperture elongated in a direction parallel to the target and spaced equal distances on opposite sides of the target reference position and intermeshed with the target-illuminating fiber sub-bundles. Access holes through the housing wall register with the light transmitting passages, and light adjusting screws within the access holes protrude into the ligh transmitting passages and regulate the amount of light transmitted from the receiver fiber bundles to the individual detector photocells. A main feedback optic fiber bundle has one end facing the condenser lens and is divided at its opposite end into a plurality of feedback fiber sub-bundles each of which registers with one of the light transmitting passages. Light adjusting screws selectively block the amount of light transmitted from each feedback fiber sub-bundle to the associated detector photocell.



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### 3,758,785

### KEY OPERATED OPTICAL SWITCH FOR ELECTRONICS INPUT KEYBOARD INCLUDING SEMICONDUCTOR LIGHT EMITTING AND LIGHT SENSITIVE COMPONENTS AND RECIPROCATING SHUTTER

**Hans-Jurgen Maute, Heilbronn-Bocklingen, Germany, assignor to Licentia Patent-Vernaltungs GmbH, Frankfurt am Main, Germany**

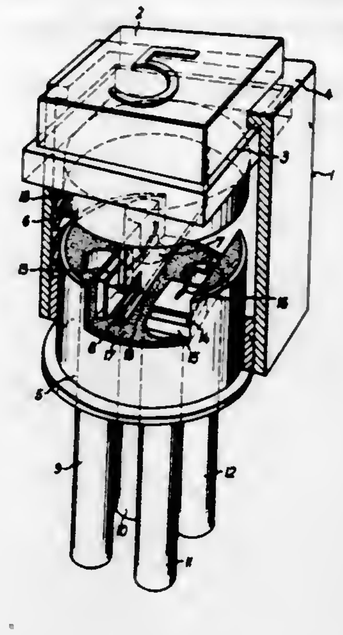
**Filed Sept. 13, 1971, Ser. No. 180,053**

**Claims priority, application Germany, Sept. 30, 1970, P 20 47 997.4**

**Int. Cl. H01j** *1/56;* **G01d** *5/34*

**U.S. Cl. 250—229 12 Claims**

A key device for an electronic input keyboard including a key head mounted in a housing so as to be displaceable therein between two positions, a light emitting element, a light sensitive element energized by a light beam from the light emitting element, both mounted in the housing, and a light interrupting element associated with the key head for interrupting the light beam in one of the two positions of the key head.



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### 3,758,786

### APPARATUS FOR SETTING BOTH BEAMS OF AN OPTICAL TWO-BEAM INSTRUMENT TO EQUAL INTENSITY

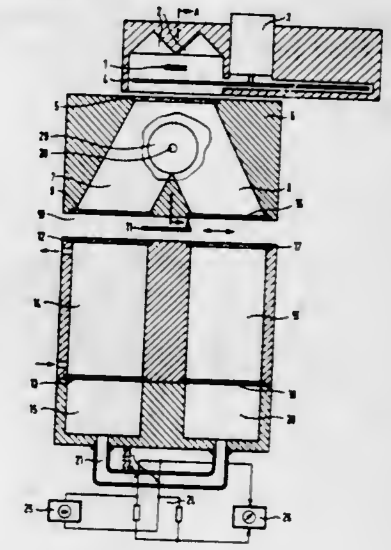
**Johann Weinel, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Apr. 6, 1972, Ser. No. 241,787**

**Claims priority, application Germany, Apr. 6, 1971, P 21 16 849.0**

**Int. Cl. G01n** *21/34*

**U.S. Cl. 250—343 12 Claims**



In order to adjust the optical instrument to obtain equal beam intensities in each radiation channel, a part of the reflecting wall within one of the radiation channels or at the junction of the two radiation channels is replaced by a window and a surface which can be adjusted for variable reflectivity. The surface can be formed by a rotatable disc having a non-reflective half-face and a reflective half-face which, upon rotation, changes the reflection characteristics of the wall of at least one of the channels. The surface can also be formed by a strip having a wedge shaped non-reflective band thereon which strip is movable across the window in the wall of one channel.

### 3,758,787
### APPARATUS FOR DETERMINING THE AMOUNT OF THE DISPERSED PHASE IN A SUSPENSION

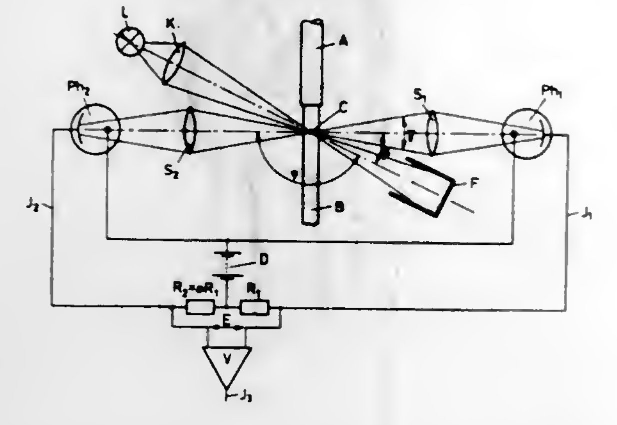
**Willy Sigrist, 6373 Ennetburgen, Switzerland**

**Filed Mar. 24, 1972, Ser. No. 237,733**

**Claims priority, application Switzerland, Mar. 29, 1971, 4551/71**

**Int. Cl. G01n** *21/00, 21/06, 21/26*

**U.S. Cl. 250—574** **5 Claims**



The amount of the dispersed phase in a suspension is determined by causing the suspension to flow in a free falling jet, directing a beam of light transversely on the jet, and measuring the light scattered at an angle of about 15° to 40° relative to a plane which includes the optical axis of the incident beam and a straight line perpendicular to that optical axis and to the longitudinal axis of the jet at the point of intersection. The resistance or output of a photoelectric cell receiving the scattered light is indicative of the amount of the suspended phase.

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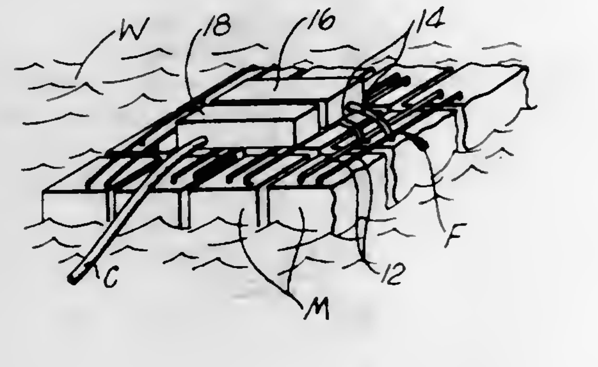
### 3,758,788
### CONVERSION SYSTEM FOR PROVIDING USEFUL ENERGY FROM WATER SURFACE MOTION

**Dale T. Richeson, 1404 Kalaniiki St., Honolulu, Hawaii**

**Filed June 14, 1971, Ser. No. 152,931**

**Int. Cl. F03b** *13/12*

**U.S. Cl. 290—42** **6 Claims**



An energy-conversion system is disclosed for converting water surface movement, e.g. wave motion, to useful energy. Buoyant structures are provided defining pairs of opposed surfaces affixed together by pivotal structures with energy means, e.g. bellows, held spaced-apart from the pivot means. In the disclosed embodiment, the bellows are actuated with displacements between the buoyant structures, to develop positive fluid pressures to accomplish various operations. As disclosed, a turbine is driven to motivate an electrical generator for providing electrical power through a conductor to an electrical load.

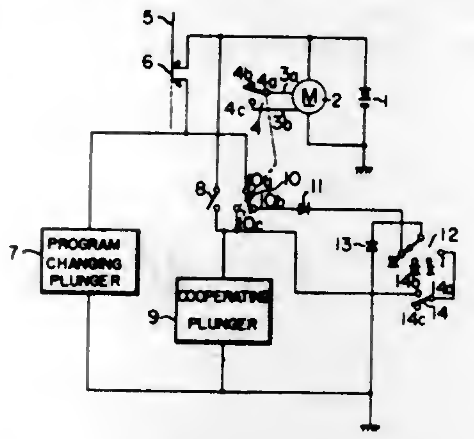
### 3,758,789
### CARTRIDGE TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

**Toshio Kawada, Neyagawa; Tadashi Torama, Osaka, and Tamio Kobayahsi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Oct. 3, 1972, Ser. No. 294,508**

**Int. Cl. G11b** *31/00*

**U.S. Cl. 307—116** **2 Claims**



A cartridge type magnetic tape recording and reproducing apparatus having a tape fast forward mechanism and being operable with an endless tape accommodated in a cartridge, which is so designed that a tape cartridge mounted in the apparatus is automatically ejected when a sensing switch is shorted by an electrically conductive foil carried on the tape during a tape fast forwarding operation.

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### 3,758,790
### CIRCUIT ARRANGEMENT FOR THE CURRENT LIMITING INTERRUPTION OF CURRENT

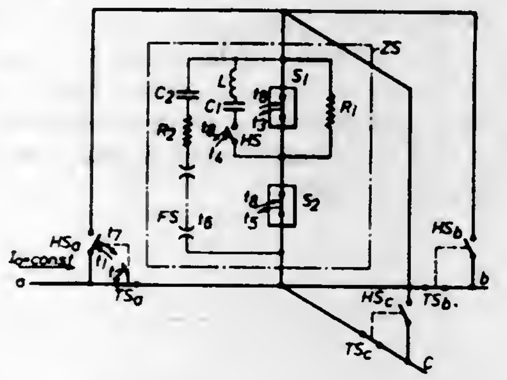
**Dieter Kind, and Hagen Hartel, both of Braunschweig, Germany, assignors to Dieter Kind, Braunschweig, Germany**

**Filed July 21, 1972, Ser. No. 274,101**

**Claims priority, application Germany, July 23, 1971, P 21 36 865.0**

**Int. Cl. H01h** *9/30*

**U.S. Cl. 307—136** **8 Claims**



A circuit arrangement for current limiting interruption of currents at high voltages in a network includes a current limiting circuit having a commutation switch and a residual current switch connected in series to a nodal point of the network. An energy dissipating resistor is connected in parallel with the commutation switch. A commutation capacitive circuit, which includes a capacitor, is connected across the commutation switch. The capacitor is of such size that the current to be interrupted is forced, after the capacitor becomes charged, to commutate to the parallel connected resistor. The current magnitude is thus reduced to a residual current which can be interrupted by the residual current switch. A plurality of separating switches are separately connected between the nodal point and respective main lines. A plurality of auxiliary switches are separately connected from each of the main lines via the commutating switch and the residual current switch to the nodal point. In order to interrupt the current flow in any of the main lines, the auxiliary switch associated with the selected main line is closed and thereafter its associated separating switch, the commutation switch and the residual current switch opened in succession in the order named.

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### 3,758,791
### CURRENT SWITCH CIRCUIT

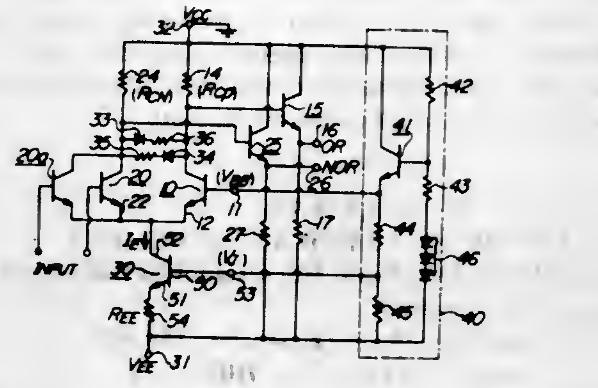
**Kenji Taniguchi, and Ichiro Imaizumi, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed June 4, 1970, Ser. No. 43,497**

**Claims priority, application Japan, June 6, 1969, 44/44009**

**Int. Cl. H03k** *19/30, 19/34*

**U.S. Cl. 307—215** **11 Claims**



A current switch circuit consisting of a couple of transistors, one transistor acting as a reference element and the other as an input element, a pair of series connections of a resistance element and a diode being connected between the respective collectors of the said transistors with the polarity of the diodes opposite to each other, so that the emitter current of the transistors are automatically regulated to maintain a predetermined value, whereby the DC levels of the output voltages of the current switch circuit are kept constant against temperature variation of the transistors.

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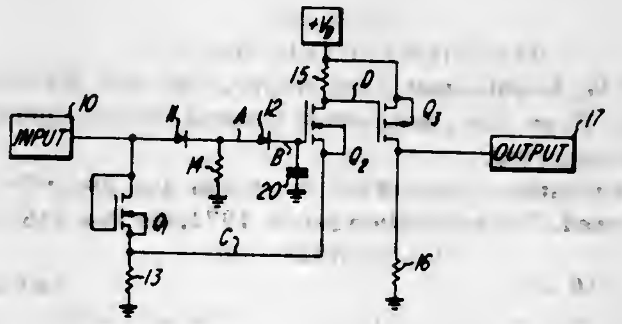
### 3,758,792
### PEAK DETECTOR CIRCUIT

**Robert Charles Heuner, Bound Brook, and Goetz Wolfgang Steudal, Flemington, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Continuation of Ser. No. 128,702, March 29, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,083**

**Int. Cl. H03k** *5/18, 5/53, 17/60*

**U.S. Cl. 307—235 A** **9 Claims**



A circuit which changes state to produce a different output signal level at the peak of a substantially periodically varying analog input signal whereby the peak of the input signal is detected and indicated.

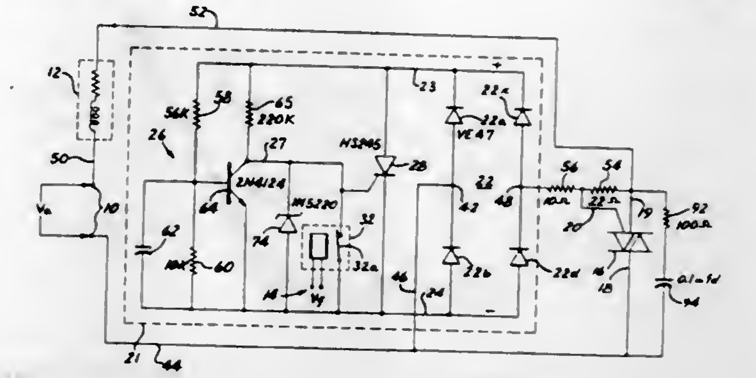
### 3,758,793
### SYNCHRONOUS SWITCHING CIRCUIT

**Joseph E. Pascente, Norridge, Ill., assignor to Grigsby-Barton, Inc., Rolling Meadows, Ill.**

**Filed Mar. 3, 1972, Ser. No. 231,652**

**Int. Cl. H03k** *17/72*

**U.S. Cl. 307—252 B** **18 Claims**



A switching circuit for controlling the application of an a.c. source to a load employs a detector for selectively triggering a control thyristor at a zero-voltage crossing of the source and means for supplying a continuous latch current to the gate of the control thyristor during succeeding cycles of the a.c. source. The control thristor is employed to latch a switching thyristor which, in turn, applies the power from the a.c. source to the load. A common rectifier arrangement is provided to energize the detector as well as to supply the continuous latch current to the gate of the control thyristor.

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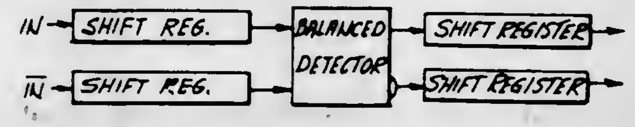
### 3,758,794
### CHARGE COUPLED SHIFT REGISTERS

**Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, Princeton, N.J.**

**Division of Ser. No. 106,381, Jan. 14, 1971. This application Jan. 31, 1972, Ser. No. 222,238**

**Int. Cl. H01l** *11/14*

**U.S. Cl. 307—304** **15 Claims**



Charge coupled shift registers in which the output stage includes an electrically floating diffusion in the substrate, of different conductivity than the substrate, and coupled to minority carrier surface charge storage location. In one form of the circuit, charge signals are shifted down one register and complements of these charge signals down another and these signals are detected by a differential signal detector connected to these diffusions. In another form of the circuit, the signal present in the diffusion of an output stage of one register along with other signals control which of a plurality of source electrodes will be employed to provide input charge signal to a second register.

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### 3,758,795
### SUPERCONDUCTIVE CIRCUITRY USING JOSEPHSON TUNNELING DEVICES

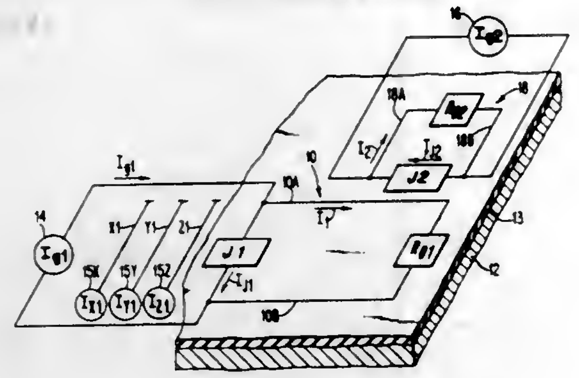
**Wilhelm Anacker, Katonah, and Juri Matisoo, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 30, 1972, Ser. No. 267,841**

**Int. Cl. H03k** *3/38, 19/02*

**U.S. Cl. 307—306** **16 Claims**

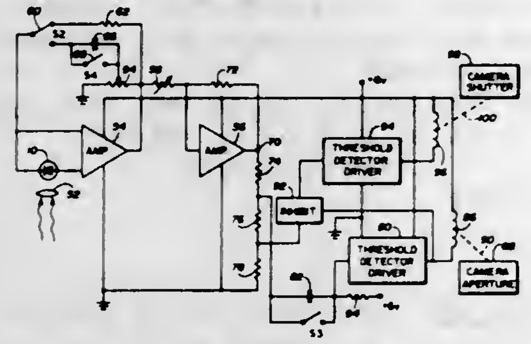
Superconductive circuitry using a first Josephson tunneling device connected to a transmission line having a termination such that no reflections result when the Josephson tunneling diode switches between two stable voltage states, in accordance with applied input signals. Means are provided for producing the input signals to switch the first Josephson tunneling device and further Josephson tunneling devices are provided whose voltage state depends on the current pulse



delivered to the transmission line when the first Josephson tunneling device switches from a first voltage state to a second voltage state. Logic circuitry is shown using this structure, as well as fan-in and fan-out Josephson tunneling device circuits.

### 3,758,796
### PHOTOSENSOR CONTROL

**Kenneth E. Years, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Filed June 10, 1971, Ser. No. 151,956**
**Int. Cl. H03k** *17/00*
**U.S. Cl. 307—311** **22 Claims**



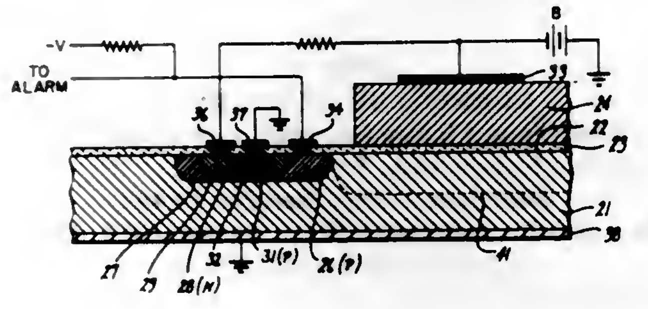
A voltage that varies linearly with light intensity variation is generated by an amplifier having a differential input stage connected to a light responsive diode. Two high gain transistors are included in the differential input stage to provide amplification of the signal currents of the light responsive diode. In a camera shutter and aperture control system, the linearly varying light intensity voltage is amplified to control two threshold detector circuits. An inhibiting circuit prevents one of the threshold detector circuits from responding to the light intensity voltage until the first threshold circuit has completed its desired operation.

### 3,758,797
### SOLID STATE BISTABLE SWITCHING DEVICE AND METHOD

**David R. Peterson, Mountain View, and James Conragan, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.**
**Filed July 7, 1971, Ser. No. 160,441**
**Int. Cl. H01l** *19/00*
**U.S. Cl. 307—324** **12 Claims**

Solid state bistable switching device having a semiconductor body with multiple dielectric layers carried by the semiconductor body and a metal electrode carried by the multiple dielectric layers with the device exhibiting diode-like characteristics with the forward direction occurring when the electrode is positive and a bistable switching characteristic between high and low conductive states when the electrode is reverse biased.

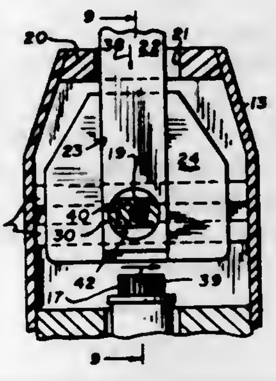
In the method for fabricating a solid state bistable switching device, successive dielectric layers are formed on the body of semiconductor material and a metal electrode is formed on the dielectric layers. A negative potential is applied across the



electrode to cause the device to assume a low conductivity state and then a signal in the form of electricity or light can be applied to the device to cause a predetermined threshold voltage to be exceeded to cause the device to switch from the low conductivity state to a high conductivity state.

### 3,758,798
### MOTOR DRIVE FOR AN IMPLEMENT

**James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.**
**Filed May 30, 1972, Ser. No. 258,105**
**Int. Cl. A61c** *15/00;* **H02k** *7/14*
**U.S. Cl. 310—50** **4 Claims**

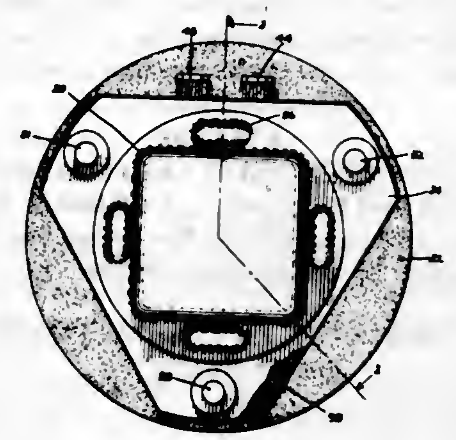


An electric motor drive and handle for a body surface shaving razor, a toothbrush and like implement that can be powered from either ordinary alternating current or by a contained battery and that drives the implement and the mounting member on which it is detachably carried in a circular path that is at right angles to the surface and parallel to the teeth, the circular path being counterclockwise as viewed from the left of the implement.

### 3,758,799
### DYNAMOELECTRIC MACHINE

**Richard W. Dochterman, Fort Wayne, Ind., and Michael E. Wendt, Tyler, Tex., assignors to General Electric Company, Fort Wayne, Ind.**
**Continuation-in-part of Ser. No. 6,666, Jan. 29, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,751**
**Int. Cl. H02k** *5/00*
**U.S. Cl. 310—89** **16 Claims**

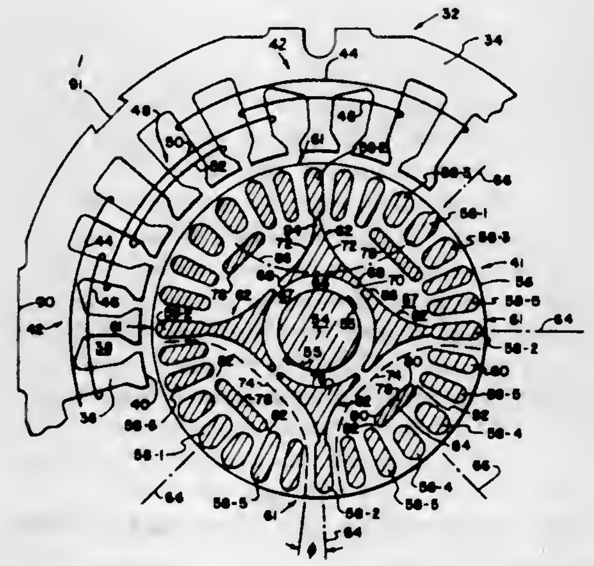
Composite structure includes winding support with windings accommodated thereon and a housing means that does not include a metal case or shell and that does include a substantially rigid primary structural member formed of an interstitial mass of inert particulate material. Adhesive material occupies interstices of interstitial mass and bonds inert particles together and to remainder of the structure. Improved composite structure exhibits enhanced structural integrity, corrosion resistance and, even when employing refractory material such as sand as the particulate material, exhibits measurably improved heat dissipation characteristics. Composite



structure also provides improved protection for winding terminations and terminals. Also disclosure of making composite structures including a particulate interstitial mass and dynamoelectric machines including such structures.

### 3,758,800
### RELUCTANCE SYNCHRONOUS MOTORS AND ROTORS FOR SAME

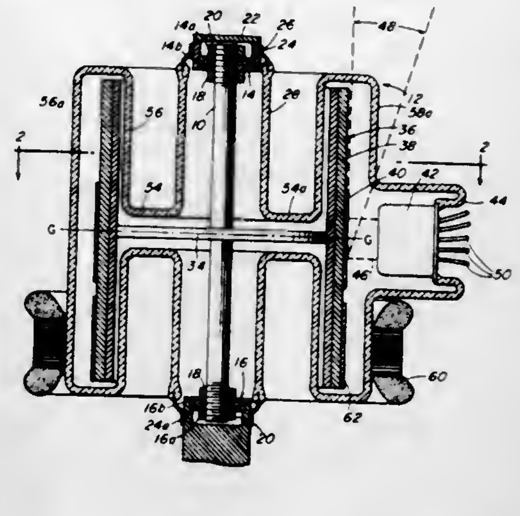
**Herbert L. McLaughlin, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.**
**Filed Jan. 24, 1972, Ser. No. 220,071**
**Int. Cl. H02k** *3/06*
**U.S. Cl. 310—211** **24 Claims**



Synchronous reluctance motor with improved rotor which permits use of multiphase or single phase motor with any type of single phase winding arrangement. Single phase motor used with a permanent split capacitor arrangement, provides substantially improved pull-in torque when hot with an attached inertia load, reduced tooth order locking; utilizes a common steel shaft, and common iron rotor laminations. Rotor body includes laminated core of substantially round peripheral configuration having internal saliencies, e.g., a plurality of polar region determining saturable bridges between at least two of which is disposed a path for flux between two adjacent direct axes. Short-circuited squirrel cage winding conductors are positioned in conductor receiving slots. At synchronous speeds, squirrel cage winding forms pairs of poles of opposite polarity at the surface of the rotor, the same in number as the stator pole pairs. Rotor magnetic structure defines one or more direct magnetic axes and one or more quadrature axes and thus at least one pair of rotor polar regions or rotor poles. Direct axes pass through first flux barrier slots with inner ends in the vicinity of, e.g., spaced closely adjacent to the shaft. Adjacent extremities of adjacent first barrier slots are located to form a saturable bridge therebetween. A second type of elongated flux barrier slot is spaced between adjacent first barrier slots and transversely disposed relative to a quadrature axis. Second barrier slots may form saturable bridges with squirrel cage slots. Configuration and arrangement of flux barrier slots establish low reluctance path for direct axis flux and high reluctance path for quadrature axis flux.

### 3,758,801
### CYLINDRICAL TARGET X-RAY TUBE

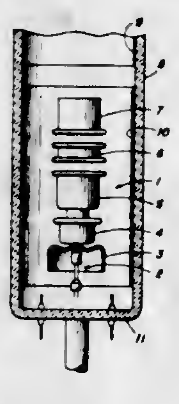
**William H. Merritt, Ridgefield, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.**
**Filed May 22, 1972, Ser. No. 255,846**
**Int. Cl. H01j** *35/10*
**U.S. Cl. 313—60** **12 Claims**



A rotating anode X-ray tube having a shaft supported by two spaced bearings and having a cylindrical anode mounted on the shaft in a manner whereby the weight or load is evenly distributed between the bearings, the anode being shaped as a cylinder, for example, mounted midway of the shaft and having a circumferential X-ray emitting ring thereon, or as a bearing-encircling skirt secured to one end of the shaft adjacent one bearing with the skirt being of a size to project substantially beyond the second bearing to provide load distribution, and having a circumferential X-ray emitting ring thereon.

### 3,758,802
### IMPROVED CATHODE RAY TUBE HAVING A GLASS ENVELOPE COATED WITH CRYSTALLIZED GLASS

**Tomoichi Kubo; Masakatsu Itazu, and Hirofumi Yamashita, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan**
**Filed Jan. 20, 1971, Ser. No. 107,900**
**Claims priority, application Japan, Jan. 23, 1970, 45/6644**
**Int. Cl. H01j** *5/08, 29/08*
**U.S. Cl. 313—64** **2 Claims**



A cathode ray tube including an electron gun enclosed by a glass envelope including a neck portion is disclosed in accordance with the teachings of the present invention wherein arcing between electrodes of the cathode ray tube is minimized by providing a coating of crystallized glass formed by heat-treatment of sealing glass, on the surface of the inner wall of said neck portion and coextensive with said electron gun, and a coating of conductive material, spaced from said coating of crystallized glass, on the surface of the inner wall of said neck portion. A method of treating a cathode ray tube to minimize arcing between the electrodes thereof is also disclosed.

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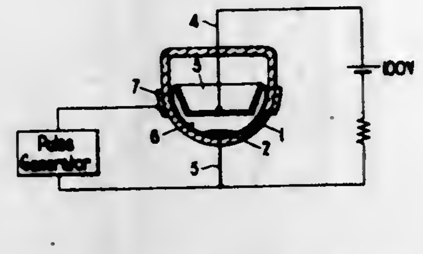
### 3,758,803
### ELECTRIC DISCHARGE DEVICES

**Kenneth George Cook, Northwood, and Robert Joseph Wheldon, Chalfont, St. Peter, both of England, assignors to The M-O Valve Company Limited, London, England**

**Filed Feb. 18, 1972, Ser. No. 227,392**

**Int. Cl. H01k** *1/50*

**U.S. Cl. 313—174** **5 Claims**



An electric discharge device has a cold cathode of solid, easily vaporizable material, and a triggering arrangement comprising a dielectric member, disposed near the cathode and anode, and having on one side a sputtered film of easily vaporizable material and on the other side a trigger electrode. The device operates at high vacuum, and a discharge can be triggered by applying a voltage pulse to the trigger electrode, causing vaporization of material from the film. For example, the device may be a switching device, a travelling-wave device, or an ion propulsion device.

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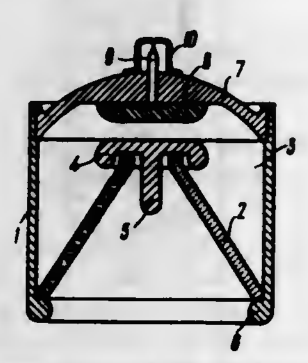
### 3,758,804
### GAS-FILLED DISCHARGE TUBE

**Ernest Alexeevich Avilov, ulitsa Lenina, 14, kv. 6; Nikolai Vasilievich Belkin, ulitsa Tolyatti, 11, kv. 39, both of Moscow; Vladimir Vasilievich Galtsov, ulitsa Engelsa, 12/1, kv. 26, Ryazan; Anatoly Petrovich Zykov, ulitsa Gagarina, 25, kv. 7; Mikhail Alexeevich Kanunov, ulitsa Pushkina, 26, kv. 11, both of Moscow; Jury Vladimirovich Kiselev, ulitsa Podgornaya, 3, kv. 29, Ryazan; Mikhail Vladimirovich Mityaev, Ryazansky prospekt, 95, korpus 4, kv. 55, Moscow; Vyacheslav Vladimirovich Nikitin, ulitsa Firsova, 12, kv. 17, Ryazan; Anatoly Alexandrovich Razin, ulitsa Lenina, 32, kv. 16, Moscow; Jury Leonidovich Stankevich, ulitsa Silkina, 7, kv. 92, Moscow; Veniamin Aronovich Tsukerman, ulitsa Vavilova, 15, kv. 75, Moscow, and Lev Samuilovich Eig, Leninsky prospekt, 43, kv. 35, Moscow, all of U.S.S.R.**

**Filed Dec. 2, 1971, Ser. No. 204,245**

**Int. Cl. H01j** *17/16*

**U.S. Cl. 313—220** **2 Claims**



A gas-filled discharge tube in which there is provided a shell in the form of a metal case and an insulator. The insulator has the shape of a truncated cone and is disposed inside the metal case and defines together with the latter, a space filled with gas. Disposed inside the space are electrodes provided with leads, one of which is electrically connected to the metal case. The side surface of the insulator faces the gas-filled space so as to take up the effective pressure of the gas. The larger base of the insulator rests on an inner flange of the metal case.

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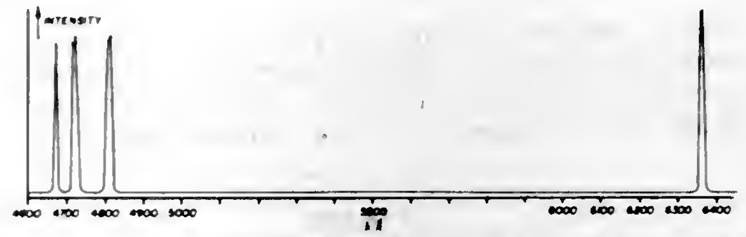
### 3,758,805
### A HIGH INTENSITY LIGHT SOURCE

Myer Geller; **Daniel E. Altman, and Glidden J. Barstow, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington,** D.C.

**Filed Oct. 27, 1971, Ser. No. 192,857**

**Int. Cl. H01j** *61/18*

U.S. Cl. 313—225 **8 Claims**



A high intensity light source produces the principal portion of its light energy output substantially within the spectral range of 4,600 A to 5,000 A. A sealed envelope of material substantially transparent to light energy within the aforementioned range contains electrically conductive electrodes, a suitable starter gas, preferably of an inert character, and also an amount of elemental metal. The electrodes have external terminals which, upon connection to a suitable source of electrical energy, generate an initial electrical discharge producing sufficient heat to cause sublimination of the metal so that it is converted to its vapor state. The metal is chosen to have a sufficiently high vapor pressure so that it will sublimate in response to a temperature of the order of approximately 800°C. One such metal is zinc, for example. Moreover, the amount of elemental metal contained within the envelope is such as to develop a sufficient pressure within the envelope for producing the principal light energy output within the desired stated spectral range. In the preferred embodiment the starter gas is an inert gas and the spacing between the electrodes is a relatively short gap ensuring an extremely high spectral radiance.

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### 3,758,806
### DEVICE FOR SEALED ELECTRODE MOUNTING

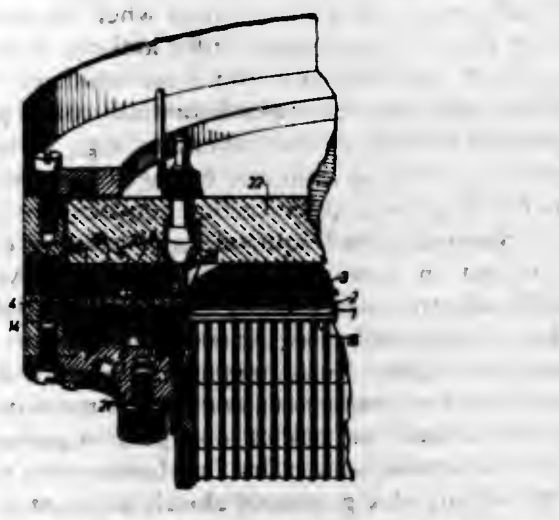
**Bertil Ingemar Bostrom, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden**

**Filed Jan. 28, 1972, Ser. No. 221,673**

**Claims priority, application Sweden, Jan. 29, 1971, 1120/71**

**Int. Cl. H01j** *1/90, 19/44, 1/46*

**U.S. Cl. 313—268** **5 Claims**



Sealed electrode mounting, in a spark discharge chamber, comprising a plane cathode and, parallel thereto, two lattice-

shaped electrodes constituting an auxiliary electrode and anode enclosed in a space forming the spark discharge chamber, the electrodes being along its entire circumference in electrically conductive connection with an electrically conductive material surrounding the periphery of the respective electrodes and extending through sealing means, which run along said electrical material, and out from the spark discharge chamber.

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### 3,758,807
### ELECTRIC FILAMENT LAMP

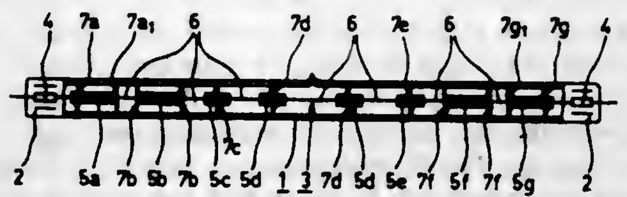
**Herbert Kamiel Maria Op de Beeck, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 30, 1971, Ser. No. 175,867**

**Claims priority, application Netherlands, Sept. 3, 1970, 7013030**

**Int. Cl. H01j** *1/92, 19/46*

**U.S. Cl. 313—273** **1 Claim**



Copying lamps having a filament which is constructed from shorter and longer coil segments which are connected by intermediate members have the drawback that after recrystallisation the intermediate members with the ends of the longer segments have warped. This is avoided by supporting the longer segments at their ends.

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### 3,758,808
### DISPENSER CATHODE AND METHOD FOR MAKING SAME

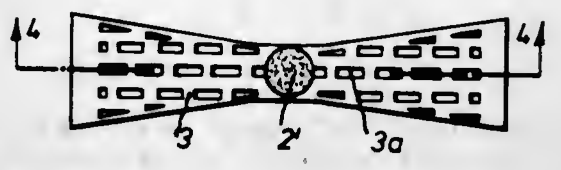
**Walter Held, Gunzburg, and Rolf Lerch, Ulm/Donau, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany**

**Filed July 27, 1971, Ser. No. 166,453**

**Claims priority, application Germany, July 30, 1970, P 20 37 874.9**

**Int. Cl. H01j** *1/14, 19/06*

**U.S. Cl. 313—346** **6 Claims**



A dispenser cathode composed of a cathode carrier forming an electrical heating element and presenting means, such as perforations, for effecting an intimate meshing between the cathode carrier and a cathode body, and a pressed cathode body meshed in a portion of the cathode carrier and formed from a moldable material. The dispenser cathode is constructed by forming a cathode carrier as an electrical heating element, and pressing a moldable material into the form of a cathode body and simultaneously fastening the material to the cathode carrier to cause it to mesh intimately therewith.

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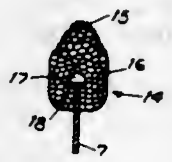
### 3,758,809
### EMISSIVE FUSED PELLET ELECTRODE

**Richard A. Menelly, Danvers, Mass., and Edmund R. Kern, Hampton, N.H., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Continuation-in-part of Ser. No. 150,311, June 7, 1971, Pat. No. 3,502,855. This application Dec. 3, 1971, Ser. No. 204,478**

**Int. Cl. H01j** *1/30, 1/38*

**U.S. Cl. 313—346 R** **10 Claims**



An emissive electrode of the type utilized in fluorescent lamps and a method for making such an electrode. The electrode includes a fused pellet and a metal lead extending from the bottom surface thereof. The pellet contains a fused mixture of electron emissive material and a metal having a high melting point and a low vapor pressure. The pellet has a bulk density gradient structure wherein the interior portions and exterior bottom and side portions thereof have a high bulk density relative to the bulk density of the exterior top portion of the pellet, and the exterior bottom and side surfaces of the pellet are smooth relative to the exterior top surface thereof. The pellet is formed by mixing a powder of said metal with a powder of said electron emissive material, compressing said mixed powder and heating it in a mold until an exothermic reaction occurs.

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### 3,758,810
### ELECTRIC DISCHARGE TUBE COMPRISING A ROD GRID

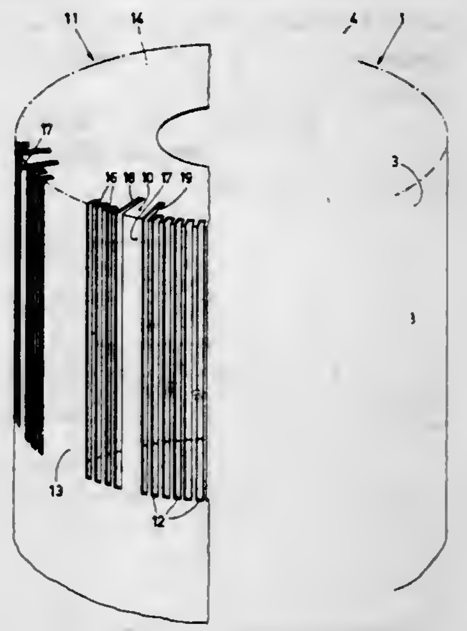
**Horst Seifert, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 18, 1971, Ser. No. 199,882**

**Claims priority, application Germany, Nov. 21, 1970, P 20 57 331.3**

**Int. Cl. H01j** *1/46, 17/12, 19/38*

**U.S. Cl. 313—356** **5 Claims**



A metal-ceramic tetrode or triode which comprises a cylindrical rod grid which is manufactured by means of a spark erosion process. In order to improve the mechanical stability of the grid and also to shift the resonant frequency to higher frequencies, the grid comprises wide and narrow rods. Since the wide rods bend inwardly or outwardly during the spark erosion process, the slots, to avoid said drawback, adjoining the wide rods extend in at least one inwardly extending flange of the cylinder farther in the direction normal to the curved surface of the cylinder than the slots present between the thin rods.

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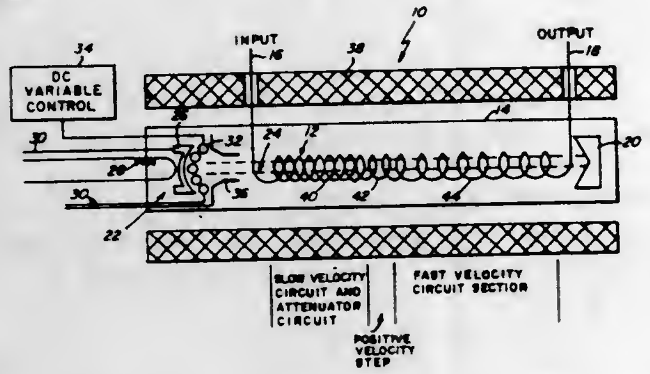
### 3,758,811
### TRAVELING WAVE TUBE LINEARITY CHARACTERISTICS

**Jeffrey Wong, Boston, Mass., assignor to Raytheon Company, Lexington, Mass.**

**Filed Aug. 2, 1972, Ser. No. 277,191**

**Int. Cl. H01j** *25/34*

**U.S. Cl. 315—3.6** **4 Claims**


10
INPUT
16
38
OUTPUT
18
34
DC VARIABLE CONTROL
14
30
20
22
SLOW VELOCITY CIRCUIT AND ATTENUATOR CIRCUIT
FAST VELOCITY CIRCUIT SECTION
POSITIVE VELOCITY STEP

A traveling wave electron interaction device is provided having means for reducing intermodulation product amplitudes and cross-modulation in multisignal operation. An axial variation of a delay line phase velocity is introduced at substantially low levels of electron beam modulation to provide a positive velocity profile. The fundamental circuit wave of one signal is allowed to proceed with relative little gain while the space harmonic component of another signal is allowed to drop in magnitude thereby improving traveling wave tube linearity by desynchronizing of space harmonic interaction with the electron beam. The invention is suited for low power level communication type devices where signal distortion is a critical parameter.

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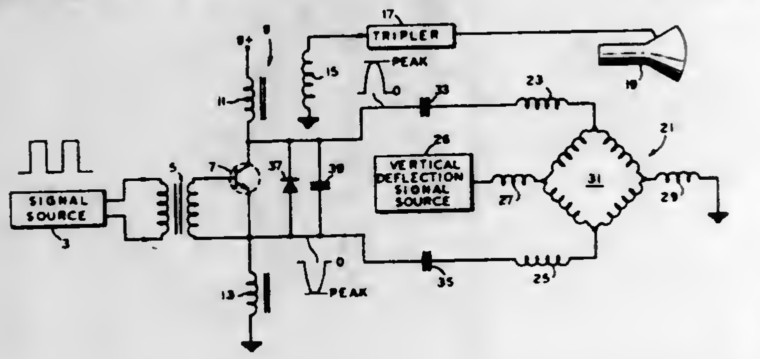
### 3,758,812
### ISOLATED HORIZONTAL AND VERTICAL OUTPUT CIRCUITRY HAVING A COMMON WINDING

**George Cleveland Waybright, Oakfield, and William Elias, Batavia, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.**

**Filed Apr. 19, 1972, Ser. No. 245,321**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—27 XY** **6 Claims**



Horizontal output circuitry for a cathode ray tube system includes a deflection yoke associated with the cathode ray tube and having horizontal, vertical, and common windings. An electron device is coupled via a first portion of a split winding of a transformer to a potential source and via a second portion to a potential reference level while a charge storage means couples each of the first and second portions of the split winding to first and second horizontal deflection windings connected to the common windings formed into a bridge configuration.

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### 3,758,813
### VERTICAL DEFLECTION SYSTEM

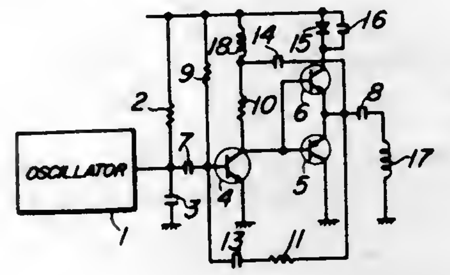
**Yoshinori Kitamura, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Dec. 10, 1970, Ser. No. 96,760**

**Claims priority, application Japan, Dec. 19, 1969, 44/102710**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—27 TD** **7 Claims**



A vertical deflection system for television receivers and the like employing a single-ended push-pull circuit in the output stage in which a circuit including an inductance is interposed between a power supply or ground and the base circuit of at least one of the two transistors constituting the single-ended push-pull circuit. The fly-back pulses are applied to the circuit including the inductance for increasing the amount of feedback thereby increasing the conduction rate of the transistor, shortening the fly-back period and improving the rate of utilization of power supply voltage.

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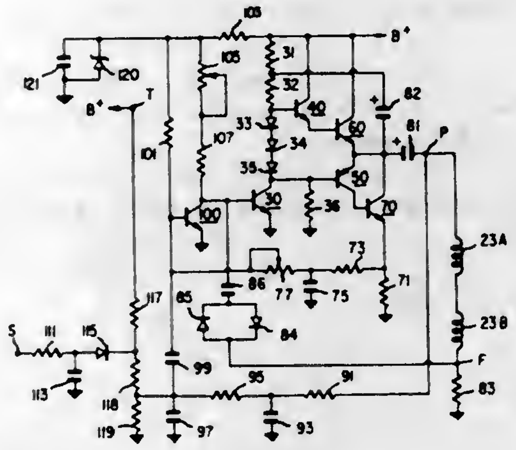
### 3,758,814
### WIDE ANGLE DEFLECTION SYSTEM

**Pak Chong Tang, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.**

**Filed Jan. 15, 1971, Ser. No. 106,806**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—27 TD** **5 Claims**



Wide angle (e.g., 110°), large screen (e.g., 25 inch diagonal) color television display system employs a narrow-neck (e.g., 29 centimeter diameter) color kinescope with a deflection yoke having toroidal horizontal and vertical deflection windings. While power requirements of toroidal horizontal windings are met by a thyristor horizontal deflection circuit, toroidal vertical windings are driven by a transistor vertical output amplifier in a quasi-complementary symmetry, Class B, push-pull configuration. Capacitor is provided in negative feedback path between amplifier output and driver input, establishing Miller integrator action for linear sawtooth wave generation. Diode in series with capacitor provides voltage rise aiding rapid turn-on of driver at end of retrace interval. Oppositely poled diode shunting first diode completes low impedance capacitor discharge path during retrace interval.

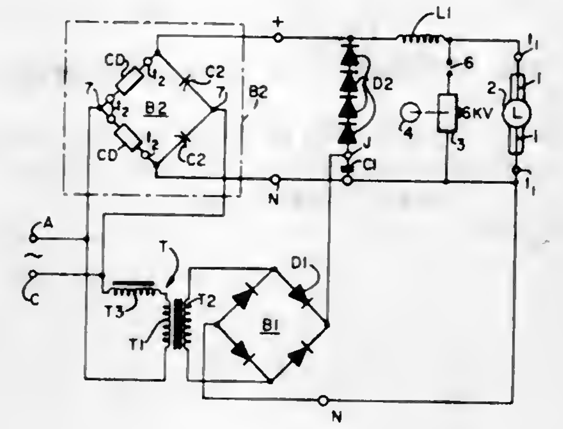
### 3,758,815
### SUPPLEMENTAL ENERGY STORAGE CIRCUIT FOR ARC DISCHARGE LAMPS

**Fredrick W. Paget, Rockport, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.**

**Filed Jan. 4, 1972, Ser. No. 215,292**

**Int. Cl. H05b** *39/00*

**U.S. Cl. 315—101** **10 Claims**



A ballast circuit for a tungsten-iodide short arc discharge lamp has, in addition to an alternating current full wave rectifier bridge supplying low voltage operating current to the lamp, a capacitor-diode bridge circuit whose discharge characteristic of voltage multiplying and low current is controlled so that discharge occurs while the rectifier bridge is approaching or at zero volts, at the time in each alternating current half cycle when it is needed to promote arc striking or prevent extinction of an arc.

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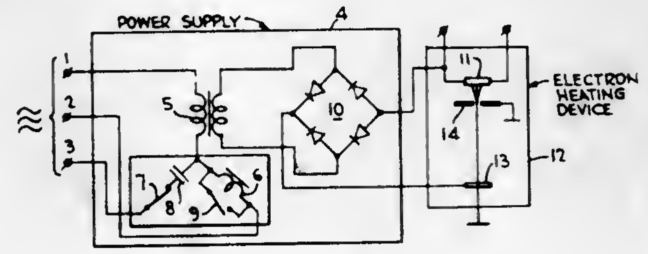
### 3,758,816
### DEVICE FOR AUTOMATICALLY CONTROLLING ELECTRICAL CONDITIONS OF AN ELECTRON BEAM UNIT

**Igor Pavlovich Brukovsky, 1, Mosfilmovsky pereulok, 5, korpus 2-B, kv. 16; Pavel Borisovich Yakovlev, ulitsa Tolbukhina, 9, korpus 1, kv. 15; Kirill Davidovich Gutterman, 3 Tverskaya-Yamskaya ulitsa, 29, kv. 8; Alexandr Vasilievich Perov, Pervomaiskaya ulitsa, 69, kv. 28, all of Moscow; Vladimir Fedorovich Zhukov, ulitsa Cheljuskintsev 3, kv. 21, Rzhev Kalininskoi Oblasti; Larisa Petrovna Nekrasova, Sovetskaya ploschad, 10, kv. 36, Rzhev Kalininskoi Oblasti, and Jury Dmitrievich Ivanovsky, ulitsa Mayakovskogo, 4, kv. 15, Rzhev Kalininskoi Oblasti, all of U.S.S.R.**

**Continuation-in-part of Ser. No. 841,815, July 15, 1969, abandoned. This application Sept. 17, 1971, Ser. No. 181,466**

**Int. Cl. H05b** *41/16*

**U.S. Cl. 315—137** **3 Claims**



A power supply of an electron beam unit has switching components and comprises means which enables the power supply to operate both as a current source and as a voltage source, said means being in the form of at least one reactive component connected in the circuit of the power supply by at least one of its switching components.

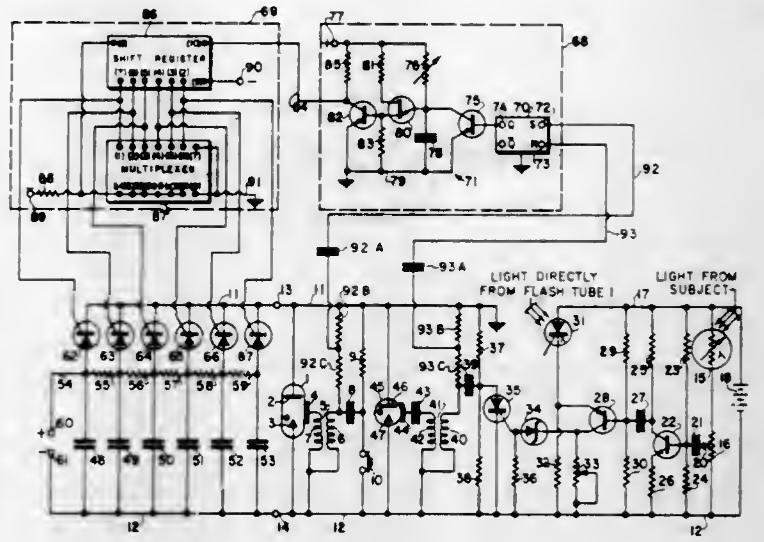
### 3,758,817
### FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION USING A NUMBER OF STORAGE CAPACITORS

**Franklin P. Elliott, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Oct. 29, 1971, Ser. No. 193,941**

**Int. Cl. H05b** *37/02*

**U.S. Cl. 315—151** **2 Claims**



A counter and a plurality of SCR's normally connect only one of a plurality of storage capacitors to a flash tube until the latter is fired, at which time a clock is started to advance the counter. The latter then connects the capacitors in discharging relationship to the tube in repeated sequence until a photocell has received a predetermined quantity of light reflected from a subject to be photographed which receives the light emitted by the tube. At that time, the clock and the counter are stopped and a quench tube is fired which effectively short-circuits the flash tube and terminates its production of light. Each capacitor is recharged following its discharge into the flash tube.

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### 3,758,818
### STARTING CIRCUIT FOR DISCHARGE LAMPS

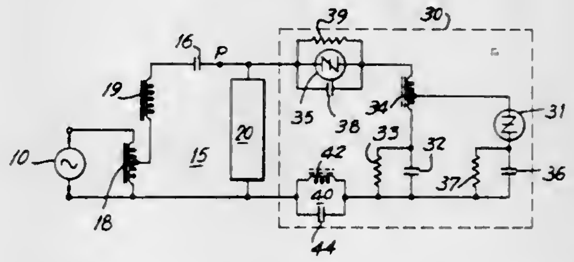
**Isao Kaneda, Otsu, Japan, assignor to New Nippon Electric Co. Ltd., Osaka, Japan**

**Filed July 23, 1970, Ser. No. 57,529**

**Claims priority, application Japan, July 25, 1969, 44/59243**

**Int. Cl. H05b** *41/14*

**U.S. Cl. 315—207** **6 Claims**



A circuit is provided for operating a cold-cathode discharge lamp which includes first and second closed circuits which share in common a capacitor. The first closed circuit includes a power source and an inductive stabilizer in combination with the aforesaid capacitor and the second closed circuit includes an inductor and a bidirectional diode thyristor in combination with the capacitor. A second bidirectional diode thyristor is provided which constitutes with the second closed circuit a starting circuit for the discharge lamp. The second thyristor has a lower break-over voltage than the first thyristor. The second closed circuit is such that the capacitor is charged through the second said bidirectional diode thyristor to the instantaneous value of the power source and is discharged by the first said bidirectional diode thyristor through the inductor to produce a high voltage which is applied to the lamp to ignite the same

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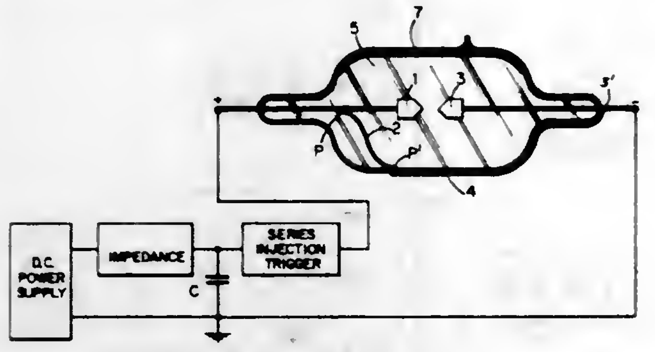
### 3,758,819
### FLASH DISCHARGE APPARATUS AND METHOD

**Jacob Goldberg, Cambridge, Mass., assignor to U.S. Scientific Instruments, Inc., Watertown, Mass.**

**Filed Dec. 27, 1971, Ser. No. 212,507**

**Int. Cl. H05b *37/00***

**U.S. Cl. 315—204** **11 Claims**



This disclosure involves novel flash tubes and similar electric discharge devices and methods comprising electrodes in a gaseous medium between which an electrical discharge is to pass and in which the reliability of repetitive operation is assured through the use of novel cooperative internal initiator conductor means and cooperative external conductive path means at opposite walls of the housing containing the gaseous medium.

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### 3,758,820
### CIRCUIT ARRANGEMENT FOR PRODUCING A HIGH VOLTAGE SPARK

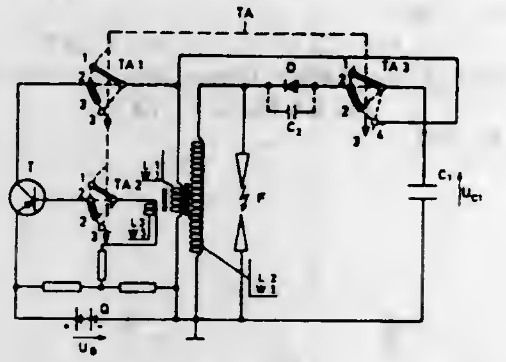
**Peter Lohberg, Rodheim v.d.H., Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany**

**Filed July 23, 1971, Ser. No. 165,080**

**Claims priority, application Germany, July 27, 1970, P 20 37 067.6**

**Int. Cl. H01t *15/00***

**U.S. Cl. 315—209 T** **4 Claims**



A circuit arrangement for producing a high voltage spark comprising a semi-conductor device having a conducting and a non-conducting state, a source of low power unidirectional voltage, such as a battery or accumulator, a feedback coupled transducer means coupled to the source and the semi-conductor device for storing energy from the source during a conduction phase of the semi-conductor device, the feedback transducer device having a primary and a secondary circuit, a diode and a capacitor coupled in the secondary circuit of the transducer device, the stored energy being discharged into the secondary circuit during one of the phases of the semi-conductor device, a sparkgap connected in parallel with the secondary winding of the transducer device, a switching device in the primary circuit of the transducer device for establishing the conducting or non-conducting phases of the semi-conductor device, and a switching means in the secondary circuit for the discharging of the stored energy across the sparkgap, the capacitor being connected in circuit relationship with the primary circuit so that upon switching of the switching device in the secondary circuit, the capacitor discharges over the primary circuit into the transducer and the spark voltage is produced over the sparkgap, the semi-conductor device being isolated from the transducer device electrically or galvanically.

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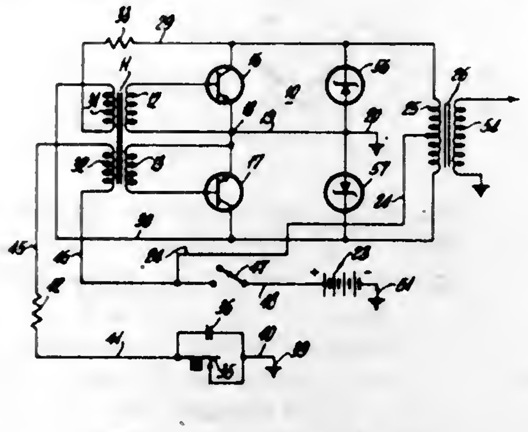
### 3,758,821
### SATURABLE-CORE SQUARE WAVE OSCILLATOR CIRCUIT

**Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.**

**Division of Ser. No. 38,272, May 18, 1970, Pat. No. 3,647,345. This application Oct. 19, 1971, Ser. No. 190,638**

**Int. Cl. H05b *37/02***

**U.S. Cl. 315—209 T** **6 Claims**



An improved saturable-core transistor oscillator circuit for feeding a negative resistance characteristic load. It includes a Jensen type oscillator that has an added saturation winding to control starting and time duration of the oscillation. There is a high turns ratio output transformer connected to the load and a saturable-core transformer in the oscillator. And, the electromagnetic characteristics of the output transformer are set to resonate with the output at no load in order to provide high starting voltage, while the electromagnetic characteristics of the saturable-core transformer are set to provide an increase in the oscillator frequency as the load increases in order to reduce the output voltage so as to compensate for the negative resistance effect of the load.

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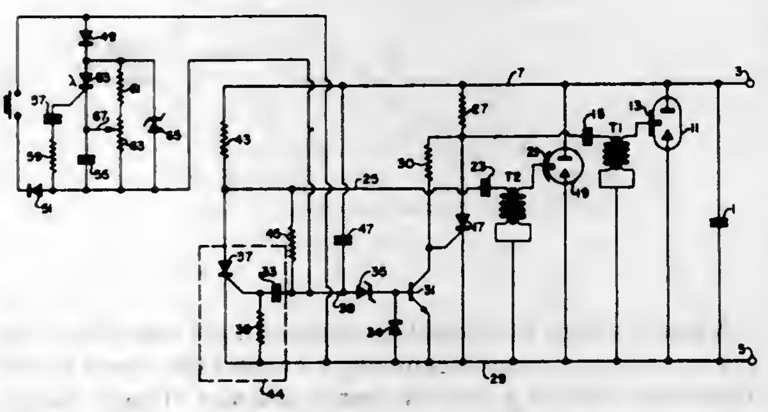
### 3,758,822
### COMPUTER TYPE FLASH APPARATUS WITH NOISE INHIBITING QUENCH CIRCUIT

**Dennis Joseph Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

**Continuation-in-part of Ser. No. 108,879, Jan. 22, 1971, abandoned. This application Apr. 20, 1972, Ser. No. 245,975**

**Int. Cl. H01j *17/34*; H05b *41/30***

**U.S. Cl. 315—241 P** **5 Claims**



A computer type flash apparatus includes a switching device, a sensing transmitter and a flash device. The switching device is selectively operable for providing a contact closure to fire the flash device, which, in turn, produces light for the illumination of a scene to be photographed. The sensing transmitter provides a quench signal upon receipt of a predetermined amount of light from the scene. The quench signal is applied through a capacitor to the gate terminal of a silicon controlled rectifier (SCR) to trigger the SCR thereby actuating a quench circuit in the flash device. The operation of the quench circuit terminates the production of light by the flash device. A resistor is connected between the gate and cathode terminals of the SCR. When the flash device is fired, a signal representative thereof effects the appearance of a voltage across the resistor to inhibit noise signals from falsely triggering the SCR until the quench signal is generated by the sensing transmitter.

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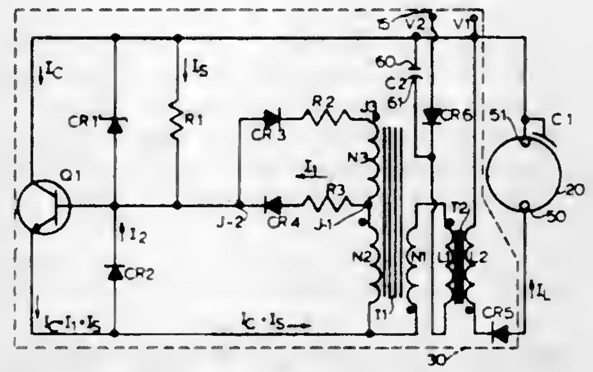
### 3,758,823
### BATTERY POWERED FLUORESCENT LIGHT

**Preston L. Jett, and James T. Hutchinson, Jr., both of Huntsville, Ala., assignors to Jettson Engineering Company, Inc., Huntsville, Ala.**

**Filed Dec. 23, 1971, Ser. No. 211,208**

**Int. Cl. H05b *37/02***

**U.S. Cl. 315—219** **12 Claims**



A battery powered transistor inverter circuit operates a fluorescent light without requiring a capacitor ballast or starting filament current and is enclosed with the light in a waterproof, shock resistant, light transmitting case.

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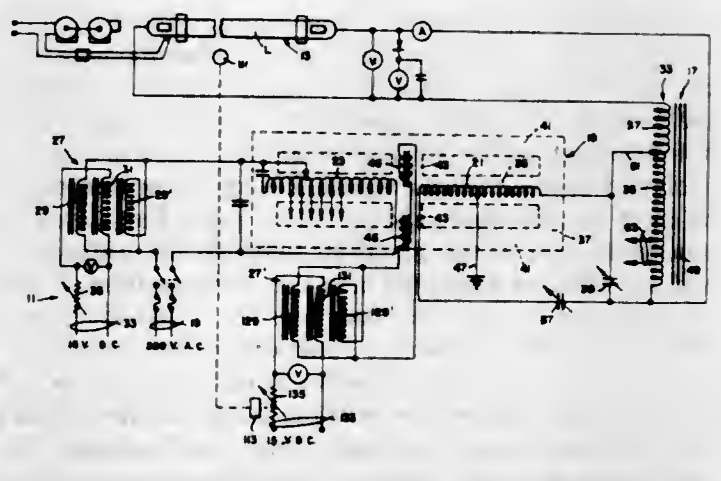
### 3,758,824
### AMPLIFICATION OF INDUCED RADIATION AND MEANS FOR ATTAINING THE SAME

**Carl J. Warneke, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio**

**Continuation of Ser. No. 691,455, Dec. 18, 1967, abandoned. This application July 23, 1970, Ser. No. 64,057**

**Int. Cl. H05b *41/16***

**U.S. Cl. 315—246** **8 Claims**



Production of, high intensity, stroboscopic radiation rich in ultraviolet rays, by energizing gaseous discharge lamps, containing a noble gas or gases and metallic vapor, with a modified A.C. wave, derived from a conventional source of sinusoidal alternating current power, and characterized by sharp peaks of short duration of the conventional power source from which the sharply peaked lamp-energizing wave is derived, the disclosure also embracing circuitry energized from a convention A.C. power source for producing the multiplied frequency, sharply peaked lamp-energizing wave, including a resonant circuit adjusted for slightly off resonance operation.

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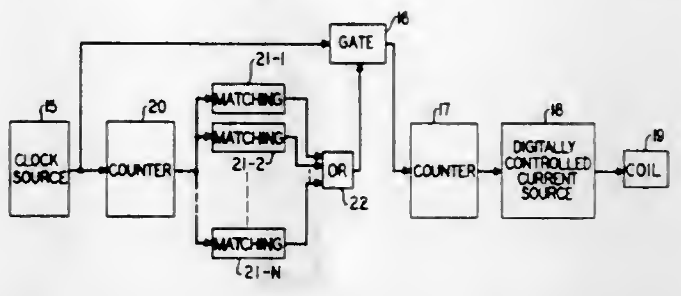
### 3,758,825
### DIGITAL DEFLECTION SYSTEM FOR CATHODE RAY TUBES

**William John Kapers, Jr., Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—276 D** **4 Claims**



A linearly changing current applied to a deflection coil of a relatively flatfaced cathode ray tube results in a nonlinear sweep on the tube face. The disclosed circuit, which comprises a clock source, a pair of counters, word recognizing circuitry, and a digitally controlled current source, reduces this nonlinearity by producing a sweep current having a nonuniform staircase waveshape.

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### 3,758,826
### PHOTOELECTRONIC SAFETY DEVICE

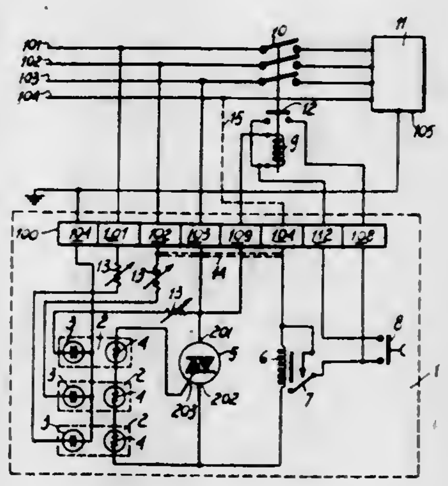
**Giuseppe Zizola, c/o Zanfranceshi Via Longhin 1 Treviso, Ponzano, Italy**

**Filed Sept. 29, 1971, Ser. No. 184,806**

**Claims priority, application Italy, Oct. 1, 1970, 82525 A/70; Apr. 29, 1971, 82517 A/71**

**Int. Cl. H02h *3/28***

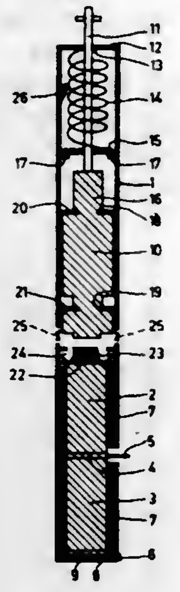
**U.S. Cl. 317—31** **1 Claim**



A photoelectronic safety device for connection to a three phase electrical supply line feeding a user apparatus. This device comprises at least three lamps star connected to the supply line, at least one photoresistance facing the lamps and emitting an outlet signal in response to the variations of luminosity of the lamps, amplifier means controlled by the outlet signal, and switching means in the supply line controlled by the amplifier means and adapted to disconnect the user apparatus from the line.

### 3,758,827
## PIEZOELECTRIC IGNITION DEVICE

**Johann Schroder, Aachen; Hans Gunther Ganser, Stolberg, and Heinrich Oepen, Gressemich, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed May 30, 1972, Ser. No. 258,128**
**Claims priority, application Germany, June 18, 1971, P 21 30 221.6**
**Int. Cl. F23q** *13/00, 3/01*
**U.S. Cl. 317—81** **9 Claims**



A piezo-electric ignition device which comprises a housing in which are incorporated one behind the other a piezo-electric element, a hammer and a spring cooperating with the hammer. A plastic-elastic damping disk is arranged between the hammer and the element. Braking means inhibit the movement of the hammer in the direction of the spring.

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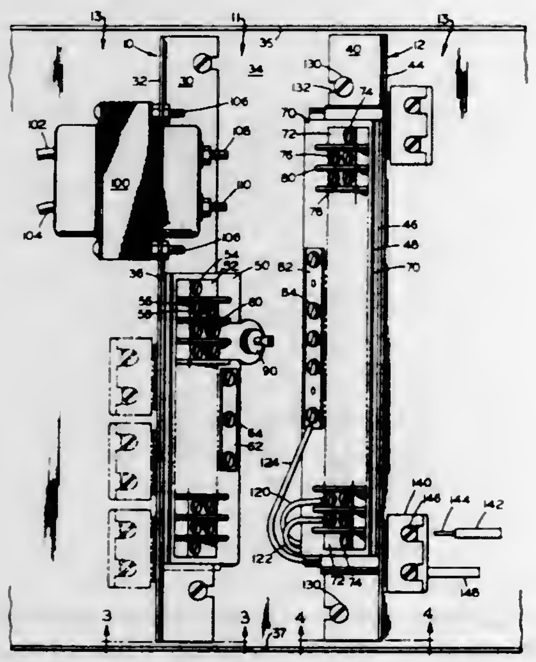
### 3,758,828
## RELAY CENTER FOR REMOTE CONTROL WIRING SYSTEM

**Joseph P. Stefani, Warwick, R.I., assignor to General Electric Company, Providence, R.I.**
**Filed Feb. 29, 1972, Ser. No. 230,290**
**Int. Cl. H02b** *1/04*
**U.S. Cl. 317—113** **3 Claims**



A relay center is provided for control with lower voltage control circuits of higher voltage power supply circuits. The relay center has a two level partition detachably mounted in a dimensionally conforming metal box. The first or rear level of the partition serves to position and retain relays extending through the partition between a high voltage and a low voltage side. The second or upper level is equipped with a terminal bar permitting highly visible, easily accessible, low voltage wiring of the relays.

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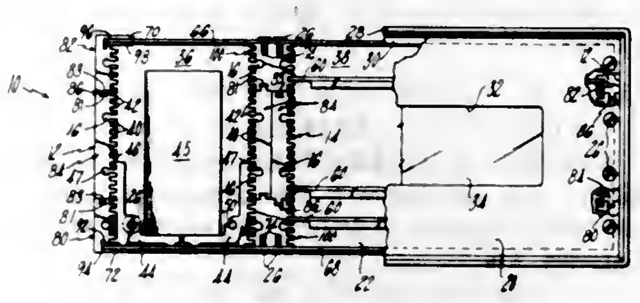
### 3,758,829
## VERSATILE MODULAR ENCLOSURE WITH EXTRUDED WALL SECTIONS

**Arthur W. Kroll, Wethersfield, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.**
**Filed Feb. 8, 1971, Ser. No. 113,266**
**Int. Cl. H02b** *1/10*
**U.S. Cl. 317—117** **4 Claims**



An enclosure for electrical equipment having modular side and divider panel extrusions forming two separate compartments with opposed supporting rails. Front and rear face plates are fastened to the ends of the side and divider extrusions to provide a rigid supporting frame, and a pair of opposed carriage extrusions are mounted on opposed supporting rails in one of the compartments for supporting an electrical package in that compartment, and a plurality of printed circuit boards are mounted on opposed supporting rails in the other compartment.

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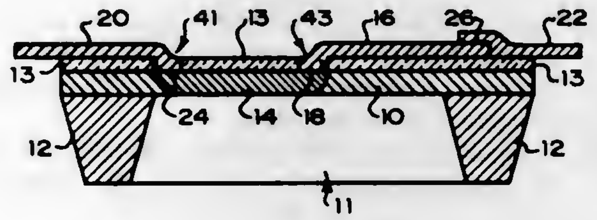
### 3,758,830
## TRANSDUCER FORMED IN PERIPHERALLY SUPPORTED THIN SEMICONDUCTOR WEB

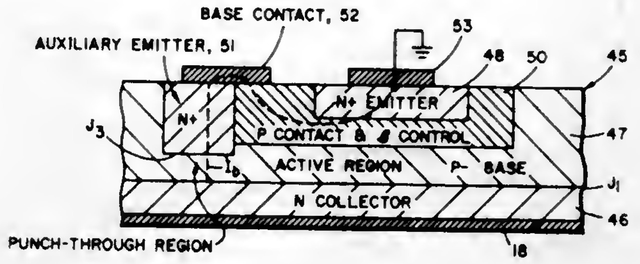
**Weldon H. Jackson, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.**
**Filed Apr. 10, 1972, Ser. No. 242,606**
**Int. Cl. H01l** *3/00, 5/00*
**U.S. Cl. 317—234 R** **7 Claims**



A thin web supported by a peripheral frame is formed from a single crystal of silicon, the web and frame being of opposite conductivity types. A lower resistivity region is diffused into the web, and the web is covered by an insulating layer having holes through which conductors are deposited in contact with each end of the diffused region. The resulting transducer can be used as a thermocouple or strain gage. For use as a thermocouple, one of the junctions between the diffused region and a conductor is situated near the center portion of the web. The diffused region comprises one leg of the thermocouple, and one of the conductors functions as the other leg. The frame acts as a heat sink relative to the center portion of the web, making the junction near the center portion a hot junction and the junction near the frame a cold junction. For use as a diaphragm type strain gage the diffused region is made to transverse most of the web. The frame serves as a mounting base that is integral with the strain gage. The resistance of the diffused region changes in proportion to the change of the dimensions of the diffused region that result from the application of a force normal to the plane of the web.

### 3,758,831
## TRANSISTOR WITH IMPROVED BREAKDOWN MODE

**Lowell E. Clark, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.**
**Filed June 7, 1971, Ser. No. 150,424**
**Int. Cl. H01l** *5/00, 9/00, 11/00*
**U.S. Cl. 317—235 R** **5 Claims**



There is disclosed a transistor with improved protection against excessive reverse biasing voltages. The improved protection is the result of providing a punch-through breakdown mode which is operative to the exclusion of an avalanche breakdown mode. In the improved transistor, the punch-through breakdown current is dissipated over a wide area such that little if any structural damage occurs. The provision of a punch-through breakdown to the exclusion of avalanche breakdown is accomplished by reducing the doping concentration in the base of the transistor under the emitter or by decreasing the distance between the collector-base junction and the emitter-base junction. There is further provided means for controlling the beta of the transistor as the distance between the above two junctions and the base doping concentration are reduced to provide for punch-through breakdown. Means are further provided for causing the punch-through breakdown to occur in a region either removed from the active area of the transistor or confined to a small portion of the active area of the transistor so that the punch-through mechanism does not interfere with the normal operation of the transistor. There is therefore separate control over the gain and the breakdown characteristics of the transistor. The punch-through current is made to flow to the emitter of the transistor whereby the punch-through breakdown current is dissipated over the entire emitter.

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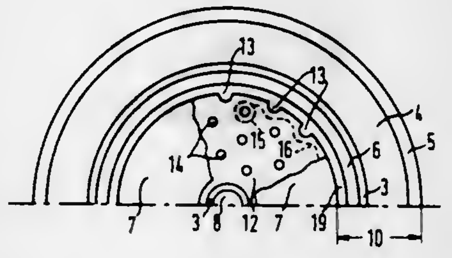
### 3,758,832
## THYRISTOR WITH SHORT CIRCUITING RING

**Karl Platzoder, Munchen, Germany, assignor to Siemens Aktiengesellschaft, Munich & Berlin, Germany**
**Filed Feb. 17, 1972, Ser. No. 227,159**
**Claims priority, application Germany, Feb. 19, 1971, P 21 08 111.8**
**Int. Cl. H01l** *5/00*
**U.S. Cl. 317—235 R** **5 Claims**



The known short-circuiting ring is situated entirely under the emitter electrode. As the electrode cannot be brought up to the edge of the semiconductor body because of the disturbances caused by finishing operations in the edge region, such as beveling, etching, etc., effective emitter area is lost. According to the invention, the short-circuiting ring is placed into the edge region and is connected to the electrode by parts of the base zone extending through cutouts in the emitter zone.

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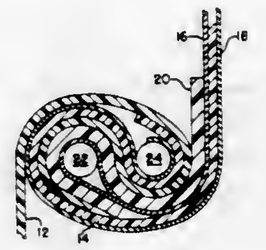
### 3,758,833
## WOUND FILM CAPACITOR

**Charles Calvin Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.**
**Filed Feb. 21, 1973, Ser. No. 334,348**
**Int. Cl. H01g** *1/14*
**U.S. Cl. 317—258** **6 Claims**



A film capacitor wound about its lead wires so that at least three layers of dielectric material are sandwiched between two layers of electrodes with transverse portions of the electrodes and three layers of dielectric being positioned between axial portions of two lead wires. One of the dielectric layers being a short relatively thick thermoplastic material and which, upon being heated, shrinks to lock the leads in firm engagement with the electrode layers. The relatively thick dielectric insert also providing protection against shorts at the center of the capacitor.

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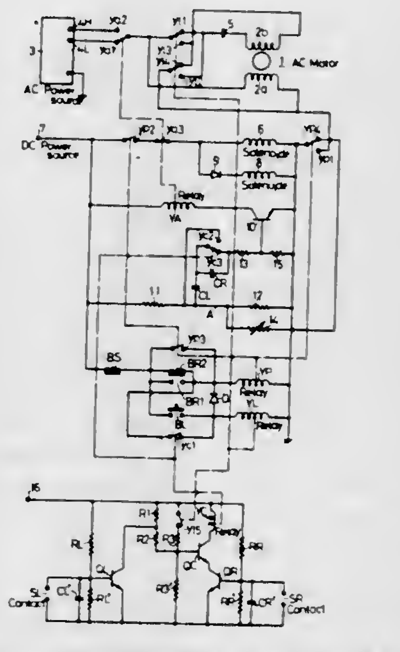
### 3,758,834
## MAGNETIC TAPE MOTOR DRIVE CONTROL APPARATUS FOR MAGNETIC TAPE RECORDERS

**Hideo Iaoue, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan**
**Filed Feb. 22, 1972, Ser. No. 228,111**
**Claims priority, application Japan, Feb. 23, 1971, 46/8539; Feb. 23, 1971, 46/8540; Feb. 27, 1971, 46/9822**
**Int. Cl. H02p** *1/56*
**U.S. Cl. 318—6** **6 Claims**

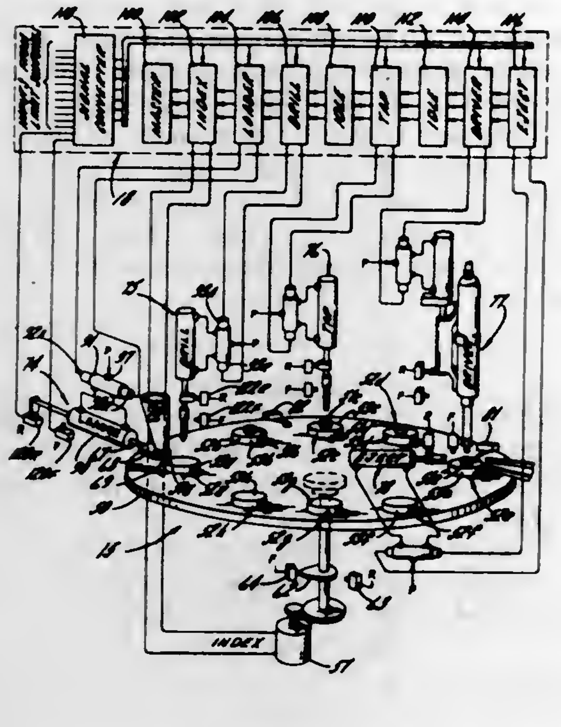


A magnetic tape drive control apparatus for magnetic tape recorders adapted such that when an operation is effected for starting a magnetic tape from its standstill condition, a plunger solenoid for bringing a pinch roller into or out of rotary contact with a capstan is energized after the capstan has reached a constant-speed revolving condition and that when an operation is achieved for changing the direction of travel of the magnetic tape from left to right, the plunger solenoid is deenergized from the time of the tape direction changing operation until the capstan comes to turn from anticlockwise to clockwise at a constant speed. In the magnetic tape drive control apparatus means for changing the direction of travel of the magnetic tape is controlled with a relay circuit, the relay circuit is energized with an output from a switching transistor having a charging capacitor connected to the input side thereof and the charging capacitor is shorted by a normally open contact which is closed by a conductive foil attached to the magnetic tape.

### 3,758,835
### STANDARDIZED CONTROL SECTIONS FOR MACHINE CONTROL SYSTEMS

**Robert Frederick Rose, Rockford, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.**

**Filed Nov. 1, 1971, Ser. No. 194,708**
**Int. Cl. G05b** *19/42*
**U.S. Cl. 318—162** **20 Claims**

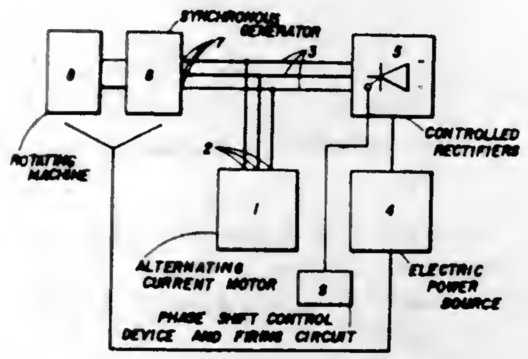


A set of standardized control sections interconnectable to form controls for machines having motion producing components operable in a predetermined sequence in the presence of predetermined interlock conditions to perform work functions. The set of standardized control sections includes a standard master section which determines the mode of operation and initiates each machine cycle and a plurality of standard unit sections, each standard unit section controlling a corresponding motion producing component and generating feedback signals for indicating the successful completion of a work function by the corresponding component; the standard master section initiates a new machine cycle when the feedback signals indicate that the components have successfully completed their work functions. Each standard unit section has associated with it means for determining the position of its corresponding component and the progress of the machine cycle and for generating interlock signals indicative of that position and progress to control the generation of the feedback signals and the operation of the motion producing components so that the components operate in the predetermined sequence and only in the presence of the predetermined interlock conditions; each standard unit section further includes auxiliary circuitry for connecting interlock signals to various standard unit sections. The set of standardized control sections additionally includes specialized standard sections for controlling or monitoring special machine components or functions. This set of standardized control sections is adaptable to be assembled into particularly reliable and compact machine controls that are extremely flexible to control large numbers of machines with little or no engineering design and easily maintained and easily altered if the motion producing components in the machine or the sequence of operations are changed.

### 3,758,836
### ELECTRIC CONTROL SYSTEM FOR ALTERNATING CURRENT CIRCUIT

**Fukuo Shibata, No. 3-8, 2-chome, Taidera, Akashi city, Hyogo-prefecture, Japan**

**Filed Feb. 3, 1972, Ser. No. 223,069**
**Int. Cl. H02p** *1/28*
**U.S. Cl. 318—197** **10 Claims**

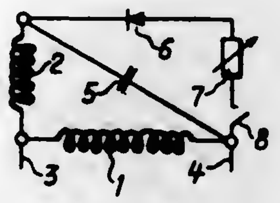


When an alternating current motor is supplied with electric current from an electric power source through an inverter or frequency converter which is composed of controlled rectifiers and whose output terminals of a synchronous generator driven by a rotary machine, the inverter or frequency converter can be A.C. line commutated or separately excited type and simple; and if an electric power is delivered between the said electric power source and the said set of synchronous generator driven by rotary machine not through the said controlled rectifiers, the efficiency of the whole system can be high.

### 3,758,837
### CIRCUIT ARRANGEMENT FOR INFINITE SPEED REGULATION OF INDUCTION MOTORS

**Siegfried Stauber; Nicolas Giger, and Klaus-Peter Schaeffer, all of Zurich, Switzerland, assignors to Firma E. Oswald, Zurich, Switzerland**

**Continuation-in-part of Ser. No. 40,192, May 25, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,169**
**Claims priority, application Switzerland, May 28, 1969, 8085/69**
**Int. Cl. H02p** *7/36*
**U.S. Cl. 318—212** **10 Claims**



A circuit arrangement for the infinite speed regulation of an induction motor, said induction motor comprising a stator having a pair of windings. One of the windings of the stator is connected across the entire voltage supply source. The circuit arrangement comprises a control circuit branch embodying a capacitor bridging the pair of stator windings and a series circuit arrangement composed of a rectifier means and a resistance connected in parallel to at least one of the stator windings.

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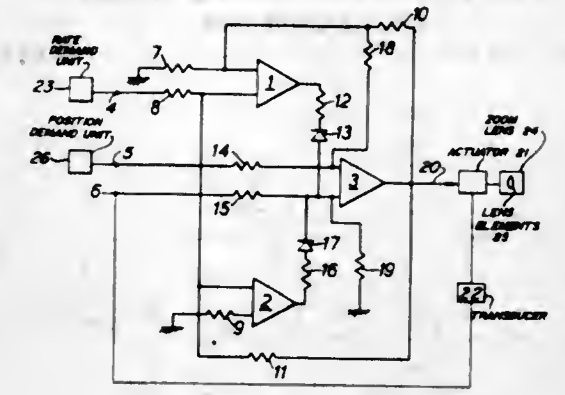
### 3,758,838
### ELECTRONIC CIRCUIT

**Keith Lawrence Wright, Leicester, England, assignor to The Rank Organization, London, England**

**Filed Dec. 22, 1971, Ser. No. 210,967**
**Int. Cl. G05b** *11/18*
**U.S. Cl. 318—597** **8 Claims**

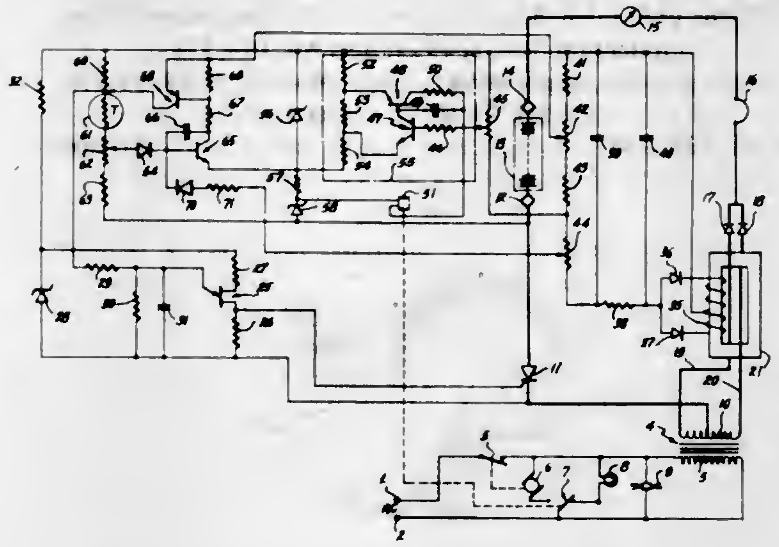


An electronic circuit which gives an output corresponding to a first input so long as that ouput is within limits set by a second input. When the output goes beyond these limits, a diode connected thereto is forward biased to establish a high loop gain feedback path holding the output constant.

### 3,758,839
### CURRENT AND VOLTAGE CONTROLLED BATTERY CHARGER

**Lewis A. Medlar, Oreland, Pa., assignor to Fox Products Company, Philadelphia, Pa.**

**Continuation of Ser. No. 768,684, Oct. 18, 1968. This application Oct. 4, 1971, Ser. No. 186,354**
**Int. Cl. H02j** *7/04*
**U.S. Cl. 320—32** **7 Claims**

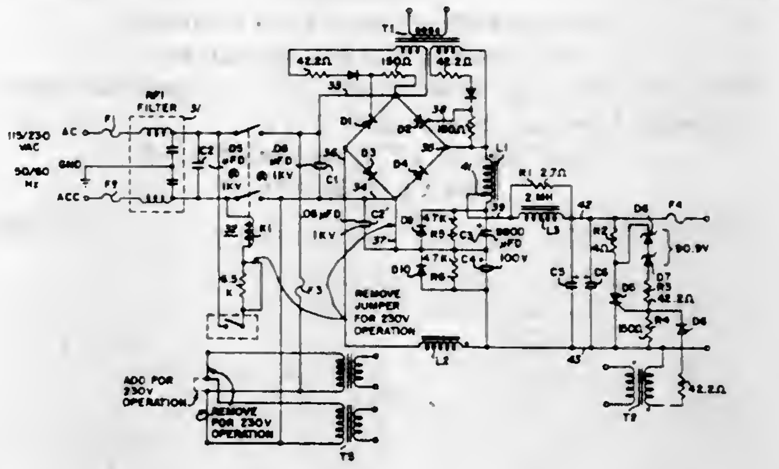


Battery charging method and apparatus for performing the method including a controlled rectifier and a trigger circuit in which a current transformer senses charging current, a voltage divider senses battery terminal voltage, and signals developed from both of the current and voltage sensing devices are used to control the operation of the trigger circuit. Current control is maintained during initial portion of the charging cycle with voltage control being substituted to diminish charging current after which a second current control maintains a closely controlled "trickle" charge level. The three control modes operate sequentially, all use the same common reference value and all control the same charging circuit valve. A second embodiment of the apparatus uses two controlled rectifiers, fired alternately.

### 3,758,840
### POWER SUPPLY UTILIZING IMPROVED VOLTAGE REGULATION

**Bernard M. Oliver, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed May 15, 1972, Ser. No. 253,465**
**Int. Cl. H02m** *7/20*
**U.S. Cl. 321—2** **9 Claims**

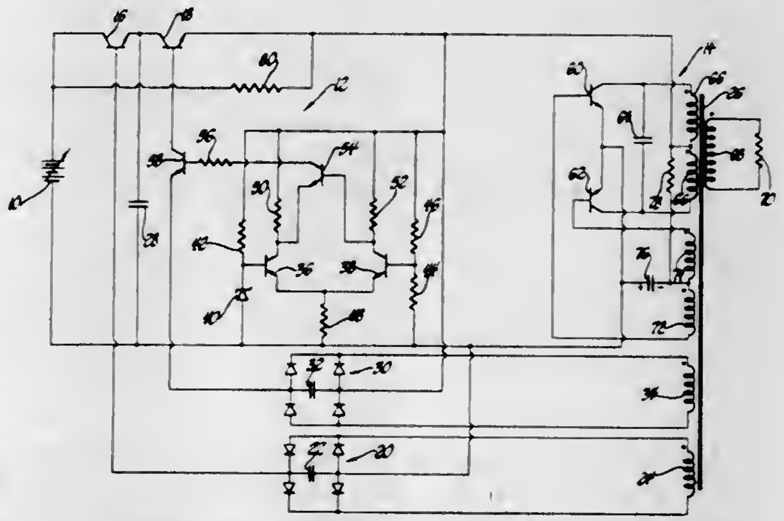


A high efficiency, AC-to-DC power supply is provided in which a preregulator circuit including a rectifier bridge is coupled to an AC supply input. Two switching rectifiers, one in each of two arms of the bridge, are controlled by a preregulator control circuit for regulating the turn on time of the bridge and thus the DC output level thereof. An inverter circuit is coupled to the output of the bridge for converting the DC output therefrom to an AC signal with a frequency substantially higher than the AC supply input and with an amplitude dependent on the DC output level of the bridge. The output of the inverter circuit is coupled by a transformer to a rectifier circuit for developing a DC output dependent on the amplitude of the AC signal from the inverter circuit. A flux sensing circuit is coupled to the transformer for developing a feedback control signal dependent on the transformer flux density. The preregulator control circuit includes means responsive to this feedback control signal for controlling the turn on time of the switching rectifiers to thereby control the DC level at the bridge output and maintain a constant flux density in the transformer. In addition, the power supply includes means responsive to the load current for controlling the gain of the feedback loop to maintain a stable loop with fast response time.

### 3,758,841
### DC TO AC STATIC POWER CONVERTER WITH SHORT CIRCUIT PROTECTION

**Frank J. Bourbeau, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 11, 1971, Ser. No. 197,862**
**Int. Cl. H02m** *1/18*
**U.S. Cl. 321—14** **2 Claims**



DC voltage is coupled through an active voltage regulator to a voltage inverter to develop a precisely controlled AC output voltage. Feedback from the inverter output supplies requisite operating bias to the regulator only when the inverter develops an output voltage, thus rendering the regulator inoperative in the absence of an output voltage as on the occurrence of a short circuit at the load, thereby affording short circuit protection for the DC to AC converter.

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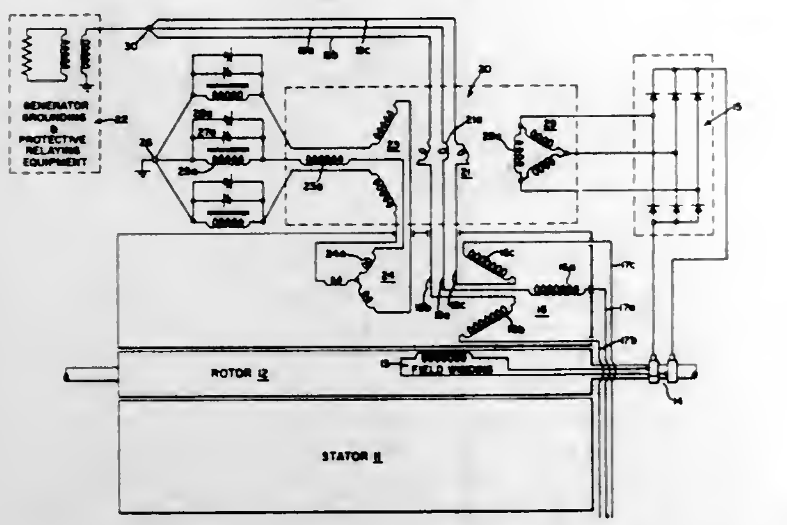
### 3,758,842
### FIELD EXCITATION CIRCUIT FOR A DYNAMOELECTRIC MACHINE

**Henry W. Kudlacik, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed May 30, 1972, Ser. No. 257,762**
**Int. Cl. H02p** *9/30*
**U.S. Cl. 322—25** **9 Claims**



A field excitation circuit utilizing a three-winding excitation transformer in each phase to supply the excitation power of a dynamoelectric machine. The field excitation circuit includes a variable reactance in series with one winding of each three-winding excitation transformer. The variable reactance comprises a reactor with silicon-controlled rectifiers connected in an inverse parallel relationship. The power output of the excitation system is adjusted to the required value by varying the reactance.

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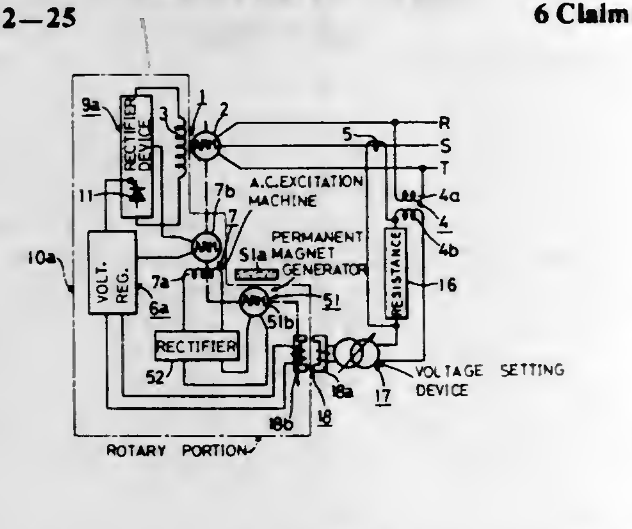
### 3,758,843
### BRUSHLESS EXCITATION DEVICE

**Akira Ishizaki; Tatuya Hirasawa; Michiteru Nakamura, and Takeshi Kawade, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan**

**Filed June 27, 1972, Ser. No. 266,740**
**Claims priority, application Japan, Aug. 14, 1971, 46/72430**
**Int. Cl. H02p** *9/30*
**U.S. Cl. 322—25** **6 Claims**



A brushless excitation device in which the output voltage and load current of an A.C. generator are detected and the detected voltage and current are applied to an automatic voltage regulator inserted and connected into a rotary portion of the generator by means of a rotary transformer, the field current of the generator being controlled by the output of the automatic voltage regulator.

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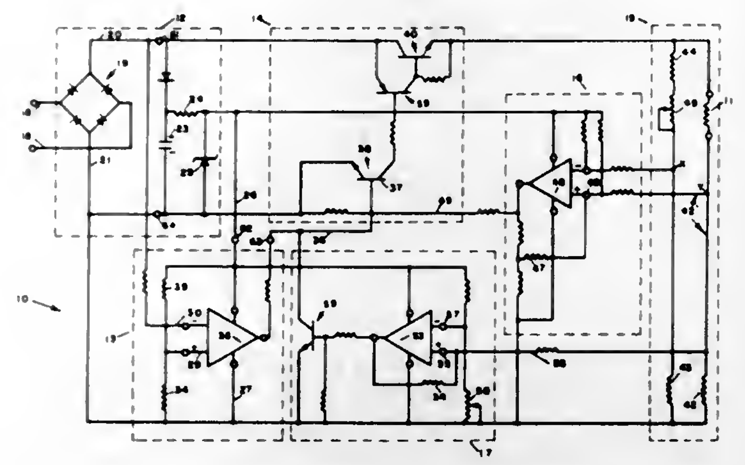
### 3,758,844
### CONTROL CIRCUIT FOR LOAD HAVING MEASUREABLE COEFFICIENT OF RESISTANCE

**Robert J. Harkenrider, and John L. Moe, both of Winona, Minn., assignors to Waynco, Inc., Winona, Minn.**

**Filed Apr. 10, 1972, Ser. No. 242,694**
**Int. Cl. G05f** *5/00*
**U.S. Cl. 323—22 T** **14 Claims**



A control circuit wherein the load acts as its own transducer and wherein the circuit may be provided with means for zero switching and overload protection.

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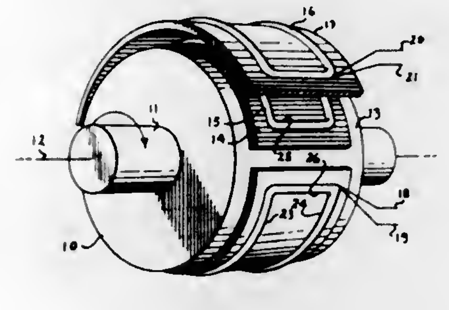
### 3,758,845
### SIGNAL TRANSMITTING SYSTEM FOR ROTATING APPARATUS

**John Stewart MacKelvie, Keene, Ontario, and Ganton Webster Clarke, Bailieboro, Ontario, both of Canada, assignors to Canadian General Electric Company Limited**

**Division of Ser. No. 52,376, July 6, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,378**
**Claims priority, application Canada, May 12, 1969, 51,176**
**Int. Cl. H02p** *13/00*
**U.S. Cl. 323—51** **3 Claims**

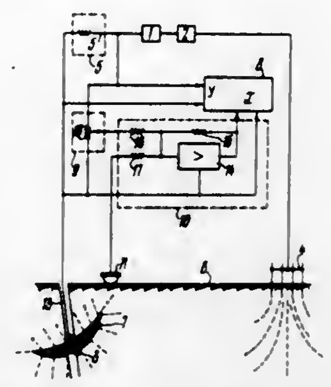


This invention relates to a rotary transformer having two windings prewound in a flat rectangular skein for transmitting signals between the rotor and stator of a dynamoelectric machine. Suitably, one skein is wrapped flatwise around, and secured to, the rotor shaft with the second skein being fixedly secured to the stator in a concentric attitude relative to the first skein to permit rotary transformer action between the skeins. In a second disclosed embodiment both rectangular skeins are bent in an arcuate configuration about the rotor axis and are disposed in parallel planes at displaced locations along the axis of rotation. The two coils are designed such that they are coupled inductively at all times during rotation of the rotor.

### 3,758,846
### METHOD OF GEOPHYSICAL PROSPECTING OF ORE DEPOSITS

**Jury Samuilovich Ryss, 2 Murinsky pr., 14, kv. 39; Tamara Mikhailovna Ovchinnikova, ul. Detskaya, 26, kv. 31; Jury Georgievich Gavrilov, Morskoi pr., 25, kv. 14; Dmitry Vyacheslavovich Voronin, 12 Linia, 17, kv. 1, and Vladimir Mikhailovich Panteleimonov, Nevsky pr., 11/2, kv. 19, all of Leningrad, U.S.S.R.**

**Continuation-in-part of Ser. No. 56,097, June 30, 1970, abandoned, which is a continuation of Ser. No. 648,285, June 23, 1967, abandoned. This application May 6, 1971, Ser. No. 140,868**
**Int. Cl. G01v** *3/02*
**U.S. Cl. 324—1** **2 Claims**



A geophysical method of prospecting for ore deposits which serves to determine the mineral composition, position and size of ore bodies in situ, as well as to correlate the intersections of the ore body by different boreholes and mine workings. The method is based on the selective excitation and registration of electrochemical reactions of certain minerals contained in the ore bodies. The successive excitation and registration of the electrochemical reactions is achieved by gradually varying the intensity of the current passed through an ore body, by simultaneously registering in the form of polarization curves the current intensity and the ore body potential relative to the enclosing rocks taking into account a drop of voltage in said rocks and by determining from said curves the potential values and the limit current intensity of the electrochemical reactions on the basis of which the mineral composition, position and size of the ore body are established.

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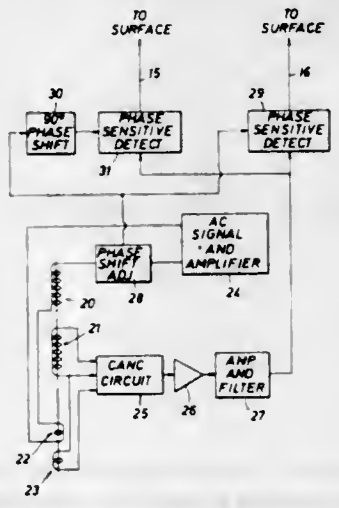
### 3,758,847
### METHOD AND SYSTEM WITH VOLTAGE CANCELLATION FOR MEASURING THE MAGNETIC SUSCEPTIBILITY OF A SUBSURFACE EARTH FORMATION

**Donald J. Dowling, Houston, Tex., assignor to Texaco Inc. New York, N.Y.**

**Filed Dec. 23, 1971, Ser. No. 211,403**
**Int. Cl. G01v** *3/10, 3/18*
**U.S. Cl. 324—6** **25 Claims**



A magnetic susceptibility well logging system is provided with an improved null circuit for more precisely cancelling the exciter voltage component out of the receiver coil voltage sought to be measured. A monitor circuit and method is provided for detecting any phase shifts occurring in the null voltage during the logging operation, and a capacitance is varied in response to such monitoring to continually realign the phase of the null voltage. In particular, a DC voltage is generated as a function of the detected phase difference, and is applied to a semiconductor diode interconnected with the null circuit. Accordingly, the capacitance provided by the diode is varied as a function of the DC voltage, whereby the phase of the null voltage is regulated as a function of the capacitance characteristic introduced into the null circuit by the diode.

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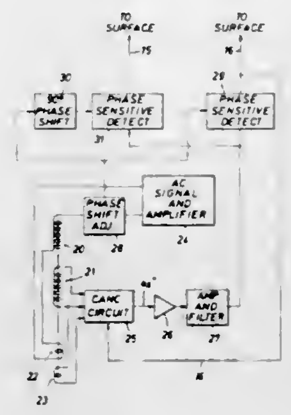
### 3,758,848
### MAGNETIC SUSCEPTIBILITY WELL LOGGING SYSTEM AND METHOD WITH AUTOMATIC NULL CONTROL

**Donald J. Dowling, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,276**
**Int. Cl. G01v** *3/10, 3/18*
**U.S. Cl. 324—6** **20 Claims**



An automatic null control circuit and method is employed in a magnetic susceptibility well loging system for regulating the null voltage employed to cancel the exciter voltage component of the receiver coil signal. Means and method are provided for determining the amplitude difference between the null voltage and the exciter voltage component, whereby the null voltage is multiplied by a factor which is functionally related to the difference. Since the null and receiver coil signals are both AC, the amplitude difference is also a phase-dependent function. Accordingly, it is an adjunct of the automatic null control system and method to also monitor and correct for phase difference between the null and receiver voltages.

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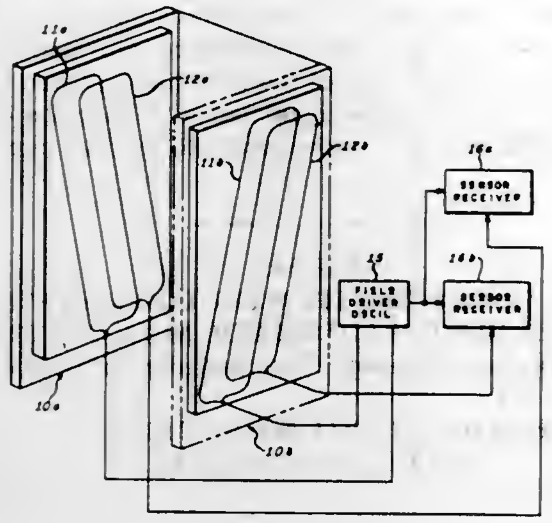
### 3,758,849
### METAL DETECTOR SYSTEM HAVING IDENTICAL BALANCED FIELD COIL SYSTEM ON OPPOSITE SIDES OF A DETECTION ZONE

**Leon Susman, Sudbury; Hugh C. Maguire, Westford, and Carl E. Bohman, Sudbury, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Mar. 31, 1972, Ser. No. 240,222**
**Int. Cl. G01r** *33/00*
**U.S. Cl. 324—41** **5 Claims**

A balanced field metal detector apparatus comprising a coil assembly including planar, generally rectangular loop configured multi-turn field and sensor coils disposed in partially overlapping minimum mutual inductive coupling relation and oriented so that the long dimension of the loops is skewed relative to the vertical in use of the apparatus. Employment of a pair of the detectors, one on each side of a pathway, with the respective coil assemblies skewed relative to the vertical oppositely to one another, enables detection of a metal object in the pathway by one or both of the detectors irrespective of the shape and orientation of the object, and by suitable processing of the sensor coil signals further enables determination of whether the object is located at the left, center or right side of the pathway.



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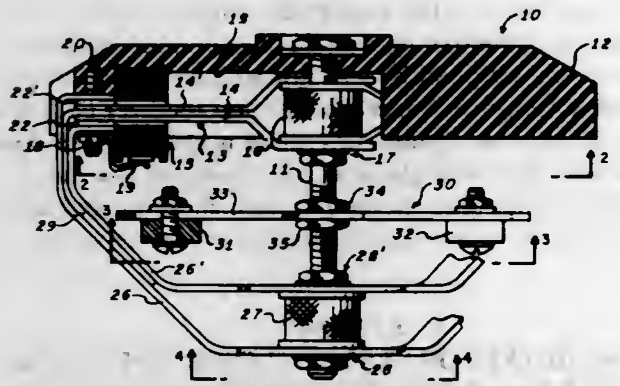
### 3,758,850
## FLUX VALVE APPARATUS FOR SENSING TOTAL HORIZONTAL AND VERTICAL AMBIENT UNIDIRECTIONAL MAGNETIC FIELD

**George W. Snyder, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Mar. 17, 1972, Ser. No. 235,584**

**Int. Cl. G01r** *33/04*

**U.S. Cl. 324—43 R** **13 Claims**



A flux valve for sensing the total unidirectional ambient magnetic field in the vicinity of the valve comprising three equiangularly oriented magnetically permeable cores each including a pair of generally coextensive parallely extending elongated core members supported from a centrally disposed non-magnetic post, the cores being so constructed and arranged as to collect both the horizontal and vertical field components in the vicinity of the valve. An excitation coil magnetically coupled to the cores produces a circulating magnetic flux flowing simultaneously in all three cores in instantaneously opposite directions in the core members of each core while pickoff coils surrounding each core provide signals representative of the total unidirectional magnetic flux directed therethrough.

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### 3,758,851
## METHOD FOR DETECTING SMALL PARTICLES IN A TANK AND APPARATUS FOR CARRYING OUT SAID METHOD

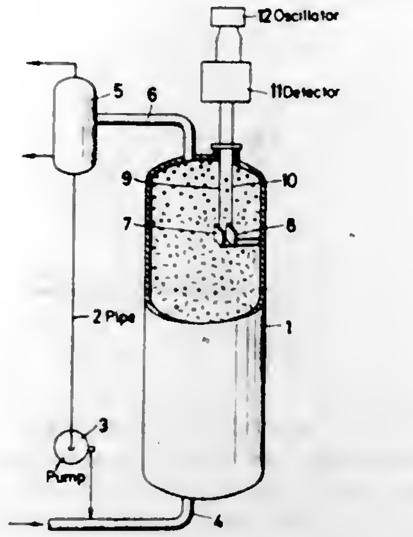
**Tohru Yokoyama, Sagamihara; Tetsuo Kanda, Yokohama; Yudo Oshio, Kawasaki, and Akira Yoshimatsu, Yokosuka, all of Japan, assignors to Chiyoda Kako Kensetsu Kabushiki Kaisha, Yokohama, Japan**

**Filed Oct. 26, 1971, Ser. No. 192,156**

**Claims priority, application Japan, Oct. 27, 1970, 45/93936; Apr. 2, 1971, 46/19605**

**Int. Cl. G01c** *27/26*

**U.S. Cl. 324—61 QS** **4 Claims**



The existence of small particles in a tank is detected by providing a pair of electrodes in the tank containing the particles to be detected, applying across the electrodes a frequency voltage high enough to occur dielectric dispersion in the particles, and measuring the changes in impedance caused by the existence of the small particles in the space between the electrodes which changes occur as a result of the changes in the real part of the dielectric constant of the particles and the imaginary part thereof resulting from dielectric dispersion. In a case where the size of the tank is large, the detection of the existence of the small particles is performed by forming a distribution resonant circuit using the distributed constants existing in the electrodes or the lead wires extending therefrom and detecting the change of the standing wave thereon.

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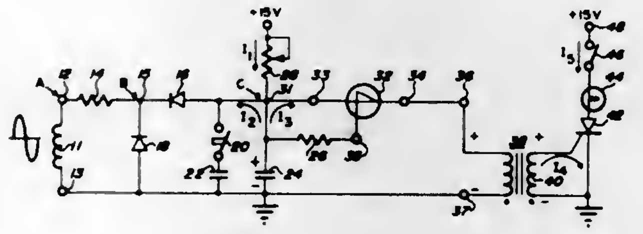
### 3,758,852
## DECREASE IN FREQUENCY DETECTOR

**John R. Nowell, Phoenix, and Luther L. Genuit, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed Mar. 2, 1972, Ser. No. 231,218**

**Int. Cl. G01r** *23/02;* **G08b** *21/00*

**U.S. Cl. 324—78 Q** **/ Claims**



A pair of diodes, a capacitor, a pair of resistors and a silicon unilateral switch detect a decrease in the frequency of an A.C. power source below a threshold value. When the frequency decreases below the threshold value, the detector provides a warning signal.

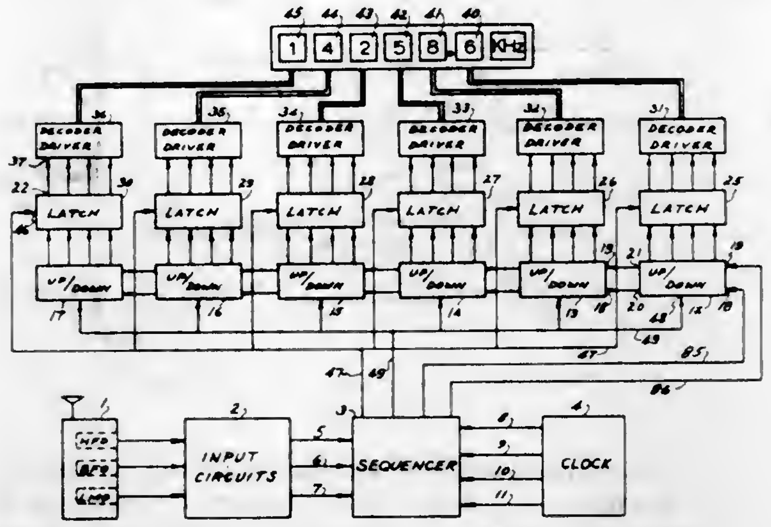
### 3,758,853
## METHOD OF AND APPARATUS FOR DETERMINING A TUNED FREQUENCY

**William R. Dionne, Stevensville, Mich., and Philippe Blanc-Brude, Neuilly, France, assignors to Heath Company, St. Joseph, Mich.**

**Filed Mar. 20, 1972, Ser. No. 235,931**

**Int. Cl. G01r** *23/02;* **H04b** *1/06*

**U.S. Cl. 324—78 D** **18 Claims**



A method and apparatus for determining a tuned frequency of a radio by subtracting numerical counts of the frequencies of two oscillators from a numerical count of a high frequency oscillator (HFO). The several counts can also be added where the HFO has a frequency less than the tuned frequency.

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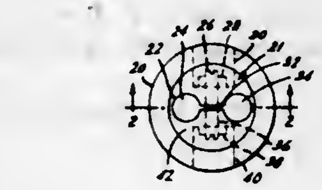
### 3,758,854
## SUPERCONDUCTIVE QUANTUM INTERFERENCE DEVICE HAVING TWO CAVITIES ISOLATED BY A SUPERCONDUCTIVE WEAK LINK

**James E. Zimmerman, 404 Hapgood Ave., Boulder, Colo.**

**Filed Mar. 12, 1971, Ser. No. 123,686**

**Int. Cl. G01r** *33/02*

**U.S. Cl. 324—43 R** **12 Claims**



A symmetric superconductive quantum interference device (SQUID) for use in magnetic field, or radio frequency energy, sensing systems. The symmetric SQUID comprises a solid niobium cylinder with a dumbbell shaped hole formed longitudinally therethrough. A pair of niobium screws, one having a flat end and the other having a pointed end, are positioned in the cylinder normal to its longitudinal axis so as to contact and form a weak superconductive link in the narrow portion of the dumbbell shaped hole. The symmetric SQUID exhibits the quantum interference effect in response to a difference in magnetic field strength between its two holes (i.e. the two circular portions of the dumbbell shaped hole). Thus the device will respond directly to a magnetic field gradient, but not to a uniform magnetic field.

Response to a uniform magnetic field can be achieved by inductively coupling a flux transformer to one hole of the device, so that in the presence of an applied field, flux shifts from one hole of the device to the other. Magnetic field gradients can be sensed by inductively coupling a gradient-sensitive flux transformer to one hole of the SQUID. The gradient sensitive flux transformer may comprise a pair of superconductive loops each formed by a thin niobium sheet wrapped around a quartz tube.

In another embodiment of the invention, suitable for making sensitive temperature measurements, cerous magnesium nitrate (CMN) powder is inserted into one hole of the symmetric SQUID. The SQUID is then cooled to its superconductive state in the presence of a magnetic field and then the field is removed. A change in temperature causes the susceptance of the CMN powder to change, thereby shifting magnetic flux lines from one hole of the device to the other. This shifting of flux causes a change in the impedance of the SQUID. This change can be measured to ascertain the temperature change.

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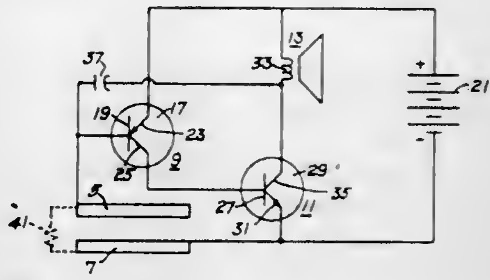
### 3,758,855
## RESISTANCE CONTROLLABLE INDICATOR

**Richard R. Meyer, 1925A Stuart St., Berkeley, Calif.**

**Filed July 9, 1970, Ser. No. 53,438**

**Int. Cl. G01r** *27/02*

**U.S. Cl. 324—65 R** **6 Claims**



A resistance controllable indicator involving a frequency generating circuit wherein the frequency is a function of resistance, the circuit including a pair of spaced terminals normally defining infinite resistance between them and across which, the resistance may be altered on the occasion of and in response to certain phenomena to be indicated and which involve changes in electrical resistance conductivity. No on-off switch is necessary to preserve battery power during periods when not in use.

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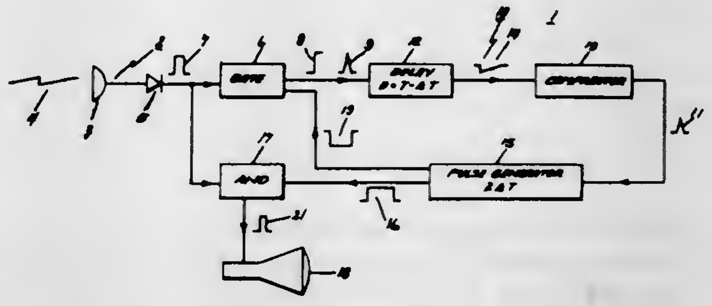
### 3,758,856
## PULSE REPETITION FREQUENCY DETERMINATION SYSTEM

**Kenneth N. Fromm, Cincinnati, Ohio, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Apr. 3, 1959, Ser. No. 804,045**

**Int. Cl. G01r** *23/02*

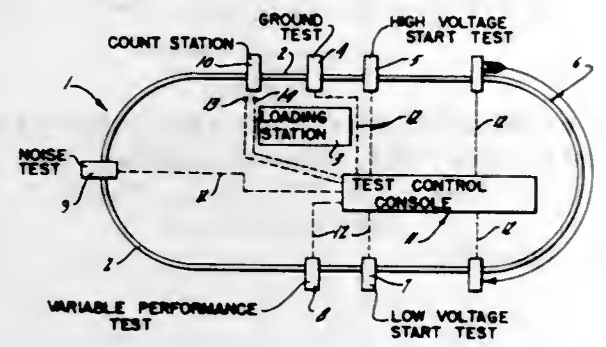
**U.S. Cl. 324—78 R** **10 Claims**



1. A system for determining the pulse repetition frequency of a relatively short train of pulses comprising: an input circuit adapted to receive said train of pulses: selectively adjustable delay means coupled to said input circuit for delaying said pulses a predetermined amount; selectively adjustable gate pulse generating means coupled to said delay means for generating gate pulses having a predetermined length responsive to the delayed pulses; and coincidence means coupled to said gate pulse generating means and to said input circuit for providing an output signal responsive to coincidence of an input pulse and a gate pulse whereby the delay of said delay means indicates the repetition frequency of said train of pulses.

### 3,758,857
## AUTOMATIC TESTING APPARATUS

**Sylvester Allan Simpson, Tipp City, and Howard W. Smith, West Carrollton, both of Ohio, assignors to A. D. Smith Corporation, Milwaukee, Wis.**
**Filed Dec. 23, 1971, Ser. No. 211,427**
**Int. Cl. G01r** *31/00, 15/12*
**U.S. Cl. 324—158 MG** **15 Claims**



An automatic electric motor testing facility provides a plurality of carriers for carrying motors to a plurality of testing stations at which tests are performed. A memory arm having two levels of memory and an attached reflector assembly is connected to each carrier for selectively actuating each testing sequence through photoelectric transducers located at each testing station. Memory arm control means located at each test station selectively control the memory level of each memory arm in response to the test results. A tabulating punch provides a test record at each carrier while tabulating counters at the test control further record test results. The test control also provides a resistor bank having a plurality of resistive elements which are selectively code connected to one another, to a power source, and to an output circuit by a data card reader for providing a plurality of presettable electrical outputs for automatically controlling the testing of the electric motors.

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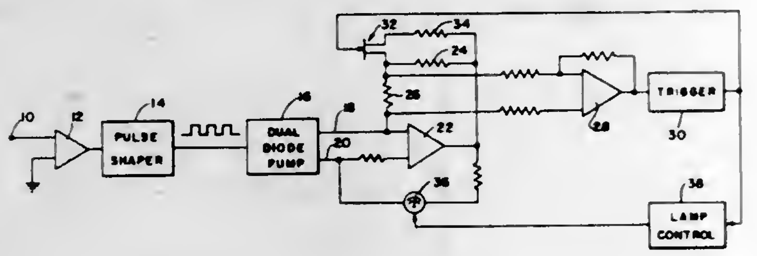
### 3,758,858
## ELECTRONIC TACHOMETER

**David D. McCue, Hamburg, N.Y., assignor to Frank A. Roberts, Grand Island, N.Y.**
**Filed June 5, 1970, Ser. No. 43,779**
**Int. Cl. G01p** *3/48*
**U.S. Cl. 324—166** **14 Claims**



An electronic tachometer is provided in which the frequency of charge transfer to a capacitor is proportional to the RPM being measured. The d.c. level proportional to the frequency of charge transfer is applied to an amplifier having a feedback resistance and whose output drives a d.c. meter having a number of scales calibrated in RPM. When the meter needle reaches the end of one scale, the value of feedback resistance for the amplifier is suddenly decreased by the effect of a switching circuit responsive to current flowing in the feedback path, thereby to decrease the amplifier output suddenly so as to swing the meter needle to the low end of the next RPM range scale. An amplifier operating at substantially full open loop gain for low values of input signal and having clipped output for higher values of input signal is used to enable meaningful output from a magnetic transducer at low RPM of the device being measured. A dual diode pump having low average supply current requirements is also disclosed.

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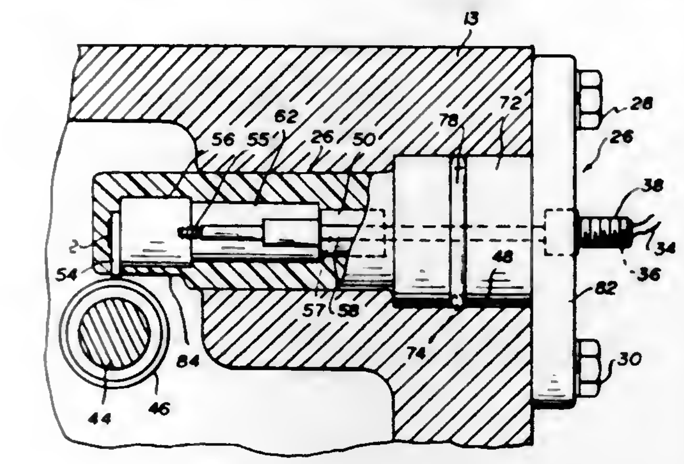
### 3,758,859
## MAGNETIC TACHOMETER PICKUP

**Algis Damijonaitis, Chicago, and Daryl D. Wiley, Elmhurst, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.**
**Filed Oct. 29, 1971, Ser. No. 193,911**
**Int. Cl. G01p** *3/48*
**U.S. Cl. 324—174** **6 Claims**



An encapsulated magnetic tachometer pickup for insertion in an aperture of a fuel or oil pump housing for detecting the rotational speed of a gear in the pump which is driven in proportion to engine RPM includes a pole piece adapter substantially perpendicular to and radially extending from the axis of the pole piece and connected thereto. The adapter is positioned to have the teeth of the pump gear move transversely across its sensing portion when the gear rotates. A magnet connected to the pole piece causes a magnetic field to be generated in the pole piece and pole piece adapter which changes as the result of the rotation of the gear across the sensing portion of the pole piece adapter. The changing flux induces a current in a coil mounted on the pole piece which in turn is connected to a signal translating network for indicating engine RPM.

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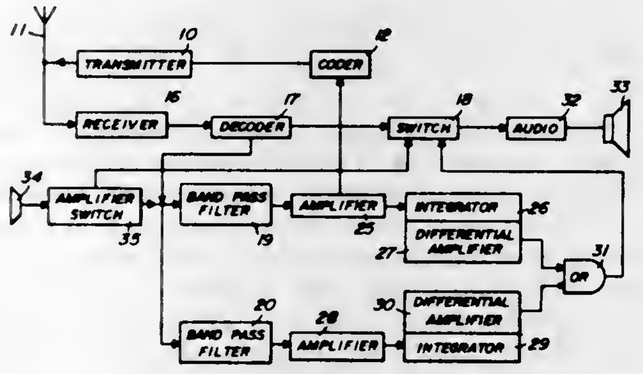
### 3,758,860
## SELECTIVE CALLING SQUELCH CIRCUIT FOR RECEIVING SYSTEMS

**William V. Braun, Chicago; Daniel P. Brown, Elmhurst, and Albert J. Leitich, Chicago, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.**
**Filed Jan. 17, 1972, Ser. No. 218,107**
**Int. Cl. H04b** *7/38*
**U.S. Cl. 325—18** **10 Claims**



A receiver, decoder and switch connected to an (audio) output stage with a first band pass filter connected to the decoder and supplying a signal to an OR gate only when a message is properly decoded by the decoder and a second band pass filter connected to the decoder and supplying a signal to the OR gate only when white noise, or an improperly decoded signal, is present at the decoder. The presence of a signal from the first filter or the absence of a signal from the second filter enables the OR gate and activates the switch to allow the signal to pass from the decoder to the output stage.

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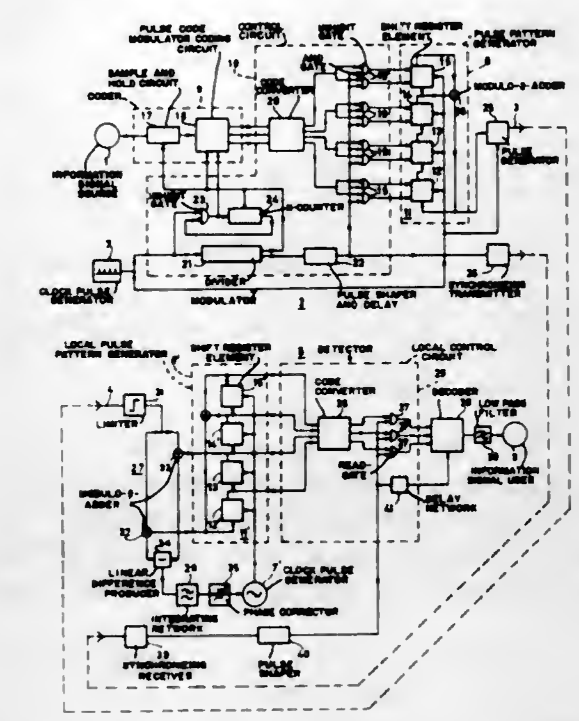
### 3,758,861
## SYSTEM FOR THE TRANSMISSION OF INFORMATION AT VERY LOW SIGNAL-TO-NOISE RATIOS

**Frank De Jager; Leo Eduard Zegers, and Nicolaas Alphonsus Maria Verhoeckx, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed July 8, 1971, Ser. No. 160,749**
**Claims priority, application Netherlands, July 25, 1970, 7011049**
**Int. Cl. H04b** *1/00*
**U.S. Cl. 325—38 R** **8 Claims**



The invention relates to a transmission system comprising a transmitter and a receiver for the transmission of information signals, the transmitter including a modulator coupled to the information signal source and the receiver including a detector coupled to the information signal user.

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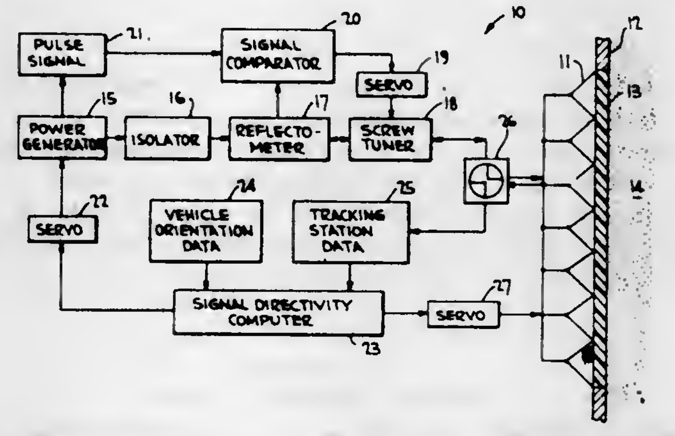
### 3,758,862
## RF TRANSMISSION THROUGH A PLASMA

**Frank L. Tevelow, Rockville, Md.; James C. Blackburn, Washington, D.C., and Frederick J. Tischer, Raleigh, N.C., assignors to The United States of America as represented by the Secretary of the Army**
**Filed Aug. 4, 1970, Ser. No. 64,915**
**Int. Cl. G01r** *27/02*
**U.S. Cl. 325—65** **5 Claims**



System for microwave transmission through a plasma. Radio communication through a layer of ionized gas is achieved by initially adjusting the impedance of the antenna system to match free space conditions, thereafter applying the radio signal to the antenna system, monitoring the standing wave ratio to detect a change in the ionization level of the ionized gas surrounding the antenna and thereafter adjusting the impedance of the antenna system to match that of the ionized gas. The ionization level is continuously monitored and the impedance continuously changed to match the constantly changing plasma conditions. Increased signal transmission is achieved by increasing the power of the signal up to a predetermined level and adjusting the impedance of the antenna system to match the changed ionized gas conditions which result from the increased input power. The increase in input power may be C.W. or may take the form of a series of pulses with subsequent monitoring of the changed ionization level delayed a predetermined time period after each pulse in order to monitor the effects of the increased pulsed power levels. Additional enhancement of signal transmission is achieved by adjusting the phased array of the antenna system in response to vehicle orientation data and remote tracking station signal data. The strength of the required power level may also be dependent upon this data.

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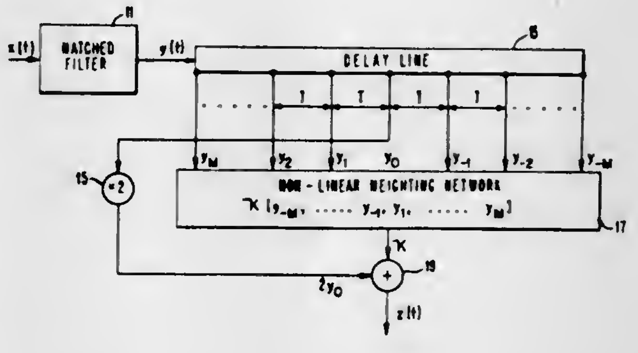
### 3,758,863
## DEVICE FOR EQUALIZING BINARY BIPOLAR SIGNALS

**Gottfried J. Ungerboeck, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Oct. 15, 1971, Ser. No. 189,578**
**Claims priority, application Switzerland, Oct. 22, 1970, 15670/70**
**Int. Cl. H04b** *1/16*
**U.S. Cl. 325—321** **8 Claims**



The present invention is concerned with a circuit for equalizing binary bipolar signals, comprising transversal filter means for reducing distortions due to overlapping.

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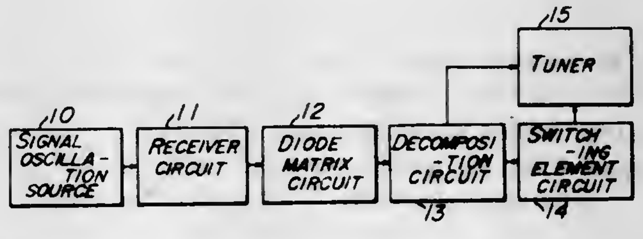
### 3,758,864
## REMOTE-CONTROL TUNING SYSTEM

**Toshiji Kanamaru, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**
**Filed Nov. 26, 1971, Ser. No. 202,326**
**Claims priority, application Japan, Nov. 28, 1970, 45/105095**
**Int. Cl. 334** *14;* **H04b** *1/06*
**U.S. Cl. 325—392** **5 Claims**



A remote-control tuning system comprising a varactor diode in which a DC voltage applied to the varactor diode is remote controlled to be tuned to a desired channel, whereby even if the desired channel is far from the preceding channel, an immediate switching is made to the desired channel.

### 3,758,865

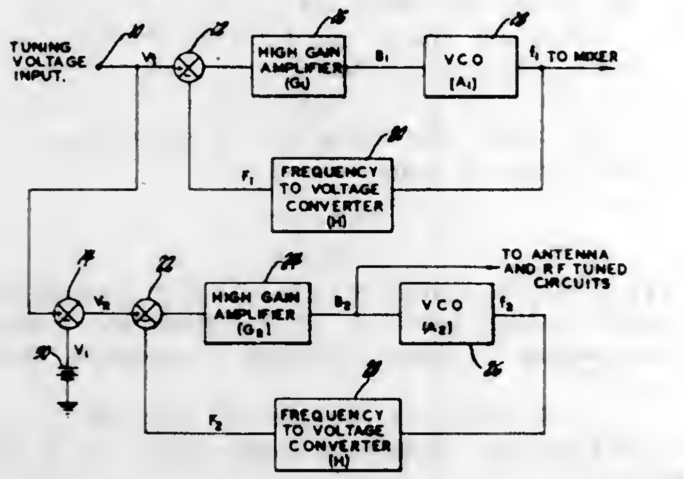
### BIAS VOLTAGE GENERATOR FOR THE VOLTAGE-RESPONSIVE TUNING ELEMENTS IN AN ELECTRONICALLY TUNED RADIO RECEIVER

**James L. McKibben, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 18, 1972, Ser. No. 218,788**

**Int. Cl. H04b** *1/16*

**U.S. Cl. 325—418** **2 Claims**



A circuit for tuning an electronically tuned radio receiver in which the tuning voltage for tuning the radio receiver is supplied to the positive input of a first differential amplifier having a high gain whose output is connected across a voltage responsive capacitive element for controlling the frequency of oscillation of a voltage controlled local oscillator. The output of this voltage controlled local oscillator is supplied to a linear frequency-to-voltage converter whose output is supplied to the negative input of the first differential amplifier to maintain the output of the local oscillator a linear function of the tuning voltage. The tuning voltage is also supplied to the positive input of a second differential amplifier whose output is supplied to the positive input of a third differential amplifier having a high gain. The output of this amplifier is connected across a voltage responsive capacitive element in a reference voltage controlled oscillator to control the frequency of oscillation thereof and across respective voltage responsive capacitive elements in the antenna and RF tuned circuits to control the tuned frequency thereof. The output of the reference voltage controlled oscillator is supplied to a linear frequency-to-voltage converter whose output is connected to the negative input of the third differential amplifier to maintain the frequency at which the reference voltage controlled oscillator, antenna and RF tuned circuits are tuned a linear function of the input voltage to the positive input of the third differential amplifier. A constant DC voltage is supplied to the negative input of the second differential amplifier to effect the tracking of the antenna and RF tuned circuits to the output of the voltage controlled local oscillator at a constant difference frequency equal to the IF frequency.

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### 3,758,866

### SEARCH-LOCK SYSTEM

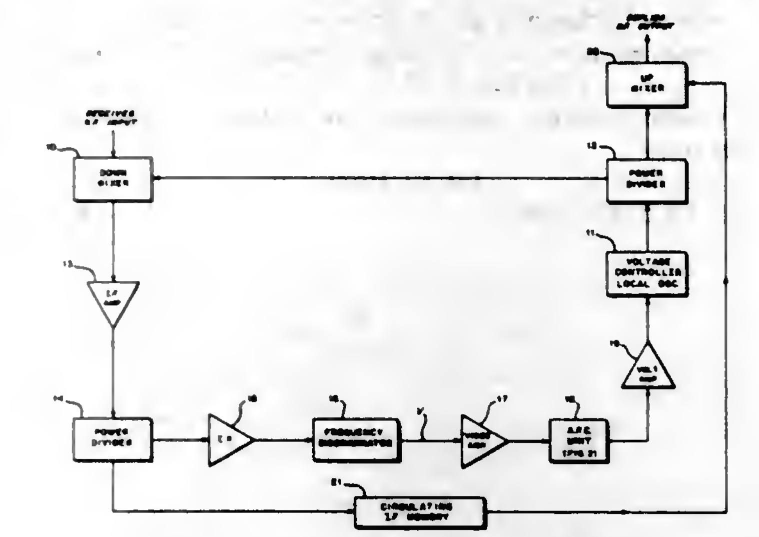
**Neil W. Hansen, Pompton Plains, N.J., and Nathan Orenstein, New York, N.Y., assignors to The United States of America as represented by the Secretary of the Navy**

**Division of Ser. No. 68,581, Aug. 31, 1970, Pat. No. 3,675,132. This application Apr. 3, 1972, Ser. No. 240,467**

**Int. Cl. H03k** *5/00*

**U.S. Cl. 328—127** **4 Claims**

A received RF signal is mixed with the output of a voltage-controlled local oscillator to provide an IF signal which is simultaneously passed to a frequency discriminator and a circulating memory. Control voltage for the oscillator is provided by an AFC unit which comprises an integrator receiving selected contant voltage inputs. During the search mode a search ramp is generated by the integrator. A flyback circuit causes the search voltage to repeat its traverse over a prescribed range. Bipolar video discriminator outputs above a predetermined threshold place the system in the lock mode and selectively gate two settable, constant voltage inputs to furnish a triangle wave integrator output centered on a voltage corresponding to the desired local oscillator frequency. The oscillator output is mixed with the stored IF to produce a replica of the input signal.



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### 3,758,867

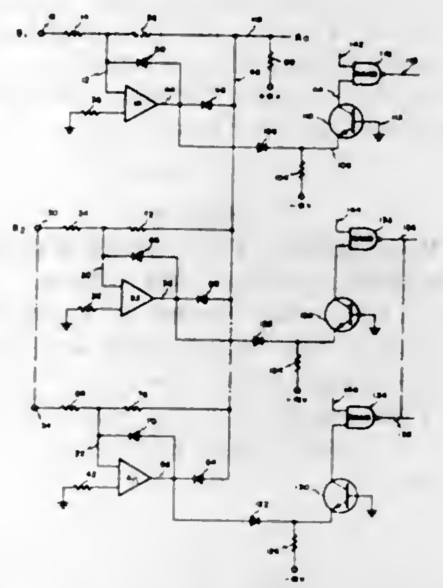
### ANALOG VOLTAGE SELECTOR CIRCUIT WITH SELECTED VOLTAGE DETECTION

**Raymond A. Schulz, Owego, N.Y., assignor to The United States of America as represented by the Secretary of the Navy**

**Filed Oct. 4, 1971, Ser. No. 188,681**

**Int. Cl. H03k** *5/20*

**U.S. Cl. 328—137** **1 Claim**



Analog signal selecting circuitry has a plurality of parallel operational amplifiers connected to a common output, and comprises diodes and feedback resistances so arranged that all amplifiers except the one having the most positive or most negative input are isolated from the output. Digital detector circuitry is described for indicating which of the input signals is selected as most positive or most negative.

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### 3,758,868

### NOISE-RIDING SLICER

**Bruce J. Brown, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy**

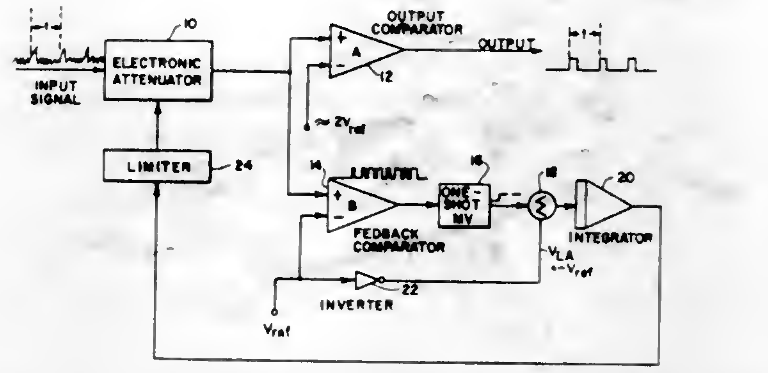
**Filed Dec. 21, 1971, Ser. No. 210,412**

**Int. Cl. H03k** *5/08*

**U.S. Cl. 328—165** **3 Claims**

A noise-slicing device for substantially eliminating the noise from an input signal consisting of signal pulses riding in a background of noise. The input signal is fed through an electronic attenuator into an output comparator which provides an output whenever its input-signal level is above a reference voltage, 2 $V_{ref}$. A feedback loop provides a control signal to

the attenuator to automatically control the attenuation level. The input to the feedback loop is the output of the attenuator. The loop comprises comparator means providing an output when the attenuator output signal is above its reference voltage, $V_{ref}$, a one-shot multivibrator, summing means having $-V_{ref}$ as one input and the M-V output as the other, an integrator and a limiter, the attenuator control signal being the output of the integrator.



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### 3,758,869

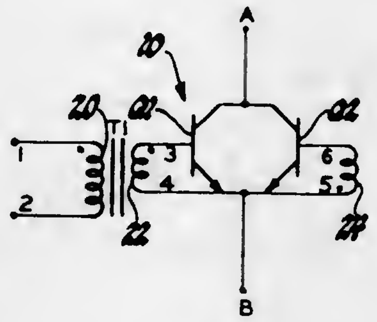
### TRANSFORMER COUPLED POWER SWITCH DEMODULATOR

**Ronald M. Wagner, Greendale, Wis., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Apr. 24, 1972, Ser. No. 246,973**

**Int. Cl. H03k** *9/08*

**U.S. Cl. 329—102** **3 Claims**



A power switch demodulator comprising a pair of power transistors having their collector electrodes connected together and to a source of DC voltage and their emitter electrodes connected together and to a load. A transformer comprising a primary winding and two secondary windings controls the conduction of the two power transistors to demodulate a pulse width modulated drive signal applied to the primary of the transformer.

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### 3,758,870

### DIGITAL DEMODULATOR

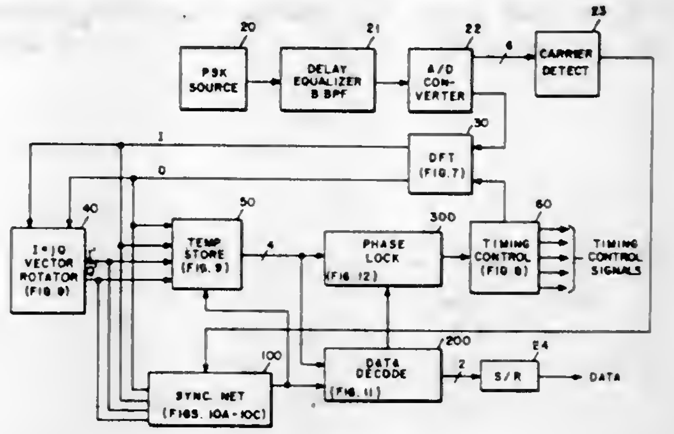
**Joseph W. Schmitt; James E. Mosakowski, both of Hudson, and Donald L. Starkey, Amherst, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.**

**Filed Feb. 23, 1972, Ser. No. 228,553**

**Int. Cl. H04l** *27/22*

**U.S. Cl. 329—104** **24 Claims**

A digital data demodulator for detecting binary information which is encoded upon an amplitude modulated or a phase modulated carrier wave. A specific example is presented for both a straight four phase and a modified four phase differentially coherent phase shift keyed (DCPSK) signal. The exemplary four phase DCPSK demodulator employs a discrete Fourier transform filter which provides updated Fourier coefficient values I + jQ during each sample interval. The I and Q values are rotated by 45° to form I′ and Q′ values. A synchronization network, a phase lock network and a data decoding network respond to the I, Q, I′ and Q′ values to synchronize the digital data demodulator with a received DCPSK signal and to decode the binary information encoded therein.



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### 3,758,871

### ARRANGEMENTS FOR CONTROLLING THE OUTPUT OF AMPLIFIERS

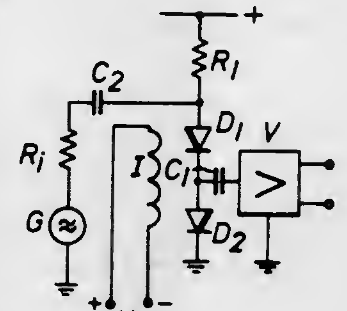
**Johann Mattfeld, Kirchhausen, Germany, assignor to Licentia Patent - Verwaltungs - GmbH, Frankfurt am Main, Germany**

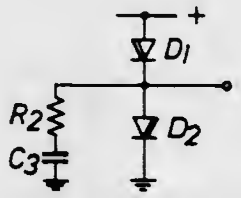
**Filed May 27, 1971, Ser. No. 147,536**

**Claims priority, application Germany, June 1, 1970, P 20 26 679.9**

**Int. Cl. H03g** *3/30*

**U.S. Cl. 330—6** **10 Claims**





An arrangement for controlling the output of an amplifier in which an element determining the output value or gain factor comprises a semiconductor element with magnetic field dependent resistance and in which means are provided for producing a magnetic field which acts on the semiconductor element.

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### 3,758,872

### FAST RECOVERY CIRCUIT FOR AC AMPLIFIER

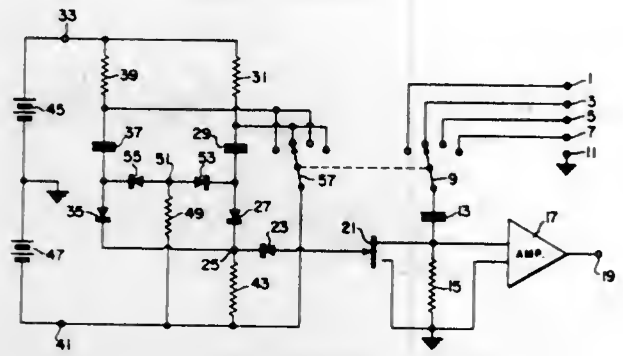
**Paul A. Diddens, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Sept. 23, 1971, Ser. No. 183,037**

**Int. Cl. H03f** *1/00*

**U.S. Cl. 330—185** **1 Claim**

A selector switch is operable to apply one of a plurality of input signals to a high impedance AC amplifier through a coupling network. A switching means is coupled to the selector switch for alternately and concurrently discharging one and charging a second charge storage means for each operation of the selector switch. The storage means being charged generates a charging signal of a predetermined duration which controls a switching device through a gating means. The switching device is operative in response to the gated charging signal and during the continuance thereof, to connect a relatively low impedance path across the input of the AC amplifier whereby to substantially reduce the response time of the AC amplifier.



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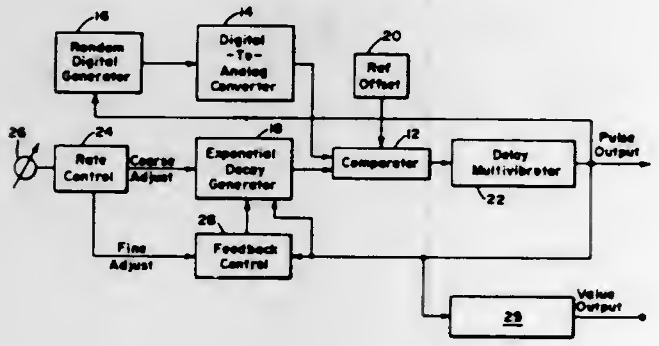
### 3,758,873
### RANDOM PULSE GENERATOR

**Herbert E. Miller, Brookline, Mass., assignor to Epsco Incorporated, Westwood, Mass.**

**Filed July 14, 1972, Ser. No. 271,704**

**Int. Cl. H03b** *29/00*

**U.S. Cl. 331—78** **8 Claims**



A system for generating electronic pulses separated by intervals which vary according to a predetermined probability distribution, typically exponential. The predetermined probability distribution is realized through the interaction of two other separately controlled functions. A first probability function statistically governs the selection of a first value and a second time varying function establishes the pulse time interval by relation to the selected first value.

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### 3,758,874
### CORONA DISCHARGE LASER

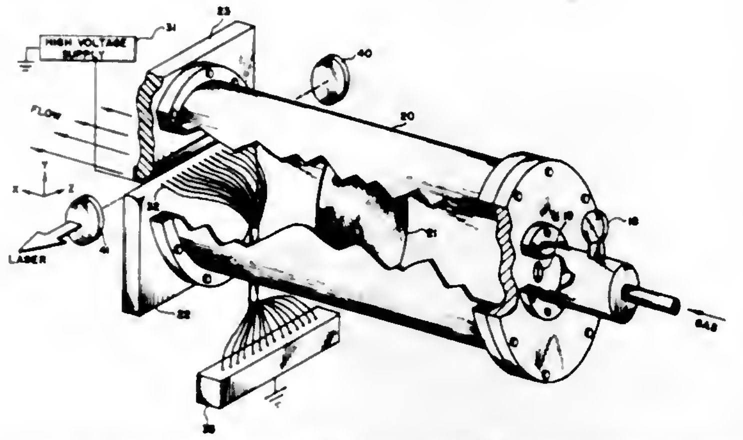
**Ethan D. Hoag, Boston, Mass., assignor to Avco Corporation, Cincinnati, Ohio**

**Filed Sept. 17, 1971, Ser. No. 181,432**

**Int. Cl. H01s** *3/00*

**U.S. Cl. 331—94.5** **1 Claim**

A method of and apparatus for producing laser action in and transverse to a flowing gas over a wide range of flow and pressure conditions by an electrical discharge orthogonal to both the flow and lasing direction which is stabilized by electrode segmentation and ballasting.



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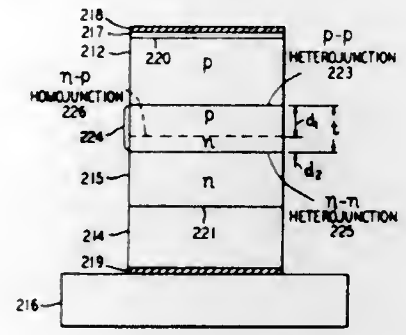
### 3,758,875
### DOUBLE HETEROSTRUCTURE JUNCTION LASERS

**Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Continuation-in-part of Ser. No. 787,459, Dec. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 766,902, Oct. 11, 1968, abandoned. This application May 1, 1970, Ser. No. 33,705**

**Int. Cl. H01s** *3/18*

**U.S. Cl. 331—94.5** **9 Claims**



A light emitting heterostructure diode includes a multilayered structure having a common conductivity type heterojunction and a p-n junction separated therefrom by a distance less than the diffusion length of minority carriers, thereby defining an intermediate region bounded by said junctions.

In a single heterostructure (SH) diode there is one such heterojunction separating narrow and wide band gap regions of the same conductivity type and the p-n junction is a p-n homojunction formed in one instance by the diffusion of impurities into the narrow band gap region. When provided with an appropriate resonator, a confinement effect produced by an energy step (at the heterojunction) in the conduction band permits the SH diode to lase at higher temperatures and lower thresholds than heretofore possible, radiative electron-hole recombination occurring between the conduction and valence bands.

In a double heterostructure (DH) the diode is provided with a second heterojunction positioned on the side of the p-n junction remote from the other heterojunction, or positioned coincident with the p-n junction, thereby defining an intermediate region between a pair of heterojunctions. When provided with an appropriate resonator the DH diode exhibits lower thresholds at higher temperatures than even the aforementioned SH diode.

In both diodes additional improvement in the threshold occurs if the diode is provided with deep impurity levels of deep band tails.

Without a resonator, both the SH and DH diodes function as electroluminescent diodes with radiation being emitted

from the intermediate region through the wide band gap region, thereby advantageously resulting in lower absorption losses and higher efficiency. Dome-like configurations of the wide band gap region of this diode are also disclosed.

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### 3,758,876
### CARBON DIOXIDE LASER

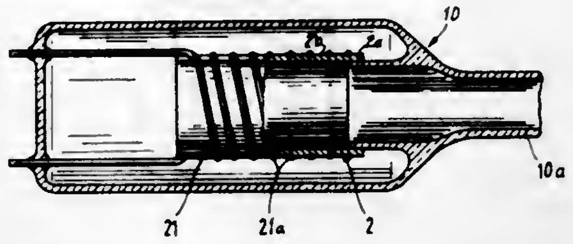
**Ekkehard Klement, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Filed July 26, 1971, Ser. No. 165,960**

**Claims priority, application Germany, Aug. 4, 1970, P 20 38 777.3**

**Int. Cl. H01s** *3/00*

**U.S. Cl. 331—94.5** **11 Claims**



A carbon dioxide laser having an oxygen-providing agent incorporated therein comprised of a nickel oxide member arranged in the laser tube in association with a heater so that the nickel oxide reaches temperatures of about 400° to 500° C. during operation. A preferred form of nickel oxide member comprises an oxidized surface layer on a nickel metal base positioned in close proximity to an electrode and outside the discharge. In one form the cathode is formed of nickel and the outer surface thereof is oxidized to form the oxygen-providing agent. In another form a metallic mesh-like nickel screen is oxidized so that the outer surface thereof comprises nickel oxide and is positioned in close proximity to the cathode. Auxiliary heating means are provided in certain embodiments to attain a desired operating temperature.

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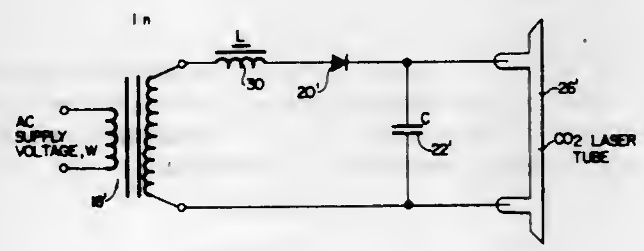
### 3,758,877
### POWER SUPPLY FOR CARBON DIOXIDE LASERS

**James C. Fletcher, Administrator of the National Aeronautics And Space Administration, with respect to an invention of, and Gerhard Schiffner, Hinterbruehl, Austria**

**Filed May 9, 1972, Ser. No. 251,621**

**Int. Cl. H01s** *3/09, 3/22*

**U.S. Cl. 331—94.5** **10 Claims**



In a power supply for a $CO_2$ laser tube including an A.C. source, a rectifier and a filter, an inductance connected in front of the rectifier provides a non-dissapative positive resistance effect for cancelling the negative differential resistance exhibited by the tube at frequencies below about 2kHz. The inductance replaces the ballast resistors usually used for the same purposes and provides a resultant increase in system efficiency. The frequency of the A.C. source is preferably in excess of 25 kHz thus taking advantage of the low amplitude and frequency fluctuations at high frequencies and enabling the use of a low value filter capacitor.

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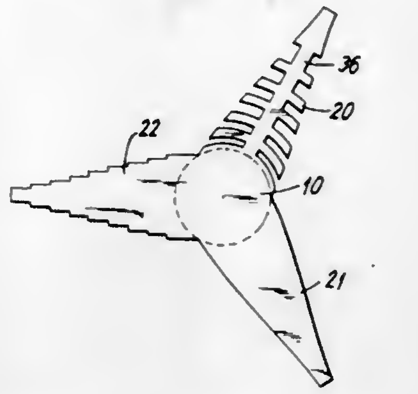
### 3,758,878
### MICRO-STRIP AND STRIPLINE JUNCTION CIRCULATORS

**Richard A. Wainwright, 9704 Kensington Pkwy., Kensington, Md.**

**Filed Dec. 23, 1971, Ser. No. 211,238**

**Int. Cl. H01p** *1/32*

**U.S. Cl. 333—1.1** **4 Claims**



A junction circulator having (one) microstrip or (two) stripline discs, or other geometries of ferrimagnetic material or in combination with non-ferrimagnetic insulating materials, spaced between a conducting ungrounded center plate and (one) microstrip or (two) stripline conducting ground plates. Three or more center conductors are connected to the center or ungrounded plate at points having generally equal angles in degrees apart. A magnetic biasing field is applied parallel to the Z axis of the ferrite discs. The bandwidth of the circulator is increased by having each center conductor tapered so as to increase in width as each center conductor approaches the center plate.

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### 3,758,879
### VARIABLE DIRECTIONAL COUPLER

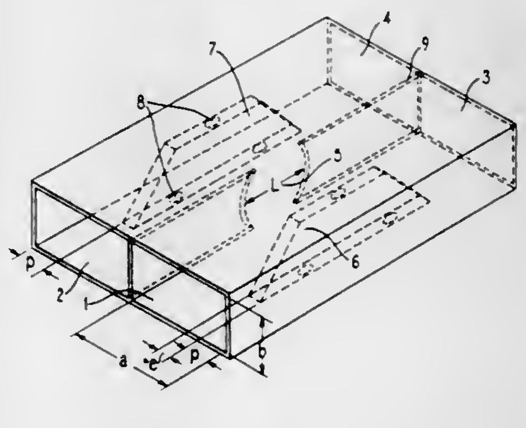
**Daniel E. Beguin, Saint-Prix; Bernard Chiron, Nanterre, and Michel P. G. Cuo, Chilly-Mazarin, all of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Aug. 30, 1972, Ser. No. 284,821**

**Claims priority, application France, Aug. 31, 1971, 7131466**

**Int. Cl. H01p** *5/12, 5/14*

**U.S. Cl. 333—10** **5 Claims**



This invention relates to a microwave directional coupler, having an easily adjustable coupling coefficient. In a short-slot hybrid junction comprising two adjacent waveguide sections having a common sidewall with a coupling slot, two dielectric slabs having their planes parallel to the common wall plane are disposed, in front of the slot, respectively in the two waveguide sections and symmetrically with respect to the common wall. Variations of the coupling coefficient are obtained by moving symmetrically the two slabs in a direction perpendicular to the common wall. This solution preserves the decoupling and matching characteristics of the coupler.

### 3,758,880

### WAVEGUIDE MODE COUPLER FOR SEPARATING WAVES OF USEFUL MODE FROM WAVES OF HIGHER MODE

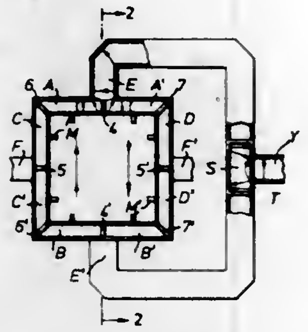
**Gunter Morz, Ludwigsburg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H.**

**Filed July 17, 1972, Ser. No. 272,138**

**Claims priority, application Germany, July 16, 1971, P 21 35 611.6; July 16, 1971, HGM 71 27 358.0**

**Int. Cl. H01p** *1/16, 5/12*

**U.S. Cl. 333—11** **6 Claims**



A mode coupler useful in ranging systems for evaluating higher waveguide wave modes resulting from aperture deviations of an antenna exciter for determining angular deviation in the azimuth plane as well as in the elevation plane. Waves of the useful mode are separated from waves of a higher mode. A first waveguide section for propagating all evaluatable wave modes is adapted to be coupled to an antenna. A second waveguide section for propagating exclusively the useful wave mode is connected in series with the first waveguide section. A gap is provided between the first waveguide section and the second waveguide section and is provided with a plurality of apertures for the higher wave modes in the direction of propagation of the waves. New modes corresponding to the higher wave modes are substantially excited by the useful mode containing the ranging signal.

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### 3,758,881

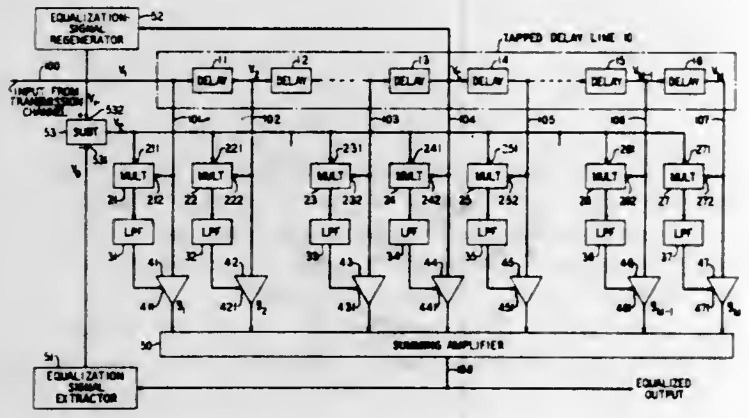
### TRANSVERSAL EQUALIZER CONTROLLED BY PILOT TONES

**William David Rummler, Mendham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**

**Filed Oct. 13, 1972, Ser. No. 297,497**

**Int. Cl. H04b** *3/10*

**U.S. Cl. 333—16** **7 Claims**


EQUALIZATION SIGNAL REGENERATOR
52
TAPPED DELAY LINE 10
INPUT FROM TRANSMISSION CHANNEL
SUBT
DELAY
MULT
LPF
SUMMING AMPLIFIER
EQUALIZATION SIGNAL EXTRACTOR
EQUALIZED OUTPUT

A transversal equalizer is controlled by harmonically related pilot tones transmitted along with the message signals. Two of the tones near the center of the transmission band differ in frequency by an amount equal to the fundamental frequency of the pilot tones. In the equalizer the two special tones are extracted from the center tap of the transversal equalizer and are used to generate amplitude and phase duplicates of the original pilot tones. At the output of the equalizer the distorted original pilot tones are separated from the message signal and subtracted from the duplicate tones, thereby creating an error signal. The control signals for the gains at each tap of the delay line of the transversal equalizer are then developed by cross-correlating the error signal with the tap voltages.

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### 3,758,882

### POLARIZATION CONVERTER FOR MICROWAVES

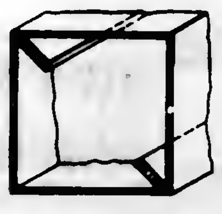
**Gunter Morz, Ludwigsburg, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**

**Filed Nov. 11, 1971, Ser. No. 197,897**

**Claims priority, application Germany, Nov. 11, 1970, P 20 55 443.2**

**Int. Cl. H01p** *1/16*

**U.S. Cl. 333—21 A** **18 Claims**



A microwave polarization converter for converting a linearly polarized wave into an elliptically, and particularly a circularly, polarized wave, the converter including a waveguide which propagates only two mutually orthogonal waves and coupling means disposed in the waveguide for coupling such orthogonal waves.

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### 3,758,883

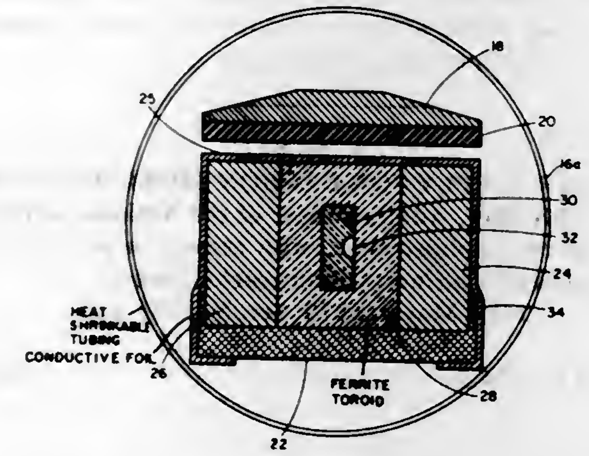
### COPPER FOIL FERRITE PHASE SHIFTER

**Richard M. Cox, and Evan Savatgy, both of Baltimore, Md., assignors to The Bendix Corporation, Baltimore, Md.**

**Filed May 15, 1972, Ser. No. 253,372**

**Int. Cl. H01p** *1/32*

**U.S. Cl. 333—24.1** **3 Claims**



A microwave phase shifter is comprised of thin aluminum channel base in which are placed a ferrite toroid and dielectric slabs to define a waveguide. A metal foil encloses the assembly, held in place by heat shrinkable tubing.

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### 3,758,884

### BAND-REJECTION FILTER USING PARALLEL-CONNECTED COMMUTATING CAPACITOR UNITS

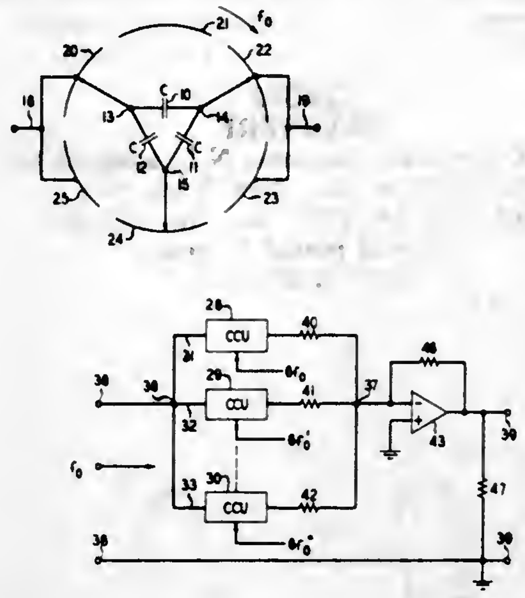
**Lawrence George Bahler, Berkely Heights, and Joseph Henry Condon, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**

**Filed July 24, 1972, Ser. No. 274,488**

**Int. Cl. H03h** *7/10, 7/16*

**U.S. Cl. 333—70 A** **13 Claims**

Plural commutating capacitor, 2-terminal, impedance units are included in parallel-connected branch circuits which are, in turn, connected in series in a signal path to suppress a predetermined signal frequency as well as certain harmonic frequency-rejection bands that would otherwise be present if a single commutating capacitor unit were employed. The plural units are essentially the same in structure and are driven for commutation switching at the same frequency but in different phases with respect to one another.



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### 3,758,885

### GYRATOR COMPRISING VOLTAGE-CONTROLLED DIFFERENTIAL CURRENT SOURCES

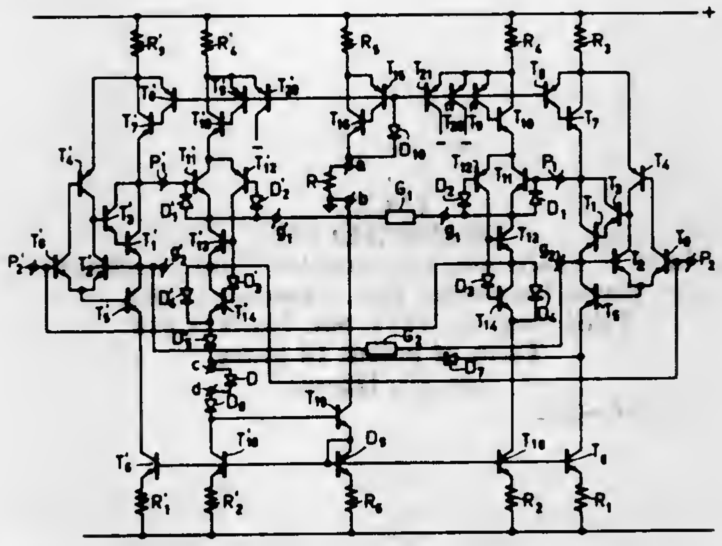
**Johannes Otto Voorman, and Arnoldus Biesheuvel, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.**

**Filed Oct. 5, 1972, Ser. No. 295,208**

**Claims priority, application Netherlands, Oct. 9, 1971, 7113893**

**Int. Cl. H03h** *7/44, 11/00*

**U.S. Cl. 333—80 T** **3 Claims**



The application relates to a gyrator which includes two voltage-controlled differential current sources. Two equivalent npn-transistors are used in one current source and two equivalent npn-transistors are used in the other current source. In addition steps have been taken in the gyrator to greatly reduce the D.C. offset currents at the input and output terminals.

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### 3,758,886

### VERSATILE IN LINE WAVEGUIDE TO COAX TRANSISTION

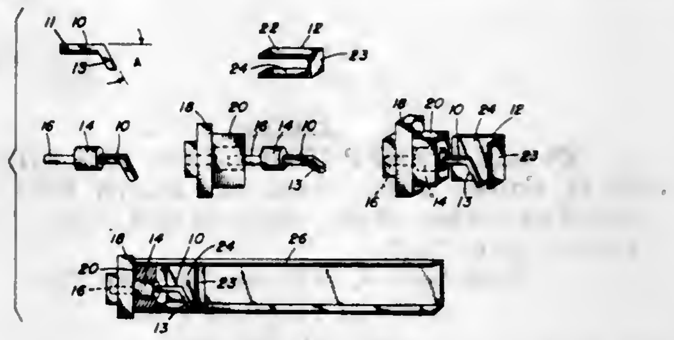
**Norman R. Landry, and Joseph P. Grabowski, both of Willingboro, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Nov. 1, 1972, Ser. No. 302,694**

**Int. Cl. H01p** *5/08, 1/00*

**U.S. Cl. 333—97 R** **9 Claims**

A microwave transition to interface between a coaxial cable and a waveguide comprises a hook-shaped exciter and a U-shaped dielectric loading transformer. The exciter is an extension of the inner conductor of the coaxial line. It enters the waveguide along its longitudinal axis and bends toward the top or bottom wall of the waveguide. The transformer surrounds the exciter with the open end located at the waveguide-coax interface.



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### 3,758,887

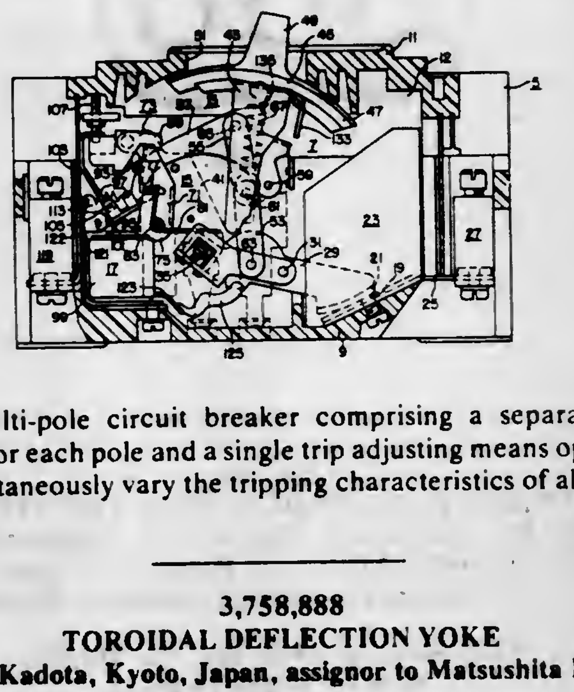
### MULTI-POLE CIRCUIT BREAKER WITH SINGLE TRIP ADJUSTMENT FOR ALL POLES

**James P. Ellsworth, Beaver, and John Majcher, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Feb. 6, 1968, Ser. No. 703,283**

**Int. Cl. H01h** *71/74*

**U.S. Cl. 335—8** **12 Claims**



A multi-pole circuit breaker comprising a separate trip device for each pole and a single trip adjusting means operable to simultaneously vary the tripping characteristics of all of the poles.

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### 3,758,888

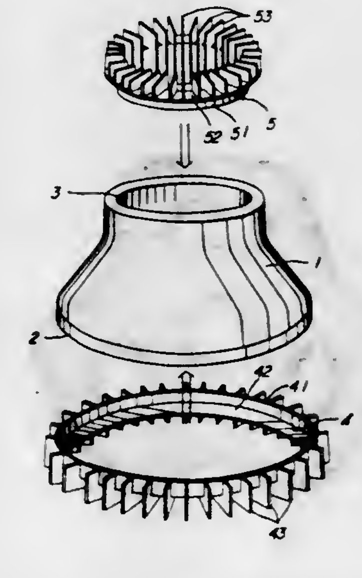
### TOROIDAL DEFLECTION YOKE

**Tokuzo Kadota, Kyoto, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan**

**Filed Mar. 7, 1972, Ser. No. 232,443**

**Int. Cl. H01f** *7/00*

**U.S. Cl. 335—210** **7 Claims**



A toroidal deflection yoke comprising a toroidal core, a pair of guide rings mounted on the toroidal core, each guide ring having a plurality of coil isolating partitions formed thereon, and horizontal and vertical deflection coils disposed between these partitions in such a manner that they are isolated from each other.

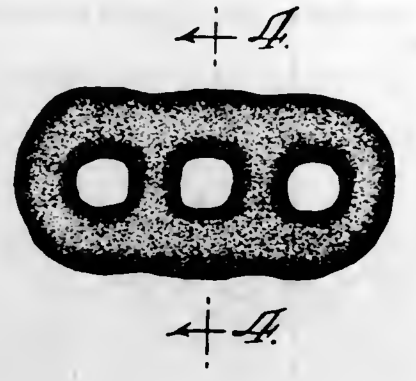
# DESIGNS

## SEPTEMBER 11, 1973

**228,320**

### SNACK FOOD PRODUCT OR THE LIKE

John D. Forbes, Battle Creek, and Joseph John Thompson, East Jordan, Mich., assignors to Kellogg Company, Battle Creek, Mich.
Filed Sept. 5, 1972, Ser. No. 286,270
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



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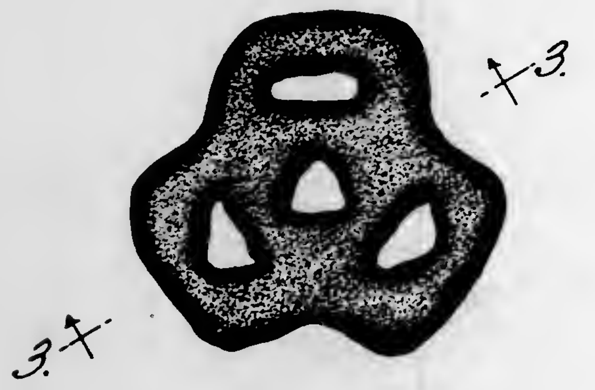
**228,321**

### SNACK FOOD PRODUCT OR THE LIKE

Richard M. Vondel and Clarence H. Soderlund, Battle Creek Township, Mich., and Ralph A. Maldari, Brooklyn, N.Y., assignors to Kellogg Company, Battle Creek, Mich.
Filed Sept. 18, 1972, Ser. No. 289,596
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



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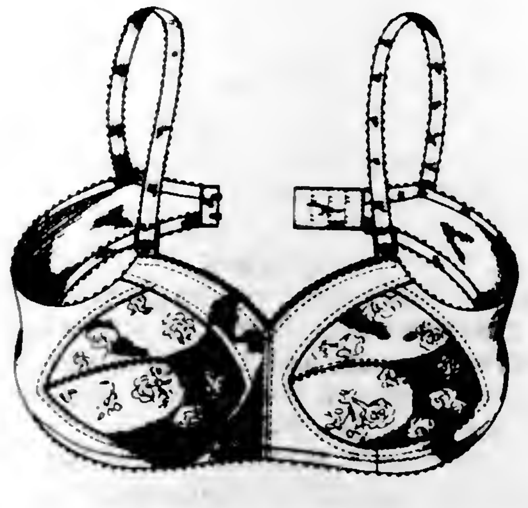
**228,322**

### BRASSIERE

Sam Guberman, Bayonne, N.J., assignor to Maidenform, Inc., New York, N.Y.
Filed Nov. 16, 1971, Ser. No. 199,403
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



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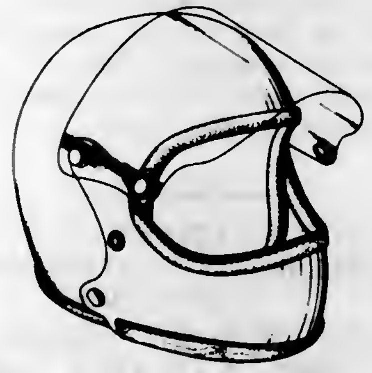
**228,323**

### CRASH HELMET

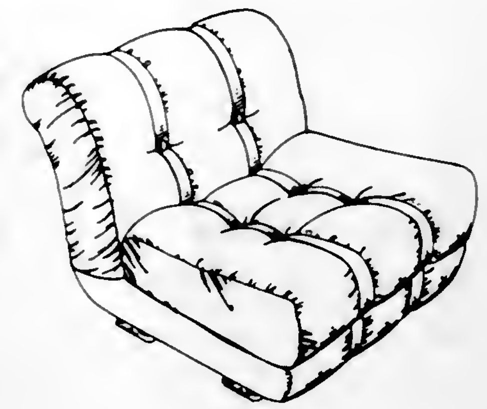
Richard P. MacCoon, Los Angeles, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Aug. 12, 1971, Ser. No. 171,418
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



**228,324**

### CHAIR OR SIMILAR ARTICLE

Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,196
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—47



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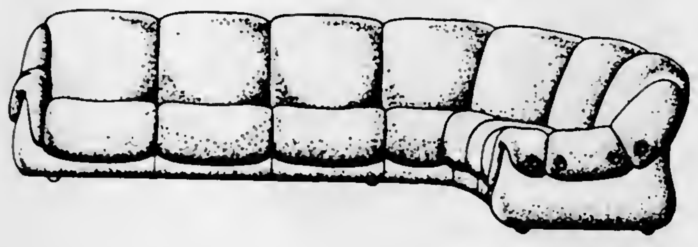
**228,325**

### SOFA OR SIMILAR ARTICLE

Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,198
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—63



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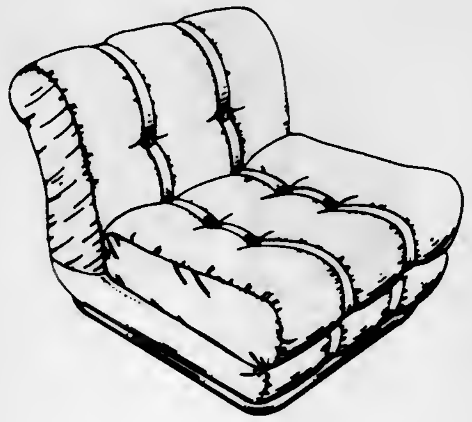
**228,326**

### CHAIR OR SIMILAR ARTICLE

Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,194
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



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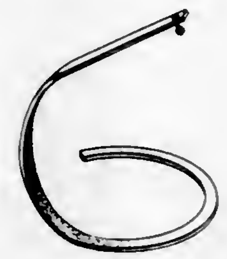
**228,327**

### DISPLAY STAND

Arthur E. Court, 10 Hotaling Place, San Francisco, Calif. 94111
Filed Sept. 17, 1971, Ser. No. 181,653
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



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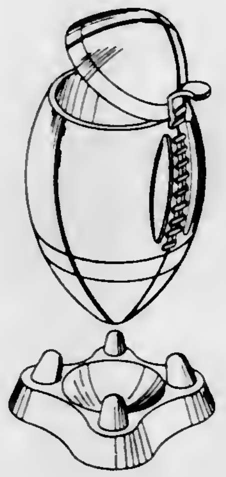
**228,328**

### COMBINED DRINKING MUG AND STAND THEREFOR

Kenneth E. Schley, 2481 Northland St., Cuyahoga Falls, Ohio 44221
Filed Feb. 19, 1971, Ser. No. 117,226
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



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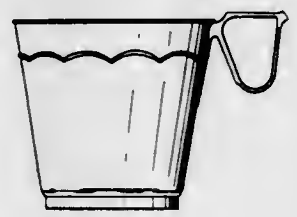
**228,329**

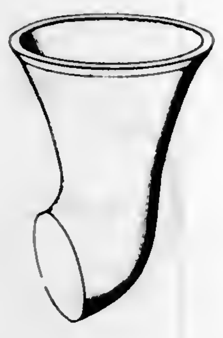
### CUP OR THE LIKE

Karl Wiedemann, Cherry Hill, N.J., assignor to Melitta, Inc., Cherry Hill, N.J.
Filed Aug. 10, 1971, Ser. No. 170,670
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



### 228,330
### DRINKING RECEPTACLE

Elvin M. Bright, Granada Hills, Calif., assignor to
Incolay Studios, Incorporated
Filed July 27, 1971, Ser. No. 166,658
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15



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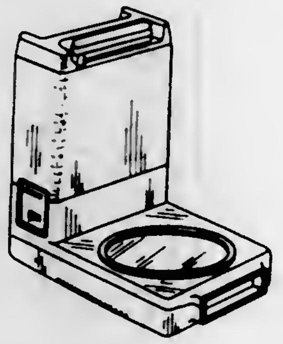
### 228,331
### WATER METERING APPARATUS FOR A COFFEE MAKER

Hans Joachim Hugo Julkenbeck, Wijnjeterp, Netherlands,
assignor to United States Philips Corporation
Filed Dec. 9, 1971, Ser. No. 206,593
Claims priority, application Switzerland June 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—41



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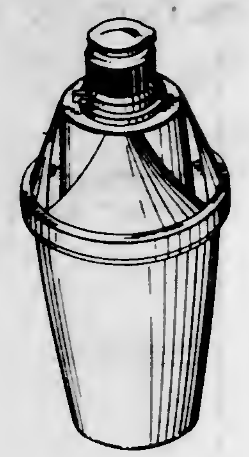
### 228,332
### METERING DISPENSING CONTAINER FOR GRANULAR MATERIAL

Jack V. Croyle, Woonsocket, and James B. Sweet, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 3, 1972, Ser. No. 215,245
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—52



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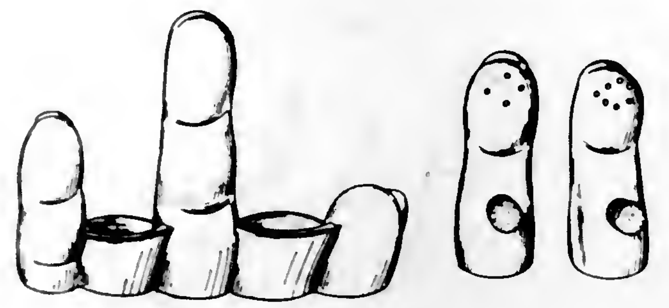
### 228,333
### COMBINED CONDIMENT STAND AND SHAKERS

Ute Berger, 75 Wandersmannstrasse Weisbaden-Erbenheim, Germany
Filed Apr. 15, 1971, Ser. No. 134,527
Claims priority, application Germany Oct. 15, 1970
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—56



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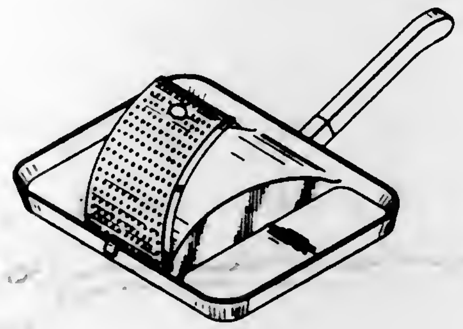
### 228,334
### FRYING PAN

John O. Kotila, 1728 Pendrell St., Vancouver,
British Columbia, Canada
Filed Sept. 20, 1971, Ser. No. 182,309
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



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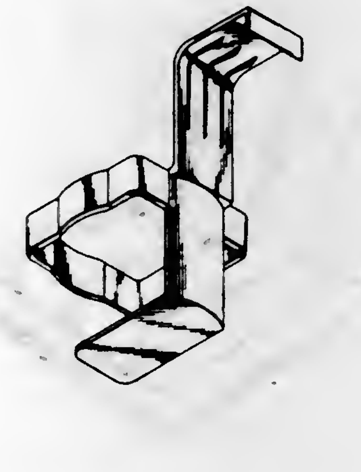
### 228,335
### BEVERAGE CONTAINER HOLDER

William E. Jackson, 3933 Jan Ave.,
Tyler, Tex. 75701
Filed Sept. 16, 1971, Ser. No. 181,281
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70



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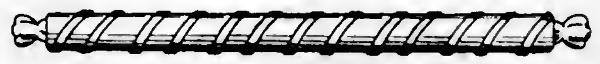
### 228,336
### ROLLING PIN OR THE LIKE

Hugh N. Pace, 3516 Poole Road,
Raleigh, N.C. 27610
Filed Jan. 11, 1971, Ser. No. 105,767
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99



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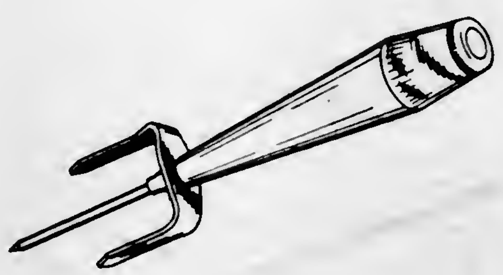
### 228,337
### FORK

Edmund M. Maynard, Santa Monica, Calif., assignor to
Gaydell, Inc., Santa Monica, Calif.
Filed June 23, 1972, Ser. No. 265,757
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—102



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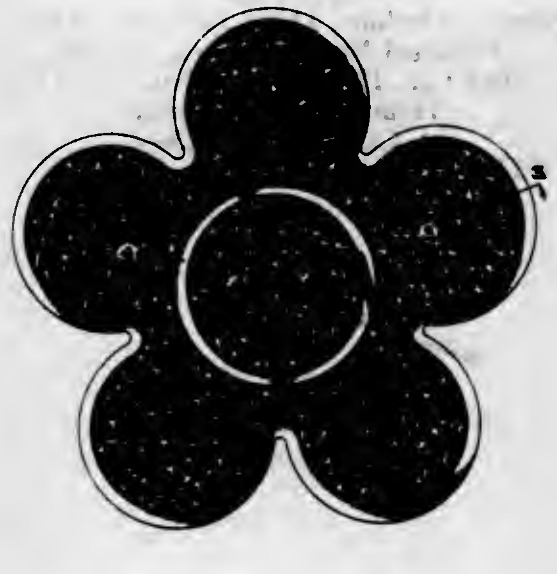
### 228,338
### BATH MAT

Robert A. O'Neil and Michael C. Wilson, Wheaton, Ill., assignors to Pretty Products, Inc., Coshocton, Ohio
Filed Feb. 14, 1972, Ser. No. 226,390
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D7—210



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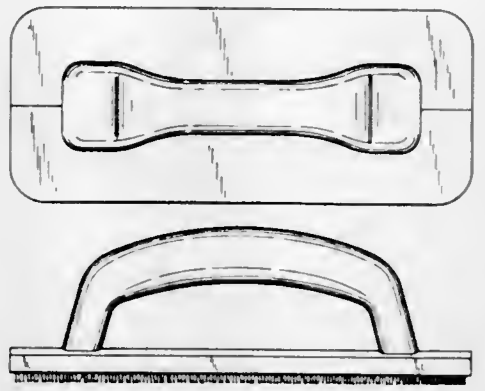
### 228,339
### PAD HOLDING DEVICE

Ronald O. Zemke, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 28, 1971, Ser. No. 194,090
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178



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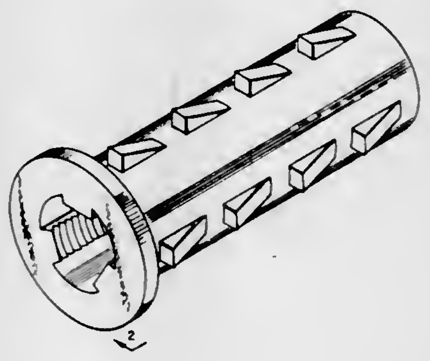
### 228,340
### THREADED ANCHORED INSERT

Fredrick J. Jennings, Fullerton, Calif., assignor to Like Manufacturing Corporation, Santa Fe Springs, Calif.
Filed Nov. 18, 1971, Ser. No. 200,272
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272



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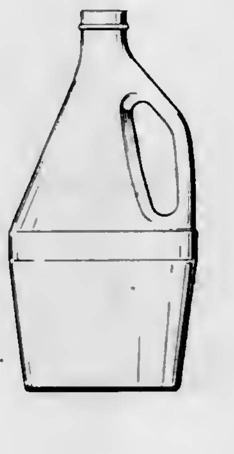
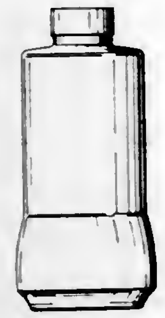
### 228,341
### BOTTLE

Peter L. Schweizer, Liberty Center, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 8, 1972, Ser. No. 233,014
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39



### 228,342
### BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed July 31, 1972, Ser. No. 276,430
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



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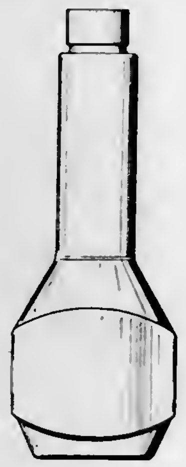
### 228,343
### BOTTLE
Edward J. Kretz, 6090 Saddlewood Drive,
Toledo, Ohio 43613
Filed Mar. 8, 1972, Ser. No. 233,016
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—127



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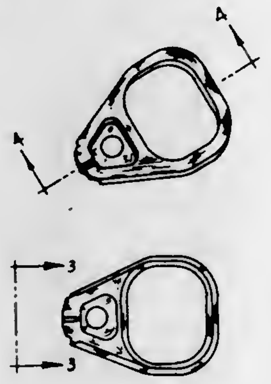
### 228,344
### PULL TAB
Herman R. Markert, Hartsville, S.C., assignor to Sonoco
Products Company, Hartsville, S.C.
Filed Apr. 6, 1972, Ser. No. 241,890
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—256



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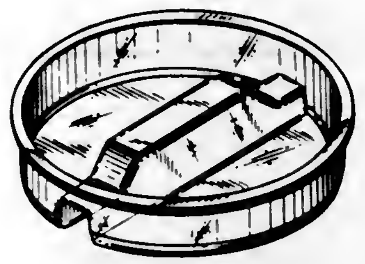
### 228,345
### CONTAINER CLOSURE
Eugene Kleinman, Montvale, N.J., assignor to Kayser-Roth Corporation, New York, N.Y.
Filed July 31, 1972, Ser. No. 276,861
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—264



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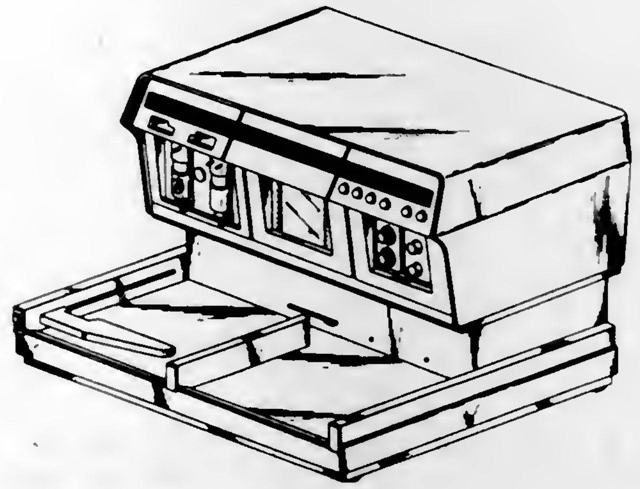
### 228,346
### AUTOMATIC PIPETTING AND ANALYSIS UNIT
Alfred M. Blumenfeld, Melrose Park, Pa., assignor to
Micromedic Systems, Inc., Philadelphia, Pa.
Filed Sept. 20, 1971, Ser. No. 182,304
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—2 C



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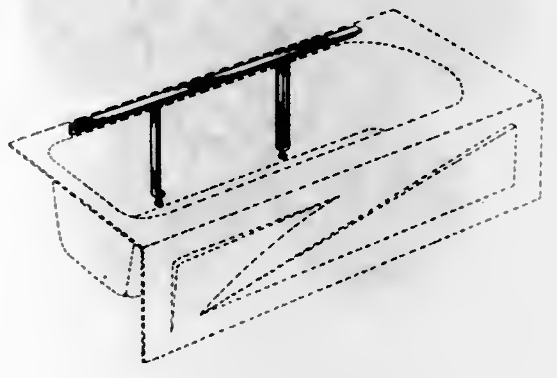
### 228,347
### SUPPORT FOR BATH
Normand Bolduc, 11048 Ethier St., Apt. 1,
Montreal North, Quebec, Canada
Filed Feb. 17, 1972, Ser. No. 227,313
Term of patent 14 years
Int. Cl. D8—*08;* D23—*02*
U.S. Cl. D23—70



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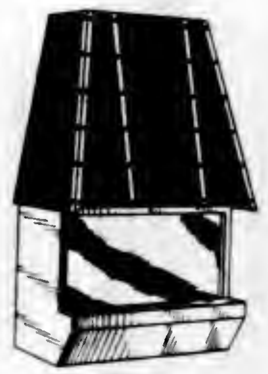
### 228,348
### FIREPLACE OR SIMILAR ARTICLE
Ray Derringer, Port Edwards, and Thomas F. Billmeyer,
Wisconsin Rapids, Wis., assignors to Preway Inc.
Filed Dec. 29, 1971, Ser. No. 213,777
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



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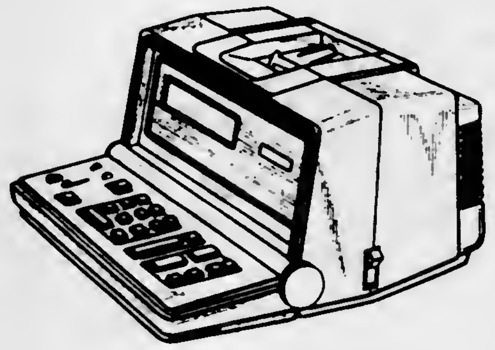
### 228,349
### ELECTRONIC CALCULATING MACHINE
Yoshihisa Oie, Osaka, Japan, assignor to Sharp
Corporation, Osaka, Japan
Filed Apr. 5, 1972, Ser. No. 233,847
Claims priority, application Japan Sept. 14, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



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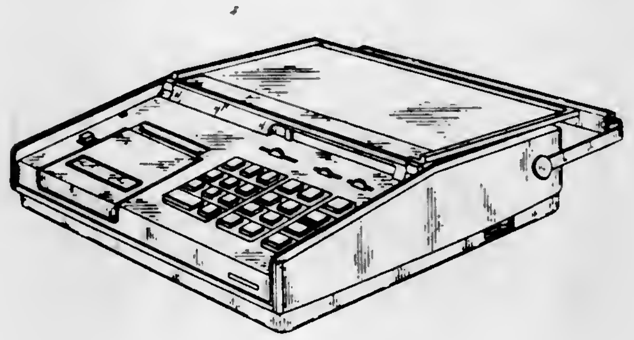
### 228,350
### ELECTRONIC CALCULATING MACHINE
Yoshisaburo Yoshida and Yoshihisa Ohie, Osaka, Japan,
assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed July 19, 1972, Ser. No. 273,024
Claims priority, application Japan Feb. 23, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



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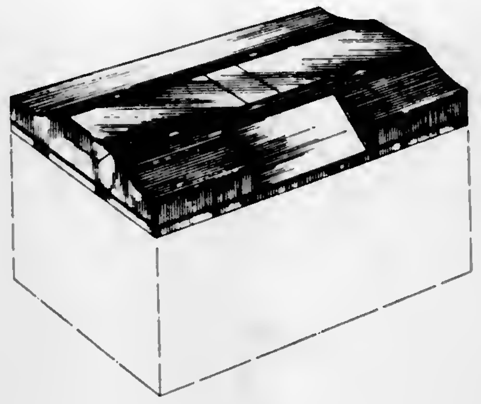
### 228,351
### BATTERY COVER
Jerome Louis Smentek, Milwaukee, Wis., assignor to
Globe-Union Inc., Milwaukee, Wis.
Filed Dec. 28, 1971, Ser. No. 213,234
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



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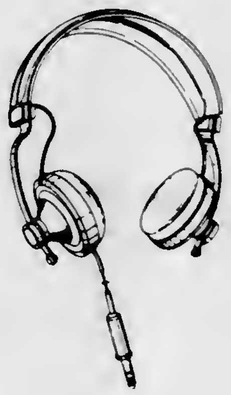
### 228,352
### HEADPHONE
Tadashi Itagaki, Tokyo, Japan, assignor to Pioneer
Electronic Corporation, Tokyo, Japan
Filed Nov. 22, 1971, Ser. No. 201,254
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H



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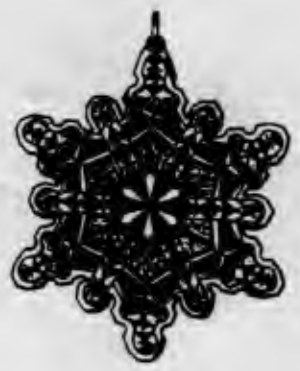
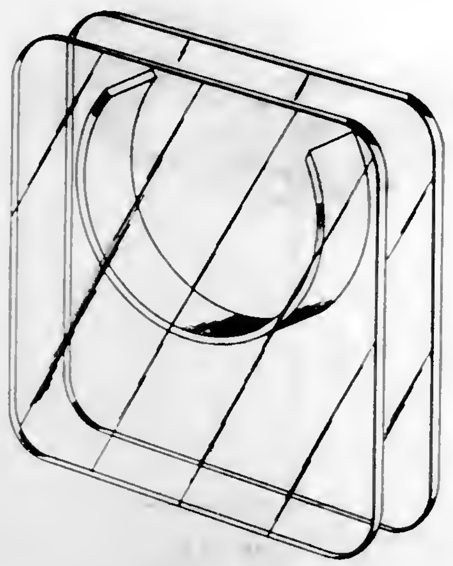
### 228,353
### CHRISTMAS ORNAMENT
James Russell Price, Esmond, and Richard S. Maiella,
Riverside, R.I., assignors to Gorham, a division of
Textron Inc., Providence, R.I.
Filed Feb. 4, 1972, Ser. No. 223,808
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1 B



### 228,354
### VASE

Mark A. Young, Washington, D.C.
(4212 Howard Ave., Kensington, Md. 20975)
Filed Mar. 15, 1973, Ser. No. 341,523
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D29—28 R



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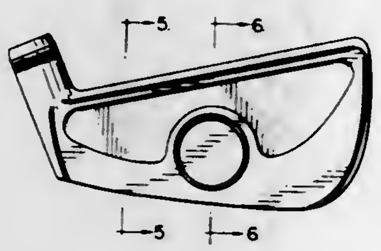
### 228,355
### GOLF CLUB HEAD

Toney Gerald Penna, 17 Ocean Drive,
Jupiter, Fla. 33458
Filed Jan. 19, 1972, Ser. No. 219,199
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—5 GH



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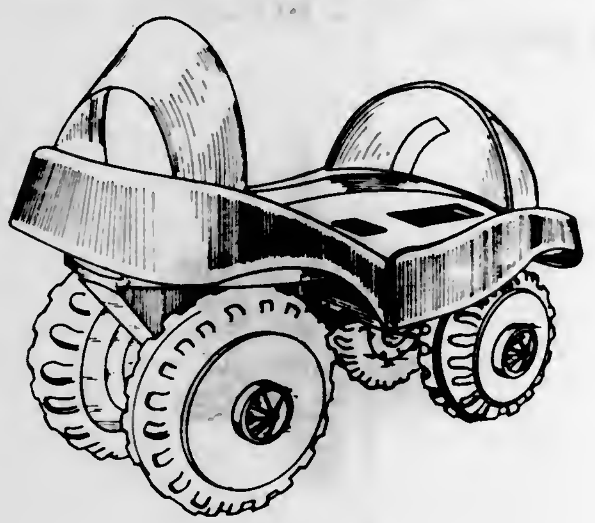
### 228,356
### ROLLER SKATE

Beverly W. Taylor, Hermann, Mo., assignor to Steven Manufacturing Co., Hermann, Mo.
Filed Sept. 27, 1971, Ser. No. 184,333
Term of patent 7 years
Int. Cl. D21—*02*

U.S. Cl. D34—15 M



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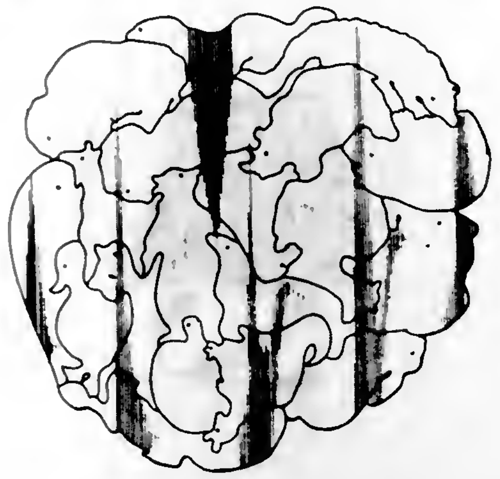
### 228,357
### JIGSAW PUZZLE

Ann S. Trageser, Valparaiso, Ind., assignor to
Voltek, Inc., Burlington, Mass.
Filed Sept. 15, 1971, Ser. No. 180,947
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 M



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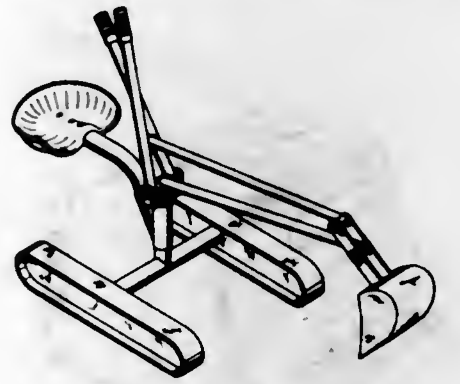
### 228,358
### PLAYGROUND BACKHOE APPARATUS

Robert S. Wormser and Ronald L. Ewers, Hillsdale, Mich., asssignors to Game Time, Inc., Hillsdale, Mich.
Filed Mar. 3, 1972, Ser. No. 231,792
Term of patent 14 years
Int. Cl. D21—*03*

U.S. Cl. D34—15 T



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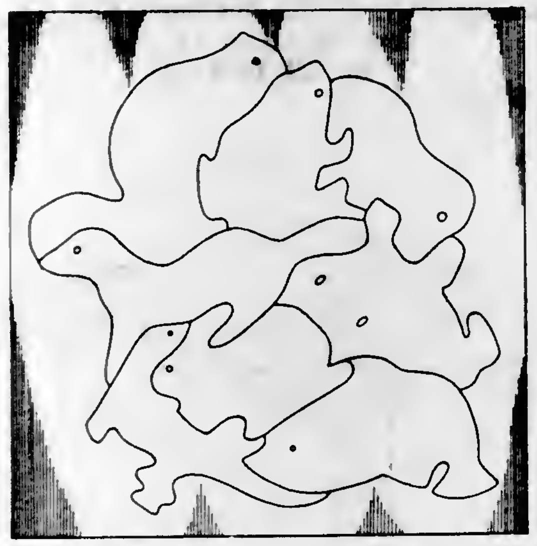
### 228,359
### JIGSAW PUZZLE

Margaret Jones, Methuen, Mass., assignor to
Voltec, Inc., Burlington, Mass.
Filed June 1, 1972, Ser. No. 258,937
Term of patent 14 years
Int. Cl. D21—*01*

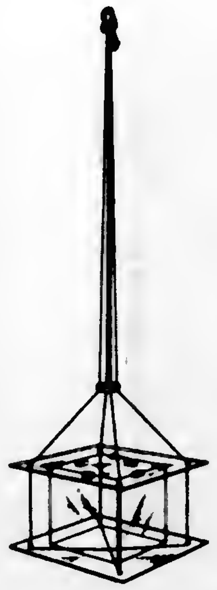
U.S. Cl. D34—15 M



### 228,360
### HANGABLE TERRARIUM

Richard B. Sunshine, 7118 Greenville Ave.,
Dallas, Tex. 75231
Filed June 7, 1972, Ser. No. 260,712
Term of patent 14 years
Int. Cl. D11—*02;* D30—*02*

U.S. Cl. D35—3 A



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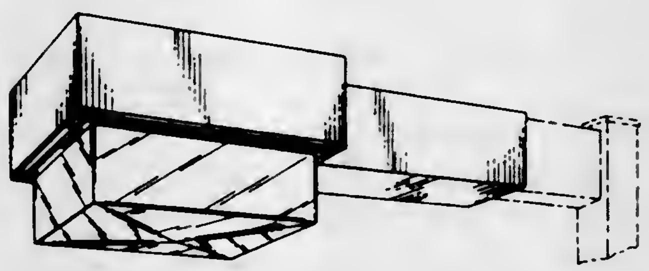
### 228,361
### LUMINAIRE

Robert T. Burns, Rocky River, and Alfred K. Goetz, Cleveland, Ohio, assignors to Westinghouse Electric Corporation
Filed Apr. 20, 1972, Ser. No. 246,097
Term of patent 14 years
Int. Cl. D26—*03*

U.S. Cl. D48—31



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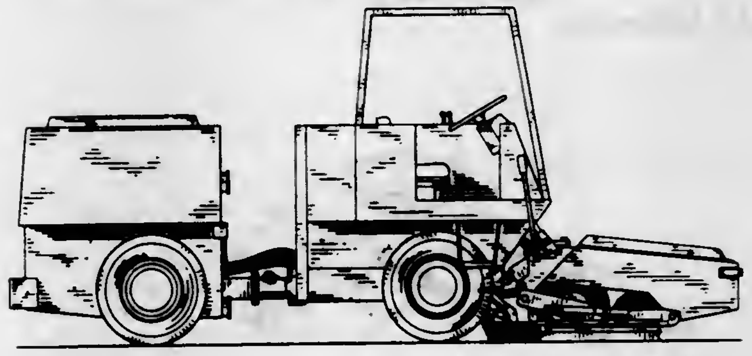
### 228,362
### SCRUBBING MACHINE

Keith N. Krier, Neil F. Brown, and Steven J. A. Waldhauser, Minneapolis, and John N. Polivka, Hopkins, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Apr. 18, 1972, Ser. No. 245,293
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D49—9.1



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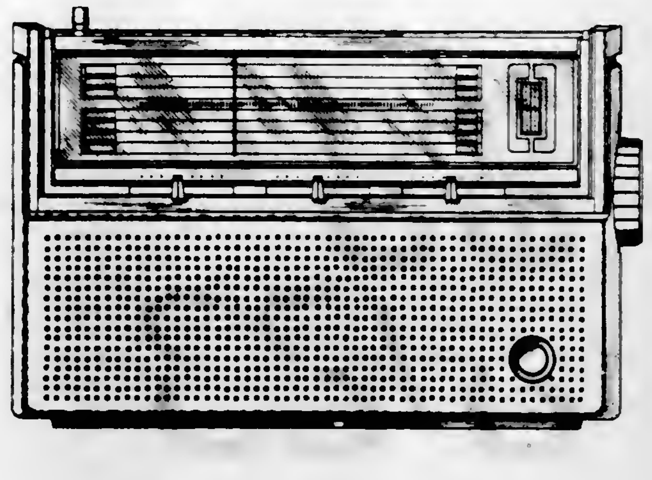
### 228,363
### MULTI-BAND PORTABLE RADIO

Cornelius W. Christie, Jr., Fulton, N.Y., assignor to
General Electric Company
Filed Dec. 2, 1971, Ser. No. 204,410
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4 B



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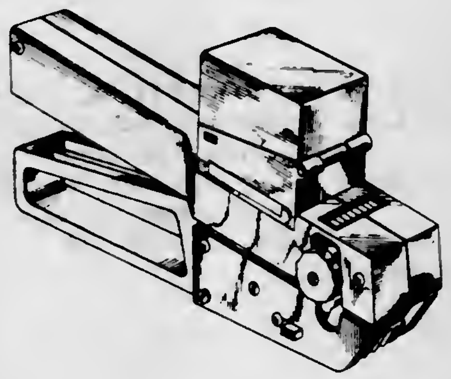
### 228,364
### LABEL PRINTING TOOL

James H. Lee, Walnut Creek, Calif., assignor to Dymo Industries, Inc., Emeryville, Calif.
Filed June 11, 1970, Ser. No. 23,443
Term of patent 14 years
Int. Cl. D18—*99*

U.S. Cl. D64—10



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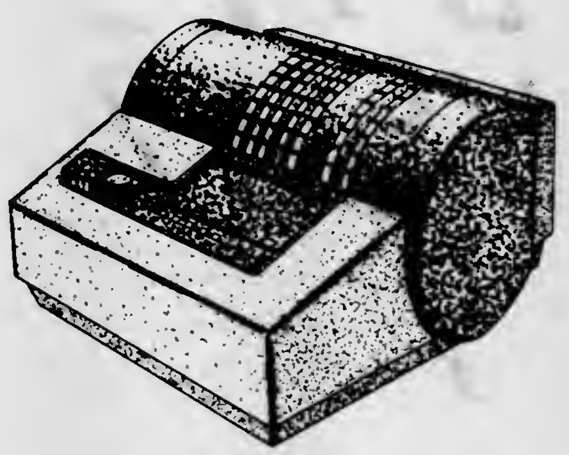
### 228,365
### CHECKWRITER

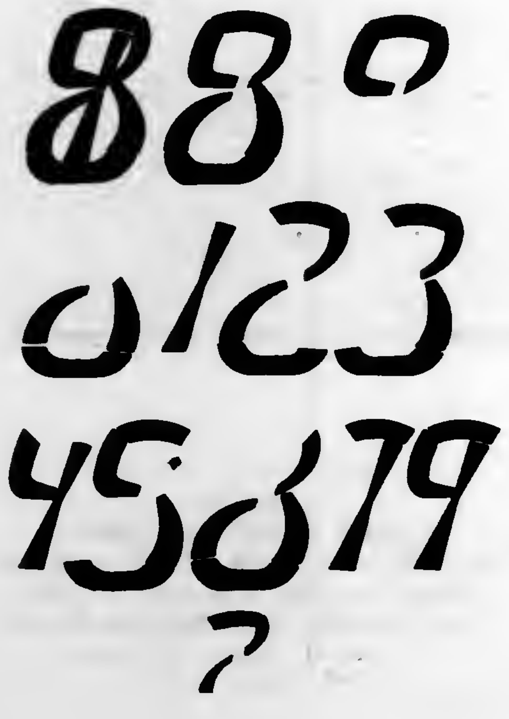
Stephen G. Hauser, Tarzana, Calif., assignor to
Addmaster Corporation, San Gabriel, Calif.
Filed Nov. 5, 1971, Ser. No. 196,266
Term of patent 14 years
Int. Cl. D18—*02*

U.S. Cl. D64—11 B



### 228,366
### FONT OF ELECTRO-OPTICAL CHARACTERS

**Brian Astle, Hightstown, N.J., assignor to Optel Corporation, Princeton, N.J.**
**Filed Feb. 17, 1972, Ser. No. 227,334**
**Term of patent 14 years**
**Int. Cl. D18—*04***
**U.S. Cl. D64—12 B**



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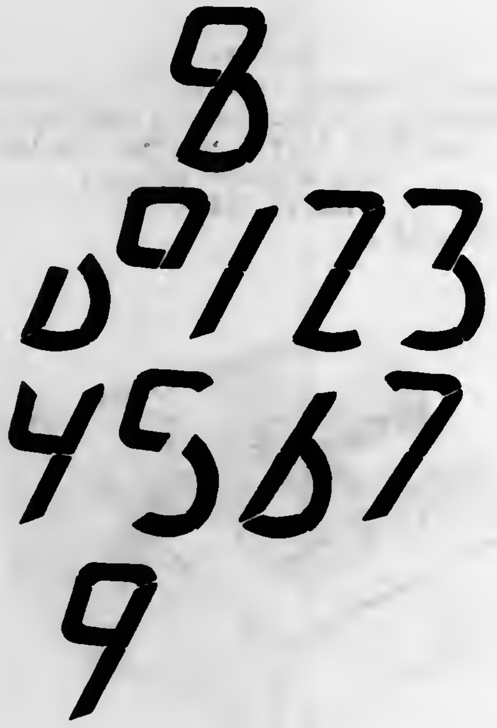
### 228,367
### FONT OF ELECTRO-OPTICAL CHARACTERS

**Brian Astle, Hightstown, N.J., assignor to Optel Corporation, Princeton, N.J.**
**Filed Feb. 17, 1972, Ser. No. 227,335**
**Term of patent 14 years**
**Int. Cl. D18—*04***
**U.S. Cl. D64—12 B**



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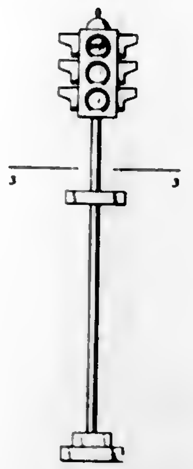
### 228,368
### WARNING LIGHT FOR SHOPLIFTERS IN STORES OR SIMILAR ARTICLE

**Robert J. Slavsky, Lathrup Village, Mich., assignor to Shaw & Slavsky, Inc., Detroit, Mich.**
**Filed Oct. 12, 1971, Ser. No. 188,644**
**Term of patent 14 years**
**Int. Cl. D29—*99***
**U.S. Cl. D72—1 E**



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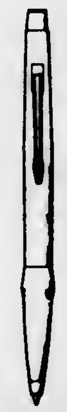
### 228,369
### WRITING IMPLEMENT

**Roland Longarzo, Valley Stream, N.Y., assignor to Consolidated Foods Corporation, Chicago, Ill.**
**Filed Oct. 5, 1971, Ser. No. 186,596**
**Term of patent 14 years**
**Int. Cl. D19—*06***
**U.S. Cl. D74—17 B**



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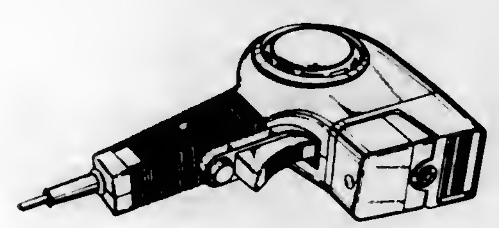
### 228,370
### HAIR DRYER

**Yoritaka Ikejima, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan**
**Filed May 18, 1972, Ser. No. 254,821**
**Term of patent 14 years**
**Int. Cl. D28—*03***
**U.S. Cl. D86—10 F**



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# LIST OF PATENTEES
## TO WHOM
## PATENTS WERE ISSUED ON THE 11TH DAY OF SEPTEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abe, Yasuo: *See*—
  - Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyomehi; Maeda, Akitoshi; and Morinaga, Fumihiko, 3,758,471.
- Abegg, Jean-Louis: *See*—
  - Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and De Beaulieu, Henri Philippe, 3,757,804.
- Abou-Zied, Aly: *See*—
  - Kogler, Werner; Kohler, Werner; and Abou-Zied, Aly, 3,758,702.
- Abrams, Herbert C.: *See*—
  - Hull, Henry E.; Abrams, Herbert C.; and Cummings, Charles A., 3,757,929.
- Abt, Reinhold: *See*—
  - Forster, Hans-Joachim M.; Katz, Klaus; and Abt, Reinhold, 3,757,602.
- Ackermann, Hans; Seiler, Herbert; and Dussy, Paul, to Ciba-Geigy AG. Triazinyl-anthraquinones. 3,758,470, Cl. 260-249.000.
- Acoustic Fiber Sound Systems Inc.: *See*—
  - Everitt, Scott F., 3,757,889.
- Adams, Gary V., to Thiokol Chemical Corporation. Release mechanism for flare parachute. 3,758,055, Cl. 244-149.000.
- Adams, John Howard, to Chevron Research Company. Normally solid crystalline polypropylene stabilized by aromatic esters of anthranilic acid. 3,758,437, Cl. 260-45.85a.
- Adams, Morris E., to General Motors Corporation. Lead acid storage battery plates and process for pasting them. 3,758,340, Cl. 136-67.000.
- Addressograph-Multigraph Corporation: *See*—
  - Richman, Edward B., 3,758,330.
  - Weber, Ralph A., 3,757,688.
- Adelsberg, Lee M.: *See*—
  - Tobin, Joseph M.; and Adelsberg, Lee M., 3,758,662.
- Adler, Kochs, AG: *See*—
  - Junemann, Hubert, 3,757,711.
- Adramopaulos, John. Combined land and air vehicle. 3,757,647, Cl. 91-482.000.
- Advanced Automated Equipment Ltd.: *See*—
  - Baljet, Daniel J.; Sodderland, George A.; and Hania, John D. H., 3,757,932.
- Ady, Irvin B.: *See*—
  - Smith, Charles T.; and Ady, Irvin B., 3,757,469.
- Aerpat A.G.: *See*—
  - Savage, Donald Stanley; and Brosser, Paul Edward, 3,757,417.
- Aga Aktiebolag: *See*—
  - Bostrom, Bertil Ingemar, 3,758,806.
- Agamian, Alexander. Situ apparatus for physical exercise with pedal action. 3,758,111, Cl. 272-73.000.
- Agee, Robert B.; and Cooke, William R., to Ethyl Corporation. Process for preparing crystalline sodium nitriloacetic acid. 3,758,565, Cl. 260-534.00e.
- Ahnsorge, Jurgen, to Schwarzkopl, Hans, GmbH. Device for testing the tightness of containers. 3,757,587, Cl. 73-45.400.
- Aiken, Vivian C.: *See*—
  - Aiken, Winthrop J., 3,757,782.
- Aiken, Winthrop J., to Aiken, Vivian C. Fluid pressurizable swab applicator for medicament, antiseptic or the like. 3,757,782, Cl. 128-269.000.
- Air Dry Corporation of America: *See*—
  - Whitten, David E., 3,758,069.
- Air Products and Chemicals Inc.: *See*—
  - Flank, William H., 3,758,539.
- Aircraft Mechanics, Inc.: *See*—
  - Pearne, Frank S., 3,758,253.
- Aisin Seiki Kabushiki Kaisha: *See*—
  - Kuwana, Kazutaka; Yamazaki, Hayao; and Sato, Takefumi, 3,758,166.
  - Momose, Yutaka, 3,757,915.
- Ajinomoto Co., Inc.: *See*—
  - Yoshida, Ryonosuke; Yoshimura, Ippei; and Takehara, Masahiro, 3,758,525.
- Akerson, David W.; and Miller, Duer L., to Conwed Corporation. Making molded fiber board. 3,758,357, Cl. 156-196.000.
- Aktiebolaget Hassle: *See*—
  - Carlsson, Per Arvid Emil; Corrodi, Hans Rudolf; Hallihagen, Sven Goran; and Junggren, Ulf Krister, 3,758,691.
- Aktiengesellschaft Gebruder Loepfe: *See*—
  - Stutz, Hansruedi, 3,758,216.
- Aktiengesellschaft Gebrueder Loepfe: *See*—
  - Loepfe, Erich; and Theiler, Hans Peter, 3,757,831.
- Albrecht, Richard E.; and Reeder, Terrence L., to Eastman Kodak Company. Film marking system. 3,757,653, Cl. 95-1.100.
- Albrecht, Wilhelm, to Daimler-Benz Aktiengesellschaft. Shifting lever for motor vehicle transmissions. 3,757,599, Cl. 74-473.000.
- Alexander, Ernest John; and Mooradian, Aram, to Sterling Drug Inc. Benzyl 1,2,3,4-tetrahydrocarbozale-3 or 4-carboxylates. 3,758,496, Cl. 260-315.000.
- Alexander, Wayne K.: *See*—
  - Dugger, William H.; and Alexander, Wayne K., 3,757,833.
- Ali, Syed Aejaz; and Shields, Robert Loren, to General Electric Company. Incinerator. 3,757,686, Cl. 110-8.00r.
- Allen, Douglas, to Uniroyal, Inc. Twister spool and method of winding yarn thereon. 3,758,045, Cl. 242-125.200.
- Allen, Judd F.: *See*—
  - Allen, Ralph Y.; and Allen, Judd F., 3,757,355.
- Allen, Ralph Y.; and Allen, Judd F., said Allen, Ralph Y. Allen, Judd F. Portable body waste collecting system. 3,757,355, Cl. 4-110.000.
- Alley, Ralph D., to Sherwood Medical Industries Inc. Suction drainage apparatus. 3,757,783, Cl. 128-277.000.
- Allgeyer, Guy H.; and Foote, James B., to Owens-Illinois, Inc. Pallet. 3,757,704, Cl. 108-51.000.
- Allied Chemical Corporation: *See*—
  - Anello, Louis G.; and Sweeney, Richard F., 3,758,543.
  - Barrett, Richard C., 3,758,324.
  - Fuhrmann, Robert; Sifniades, Stylianos; and Tunick, Allen Abraham, 3,758,581.
  - Litt, Morton H.; and Evans, Francis W., 3,758,538.
  - Santimauro, John F.; and Gerson, Herman, 3,758,321.
  - Stephenson, Robert L.; and Radke, Donald G., 3,758,131.
- Allied Products Corporation: *See*—
  - Dougherty, John S., 3,757,471.
- Allinger, Arlen W. Mini-cold plate portable cooler. 3,757,852, Cl. 165-47.000.
- Allis-Chalmers Corporation: *See*—
  - Olson, Donald R.; and Waddell, Eugene P., 3,758,041.
- Allis-Chalmers Manufacturing Company: *See*—
  - Manion, Jean P., 3,758,339.
- Allison, Birt: *See*—
  - Watson, James M.; and Allison, Birt, 3,758,622.
- Allphin, Nylen L., Jr.: *See*—
  - Reitsema, Robert H.; and Allphin, Nylen L., Jr., 3,758,548.
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Betke, Erich, to Dynamit Nobel Aktiengesellschaft. Apparatus for cementing together cut-to-size shank upper material. 3,757,373, Cl. 12-52.000.
Bezar, William, to Techni-Toll Inc. Tool for removing and inserting modules. 3,757,406, Cl. 29-203.00h.
Bhaskar, Surindar N.; Cutright, Duane E.; and Gross, Arthur, to United States of America, Army. Pulsating hydrojet lavage device. 3,757,806, Cl. 134-191.000.
Bice, Keith Charles, to Mindrill Limited. Drilling apparatus. 3,757,873, Cl. 173-43.000.
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Bil, Milus S., to Clairol Incorporated. Heterocyclic nitro-P-phenylenediamines. 3,758,499, Cl. 260-326.501.
Bill, Jacky, to Haefely, Emil, & Cie AG. Process and means for replacement of components and/or operating media in encapsulated installations. 3,757,404, Cl. 29-200.00d.
Bilow, Norman, to Hughes Aircraft Company. Method of preparing resin compositions. 3,758,630, Cl. 260-823.000.
Bingham, Wallace Karl, to Minnesota Mining and Manufacturing Company. Reflex-reflective structures including fabric and transfer foils. 3,758,192, Cl. 350-105.000.
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Binkley, Ralph N., to Western Electric Company, Incorporated. Multi-directional indexing apparatus. 3,757,963, Cl. 214-1.0bh.
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Bishop, David A., to International Business Machines Corporation. Right hand margin control system. 3,757,921, Cl. 197-19.000.
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Bivens, Donald Bernard; Patton, Leo Wesley; and Thomas, William Erbie, Jr., to Du Pont de Nemours, E. I., and Company. Hydrogenation of adiponitrile. 3,758,584, Cl. 260-583.00k.
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Meshulam, Avram M., 3,758,221.
Black, Richard A., to Bell Fibre Products Corporation. Carton divider. 3,758,018, Cl. 229-15.000.
Blackburn, Camille R.; and Schmelzer, Jurgen F., to Rathmans of Pall Mall Canada Limited. Cigarette inspection. 3,757,564, Cl. 73-45.100.
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Bledsoe, James O., Jr.; and Derfer, John M., to SCM Corporation. Hydrolyzed diels-alder adducts of ocimenol. 3,758,590, Cl. 260-598.000.
Bleiberg, Melvin L., to Atlantic Richfield Company, mesne. Method of inserting nuclear fuel rods in grid assembly. 3,757,403, Cl. 29-424.000.
Blutt, John Robert; and Harvey, Andrew Cecil, to Vermont Marble Company. Can body expanding and flanging apparatus. 3,757,555, Cl. 72-63.000.
Bohman, Carl E.: *See*—
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Boise Cascade: *See*—
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Boivin, Jean L.; and Tremblay, Meude, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Hydroxy-terminated polybutadienes. 3,758,426, Cl. 260-18.05n.
Bolger, John G., Jr., to Digilux Corporation. Arc printing of characters. 3,758,749, Cl. 219-216.000.
Bolick, Fred C., Jr.; and Godwin, James B., III, to Lanier Electronic Laboratory, Inc. Electrical condition control device for a transcribing machine. 3,758,726, Cl. 179-100.10r.
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Bollinger, Frederick W., to Merck & Co., Inc. Resolution of DL-α-methylphenylalanine. 3,758,559, Cl. 260-518.00r.
Bolyos, Imre. Pedestal system for tables, bookshelves, shop furnishings and the like. 3,758,181, Cl. 312-107.000.
Bomar, Russel Paul. Magazine holding a multiple number of screws to be used with an electric drill. 3,757,407, Cl. 29-212.00r.
Bond, William D.; and Paterson, Ray Wesley. Water-propelled pool purifying float. 3,758,276, Cl. 23-267.00a.
Bonikowsky, Gary Wayne. Pneumatic seat for cycles. 3,758,153, Cl. 297-199.000.
Bonner, Gilbert B.; and Brumbaugh, Philip A., to International Business Machines Corporation. Controlled tension ribbon cassette. 3,758,012, Cl. 226-168.000.
Bonyhard, Peter Istvan, to Bell Telephone Laboratories, Incorporated. Network for transposing signal bit interleaving patterns. 3,758,722, Cl. 179-15.00a.

Boosen, Karl-Josef, to Lonza Ltd. Method of manufacturing tetronic acid. 3,758,515, Cl. 260-343.600.
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Bostrom, Bertil Ingemar, to Aga Aktiebolag. Device for sealed electrode mounting. 3,758,806, Cl. 313-268.000.
Boue, Guy; and Vidberg, Marcel, to Automobiles Peugeot and Regie Nationale des Usines Renault. Device for regulating the flow of fuel injected into an internal combustion engine. 3,757,796, Cl. 123-97.00b.
Bouillon, Gratien; Tordion, Georges; and Tremblay, Gilles. Apparatus for testing the profile and the pitch of involute gear teeth. 3,757,425, Cl. 33-177.50d.
Bourbeau, Frank J., to General Motors Corporation. DC to AC static power converter with short cuicuit protection. 3,758,841, Cl. 321-14.000.
Bourns, Inc.: *See*—
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Bowden, Roy Dennis, to Imperial Chemical Industries Limited. Preparation of 2-alkpoly/hydroxy pyrimidines. 3,758,472, Cl. 260-251.00r.
Bowditch, Hoel L., to Foxboro Company, The. Pneumatic relay. 3,758,093, Cl. 267-159.000.
Bowlin, Calvin E.; and Dombrowski, Anthony E. Liquid-cooled underlying support for the human body. 3,757,362, Cl. 5-348.0wp.
Boyer, Nicodemus E., to Borg-Warner Corporation. Halogen containing phosphorus monools. 3,758,646, Cl. 260-95.000.
Bozek, John W. Hydraulic remote fluid flow indicating device. 3,757,577, Cl. 73-209.000.
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Bradley, John N.; and Haug, J. Edward, to Budd Company, The. Reinforced wheel rim. 3,758,161, Cl. 301-63.00r.
Brady, Kenneth John; and Catalina, Edward L.; deceased (by Catalina, Doris M.; administratrix). Method of and apparatus for abrasive peeling. 3,757,677, Cl. 99-630.000.
Braga, Albert T., to Whirlpool Corporation. Combination detergent dispenser and manual filter. 3,757,543, Cl. 68-17.00r.
Brandt, Paul H. Refrigerant metering system. 3,757,532, Cl. 62-278.000.
Brandt, Robert O. Force indicator. 3,757,589, Cl. 73-502.000.
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Braun, William V.; Brown, Daniel P.; and Leitich, Albert J., to Motorola, Inc. Selective calling squelch circuit for receiving systems. 3,758,860, Cl. 325-18.000.
Braunlich, Peter F., to Bendix Corporation, The. Surface imaging exoelectron microscope. 3,758,778, Cl. 250-307.000.
Brayshaw, Forrest G.; and Roberts, Theodore S., to Bio-Tel Western Inc. Physiological pressure sensing and telemetry means employing a diode connected transistor transducer. 3,757,770, Cl. 128-2.00r.
Breeden, Robert H., to Sperry Rand Corporation. Power transmission. 3,758,235, Cl. 417-222.000.
Breetvelt, Emile, to Intermenua (Proprietary) Limited. Guillotines and like shearing machines. 3,757,621, Cl. 83-157.000.
Breslow, Jeffrey D.; and Glass, Marvin I., to Glass, Marvin, & Associates. Doll with movable part for coaction with movable part of accessory. 3,757,463, Cl. 46-118.000.
Breslow, Jeffrey D.; and Jaworski, Eugene, to Glass, Marvin, & Associates. Smoking apparatus. 3,757,801, Cl. 131-171.00r.
Bridgeford, Ronald E.; and Cawi, Vernon A., to Phillips Petroleum Company. Production of motor fuels. 3,758,401, Cl. 208-78.000.
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Briem, Fritz, to Briem, Marietta and Binkert, Zita, nee Briem. Method of preserving hops. 3,758,310, Cl. 99-50.500.
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Brooks, Joseph F.; and Schaefer, Harold W., to National Union Electric Corporation. Belt drive assembly. 3,757,382, Cl. 15-389.000.
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Brown, Martin L., to Du Pont de Nemours, E. I., and Company. Dual latex adhesive system. 3,758,362, Cl. 156-310.000.
Brown, Omar L., to Fraze, Ermal C. Can end with inseparable tear strip. 3,757,989, Cl. 220-54.000.
Bruce, Roger K.; and Marhold, Werner, to Sterigard Corporation. Apparatus for advancing and retracing a dispenser body to and from a bag applicator. 3,757,651, Cl. 93-36.000.
Bruckmann, Paul-Gunther: *See*—
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Brudi, Ronald A.; and Hamlik, Jerry P., to Brudi Equipment Inc. Tote pan handler attachment for lift trucks. 3,757,977, Cl. 214-620.000.
Brukovsky, Igor Pavlovich; Yakovlev, Pavel Borisovich; Gutterman, Kirill Davidovich; Perov, Alexandr Vasilievich; Hukov, Vladimir Fedorovich; Nekrasova, Larisa Petrovna; and Ivanovsky, Jury Dmitrievich. Device for automatically controlling electrical condiions of an electron beam unit. 3,758,816, Cl. 315-137.000.
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Brunel, Francis J.; and Diacont, George P., to AMF Incorporated. Armhole felling machine. 3,757,712, Cl. 112-132.000.
Brunnee, Curt; and Jenckel, Ludolf, to Varian Mat GmbH. Ion source for vaporing and ionizing solid substances. 3,758,777, Cl. 250-425.000.
Bruno, August Joseph: *See*—
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Buck, Gordon H.; Bales, Joseph H.; and Prodger, Brian S. Powered dragster having lateral stability coacting with track. 3,757,459, Cl. 46-202.000.
Buck, Willard E.; and Holland, Thomas E., to Technical Operations, Incorporated. Optical raster producing system. 3,758,715, Cl. 178-7.600.
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- Buhler, Otto R.; and Cutter, Joseph T., to International Business Machines Corporation. Exponential predictor and sampled-data systems. 3,758,757, Cl. 235-150.001.
- Bungo, Edward M.: *See—*
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- Bunn, Dorrance P., Jr.: *See—*
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- Bunting, William M.; and Langer, Arthur W., Jr., to Esso Research and Engineering Company. Complexes of inorganic sodium compounds and chelating amines. 3,758,585, Cl. 260-583.00p.
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- Burgarella, John P., to Polaroid Corporation. Photoflash apparatus. 3,757,643, Cl. 95-11.00r.
- Burgess, Colin M.; Feather, Peter; and Goatly, Philip H., to BDH Pharmaceuticals Limited. 17α-(5'-Substituted-5'-hydroxy-penta-1',3'-divinyl)-steroids. 3,758,521, Cl. 260-397.500.
- Burgess, Ronald R.; Coleman, Michael G.; and Grenon, Lawrence A., to Motorola, Inc. Light emitting diode display for electronic timepiece. 3,757,511, Cl. 58-50.00r.
- Burke, Harold J., to General Motors Corporation. Collapsible steering column assembly. 3,757,601, Cl. 74-492.000.
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- Burton, Maurice G. Mobile unit with overhead compartment. 3,758,147, Cl. 296-23.00r.
- Bush, Roy L.; and Beattie, Harold R., to Continental Oil Company. Apparatus for securing small diameter conduit to a larger diameter tubing string or the like. 3,757,387, Cl. 24-81.0cc.
- Butera, Thomas, Jr.: *See—*
  - Stasio, Robert; and Butera, Thomas, Jr., 3,758,219.
- Buth, Wallace R. Disposable flexible liner for paint trays. 3,757,990, Cl. 220-63.00r.
- Buysch, Hans-Josef; Krimm, Heinrich; and Margotte, Dieter, to Bayer Aktiengesellschaft. 2-(Hydroxyphenyl)-2-(isopropenylphenyl)-propanes, processes for their manufacture. 3,758,597, Cl. 260-613.00r.
- Bykhovsky, David Grigorievich; and Medvedev, Alexandr Yakovlevich. Inclusion hafnium electrode with uses in an active medium. 3,758,746, Cl. 219-145.000.
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- Callan, John E., to Cities Service Company. Extruder. 3,758,001, Cl. 222-146.000.
- Camacho, George T. Fixture for saw. 3,757,628, Cl. 83-745.000.
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- Cameron, Bruce M. Shoe and method of making same. 3,757,437, Cl. 36-59.00r.
- Campbell, Ronald F., to Chemetron Corporation. Method for carbon dioxide snow separation. 3,757,367, Cl. 62-10.000.
- Campen, Jan P.; Spitzer, Ernst L.T.M.; Senden, Wilhelmus A. A.; and Hill, Jeffrey S., to Shell Oil Company. Process for producing sulphonium compounds. 3,758,594, Cl. 260-607.00r.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
  - Boivin, Jean L.; and Tremblay, Meude, 3,758,426.
- Canadian General Electric Company Limited: *See—*
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- Canadian Industries Limited: *See—*
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  - Candor, Robert R.; and Candor, James T., 3,757,426.
- Candor, Robert R.; and Candor, James T. Liquid removing method. 3,757,426, Cl. 34-1.000.
- Cannon, Robert L.; Goldberg, Herbert E.; Thaler, Sherwood S.; and Daynard, Richard F., to American Optical Corporation. Temporary power supply for a heart-stimulating device. 3,757,794, Cl. 128-419.00p.
- Canon Kabushiki Kaisha: *See—*
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- Cantaloube, Bernard Andre: *See—*
  - Caruel, Jacques Emile Jules; Cantaloube, Bernard Andre; Stora, Guy Daniel; Bedue, Jean Robert; Gastebois, Philippe Marc Denis; and Guillevere, Herve Alain, 3,757,522.
- Cantz, Rolf J., to Kennametal Inc. Tire stud. 3,757,841, Cl. 152-210.000.
- Canup, Robert E., to Texaco Inc. Saturable-core square wave oscillator circuit. 3,758,821, Cl. 315-209.00t.
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- Carder, Mervin L. Fluid dispensing nozzle and latchpin therefor. 3,757,834, Cl. 141-225.000.
- Carlsson, Per Arvid Emil; Corrodi, Hans Rudolf; Hallihagen, Sven Goran; and Junggren, Ulf Krister, to Aktiebolaget Hassle. Substituted hydroxyphenyl-alkylamines in the treatment of mental illness. 3,758,691, Cl. 424-330.000.
- Carner, Walter J., to Institute of Gas Technology. Engine control apparatus. 3,757,755, Cl. 123-148.00e.
- Carpiciani, Poerio. Float valve for dry washing machines. 3,757,542, Cl. 68-12.00r.
- Carr, Robert L., to Goodrich, B. F., Company, The. Belted pneumatic tire. 3,757,843, Cl. 152-301.0dm.
- Carroll, Joseph E. Egg cooking device. 3,757,674, Cl. 99-440.000.
- Cartridge Television, Inc.: *See—*
  - Crosno, Philip M., 3,758,710.
  - Crosno, Philip M., 3,758,711.
- Caruel, Jacques Emile Jules; Cantaloube, Bernard Andre; Stora, Guy Daniel; Bedue, Jean Robert; Gastebois, Philippe Marc Denis; and Guillevere, Herve Alain, to Societe Nationale d'Etude et de Construction de. Devices for pre-vaporising liquid fuel. 3,757,52, Cl. 60-39.710.
- Carus Corporation: *See—*
  - Anderson, Fred J.; and Kessler, Jack L., 3,758,391.
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- Case, J. I., Company: *See—*
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- Cass, William E.: *See—*
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- Cassar, Richard D., to Sun Research and Development Co. Crosslinked polyurea from dihydrazides of methylated muconic acids. 3,758,637, Cl. 260-859.000.
- Catalina, Doris M.: *See—*
  - Brady, Kenneth John; and Catalina, Edward L., 3,757,677.
- Catalina, Edward L.: *See—*
  - Brady, Kenneth John; and Catalina, Edward L., 3,757,677.
- Caton, James E.: *See—*
  - Pfenning, Ray C.; and Caton, James E., 3,757,625.
- Cattin, Walter J.; and Paffrath, Edgar C., to General Motors Corporation. Dual roller throttle control-cable mechanism. 3,757,603, Cl. 74-513.000.
- C.A.V. Limited: *See—*
  - Kemp, Kenneth Albert Walters; and Sosnowski, Stanislaw Jan Antoni, 3,758,240.
- Cavanagh, John R.: *See—*
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- Cawi, Vernon A.: *See—*
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- C.C.L. Systems Limited: *See—*
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- Celanese Corporation: *See—*
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  - Rich, Ernest Joseph, 3,758,373.
- Century Laboratories Inc.: *See—*
  - Rovinski, Walter M., 3,757,779.
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  - Godfroid, Jean Jacques; and Thuillier, Jean Eugene, 3,758,506.
- Ceskoslovenska Akademie ved: *See—*
  - Hrdina, Jiri, 3,758,239.

- Chae, Hi Chul; Gelinas, Richard; Trusty, Jon Caton; and Berntsen, Walter H., to Lilly, Eli, and Company. Electronic system and method for capsule inspection. 3,757,943, Cl. 209-111.700.
- Chamberas, George Athanasios, to RCA Corporation. Simulated load for internal combustion engines. 3,757,571, Cl. 73-116.000.
- Chamberlin, Virgil W., to Lockheed Aircraft Corporation. Variable height stairs for work platform. 3,757,894, Cl. 182-106.000.
- Chan, Chee Keung, to M & T Chemicals Inc. Novel zinc plating process. 3,758,386, Cl. 204-55.000.
- Chance, A. B., Company: *See—*
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- Chandra, Grish; Owen, William John; Lloyd, Norman Cecil; and Cooper, Bryan Ewart, to Midland Silicones Limited. Organosilicon compounds. 3,758,541, Cl. 260-448.20q.
- Chang, Charles H., to GAF Corporation. Anthraquinone dyes containing N-methylenelactam. 3,758,505, Cl. 260-326.50c.
- Chang, Richard S.; Staats, William A.; Bosley, Denis V.; and Yamasaki, Toshio, to Mattel, Inc. Impact-damage-resistant, propeller-driven toy. 3,757,461, Cl. 46-243.0av.
- Chang, Yun Feng: *See—*
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- Chapman, Walter Harry: *See—*
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- Chatterji, Jiten: *See—*
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- Chavet, Itzhak, to State of Israel, Atomic Energy Commission. Control mechanism for the fine positional adjustment of an object. 3,757,962, Cl. 214-1.0cm.
- Cheale, Daniel, to Howard Harvestore Limited. Chain links. 3,757,595, Cl. 74-245.00c.
- Cheatham, Burton L., II: *See—*
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- Chemical Construction Corporation: *See—*
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- Chen, Nai Yuen; and Lucki, Stanley J., to Mobil Oil Corporation. Selective catalysis. 3,758,602, Cl. 260-676.00r.
- Cherniavskyj, Jaroslav: *See—*
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- Chessin, Hyman; and Best, Maurice P., to M & T Chemicals Inc. Novel chromium plating compositions. 3,758,390, Cl. 204-51.000.
- Cbet Industries (Proprietary) Limited: *See—*
  - Kessler, Cecil, 3,758,246.
- Chevron Research Company: *See—*
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- Chiabrandy, Robert E., to General Electric Company. Bolt accelerator for recoil operated gun. 3,757,636, Cl. 89-169.000.
- Chiang, Ta-kuan. Electrostatic cigarette filtering arrangement. 3,757,803, Cl. 131-188.000.
- Chicago Display Company: *See—*
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- Chisholm, James Edwards; Hicks, Clark Thomas; and Buonaura, Anthony, to Formica Corporation. Free-standing shower. 3,757,358, Cl. 4-146.000.
- Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
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  - Wilder, Arthur G.; and Bridwell, Harold C., 3,757,879.
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  - Martin, Henry; and Pissiotas, Georg, 3,758,579.
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  - Seitz, Karl; Klahre, Guenter; and Scheutz, Hans-Ulrich, 3,758,467.
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  - Lucas, Robert Armistead, and Blatter, Herbert Morton, 3,758,473.
  - Marxer, Adrian, 3,758,527.
- Cichowski, Robert S., to Phillips Petroleum Company. Processes for the oxidative dehydrogenation of hydrocarbon feedstocks. 3,758,609, Cl. 260-680.00e.
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- Cities Service Company: *See—*
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- Clairol Incorporated: *See—*
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- Clampitt, Richard L.; and Curzon, James E., to Phillips Petroleum Company. Secondary recovery methods. 3,757,863, Cl. 166-307.000.
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- Claxton, Lindsay Graham, to Mindrill Limited. Drilling apparatus with mast filling about upper point axis fixed against horizontal translation. 3,757,874, Cl. 173-43.000.
- Clements, Michael John. Removal of gases from containers. 3,757,865, Cl. 169-2.00r.
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- Clonts, Kenyon E., to Merichem Company. Liquid-liquid mass transfer process and apparatus. 3,758,404, Cl. 208-263.000.
- Cloud, Charles E., to Cloud Machine Corporation. Cutting apparatus. 3,757,620, Cl. 83-88.000.
- Cloud Machine Corporation: *See—*
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- Coates, Clarence A., Jr.: *See—*
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- Cobble, James T., to B & J Machinery Company, Inc. Knife block for a tufting machine. 3,757,709, Cl. 112-79.00r.
- Codrino, Giuseppe. Metal cable terminal for light guiding cable. 3,758,189, Cl. 350-96.00b.
- Cogar Corporation: *See—*
  - Boisvert, Conrad J., Jr.; and Mandia, Anthony L., 3,758,759.
- Cohen, Abraham D., to Esso Research and Engineering Company. Dehydrogenation catalyst. 3,758,625, Cl. 260-669.00r.
- Cohen, Hyman L.; King, James R., Jr.; and Minsk, Louis M., to Eastman Kodak Company. Novel polymers and photographic elements containing same. 3,758,445, Cl. 260-78.0sc.
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- Compagnie Generale des Etablissements Michelin raison Sociale Michelin & Cie: *See—*
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- Computer Identics Corporation: *See—*
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- Connelly, William; Sydenham, Leonard; and Szilagyi, John, to Canadian Industries Limited. Acrylic coating compositions. 3,758,428, Cl. 260-17.00r.
- Connor, Daniel S.; and Krummel, Harry Karl, to Procter & Gamble Company, The. Detergent composition containing a homogeneously polyfunctionally-substituted aromatic acid sequestering agent. 3,758,420, Cl. 252-550.000.
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- Cook, Toby M.; and Tucker, Gerald L., to Mississippi Chemical Corporation. Ammonium nitrate neutralizer. 3,758,277, Cl. 23-285.000.
- Cook, Walter F. Display holder. 3,757,442, Cl. 40-128.000.
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- Coombes, James Eric. Tool. 3,757,376, Cl. 15-202.000.
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- Coughlin, Joseph F.; and Ruszkay, Richard J., to Du Pont de Nemours, E. I., and Company. Process for controlling molecular weight of alpha-olefin polymers. 3,758,446, Cl. 260-80.780.
- Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. Catalytic addition of secondary aliphatic amines to ethylene in presence of rhodium or iridium salts. 3,758,586, Cl. 260-583.00r.
- Cousin, Barry D., to Plas/Steel Products, Inc. Archery bow with removable inserts to vary draw force. 3,757,762, Cl. 124-24.000.
- Covarrubtas, George S., to CBF Systems, Inc. Shear valve and frangible fitting. 3,757,810, Cl. 137-68.000.
- Cowan, Joseph Lamar, to Honeywell Information Systems Inc. Error detection for arithmetic and logical unit modules. 3,758,760, Cl. 235-153.0bb.
- Cowley, Richard Thomas; and Hulls, Leonard Robin, to RCA Corporation. Simulated load for internal combustion engines. 3,757,570, Cl. 73-116.000.
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- Cox, Richard M.; and Savatgy, Evan, to Bendix Corporation, The. Copper foil ferrite phase shifter. 3,758,883, Cl. 333-24.100.
- Cox, Thomas L.; and Rodriguez, David G., to J & J Manufacturing Company. Palletizing apparatus. 3,757,966, Cl. 214-6.00p.
- Craik, Darrel W., to Teledyne, Inc. Method of manufacturing sealing rings. 3,757,413, Cl. 29-557.000.
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- Crawford, David Lee; Earl, Robert Brooks; and Monroe, Roger F., to Dow Chemical Company, The. Friction reducing and gelling agent for organic liquids. 3,757,864, Cl. 166-308.000.
- Creative Product Lines Inc.: *See—*
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- Crosno, Philip M., to Cartridge Television, Inc. Time base error correction system, including converter, for video reproducer and/or recorder. 3,758,710, Cl. 178-6.6tc.
- Crosno, Philip M., to Cartridge Television, Inc. Time base error correction system including electronically variable delay line for video reproducer and/or recorder. 3,758,711, Cl. 178-6.67c.
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- Crossman, Richard L.; Cook, Albert W.; and Hawley, Jesse G., to Goodyear Tire & Rubber Company, The. Key slot segments for driving brake discs. 3,757,907, Cl. 188-218.0xl.
- Crounse, Nathan N.; Werner, Raymond E.; and Dimond, Harold L., to Sterling Drug Inc. Bromination of salicylanilide. 3,758,575, Cl. 260-559.00s.
- Crowe, Gordon Appling, to BASF Wyandotte Corporation. Vacuum holder to conform casting surface. 3,757,735, Cl. 118-50.000.
- Cruickshank, David G.; and Tata, Raymond V., to Leesona Corporation. Supply bobbin delivery mechanism. 3,757,992, Cl. 221-13.000.
- Crum, Gerald W.; and Sauter, Richard J., to United States of America, National Aeronautics and Space Administration. Foot pedal operated fluid type exercising device. 3,758,112, Cl. 272-79.00c.
- Crutchley, Frederick; and Hindley, David, to Automotive Products Company. Improvements in or relating to friction clutches and to engaging load applying spring means for such friction clutches. 3,758,094, Cl. 267-162.000.
- Cuckson, Eric Engel; and Jones, Arthur Llewelyn, to Scovill Manufacturing Company. Slide fastner of the invisible type. 3,757,391, Cl. 24-205.10r.
- Culbertson, Thomas L., to United States of America, Navy. Horizontal bottom-freezing apparatus. 3,757,854, Cl. 165-106.000.
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- Daams, Jasper; Kuipers, Johannes; and Pluijgers, Christoffel Willem, to U.S. Philips Corporation. 1-Alkyl-6-azauracil compounds and preparations. 3,758,468, Cl. 260-248.0as.
- Dahl, Norman C.; and Tabor, Joseph A. Method of forming a nut. 3,757,372, Cl. 10-86.00r.
- Dahl, Norman C. Fixed force level bolt. 3,757,630, Cl. 85-62.000.
- Daicel Ltd.: *See—*
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- Daido Kogyo Kaisha Ltd.: *See—*
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  - Forster, Hans-Jaochim M.; and Eltze, Ulrich, 3,757,606.
  - Forster, Hans-Joachim M.; Katz, Klaus; and Abt, Reinhold, 3,757,602.
  - Hartmann, Otto, 3,757,747.
- Dalglish, Herbert Francis. Vacuum center lift. 3,758,144, Cl. 294-64.00r.
- Daman, Leonard Salisbury, to Deere & Company. Heat-exchanger for power plants, especially motor vehicles. 3,757,853, Cl. 165-76.000.
- Damijonatis, Algis; and Wiley, Daryl D., to Motorola, Inc. Magnetic tachometer pickup. 3,758,859, Cl. 324-174.000.
- Damm, David A., to Owens-Illinois, Inc. Memory system having two clock pulse frequencies. 3,757,940, Cl. 209-74.00m.
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- Daniel, Roger P., to Ford Motor Company. Crash dummy chest structure. 3,757,431, Cl. 35-17.000.
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- Darnell, Wayne Lee. Toy gun with rotating magazine for discharging elastic bands. 3,757,760, Cl. 124-19.000.
- Dastur, Kavsy D., to Du Pont de Nemours, E. I., and Company. Reduction of microorganism populations of food articles by contact with a liquid chlorohydrocarbon. 3,758,257, Cl. 426-331.000.
- Data Card Corporation: *See—*
  - Drillick, Jacob H., 3,757,684.
- Datta, Arthur S.: *See—*
  - Lienemann, Darlo E.; and Datta, Arthur S., 3,757,996.
- Datye, Keshav V.; and Milicevic, Branimir, to Ciba-Geigy AG. Process for dyeing hydrophobic textile material. 3,758,272, Cl. 8-172.000.
- Dauben, Dwight L.: *See—*
  - Murphy, Robert P.; Owens, William W.; and Dauben, Dwight L., 3,757,575.
- Daugherty, Robert D.: *See—*
  - Baskin, John Y.; Bender, Miles D.; and Daugherty, Robert D., 3,757,374.
- Daval, Jacques; and Forrat, Francis, to Commissariat a l'Energie Atomique. Interferometric modulator for use in natural light. 3,758,194, Cl. 350-160.00r.
- David, Harry; and Rudszinat, Willy, to Hauni-Werke Korber & Co. KG. Apparatus for classifying fragments of tobacco. 3,757,800, Cl. 131-109.00b.
- Davis, Darwin Darrell, to du Pont de Nemours, E. I., and Company. Process for preparation of straight chain alkane dicarboxylic acids. 3,758,564, Cl. 260-531.00r.
- Davis, Haggai; and Robertson, Robert S., to Snub-R-Rig Corporation. Apparatus for moving pipe into and out of a well. 3,757,858, Cl. 166-77.000.
- Davy and United Engineering Company, Limited: *See—*
  - Howard, David Robert, 3,758,040.
  - Renshaw, Gilbert Lendrum, 3,757,965.
- Daynard, Richard F.: *See—*
  - Cannon, Robert L.; Goldberg, Herbert E.; Thaler, Sherwood S.; and Daynard, Richard F., 3,757,794.
- De Beaulieu, Henri Philippe: *See—*
  - Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and De Beaulieu, Henri Philippe, 3,757,804.
- De Bernardi, Jacques Francois Dominique: *See—*
  - Vogel, Jean-Luc; De Bernardi, Jacques Francois Dominique; and Moulinard, Claude, 3,757,597.
- De Jager, Frank; Zegers, Leo Eduard; and Verhoeckx, Nicolaas Alphonsus Maria, to U.S. Philips Corporation. System for the transmission of information at very low signal-to-noise ratios. 3,758,861, Cl. 325-38.00r.
- De Jongh, Job Harn; Maenhout, Johannes Josephus Aloisius Cornelus; and Osenbruggen, Cornelis Van, to U.S. Philips Corporation. Apparatus for removing material from an electrically conducting workpiece. 3,758,739, Cl. 219-69.00g.
- De Kiss, Nicholas, to De Laval Turbine Inc. Reciprocatory fluid actuated motor having a rack and pinion piston locking mechanism. 3,757,650, Cl. 92-25.000.
- De Laval Turbine California, Inc.: *See—*
  - Owyoung, Sheldon; and Lowrey, Maurice H., 3,757,756.
- De Laval Turbine Inc.: *See—*
  - De Kiss, Nicholas, 3,757,650.
- De Lorenzo, Joseph D.: *See—*
  - Bennett, Clarence Leonard, Jr.; De Lorenzo, Joseph D.; and Durling, Hubert R., Jr., 3,757,501.
- De Radzitzky D'Ostrowick; Hanotier, Jacques D. V.; and Vaerman, Joseph M. E., to Labofina, Soc. An. Process for the oxidation of paraffins. 3,758,557, Cl. 260-488.00f.
- Dean, Frank J., Jr., to Tempmaster Corporation. T-bar mounted air diffuser. 3,757,668, Cl. 98-40.00d.
- Dean, Jimmie L., to Phillips Petroleum Company. Grasping parison preform at right angle to mold parting line. 3,758,254, Cl. 425-387.00b.
- Deeb, Fouad M.: *See—*
  - Skinner, Harry W.; and Deeb, Fouad M., 3,758,066.
- Deegen, Axel W., to International Business Machines Corporation. Apparatus for making flat cables by extrusion. 3,758,247, Cl. 425-114.000.
- Deem, William Roy, to Imperial Chemical Industries, Limited. Production of tetrafluoroethylene oligomers. 3,758,618, Cl. 260-653.100.
- Deere & Company: *See—*
  - Daman, Leonard Salisbury, 3,757,853.
  - French, John Lischer; Kessler, Kenneth Quentin; Funk, Welker W.; Pierrot, Victor Charles, III; and Hiseler, Stanley Robert, 3,757,837.
  - Gregerson, Stanley Martin, 3,757,868.
  - Hook, Richard Wayne; and Zaun, Richard David, 3,757,867.
  - Hook, Richard Wayne; and Zaun, Richard David, 3,757,928.
  - Hubbard, Arthur Lowell, 3,757,502.
  - Maust, John Edward, Jr.; Honnold, Darrel Lee; and Jackson, William Wayne, 3,757,871.
  - Schroeder, Kenneth Roger, 3,757,604.
  - Trapp, Robert Lee, 3,758,169.
- Deering Milliken Research Corporation: *See—*
  - Sanders, Grady H., 3,757,381.
- Dehm, Henry C., to Hercules Incorporated. Process for providing solid particles with a coating having reactive surface isocyanate groups. 3,758,334, Cl. 117-100.00a.
- Delalande S.A.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; and Bailly, Yves G., 3,758,459.
- Delavarenne, Serge Yvou, to Union Carbide Corporation. Process for producing fluorinated cyclic ketals. 3,758,510, Cl. 260-340.900.
- Dellian, Kurt A., to Ciba-Geigy Corporation. Fixation of leuco vat ester dyes by electrical current. 3,758,394, Cl. 204-134.000.
- Deming, Joseph A.; Heffron, Allen J.; and Estry, Arthur L., to C. M. Systems, Incorporated and Crankshaft Machine Company. Single spindle crankshaft machine. 3,757,615, Cl. 82-9.00r.
- Demurger, Jacques L. J. Saw blade made from W-Cr-W-Mo-containing tool steel. 3,758,297, Cl. 75-126.00c.
- Denda, Rokuro; and Kawaguchi, Toshio, to Kuraray Co., Ltd. Method of removing aldehydes. 3,758,611, Cl. 260-681.50r.
- Denki Onkyo Co., Ltd.: *See—*
  - Horikawa, Hideichi; Katayama, Shitomi; and Masuda, Noboru, 3,758,636.
- Dennison Manufacturing Company: *See—*
  - Setzer, Henry J.; and Thompson, George S., 3,758,043.
- Denojean, Jacques, to Les Etablissements Marechal. Covering. 3,758,331, Cl. 117-39.000.
- Derfer, John M.: *See—*
  - Bledsoe, James O., Jr.; and Derfer, John M., 3,758,590.
- Derk, Joseph T., to United States of America, Army. Electronic squib firing sequencer. 3,757,696, Cl. 102-70.20r.
- Design and Development, Incorporated: *See—*
  - Waiwood, William P.; Trybuski, John E.; Friedl, Wendel M.; and Cross, Thomas S., 3,757,917.
- Dessau, Ralph M.: *See—*
  - Heiba, El Ahmadi I.; and Dessau, Ralph M., 3,758,514.
  - Heiba, El Armadi I.; and Dessau, Ralph M., 3,758,513.
- Dexter Axle Co., Inc.: *See—*
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- Dexter, Martin; and Steinberg, David, to Ciba-Geigy Corporation. Poly alkanol esters of alkylthioalkanoic acids. 3,758,549, Cl. 260-481.00r.
- DeYoung, Simon Arden, to Kaig Machine Products, Inc. Spool release mechanism. 3,757,904, Cl. 188-823.000.
- Di Ianni, Daniel; and Brackmann, Warren A., to Rothmans of Pall Mall Canada Limited. Tobacco reclaiming method and apparatus. 3,757,799, Cl. 131-96.000.
- Di Marco, Franco: *See—*
  - Rolff, Jacob J. P.; and Di Marco, Franco, 3,757,576.
- Di Prospero, Peter. Pollution control device. 3,757,708, Cl. 110-8.00r.
- Diacont, George P.: *See—*
  - Brunel, Francis J.; and Diacont, George P., 3,757,712.
- Diagnostics Data, Inc.: *See—*
  - Huber, Wolfgang; and Schulte, Thomas L., 3,758,682.
- Diamler-Benz Aktiengesellschaft: *See—*
  - Steiner, Adolf; and Rinnergschwentner, Hans, 3,757,885.
- Diamond International Corporation: *See—*
  - Siciliano, Anthony J., 3,757,741.
  - Struble, Glenn E., 3,758,019.
- Diamond, Julius, to Rorer, William H., Inc. s-Triazines. 3,758,469, Cl. 260-249.900.
- Dickson Paper Fibre, Inc.: *See—*
  - Berkowitz, Lawrence; Novickis, Georgs; and Sheth, Prafulchandra N., 3,757,946.

Diddens, Paul A., to Honeywell Inc. Fast recovery circuit for AC amplifier. 3,758,872, Cl. 330-185.000.

Diez, Adolf; and Heim, Josef, to Schmidt, Karl, GmbH. Low-pressure casting apparatus. 3,757,850, Cl. 164-309.000.

Digilux Corporation: *See—*

Bolger, John G., Jr., 3,758,749.

Dill, Hans G., to Hughes Aircraft Company. High frequency electronic watch with low power dissipation. 3,757,510, Cl. 58-23.00r.

Dimension Weld International Corporation, The: *See—*

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Dimond, Harold L.: *See—*

Crounse, Nathan N.; Werner, Raymond E.; and Dimond, Harold L., 3,758,575.

Dinbergs, Kornelius, to Goodrich, B.F., Company, The. Stabilization of dimethylformamide. 3,758,577, Cl. 260-561.00r.

Dinella, Donald; and Kenney, John Thomas, to Western Electric Company, Incorporated. Method of metal coating an epoxy. 3,758,332, Cl. 117-47.00a.

Dinn, Neil Francis, to Bell Telephone Laboratories, Incorporated. Circuit for incrementally phasing digital signals. 3,758,720, Cl. 178-67.000.

Dionne, William R.; and Blanc-Brude, Philippe, to Heath Company. Method of and apparatus for determining a tuned frequency. 3,758,853, Cl. 324-78.00d.

Ditscheid, Hans Leo, to Felten & Guilleaume Kabelwerke Aktiengesellschaft. Insulating space for high-frequency coaxial cables and electrical fittings associated with it. 3,758,700, Cl. 174-28.000.

Dixie Yarns, Inc.: *See—*

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Dixon Automatic Tool, Inc.: *See—*

Rose, Robert Frederick, 3,758,835.

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Dochterman, Richard W.; and Wendt, Michael E., to General Electric Company. Dynamoelectric machine. 3,758,799, Cl. 310-89.000.

Doerge, Herman P.; and Wismer, Marco, to PPG Industries, Inc. Unsaturated polyesters with reduced smoke levels. 3,758,638, Cl. 260-865.000.

Doig, George: *See—*

Workman, William, Jr.; and Doig, George, 3,758,079.

Dombrowski, Anthony E.: *See—*

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Domenico, Penelope B., to Dow Chemical Company, The. Halopyridyl thiocyanates. 3,758,482, Cl. 260-294.80g.

Doniguian, Thaddeus M., to I.M.I., division of Becton, Dickinson and Company. Fluid sensor. 3,758,398, Cl. 204-195.00p.

Doty, Richard L.: *See—*

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Dougherty, John S., to Allied Products Corporation. Curtain wall safety panel. 3,757,471, Cl. 49-2.000.

Douglas, Donald J. Wind actuated devices. 3,757,730, Cl. 116-28.000.

Douglas, Donald J., to Nu-Pro, Inc. Jumping reflex-reflection. 3,758,190, Cl. 350-97.000.

Douglas, James M.: *See—*

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Dow Chemical Company: *See—*

Hargash, Paul, 3,757,560.

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Dow Chemical Company, The: *See—*

Bergman, Sylvester; and Pews, Richard Garth, 3,758,335.

Crawford, David Lee; Earl, Robert Brooks; and Monroe, Roger F., 3,757,864.

Domenico, Penelope B., 3,758,482.

Frevel, Ludo K.; and Kreasley, Leonard J., 3,758,666.

Gum, Wilson F.; and Nelson, David A., 3,758,616.

Habermann, Clarence E.; and Tefertiller, Ben A., 3,758,578.

Jones, Irby C., Jr.; and Rhymes, Aubrey J., Jr., 3,758,572.

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Zweigle, Maurice L., 3,758,641.

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Dowling, Donald J., to Texaco Inc. Method and system with voltage cancellation for measuring the magnetic susceptibility of a subsurface earth formation. 3,758,847, Cl. 324-6.000.

Dowling, Donald J., to Texaco Inc. Magnetic susceptibility well logging system and method with automatic null control. 3,758,848, Cl. 324-6.000.

Downing, John Charles. Sleeping pillow. 3,757,364, Cl. 5-338.000.

Doyle, Edward J.; and Bagwell, Richard S., Jr., to Schick Incorporated. Product dispenser and heater. 3,758,002, Cl. 222-146.0ha.

Doyle, Michael A.; Cree, Roger W.; and Keller, Richard C., to Control Data Corporation. Cooling system for data processing apparatus. 3,757,530, Cl. 62-117.000.

Doyle, Michael D.; and Bahne, William L., Jr. Single snow ski. 3,758,127, Cl. 280-11.13s.

Drackett Company, The: *See—*

Mack, Frank J., 3,758,000.

Drain, James Joseph: *See—*

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Drazick, Herman J. Injection plastic feeder. 3,758,248, Cl. 425-145.000.

Dreis & Krump Manufacturing Company: *See—*

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Dreismann, Robert: *See—*

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Drillick, Jacob H., to Data Card Corporation. High speed automatic card embosser. 3,757,684, Cl. 101-18.000.

Drum, Harvey R.; Witherill, Jeffry L.; and Rennwald, Fredrick H. Mechanical pickup device for animal droppings. 3,757,737, Cl. 119-1.000.

Du Pont de Nemours, E. I., and Company: *See—*

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Matt, John Walter, 3,758,283.

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Re, Frank Manuel, 3,758,151.

Dugger, William H.; and Alexander, Wayne K., to International Telephone and Telegraph Corporation. Depositing apparatus. 3,757,833, Cl. 141-186.000.

Duncan, James E. Roof standing water eliminator. 3,757,812, Cl. 137-142.000.

Duncan, William A.: *See—*

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Dunhill Lighters Limited: *See—*

Harris, Anthony Roberts, 3,758,262.

Dunning, William S. Electromagnetic suspended speaker. 3,757,890, Cl. 181-31.00b.

Dupy, Jerome N. Apparatus for scarfing weld beads. 3,758,740, Cl. 219-67.000.

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Dussy, Paul: *See—*

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Dyckerhoft & Widmann Aktiengesellschaft: *See—*

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Dyer, John, to FMC Corporation. Low D.P. high D.P. viscose mixture using high cellulose concentration. 3,758,458, Cl. 260-212.000.

Dymo Industries, Inc.: *See—*

Pedersen, Dane Harald, 3,757,919.

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Ealkenberg, Dieter; Renner, Theodor; Rittmayer, Gerhard; and Winkler, Josef, to Siemens Aktiengesellschaft. Thermoelectric generator. 3,758,346, Cl. 136-202.000.

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Fisher, John G.; and Coates, Clarence A., Jr., 3,758,466.

Fumia, Arthur, Jr.; and Brooker, Leslie G. S., 3,758,461.

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Eberly, Paul E., Jr.; Cull, Neville L.; and Buchamann, Fred J.; deceased (by Buchmann, Cordelia Atkeson; legal representative and heir), to Esso Research and Engineering Company. Aromatization catalyst and process. 3,758,600, Cl. 260-673.500.

Ebert, David F. Instructional and amusement device. 3,758,693, Cl. 35-8.00r.

Eck, Herbert; Heckmaier, Josef; and Spes, Hellmuth, to Wacker-Chemie G.m.b.H. Process for producing methylene malonic esters. 3,758,550, Cl. 260-485.00r.

Eckardt, J. C., AG: *See—*

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Edelman, Irving, to Maidrite Novelty Corporation. Apparatus for the manufacture of laminated shoulder strap material. 3,758,364, Cl. 156-463.000.

Edenhofer, Albrecht, to Hoffman-La Roche Inc. Tetrahydropyridine derivatives. 3,758,483, Cl. 260-295.0am.

Edwards, Hugh Jeremy Willis, to C.C.L. Systems Limited. Anchorage assembly for prestressing cables. 3,757,390, Cl. 24-126.000.

Edwards, James B.: *See—*

Woodie, Paul E.; and Edwards, James B., 3,757,685.

Edwards, John A., to Syntex Corporation. Preparation of C-17$\alpha$ alkyl substituted propadienyl steroids. 3,758,517, Cl. 260-397.400.

Eheim, Franz, to Bosch, Robert, G.m.b.H. Fuel injection pump for multi-cylinder internal combustion engines. 3,758,241, Cl. 417-494.000.

Eich, Edmund; Muller, Walter; and Freitsch, Bruno. Device for the automatic replacement and adjustment of tool carriers, more particularly angular milling heads on the milling support of a machine tool. 3,757,637, Cl. 90-17.000.

Eichinger, John W., to Gulf & Western Industrial Products Company. Closure member for metal containers and method of assembly. 3,757,986, Cl. 220-39.00r.

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Eimers, Erich; Rudolph, Hans; and Kloker, Werner, to Bayer Aktiengesellschaft. Polyesters containing tertiary nitrogen atoms. 3,758,556, Cl. 260-485.00g.

El Chico Corporation: *See—*

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Elfes, Lee Eugene; and Lorenz, John, to Massey-Ferguson, Inc. Tractor counter weight assembly. 3,758,132, Cl. 280-150.00e.

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Elion, Gertrude B.; and Strelitz, Robert A., to Burroughs Wellcome Ço. and Wellcome Foundation, Ltd. Treating DNA virus infections with amino purine derivatives. 3,758,684, Cl. 424-180.000.

Elliot, David R.: *See—*

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Elliott, Franklin P., to Honeywell Inc. Flash apparatus with automatic light termination using a number of storage capacitors. 3,758,817, Cl. 315-151.000.

Ellsworth, James P.; and Majcher, John, to Westinghouse Electric Corporation. Multi-pole circuit breaker with single trip adjustment for all poles. 3,758,887, Cl. 335-8.000.

Elmer, Arthur Ernest Henry, to Dynair Limited. Fan drives. 3,757,914, Cl. 192-48.300.

Elonanta, Vaito K.; and Ruggles, Benjamin C., to Polaroid Corporation. Manually operable film-advancing apparatus. 3,757,657, Cl. 95-13.000.

Eltze, Ulrich: *See—*

Forster, Hans-Jaochim M.; and Eltze, Ulrich, 3,757,606.

Emerson Electric Co.: *See—*

Newport, Harry E., Jr.; and Wright, James A., 3,758,260.

Emold, Harry G., to Relaxaway, Inc. Chair with U-shaped wooden support beams. 3,758,149, Cl. 297-259.000.

Engebretsen, Einar; and Grunewald, Ernst, to Hobart Manufacturing Company, The. Compactor drive chain tensioning apparatus. 3,757,683, Cl. 100-229.00a.

Engesser, Rudolf, to Oxy Metal Finishing Corporation, mesne. Method of producing chemical conversion coatings on metal surfaces. 3,758,349, Cl. 148-6.150z.

Engrenager et Reducteurs (Engrenages Citroen et Etablissements R. Messian reunis: *See—*

Messian, Philippe R., 3,757,902.

Ennis, Philip James; and Parry, Philip James, to International Nickel Company, Inc., The. Chromium-nickel alloys and articles and parts made therefrom. 3,758,299, Cl. 75-171.000.

Environment/One Corporation: *See—*

Ludewig, Frederick A., Jr., 3,757,583.

Envirotech Corporation, mesne: *See—*

Hoon, Harry E., Jr., 3,758,087.

Eppich, Robert E., to General Motors Corporation. Method of producing graphitic aluminum castings. 3,758,298, Cl. 75-138.000.

Epsco Incorporated: *See—*

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Ergene, Mehmet T., to Stanley Works, The. Method for forming foamed concrete structures. 3,758,319, Cl. 106-88.000.

Erickson, John W.; and Brown, Francis Barton, to Kobe, Inc. Free turbine pump. 3,758,238, Cl. 417-408.000.

Eriksson, Erik Edvin: *See—*

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ESB Incorporated: *See—*

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Eskeli, Michael. Reaction rotor turbine. 3,758,223, Cl. 415-1.000.

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Esso Production Research Company: *See—*

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  - McCanse, James E., 3,757,596.
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  - Nowell, John R.; and Genuit, Luther L., 3,758,852.
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  - Wilson, Bruce N.; and Hindersinn, Raymond R., 3,758,422.
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Ironfield, Richard, to Amana Refrigeration, Inc. Waveguide filter for microwave heating apparatus. 3,758,737, Cl. 219-10.550.
Isenberg, Lionel; and Hillberg, Ernest T., to North American Rockwell Corporation. Thermally insulated container. 3,757,982, Cl. 220-9.00c.
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Islam, Rafiqul; Garnish, Sidney G.; Figov, Murray; and Mustacchi, Henry, to GAF Corporation. Diazotype light-sensitive compositions containing a 4-(N-pyrrolidino)-3-substituted benzene diazonium salt. 3,758,307, Cl. 96-91.00r.
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Gischlar, George M., 3,757,900.
Itazu, Masakatsu: *See—*
Kubo, Tomoichi; Itazu, Masakatsu; and Yamashita, Hirofumi, 3,758,802.
Ito, Toshi: *See—*
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Ito, Toshio; Nomaguchi, Tamotsu; and Saito, Tatsuo, to Mitsubishi Denki Kabushiki Kaisha. Room heating apparatus. 3,757,767, Cl. 126-110.00b.
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Brukovsky, Igor Pavlovich; Yakovlev, Pavel Borisovich; Gutterman, Kirill Davidovich; Perov, Alexandr Vasilievich; Hukov, Vladimir Fedorovich; Nekrasova, Larisa Petrovna; and Ivanovsky, Jury Dmitrievich, 3,758,816.
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Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Archery bow having vibration dampener. 3,757,761, Cl. 124-23.000.
J & J Manufacturing Company: *See—*
Cox, Thomas L.; and Rodriguez, David G., 3,757,966.
Jacalone, Richard P.: *See—*
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Jackobs, Nancy E.: *See—*
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Jackson, Benjamin L. Paint tray. 3,757,380, Cl. 15-257.050.
Jackson, George E., to Union Carbide Corporation. Double faced warp knit fabric and apparatus and method for making same. 3,757,540, Cl. 66-192.000.
Jackson, Richard L. Insulin product. 3,758,683, Cl. 424-178.000.
Jackson, Weldon H., to Hewlett-Packard Company. Transducer formed in peripherally supported thin semiconductor web. 3,758,830, Cl. 317-234.00r.
Jackson, William Wayne: *See—*
Maust, John Edward, Jr.; Honnold, Darrel Lee; and Jackson, William Wayne, 3,757,871.
Jacobs, Orville W., to East Dayton Tool & Die Company, The. Article transfer apparatus. 3,757,961, Cl. 214-1.0bb.
Jacobsen Manufacturing Company: *See—*
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Jacobson Manufacturing Company: *See—*
Kaercher, William C., Jr., 3,757,529.
Jacobson, Michael D., to United States of America, Navy. Low-interference seeker dome attachment. 3,757,698, Cl. 102-70.20r.
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Jalbert, Domina C. Cloth ventilator. 3,757,664, Cl. 98-37.000.
James, Donald N.; and Nightingale, Peter A., to Ball Brothers Research Corporation. Television receiver mounting apparatus. 3,758,716, Cl. 178-78.000.
James, John William: *See—*
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Janssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendrik; Postma, Cambertus; and Guerts, Angustinus Joseph, to U.S. Philips Corporation. Method of producing electrically conductive metal layers. 3,758,304, Cl. 96-38.400.
Jastrow, Horst; Lederer, Michael; and Heiskel, Elmar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of formable styrene polymers. 3,758,425, Cl. 260-2.50b.
Jaworski, Eugene: *See—*
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Jebens, Aksel, to Sentralinstitutt for Industriell forskning. Forming cooling channels in hot thermally bloated ceramic block to facilitate cooling. 3,758,652, Cl. 264-43.000.
Jeffries, Edward William; and Jeffries, Raymond Elmer, Jr. Camper lifting system and removable jacks therefor. 3,758,074, Cl. 254-45.000.
Jeffries, Raymond Elmer, Jr.: *See—*
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Jenkins, Philip W., to Eastman Kodak Company. Trinuclear complex merocyanine dyes. 3,758,465, Cl. 260-240.100.
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Jerobee Industries, Inc.: *See—*
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Jett, Preston L.; and Hutchinson, James T., Jr., to Jettson Engineering Company, Inc. Battery powered flourescent light. 3,758,823, Cl. 315-219.000.
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Johnson, Charles William, to Johns-Manville Corporation. Skein timer-device. 3,758,013, Cl. 226-199.000.
Johnson, Craig E.; and Henderson, Larry D., to United States of America, Navy. Nitrocellulose containing adhesive compositions. 3,758,325, Cl. 106-180.000.
Johnson, Herbert G., to Shell Oil Company. Method for forming hollow articles of work-strengthenable plastic materials. 3,757,718, Cl. 113-120.00r.
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Johnson, Thomas E., to Lewis, Chas. S., & Co., Inc. Corrosion resistant alloy. 3,758,296, Cl. 75-122.000.
Johnston, Mack S. Tapping assembly for beer kegs and the like. 3,758,008, Cl. 222-400.700.
Johnston, Richard; and Clarke, Raymond, to Gillette Company, The. Processes for sterilizing polypropylene objects. 3,758,273, Cl. 21-54.00r.
Johnston, Robert A.; Docherty, Daniel; and Arrington, Robert L., to Caledon Engineering Inc. De-mister device. 3,757,493, Cl. 55-242.000.
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Jones, Claude A. Self-propelled snow sled. 3,757,880, Cl. 180-5.00r.
Jones, Irby C., Jr.; and Rhymes, Aubrey J., Jr., to Dow Chemical Company, The. Process for recovering urea from pyrolysis systems. 3,758,572, Cl. 260-553.00b.
Jones, Michael Edward Beney; and Jennings, Brian Edmund. Cross-linked poly(arylsulphone ethers). 3,758,436, Cl. 260-37.00r.
Jones, R. A., & Co., Inc.: *See—*
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Jonker, Hendrik: *See—*
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Juguin, Bernard; and Le Page, Jean Francois, to Institut Francais du Petrole des Carburants et Lubrifiants. Polymerization of olefins using a silica-phosphoric acid catalyst. 3,758,627, Cl. 260-683.15c.
Junemann, Hubert, to Adler, Kochs, AG. Template follower mechanism. 3,757,711, Cl. 112-121.120.
Junggren, Ulf Krister: *See—*
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Kablaoui, Mahmoud S. Aromatization of cyclohexene derivatives. 3,758,589, Cl. 260-590.000.
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Kabushikikaisha Oichidenkikosakusho: *See*—
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Kachelhoffer, Jean, to Institut National de la Sante et de la Recherche Medicale. Device for producing a pulsating flow of a fluid. 3,758,237, Cl. 417-394.000.

Kadota, Tokuzo, to Matsushita Electric Industrial Co., Ltd. Toroidal deflection yoke. 3,758,888, Cl. 335-210.000.

Kaercher, William C., Jr., to Jacobson Manufacturing Company. Wire and tape laying machine employing oscillatory trenching blade and oscillatory feed device. 3,757,529, Cl. 61-72.600.

Kaercher, William C., Jr., to Jacobsen Manufacturing Company. Gripping device for use in laying pipes and tubes. 3,758,146, Cl. 294-94.000.

Kaig Machine Products, Inc.: *See*—
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Kaiser Aluminum & Chemical Corporation: *See*—
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Kaiser, Wolfgang: *See*—
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Kalisiak, Witold, to Biuro Konstrukcyjno-Technologiczne Maczyn i Urzadzen Budowlanych. Method of pneumatic suction conveying of disintegrated materials and an arrangement for application of this method. 3,758,163, Cl. 302-58.000.

Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and De Beaulieu, Henri Philippe, to Societe Anonyme dite: L'Oreal. Product for treating hair. 3,757,804, Cl. 132-7.000.

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Kalopissis, Gregoire; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. N-(Haloalkyl)-benzene and para-toluene. 3,758,573, Cl. 260-556.0ar.

Kaltschmidt, Hans-Jurgen: *See*—
Strauss, Edmar; Foth, Seigfried; and Kaltschmidt, Hans-Jurgen, 3,758,706.

Kamar Products, Inc.: *See*—
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Kamata, Masamoto: *See*—
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Kampf, Gunther; and Volz, Hans-Georg, to Bayer Aktiengesellschaft. Measurement pneumatically of thicknesses of coatings. 3,757,563, Cl. 73-37.500.

Kanamaru, Toshiji, to Matsushita Electric Industrial Co., Ltd. Remote-control tuning system. 3,758,864, Cl. 325-392.000.

Kanda, Tetsuo: *See*—
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Kandler, Joachim; Merkenich, Karl; Henning, Klaus; and Pirig, Wolf-Dieter, to Knapsack Aktiengesellschaft. Production of polyphosphate hydrated to an extent of more than % and having an apparent density of between 400 and 600 grams/liter. 3,758,671, Cl. 42-315.000.

Kaneda, Isao, to New Nippon Electric Company Ltd. Starting circuit for discharge lamps. 3,758,818, Cl. 315-207.000.

Kanetaka, Junichi; Shimodaira, Takashi; and Mori, Shoichiro, to Mitsubishi Petrochemical Co., Ltd. Hydrogenation catalyst. 3,758,512, Cl. 260-343.600.

Kanie, Shiomi; Shoji, Takeo; Nogi, Isao; and Mitani, Taizo, to Canon Kabushiki Kaisha. Fitting device for the accessories of a camera. 3,758,198, Cl. 350-257.000.

Kantorovich, Leonid Vitalievich; Tolstiev, Valery Petrovich; and Fet, Yakov Iliich. Digital serial arithmetic unit. 3,758,767, Cl. 235-159.000.

Kanunov, Mikhail Alexeevich: *See*—
Avilov, Ernest Alexeevich; Vasilievich, Nikolai; Galtsov, Vladimir Vasilievich; Zykov, Anatoly Petrovich; Kanunov, Mikhail Alexeevich; Kiselev, Jury Vladimirovich; Mityaev, Mikhail Vladimirovich; Nikitin, Vyacheslav Vladimirovich; Razin, Anatoly Alexandrovch; Stankevich, Jury Leonidovich; Tsukerman, Veniamin Aronovich; and Eig, Lev Samuilovich, 3,758,804.

Kao Soap, Ltd.: *See*—
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Kapers, William John, Jr., to Bell Telephone Laboratories, Incorporated. Digital deflection system for cathode ray tubes. 3,758,825, Cl. 315-276.00d.

Kaplan, Irving Leonard, to Krasny, Carl, & Associates, Inc. Bar unscrambler. 3,757,964, Cl. 214-1.0pb.

Kapsambelis, Christos Basil; and Ugalde, Clyde Francis, to Computer Identics Corporation. Automatic vehicle identification. 3,758,752, Cl. 236-61.11e.

Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. N-Acyl-α-hydrazino-hydrocinnamic acid and derivatives. 3,758,560, Cl. 260-519.000.

Kariotis, Anthony H.: *See*—
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Karmas, George, to Ortho Pharmaceutical Corporation. Derivatives of the 2-(lower alkyl)-3-(lower alkyl)-4-aryl-3- or 4-cyclohexenecarbinola. 3,758,552, Cl. 260-482.00r.

Karol, Joseph A., to Avco Corporation. Simplified follower servomechanism. 3,757,640, Cl. 91-49.000.

Kaspar, Emanuel: *See*—
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Kaspar, Peter D., to International Playtex Corporation. Method for the continuous formation of foraminous elastomeric sheet material from a coagulable liquid. 3,758,651, Cl. 264-39.000.

Kasper, Klaus B.: *See*—
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Kasztreiner, Endre; Vargha, Laszlo; Huszti, Zsuzsanna; Borsi, Jozsef; Szilagyi, Geza; Szakaly, Judit; Elek, Sandor; and Polgari, Istvan, to Gyogyszerkutato Intezet. Methoxy amine derivatives and process for preparing them. 3,758,546, Cl. 260-471.00r.

Katayama, Shitomi: *See*—
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Kato, Kiyoakira: *See*—
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Kato, Saburo, to Ricoh Co., Ltd. Spiral track magnetic recording and reproducing apparatus. 3,758,120, Cl. 274-4.00j.

Kato, Yasumasa: *See*—
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Katsibas, Themistoklis, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of epoxy-modified polyurethane resins which can be diluted with water or dispersed in water. 3,758,427, Cl. 260-190.0ep.

Katsume, Tetsuo: *See*—
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Katz, Klaus: *See*—
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Kaufman, Edward L. Disposable half-mask respirator. 3,757,777, Cl. 128-146.200.

Kautz, Wilbert G.; and German, Dale F., to Aro Corporation, The. Hot melt liquefying and pumping mechanism. 3,758,003, Cl. 222-146.00r.

Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, to Matsushita Electric Industrial Co., Ltd. Cartridge type magnetic tape recording and reproducing apparatus. 3,758,789, Cl. 307-116.000.

Kawaguchi, Toshio: *See*—
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Kawaharasaki, Yoichi, to Victor Company of Japan, Limited. Automatic cassette changing and playing apparatus. 3,758,122, Cl. 274-4.00f.

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Kawaoe, Takeshi: *See*—
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Kawawa, Takaho; Kamata, Masamoto; and Hirasawa, Takeshi, to Nippon Kokan Kabushiki Kaisha. Method of roughing slab to predetermined width and apparatus thereof. 3,757,556, Cl. 72-234.000.

Kayser, Allan J. Theft prevention device for trailers. 3,757,550, Cl. 70-232.000.

Kazachkov, Lev Yakovlevich; and Lesokhin, Jury Abramovich. Hydraulic pump-turbine. 3,758,225, Cl. 415-69.000.

Keis, Heinz; and Veeh, Karl, to Glaswerk Schuller GmbH. Method and apparatus for inserting vitreous fibrous material into liquid bath in web forming system. 3,758,375, Cl. 162-156.000.

Keiter, Marlin Edward, Jr., to Showell Poultry, Inc. Apparatus and method for separating hearts and livers from a mixture thereof. 3,757,945, Cl. 209-114.000.

Kell, Nathaniel B., to General Motors Corporation. Directional shift inhibitor. 3,757,822, Cl. 137-625.610.

Keller, C., u. Co.: *See*—
Wiewel, Josef, 3,757,623.

Keller, Daniel Franklin, to Keller-Dee Research and Development. Wave deflecting device for a sea wall. 3,757,527, Cl. 61-49.000.

Keller, Hans; and Knop, Hans-Georg. Method for obtaining electronic color correction signals. 3,758,707, Cl. 178-5.20a.

Keller, Hans W., to Honeywell Inc. Method for batch fabricating semiconductor devices. 3,757,414, Cl. 29-580.000.

Keller, Richard C.: *See*—
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Kemp, Kenneth Albert Walters; and Sosnowski, Stanislaw Jan Antoni, to C.A.V. Limited. Liquid fuel injection pumping apparatus. 3,758,240, Cl. 417-462.000.

Kennametal Inc.: *See*—
Cantz, Rolf J., 3,757,841.

Kenney, John Thomas: *See*—
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Kenney, John Thomas; and Litt, Frederic Alan, to Western Electric Company, Incorporated. Method of forming and dispersing a plurality of discrete, non-coalescing liquid metal particles in an aqueous medium. 3,758,414, Cl. 252-313.00r.

Kent Air Tool Co.: *See*—
Gunning, Samuel D., 3,757,875.

Kent, James T. Cryogenic freezer unit. 3,757,533, Cl. 62-303.000.

Kern, Edmund R.: *See*—
Menelly, Richard A.; and Kern, Edmund R., 3,758,809.

Kern, Loyd R.; and Martin, Ferman G., to Atlantic Richfield Company. Multilayer propping of fractures. 3,757,862, Cl. 166-280.000.

Kershaw, Sydney L., to Parker-Hannifin Corporation. Quick disconnect coupling. 3,758,137, Cl. 285-70.000.

Kertell, Frank W., to Walker, Brooks. Quad jet. 3,758,082, Cl. 261-23.00a.

Kessler, Cecil, to Chet Industries (Proprietary) Limited. Apparatus for producing wax match shafts. 3,758,246, Cl. 425-93.000.

Kessler, Jack L.: *See*—
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Anderson, Fred J.; and Kessler, Jack L., 3,758,392.

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Keues, Henry P. C., to Luxair Inc. Air purifier and humidifier. 3,757,494, Cl. 55-234.000.

Khaitovitch, David. Method of excavating treaches of considerable width. 3,757,439, Cl. 37-195.000.

Khilnani, Ashok: *See*—
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Kibby, Robert M., to Reynolds Metals Company. Cardothermic production aluminum. 3,758,290, Cl. 75-10.00r.

Kida, Kaneaki; and Ida, Kazuyoshi, to Hitachi Metals, Ltd. Sectional forming roll having improved strength and stability. 3,757,554, Cl. 72-43.000.

Kieding, Robert B.: *See*—
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Kiefer, Hans: *See*—
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King, James R., Jr.: *See*—
Cohen, Hyman L.; King, James R., Jr.; and Minsk, Louis M., 3,758,445.

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Kinoshita, Ikuya: *See*—
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Kirby, Harold W., to United States of America, Atomic Energy Commission. Separation of lead-210 from polonium-210 and bismuth-210. 3,758,663, Cl. 423-2.000.

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Kirchner, Henry P.; and Walker, Ralph E., to Kirchner, Henry P. Method of strengthening alumina and spinel bodies. 3,758,328, Cl. 177-107.20p.

Kirkemo, Lillian F. Refrigerator guard. 3,757,958, Cl. 211-153.000.

Kiselev, Jury Vladimirovich: *See*—
Avilov, Ernest Alexeevich; Vasilievich, Nikolai; Galtsov, Vladimir Vasilievich; Zykov, Anatoly Petrovich; Kanunov, Mikhail Alexeevich; Kiselev, Jury Vladimirovich; Mityaev, Mikhail Vladimirovich; Nikitin, Vyacheslav Vladimirovich;, Razin, Anatoly Alexandrovch; Stankevich, Jury Leonidovich; Tsukerman, Veniamin Aronovich; and Eig, Lev Samuilovich, 3,758,804.

Kishino, Shigeo; Yamada, Yasuo; Kudamatsu, Akio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. Halogen-substituted O,O-dialkyl O-cyanophenyl phosphates. 3,758,647, Cl. 260-940.000.

Kiss, William B.: *See*—
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Kissel, Roland Roger, to Societe Anonyme Heurtey. Fluid-fuel burners. 3,758,263, Cl. 431-158.000.

Kitaguchi, Katuhiko, to Taihei Industries, Co., Ltd. Plastic saddle for bicycle. 3,758,154, Cl. 297-214.000.

Kitamura, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Vertical deflection system. 3,758,813, Cl. 315-27.0td.

Kitchin, James F.; and Smith, Dalton L. Air stream exposed adjustable ram air intake horn. 3,757,751, Cl. 123-119.0cg.

Klahre, Guenter: *See*—
Seitz, Karl; Klahre, Guenter; and Scheutz, Hans-Ulrich, 3,758,467.

Klang, Daniel M.; and Mosciatti, Roger, to Bucode, Inc. Light collecting and transmitting apparatus. 3,758,197, Cl. 350-286.000.

Kleiber, Armin. Movable multiple casting moulds and elements therefor. 3,758,067, Cl. 249-129.000.

Kleiner, Eduard Karl: *See*—
Falk, Robert Allan; and Kleiner, Eduard Karl, 3,758,447.

Klemann, Lawrence P.: *See*—
Langer, Arthur W., Jr.; Whitney, Thomas A.; and Klemann, Lawrence P., 3,758,580.

Klement, Ekkehard, to Siemens Aktiengesellschaft. Carbon dioxide laser. 3,758,876, Cl. 331-94.500.

Kline, William M., to Medical Evaluation Devices & Instruments Corporation. Manipulable spring guide-catheter and tube for intravenous feeding. 3,757,768, Cl. 128-2.00m.

Kloker, Werner: *See*—
Eimers, Erich; Rudolph, Hans; and Kloker, Werner, 3,758,556.

Klose, Ulrich Konrad Wilhelm, to International Business Machines Corporation. Method and device for two-way transmission by means of two-wire transmission channel. 3,758,719, Cl. 178-58.00r.

KMS Industries, Inc.: *See*—
Thomas, Carlton E.; and Massey, Norman G., 3,758,187.

Knapsack Aktiengesellschaft: *See*—
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; and Pirig, Wolf-Dieter, 3,758,671.

Kniff, August A. Automobile tow bar. 3,758,135, Cl. 280-402.000.

Knoke, Daniel R., to Appleton Mills. Single endless strand mounted in self centering fashion in a series of parallel convolutions as a fibrous web supporting surface in a papermaking machine. 3,758,381, Cl. 162-348.000.

Knoll AG, Chemische Fabriken: *See*—
Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, 3,758,484.

Knop, Hans-Georg: *See*—
Keller, Hans; and Knop, Hans-Georg, 3,758,707.

Knorpp, Charles T., to United States of America, Navy. Process of freezing blood using an hydroxyalkyl starch as cryoprote active agent. 3,758,382, Cl. 195-1.800.

Knott, Allan Roy: *See*—
Morley, Michael; and Knott, Allan Roy, 3,758,295.

Knott, Edward B.: *See*—
Bailey, Joseph; Heath, Bushey; Knott, Edward B.; and Marr, Peter A., 3,758,309.

Knowlton, Keith L. Method and apparatus for making glass fiber sprays. 3,758,285, Cl. 65-64.000.

Knutson, Dale A., to Applied Power Industries, Inc. Valve. 3,757,823, Cl. 137-625.640.

Knutson, Dale A., to Applied Power Inc. Aerial lift vehicle. 3,757,895, Cl. 182-46.000.

Kobayashi, Tamio: *See*—
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,758,789.

Kobayashi, Tatsuo, to Minolta Camera Kabushiki Kaisha. Electronically controlled camera shutter. 3,757,655, Cl. 95-10.0ce.

Kobe, Inc.: *See*—
Erickson, John W.; and Brown, Francis Barton, 3,758,238.

Kobori, Toshio: *See*—
Kuramoto, Yoshio; Kobori, Toshio; and Ueda, Hiroshi, 3,757,660.

Koch, Werner; and Preuss, Friedrich, to Roland Offsetmaschinenfabrik Faber & Schleicher A.G. Adjustable assembly for a dampening roller of an offset printing press. 3,757,689, Cl. 101-148.000.

Kocks, Friedrich. Kilns. 3,758,089, Cl. 266-18.000.

Koehn, Frederick F.: *See*—
Feurston, Ludwig J.; and Koehn, Frederick F., 3,757,486.

Koerper Engineering Associates, Inc.: *See*—
Gerber, Karol, 3,758,244.

Koester, Charles J., to American Optical Corporation. Image-transmitting optical system. 3,758,188, Cl. 350-96.000.

Kogler, Werner; Kohler, Werner; and Abou-Zied, Aly, to Siemens Aktiengesellschaft. Insulated bus-bar assembly having a branch connection. 3,758,702, Cl. 174-71.00b.

Kobler, Arthur. Nozzle head assembly for injection mold. 3,758,252, Cl. 425-242.000.

Kohler, Werner: *See—*
Kogler, Werner; Kohler, Werner; and Abou-Zied, Aly, 3,758,702.

Kohn, Karl Walter, to Societe d'Etudes de Machines Thermiques. Handling device for mounting or removing an access door. 3,758,174, Cl. 308-3.00r.

Kolhi, Martti Ilmari, to Collin, R., Consulting AB. Method for combusting fuels in a substantially conically shaped curtain. 3,758,258, Cl. 431-9.000.

Kolin, Alexander, to University of California, The Regents of the. External field electromagnetic flow sensor-artery gauge. 3,757,773, Cl. 128-2.05f.

Kombinat fur Polygraphische Maschinen und Ausrustungen Leipzig: *See—*
Skiera, Heinz; and Schumann, Helmut, 3,757,690.

Konig, Klaus; Muller, Erwin; Muhlhausen, Cornelius; and Dobereiner, Uwe Jens. Process for the production of polyurethane elastomers based on a particular polyol polycarbonate. 3,758,443, Cl. 260-75.0np.

Koppers Company, Inc.: *See—*
Toperzer, John W.; and Beachy, Dale K., 3,757,849.
Weinberger, Carl S.; and Hale, William T., 3,758,124.

Korn, Joseph: *See—*
Schurig, Robert E.; and Korn, Joseph, 3,758,033.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Functional bis (perfluoroalkylsulfonyl) alkyl compounds. 3,758,531, Cl. 260-400.000.

Koshar, Robert J.; Husted, Donald R.; Wright, Charles D.; and Zollinger, Joseph La Mar, to Minnesota Mining and Manufacturing Company. Difluoroamino compounds. 3,758,555, Cl. 260-482.00r.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Functional bis (perfluoroalkylsulfonyl) alkyl compounds. 3,758,591, Cl. 260-607.00a.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Functional bis (perfluoroalkylsulfonyl) alkyl compounds. 3,758,592, Cl. 260-607.00a.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Functional bis (perfluoroalkylsulfonyl) alkyl compounds. 3,758,593, Cl. 260-607.00a.

Kosonocky, Walter Frank, to RCA Corporation. Charge coupled shift registers. 3,758,794, Cl. 307-304.000.

Kost, Erwin. Hydraulic stretch levelling machine. 3,757,557, Cl. 72-311.000.

Kosters, Paul L. M. Silencer for eliminating noise caused by a pawl on a gear rack when the gear rack is returned to a initial position. 3,757,923, Cl. 197-94.000.

Kostowski, Wojciech: *See—*
Biniecki, Stanislaw; Kubikowski, Piotr; Kostowski, Wojciech; and Nantka-Namirski, Pawel, 3,758,485.

Kouwenhoven, Harman W.; and Cole, John. Process for the preparation of mordenite. 3,758,667, Cl. 423-118.000.

Kraft, Donald E. Valve and system for dental apparatus. 3,757,421, Cl. 32-22.000.

Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, to Knoll AG, Chemische Fabriken. 3-Beta-acetoxy 11-oxo noroleanene(12) 20 beta-carboxylic acid, N-methyl piperidol-(4) ester. 3,758,484, Cl. 260-293.560.

Kramer, George M., to Esso Research and Engineering Company. Isomerization solvents. 3,758,623, Cl. 260-668.00a.

Kramer, James H., to Goodrich, B. F., Company, The. Conveyor belt suspension. 3,757,930, Cl. 198-192.000.

Krasny, Carl, & Associates, Inc.: *See—*
Kaplan, Irving Leonard, 3,757,964.

Kraus, Theodore C.; and Mangold, Donald J., to Olin Mathieson Chemical Corporation. Process preparation of non-solvated aluminum hybrid. 3,758,677, Cl. 423-645.000.

Kreissig, Ernst Florian; and Feuerlein, Karl, to Sulzer Brothers, Ltd. Railway car roll controlled by fluid spring controller assembly. 3,757,702, Cl. 105-210.000.

Kressley, Leonard J.: *See—*
Frevel, Ludo K.; and Kressley, Leonard J., 3,758,666.

Kretchmer, Murray. Therapeutic Murray. 3,757,365, Cl. 5-338.000.

Krieger, A. P. Tool silencing means. 3,757,891, Cl. 181-33.00k.

Krieger, Charles: *See—*
Sieger, George Madison; Shultz, Walter; and Krieger, Charles, 3,758,686.

Krimm, Heinrich: *See—*
Buysch, Hans-Josef; Krimm, Heinrich; and Margotte, Dieter, 3,758,597.

Kroll, Arthur W., to Veeder Industries, Inc. Versatile modules enclosure with extruded wall sections. 3,758,829, Cl. 317-117.000.

Kroll, Glenn H., to Sears Roebuck and Co. End caps for gym. 3,757,826, Cl. 138-89.000.

Krone GmbH: *See—*
Harms, Wolf-Henning, 3,758,725.

Kruklitis, Karlis, to Burroughs Corporation. Multiple transducer magnetic head. 3,758,727, Cl. 179-100.20c.

Krummel, Harry Karl: *See—*
Connor, Daniel S.; and Krummel, Harry Karl, 3,758,420.

Kruse, Friedel; Wahle, Gunter; Rudszinat, Willy; and Erdmann, Otto, to Hauni-Werke Korber & Co., KG. Apparatus for severing sheet-like materials in machines for the processing of smokers product. 3,757,624, Cl. 83-271.000.

Ksieski, Kazimierz T., to Parker-Hannifin Corporation. Omega seal. 3,758,123, Cl. 277-206.000.

Kubiatowicz, David O.: *See—*
Lindsay, Thomas W.; and Kubiatowicz, David O., 3,758,678.

Kubikowski, Piotr: *See—*
Biniecki, Stanislaw; Kubikowski, Piotr; Kostowski, Wojciech; and Nantka-Namirski, Pawel, 3,758,485.

Kubo, Tomoichi; Itazu, Masakatsu; and Yamashita, Hirofumi, to Nippon Electric Company, Limited. Cathode ray tube having a glass envelope counted with crystallized glass. 3,758,802, Cl. 313-64.000.

Kubola, Seishi; Kunugi, Takashi; and Katsume, Tetsuo, to Nissan Motor Company, Limited. Control system for gas turbine engine. 3,757,610, Cl. 74-843.000.

Kuciejcik, James S.: *See—*
Ritchie, David Alan; and Kuciejcik, James S., 3,758,274.

Kudamatsu, Akio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamatsu, Akio; and Kume, Toyohiko, 3,758,647.

Kudlacik, Henry W., to General Electric Company. Field excitation circuit for a dynamoelectric machine. 3,758,842, Cl. 322-25.000.

Kueneker, William: *See—*
Holstein, Alvin W.; Short, William H.; and Kueneker, William, 3,757,669.

Kuhn, Wenzel: *See—*
Pfuller, Peter; and Kuhn, Wenzel, 3,758,498.

Kuipers, Johannes: *See—*
Daams, Jasper; Kuipers, Johannes; and Pluijgers, Christoffel Willem, 3,758,468.

Kukolja, Stephan P.; and Morin, Robert B., to Lilly, Eli, and Company. Process for preparing thiazole derivatives. 3,758,488, Cl. 260-302.00r.

Kulp, Jack H., to Royal Industries, Inc. Device for storing and dispensing ribbon-like materials and the like. 3,757,626, Cl. 83-542.000.

Kume, Toyohiko: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamatsu, Akio; and Kume, Toyohiko, 3,758,647.

Kumm, Emerson L., to Garrett Corporation, The. Variable speed belt transmission. 3,757,594, Cl. 74-230.17f.

Kun, Leslie C.; and Wulf, James B., to Union Carbide Corporation. Primary surface heat exchanger. 3,757,855, Cl. 165-166.000.

Kun, Leslie C., to Union Carbide Corporation. Primary surface heat exchanger and manufacture thereof. 3,757,856, Cl. 165-166.000.

Kunert, Heinz, to Saiak-Gebain. Shattering frangible objects, particularly plates. 3,757,988, Cl. 220-47.000.

Kunioka, Kazuo: *See—*
Shimotsuma, Teruo; Kunioka, Kazuo; and Yamada, Takeo, 3,758,090.

Kuntz, John B.; and Spinola, Anthony A., to United States Steel Corporation. Method of quenching slag. 3,758,292, Cl. 75-24.000.

Kunugi, Takashi: *See—*
Kubola, Seishi; Kunugi, Takashi; and Katsume, Tetsuo, 3,757,610.

Kunzel, Hans-Egon; Bentz, Francis; and Nischk, Gunther, to Bayer Aktiengesellschaft. Aromatic polyimides with increased solubility. 3,758,434, Cl. 260-30.200.

Kuramoto, Yoshio, to Minolta Camera Kabushiki Kaisha. Single lens reflex camera. 3,757,656, Cl. 95-11.00v.

Kuramoto, Yoshio; Kobori, Toshio; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Photographic camera capable of making multiple exposures. 3,757,660, Cl. 95-31.0ac.

Kuraray Co., Ltd.: *See—*
Denda, Rokuro; and Kawaguchi, Toshio, 3,758,611.

Kurihara, Kazuo: *See—*
Aya, Masahiro; Saito, Junichi; Fukazawa, Nobuo; Tamura, Tatsuo; Kurihara, Kazuo; and Morishima, Norihisa, 3,758,481.

Kuroda, Minoru, to Nishizawa Shoji Co., Ltd. and Dimension Weld International Corporation, The. Method of and apparatus for making a padded three-dimensional applique. 3,758,358, Cl. 156-222.000.

Kurth, Johannes; and Glaser, Josef, to Ferdrowitz, Wilhelm and Mannesmann Aktiengesellschaft. Device for adjusting the position of a mold for continuous casting in a stand. 3,757,405, Cl. 29-200.00p.

Kusters, Eduard, Maschinenfabrik: *See—*
Urban, Peter T., 3,757,398.

Kuts, Mathew, to Goodrich, B. F., Company, The. Fabric cutting. 3,757,618, Cl. 83-471.300.

Kutscher, Gerhard; and Wehling, Rolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for the spinning of staple fibers in a ringless manner. 3,757,506, Cl. 57-58.950.

Kuwana, Kazutaka; Yamazaki, Hayao; and Sato, Takefumi, to Aisin Seiki Kabushiki Kaisha and Sharp Corporation. Process and apparatus for antiskid control mechanism. 3,758,166, Cl. 303-21.00p.

Kvam, Donald C.: *See—*
Harrington, Joseph K.; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,758,490.
Robertson, Jerry E.; Harrington, Joseph K.; and Kvam, Donald C., 3,758,688.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyomehi; Maeda, Akitoshi; and Morinaga, Fumihiko, 3,758,471.

Laama, Vello; and Grahn, Robert Donald, to Sunbeam Corporation. Expresso coffeemaker. 3,757,670, Cl. 99-302.000.

Laarman, Johannes Bertus, to N.V. Industrieele Handelscombinatie. Pipeline with floats. 3,757,369, Cl. 9-8.00r.

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Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Powdered coating composition of unsaturated glycidyl and anhydride copolymer and a flow control agent. 3,758,632, Cl. 260-836.000.

Labana, Santokh S.; Golovoy, Amos; and Newman, Seymour, to Ford Motor Company. Powdered coating compositions of carboxy containing copolymers, epoxy crosslinking agents and flow control agents. 3,758,633, Cl. 260-836.000.

Labana, Santokh S.; and Newman, Seymour, to Ford Motor Company. Powdered coating composition of unsaturated glycidyl copolymer, flow control agents and diphenolic crosslinking agents. 3,758,634, Cl. 260-836.000.

Labana, Santokh S.; Chang, Yun Feng; and Theodore, Ares N., to Ford Motor Company. Powdered coating compositions of unsaturated glycidyl copolymers with flow control agents. 3,758,635, Cl. 260-836.000.

Labbe, Francis Auguste Maurice, to Molins Machine Company, Limited. Smoke filters. 3,757,649, Cl. 93-1.00c.

Labofina, Soc. An.: *See—*
De Radzitzky D'Ostrowick; Hanotier, Jacques D. V.; and Vaerman, Joseph M. E., 3,758,557.

Lacey, Robert Ronald, to Universal Oil Products Company. Adjustable seats for trucks, coaches and other vehicles. 3,758,063, Cl. 248-161.000.

Lachnit, Ursula: *See—*
Ufer, Joachim; Kimbel, Karl-Heimz; and Lachnit, Ursula, 3,758,687.

LaFond, Gerard L.: *See—*
Moore, Wiley I.; and LaFond, Gerard L., 3,757,887.

Lagier, Michel; and Reynier, Rene, to Thomson-CSF. Sonar transducer housing. 3,757,888, Cl. 181-.50a.

Lagow, Richard J.: *See—*
Margrave, John L.; and Lagow, Richard J., 3,758,450.

Lake, Gary F. Circular table and seat construction. 3,758,152, Cl. 297-157.000.

Lake, John W., to Omark Industries, Inc. Chuck assembly for stud welding apparatus. 3,758,743, Cl. 219-98.000.

Lambert, Gerard L.; and Greenlay, Charles A., to Johns-Manville Corporation. Method of removing contents from container. 3,757,973, Cl. 214-152.000.

Lambert, Robert R., to Wehr Corporation, mesne. Ceiling tile plenum boundary suspended ceiling construction. 3,757,666, Cl. 98-40.00d.

Lambert, Robert R., to Wehr Corporation, mesne. Pulg-in air diffuser subassembly for a variety of suspended ceiling framework. 3,757,667, Cl. 98-40.00d.

Lambert, William M. Method of reducing dependence on tobacco. 3,757,798, Cl. 131-1.000.

Lamberti, Vincent; and Lemaire, Henry, to Lever Brothers Company. Detergent. 3,758,595, Cl. 260-609.00r.

Lampert, Rolf: *See—*
Puhahn, Werner; and Lampert, Rolf, 3,757,805.

Landoni, Giannino. Automatic quilting machine. 3,757,710, Cl. 112-118.000.

Landry, Norman R.; and Grabowski, Joseph P., to United States of America, Navy, mesne. Versatile in line waveguide to coax transition. 3,758,886, Cl. 333-97.00r.

Lane, Thomas A.: *See—*
Lang, Theo O.; and Lane, Thomas A., 3,758,371.

Laney, Campbell P., Jr.; White, William Thomas; and Mercer, Harry L., to Stevens, J. P., & Co., Inc. Padding apparatus with anti-flowback guide. 3,757,545, Cl. 68-43.000.

Lang, Theo O.; and Lane, Thomas A., to Foster Grant Co., Inc. Plastic net laminate material. 3,758,371, Cl. 161-88.000.

Lange, Gerhard, to Wafios Maschinenfabrik Wagner, Ficker & Schmid G.m.b.H. Method and apparatus for cutting pins for producing chain links. 3,757,627, Cl. 83-558.000.

Lange, Hermann Paul. Mixing valve and thermostat for use with same. 3,758,028, Cl. 236-12.00r.

Langer, Arthur W., Jr.: *See—*
Bunting, William M.; and Langer, Arthur W., Jr., 3,758,585.

Langer, Arthur W., Jr.; Whitney, Thomas A.; and Klemann, Lawrence P., to Esso Research and Engineering Company. Separation of tertiary chelating polyamines. 3,758,580, Cl. 260-563.00r.

Langlais, Joseph E. Patient communicator support. 3,757,363, Cl. 5-317.000.

Lanier Electronic Laboratory, Inc.: *See—*
Bolick, Fred C., Jr.; and Godwin, James B., III, 3,758,726.

Lapple, Walter C.; and Matty, Robert E., to Babcock & Wilcox Company, The. $SO_2$ absorption system with regeneration of absorbent. 3,758,668, Cl. 423-242.000.

Larsen, Aubrey A.; and Gould, William A.; deceased (by Gould, Barbara E.; legal representative), to Mead Johnson & Company. Sympathomimetic process and compositions employing sulfonamidophenalkylamines. 3,758,692, Cl. 424-321.000.

Larsson, Erik Johan, to Barracudaverken AB. Floating boom structures. 3,757,526, Cl. 61-1.00f.

Lasnf, Claude: *See—*
Fally, Jacques; Richez, Jacques; Lasnf, Claude; and Lazennec, Yvon, 3,758,337.

Lau, Edward: *See—*
Wolf, Edgar; Lau, Edward; and Polizzotto, Joseph F., 3,757,920.

Lau, Philip T. S.: *See—*
Beavers, Leo E.; Lau, Philip T. S.; and Salminen, Ilmari F., 3,758,308.

Laurance, Dale Roderic: *See—*
Broeck, James Samuel Ten, Jr.; Perry, Robert Bruce; Laurance, Dale Roderic; and Fisher, John Richard, 3,758,457.

Lawrence Brothers Inc.: *See—*
Rusch, Robert E., 3,757,384.

Lazennec, Yvon: *See—*
Fally, Jacques; Richez, Jacques; Lasnf, Claude; and Lazennec, Yvon, 3,758,337.

Le Bar, Philip A., Jr., to General Motors Corporation. Linear governor. 3,757,809, Cl. 137-47.000.

Le Page, Jean Francois: *See—*
Juguin, Bernard; and Le Page, Jean Francois, 3,758,627.

Le Roch, Emile Francois Louis; and Troncy, Robert, to Telecommunications Radioelectriques et Telephoniques T.R.T. Repeater fault localization system. 3,758,728, Cl. 179-175.31r.

Leathers, Clarence H., to Grant Oil Tool Company. Large diameter hole opener for earth boring. 3,757,877, Cl. 175-269.000.

Leber, Jean-Pierre; and Lutz, Karl, to Sandoz Ltd., (a/k/a) Sandoz AG. Cis-thiophosphoric acid amide esters. 3,758,645, Cl. 260-941.000.

Lederer, Michael: *See—*
Jastrow, Horst; Lederer, Michael; and Heiskel, Elmar, 3,758,425.

Lee, Andrew, to Hypaco, Incorporated. Cutoff and routing device. 3,757,838, Cl. 144-3.00r.

Lee, Lap Yen, to United States of America, Atomic Energy Commission. Optical-binary coded position-sensitive radiation detector. 3,758,780, Cl. 250-271.000.

Lee, Sydney, to Colgate-Palmolive Company. Treatment of tallow and like fatty materials. 3,758,533, Cl. 260-428.000.

Lee, William Waltham Alfred, to Walthams (Bognor Regis) Limited. Ladders. 3,757,896, Cl. 182-164.000.

Leeds & Northrup Company: *See—*
Littman, Bernard; and Ross, Charles W., 3,758,762.

Leesona Corporation: *See—*
Cruickshank, David G.; and Tata, Raymond V., 3,757,992.

Leff, Martin J.: *See—*
Olney, Nathaniel M.; Hurkmans, Antoon M.; Barrett, Edward E.; and Leff, Martin J., 3,758,016.

Lehe, Russell B., to Norandex, Inc. Slatted flooring connector system. 3,757,743, Cl. 119-28.000.

Leitich, Albert J.: *See—*
Braun, William V.; Brown, Daniel P.; and Leitich, Albert J., 3,758,860.

Lemaire, Henry: *See—*
Lamberti, Vincent; and Lemaire, Henry, 3,758,595.

Lengel, George W. Form for molding a tapered bore in concrete. 3,758,068, Cl. 249-177.000.

Lennox Industries Inc.: *See—*
Coplin, Jess Lee, 3,757,665.

Leonard, Ronald James, to Baxter Laboratories, Inc. Multi-layer membrane type mass transfer device and process. 3,757,955, Cl. 210-321.000.

Leonard, William J., Jr.; and Holler, Howard V., to Shell Oil Company. Process for preparing a supported catalyst. 3,758,418, Cl. 252-464.000.

Lepley, Russell L.; and Motyl, Werner J. Emergency mine elevator. 3,757,701, Cl. 104-242.000.

Lerch, Rolf: *See—*
Held, Walter; and Lerch, Rolf, 3,758,808.

Les Etablissements Marechal: *See—*
Denojean, Jacques, 3,758,331.

Lesokhin, Jury Abramovich: *See—*
Kazachkov, Lev Yakovlevich; and Lesokhin, Jury Abramovich, 3,758,225.

Letzer, Edward K., to Eastman Kodak Company. Masking printer. 3,758,207, Cl. 355-80.000.

Levenberg, Nathan. Apparatus for transportation and segregated emptying of vessels containing fluids of different density. 3,757,813, Cl. 137-172.000.

Lever Brothers Company: *See—*
Lamberti, Vincent; and Lemaire, Henry, 3,758,595.

Levesque, Albert H.: *See—*
Popper, Felix B.; and Levesque, Albert H., 3,758,534.

Lewis, Chas. S., & Co., Inc.: *See—*
Johnson, Thomas E., 3,758,296.

Lewis, Thomas John, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty, Government of the. Manufacture of silicon carbide. 3,758,672, Cl. 423-345.000.

Leyland, Boris Nicholas; and Wood, Neil Frederick, to Imperial Chemical Industries Limited. Rubber-polyester compositions. 3,758,374, Cl. 161-231.000.

Liberty Glass Company: *See—*
Hull, Henry E.; Abrams, Herbert C.; and Cummings, Charles A., 3,757,929.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Held, Walter; and Lerch, Rolf, 3,758,808.
Hennings, Klaus, 3,758,326.
Mattfeld, Johann, 3,758,871.
Maute, Hans-Jurgen, 3,758,785.
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Strauss, Edmar; Foth, Seigfried; and Kaltschmidt, Hans-Jurgen, 3,758,706.

Lickmann, Karl. Pressure balanced arrangement for a multiple flow device. 3,757,648, Cl. 91-485.000.

- Liebig, Anthony E. Enclosed game or sport facility. 3,758,106, Cl. 272-3.000.
- Liebig, Preston D.: *See—*
  - Hurlbut, William B., Sr.; Liebig, Preston D.; and Maurin, Peter G., 3,757,498.
- Liechti, Peter: *See—*
  - Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,758,462.
- Lienemann, Darlo E.; and Datta, Arthur S., to International Harvester Company. Seed cut-off for planters. 3,757,996, Cl. 221-211.000.
- Lilly, Eli, and Company: *See—*
  - Chae, Hi Chul; Gelinas, Richard; Trusty, Jon Caton; and Berntsen, Walter H., 3,757,943.
  - Hamill, Robert L.; and Hoehn, Marvin M., 3,758,681.
  - Kukolja, Stephan P.; and Morin, Robert B., 3,758,488.
  - Seidler, Werner M. K., 3,758,679.
- Linbro Chemical Co., Inc.: *See—*
  - Gallant, Reginald R., 3,757,584.
- Lindegren, Erik D. Drycleaning tag. 3,757,936, Cl. 206-56.0ab.
- Lindner, Ernst: *See—*
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- Mertweiller, Joseph K.; and Tenney, Horace M., to Esso Research and Engineering Company. Hydrogenation of organic compounds. 3,758,614, Cl. 260-683.900.
- Meserole, Robert H., to Johns-Manville Corporation. Connection ends on duct or conduit section. 3,758,139, Cl. 285-332.000.
- Meshulam, Avram M., to Black and Decker Manufacturing Company, The. Hole saw assembly. 3,758,221, Cl. 408-204.000.
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- Miller, Herbert E., to Epsco Incorporated. Random pulse generator. 3,758,873, Cl. 331-78.000.
- Miller, John H., to Hy-Way Heat Systems, Inc. Direct fired heating device. 3,757,745, Cl. 122-136.00r.
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- Millies, Clarence Fredrick; and Hughes, Loren V. Adaptor system for a vending machine to adapt it to the vending of various size articles. 3,757,998, Cl. 221-242.000.
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- Neudeck, Herbert D.; and Thalacker, Ronald A., to Amana Refrigeration, Inc. Shipping mount for room air conditioners. 3,758,058, Cl. 248-20.000.
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- Nikles, Otho Leroy, Jr., to Resyn Corporation. Emulsifying curing agents for water dilutable epoxy resin systems. 3,758,421, Cl. 260-2.00n.
- Nilson, Alfred M., to Magnavox Company, The. Single tube color camera with crossed grid grating with adjacent line signal averaging to eliminate vertical scene modulation. 3,758,709, Cl. 178-5.4st.
- Nilsson, Karl-Ivar Sigurd, to Granges-Essem, AB. Locking device for vehicle safety belts. 3,758,044, Cl. 242-107.400.
- Nippon Electric Company, Limited: *See—*
  - Kubo, Tomoichi; Itazu, Masakatsu; and Yamashita, Hirofumi, 3,758,802.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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- Nippon Kogaku K.K.: *See—*
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- Nohara, Haruo; and Makino, Junichi, to Hitachi, Ltd. Method of digitally processing sinusoidal AC signals. 3,758,763, Cl. 235-151.000.
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- Northway, Clarence E.; and Pegg, Ronald L., to Haveg Industries, Inc. Porous fibrous substrate structure produced in oxidizing atmosphere. 3,758,352, Cl. 156-60.000.
- Norton Company: *See—*
  - Smith, Hugh E., 3,758,393.
- Novickis, Georgs: *See—*
  - Berkowitz, Lawrence; Novickis, Georgs; and Sheth, Prafulchandra N., 3,757,946.
- Nowell, John R.; and Genuit, Luther L., to Honeywell Information Systems Inc. Decrease in frequency detector. 3,758,852, Cl. 324-78.00q.
- Nu-Pro, Inc.: *See—*
  - Douglas, Donald J., 3,758,190.
- Nukem Nuklear-Chemie und Metallurgie, GmbH: *See—*
  - Pirk, Hans; Muller, Henricus; and Hackstein, Karl, 3,758,280.
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- O'Brien, James E.; and Schmidt, Emerson E., to Bendix Corporation, The. Flaw or chip detector. 3,757,569, Cl. 73-104.000.
- O'Brien, William James: *See—*
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- Ochial, Kohei; and Kato, Kiyoakira, to Olympus Optical Company, Ltd. Movable mirror arrangement in a single-lens reflex camera. 3,757,661, Cl. 95-42.000.
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- Ogata, Masaru, to Shionogi and Company, Ltd. 1,2-Epoxy-methano-A-norsteroid compounds and process for preparation thereof. 3,758,507, Cl. 260-333.000.
- Ohishi, Yasuhiro. Underwater craft for transporting divers. 3,757,721, Cl. 114-16.00a.
- Ohrberg, Carl Verner, to Danfoss A/S. Rotary piston machine. 3,758,242, Cl. 418-61.000.
- Ohtani, Yoshio 54 Diesel Kiki Kabushiki Kaisha. Electronic governor for injection-type internal combustion engines. 3,757,750, Cl. 123-102.000.
- Okabe, Katsuhiko, to Kabushikikaisha COPAL. Instantaneous intermittent feeding mechanism. 3,757,592, Cl. 74-112.000.
- Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Shock absorbing air bag apparatus in a motor car. 3,758,133, Cl. 280-150.0ab.
- Okamoto, Toyoo, to Kabushiki Kaisha Ricoh. Sheet catch tray for automatic sheet feeding apparatus. 3,758,105, Cl. 271-170.000.
- Okamura, Kyuya: *See—*
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- Oleck, Stephen M.; Schwartz, Albert B.; and Stover, William A., to Mobil Oil Corporation. Catalytic hydrocracking of hydrocarbons. 3,758,402, Cl. 208-111.000.
- Oliapuram, Antony, to Varta Aktiengesellschaft. Method of producing an electrolytic-cell electrode with active iron mass. 3,758,344, Cl. 136-120.0fc.
- Olin Mathieson Chemical Corporation: *See—*
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- Olinkraft, Inc.: *See—*
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- Olney, Nathaniel M.; Hurkmans, Antoon M.; Barrett, Edward E.; and Leff, Martin J., to Swingline Inc. Tacker. 3,758,016, Cl. 227-132.000.
- Olson, Donald R.; and Waddell, Eugene P., to Allis-Chalmers Corporation. Division head curtain for compartmented grinding mill. 3,758,041, Cl. 241-153.000.
- Olthuis, Eugene G., to General Electric Company. Centrifugally responsive dispenser for washing machine. 3,757,544, Cl. 68-17.00a.
- Olympus Optical Company, Ltd.: *See—*
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- Op de Beck, Herbert Kamiel Maria, to U.S. Philips Corporation. Electric filament lamp. 3,758,807, Cl. 313-273.000.
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- Orain, Michel, to Societe Anonyme: Glaenzer Spicer. Universal joints. 3,757,534, Cl. 64-8.000.
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- Orlick, John, to Hunt, Rodney, Company. Knock-off device. 3,757,547, Cl. 68-176.000.
- Orr, James D. Pressure relief valve. 3,757,815, Cl. 137-475.000.
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- Owen, David F. Detoxification and isolation of rapeseed protein by aqueous saline extraction and isoelectric protein precipitation. 3,758,452, Cl. 260-123.500.
- Owen, Keith; and Roberts, Geoffrey A. H., to Esso Research and Engineering Company. Fuel compositions. 3,758,282, Cl. 44-69.000.
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Pais, George S. Autocombine engine. 3,757,515, Cl. 60-13.00f.
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Pallos, Ferenc M., to Stauffer Chemical Company. Certain phosphorus containing amidine compounds as insecticides and acaricides. 3,758,685, Cl. 424-211.000.
Palmenberg, Edward C., to Chromalloy American Corporation. Classification gage for turbine vanes. 3,757,424, Cl. 33-174.00c.
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Palmer, William E. Wave-powered aerator. 3,758,083, Cl. 261-25.000.
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Parish, William R.; Kelley, James C.; Giovanetti, Albert; and Lutz, William A., to Wellman-Power Gas Incorporated. Process for producing anhydrous HF from fluroactive agent. 3,758,674, Cl. 423-483.000.
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Paruolo, Miller J.; McMackin, John J.; and McMeekin, James H., to Brockway Glass Company, Inc. Aerodynamic means for raising and swirling loose objects in empty glass containers and optical means for detecting the presence of same. 3,758,215, Cl. 356-196.00.
Pascente, Joseph E., to Grigsby-Barton, Inc. Synchronous switching circuit. 3,758,793, Cl. 307-252.00b.
Passon, Philip J., to General Motors Corporation. Brake actuated throttle closure system. 3,757,913, Cl. 192-3.00r.
Patel, Narendra; and Roberts, Bernard J. Method of forming clay articles around a compressible mandrel. 3,758,653, Cl. 264-56.000.
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Pechuk, Vasily Ivanovich; Pompeev, Vladimir Mikhailovich; and Taratukhina, Galina Petrovna. Load cell with resistance strain gauges. 3,757,573, Cl. 73-141.00a.
Pedersen, Dane Harald, to Dymo Industries, Inc. Embossing tool tape cut-off mechanism. 3,757,919, Cl. 197-6.700.
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Peterson, David R.; and Conragan, James, to Signetics Corporation. Solid state bistable switching device and method. 3,758,797, Cl. 307-324.000.
Peterson, Frederick L.; and Paclik, George F., to Garrett Corporation, The. Electronic mass airflow sensing and control system. 3,757,808, Cl. 137-2.000.
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Pfenning, Ray C.; and Caton, James E. Apparatus for making engineering stakes. 3,757,625, Cl. 83-404.100.
Pfrommer, John W.; and Geisel, Robert C., to Eyelet Speciality Company. Cartridge-type lipstick container or the like. 3,758,218, Cl. 401-86.000.
Pfuller, Peter; and Kuhn, Wenzel, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Preparation of maleimides. 3,758,498, Cl. 260-326.5fm.
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Pomara, Johnny B., Jr., 50% to El Chico Corporation. Food processing apparatus. 3,757,676, Cl. 99-450.600.
Pompeev, Vladimir Mikhailovich: *See—*
Pechuk, Vasily Ivanovich; Pompeev, Vladimir Mikhailovich; and Taratukhina, Galina Petrovna, 3,757,573.
Popoff, Ivan Christoff; and Thanawalla, Chandrakant Bhagwandas, to Pennwalt Corporation. Fluorosulfonated thiopenols and method of preparation. 3,758,567, Cl. 260-543.00f.
Popper, Felix B.; and Levesque, Albert H., to Grace, W. R., & Co. Production of metal chelates. 3,758,534, Cl. 260-429.500.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
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Portmann, August Thomas, to Bruderer AG. Apparatus for oscillating drive of shafts and use of the aforesaid apparatus. 3,758,011, Cl. 226-142.000.
Post, Daniel H. Rotary engine. 3,758,228, Cl. 415-153.000.
Postma, Cambertus: *See—*
Janssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendrik; Postma, Cambertus; and Guerts, Angustinus Joseph, 3,758,304.
Potgieter, Jacobus Daniel. Bicycle type exercising apparatus with eccentric mounting. 3,758,107, Cl. 272-73.000.
Potter, Huntington. Luggage handles. 3,757,911, Cl. 190-57.000.
Potter, James L. Rotor system having viscoelastic lead-lag damper. 3,758,230, Cl. 416-107.000.
Potter, Ralph A.; and Tennery, Victor J., to United States of America, Atomic Energy Commission. Process for the preparation of uranium nitride powder. 3,758,669, Cl. 423-254.000.
Pounder, Maurice George; and Wilkins, Kenneth Ross, to Du Pont of Canada Limited. Purification of adiponitrile. 3,758,545, Cl. 260-465.80r.
Powers, William, III: *See—*
Rigdon, Orville W.; Macaluso, Anthony, Sr.; and Powers, William, III, 3,758,608.
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PPG Industries, Inc.: *See—*
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Prete, Ernest, Jr., to Ancra Corporation. Door latching mechanism. 3,758,140, Cl. 292-223.000.
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Price Company, Limited, The: *See—*
Hawkings, William E., 3,758,380.
Price, Frederick. Downhole safety valve. 3,757,816, Cl. 137-498.000.
Price, Philip N.; and Hoffman, Herbert N., to General Electric Company. Turbine valve chest and nozzle plate construction. 3,758,229, Cl. 415-217.000 57 11/19/71.
Prindle, Herghel B.; McElreath, Jack A.; and Elliot, David R., to Dow Chemical Company, The. Process for preparing a stabilized biocidal composition. 3,758,464, Cl. 260-248.500.
Pritchett, William C., to Atlantic Richfield Company. Well heating. 3,757,860, Cl. 166-248.000.
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Ptashnik, William J., to General Motors Corporation. Method for producing metal alloy foams. 3,758,291, Cl. 75-20.00f.
Pugh, Hubert M., to Thermo-Products, Inc. Humidifier with flushing system. 3,758,086, Cl. 261-92.000.
Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy AG. Process for the production of deeply coloured transparent pigments of the isoindoline series. 3,758,497, Cl. 260-325.000.
Puhahn, Werner; and Lampert, Rolf, to Standardwerk Eugen Reis GmbH. Coin counting apparatus. 3,757,805, Cl. 133-8.00r.
Quaglia, Lawrence T.: *See—*
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Quame, Babington A. Apparatus for providing test specimens in the form of spots. 3,758,275, Cl. 23-259.000.
R. I. Patents, Inc.: *See—*
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- Ramachandran, Pallassana; and Yurko, Joseph, to Colgate-Palmolive Company. Non-yellowing detergent formulation. 3,758,408, Cl. 252-89.000.
- Rammler, David H.: *See—*
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- Ranseen, Mauritz C. Card supporting device. 3,758,065, Cl. 248-459.000.
- Raocio, Joseph A. Tool-holder for machine tools. 3,757,616, Cl. 82-36.00r.
- Raodman, Charles J., Jr., to Skyway Machine, Inc. Exhaust unit for combusion engine. 3,757,892, Cl. 181-36.000.
- Rapfogel, Irving. Method of treating periodontal disease. 3,758,689, Cl. 424-329.000.
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- Rathmans of Pall Mall Canada Limited: *See—*
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- Ray, Frank M., to Slick Corporation, The. Control valve for pulse jet type filter apparatus. 3,757,497, Cl. 55-302.000.
- Rayburn, Charles Calvin, to Illinois Tool Works Inc. Wound film capacitor. 3,758,833, Cl. 317-258.000.
- Raynaud, Guy M.: *See—*
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  - Cowley, Richard Thomas; and Hulls, Leonard Robin, 3,757,570.
  - Frattarola, Joseph Ralph, 3,758,649.
  - Heuner, Robert Charles; and Steudal, Goetz Wolfgang, 3,758,792.
  - Kosonocky, Walter Frank, 3,758,794.
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- Re, Frank Manuel, to Dual Manufacturing and Engineering, Incorporated. Reclining chair. 3,758,151, Cl. 297-83.000.
- Redactron Corporation: *See—*
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- Reddan, Edwin D.: *See—*
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- Reed, Hugh Wilma Boulton; Smith, John; and Hirst, Ian, to Imperial Chemical Industries Limited. Process for the production of phenolic compounds and intermediates for use therein. 3,758,596, Cl. 260-613.00d.
- Reeder, Terrence L.: *See—*
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- Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
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- Reichle, Rulf, to Bosch, Robert, G.m.b.H. Information carrier construction. 3,758,336, Cl. 117-217.000.
- Reichrath, Werner: *See—*
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- Reid, Thomas. System for removing snow and ice from paved surfaces. 3,758,748, Cl. 219-213.000.
- Reimlinger, Hans K.; and Vandewalle, Jan Joseph Maurice, to Mallingkrodt Chemicals Works, mesne. s-Triazolo [5,1$\alpha$] isoquinolines and derivatives. 3,758,480, Cl. 260-288.00r.
- Reinberg, Alan R., to Texas Instruments, Incorporated. Radial flow reactor. 3,757,733, Cl. 118-49.500.
- Reinhall, Rolf Bertil. Revolver feeder for cellulosic materials. 3,758,379, Cl. 162-246.000.
- Reist, Walter, to Ferag AG. Universal link chain. 3,757,514, Cl. 59-78.000.
- Reitsema, Robert H.; and Allphin, Nylen L., Jr., to Marathon Oil Company. Liquid esters of naphthalene dicarboxylic acids. 3,758,548, Cl. 260-475.0fr.
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- Remy, E. P., et Cie: *See—*
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- Renfroe, Hiram H. Frying and/or frictionless probing device. 3,757,788, Cl. 128-348.000.
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  - Ealkenberg, Dieter; Renner, Theodor; Rittmayer, Gerhard; and Winkler, Josef, 3,758,346.
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- Resilient Grip Limited: *See—*
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- Resyn Corporation: *See—*
  - Nikles, Otho Leroy, Jr., 3,758,421.
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- Reyner, Emerson Marshall, II: *See—*
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- Reynolds, Blake: *See—*
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- Rhoda, Ralph A., to Berkeley Pump Company. Guide vane for suction side of marine jet propulsion system. 3,757,728, Cl. 115-16.000.
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- Rhymes, Aubrey J., Jr.: *See—*
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- Rich, Ernest Joseph, to Celanese Corporation. Spray-spun continuous tubular structure. 3,758,373, Cl. 161-169.000.
- Richeson, Dale T. Conversion system for providing useful energy from water surface motion. 3,758,788, Cl. 290-42.000.
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- Richman, Edward B., to Addressograph-Multigraph Corporation. Process for making a printing master. 3,758,330, Cl. 117-37.01e.
- Rickenbacher, Hans Rudolf, to Ciba-Geigy AG. Chlorinated alpha-aminoanthraquinones and process for their manufacture. 3,758,518, Cl. 260-381.000.
- Ricoh Co., Ltd.: *See—*
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  - Mochizuki, Nobuo, 3,758,204.
- Ridgway, Harold C., to Telaco Industries. Hydraulically actuated rotary pop-up sprinkler. 3,758,038, Cl. 239-206.000.
- Rigdon, Orville W.; Macaluso, Anthony, Sr.; and Powers, William, III, to Texaco Inc. Process for acid treating of olefins. 3,758,608, Cl. 260-677.000.
- Riggert, Karlheinz, to Vickers-Zimmer Aktiengesellschaft Planung und bau von Industrieanlagen. Process for the production of technical endless filaments of high-molecular weight linear polymers. 3,758,658, Cl. 264-176.00f.
- Rigollot, Georges Alfred. Power-generating plant using a combined gas- and steam-turbine cycle. 3,757,517, Cl. 60-39.18b.
- Riker Laboratories, Inc., mesne: *See—*
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- Ritchie, David Alan; and Kuciejcik, James S., to Sherwood Medical Industries, Inc. Reagent reservoir and magnetic stirring system. 3,758,274, Cl. 23-259.000.
- Ritchie, Lyle J., to Automatic Refuse Systems, Inc. Dolly-mounted bag holder for refuse compactor. 3,757,682, Cl. 100-220.000.
- Ritter, Klaus; Gott, Hans; and Zechner, Gottfried, to EVG Entwicklungs- und Verwertungsgesellschaft m.b.H. Machine for straightening and cutting metal wire or strip into pieces. 3,757,552, Cl. 72-12.000.
- Rittiger, Robert S.; and Russell, Charles K., to United States Steel Corporation. Apparatus for oxygen determination. 3,758,397, Cl. 204-195.00s.

- Rittmayer, Gerhard: *See—*
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- Roberts, Bissett J. Support and guide mechanism for pivoting a platform. 3,757,703, Cl. 108-6.000.
- Roberts, Edward S., to Treadwell Corporation. Method and apparatus for extruding metal powder to produce a continuous rod. 3,757,410, Cl. 29-420.500.
- Roberts, Frank A., mesne: *See—*
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- Roberts, Geoffrey A. H.: *See—*
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- Roberts, George Leathwhite, Jr.; and Rowland, John David, to American Cyanamid Company. Rutile T 102 slurries. 3,758,322, Cl. 106-300.000.
- Roberts, Theodore S.: *See—*
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- Robertson, Jerry E.: *See—*
  - Harrington, Joseph K.; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,758,490.
- Robertson, Jerry E.; Harrington, Joseph K.; and Kvam, Donald C., to Riker Laboratories, Inc., mesne. Substituted sulfonanilides in the treatment of inflammation. 3,758,688, Cl. 424-321.000.
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- Robin, Michael; and Schulte, Sheldon R., to Ashland Oil, Inc. Process of reacting a benzoic acid with amino alcohol. 3,758,547, Cl. 260-472.000.
- Robinson, John Joseph; and Hibbert, Frederick. Apparatus for forming and displaying words or numerals or a series of numerals and synbols. 3,757,433, Cl. 35-75.000.
- Robinson, William P.: *See—*
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- Robnolie, Wilber B. Entry device for reproduction machine. 3,758,208, Cl. 355-97.000.
- Roch, Gerald V., to Hurco Manufacturing Company, Inc. Automatic shearing method and apparatus. 3,757,645, Cl. 91-411.00r.
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- Rodriguez, David G.: *See—*
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- Rogakos, Deno J., to General Motors Corporation. System including bi-directional drive mechanism with reverse drive limit. 3,757,472, Cl. 49-40.000.
- Rogers, Edward F.; and Clark, Robert L., to Merck & Co., Inc. 2-Loweralkylamino-4-amino benzoic acids ether salts and esters, and acid addition salt thereof. 3,758,561, Cl. 260-418.00r.
- Rogers, Frank J.; and MacClose, Joe, to Rogers Sales & Service Inc. Plastic tee manufacturing apparatus. 3,758,255, Cl. 425-392.000.
- Rogers, Glyn D.: *See—*
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- Rogoff, Martin H.: *See—*
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- Rohr, Charlotte M. Electric mattress. 3,758,747, Cl. 219-212.000.
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- Rolff, Jacob J. P.; and Di Marco, Franco, to Eckardt, J. C., AG. Apparatus for measuring the quantity of outflow in open canals or the like. 3,757,576, Cl. 73-194.0em.
- Rooney, Clarence Stanley; and Gleason, Clarence Henry, to Merck, Sharp, & Dohone (I.A.) Corporation. N-sulfonyl-indole-3-acetomides. 3,758,500, Cl. 260-326.12r.
- Roos, Leo, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions and elements containing organosilanes. 3,758,306, Cl. 96-83.000.
- Ropp, Richard C., to Westinghouse Electric Corporation. Rare-earth-niobate composition. 3,758,486, Cl. 252-301.40r.
- Rorer, William H., Inc.: *See—*
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- Rose, Robert Frederick, to Dixon Automatic Tool, Inc. Standardized control sections for machine control systems. 3,758,835, Cl. 318-162.000.
- Roseman, Richard J. Tube connection for fluid handling apparatus. 3,758,138, Cl. 285-158.000.
- Rosen, Joseph L., to Super Whip Valve Mfg. Co. Valve structure. 3,758,007, Cl. 222-394.000.
- Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Aryl ketals of polycyclic oxo compounds and processes. 3,758,509, Cl. 260-340.500.
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  - Winkelmann, Hans Dieter; Rosendahl, Friedrich Karl; Oertel, Harald; and Rinke, Odenthal-Globusch Heinrich, 3,758,553.
- Rosinski, Edward J.; Plank, Charles J.; and Schwartz, Albert B., to Mobil Oil Company. Catalytic cracking of hydrocarbons with mixture of ZSM-5 and other zeolites. 3,758,403, Cl. 208-120.000.
- Ross, Abe D. Commercial laundering apparatus. 3,757,546, Cl. 68-44.000.
- Ross, Charles W.: *See—*
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- Ross, Donald R. Rigid panel container. 3,758,017, Cl. 229-14.00c.
- Ross Operating Valve Company: *See—*
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  - Bethke, Robert P.; Mac Fadden, David P.; Nelson, Ronald H., Sr.; and Ross, Steven G., 3,758,024.
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- Routson, Willis G., to Dow Chemical Company, The. Oil recovery employing peroxides and alkalis. 3,757,861, Cl. 166-273.000.
- Rovinski, Walter M., to Century Laboratories Inc. Filter syringe. 3,757,779, Cl. 128-218.00m.
- Rowe, Robert W. Muzzle loading firearm. 3,757,447, Cl. 42-51.000.
- Rowland, John David: *See—*
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- Royal Industries, Inc.: *See—*
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- Rucker, Dietrich: *See—*
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- Rudolph, Hans: *See—*
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- Rudszinat, Willy: *See—*
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- Ruegg, Frank A.; Spracklen, Stanford B.; and Cheatham, Burton L., II, to International Biophysics Corporation. Sterile inserter apparatus. 3,757,771, Cl. 128-2.10e.
- Ruggles, Benjamin C.: *See—*
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- Ruhle, Helmut W.: *See—*
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- Rummler, William David, to Bell Telephone Laboratories, Incorporated. Transversal equalizer controlled by pilot tones. 3,758,881, Cl. 333-16.000.
- Runciman, Donald A. Method and apparatus for drying lumber. 3,757,428, Cl. 34-9.500.
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- Rundgren, Alfred E.; and Rundgren, Alfred C. Non-refillable bottle. 3,757,980, Cl. 215-23.000.
- Rupert, Ronald E. Cartridge locator. 3,757,561, Cl. 72-461.000.
- Rusch, Allan C.; and Bubak, John, to Massey-Ferguson Inc. Hydrostatic transmission. 3,757,525, Cl. 60-492.000.
- Rusch, Robert E., to Lawrence Brothers Inc. Hanger device. 3,757,384, Cl. 16-97.000.
- Ruschig, Heinrich: *See—*
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- Russell, Charles K.: *See—*
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  Radford, Robert E.; and Stapleford, Gary N., 3,758,782.
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Schmitt, Joseph W.; Mosakowski, James E.; and Starkey, Donald L., to Sanders Associates, Inc. Digital demodulator. 3,758,870, Cl. 329-104.000.
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Schneider, Robert J. Resilient plastic staple. 3,757,629, Cl. 85-49.000.
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Schroeder, Josef; and Scbellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Styryl compounds. 3,758,460, Cl. 260-240.00d.
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Schuff, Richard William. Tub forming machine. 3,758,250, Cl. 425-165.000.
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Schwartz, Boris. Biased tensioned insole member for boots or shoes. 3,757,435, Cl. 36-30.00r.
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Scott, Robert D. Dehydration and packaging of foodstuffs by dialysis. 3,758,313, Cl. 99-199.000.
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Seemann, Fritz; and Troxler, Franz. Organic compounds. 3,758,502, Cl. 260-326.150.
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Seno, Hisau; and Seno, Fushi. Rope and float assembly for use as a course demarcation line in a swimming pool. 3,757,370, Cl. 9-8.00r.
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Sewell, Windell C., 1/3 each to Smith, Fred D. and Smith, Robert L. and Smith, Robert L. Vise apparatus. 3,758,101, Cl. 269-254.00r.
Shankir, Irvin P., to ESB Incorporated. Electromedical stimulator lead connector. 3,757,789, Cl. 128-404.000.
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Shih, Chi-Kai, to Du Pont de Nemours, E. I., and Company. Process for preparing an elastomer which is structurally supported against excessive cold-flow during shipment or storage. 3,758,656, Cl. 264-115.000.
Shima, Takeo; Yamashiro, Seiichi; and Inata, Hiroo, to Teijin Limited. Novel polyetheresters of hydroxyalkoxyl diphenyl-4-carboxylic acid process for preparation thereof, and articles thereof. 3,758,442, Cl. 260-47.00c.
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Sick, Erwin; Pinior, Gernot; and Plockl, Johann, to Zellweger AG. Reader mechanism for optically discernible characters. 3,758,783, Cl. 250-219.00d.
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- Silverman, Ralph H. Dental operative system. 3,757,420, Cl. 32-22.000.
- Simpson, Sylvester Allan; and Smith, Howard W., to Smith, A. D., Corporation. Automatic testing apparatus. 3,758,857, Cl. 324-158.0mg.
- Sindzingre, Michel Jacques Marie; Villamayor, Michel; and Robert, Alain, to Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S. Resistance and modulus reinforcing materials. 3,758,369, Cl. 161-60.000.
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- Singh, Salwani, to American Cyanamid Company. Photographic imaging of material containing halo azido naphthalenes. 3,758,303, Cl. 96-27.00r.
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- SKF Industriele En Ontevikkeling Maatschappi: *See—*
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- Skinner, Jerald Paul. Monolithic structural member and systems therefor. 3,757,481, Cl. 52-265.000.
- Skoetsch, Paul B. S. Pill dispenser. 3,757,994, Cl. 221-202.000.
- Sky-Eagle, William A., Jr. Decanting skimmer. 3,757,953, Cl. 210-242.000.
- Sky-Van Limited: *See—*
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- Sletzinger, Meyer: *See—*
  - Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,758,560.
- Slick Corporation, The: *See—*
  - Ray, Frank M., 3,757,497.
- Smart, Ray F. Tool for administering pills to animals. 3,757,781, Cl. 128-223.000.
- Smejkal, Hellmuth; and Poferl, Gunter, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Water-cooled measuring probe for continuously measuring the temperature of hot liquid metal baths in great basic oxygen converters. 3,757,579, Cl 73-343.00r.
- Smith, A. D., Corporation: *See—*
  - Simpson, Sylvester Allan; and Smith, Howard W., 3,758,857.
- Smith, Basil G., to Smith, Basil, Seals, Limited. Mechanical shaft seal. 3,758,179, Cl. 308-187.100.
- Smith, Basil, Seals, Limited: *See—*
  - Smith, Basil G., 3,758,179.
- Smith, Charles T.; and Ady, Irvin B. Plant watering and fertilizing device. 3,757,469, Cl. 47-48.500.
- Smith, Dalton L.: *See—*
  - Kitchin, James F.; and Smith, Dalton L., 3,757,751.
- Smith, David F. Synthetic surgical sutures. 3,757,786, Cl. 128-335.500.
- Smith, Donald F.: *See—*
  - Anstin, Wayne D.; Byrne, Joseph E.; Clifford, Gilbert F.; Henkel, Robert W.; Odell, Arthur W.; Quaglia, Lawrence T.; and Smith, Donald F., 3,757,941.
- Smith, Edward A., to GAF Corporation. Extended filter bag. 3,757,957, Cl. 210-486.000.
- Smith, Edward Howard. Liquid body waste disposal system. 3,757,357, Cl. 4-114.000.
- Smith, F., & Company (Whitworth) Limited: *See—*
  - Collinge, Robert Alan, 3,757,548.
- Smith, Fred D. and Smith, Robert L.: *See—*
  - Sewell, Windell C., 3,758,101.
- Smith, Harold E., to Smithpac Canada Limited. Latching arrangement for tailgates. 3,757,969, Cl. 214-83.300.
- Smith, Howard W.: *See—*
  - Simpson, Sylvester Allan; and Smith, Howard W., 3,758,857.
- Smith, Hugh E., to Norton Company. Activating product. 3,758,393, Cl. 204-279.000.
- Smith International, Inc.: *See—*
  - Pereau, Robert E., 3,757,876.
- Smith, John: *See—*
  - Reed, Hugh Wilma Boulton; Smith, John; and Hirst, Ian, 3,758,596.
- Smith, Raymond L., Jr., to C & M Manufacturing Company. Double mast side loader lift truck and double actuator balancing. 3,757,899, Cl. 187-17.000.
- Smith, Robert L.: *See—*
  - Sewell, Windell C., 3,758,101.
- Smithpac Canada Limited: *See—*
  - Smith, Harold E., 3,757,969.
- Snarr, James L.: *See—*
  - Green, Donald T.; and Snarr, James L., 3,758,723.
- Sneider, Charles. Carrier frame for automobiles. 3,757,975, Cl. 214-450.000.
- Snub-R-Rig Corporation: *See—*
  - Davis, Haggai; and Robertson, Robert S., 3,757,858.
- Snyder, George W., to Sperry Rand Corporation. Flex valve apparatus for sensing total horizontal and vertical ambient undirectional magnetic field. 3,758,850, Cl. 324-43.00r.
- Societa Italiana Resine S.I.R.S.P.A.: *See—*
  - Craveri, Renato; Manachini, Pier Luigi; and Araguzzini, Fabrizio, 3,758,529.
- Societa Italiana Resine S.p.A.: *See—*
  - Forni, Lucio, 3,758,416.
- Societe Anonyme dite: L'Oreal: *See—*
  - Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and De Beaulieu, Henri Philippe, 3,757,804.
  - Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,758,268.
  - Kalopissis, Gregoire; and Bugaut, Andree, 3,758,573.
- Societe Anonyme Heurtey: *See—*
  - Kissel, Roland Roger, 3,758,263.
- Societe Anonyme Heurtey and ELF-Union: *See—*
  - Pariel, Jean Marie; and Robic, Gabriel, 3,757,706.
- Societe Anonyme: Glaenzer Spicer: *See—*
  - Orain, Michel, 3,757,534.
- Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
  - Nau, Gilbert, 3,758,773.
- Societe des Acieries de Manori-Pompey: *See—*
  - Bellot, Jean; and Hugo, Michel, 3,758,294.
- Societe d'Etude et de Promotion d'Enterprises: *See—*
  - Vincens, Rene, 3,757,485.
- Societe d'Etudes de Machines Thermiques: *See—*
  - Bastenhof, Dirk, 3,757,757.
  - Kohn, Karl Walter, 3,758,174.
- Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale: *See—*
  - Malen, Charles; Danree, Bernard; and Poignant, Jean-Claude, 3,758,528.
- Societe Italiana Resine S.p.A.: *See—*
  - Piccolo, Luigi; and Calcagno, Benedetto, 3,758,675.
- Societe Nationale d'Etude et de Construction de: *See—*
  - Caruel, Jacques Emile Jules; Cantaloube, Bernard Andre; Stora, Guy Daniel; Bedue, Jean Robert; Gastebois, Philippe Marc Denis; and Guillevere, Herve Alain, 3,757,522.
- Societe Stephanoise de Constructions Mecaniques: *See—*
  - Fevre, Charles M., 3,757,905.
- Sodderland, George A.: *See—*
  - Baljet, Daniel J.; Sodderland, George A.; and Hania, John D. H., 3,757,932.
- Sofinsky, Pavet Ilich; and Tsedyakov, Ivan Filippovich. Roll mould with cooling systems. 3,757,847, Cl. 164-277.000.
- Soldavini, Teodore. Lawnmower and grass collector. 3,757,503, Cl. 56-202.000.
- Sonic Development Corporation: *See—*
  - Schurig, Robert E.; and Korn, Joseph, 3,758,033.
- Sony Corporation: *See—*
  - Baba, Hideo, 3,758,342.
- Sosnowski, Stanislaw Jan Antoni: *See—*
  - Kemp, Kenneth Albert Walters; and Sosnowski, Stanislaw Jan Antoni, 3,758,240.
- Sowards, Donald M.: *See—*
  - Moore, Earl P., Jr.; and Sowards, Donald M., 3,758,317.
- Sowards, Donald M., to Du Pont de Nemours, E. I., and Company. Refractory materials and process for making same. 3,758,316, Cl. 106-5.000.
- Sowma, Julia A. Convertible camper. 3,758,148, Cl. 296-23.0mc.
- Spanel, Abram N.: *See—*
  - Spanel, Abram N.; and Schwartz, John L. (said Schwartz, assor. to said), 3,757,715.
- Spanel, Abram N.; and Schwartz, John L., said Schwartz, assor. to said Spanel, Abram N. Needles for use with tufting machines. 3,757,715, Cl. 112-221.000.
- Spero, Theodore P.: *See—*

  - Givens, Reuben H.; and Spero, Theodore P., 3,757,825.
- Sperry Rand Corporation: *See—*
  - Armstrong, James B., 3,757,995.
  - Bennett, Clarence Leonard, Jr.; De Lorenzo, Joseph D.; and Durling, Hubert R., Jr., 3,757,501.
  - Breeden, Robert H., 3,758,235.
  - Snyder, George W., 3,758,850.
  - Susman, Leon; Maguire, Hugh C.; and Bohman, Carl E., 3,758,849.
  - Thaxter, James B., 3,758,199.
- Spes, Hellmuth: *See—*
  - Eck, Herbert; Heckmaier, Josef; and Spes, Hellmuth, 3,758,550.
- Spinola, Anthony A.: *See—*
  - Kuntz, John B.; and Spinola, Anthony A., 3,758,292.
- Spisak, Steve, to TRW Inc. Stud welding tool and stud loading device therefor. 3,758,742, Cl. 219-98.000.
- Spisak, Steve, to TRW Inc. Clutch mechanism for welding tools. 3,758,744, Cl. 219-98.000.
- Spitsbergen, James C.; and Kim, Young Kwon, to Witco Chemical Company. Styrene soluble chemically resistant polyester. 3,758,639, Cl. 260-870.000.
- Spitzer, Cary R.; and Stainback, Jerry D., to United States of America, National Aeronautics and Space Administration. Exposure interlock for oscilloscopy camera. 3,757,659, Cl. 95-42.000.
- Spitzer, Ernst L.T.M.: *See—*
  - Campen, Jan P.; Spitzer, Ernst L.T.M.; Senden, Wilhelmus A. A.; and Hill, Jeffrey S., 3,758,594.
- Spracklen, Stanford B.: *See—*
  - Ruegg, Frank A.; Spracklen, Stanford B.; and Cheatham, Burton L., II, 3,757,771.
- Sprecher, Nathan; and Cotter, John Thomas, to Esso Research and Engineering Company. Isomerization-fractionation process. 3,758,604, Cl. 260-677.00a.
- Staar Societe Anonyme: *See—*
  - Staar, Theophiel Clement Josef Lodewijk, 3,758,049.
- Staar, Theophiel Clement Josef Lodewijk, to Staar Societe Anonyme. Rapid drive device for tape transports. 3,758,049, Cl. 242-201.000.
- Staats, William A.: *See—*
  - Chang, Richard S.; Staats, William A.; Bosley, Denis V.; and Yamasaki, Toshio, 3,757,461.
- Stainback, Jerry D.: *See—*
  - Spitzer, Cary R.; and Stainback, Jerry D., 3,757,659.
- Stalker, Kenneth W., to General Electric Company. Method for improving a metal casting. 3,758,347, Cl. 148-4.000.
- Stallbaumer, Richard J.: *See—*
  - Poyner, Weston R.; Stallbaumer, Richard J.; and Eskridge, Wade A., 3,757,524.
- Stamberger, Paul, to Union Optics Corporation. Copolymers and hydrogels of unsaturated esters. 3,758,448, Cl. 260-86.10e.
- Stamicarbon N.V.: *See—*
  - Suverkropp, Geerthrudes H.; and Reichrath, Werner, 3,758,494.
- Standard Oil Company: *See—*
  - Hughes, Robert D.; and Steigelmann, Edward F., 3,758,605.
  - Steigelmann, Edward F.; and Hughes, Robert D., 3,758,603.
- Standardwerk Eugen Reis GmbH: *See—*
  - Puhahn, Werner; and Lampert, Rolf, 3,757,805.
- Stankevich, Jury Leonidovich: *See—*
  - Avilov, Ernest Alexeevich; Vasilievich, Nikolai; Galtsov, Vladimir Vasilievich; Zykov, Anatoly Petrovich; Kanunov, Mikhail Alexeevich; Kiselev, Jury Vladimirovich; Mityaev, Mikhail Vladimirovich; Nikitin, Vyacheslav Vladimirovich; Razin, Anatoly Alexandrovch; Stankevich, Jury Leonidovich; Tsukerman, Veniamin Aronovich; and Eig, Lev Samuilovich, 3,758,804.
- Stanley Works, The: *See—*
  - Ergene, Mehmet T., 3,758,319.
- Stanton, Stephen, to Precision Industries, Inc., mesne. Last stitch and tie stitch placing system. 3,758,015, Cl. 227-7.000.
- Stapleford, Gary N.: *See—*
  - Radford, Robert E.; and Stapleford, Gary N., 3,758,782.
- Stapley, Derek E., to Sundstrand Corporation. Bearing pack. 3,758,176, Cl. 308-6.00c.
- Starkey, Donald L.: *See—*
  - Schmitt, Joseph W.; Mosakowski, James E.; and Starkey, Donald L., 3,758,870.
- Stasio, Robert; and Butera, Thomas, Jr. Loose leaf notebook sheet lifter. 3,758,219, Cl. 402-80.001.
- State of Defence, Secretary of: *See—*
  - Goodwin, John R., 3,758,234.
  - Wallett, John Stanley, 3,758,232.
- State of Israel, Atomic Energy Commission: *See—*
  - Chavet, Itzhak, 3,757,962.
- Stauber, Siegfried; Ciger, Nicolas; and Schaeffer, Klaus-Peter, to Osswald, E., Firma. Circuit arrangement for infinite speed regulation of induction motors. 3,758,837, Cl. 318-212.000.
- Stauffer Chemical Company: *See—*
  - Pallos, Ferenc M., 3,758,685.
- Stearns, Charles F.: *See—*
  - Baum, James A.; and Stearns, Charles F., 3,757,639.
- Steelcase, Inc.: *See—*
  - Fries, Bernard J., 3,758,157.
- Stefani, Joseph P., to General Electric Company. Relay center for remote control wiring system. 3,758,828, Cl. 317-113.000.
- Steigelmann, Edward F.: *See—*
  - Hughes, Robert D.; and Steigelmann, Edward F., 3,758,605.
- Steigelmann, Edward F.; and Hughes, Robert D., to Standard Oil Company. Process for separation of unsaturated hydrocarbons. 3,758,603, Cl. 260-677.00a.
- Stein, Wolfgang J., to Avco Corporation. Drive assembly with compensation for misalignment. 3,757,535, Cl. 64-9.00r.
- Steinbach, Heinz, to Institut Dr. Forster. Pipe conveyor apparatus. 3,757,974, Cl. 214-339.000.
- Steinberg, David: *See—*
  - Dexter, Martin; and Steinberg, David, 3,758,549.
- Steiner, Adolf; and Rinnergschwentner, Hans, to Diamler-Benz Aktiengesellschaft. Steering spindle for motor vehicles, especially for commercial-type vehicles. 3,757,885, Cl. 180-89.00a.
- Steinkamp, Norman A.; and Stipanuk, John M., to Sunbeam Corporation. Food mixer storage rack. 3,758,183, Cl. 312-292.000.
- Stellman, Gerald B. Litter device. 3,757,359, Cl. 5-81.000.
- Stendel, Koeln Wilhelm: *See—*
  - Hoffman, Hellmut; Hammann, Ingelborg; and Stendel, Koeln Wilhelm, 3,758,487.
- Stenwall, Lauri. Combined beach chair and shopping cart. 3,758,128, Cl. 280-47.250.
- Stephenson, Robert L.; and Radke, Donald G., to Allied Chemical Corporation. Inflation apparatus for safety device. 3,758,131, Cl. 280-150.0ab.
- Sterigard Corporation: *See—*
  - Bruce, Roger K.; and Marhold, Werner, 3,757,651.
- Sterling Drug Inc.: *See—*
  - Alexander, Ernest John; and Mooradian, Aram, 3,758,496.
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- Steudal, Goetz Wolfgang: *See—*
  - Heuner, Robert Charles; and Steudal, Goetz Wolfgang, 3,758,792.
- Stevens, J. P., & Co., Inc.: *See—*
  - Gaj, Bernard J.; and Sello, Stephen B., 3,758,554.
  - Laney, Campbell P., Jr.; White, William Thomas; and Mercer, Harry L., 3,757,545.
- Stevenson, Robert L. Wood heater with viewing window. 3,757,766, Cl. 126-60.000.
- Stewart, George E. Breakaway step for high-clearance vehicles. 3,758,134, Cl. 280-163.000.
- Stiebel, Ariel, to Radex Corporation. Digital foot measuring instrument. 3,757,418, Cl. 33-3.00c.
- Stilwell, Daisy D. Collapsible picture frame. 3,757,445, Cl. 40-154.000.
- Stipanuk, John M.: *See—*
  - Steinkamp, Norman A.; and Stipanuk, John M., 3,758,183.
- Stokstad, Paul A. Optical bench and components therefor. 3,758,217, Cl. 356-256.000.
- Stoliman, Donald D., to General Motors Corporation. Throttle pedal actuated throttle return. 3,757,758, Cl. 123-198.0db.
- Stolzer, Claus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O, N-Di-aliphatic hydrocarbon-S-(N-monoalkylicarbamyl-methyl)-thionothiolphosphoric acid ester amides. 3,758,644, Cl. 260-940.000.
- Stone Container Corporation: *See—*
  - Gordon-Ross, Ronald H., 3,758,021.
- Stoneham, Jeffrey R., to Eastman Kodak Company. Film metering mechanism for cameras. 3,757,658, Cl. 95-31.0fm.
- Stora, Guy Daniel: *See—*
  - Caruel, Jacques Emile Jules; Cantaloube, Bernard Andre; Stora, Guy Daniel; Bedue, Jean Robert; Gastebois, Philippe Marc Denis; and Guillevere, Herve Alain, 3,757,522.
- Stout, James T., to Mead Corporation, The. Article carrier. 3,757,991, Cl. 220-113.000.
- Stout, Lilburn G.: *See—*
  - McAlexander, Robert L.; and Stout, Lilburn G., 3,758,052.
- Stover, William A.: *See—*
  - Oleck, Stephen M.; Schwartz, Albert B.; and Stover, William A., 3,758,402.
- Strader, James W., to Strader, Jim, Capt., Inc. Fishing lure. 3,757,455, Cl. 43-42.140.
- Strader, Jim, Capt., Inc.: *See—*
  - Strader, James W., 3,757,455.
- Straits, Ernest J., to Interlake, Inc. Gang chair construction. 3,758,155, Cl. 297-248.000.
- Stratton, Craig A. Airplane kite. 3,758,057, Cl. 244-154.000.
- Strauss, Edmar; Foth, Seigfried; and Kaltschmidt, Hans-Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Insulated coils for electrical machines. 3,758,706, Cl. 174-120.0sr.
- Strelakos, George P. Noise maker to be worn on the foot. 3,757,466, Cl. 46-175.000.
- Strelitz, Robert A.: *See—*
  - Elion, Gertrude B.; and Strelitz, Robert A., 3,758,684.
- Streule, Josef; and Brot, Blasius. Cigarette or cigar filter. 3,757,802, Cl. 131-187.000.
- Strickland, Alvah T., to United States of America, Navy. Depth compensator valve. 3,757,719, Cl. 114-16.00e.
- Strickland, John C.; and Bunn, Dorrance P., Jr., to Texaco Inc. Combination cracking process for converting paraffinic naphtha into high octane gasoline. 3,758,628, Cl. 260-683.430.
- Strickler, Allen, to Beckman Instruments, Inc. Resolution and symmetry control in continuous free flow electrophoresis. 3,758,395, Cl. 204-180.00r.

Striedieck, Walter J.; and Woodring, Daniel, to Chemcut Corporation. Preferential etching method for ferrous base metals. 3,758,351, Cl. 156-18.000.
Strom, Martin. Obstruction removal apparatus. 3,757,375, Cl. 15-104.300.
Struble, Glenn E., to Diamond International Corporation. Multi-use garment box. 3,758,019, Cl. 229-16.00r.
Stubblebine, Warren: *See—*
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Sturge, Derek William James; and Cox Gough, John Richard, to United Kingdom Atomic Energy Authority. Nuclear fuel compacts of coated particle fuel. 3,758,648, Cl. 264-.500.
Stutz, Hansruedi, to Aktiengesellschaft Gebruder Loepfe. Electronic appliance for setting and checking electronic yarn clearers. 3,758,216, Cl. 356-200.000.
Sugaya, Hiroshi; and Sakumoto, Hideki, to Matsushita Electric Industrial Co., Ltd. Tape cassette. 3,758,048, Cl. 242-192.000.
Sugimoto, Noritsugu: *See—*
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Sharan, Haredra Nath, 3,757,746.
Sumino, Shouji, to Brother Kogyo Kabushiki Kaisha. Wig dryer. 3,757,429, Cl. 34-103.000.
Sumitomo Chemical Company, Limited: *See—*
Matsui, Masanao; and Okuno, Yositose, 3,758,504.
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Susman, Leon; Maguire, Hugh C.; and Bohman, Carl E., to Sperry Rand Corporation. Metal detector system having identical balanced field coil systems on opposite sides of a detection zone. 3,758,849, Cl. 324-41.000.
Suverkropp, Geerthrudes H.; and Reichrath, Werner, to Stamicarbon N.V. Process for the preparation of 5-(4-amino butyl)-hydantoin. 3,758,494, Cl. 260-309.500.
Svenson, Bert N., to Instrument System Corporation, mesne. Variable-ratio belt-type transmission for engine-driven cycle, incorporating pedal-operated engine starting means. 3,757,593, Cl. 74-230.70a.
Svensson, Karl-Erik: *See—*
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Sweet, Roger L., to Ross Operating Valve Company. Safety control valve system for fluid actuated devices. 3,757,818, Cl. 137-596.600.
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Szabrak, Robert H.; and Stubblebine, Warren, to Sam Stein Associates, Inc. Deep fat fryer feeding apparatus. 3,757,672, Cl. 99-404.000.
Szakaly, Judit: *See—*
Kasztreiner, Endre; Vargha, Laszlo; Huszti, Zsuzsanna; Borsi, Jozsef; Szilagyi, Geza; Szakaly, Judit; Elek, Sandor; and Polgari, Istvan, 3,758,546.
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Tabor, Joseph A.: *See—*
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Tada, Minoru, to Kabushiki Kaisha Chuogoraku Kenkyusha. Occupant propelled rotatable seesaw. 3,758,108, Cl. 272-30.000.
Taft, David D.; and Shepler, Terry H. Hot melt compositions. 3,758,431, Cl. 260-27.000.
Taihei Industries, Co., Ltd.: *See—*
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Takahashi, Yasunobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of N,N-dialkylamides. 3,758,576, Cl. 260-561.00r.
Takeda Chemical Industries, Ltd.: *See—*
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Takeda, Hiromu, to Toray Industries, Inc. Method of manufacturing fibers and films from an acrylonitrile copolymer. 3,758,659, Cl. 264-182.000.
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Tamura, Noriyoshi: *See—*
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Tanaka, Yushiyuki. Emergency stop switch means for a snowmobile or the like. 3,758,736, Cl. 200-157.000.
Tang, Pak-Chong, to RCA Corporation. Wide angle deflection system. 3,758,814, Cl. 315-27.0td.
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Taniguchi, Kenji; and Imaizumi, Ichiro, to Hitachi, Ltd. Current switch circuit. 3,758,791, Cl. 307-215.000.
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Taylor, Lynn J., to Owens-Illinois, Inc. Polymer and process for producing same from an epoxy monomer and a silicon containing co-reactant. 3,758,423, Cl. 260-2.0ec.
Taylor, Peter Graham, to Cambridge Scientific Instruments Limited. Disengageable nut and screw arrangement. 3,757,591, Cl. 74-89.150.
Taylor, Stanford E.; and Harbor, Lloyd. Controlled reading device. 3,757,432, Cl. 35-35.00b.
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Thill, Bruce P., to Dow Chemical Company, The. Cross-linking of addition polymers containing combined free carboxyl by reaction with di-2-oxazoline. 3,758,629, Cl. 260-80.800.
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Toth, Laszlo, to Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat. Auxiliary battery for motor vehicles. 3,758,345, Cl. 136-181.000.
Tourtellotte, John F.; Negra, John S.; Warshaw, Abe; and Villiers-Fisher, John F., to Chemical Construction Corporation. Integrated engine exhaust emission control system. 3,757,521, Cl. 60-274.000.
Townhill, Arthur. Golf club bag stands. 3,758,061, Cl. 248-96.000.
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Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat: *See—*
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Trask, Allen, to Mechaniwatt Corporation, The. Automatic air conditioning system. 3,758,368, Cl. 165-21.000.
Trbovich, Nicholas D.; Meyer, William H.; Bean, Edwin T., Jr.; and Robinson, William P., said Meyer, Bean and Robinson, assors. to Servotronics, Inc. Amusement game. 3,758,113, Cl. 273-120.00r.
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  National Aeronautics and Space Administration; Administrator; with respect to an invention of:
    Kariotis, Anthony H. Compression test assembly. 3,757,568, Cl. 73-94.000.
    Rasmussen, Hans P. Transparent switchboard. 3,758,718, Cl. 178-18.000.
    Schiffner, Gerhard. Power supply for $CO_2$ lasers. 3,758,877, Cl. 331-94.500.
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Voorman, Johannes Otto; and Biesheuvel, Arnoldus, to U.S. Philips Corporation. Gyrator comprising voltage-controlled differential current sources. 3,758,885, Cl. 333-80.00t.
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Weiss, Helmut. Optical magnifying system and apparatus for viewing small objects. 3,758,196, Cl. 350-241.000.

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Wilbright, Arthur E. Barbecue grill with tilt top and shifting fire box. 3,757,675, Cl. 99-446.000.

Wilder, Arthur G.; and Bridwell, Harold C., to Christensen Diamond Products Company. Drill bits and methods of producing drill bits. 3,757,878, Cl. 175-329.000.

Wilder, Arthur G.; and Bridwell, Harold C., to Christensen Diamond Products Company. Drill bits and methods of producing drill bits. 3,757,879, Cl. 175-329.000.

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Willach, Horst, to Huwil-Werke Hugo Willach of Sohne. Magnetic lock with relatively slidable elements. 3,757,551, Cl. 70-276.000.

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Williams, Jerome. Machine for compressing and flattening junked automobiles. 3,757,680, Cl. 100-100.000.

Williams, Patrick Yelverton. Collapsible wheel chair. 3,758,150, Cl. 297-45.000.

Williams, Raymond, to United Kingdom Atomic Energy Authority. Air bearings. 3,758,177, Cl. 308-9.000.

Williamson, Ronald Eugene; Porter, Sidney Clark, Jr.; and Shotting, Kenneth Frederic, to Combustion Engineering, Inc. Automated bricklaying device. 3,757,484, Cl. 52-749.000.

Willner, Horst, to Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft. Solar and planetary gear system with load pressure compensation. 3,757,608, Cl. 74-801.000.

Wilson, Bruce N.; and Hindersinn, Raymond R., to Hooker Chemical Corporation. Oxyalkylated derivatives of phenolphthalein. 3,758,422, Cl. 260-47.0eq.

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Wowk, Anatole, to M & T Chemicals Inc. Process for preparing polymeric halo tin thiohydrocarbyl carboxylates. 3,758,536, Cl. 260-429.700.

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- Years, Kenneth E., to Texas Instruments, Incorporated. Photosensor control. 3,758,796, Cl. 307-311.000.
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- York, Orin R. Knitting machine. 3,757,537, Cl. 66-9.00r.
- York, William C.; and Rodenberg, Orville C., to Eastman Kodak Company. Transfer of liquid developed electrographic images. 3,758,327, Cl. 117-37.01e.
- Yoshida, Ryonosuke; Yoshimura, Ippei; and Takehara, Masahiro, to Ajinomoto Co., Inc. Process for preparing N-higher aliphatic acyl acidic amino acids. 3,758,525, Cl. 260-402.500.
- Yoshida, Toushio. Method and apparatus for air-conditioning. 3,758,029, Cl. 236-49.000.
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- Zeidler, Adolf; Kiefer, Hans; Fischer, Adolf; Hoffmann, Hans-Dieter; and Merger, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 1-Acyl-uracil herbicidal compounds. 3,758,477, Cl. 260-260.000.
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- Zellweger, Conrad, to Waldman Corporation, mesne. Watertight pusher. 3,757,512, Cl. 58-90.00b.
- Zemlin, John C.; and Dow, Glenn W., to Graves Corporation. Ski construction and method of forming the same. 3,758,126, Cl. 280-11.131.
- Zimmerman, James E. Superconductive quantum interference device having two cavities isolated by a superconductive weak link. 3,758,854, Cl. 324-43.00r.
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- Zugel, Martin J., to Cyclo Index Corporation. Universal index mechanism. 3,757,609, Cl. 74-826.000.
- Zweigle, Maurice L., to Dow Chemical Company, The. Adhesion of polymer gels to cellulose. 3,758,641, Cl. 260-874.000.
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- Bradt, Richard W. Jr., to E. I. du Pont de Nemours and Co. Flexible epoxy-coated dielectric. T914,003, 9–11–73, Cl. 117—138.80.
- Brown, Wade H., J. M. Farber, and P. P. Klemchuk. Stabilization of polymers for wire and cable applications. T914,009, 9–11–73. Cl. 260—45.85.
- Burnett, Glenna E.: *See—*
  - Coney, Charles H., and Burnett. T914,005.
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- Du Pont de Nemours, E. I. and Co.: *See—*
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- Farber, Joseph M.: *See—*
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- Franks, Douglas G. Workpiece holding fixture. T914,002, 9–11–73. Cl. 269—120.
- Grant, Peter M., and H. R. Lyon. Power coating process. T914,001, 9–11–73, Cl. 117—17.
- Hamilton, William L., and W. B. Lindsey, to E. I. du Pont de Nemours and Co. A nonmetallic, plastic and glass fiber toaster package. T914,010, 9–11–73, Cl. 99—171.
- Hignett, Travis P., and A. J. Smith. Production of chloride-free potassium phosphates. T914,007, 9–11–73. Cl. 71—34.
- Klemchuk, Peter P.: *See—*
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- Lindsey, William B.: *See—*
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- Litz, Donald C., to Westinghouse Electric Corp. Fluid-cooled rotating member with improved coolant exhaust structure for super-conducting dynamoelectric machinery. T914,004, 9–11–73. Cl. 310—52.
- Lyon, Herbert R.: *See—*
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- McConnell, Richard L., and W. C. Wooten. Reacting unsaturated dicarboxylic acids, anhydrides and esters thereof with polyethylene. T914,008, 9–11–73, Cl. 260—78.40.
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- Wooten, Willis C.: *See—*
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# LIST OF REISSUE PATENTEES

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- Beckman Instruments, Inc.: *See—*
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- Byers, James Otto, to Sanders Associates, Inc. Fluid flow control valve. Re. 27,758, 9–11–73, Cl. 137—625.620.
- Daniels, Charles K., and J. P. McCarthy, to E. G. & G. International, Inc. Underwater guidance method and apparatus. Re. 27,750, 9–11–73, Cl. 340—3.
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- Wormser, Robert S., and R. L. Ewers, to Game Time, Inc. Playground backhoe apparatus. 228,358, 9–11–73, Cl. D34—15.
- Yoshida, Yoshisaburo, and Y. Ohie, to Sharp Kabushiki Kaisha. Electronic calculating machine. 228,350, 9–11–73, Cl. D26—5.
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# CLASSIFICATION OF PATENTS

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| 70 | 3,757,386 |
| **CLASS 21** | |
| 54R | 3,758,273 |
| **CLASS 23** | |
| 253R | Re.27,756 |
| 259 | 3,758,274 |
| | 3,758,275 |
| 267A | 3,758,276 |
| 285 | 3,758,277 |
| 288F | 3,758,278 |
| 288R | 3,758,279 |
| **CLASS 24** | |
| 81CC | 3,757,387 |
| 113MP | 3,757,388 |
| 126 | 3,757,390 |
| 150R | 3,757,389 |
| 205.1R | 3,757,391 |
| 238 | 3,757,392 |
| 252CP | 3,757,393 |
| 281 | 3,757,394 |
| **CLASS 28** | |
| 15 | 3,757,395 |
| **CLASS 29** | |
| 33T | 3,757,396 |
| 105R | 3,757,397 |
| 116AD | 3,757,398 |
| 116R | 3,757,399 |
| 159A | 3,757,400 |
| | 3,757,401 |
| 182 | 3,758,281 |
| 200D | 3,757,404 |
| 200P | 3,757,405 |
| 203H | 3,757,406 |
| 212R | 3,757,407 |
| 235 | 3,757,402 |
| 237 | 3,757,408 |
| 254 | 3,757,409 |
| 416 | 3,757,411 |
| 420.5 | 3,757,410 |
| 424 | 3,757,403 |
| 429.2 | 3,757,412 |
| 557 | 3,757,413 |
| 580 | 3,757,414 |
| 604 | 3,757,415 |
| **CLASS 30** | |
| 4R | 3,757,416 |
| 179 | 3,757,417 |
| **CLASS 32** | |
| 22 | 3,757,420 |
| | 3,757,421 |
| 59 | 3,757,419 |
| **CLASS 33** | |
| 3C | 3,757,418 |
| 76R | 3,757,422 |
| 174C | 3,757,424 |
| 174R | 3,757,423 |
| 179.5D | 3,757,425 |
| **CLASS 34** | |
| 1 | 3,757,426 |
| 9.5 | 3,757,428 |
| 32 | 3,757,427 |
| 103 | 3,757,429 |
| **CLASS 35** | |
| 8R | 3,758,693 |
| 16 | 3,757,430 |
| 17 | 3,757,431 |
| 26 | 3,758,695 |
| 31R | 3,758,694 |
| 35B | 3,757,432 |
| 75 | 3,757,433 |
| **CLASS 36** | |
| 2.5AH | 3,757,434 |
| 30R | 3,757,435 |
| 46.5 | 3,757,436 |
| 59R | 3,757,437 |
| **CLASS 37** | |
| 54 | 3,757,438 |
| 195 | 3,757,439 |
| **CLASS 38** | |
| 17 | 3,757,440 |
| **CLASS 40** | |
| 2R | 3,757,441 |
| 125H | 3,757,443 |
| 128 | 3,757,442 |
| 130B | 3,757,444 |
| 154 | 3,757,445 |
| **CLASS 42** | |
| 42R | 3,757,446 |
| 51 | 3,757,447 |
| 59 | 3,757,448 |
| 87 | 3,757,449 |
| **CLASS 43** | |
| 35 | 3,757,450 |
| 42.1 | 3,757,451 |
| 42.14 | 3,757,455 |
| 42.16 | 3,757,454 |
| 42.25 | 3,757,452 |
| 43.14 | 3,757,453 |
| 81 | 3,757,456 |
| | 3,757,457 |
| **CLASS 44** | |
| 62 | 3,758,283 |
| 69 | 3,758,282 |
| **CLASS 46** | |
| 41 | 3,757,460 |
| 118 | 3,757,463 |
| 135R | 3,757,465 |
| 161 | 3,757,458 |
| 175 | 3,757,466 |
| 202 | 3,757,459 |
| 240 | 3,757,467 |
| 243AV | 3,757,461 |
| | 3,757,462 |
| 244A | 3,757,464 |
| **CLASS 47** | |
| 1.2 | 3,757,470 |
| 34.13 | 3,757,468 |
| 48.5 | 3,757,469 |
| **CLASS 49** | |
| 2 | 3,757,471 |
| 40 | 3,757,472 |
| 380 | 3,757,473 |
| **CLASS 51** | |
| 33W | 3,757,474 |
| **CLASS 52** | |
| 23 | 3,757,475 |
| 79 | 3,757,477 |
| 80 | 3,757,478 |
| 222 | 3,757,479 |
| 241 | 3,757,480 |
| 265 | 3,757,481 |
| 405 | 3,757,482 |
| 522 | 3,757,483 |
| 646 | 3,757,476 |
| 731 | 3,757,485 |
| 749 | 3,757,484 |
| **CLASS 53** | |
| 162 | 3,757,486 |
| 334 | 3,757,487 |
| **CLASS 55** | |
| 67 | 3,757,490 |
| 73 | 3,757,488 |
| 74 | 3,757,489 |
| 107 | 3,757,491 |
| 181 | 3,757,492 |
| 234 | 3,757,494 |
| 242 | 3,757,493 |
| 279 | 3,757,495 |
| 293 | 3,757,496 |
| 302 | 3,757,497 |
| 440 | 3,757,498 |
| 500 | 3,757,499 |
| **CLASS 56** | |
| 6 | 3,757,500 |
| 10.2 | 3,757,501 |
| 28 | 3,757,502 |
| 202 | 3,757,503 |
| 328R | 3,757,504 |
| **CLASS 57** | |
| 34R | 3,757,505 |
| 58.95 | 3,757,506 |
| 156 | 3,757,507 |
| **CLASS 58** | |
| 2 | 3,757,508 |
| 23R | 3,757,509 |
| | 3,757,510 |
| 50R | 3,757,511 |
| 90B | 3,757,512 |
| 152R | 3,757,513 |
| **CLASS 59** | |
| 78 | 3,757,514 |
| **CLASS 60** | |
| 13F | 3,757,515 |
| 26 | 3,757,516 |
| 39.18R | 3,757,517 |
| 39.71 | 3,757,522 |
| 202 | 3,757,518 |
| 219 | 3,757,520 |
| 274 | 3,757,521 |
| 286 | 3,757,519 |
| 477 | 3,757,523 |
| 483 | 3,757,524 |
| 492 | 3,757,525 |
| **CLASS 61** | |
| 1F | 3,757,526 |
| 49 | 3,757,527 |
| 53.52 | 3,757,528 |
| 72.6 | 3,757,529 |
| **CLASS 62** | |
| 10 | 3,757,367 |
| 117 | 3,757,530 |
| 156 | 3,757,531 |
| 278 | 3,757,532 |
| 303 | 3,757,533 |
| **CLASS 64** | |
| 8 | 3,757,534 |
| 9R | 3,757,535 |
| **CLASS 65** | |
| 31 | 3,758,284 |
| 64 | 3,758,285 |
| 334 | 3,758,286 |
| **CLASS 66** | |
| 1R | 3,757,536 |
| 9R | 3,757,537 |
| 19 | 3,757,538 |
| 173 | 3,757,539 |
| 192 | 3,757,540 |
| 193 | 3,757,541 |
| **CLASS 68** | |
| 12R | 3,757,542 |
| 17A | 3,757,544 |
| 17R | 3,757,543 |
| 43 | 3,757,545 |
| 44 | 3,757,546 |
| 176 | 3,757,547 |
| 205R | 3,757,548 |
| **CLASS 70** | |
| 232 | 3,757,549 |
| | 3,757,550 |
| 276 | Re.27,753 |
| | 3,757,551 |
| **CLASS 71** | |
| 12 | 3,758,287 |
| 90 | 3,758,288 |
| **CLASS 72** | |
| 12 | 3,757,552 |
| 21 | 3,757,553 |
| 43 | 3,757,554 |
| 63 | 3,757,555 |
| 234 | 3,757,556 |
| 311 | 3,757,557 |
| 354 | 3,757,558 |
| 379 | 3,757,559 |
| 458 | 3,757,560 |
| 461 | 3,757,561 |
| **CLASS 73** | |
| 12 | 3,757,562 |
| 37.5 | 3,757,563 |
| 45.1 | 3,757,564 |
| 45.4 | 3,757,587 |
| 71.4 | 3,757,565 |
| 78 | 3,757,566 |
| 81 | 3,757,567 |
| 94 | 3,757,568 |
| 104 | 3,757,569 |
| 116 | 3,757,570 |
| | 3,757,571 |
| | 3,757,572 |
| 136A | 3,757,580 |
| 141A | 3,757,573 |
| 150A | 3,757,574 |
| 152 | 3,757,575 |
| 194EM | 3,757,576 |
| 209 | 3,757,577 |
| 231R | 3,757,578 |
| 247 | 3,757,581 |
| 343R | 3,757,579 |
| 418 | 3,757,582 |
| 421.5R | 3,757,583 |
| 425.4P | 3,757,584 |
| 425.6 | 3,757,585 |
| 432R | 3,757,586 |
| 483 | 3,757,588 |
| 502 | 3,757,589 |
| **CLASS 74** | |
| 10.33 | 3,757,590 |
| 89.15 | 3,757,591 |
| 112 | 3,757,592 |
| 230.17A | 3,757,593 |
| 230.17F | 3,757,594 |
| 245C | 3,757,595 |
| 471XY | 3,757,597 |
| 473R | 3,757,598 |
| | 3,757,600 |
| 473 | 3,757,599 |
| 491 | 3,757,596 |
| 492 | 3,757,601 |
| 499 | 3,757,602 |
| 513 | 3,757,603 |
| 529 | 3,757,604 |
| 733 | 3,757,606 |
| 751 | 3,757,605 |
| 761 | 3,757,607 |
| 801 | 3,757,608 |
| 826 | 3,757,609 |
| 843 | 3,757,610 |
| 860 | 3,757,611 |
| 865 | 3,757,612 |
| **CLASS 75** | |
| 10R | 3,758,290 |
| 10 | 3,758,289 |
| 20F | 3,758,291 |
| 23 | 3,758,293 |
| 24 | 3,758,292 |
| 122 | 3,758,294 |
| | 3,758,295 |
| | 3,758,296 |
| 126C | 3,758,297 |
| 138 | 3,758,298 |
| 171 | 3,758,299 |
| **CLASS 81** | |
| 57.22 | 3,757,613 |
| 119 | 3,757,614 |
| **CLASS 82** | |
| 9R | 3,757,615 |
| 36R | 3,757,616 |
| **CLASS 83** | |
| 1 | 3,757,617 |
| 65 | 3,757,619 |
| 88 | 3,757,620 |
| 157 | 3,757,621 |
| 165 | 3,757,622 |
| 168 | 3,757,623 |
| 271 | 3,757,624 |
| 404.1 | 3,757,625 |
| 471.3 | 3,757,618 |
| 542 | 3,757,626 |
| 558 | 3,757,627 |
| 745 | 3,757,628 |
| **CLASS 84** | |
| 1.16 | 3,758,696 |
| 425 | 3,758,697 |
| 485 | 3,758,698 |
| **CLASS 85** | |
| 49 | 3,757,629 |
| 62 | 3,757,630 |
| **CLASS 86** | |
| 20R | 3,757,631 |
| **CLASS 87** | |
| 1 | Re.27,749 |
| **CLASS 89** | |
| 1R | 3,757,632 |
| 1.5R | 3,757,633 |
| 36H | 3,757,635 |
| 145 | 3,757,634 |
| 169 | 3,757,636 |
| **CLASS 90** | |
| 17 | 3,757,637 |
| 46 | 3,757,638 |
| **CLASS 91** | |
| 47 | 3,757,639 |
| 49 | 3,757,640 |
| 171 | 3,757,641 |
| 176 | 3,757,642 |
| 411R | 3,757,644 |
| | 3,757,645 |
| 438 | 3,757,646 |
| 482 | 3,757,647 |
| 485 | 3,757,648 |
| **CLASS 92** | |
| 25 | 3,757,650 |
| **CLASS 93** | |
| 1C | 3,757,649 |
| 36.01 | 3,757,651 |
| 61R | 3,757,652 |
| **CLASS 95** | |
| 1.1 | 3,757,653 |
| 10CE | 3,757,654 |
| | 3,757,655 |
| 11R | 3,757,643 |
| 11V | 3,757,656 |
| 13 | 3,757,657 |
| 31AC | 3,757,660 |
| 31FM | 3,757,658 |
| 42 | 3,757,659 |
| | 3,757,661 |
| 89R | 3,757,662 |
| **CLASS 96** | |
| 1.3 | 3,758,305 |
| 1.5 | 3,758,301 |
| 2 | 3,758,302 |
| 4 | 3,758,300 |
| 27R | 3,758,303 |
| 38.4 | 3,758,304 |
| 83 | 3,758,306 |
| 91R | 3,758,307 |
| 100 | 3,758,308 |
| 136 | 3,758,309 |
| **CLASS 98** | |
| 2.12 | 3,757,663 |
| 37 | 3,757,664 |
| 40D | 3,757,666 |
| | 3,757,667 |
| | 3,757,668 |
| 40R | 3,757,665 |
| **CLASS 99** | |
| 50.5 | 3,758,310 |
| 90R | 3,758,311 |
| 179 | 3,758,312 |
| 199 | 3,758,313 |
| 280 | 3,757,669 |
| 302 | 3,757,670 |
| 400 | 3,757,671 |
| 404 | 3,757,672 |
| 410 | 3,757,673 |
| 440 | 3,757,674 |
| 446 | 3,757,675 |
| 450.6 | 3,757,676 |
| 630 | 3,757,677 |
| **CLASS 100** | |
| 2 | 3,757,678 |
| 53 | 3,757,679 |
| 100 | 3,757,680 |
| 180 | 3,758,325 |
| 214 | 3,757,681 |
| 220 | 3,757,682 |
| 229A | 3,757,683 |
| 270 | 3,757,687 |
| **CLASS 101** | |
| 18 | 3,757,684 |
| 45 | 3,757,688 |
| 66 | 3,757,685 |
| 148 | 3,757,689 |
| 415.1 | 3,757,690 |
| | 3,757,691 |
| **CLASS 102** | |
| 49.7 | 3,757,692 |
| 67 | 3,757,693 |
| | 3,757,694 |
| 70.2G | 3,757,695 |
| 70.2R | 3,757,696 |
| | 3,757,697 |
| | 3,757,698 |
| **CLASS 104** | |
| 23FS | 3,757,699 |
| 165 | 3,757,700 |
| 242 | 3,757,701 |
| **CLASS 105** | |
| 210 | 3,757,702 |
| **CLASS 106** | |
| 1 | 3,758,314 |
| 8 | 3,758,315 |
| 55 | 3,758,316 |
| 65 | 3,758,317 |
| | 3,758,318 |
| 88 | 3,758,319 |
| 129 | 3,758,323 |
| 146 | 3,758,324 |
| 288Q | 3,758,320 |
| | 3,758,321 |
| 300 | 3,758,322 |
| **CLASS 108** | |
| 6 | 3,757,703 |
| 51 | 3,757,704 |
| 144 | 3,757,705 |
| **CLASS 110** | |
| 7S | 3,757,706 |
| 8C | 3,757,707 |
| 8R | 3,757,686 |
| | 3,757,708 |
| **CLASS 112** | |
| 79R | 3,757,709 |
| 118 | 3,757,710 |
| 121.12 | 3,757,711 |
| 132 | 3,757,712 |
| 170 | 3,757,713 |
| 212 | 3,757,714 |
| 221 | 3,757,715 |
| **CLASS 113** | |
| 1F | 3,757,716 |
| 18E | 3,757,717 |
| 120R | 3,757,718 |

| | |
|---|---|
| **CLASS 114** | |
| 16A | 3,757,721 |
| 16E | 3,757,719 |
| 16F | 3,757,720 |
| 16 | 3,757,722 |
| 27 | 3,757,724 |
| 126 | 3,757,723 |
| 173 | 3,757,725 |
| 183R | 3,757,726 |
| 208 | 3,757,727 |
| **CLASS 115** | |
| 16 | 3,757,728 |
| 28 | 3,757,729 |
| **CLASS 116** | |
| | 3,757,730 |
| 112 | 3,757,731 |
| 115 | 3,757,732 |
| **CLASS 117** | |
| 37LE | 3,758,327 |
| | 3,758,330 |
| 37R | 3,758,326 |
| 39 | 3,758,331 |
| 47A | 3,758,332 |
| 62 | 3,758,333 |
| 100A | 3,758,334 |
| 107.2P | 3,758,328 |
| 126GM | 3,758,329 |
| 136 | 3,758,335 |
| 217 | 3,758,336 |
| **CLASS 118** | |
| 49.5 | 3,757,733 |
| | 3,757,734 |
| 50 | 3,757,735 |
| 59 | 3,757,736 |
| **CLASS 119** | |
| 1 | 3,757,737 |
| | 3,757,738 |
| 5 | 3,757,739 |
| 6 | 3,757,740 |
| 17 | 3,757,741 |
| 23 | 3,757,742 |
| 28 | 3,757,743 |
| 96 | 3,757,744 |
| **CLASS 122** | |
| 136R | 3,757,745 |
| 250R | 3,757,746 |
| **CLASS 123** | |
| 41.74Q | 3,757,747 |
| 45A | 3,757,748 |
| 90.22 | 3,757,749 |
| 97B | 3,757,796 |
| 102 | 3,757,750 |
| 119CG | 3,757,751 |
| 122D | 3,757,752 |
| 136 | 3,757,753 |
| 148E | 3,757,754 |
| | 3,757,755 |
| 179G | 3,757,756 |
| 188VA | 3,757,757 |
| 198DB | 3,757,758 |
| **CLASS 124** | |
| 7 | 3,757,759 |
| 19 | 3,757,760 |
| 23 | 3,757,761 |
| 24 | 3,757,762 |
| 35 | 3,757,763 |
| 41 | 3,757,764 |
| **CLASS 126** | |
| 41R | 3,757,765 |
| 60 | 3,757,766 |
| 110B | 3,757,767 |
| **CLASS 128** | |
| 2M | 3,757,768 |
| 2R | 3,757,770 |
| 2Z | 3,757,769 |
| 2.05F | 3,757,773 |
| 2.05G | 3,757,772 |
| 2.06R | 3,757,778 |
| 2.1E | 3,757,771 |
| 25B | 3,757,774 |
| 130 | 3,757,775 |
| 145.6 | 3,757,776 |
| 146.2 | 3,757,777 |
| 218M | 3,757,779 |
| 218N | 3,757,780 |
| 223 | 3,757,781 |
| 269 | 3,757,782 |
| 277 | 3,757,783 |
| 281 | 3,757,784 |
| 287 | 3,757,785 |
| 335.5 | 3,757,786 |
| 346 | 3,757,787 |
| 348 | 3,757,788 |
| 404 | 3,757,789 |
| 419D | Re.27,757 |
| 419P | 3,757,790 |
| | 3,757,791 |
| | 3,757,792 |
| | 3,757,793 |
| | 3,757,794 |
| | 3,757,795 |
| **CLASS 130** | |
| 24 | 3,757,797 |
| **CLASS 131** | |
| 1 | 3,757,798 |
| 96 | 3,757,799 |
| 109B | 3,757,800 |
| 171R | 3,757,801 |
| 187 | 3,757,802 |
| 188 | 3,757,803 |
| **CLASS 132** | |
| 7 | 3,757,804 |
| **CLASS 133** | |
| 8R | 3,757,805 |
| **CLASS 134** | |
| 191 | 3,757,806 |
| **CLASS 135** | |
| 47.5 | 3,757,807 |
| **CLASS 136** | |
| 6FS | 3,758,337 |
| 6F | 3,758,338 |
| 67 | 3,758,340 |
| 86A | 3,758,342 |
| 86E | 3,758,339 |
| 111 | 3,758,343 |
| 120FC | 3,758,344 |
| 181 | 3,758,345 |
| 202 | 3,758,346 |
| **CLASS 137** | |
| 2 | 3,757,808 |
| 47 | 3,757,809 |
| 68 | 3,757,810 |
| 116 | 3,757,811 |
| 142 | 3,757,812 |
| 172 | 3,757,813 |
| 268 | 3,757,814 |
| 475 | 3,757,815 |
| 498 | 3,757,816 |
| 596 | 3,757,817 |
| 596.16 | 3,757,818 |
| 625.23 | 3,757,819 |
| 625.3 | 3,757,820 |
| 625.48 | 3,757,821 |
| 625.61 | 3,757,822 |
| 625.62 | Re.27,758 |
| 625.64 | 3,757,823 |
| 798 | 3,757,824 |
| **CLASS 138** | |
| 26 | 3,757,825 |
| 89 | 3,757,826 |
| 109 | 3,757,827 |
| 145 | 3,757,828 |
| 146 | 3,757,829 |
| 163 | 3,757,830 |
| **CLASS 139** | |
| 336 | 3,757,831 |
| **CLASS 141** | |
| 59 | 3,757,832 |
| 186 | 3,757,833 |
| 225 | 3,757,834 |
| 286 | 3,757,835 |
| 312 | 3,757,836 |
| **CLASS 144** | |
| 2Z | 3,757,837 |
| 3R | 3,757,838 |
| 172 | 3,757,839 |
| **CLASS 148** | |
| 4 | 3,758,347 |
| 6.15Z | 3,758,349 |
| 175 | 3,758,348 |
| **CLASS 150** | |
| 35 | 3,757,840 |
| **CLASS 152** | |
| 210 | 3,757,841 |
| 216 | 3,757,842 |
| 301DM | 3,757,843 |
| 361FP | 3,757,844 |
| **CLASS 156** | |
| 8 | 3,758,350 |
| 18 | 3,758,351 |
| 52 | 3,758,353 |
| 60 | 3,758,352 |
| 79 | 3,758,354 |
| 157 | 3,758,355 |
| 160 | 3,758,356 |
| 196 | 3,758,357 |
| 222 | 3,758,358 |
| 244 | 3,758,359 |
| 273 | 3,758,360 |
| 287 | 3,758,361 |
| 310 | 3,758,362 |
| 383 | 3,758,363 |
| 463 | 3,758,364 |
| 515 | 3,758,366 |
| 519 | 3,758,367 |
| 538 | 3,758,365 |
| **CLASS 160** | |
| 189 | 3,757,845 |
| **CLASS 161** | |
| 60 | 3,758,369 |
| 69 | 3,758,370 |
| 88 | 3,758,371 |
| 109 | 3,758,372 |
| 169 | 3,758,373 |
| 231 | 3,758,374 |
| **CLASS 162** | |
| 156 | 3,758,375 |
| 162 | 3,758,376 |
| 163 | 3,758,377 |
| 216 | 3,758,378 |
| 246 | 3,758,379 |
| 306 | 3,758,380 |
| 348 | 3,758,381 |
| **CLASS 164** | |
| 51 | 3,757,846 |
| 232 | 3,757,849 |
| 277 | 3,757,847 |
| 282 | 3,757,848 |
| 309 | 3,757,850 |
| **CLASS 165** | |
| 21 | 3,758,368 |
| 41 | 3,757,851 |
| 47 | 3,757,852 |
| 76 | 3,757,853 |
| 106 | 3,757,854 |
| 166 | Re.27,747 |
| | 3,757,855 |
| | 3,757,856 |
| 170 | 3,757,857 |
| **CLASS 166** | |
| 77 | 3,757,858 |
| 173 | 3,757,859 |
| 248 | 3,757,860 |
| 273 | 3,757,861 |
| 280 | 3,757,862 |
| 307 | 3,757,863 |
| 308 | 3,757,864 |
| **CLASS 169** | |
| 2R | 3,757,865 |
| 37 | 3,757,866 |
| **CLASS 171** | |
| 58 | 3,757,867 |
| **CLASS 172** | |
| 4.5 | 3,757,870 |
| 9 | 3,757,868 |
| 40 | 3,757,869 |
| 178 | 3,757,871 |
| 225 | 3,757,872 |
| **CLASS 173** | |
| 43 | 3,757,873 |
| | 3,757,874 |
| 44 | 3,757,875 |
| **CLASS 174** | |
| 19 | 3,758,699 |
| 28 | 3,758,700 |
| | 3,758,701 |
| 71B | 3,758,702 |
| 84C | 3,758,703 |
| 102E | 3,758,704 |
| 113R | 3,758,705 |
| 120SR | 3,758,706 |
| **CLASS 175** | |
| 267 | 3,757,876 |
| 269 | 3,757,877 |
| 329 | 3,757,878 |
| | 3,757,879 |
| **CLASS 178** | |
| 5.2A | 3,758,707 |
| 5.4ST | 3,758,709 |
| 5.4C | 3,758,708 |
| 6.6TC | 3,758,710 |
| | 3,758,711 |
| 6.8 | 3,758,712 |
| | 3,758,713 |
| | 3,758,717 |
| | 3,758,723 |
| 7.5D | 3,758,714 |
| 7.6 | 3,758,715 |
| 7.8 | 3,758,716 |
| 18 | 3,758,718 |
| 58R | 3,758,719 |
| 67 | 3,758,720 |
| **CLASS 179** | |
| 6.5 | 3,758,721 |
| 15BY | 3,758,725 |
| 15A | 3,758,722 |
| 18AB | 3,758,724 |
| 99 | 3,758,729 |
| 100.1R | 3,758,726 |
| 100.2C | 3,758,727 |
| 100.2Z | 3,758,730 |
| 175.31R | 3,758,728 |
| **CLASS 180** | |
| 5R | 3,757,880 |
| 9.2 | 3,757,881 |
| 33R | 3,757,882 |
| 70R | 3,757,883 |
| 77R | 3,757,884 |
| 79.2R | 3,757,886 |
| 89A | 3,757,885 |
| 98 | 3,757,887 |
| **CLASS 181** | |
| .5A | 3,757,888 |
| 31B | 3,757,889 |
| | 3,757,890 |
| 33K | 3,757,891 |
| 36C | 3,757,892 |
| **CLASS 182** | |
| 6 | 3,757,893 |
| 46 | 3,757,895 |
| 106 | 3,757,894 |
| 164 | 3,757,896 |
| **CLASS 187** | |
| 6 | 3,757,897 |
| 8.62 | 3,757,898 |
| 17 | 3,757,899 |
| **CLASS 188** | |
| 1C | 3,757,900 |
| 65.4 | 3,757,901 |
| 71.1 | 3,757,902 |
| 82.3 | 3,757,904 |
| 138 | 3,757,903 |
| 170 | 3,757,905 |
| 196D | 3,757,906 |
| 218XL | 3,757,907 |
| 265 | 3,757,908 |
| 290 | 3,757,909 |
| 322 | 3,757,910 |
| **CLASS 190** | |
| 57 | 3,757,911 |
| **CLASS 192** | |
| .02 | 3,757,912 |
| 3R | 3,757,913 |
| 48.3 | 3,757,914 |
| 87.19 | 3,757,915 |
| **CLASS 194** | |
| 1R | 3,757,916 |
| 10 | 3,757,917 |
| 101 | 3,757,918 |
| **CLASS 195** | |
| 1.8 | 3,758,382 |
| 96 | 3,758,383 |
| 103.5R | 3,758,384 |
| **CLASS 197** | |
| 6.7 | 3,757,919 |
| 19 | 3,757,920 |
| | 3,757,921 |
| 49 | 3,757,922 |
| 94 | 3,757,923 |
| **CLASS 198** | |
| 19 | 3,757,924 |
| 37 | 3,757,925 |
| 38 | 3,757,926 |
| 105 | 3,757,927 |
| 160 | 3,757,928 |
| 179 | 3,757,929 |
| 192 | 3,757,930 |
| 218 | 3,757,931 |
| 220BC | 3,757,932 |
| **CLASS 200** | |
| 5R | 3,758,734 |
| 61.69 | 3,758,731 |
| 81R | 3,758,732 |
| 82R | 3,758,733 |
| 157 | 3,758,736 |
| 222 | 3,758,735 |
| **CLASS 201** | |
| 6 | 3,758,385 |
| **CLASS 204** | |
| 15 | 3,758,387 |
| 20 | 3,758,388 |
| 41 | 3,758,389 |
| 51 | 3,758,390 |
| 55 | 3,758,386 |
| 78 | 3,758,391 |
| | 3,758,392 |
| 134 | 3,758,394 |
| 180R | 3,758,395 |
| 181 | 3,758,396 |
| 195P | 3,758,398 |
| 195S | 3,758,397 |
| 228 | 3,758,399 |
| 279 | 3,758,393 |
| **CLASS 206** | |
| 3 | 3,757,933 |
| 44R | 3,757,934 |
| 46H | 3,757,935 |
| 56AB | 3,757,936 |
| 80R | 3,757,937 |
| **CLASS 208** | |
| 72 | 3,758,400 |
| 78 | 3,758,401 |
| 111 | 3,758,402 |
| 120 | 3,758,403 |
| 263 | 3,758,404 |
| **CLASS 209** | |
| 5 | 3,757,938 |
| 72 | 3,757,939 |
| 74M | 3,757,940 |
| 80.5 | 3,757,941 |
| 111.5 | 3,757,942 |
| 111.7 | 3,757,943 |
| | 3,757,944 |
| 114 | 3,757,945 |
| 120 | 3,757,946 |
| **CLASS 210** | |
| 23 | 3,758,405 |
| 86 | 3,757,947 |
| 102 | 3,757,948 |
| 122 | 3,757,949 |
| 123 | 3,757,950 |
| 131 | 3,757,951 |
| 198C | 3,757,952 |
| 242 | 3,757,953 |
| 277 | 3,757,954 |
| 321 | 3,757,955 |
| 333 | 3,757,956 |
| 486 | 3,757,957 |
| **CLASS 211** | |
| 153 | 3,757,958 |
| **CLASS 212** | |
| 1 | 3,757,959 |
| **CLASS 214** | |
| 1BB | 3,757,961 |
| 1BD | Re.27,754 |
| 1BH | 3,757,963 |
| 1CM | 3,757,962 |
| 1PB | 3,757,960 |
| | 3,757,964 |
| 6H | 3,757,965 |
| 6P | 3,757,966 |
| 8.5F | 3,757,970 |
| 8.5K | 3,757,971 |
| 16.4R | 3,757,967 |
| 17B | 3,757,968 |
| 83.3 | 3,757,969 |
| 85 | 3,757,972 |
| 152 | 3,757,973 |
| 339 | 3,757,974 |
| 450 | 3,757,975 |
| 515 | 3,757,976 |
| 620 | 3,757,977 |
| **CLASS 215** | |
| 1C | 3,757,978 |
| 9 | 3,757,979 |
| 23 | 3,757,980 |
| 37R | 3,757,981 |
| **CLASS 219** | |
| 10.49 | 3,758,738 |
| 10.55 | 3,758,737 |
| 67 | 3,758,740 |
| 69G | 3,758,739 |
| 91 | 3,758,741 |
| 98 | 3,758,742 |
| | 3,758,743 |
| | 3,758,744 |
| 121LM | 3,758,745 |
| 145 | 3,758,746 |
| 212 | 3,758,747 |
| 213 | 3,758,748 |
| 216 | 3,758,749 |
| 457 | 3,758,750 |
| **CLASS 220** | |
| 9C | 3,757,982 |
| 23.4 | 3,757,983 |
| 27 | 3,757,984 |
| 29 | 3,757,985 |
| 39R | 3,757,986 |
| 44R | 3,757,987 |
| 47 | 3,757,988 |
| 54 | 3,757,989 |
| 63R | 3,757,990 |
| 81 | Re.27,748 |
| 113 | 3,757,991 |
| **CLASS 221** | |
| 13 | 3,757,992 |
| 80 | 3,757,993 |
| 202 | 3,757,994 |
| 211 | 3,757,995 |
| | 3,757,996 |
| 241 | 3,757,997 |
| 242 | 3,757,998 |
| **CLASS 222** | |
| 57 | 3,757,999 |
| 143 | 3,758,000 |
| 146HA | 3,758,002 |
| 146R | 3,758,003 |
| 146 | 3,758,001 |
| 181 | 3,758,004 |
| 309 | 3,758,005 |
| 323 | 3,758,006 |
| 394 | 3,758,007 |
| 400.7 | 3,758,008 |
| **CLASS 226** | |
| 11 | 3,758,009 |
| 33 | 3,758,010 |
| 142 | 3,758,011 |
| 168 | 3,758,012 |
| 199 | 3,758,013 |
| **CLASS 227** | |
| 7 | 3,758,014 |
| | 3,758,015 |
| 132 | 3,758,016 |
| **CLASS 229** | |
| 14C | 3,758,017 |
| 15 | 3,758,018 |
| 16R | 3,758,019 |
| 39B | 3,758,020 |
| 44R | 3,758,022 |
| 51DB | 3,758,021 |
| 51TC | 3,758,023 |
| 57 | 3,758,024 |
| 69 | 3,758,025 |
| **CLASS 232** | |
| 1R | 3,758,026 |
| 17 | 3,758,027 |
| **CLASS 235** | |
| 61.11E | 3,758,751 |
| | 3,758,752 |
| | 3,758,753 |
| | 3,758,754 |
| 92MT | 3,758,756 |
| 92PE | 3,758,755 |
| 150.1 | 3,758,757 |
| | 3,758,762 |
| 150.2 | 3,758,764 |
| 150.26 | 3,758,765 |
| 151.3 | 3,758,758 |
| 153AC | 3,758,759 |
| 153AK | 3,758,761 |
| 153BB | 3,758,760 |
| 155 | 3,758,766 |
| 159 | 3,758,767 |
| **CLASS 236** | |
| 12R | 3,758,028 |
| 49 | 3,758,029 |
| 87 | 3,758,030 |
| **CLASS 237** | |
| 8A | 3,758,031 |
| **CLASS 238** | |
| 338 | 3,758,032 |
| **CLASS 239** | |
| 4 | 3,758,033 |
| 9 | 3,758,034 |
| 102 | 3,758,036 |
| 132.3 | 3,758,037 |
| 206 | 3,758,038 |
| 372 | 3,758,039 |
| 550 | 3,758,040 |
| **CLASS 240** | |
| 1.3 | 3,758,768 |
| 6.4W | 3,758,771 |
| 7.1H | 3,758,772 |
| 10.6R | 3,758,773 |
| 41R | 3,758,769 |
| 41.36 | 3,758,770 |
| 103R | 3,758,774 |
| **CLASS 241** | |
| 73 | 3,758,035 |
| 153 | 3,758,041 |
| **CLASS 242** | |
| 18A | 3,758,042 |
| 55R | 3,758,043 |
| 107.4 | 3,758,044 |
| 125.2 | 3,758,045 |
| 147R | 3,758,046 |
| 181 | 3,758,047 |
| 192 | 3,758,048 |
| 201 | 3,758,049 |
| **CLASS 243** | |
| 32 | 3,758,050 |
| **CLASS 244** | |
| 1SA | 3,758,051 |
| 3.14 | 3,758,052 |
| 83R | 3,758,053 |
| 115 | 3,758,054 |
| 149 | 3,758,055 |
| 152 | 3,758,056 |
| 154 | 3,758,057 |
| **CLASS 246** | |
| 125 | 3,758,775 |
| **CLASS 248** | |
| 20 | 3,758,058 |
| 23 | 3,758,059 |
| 74PB | 3,758,060 |
| 96 | 3,758,061 |
| 156 | 3,758,062 |
| 161 | 3,758,063 |
| 403 | 3,758,064 |
| 459 | 3,758,065 |
| **CLASS 249** | |
| 95 | 3,758,066 |
| 129 | 3,758,067 |
| 177 | 3,758,068 |
| **CLASS 250** | |
| 207 | 3,758,781 |
| 217CR | 3,758,782 |
| 219D | 3,758,783 |
| 227 | 3,758,784 |
| 229 | 3,758,785 |
| 231R | 3,758,776 |
| 271 | 3,758,780 |
| 307 | 3,758,778 |
| 325 | 3,758,779 |
| 343 | 3,758,786 |
| 425 | 3,758,777 |
| 574 | 3,758,787 |

| | |
|---|---|
| **CLASS 251** | |
| 58 | 3,758,069 |
| 86 | 3,758,070 |
| 139 | 3,758,071 |
| 332 | 3,758,072 |
| 342 | 3,758,073 |
| **CLASS 252** | |
| 8.55R | 3,758,406 |
| 18 | 3,758,407 |
| 89 | 3,758,408 |
| | 3,758,410 |
| 90 | 3,758,411 |
| 99 | 3,758,409 |
| 301.2R | 3,758,412 |
| 301.4F | 3,758,413 |
| 301.4R | 3,758,486 |
| 313R | 3,758,414 |
| 378R | 3,758,415 |
| 447 | 3,758,416 |
| 455Z | 3,758,539 |
| 462 | 3,758,417 |
| 464 | 3,758,418 |
| 550 | 3,758,420 |
| 551 | 3,758,419 |
| **CLASS 254** | |
| 2R | 3,758,075 |
| 8R | 3,758,076 |
| 45 | 3,758,074 |
| 133 | 3,758,077 |
| 166 | 3,758,078 |
| 168 | 3,758,079 |
| **CLASS 259** | |
| 4 | 3,758,080 |
| **CLASS 260** | |
| 2EC | 3,758,423 |
| 2N | 3,758,421 |
| 2.5B | 3,758,425 |
| 2.5N | 3,758,424 |
| 17R | 3,758,428 |
| 17.4ST | 3,758,429 |
| 18TN | 3,758,426 |
| 19EP | 3,758,427 |
| 27EV | 3,758,431 |
| 27R | 3,758,430 |
| 29.6MN | 3,758,432 |
| 29.6E | 3,758,433 |
| 30.2 | 3,758,434 |
| 33.6A | 3,758,435 |
| 37R | 3,758,436 |
| 40P | 3,758,438 |
| 41R | 3,758,439 |
| 45.85A | 3,758,437 |
| 45.95C | 3,758,440 |
| 46.5G | 3,758,441 |
| 47EQ | 3,758,422 |
| 47C | 3,758,442 |
| 75NH | 3,758,444 |
| 75NP | 3,758,443 |
| 78SC | 3,758,445 |
| 78.5B | 3,758,447 |
| 80.78 | 3,758,446 |
| 80.8 | 3,758,629 |
| 85.5R | 3,758,449 |
| 86.1E | 3,758,448 |
| 94.9H | 3,758,450 |
| 105 | 3,758,451 |
| 121 | 3,758,453 |
| 123.5 | 3,758,452 |
| 210R | 3,758,454 |
| | 3,758,455 |
| 211.5R | 3,758,456 |
| 212 | 3,758,457 |
| | 3,758,458 |
| 240CA | 3,758,462 |
| 240D | 3,758,460 |
| 240E | 3,758,466 |
| 240K | 3,758,459 |
| 240.1 | 3,758,461 |
| | 3,758,465 |
| 248AS | 3,758,468 |
| 248C | 3,758,463 |
| 248.5 | 3,758,464 |
| 249 | 3,758,467 |
| | 3,758,470 |
| 249.6 | 3,758,471 |
| 249.9 | 3,758,469 |
| 251R | 3,758,472 |
| 256.4F | 3,758,474 |
| | 3,758,475 |
| 256.4H | 3,758,473 |
| 256.5R | 3,758,476 |
| 260 | 3,758,477 |
| 268TR | 3,758,479 |
| 268R | 3,758,506 |
| 287R | 3,758,478 |
| 288R | 3,758,480 |
| 293.56 | 3,758,484 |
| 293.77 | 3,758,481 |
| 294.8G | 3,758,482 |
| 295AM | 3,758,483 |
| | 3,758,485 |
| 302E | 3,758,487 |
| 302R | 3,758,488 |
| 304 | 3,758,489 |
| 305 | 3,758,490 |
| 306.7 | 3,758,491 |
| 306.8D | 3,758,492 |
| 309.5 | 3,758,494 |
| 309.6 | 3,758,493 |
| | 3,758,495 |
| 315 | 3,758,496 |
| 325 | 3,758,497 |
| 326.12R | 3,758,500 |
| 326.15 | 3,758,502 |
| 326.5FM | 3,758,498 |
| 326.5C | 3,758,505 |
| 326.5L | 3,758,499 |
| 326.9 | 3,758,501 |
| 327M | 3,758,503 |
| 332.2R | 3,758,504 |
| 333 | 3,758,507 |
| 338 | 3,758,508 |
| 340.5 | 3,758,509 |
| 340.9 | 3,758,510 |
| 343.2F | 3,758,511 |
| 343.3 | 3,758,513 |
| 343.6 | 3,758,512 |
| | 3,758,514 |
| | 3,758,515 |
| 348A | 3,758,516 |
| 381 | 3,758,518 |
| 390 | 3,758,519 |
| 396N | 3,758,520 |
| 397.3 | 3,758,523 |
| 397.4 | 3,758,517 |
| 397.47 | 3,758,524 |
| 397.5 | 3,758,521 |
| 397.7 | 3,758,522 |
| 400 | 3,758,531 |
| 402.5 | 3,758,525 |
| 404 | 3,758,526 |
| | 3,758,527 |
| | 3,758,528 |
| | 3,758,529 |
| 410.7 | 3,758,530 |
| 420 | 3,758,532 |
| 428 | 3,758,533 |
| 429J | 3,758,534 |
| 429.5 | 3,758,535 |
| 429.7 | 3,758,341 |
| | 3,758,536 |
| | 3,758,537 |
| 430 | 3,758,538 |
| 439R | 3,758,540 |
| 448.2Q | 3,758,541 |
| 448.8R | 3,758,542 |
| 458 | 3,758,543 |
| 465F | 3,758,544 |
| 465.8R | 3,758,545 |
| 471R | 3,758,546 |
| 472 | 3,758,547 |
| 475FR | 3,758,548 |
| 481R | 3,758,549 |
| 482B | 3,758,554 |
| 482R | 3,758,552 |
| | 3,758,553 |
| | 3,758,555 |
| 485G | 3,758,556 |
| 485R | 3,758,550 |
| 486R | 3,758,551 |
| 488F | 3,758,557 |
| 515M | 3,758,558 |
| 518R | 3,758,559 |
| | 3,758,561 |
| 519 | 3,758,560 |
| 520 | 3,758,562 |
| 526N | 3,758,563 |
| 531R | 3,758,564 |
| | 3,758,566 |
| 534E | 3,758,565 |
| 543F | 3,758,567 |
| 543H | 3,758,568 |
| 544C | 3,758,570 |
| 544Y | 3,758,569 |
| | 3,758,571 |
| 553B | 3,758,572 |
| 556AR | 3,758,573 |
| 558A | 3,758,574 |
| 559S | 3,758,575 |
| 561N | 3,758,578 |
| 561R | 3,758,576 |
| | 3,758,577 |
| 562B | 3,758,579 |
| 563R | 3,758,580 |
| 566AE | 3,758,582 |
| 566A | 3,758,581 |
| 570.7 | 3,758,583 |
| 583K | 3,758,584 |
| 583P | 3,758,585 |
| 583R | 3,758,586 |
| 584R | 3,758,587 |
| 586H | 3,758,588 |
| 590 | 3,758,589 |
| 598 | 3,758,590 |
| 607A | 3,758,591 |
| | 3,758,592 |
| | 3,758,593 |
| 607B | 3,758,594 |
| 609R | 3,758,595 |
| 613D | 3,758,596 |
| 613R | 3,758,597 |
| 614R | 3,758,598 |
| 641 | 3,758,615 |
| 644 | 3,758,616 |
| 648C | 3,758,617 |
| 653.1 | 3,758,618 |
| 659A | 3,758,619 |
| 665G | 3,758,620 |
| 666B | 3,758,621 |
| 668A | 3,758,623 |
| 668D | 3,758,599 |
| 668R | 3,758,622 |
| | 3,758,624 |
| 669R | 3,758,625 |
| 673.5 | 3,758,600 |
| 674A | 3,758,601 |
| 676R | 3,758,602 |
| 677AD | 3,758,608 |
| 677A | 3,758,603 |
| | 3,758,604 |
| | 3,758,605 |
| | 3,758,606 |
| | 3,758,607 |
| 680E | 3,758,609 |
| 681 | 3,758,610 |
| | 3,758,612 |
| 681.5R | 3,758,611 |
| 683.15C | 3,758,627 |
| 683.15R | 3,758,626 |
| 683.43 | 3,758,628 |
| 683.48 | 3,758,613 |
| 683.9 | 3,758,614 |
| 823 | 3,758,630 |
| 830P | 3,758,631 |
| 836 | 3,758,632 |
| | 3,758,633 |
| | 3,758,634 |
| | 3,758,635 |
| 857G | 3,758,636 |
| 859R | 3,758,637 |
| 865 | 3,758,638 |
| 870 | 3,758,639 |
| 873 | 3,758,640 |
| 874 | 3,758,641 |
| 885 | 3,758,642 |
| 897A | 3,758,643 |
| 940 | 3,758,644 |
| | 3,758,647 |
| 941 | 3,758,645 |
| 953 | 3,758,646 |
| **CLASS 261** | |
| 18B | 3,758,081 |
| 23A | 3,758,082 |
| 25 | 3,758,083 |
| 35 | 3,758,084 |
| 89 | 3,758,085 |
| 92 | 3,758,086 |
| 94 | 3,758,087 |
| 111 | 3,758,088 |
| **CLASS 264** | |
| .5 | 3,758,648 |
| 1 | 3,758,649 |
| 34 | 3,758,650 |
| 39 | 3,758,651 |
| 43 | 3,758,652 |
| 56 | 3,758,653 |
| 98 | 3,758,654 |
| 105 | 3,758,655 |
| 115 | 3,758,656 |
| 166 | 3,758,657 |
| 176F | 3,758,658 |
| 182 | 3,758,659 |
| 202 | 3,758,660 |
| 230 | 3,758,661 |
| 332 | 3,758,662 |
| **CLASS 266** | |
| 18 | 3,758,089 |
| 41 | 3,758,090 |
| **CLASS 267** | |
| 65R | 3,758,091 |
| 131 | 3,758,092 |
| 159 | 3,758,093 |
| 162 | 3,758,094 |
| 165 | 3,758,095 |
| **CLASS 269** | |
| 7 | 3,758,096 |
| 27 | 3,758,097 |
| 55 | 3,758,098 |
| 58 | 3,758,099 |
| 203 | 3,758,100 |
| 254R | 3,758,101 |
| **CLASS 270** | |
| 69 | 3,758,102 |
| **CLASS 271** | |
| 75 | 3,758,104 |
| 170 | 3,758,105 |
| **CLASS 272** | |
| 3 | 3,758,106 |
| 30 | 3,758,108 |
| 64 | 3,758,110 |
| 73 | 3,758,107 |
| | 3,758,111 |
| 79C | 3,758,112 |
| 84 | 3,758,109 |
| **CLASS 273** | |
| 120R | 3,758,113 |
| 159 | 3,758,114 |
| 164 | 3,758,115 |
| 181A | 3,758,116 |
| 194B | 3,758,117 |
| 201 | 3,758,118 |
| **CLASS 274** | |
| 4E | 3,758,119 |
| | 3,758,121 |
| 4F | 3,758,122 |
| 4J | 3,758,120 |
| **CLASS 277** | |
| 206 | 3,758,123 |
| 224 | 3,758,124 |
| **CLASS 279** | |
| 103 | 3,758,125 |
| **CLASS 280** | |
| 11.13L | 3,758,126 |
| 11.13S | 3,758,127 |
| 47.25 | 3,758,128 |
| 96 | 3,758,130 |
| 96.1 | 3,758,129 |
| 150AB | 3,758,131 |
| | 3,758,133 |
| 150E | 3,758,132 |
| 163 | 3,758,134 |
| 402 | 3,758,135 |
| **CLASS 281** | |
| 16 | 3,758,136 |
| **CLASS 285** | |
| 70 | 3,758,137 |
| 158 | 3,758,138 |
| 332 | 3,758,139 |
| **CLASS 290** | |
| 42 | 3,758,788 |
| **CLASS 291** | |
| 4 | 3,758,103 |
| **CLASS 292** | |
| 223 | 3,758,140 |
| 254 | 3,758,142 |
| 262 | 3,758,141 |
| **CLASS 294** | |
| 8 | 3,758,143 |
| 64R | 3,758,144 |
| 86.29 | 3,758,145 |
| 94 | 3,758,146 |
| **CLASS 296** | |
| 23MC | 3,758,148 |
| 23R | 3,758,147 |
| **CLASS 297** | |
| 45 | 3,758,150 |
| 83 | 3,758,151 |
| 157 | 3,758,152 |
| 199 | 3,758,153 |
| 214 | 3,758,154 |
| 248 | 3,758,155 |
| 259 | 3,758,149 |
| 260 | 3,758,156 |
| 300 | 3,758,157 |
| 385 | 3,758,158 |
| 455 | 3,758,159 |
| **CLASS 299** | |
| 15 | 3,758,160 |
| **CLASS 301** | |
| 63R | 3,758,161 |
| **CLASS 302** | |
| 53 | 3,758,162 |
| 58 | 3,758,163 |
| **CLASS 303** | |
| 7 | 3,758,164 |
| 20 | 3,758,165 |
| 21P | 3,758,166 |
| 40 | 3,758,167 |
| 52 | 3,758,168 |
| **CLASS 305** | |
| 32 | 3,758,169 |
| 35EB | 3,758,170 |
| 40 | 3,758,171 |
| **CLASS 307** | |
| 116 | 3,758,789 |
| 136 | 3,758,790 |
| 215 | 3,758,791 |
| 235A | 3,758,792 |
| 252B | 3,758,793 |
| 304 | 3,758,794 |
| 306 | 3,758,795 |
| 311 | 3,758,796 |
| 324 | 3,758,797 |
| **CLASS 308** | |
| 2R | 3,758,173 |
| 2 | 3,758,172 |
| 3R | 3,758,174 |
| 5 | 3,758,175 |
| 6C | 3,758,176 |
| 8.2 | Re.27,752 |
| 9 | 3,758,177 |
| 159 | 3,758,178 |
| 187.1 | 3,758,179 |
| 201 | 3,758,180 |
| **CLASS 310** | |
| 50 | 3,758,798 |
| 89 | 3,758,799 |
| 211 | 3,758,800 |
| **CLASS 312** | |
| 107 | 3,758,181 |
| 194 | 3,758,182 |
| 292 | 3,758,183 |
| **CLASS 313** | |
| 60 | 3,758,801 |
| 64 | 3,758,802 |
| 69C | Re.27,751 |
| 174 | 3,758,803 |
| 220 | 3,758,804 |
| 225 | 3,758,805 |
| 268 | 3,758,806 |
| 273 | 3,758,807 |
| 346R | 3,758,809 |
| 346 | 3,758,808 |
| 356 | 3,758,810 |
| **CLASS 315** | |
| 3.6 | 3,758,811 |
| 27TD | 3,758,813 |
| | 3,758,814 |
| 27XY | 3,758,812 |
| 101 | 3,758,815 |
| 137 | 3,758,816 |
| 151 | 3,758,817 |
| 204 | 3,758,819 |
| 207 | 3,758,818 |
| 209T | 3,758,820 |
| | 3,758,821 |
| 219 | 3,758,823 |
| 241P | 3,758,822 |
| 246 | 3,758,824 |
| 276D | 3,758,825 |
| **CLASS 316** | |
| 25 | 3,758,184 |
| **CLASS 317** | |
| 31 | 3,758,826 |
| 81 | 3,758,827 |
| 113 | 3,758,828 |
| 117 | 3,758,829 |
| 234R | 3,758,830 |
| 235R | 3,758,831 |
| | 3,758,832 |
| 258 | 3,758,833 |
| **CLASS 318** | |
| 6 | 3,758,834 |
| 162 | 3,758,835 |
| 197 | 3,758,836 |
| 212 | 3,758,837 |
| 597 | 3,758,838 |
| **CLASS 320** | |
| 32 | 3,758,839 |
| **CLASS 321** | |
| 2 | 3,758,840 |
| 14 | 3,758,841 |
| **CLASS 322** | |
| 25 | 3,758,842 |
| | 3,758,843 |
| **CLASS 323** | |
| 22T | 3,758,844 |
| 51 | 3,758,845 |
| **CLASS 324** | |
| 1 | 3,758,846 |
| 6 | 3,758,847 |
| | 3,758,848 |
| 41 | 3,758,849 |
| 43R | 3,758,850 |
| | 3,758,854 |
| 61QS | 3,758,851 |
| 65R | 3,758,855 |
| 78D | 3,758,853 |
| 78Q | 3,758,852 |
| 78R | 3,758,856 |
| 158MG | 3,758,857 |
| 166 | 3,758,858 |
| 174 | 3,758,859 |
| **CLASS 325** | |
| 18 | 3,758,860 |
| 38R | 3,758,861 |
| 65 | 3,758,862 |
| 321 | 3,758,863 |
| 392 | 3,758,864 |
| 418 | 3,758,865 |
| **CLASS 328** | |
| 127 | 3,758,866 |
| 137 | 3,758,867 |
| **CLASS 329** | |
| 102 | 3,758,869 |
| 104 | 3,758,870 |
| **CLASS 330** | |
| 6 | 3,758,871 |
| 185 | 3,758,872 |
| **CLASS 331** | |
| 78 | 3,758,873 |
| 94.5 | 3,758,874 |
| | 3,758,875 |
| | 3,758,876 |
| | 3,758,877 |
| **CLASS 333** | |
| 1.1 | 3,758,878 |
| 10 | 3,758,879 |
| 11 | 3,758,880 |
| 16 | 3,758,881 |
| 21A | 3,758,882 |
| 24.1 | Re.27,755 |
| | 3,758,883 |
| 70A | 3,758,884 |
| 80T | 3,758,885 |
| 97R | 3,758,886 |
| **CLASS 335** | |
| 8 | 3,758,887 |
| 210 | 3,758,868 |
| | 3,758,888 |
| **CLASS 340** | |
| 3R | Re.27,750 |
| **CLASS 350** | |
| 1 | 3,758,185 |
| 3.5 | 3,758,186 |
| | 3,758,187 |
| 96B | 3,758,188 |
| | 3,758,189 |
| 97 | 3,758,190 |
| 103 | 3,758,191 |
| 105 | 3,758,192 |
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| 160LC | 3,758,195 |
| 160R | 3,758,194 |
| 241 | 3,758,196 |
| 257 | 3,758,198 |
| 285 | 3,758,199 |
| 286 | 3,758,197 |
| 318 | 3,758,200 |
| **CLASS 351** | |
| 25 | 3,758,201 |
| 41 | 3,758,202 |
| 98 | 3,758,203 |
| **CLASS 355** | |
| 10 | 3,758,204 |
| 18 | 3,758,205 |
| 75 | 3,758,206 |
| 80 | 3,758,207 |
| 97 | 3,758,208 |
| **CLASS 356** | |
| 4 | 3,758,209 |
| 51 | 3,758,210 |
| 103 | 3,758,211 |
| 145 | 3,758,212 |
| 155 | 3,758,213 |
| 160 | 3,758,214 |
| 196 | 3,758,215 |
| 200 | 3,758,216 |
| 256 | 3,758,217 |
| **CLASS 401** | |
| 86 | 3,758,218 |
| **CLASS 402** | |
| 80L | 3,758,219 |
| **CLASS 404** | |
| 67 | 3,758,220 |
| **CLASS 408** | |
| 204 | 3,758,221 |
| 224 | 3,758,222 |
| **CLASS 415** | |
| 1 | 3,758,223 |
| 66 | 3,758,224 |
| 69 | 3,758,225 |
| 104 | 3,758,226 |
| 121 | 3,758,227 |
| 153 | 3,758,228 |
| 217 | 3,758,229 |
| **CLASS 416** | |
| 107 | 3,758,230 |
| 132 | 3,758,231 |
| 213 | 3,758,232 |
| 229 | 3,758,233 |
| 230 | 3,758,234 |
| **CLASS 417** | |
| 222 | 3,758,235 |
| 360 | 3,758,236 |
| 394 | 3,758,237 |
| 408 | 3,758,238 |
| 462 | 3,758,240 |
| 477 | 3,758,239 |
| 494 | 3,758,241 |
| **CLASS 418** | |
| 61 | 3,758,242 |
| 76 | 3,758,243 |
| 107 | 3,758,244 |
| **CLASS 423** | |
| 2 | 3,758,663 |
| 15 | 3,758,280 |
| | 3,758,664 |
| 56 | 3,758,665 |
| 242 | 3,758,668 |
| 247 | 3,758,666 |
| 254 | 3,758,669 |
| 261 | 3,758,670 |
| 315 | 3,758,671 |
| 345 | 3,758,672 |
| 415 | 3,758,673 |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 483 | 3,758,674 | 118 | 3,758,681 | 329 | 3,758,689 | 155 | 3,758,249 | 281 | 3,758,256 | 158 | 3,758,263 |
| 495 | 3,758,675 | 177 | 3,758,682 | 330 | 3,758,690 | 165 | 3,758,250 | 331 | 3,758,257 | 191 | 3,758,264 |
| 573 | 3,758,676 | 178 | 3,758,683 | | 3,758,691 | 174.8E | 3,758,251 | | | 349 | 3,758,265 |
| 645 | 3,758,677 | 180 | 3,758,684 | | | 242 | 3,758,252 | CLASS 431 | | | |
| | | 211 | 3,758,685 | CLASS 425 | | 249 | 3,758,253 | 9 | 3,758,258 | CLASS 432 | |
| CLASS 424 | | | 3,758,686 | 78 | 3,758,245 | 387B | 3,758,254 | | 3,758,259 | 14 | 3,758,266 |
| 1 | 3,758,678 | 243 | 3,758,687 | 93 | 3,758,246 | 392 | 3,758,255 | 78 | 3,758,260 | 134 | 3,758,267 |
| 19 | 3,758,679 | 321 | 3,758,692 | 114 | 3,758,247 | CLASS 426 | | 116 | 3,758,261 | CLASS 444 | |
| 22 | 3,758,680 | 324 | 3,758,688 | 145 | 3,758,248 | 118 | 3,758,667 | 130 | 3,758,262 | 151 | 3,758,763 |

## CLASSIFICATION OF DESIGNS

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D01— | 1 | 228,320 | | 2 | 228,337 | | 99 | 228,335 | D23— | 70 | 228,347 | D34— | 5 | 228,355 | D56— | 4 | 228,363 |
| | | 228,321 | | 4 | 228,336 | | 210 | 228,338 | | 94 | 228,348 | | 14 | 228,356 | D64— | 10 | 228,364 |
| D02— | 24 | 228,322 | | 9 | 228,329 | D08— | 272 | 228,340 | D26— | 5 | 228,349 | | 15 | 228,357 | | 11 | 228,365 |
| | 232 | 228,323 | | 15 | 228,330 | D09— | 39 | 228,341 | | | 228,350 | | | 228,358 | | 12 | 228,366 |
| D06— | 47 | 228,324 | | 41 | 228,331 | | 100 | 228,342 | | 6 | 228,351 | | | 228,359 | | | 228,367 |
| | 63 | 228,325 | | | 228,339 | | 127 | 228,343 | | 14 | 228,352 | D35— | 3 | 228,360 | D72— | 1 | 228,368 |
| | 66 | 228,326 | | 52 | 228,332 | | 256 | 228,344 | D29— | 1 | 228,353 | D48— | 31 | 228,361 | D74— | 17 | 228,369 |
| | 85 | 228,327 | | 56 | 228,333 | | 264 | 228,345 | | 28 | 228,354 | D49— | 9 | 228,362 | D86— | 10 | 228,370 |
| D07— | 1 | 228,328 | | 95 | 228,334 | D16— | 2 | 228,346 | | | | | | | | | |

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# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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# PATENT OFFICE NOTICES

## Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before October 5, 1973:

Bercovitz, Leon J., 10036 Renfrew Road, Silver Spring, Md. 20901
Chirlin, Sydney R., 1 Amstel Drive, #15, New Castle, Del. 19720
Epstein, Reuben, 2800 Quebec St. NW., Washington, D.C. 20008
Harris, Michael D., 1888 Century Park E., Suite 1000, Los Angeles, Calif. 90067
Mintz, Herbert H., 17 Fence Line Drive, Gaithersburg, Md. 20760
Rutledge, Carl A., 2250 N. Beauregard St., Alexandria, Va. 22311

LUTRELLE F. PARKER,
*Chairman, Committee on Enrollment.*

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**3,035,294**, Stout and Houser, SWEEPER WITH HAND ACTUATED REAR DUMPING DEBRIS RECEPTACLE; **D. 194,051**, same, LAWN SWEEPER, **filed** Feb. 27, 1973, C.A., Sixth Circuit, Ohio (Cincinnati), Doc. 72–1664, *Parker Sweeper Company* v. *The E. T. Rugg Company*. Decision: The judgment of the District Court is reversed and the case is remanded for entry of an order dismissing the complaint on the ground that both patents at issue are invalid.

**3,046,110**, M. P. Schmidt, PROCESS OF MAKING PRINTING PLATES AND LIGHT SENSITIVE MATERIAL SUITABLE FOR USE THEREIN, **filed** Jan. 25, 1971, D.C. Del. (Wilmington), Doc. 4049, transferred from D.C. Md., Doc. 19764–C, *Azoplate Corporation* v. *James E. Harper*. Order returning case to the United States District Court for the District of Maryland, Nov. 10, 1972.

**3,057,195**, Bentley and Price, FORCE MEASURING SYSTEM; **3,074,279**, H. D. Morris, POSITION DETECTING TRANSDUCER; **Re. 27,411**, same, FORCE MEASURING SYSTEM, **filed** Oct. 2, 1972, D.C.N.J. (Trenton), Doc. 1626–72, *Systron-Donner Corporation* v. *Gulton Industries, Inc.* Consent order dismissing action, Mar. 7, 1973.

**3,074,279.** (See 3,057,195.)

**3,095,342**, J. Kraly, TIRE REPAIR INSERT, **filed** May 22, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1247, *Mary S. Kraly* v. *National Distillers and Chemical Corp.* Judgment entered, ordered, adjudged and decreed that claims 3–6 of the Kraly Patent No. 3,095,342 are invalid pursuant to 35 U.S.C. 103, such invalidity terminating all defendant's further obligations under said contract, Feb. 28, 1973.

**3,098,520**, Greenstadt and Ziers, DRAPERY APPARATUS, **filed** Mar. 2, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–454–CC, *Lightron Corp.* v. *Fabcraft Inc.*

**3,100,986**, Starr, Kaplan, Greenberg and Cox, LEAKAGE INDICATOR; **3,357,161**, Starr, Kaplan and Cox, LIQUID PURIFYING SYSTEM, **filed** Feb. 21, 1973, D.C., E.D. Mich. (Detroit), Doc. 39687, *Louis Starr and Allan L. Kaplan* v. *The Allen Group Inc.*

**3,167,814**, H. O. Corbert, APPARATUS FOR FORMING BLOWN TUBULAR FILMS, **filed** May 10, 1972, D.C. Mass. (Boston), Doc. 72–1542–M, *Gloucester Engineering Co., Inc.* v. *National Distillers and Chemical Corporation.*

**3,257,190**, Q. F. Soper, METHOD OF ELIMINATING WEED GRASSES AND BROADLEAF WEEDS. **filed** Aug. 24, 1972, D.C., N.C. Ill. (Chicago), Doc. 72c2111, *Eli Lilly and Company* v. *United States Borax & Chemical Corp.*

**3,265,546**, R. J. Medford, CHEMICAL DRILLING OF CIRCUIT BOARDS, **filed** Feb. 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–411–CC, *Chem-Aero, Inc.* v. *Chemical Machining Corp. et al.*

**3,273,433**, A. Borzym, TUBULAR STOCK CUTOFF METHOD AND APPARATUS, **filed** Mar. 5, 1973, D.C., E.D. Mich. (Detroit), Doc. 39750, *Warren Machine & Engineering, Inc.* v. *W. H. Morrin.*

**3,357,161.** (See 3,100,986.)

**3,418,111**, R. B. Herchenroeder, COBALT BASE ALLOY, **filed** Feb. 16, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. 73–146, *Cyclops Corporation* v. *Cabot Corporation.*

**3,474,479**, H. J. Girard, PIPELINE CLEANING DEVICE, **filed** Feb. 28, 1973, D.C., S.D. Tex. (Houston), Doc. 73–H–272, *Harry J. Girard* v. *Polly-Pig by Knapp, Inc.*

**3,477,406**, M. Fujinaga, METHOD OF CULTIVATION OF PENAEID SHRIMP, **filed** Jan. 5, 1972, D.C. Del. (Wilmington), Doc. 4306, *United States of America* v. *Marifarms, Inc. and Motosaku Fujinaga, also known as Gensaku Hudinaga.* Decision: It appearing that Marifarms, Incorporated has caused the reissue application of the patent in suit to be abandoned and has dedicated to the public for the full term thereof the patent in suit; it further appearing that there remain no other issues to be litigated; and further appearing that the individual defendant has neither been served nor appeared in the action; pursuant to Civil Rule 41(a)(1) the action is hereby dismissed, Dec. 26, 1972.

**3,483,934**, B. H. Fuchs, UNDERREAMER HAVING UNEQUAL ARM EXTENSION RADII, **filed** Oct. 30, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2570–JWC, *Grant Oil Tool Company, Inc.* v. *Benjamin H. Fuchs and Petroleum Drilling Tools.* Consent judgment and order thereon enjoining defendants from infringing plaintiff's patent without the consent of plaintiff. The plaintiff's 2nd cause of action for unfair competition is dismissed without prejudice, Feb. 26, 1973.

**3,548,066**, A. B. Freeman, PLURAL MODE AUTOMATIC BASS NOTE SYSTEM FOR MUSICAL CHORDS WITH AUTOMATIC RHYTHM DEVICE, **filed** Nov. 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2758, *Alfred B. Freeman* v. *Hammond Corporation.*

**3,594,964**, W. T. Clark, PLANETARIUM PROJECTION DOME, **filed** Apr. 5, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72–679, *Observa-Dome Laboratories, Inc.* v. *McGraw-Hill, Inc.* Defendants' motion for summary judgment is unopposed, and further appearing that there has been no action of either defendant which even arguably infringes the patent in suit, defendant's motion for summary judgment is hereby granted, Feb. 21, 1973.

**3,597,187**, U. P. Trudeau, APPARATUS FOR HANDLING MOLD CHARGES OF MOLTEN GLASS, **filed** Mar. 5, 1973, D.C. Conn. (New Haven), Doc. 15662, *Owens-Illinois, Inc.* v. *Emhart Corporation.*

**Re. 27,411.** (See 3,057,195.)

**D. 194,051.** (See 3,035,294.)

**D. 222,104**, K. G. Logan, VEHICLE SAFETY LIGHT AND BRACKET THEREFOR, **filed** Feb. 21, 1973, D.C., N.D. Iowa (Fort Dodge), Doc. 73–C–2014–C, *Saflite Corp.* v. *Cushion Industries Co. (a partnership comprised of Venonn Ferguson and Clarice Ferguson, and Gwenna Groff).*

## Certificates of Correction for the Week of Sept. 18, 1973

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## Disclaimer and Dedication

3,728,112.—*Leo N. Chapin*, Des Plaines, and *Robert Freed*, Lincolnwood, Ill. ELECTROPHOTOGRAPHIC MULTICOLOR COPY PROCESS EMPLOYING SOLUBILIZABLE DYES. Patent dated Apr. 17, 1973. Disclaimer and Dedication filed Nov. 3, 1972, by the assignee, *A. B. Dick Company.*

Hereby disclaims and dedicates to the Public the portion of the term of the patent subsequent to Dec. 28, 1988.

## Service by Publication

Francis R. Sullivan

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on May 3, 1971, of an application for patent entitled "Thermally Stable Polyphosphonates as Flame Retardants," on behalf of Francis R. Sullivan, whose last known address is 201 12th Avenue, Belmar, New Jersey 07719. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor James L. Clovis without execution by the said Francis R. Sullivan. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Francis R. Sullivan in connection with the said applciation must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
*Acting Assistant Commissioner of Patents.*

## Disclaimers

3,620,518.—*Karl-Heinz Winter*, Dornigheim and *Ottwin Krach*, Wolfgang Bei Hanau/Main, Germany. PROCESS AND DEVICE FOR THE TREATMENT OF SURFACES OF WORKPIECES IN AN ANNEALING FURNACE. Patent dated Nov. 16, 1971. Disclaimer filed June 10, 1971, by the assignee, *Deutsche Gold- und Silber-Scheideanstalt vormals Roessler.*

Hereby disclaims the portion of the term of the patent subsequent to July 7, 1987.

3,620,757.—*Rudolph H. Ellinger*, New Canaan, Conn. and *Mark G. Schwartz*, Yonkers, N.Y. REPLACEMENT OF SODIUM CASEINATE. Patent dated Nov. 16, 1971. Disclaimer filed Nov. 3, 1971, by the assignee, *Stauffer Chemical Company.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 26, 1988.

3,632,853.—*Eugene E. Galantay*, Morristown, N.J. CERTAIN BENZOCYCLOHEPTOXAZOLE COMPOUNDS. Patent dated Jan. 4, 1972. Disclaimer filed Apr. 15, 1971, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 22, 1987.

3,636,603.—*Theron V. Moss*, Shaker Heights, Ohio and *Ollie Ray Caylor*, McDonald, Tenn. BUFFING DEVICE. Patent dated Jan. 25, 1972. Disclaimer filed May 12, 1971, by the assignee, *Theron V. Moss.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 6, 1987.

3,636,757.—*Leo J. Hansen*, Clarendon Hills, Ill. MEASURING THE TENDERNESS OF MEAT. Patent dated Jan. 25, 1972. Disclaimer filed Sept. 7, 1971, by the assignee, *Armour and Company.*

Hereby disclaims the portion of the term of the patent subsequent to July 13, 1987.

3,639,757.—*David I. Carroll*, Lantana, *Roger F. Wernlund*, Lake Worth, and *Martin J. Cohen*, West Palm Beach, Fla. APPARATUS AND METHODS EMPLOYING ION-MOLECULE REACTIONS IN BATCH ANALYSIS OF VOLATILE MATERIALS. Patent dated Feb. 1, 1972. Disclaimer filed Nov. 1, 1971, by the assignee, *Franklin GNO Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 16, 1988.

3,648,711.—*Richard M. Berger*, Richmond and *Elwin W. Brooks*, Mechanicsville, Va. TOBACCO SMOKE FILTER. Patent dated Mar. 14, 1972. Disclaimer filed Nov. 16, 1971, by the assignee, *American Filtrona Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 13, 1987.

3,655,136.—*William L. Livingston*, Sharon, Mass. PRESSURE RESPONSIVE FLUID NOZZLE. Patent dated Apr. 11, 1972. Disclaimer filed April 25, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 4, 1989.

3,665,306.—*Peter Orth*, Lippstadt, Germany. PROCESS FOR MEASURING REVOLUTION SPEED OF A BODY. Patent dated May 23, 1972. Disclaimer filed Sept. 20, 1972, by the assignee, *Heberlein Patent Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to May 23, 1989.

3,681,388.—*Marcel K. Eberle,* Madison, N.J. N-SUBSTITUTED-3-AMINOALKANOYL FUSED CYCLOALKYL INDOLES. Patent dated Aug. 1, 1972. Disclaimer filed July 17, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to May 16, 1989.

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3,696,100.—*Guy M. Raynaud, Claude P. Fauran, Michel J. Turin,* Paris, *Bernard M. Pourrias,* Meudon La Foret and *Gerard J. Huguet,* Malesherbes, France. N-(6-METHYL-6-OL-2-HEPTYL)-N'-SUBSTITUTED PIPERAZINES. Patent dated Oct. 3, 1972. Disclaimer filed Nov. 8, 1971, by the assignee, *Delalande S.A.*

Hereby disclaims the portion of the term of the patent subsequent to Mar. 30, 1988.

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3,697,640.—*Peter M. Grant,* Kingsport, Tenn. and *Brazelton Fulkerson* and *John W. Mench,* Rochester, N.Y. RUMEN STABLE MEDICAMENT AND/OR NUTRIENT COMPOSITIONS. Patent dated Oct. 10, 1972. Disclaimer filed Mar. 13, 1972, by the assignee, *Eastman Kodak Company.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 9, 1988.

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3,702,919.—*Robert R. Candor,* Miami Township, and *James T. Candor,* Washington Township, Ohio. METHOD FOR CLEANING A COOKING APPARATUS USING ELECTROSTATIC MEANS. Patent dated Nov. 14, 1972. Disclaimer filed Apr. 24, 1972, by the inventors.

Hereby disclaim the portion of the term of the patent subsequent to June 23, 1987.

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3,707,372.—*Robert W. Hallman,* Utica, and *Gary W. Kurtz,* Southfield, Mich. ELECTROMAGNETIC RADIATION SENSITIVE ELEMENTS. Patent dated Dec. 26, 1972. Disclaimer filed Oct. 24, 1972, by the assignee, *Teeg Research, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1989.

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3,708,015.—*Cheng Yao,* Weston, Mass. SYSTEM FOR FIRE PROTECTION USING RECIRCULATION OF COMBUSTION PRODUCTS. Patent dated Jan. 2, 1973. Disclaimer filed Sept. 28, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patnet subsequent to Sept. 19, 1989.

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3,711,470.—*Karl-Heinz Weber,* Gau-Algesheim, *Karl Seile* and *Peter Danneberg,* Ingelheim (Rhine), *Rolf Giesemann,* Bingen, and *Karl Heinz Hauptmann,* deceased, late of Ingelheim (Rhine), Germany, by *Maria Hauptmann,* heir, Bonn (Rhine), Germany. 5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES. Patent dated Jan. 16, 1973. Disclaimer filed Sept. 13, 1972, by the assignee, *Boehringer Ingelheim G.m.b.H.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 14, 1989.

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3,711,521.—*Robert V. Coombs,* Summit, and *Eugene E. Galantay,* Morristown, N.J. 17α-HYDROXY AND ACYLOXY SUBSTITUTED-9α-METHYL-19-NORPROGESTERONES. Patent dated Jan. 16, 1973. Disclaimer filed Dec. 4, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 11, 1989.

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3,713,435.—*Roman Szpur,* Dayton, Ohio. PICKUP ELECTRODE WITH RIGID ELECTROLYTE CUP. Patent dated Jan. 30, 1973. Disclaimer filed Nov. 13, 1972, by the assignee, *NDM Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 10, 1989.

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3,717,637.—*Fritz Hunziker,* Bern, *Jean Schmutz,* Mnri near Bern, *Franz Martin Kunzle,* Bern, Switzerland. TRIFLUOROMETHYL THIO SUBSTITUTED DIBENZ [b, f] [1, 4] OXAZEPINES. Patent dated Feb. 20, 1973. Disclaimer filed July 24, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

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3,717,663.—*Robert V. Coombs,* Chatham and *Eugene E. Galantay,* Morristown, N.J. 9-ALPHA-METHYL STEROIDS. Patent dated Feb. 20, 1973. Disclaimer filed Dec. 4, 1972, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to April 11, 1989.

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3,717,847.—*Kazuhiko Kakuta,* Tokyo, Japan. METHOD AND APPARATUS FOR TRACING THE CONTOUR OF A PATTERN. Patent dated Feb. 20, 1973. Disclaimer filed Nov. 20, 1972, by the assignee, *Iwatsu Electric Company, Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to June 20, 1989.

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3,722,596.—*William L. Livingston,* Sharon, Mass. FIRE PROTECTION SYSTEM. Patent dated Mar. 27, 1973. Disclaimer filed Dec. 21, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 4, 1989.

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3,729,312.—*Raymond H. Young, Jr.,* Macon, Ga. ELECTROPHOTOGRAPHIC COMPOSITION EMPLOYING POLY-(VINYL-HALOBENZAL) BINDER FOR ORGANIC PHOTOCONDUCTORS. Patent dated Apr. 24, 1973. Disclaimer filed Sept. 8, 1972, by the assignee, *Monsanto Company.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 22, 1989.

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3,732,581.—*Joseph J. Pitti,* Wantagh and *George A. Tassone,* Brooklyn, N.Y. POOL COVER. Patent dated May 15, 1973. Disclaimer filed Nov. 3, 1972, by the assignee, *Atreo Manufacturing Co., Inc.*

Hereby disclaims the portion of the term of the patent subsequent to June 6, 1989.

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3,734,979.—*Joseph Victor Koleske* and *Earl Richard Walter,* Charleston, W. Va. SHAPED AND MOLDED ARTICLES OF POLYMER BLENDS COMPRISING POLYOLEFINS AND LACTONE POLYMER. Patent dated May 22, 1973. Disclaimer filed Nov. 20, 1972, by the assignee, *Union Carbide Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

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# PATENT EXAMINING CORPS

## WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 1, 1973

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director<br>Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 7-20-72 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director<br>Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 8-01-72 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director<br>Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 7-11-72 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director<br>Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 6-01-72 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director<br>Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 4-19-72 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director<br>Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 1-24-73 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director<br>Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 12-07-72 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director<br>Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 10-02-72 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.<br>Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 5-15-72 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director<br>Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 11-27-72 |
| DESIGNS, GROUP 290—R. L. CAMPBELL, Director<br>Industrial Arts; Household, Personal and Fine Arts. | 1-03-72 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director<br>Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 11-20-72 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director<br>Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 8-01-72 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director<br>Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 10-24-72 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director<br>Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 9-25-72 |
| MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director<br>Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 9-05-72 |

**Expiration of patents**: The patents within the range of numbers indicated below expire during September 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

| | |
|---|---|
| Patents | Numbers 2,761,142 to 2,764,757, inclusive |
| Plant Patents | Numbers 1,509 to 1,521, inclusive |

# REISSUES

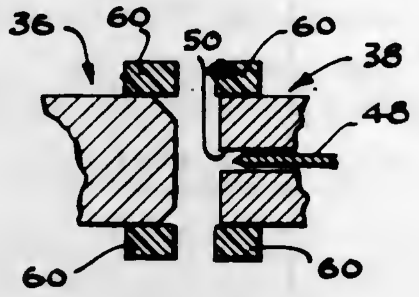
## SEPTEMBER 18, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

### 27,759

### METHOD AND APPARATUS FOR SEALING FILM WITH HIGH FREQUENCY ELECTRICAL ENERGY USING A TAPERED EDGE SEALING JAW

**John Leimert, Highland Park, Ill.**
**(373 E. Wisconsin Ave., Lake Forest, Ill. 60045)**
**Original No. 3,530,642, dated Sept. 29, 1970, Ser. No. 729,315, May 15, 1968, which is a continuation of Ser. No. 615,171, Feb. 10, 1967, now abandoned. Application for reissue Dec. 14, 1971, Ser. No. 208,007**
**Int. Cl. B23k** *13/02;* **B29c** *19/04*
**U.S. Cl. 156—273** **6 Claims**



An apparatus for sealing plastic film into an enclosed form with high frequency electrical energy, the film first being formed into a closed shape and continuously sealed in this shape, said apparatus contemplating the sealing of film such as polyvinyl chloride rapidly and without interruption in the seal.

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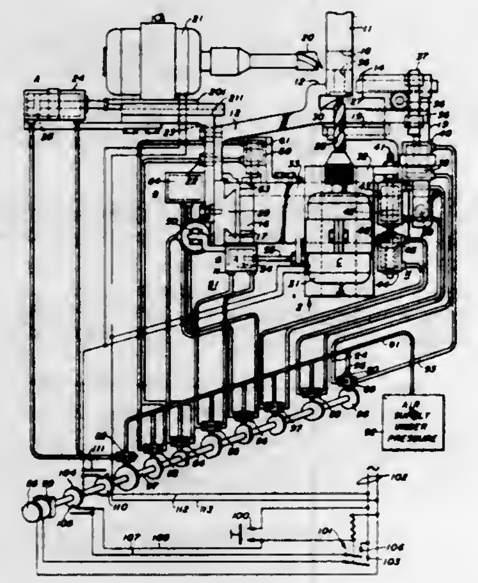
### 27,760

### DOOR FINISHING MACHINE

**George L. Mayo, Fort Worth, Tex., by Clary Corp., San Gabriel, Calif., assignee**
**Original No. 3,513,889, dated May 26, 1970, Ser. No. 741,746, July 1, 1968. Application for reissue Aug. 3, 1970, Ser. No. 60,478**
**Int. Cl. B27m** *3/00*
**U.S. Cl. 144—3 R** **16 Claims**



A machine for drilling and routing a door to receive a door lock in which a rotating cutting tool having a drilling portion and a routing tip is first caused to enter the door by an amount equal to the depth of the lock face recess, whereupon the tool is moved laterally in coordinate directions to form the recess. Thereafter, the tool is centered and advanced, causing the drill portion thereof to drill the lock bolt hole. Pneumatically operable devices operate in timed sequence to clamp the door in position and to operate the cutting tool in various directions.

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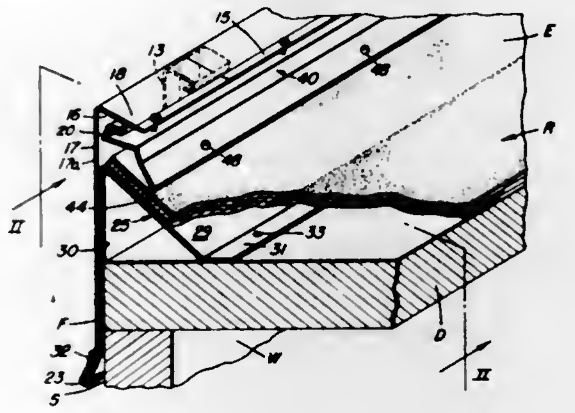
### 27,761

### CONJOINT FACIA AND WATER DAM

**Julian J. Attaway, Tucker, Ga., assignor to Miscellaneous Manufacturing Corporation, Tucker, Ga.**
**Original No. 3,624,973, dated Dec. 7, 1971, Ser. No. 1,123, Jan. 7, 1970. Application for reissue Oct. 5, 1972, Ser. No. 298,803**
**Int. Cl. E04d** *13/15*
**U.S. Cl. 52—60** **16 Claims**



A conjoint facia and water dam for being installed on a roof deck is provided comprising facia and heading and keeper means, a cant, flashing means, and thrust means, the flashing means being characterized by having first and second wall and bearing components and an interconnecting bight portion for engaging the first wall and bearing component with keeper structure of the facia and heading and keeper means in a recess bordered by an upper facia and heading portion of the latter means for the flashing means to extend behind a facia wall of the facia and heading and keeper means having the facia wall upstanding from an end of a roof deck and the second wall and bearing component of the flashing means covering and bearing upon an end of roofing on the cant, the latter supported on the roof deck behind the facia wall, while the thrust means engages the second wall and bearing component of the flashing means with the facia and heading and keeper means in an area of the keeper structure of the latter located exteriorly of the recess for the flashing means to clamp the end of roofing under the second wall and bearing component to an inclined surface of the cant.

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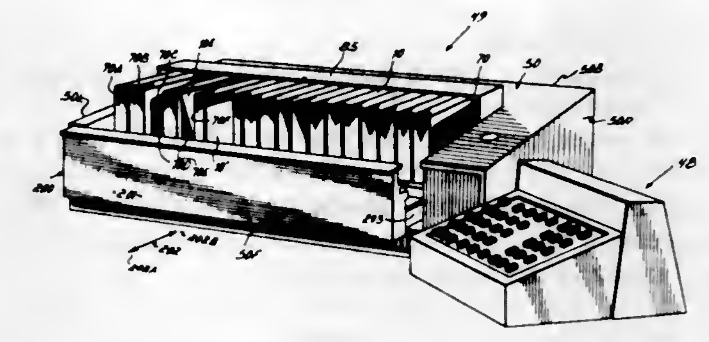
### 27,762

### ARTICLE SELECTION SYSTEM

**Robert D. Parry, deceased, late of Cincinnati, Ohio, by Margaret G. Parry, executrix, Cincinnati, Ohio, assignor to O.K. Partnership and Access Corp., both of Cincinnati, Ohio, fractional part interest to each**
**Original No. 3,478,877, dated Nov. 18, 1969, Ser. No. 661,758, Aug. 4, 1967. Application for reissue Nov. 17, 1971, Ser. No. 199,754**
**Int. Cl. B07c** *5/00, 9/00*
**U.S. Cl. 209—80.5** **52 Claims**

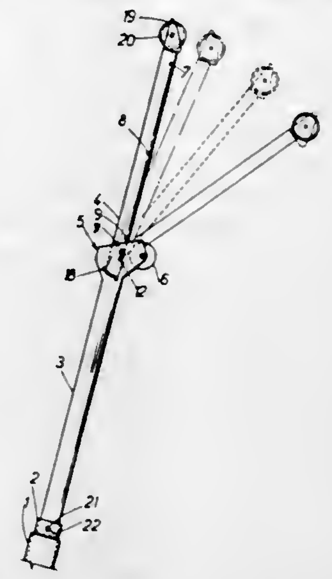


A retrieval system is disclosed for selecting one or more articles having a code-notched sorting edge from a plurality of similar articles stored with their sorting edges *substantailly horizontal and* aligned. The system includes means for selectively engaging sorting bars disposed transversely of the stored articles with the aligned code-notched article edges, separating means for relatively limitedly moving and partially separating, in a *substantial horizontal* direction parallel to their sorting edges, articles notched in conformity with the engaged sorting bars and those not conformingly notched, and lock means for positively locking nonconformingly notched articles to permit further separation of the conformingly and nonconformingly notched articles by continued relative movement in the same direction used to effect partial separation of the articles.

### 27,763

### TELESCOPIC JIB WITH A TELESCOPIC INCLINABLE END MEMBER FOR CRANES

**Jean Fauchers, Sein, France, assignor to Richier, Paris, France**
**Original No. 3,620,379, dated Nov. 16, 1971, Ser. No. 888,726, Dec. 29, 1969. Application for reissue July 11, 1972, Ser. No. 270,735**
**Claims priority, application France, Dec. 30, 1968, 182,223**
**Int. Cl. B66c** *23/06*
**U.S. Cl. 212—55** **3 Claims**



A telescopic jib for a crane, the jib being provided with an inclinable telescopic end element which is slidable in the internal element of the jib and can be fixed to this element in various positions when it is aligned therewith, by pinning or the like, and which when in a fully extended position can assume various inclinations relative to the jib, the said end element then being capable of pivoting around the fixing pin and of being fixed in the selected inclined position by means of another pin or the like.

# PLANT PATENTS

## GRANTED SEPTEMBER 18, 1973

**Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.**

**3,395**

### PEONY PLANT

**Carl G. Klehm, 2 E. Algonquin Road,**
**Arlington Heights, Ill. 60005**
**Filed Mar. 9, 1972, Ser. No. 233,365**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—68** **1 Claim**

1. A new and distinct variety of peony plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, multi-stemmed and upright habit of growth, very large foliage of an attractive deep green color, a free blooming habit, a neat, compact, bomb-shaped flower form, with ruffled and crinkled guard petals, a distinctive, attractive and unusual flower color, with the outer petals being pale pink, striped and splotched with darker pink hues, and with the flower center having marked tones of cream, lemon and yellow colors, and an outstanding flower fragrance.

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**3,396**

### DISTINCT VARIETY OF PHILODENDRON PLANT

**Robert H. McColley, P.O. Box 17126,**
**Orlando, Fla. 32810**
**Filed Apr. 10, 1972, Ser. No. 242,844**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—88** **1 Claim**

The disclosure hereof is of a Philodendron plant of compact form, having leathery leaves which in their immature stage are of a greyish brown, and maturing become olive grey, producing a general two-color effect which in dark conditions is almost black.

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**3,397**

### DISTINCT VARIETY OF PHILODENDRON PLANT

**Robert H. McColley, P.O. Box 17126,**
**Orlando, Fla. 32810**
**Filed Apr. 10, 1972, Ser. No. 242,845**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—88** **1 Claim**

The disclosure hereof is a Philodendron plant having characteristics of particular density of growth, with wide leaves, short petioles and close internodes, the durability of the plant without watering at long intervals is an important aspect, the leaves being tough and leathery with very shiny appearance, even more so than usual Philodendrons.

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**3,398**

### DISTINCT VARIETY OF PHILODENDRON PLANT

**Robert H. McColley, P.O. Box 17126,**
**Orlando, Fla. 32810**
**Filed Apr. 10, 1972, Ser. No. 242,848**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—88** **1 Claim**

There is disclosed a new variety of Philodendron plant, characterized by the substantial volume of moderate reddish brown leaves at maturity, compact dense growth, the leaves being very thick and rubbery with large diameter stems, the general color of the plant being distinctive in that it includes the reddish and green contrast resulting from the breeding.

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**3,399**

### DISTINCT VARIETY OF AGLAONEMA PLANT

**Robert H. McColley, P.O. Box 17126,**
**Orlando, Fla. 32810**
**Filed Apr. 10, 1972, Ser. No. 242,849**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—88** **1 Claim**

The disclosure herein is of an Aglaonema plant, having the characteristic of producing a large proportion of white in the leaves, petioles and stems in relation to the green of the leaves, the green being distinctive and in view of the predominance of white providing a completely different impression with the white splotched throughout the leaves and many stems being entirely white.

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**3,400**

### KOREAN MOUNTAIN ASH TREE

**William Flemer III, Princeton, N.J., assignor to**
**Treesearch, Kingston, N.J.**
**Filed May 8, 1972, Ser. No. 251,499**
**Int. Cl. A01h** *5/12*

**U.S. Cl. Plt.—51** **1 Claim**

1. A new and distinct variety of mountain ash tree of the Korean mountain ash species botanically known as *Sorbus alnifolia,* substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an exceptionally vigorous habit of growth, a narrow-oval and very upright tree form in comparison with the normal habit of Korean mountain ash trees which are more spreading and often drooping in habit, thick and leathery leaves which are very resistant to physiological leaf scorch in hot weather, showy clusters of white flowers which bloom in the month of May in New Jersey, heavily borne bright red fruits which last late into the winter season without losing their color, and especial suitability for street tree plantings where pedestrian and vehicle clearance is essential.

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**3,401**

### CHRYSANTHEMUM PLANT

**Barrie John Machin, Chichester, England, assignor to**
**Framptons Nurseries Limited, Sussex, England**
**Filed Aug. 30, 1971, Ser. No. 176,340**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—77** **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a wiry, upright plant with incurving, decorative white flowers having from 220 to 250 ray petals and 30 to 100 disc petals, excellent resistance to damping off under humid conditions, and an improved response time of 1½ weeks during short day seasons in poor light conditions.

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**3,402**

### WHITE ROSE PLANT

**Robert G. Jelly, Richmond, Ind., assignor to**
**E. G. Hill Co. Inc., Richmond, Va.**
**Filed Feb. 7, 1972, Ser. No. 224,349**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—23** **1 Claim**

A new variety of rose plant bred for greenhouse production of cut flowers and distinguished by its abundant and continuous production of an almost pure white flower of excellent form, borne on medium to long moderately strong stems, and having a relatively long vase life at living room temperatures.

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**3,403**

### BEGONIA PLANT

**Siegfried Merholz, Krefeld, Germany, assignor to**
**Mikkelsens Inc., Ashtabula, Ohio**
**Filed Apr. 12, 1972, Ser. No. 243,485**
**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—68** **1 Claim**

1. A novel and distinctive *elatior Begonia* variety characterized particularly by its increased vigor but short compact growth, with close internodes; the high degree of red pigmentation in the stems, leaf petioles, and foliage thereby giving an overall reddish cast to the plant, with the additional color penetration of the foliage adding considerable contrast to the bright orange red color of the bracts; its very floriferous habit with excellent quality blooms of larger than average size when compared to the parent variety; its high quantity of excellent foliage possessing a high degree of resistance to common mildew; its characteristic of being vegetatively propagated from leaf cuttings that produce vigorously growing adventitious shoots; by its ability to be produced under controlled environmental conditions on a year around basis, and by its excellent keeping qualities under normal household conditions.

# PATENTS

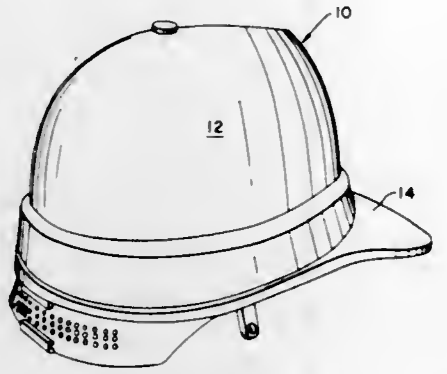
## GRANTED SEPTEMBER 18, 1973

## GENERAL AND MECHANICAL

**3,758,889**

### SHOCK ABSORBING SAFETY HELMET

**William B. Erb, Atlanta, Ga., assignor to Erb Plastics, Inc., Woodstock, Ga.**
**Filed Dec. 8, 1972, Ser. No. 313,302**
**Int. Cl. A42b** *3/00*
**U.S. Cl. 2—3 B** **9 Claims**



A shock absorbing safety or protective helmet of the hard-hat type having a head engaging suspension system which is removably interconnectable in the helmet, incuding free crossed crown straps, a detachable size adjustable headband and nape strap, and a detachable soft pliable sweatband, the entire suspension system being mountable by suspension lugs at the free ends of the crossed straps, the lugs having lateral side shear pins and being slidably suspended in holders on the interior of the helmet shell, the lugs and shear pins serving to resiliently resist seating of the lugs in the holders and thereby increase absorption of impact shocks on the helmet.

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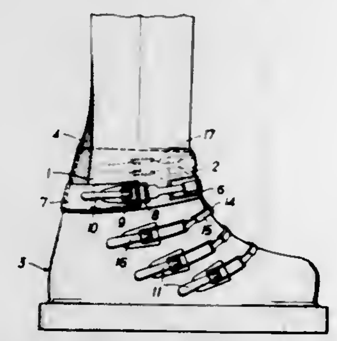
**3,758,890**

### ARRANGEMENT FOR CONNECTING A SKI PANTS LEG TO A SKI BOOT

**Eric Georg Selzer, Vienna, Austria, assignor to EXI Erzeugung von Sportbekleidung Gesellschaft G.m.b.H.**
**Filed Sept. 23, 1971, Ser. No. 183,137**
**Claims priority, application Austria, Aug. 2, 1971, A 6729/71**
**Int. Cl. A41d** *1/08*
**U.S. Cl. 2—232** **10 Claims**



To secure the lower end of a ski pants leg over and in positive engagement with the outer surface of a ski boot, an elastic insert is provided in the pants leg so that it can expand in the circumferential direction and fit closely over the upper portion of the ski boot. A strap with an adjustable buckle is secured to the lower end of the ski pants leg for securing it tightly about the ski boot. Further, for assuring positive engagement, a hook is fixed to the lower end of the ski pants leg so that it can interengage with a part on the ski boot, such as a buckle. The inner surface of the lower end of the ski pants leg can be provided with suction cups or with a material having a high coefficient of friction to enhance the engagement between the lower end of the ski pants leg and the ski boot.

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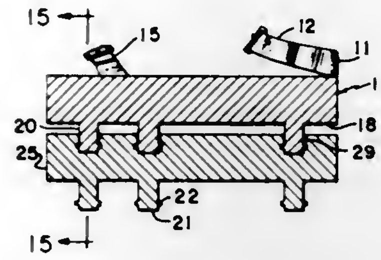
**3,758,891**

### FOOT TOY

**Howard Bob Geister, 223 St. Andrew's St., Hayward, Calif.**
**Filed June 1, 1971, Ser. No. 148,646**
**Int. Cl. A61f** *3/00;* **A63b** *25/00*
**U.S. Cl. 3—5** **9 Claims**



A foot toy of controllable height comprises a foot-receiving sole element which has means, such as heel and toe straps, to confine or retain an inserted foot when the device is donned, and two or more spaced projections or pegs disposed on the lower surface of the sole element. An auxiliary sole-like element is provided with recesses in its upper surface to receive the above-mentioned projections or pegs in firm but detachable relationship, and also has pegs or projections on its lower-face, so that the toy can be built up to any desired height by addition of as many auxiliary units as desired. The sole element and the auxiliary element are slightly spaced from each other whereby the loading stress is borne by the pegs.

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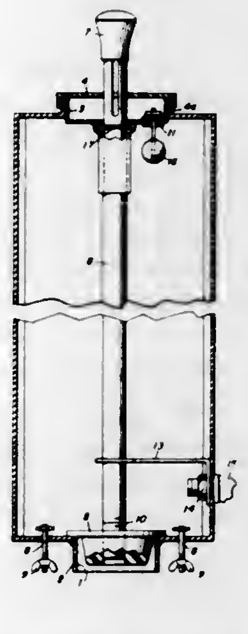
**3,758,892**

### WATER SAVING WATER CLOSET TANK

**Juan Martinez Mendez, Crucecita A Porvenir 55, Caracas, Venezuela**
**Filed Dec. 10, 1971, Ser. No. 206,638**
**Int. Cl. E03d** *1/012, 1/00, 3/00*
**U.S. Cl. 4—18** **5 Claims**



A water closet tank extends vertically above the inlet to the bowl and has a vertically movable plug to control the discharge of water for flushing the bowl directly from the tank and the water supply to the tank, the plug being operated by a vertical pipe projecting upwardly from the top of the tank; a float valve at the top of the tank controls the entry of water into the tank.

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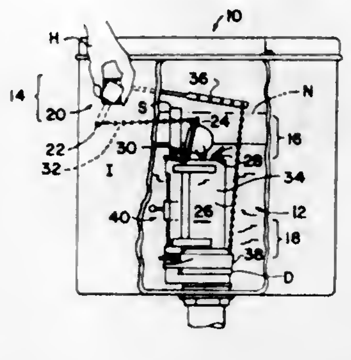
**3,758,893**

### WATER SAVER TOILET BOWL FLUSH SYSTEM

**William H. Smolinski, 530 S. Kenwood Ave., and Barton B. Skeen, 6020 Bellona Ave., both of Baltimore, Md.**
**Filed June 8, 1972, Ser. No.**
**Int. Cl. E03d** *1/34, 5/02*
**U.S. Cl. 4—67 A** **11 Claims**



A two-level selective volume valve assembly for providing optional light and heavy flushes in toilets having storage tanks; twisting the control actuates a quick-opening flapper type upper valve which releases water from a higher level only; pushing the control actuates a lower straight-lift valve closure which carries with it the upper valve and a tube spacing the two, releasing the full capacity of the tank; single clamp installation and adjustment of the valve assembly, single-screw installation of the double acting control, and use of commonly available toilet valve parts and control parts modified to the special design of the invention are other features of the invention.

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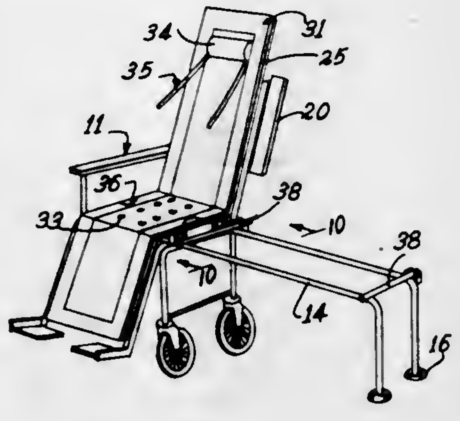
**3,758,894**

### CHAIR-BATH

**Mary L. Finley, 11440 S. Morgan St., Chicago, Ill.**
**Filed Feb. 11, 1971, Ser. No. 114,497**
**Int. Cl. A47k** *3/12*
**U.S. Cl. 4—185 R** **7 Claims**



A hospital type wheelchair with a connecting bathtub means, the device comprising a pivotable frame comprised of parallel gliding rods having a pair of legs at their outer end which are receivable within a conventional bathtub so that the gliding rods extend in a horizontal position from the wheelchair, a foldable inner chair member being glidable along the metal gliding rods, the inner chair being extendable to horizontal position and upon which a rubber tub is placeable for receiving a wheelchair patient and thus permit transporting the patient over the conventional bathtub or helping himself in taking a bath.

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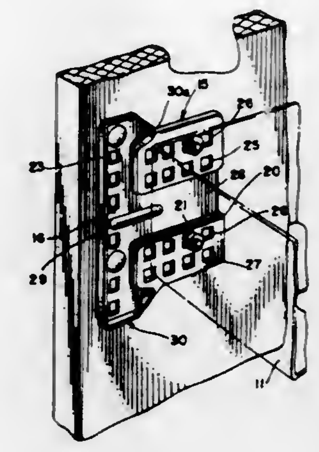
**3,758,895**

### BED FRAME CONNECTOR

**Kenneth H. Gunter, 3285 Dato, Highland Park, Ill.**
**Filed June 14, 1971, Ser. No. 152,901**
**Int. Cl. A47c** *19/00, 23/00*
**U.S. Cl. 5—304** **4 Claims**



A novel connector for connecting a headboard to a bed frame which is capable of accommodating to different bolt hole locations and which is characterized by having offset bearing surfaces arranged to avoid a wobbly connection.

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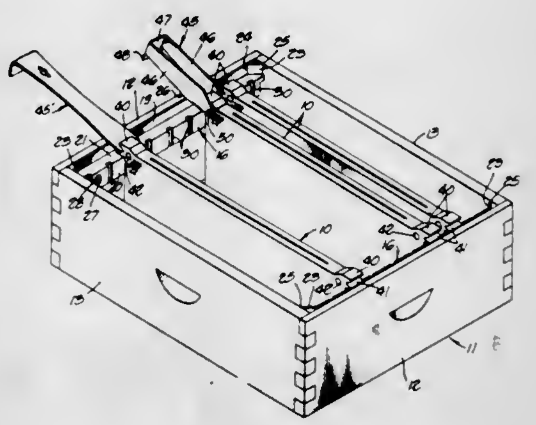
**3,758,896**

### ARTIFICIAL HONEYCOMB FOR COLLECTING AND RECOVERING HONEY

**Kenneth F. Croan, 2165 N. Grand Oaks, Altadena, Calif.**
**Filed Jan. 20, 1971, Ser. No. 107,950**
**Int. Cl. A01k** *47/04*
**U.S. Cl. 6—10** **13 Claims**

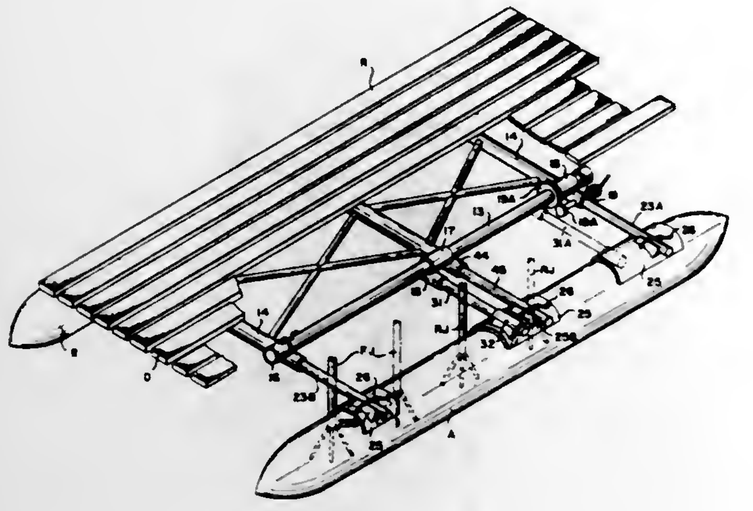


Improved means for and method of collecting and recovering honey using conventional beehive supers equipped with spacer strips to support molded plastic honeycombs. These reusable honeycombs have preformed honey cells of three quarters of their full depth in readiness for filling by bees. The upper corners of these combs include tool manipulating and handling recesses including portions cooperating with the spacer strips to space the combs properly. The spacer strips are self-gripping for installation without tools. The honey can be recovered centrifugally from a plurality of the supers. The combs may be serviced by a conventional hive tool or the invention hive tool having tong jaws for gripping the ends of the combs and breaking the combs loose and having sharp-edged tang means for scraping encrusted surfaces.

**3,758,897**

### AMPHIBIOUS CAMPER

**Robert H. Shaw, 131 Oakwood Ln., Ithaca, N.Y.**
**Continuation-in-part of Ser. No. 138,613, Feb. 29, 1971. This application Sept. 6, 1972, Ser. No. 286,745**
**Int. Cl. B63c** *13/00*
**U.S. Cl. 9—1 R** **4 Claims**



A process and equipment for transferring a standard truck conforming camper body from the truck onto a pontoon raft at a suitable shore location of a body of water, such as a river, lake, sea or ocean to convert the camper to serve as a houseboat. Also, the structural features of the camper body and the pontoon raft are so arranged, formed and structurally equipped as to provide for the complete transfer of the camper to the pontoon raft for transformation into a houseboat by one man working alone.

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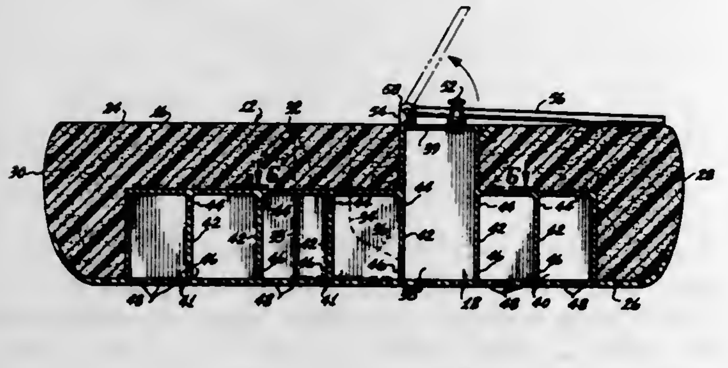
**3,758,898**

### WADING PONTOONS

**Earle T. Dougherty, 3420 N. 71st Ave., Phoenix, Ariz.**
**Filed Oct. 4, 1972, Ser. No. 294,966**
**Int. Cl. A63c** *15/04*
**U.S. Cl. 9—310 D** **14 Claims**



A water walking apparatus including a pair of pontoons for attachment to the lower leg portions of a user to enable him to propel himself through water. The pontoons include ballast tanks which may have means by which the user may alter the buoyancy of the apparatus during use, and also includes a plurality of hinged flippers so that the user may propel himself in a walking movement or an alternate hand operated propelling means may be employed.

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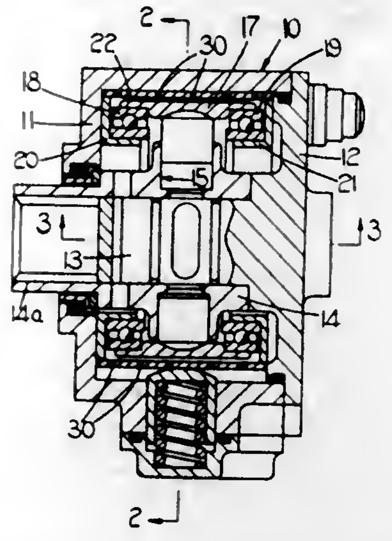
**3,758,899**

### ROTARY HYDRAULIC MACHINES

**Frank George Freeman, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**
**Filed Dec. 10, 1971, Ser. No. 206,757**
**Claims priority, application Great Britain, Dec. 18, 1970, 60,179/70**
**Int. Cl. F01b** *13/06*
**U.S. Cl. 91—475** **5 Claims**



A radial piston hydraulic motor has a cam ring which is slidable transversely of the axis of the rotor so as to vary the eccentricity of the ring with respect to the rotor axis. The ring is engaged by a piston which is biased by a spring to urge the ring to a position of maximum eccentricity. The piston is responsive to an increase in centrifugal pressure adjacent the ring to overcome the spring and reduce the eccentricity. For a given flow the motor speed tends always to increase, resulting in high starting torque and low running torque.

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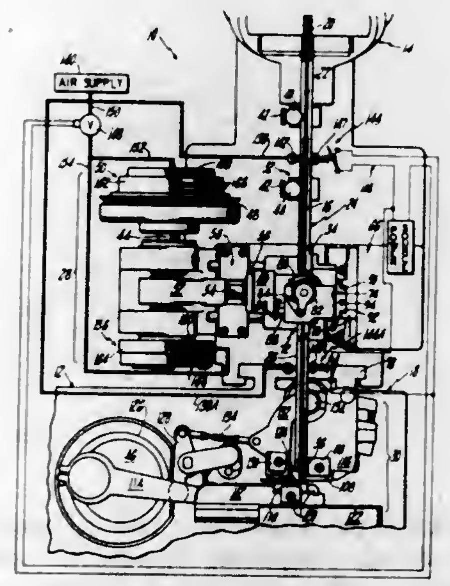
**3,758,900**

### COMBINATION POINT FORMER AND THREAD ROLLER MACHINE

**Robert D. Morton, West Hartford, Conn., assignor to The Hartford Special Machinery Company, Simsbury, Conn.**
**Filed June 3, 1971, Ser. No. 149,520**
**Int. Cl. B21h** *3/06;* **B23g** *9/00*
**U.S. Cl. 10—4** **9 Claims**



An in-line, inclined gravity feed track for automatically feeding headed work blanks in sequence through a forging type point forming station having a rotary dial indexing mechanism. The indexing mechanism is selectively adjustable relative to the forging dies, and the entire point forming station is adjustable as a unit relative to the feed track. A thread rolling station is in aligned spaced apart downstream relation to the point forming station and effects work blank rolling movement in a substantially horizontal direction normal to the straight line path of travel of the work blanks in the feed track. A sensing system continuously monitors feeding of blanks in the feed track for deactivating operation of the point forming station.

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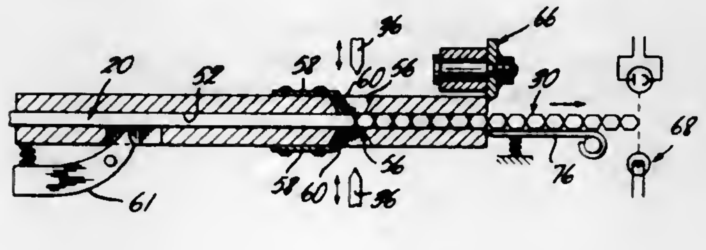
**3,758,901**

### APPARATUS FOR MAKING NAIL STRIPS

**Roger Walnman, Brussels, Belgium, assignor to Industrial & Merchandising Services S.A., Brussels, Belgium**
**Division of Ser. No. 35,863, May 8, 1970, abandoned. This application Sept. 22, 1971, Ser. No. 182,889**
**Int. Cl. B21g** *3/26*
**U.S. Cl. 10—29** **2 Claims**



A nail strip in the form of an elongated band of durable material formed from a blank, having in cross-section taken substantially perpendicular to its longitudinal axis, an elongated shank portion, a tip portion at one end of the shank portion and an enlarged head portion at the other end of the shank portion is formed by producing a series of spaced-apart, straight, parallel grooves in opposite faces of the blank, the grooves on either side of the blank being disposed opposite each other. The grooves define in the band a multiplicity of individual nails, the nails being connected by webs of material at the bases of the grooves. The cross-sections of the webs of material joining the nails are such that an end nail in the strip may be sheared off by the application of a predetermined driving force. The nail strip is particularly well suited for use in a mechanical, electrical or pneumatic hammer that is provided with a magazine to receive the strip and deliver the nails to the driving element.

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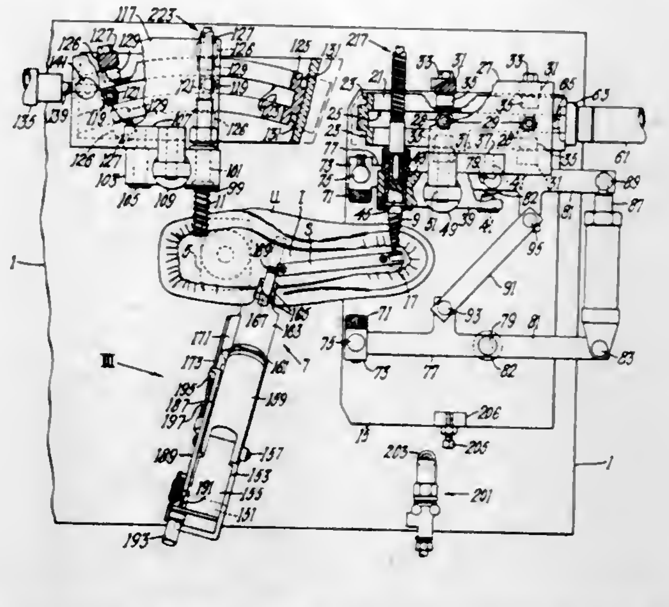
**3,758,902**

### SHOE LASTING MACHINE

**Ronald O. C. Gadd, 25 Berridge Ln., and Frank R. Smith, 142 S. Knighton Rd., both of Leicester, England**
**Filed Mar. 13, 1972, Ser. No. 233,991**
**Claims priority, application Great Britain, Mar. 11, 1971, 6,564/71**
**Int. Cl. A93d** *21/00*
**U.S. Cl. 12—8.3** **3 Claims**

Machinery and methods for side lasting shoes in which a gripper pulls the upper margin intermediate of the portion to be lasted and wiping means wipes the upper margin from one end of the portion progressively toward the gripper and stops short of the gripper whereupon a second wiping means wipes toward the gripper from the other end of said portion, the gripper releasing as the second wiping means approaches and the gripped upper portion is thereafter wiped.



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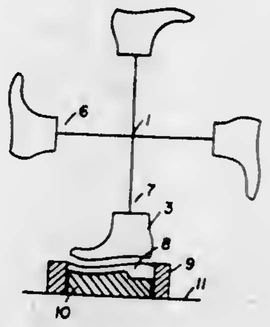
**3,758,903**

### METHOD AND APPARATUS FOR UNIT MOLDING

**Horace Ray Auberry, Tuscola Park, and Anton I. Liebscher, Waynesville, both of N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.**
**Continuation-in-part of Ser. No. 78,412, Oct. 6, 1970. This application Aug. 4, 1972, Ser. No. 277,884**
**Int. Cl. A43d** *9/00*
**U.S. Cl. 12—142 RS** **5 Claims**



A method of lasting shoe uppers and sole-attaching devices to carry out the method.

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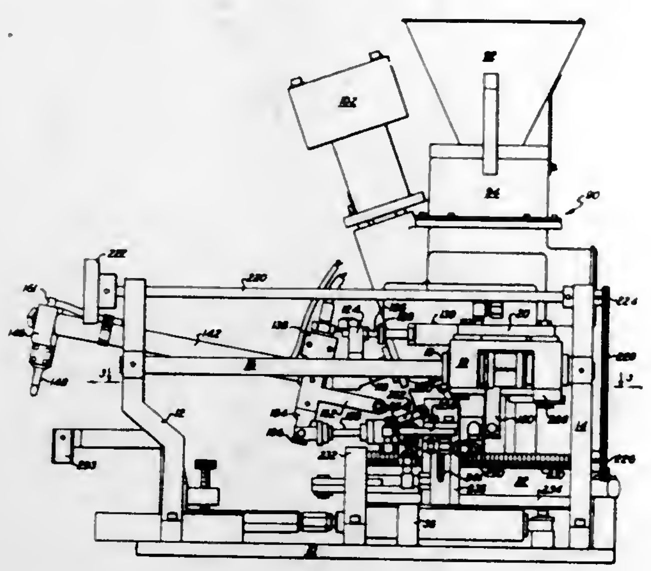
**3,758,904**

### METHOD AND MECHANISM FOR APPLYING CEMENT IN THE CORNER BETWEEN AN UPPER MARGIN AND AN INSOLE

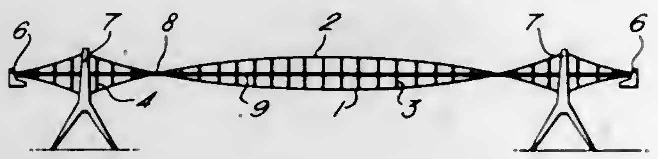
**Jacob S. Kamborian, deceased, late of West Newton, Mass.; by Lisbeth N. Godley, Washington, D.C.; by Michael M. Becka, Watertown, Mass.; by Jacob S. Kamborian, Jr., Lincoln, Mass. (executors), and Costa Caris, East Walpole, Mass., assignors to Jacob S. Kamborian, West Newton, Mass.**
**Filed Jan. 22, 1973, Ser. No. 325,701**
**Int. Cl. A43d** *21/00;* **B05c** *1/06*
**U.S. Cl. 12—142 R** **26 Claims**

A mechanism for applying cement in the corners between the unwiped side portions of an upper margin, that is mounted on a last, and the corresponding side portions of the periphery of an insole that is located in the last bottom. The upper margin side portions are located between the previously wiped toe and heel portions of the upper margin. The mechanism includes a pair of nozzles that travel in unison along the entire lengths of the corners, while the last is supported bottom-up, from the boundaries of the side portions of the upper margin with the wiped toe portion of the upper margin and the boundaries of the side portions of the upper margin with the wiped heel portion of the upper margin. During this travel, the nozzles are yieldably urged downwardly of the insole and outwardly into the corners and the nozzles are mounted to enable them to have relative movement with respect to each other lengthwise of the last so that they can affect this relative movement when arriving at the boundaries.



### 3,758,905
### CABLE TENSOSTRUCTURE INCLUDING STIFFENING LATTICED ELEMENTS

**Lucio Baratta, Via Giovanni Lanza, Rome, Italy**
**Filed July 9, 1971, Ser. No. 161,860**
**Int. Cl. E01d** *11/00*
**U.S. Cl. 14—19** **3 Claims**

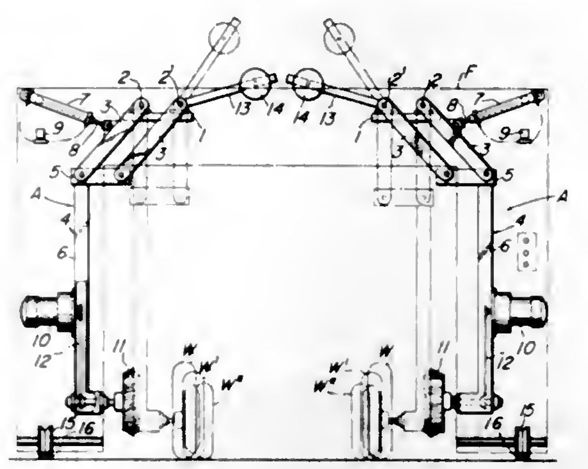


A cable tensostructure including at least two pairs of cables, each pair being operative in a vertical plane, the planes being substantially parallel to each other, two pluralities of transverse members each comprising a latticed body of substantially prismatic configuration constituting a transverse connection between the pairs of cables while carrying the platform elements forming the runway plane along which the pedestrian and vehicular traffic move.

### 3,758,906
### CAR WASHING APPARATUS

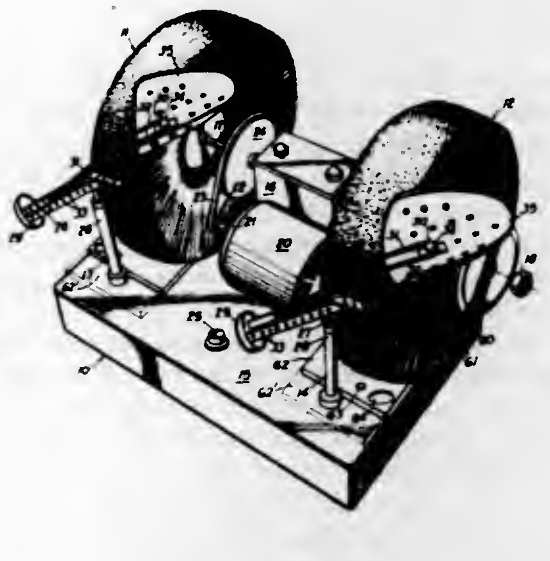
**Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan**
**Filed Apr. 30, 1971, Ser. No. 138,995**
**Claims priority, application Japan, June 3, 1970, 45/47181**
**Int. Cl. B60s** *3/06*
**U.S. Cl. 15—21 E** **4 Claims**

Car washing apparatus including brush means for washing the roof portion of a car, brush means for washing both sides of the car and brush means for washing outer side surfaces of wheels on the car, said last mentioned brush means being displaceable transversely and vertically in accordance with the size of the car.



### 3,758,907
### SHOE SHINE APPARATUS

**George D. Lashley, 3098 Old Norcross Rd., Tucker, Ga.**
**Filed Feb. 7, 1972, Ser. No. 224,117**
**Int. Cl. A47l** *23/02, 23/11*
**U.S. Cl. 15—31** **12 Claims**



Apparatus for use in shining shoes, including a pair of power driven shoe brushing means rotatable about a common horizontal axis, with each shoe brushing means operatively associated with a shoe supporting means. Each of the shoe supporting means is mounted for power rotation about a vertically disposed axis and includes releasable retaining means for engaging the interior of a supported shoe. The shoe supporting means are detailed in location relative to the brushing means so that all polished surfaces of a pair of supported shoes are contacted during rotation of the brushing means and shoe supporting means. A single motor is operatively associated with the shoe brushing means and the shoe supporting means for effecting simultaneous rotation thereof in a shoe shining operation. The shoe shining apparatus includes polish dispensing means operatively associated with each of the brushing means, with the polish dispensing means including cover means supported between the polish dispensing means and the shoe brushing means and selectively movable between closed and opened conditions to permit polish to be applied to shoes during rotation of the brushes.

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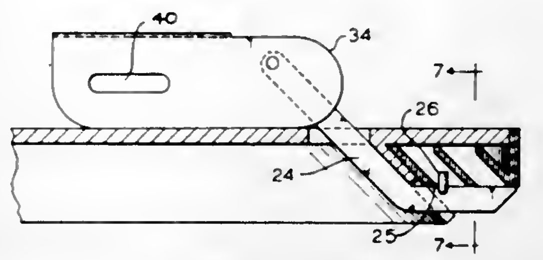
### 3,758,908
### BRUSH MOUNTING MEANS

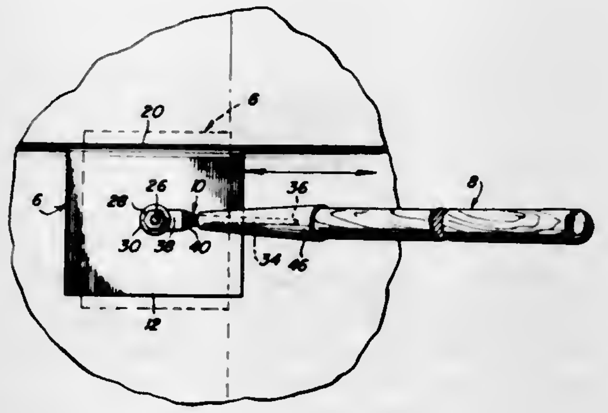
**Allan M. Maltarp, Bogota, Colombia, assignor to Canadian Wire Brush Co., Barrie, Ontario, Canada**
**Filed Feb. 8, 1972, Ser. No. 224,493**
**Int. Cl. A46b** *13/02*
**U.S. Cl. 15—180** **8 Claims**



In a street sweeping brush, a plurality of sector shaped bristle mounting members are designed to be clamped on a mounting member for easy replacement.

### 3,758,909
### WALKING-TYPE CONCRETE EDGER

**Joe Granger, Jr., 509 Tennessee St., Clovis, N. Mex.**
**Filed July 1, 1971, Ser. No. 158,940**
**Int. Cl. E01c** *19/12*
**U.S. Cl. 15—235.8** **1 Claim**

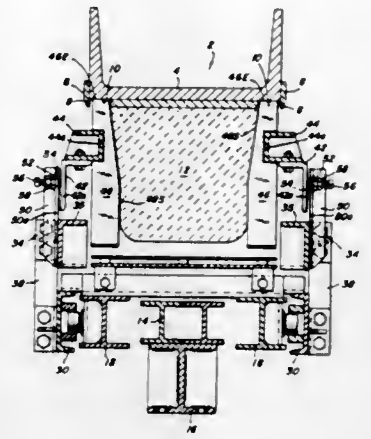


A concrete edger comprising a rigid plate wherein at least one marginal edge is provided with a depending lip-like flange joined to said edge by a concave-convex contouring edge-shaping web. An elongated push-pull handle is disposed at an oblique angle and can be caught hold of and conveniently utilized while the user is either standing or walking. The central top side of the plate or blade is provided with an integral upstanding stud by way of which a connector on the forward lower end of the handle is detachably and adjustably coupled to the stud. The handle can be operatively united with the plate and rotated relative thereto to assume the position desired.

### 3,758,910
### COKE OVEN DOOR CLEANER

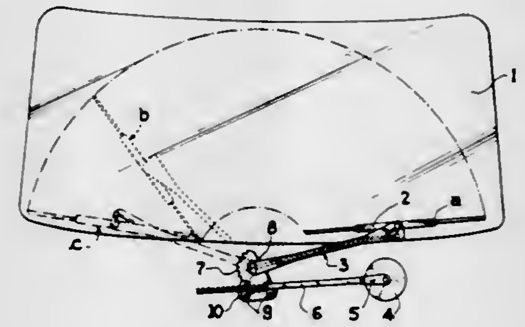
**Warren D. Lakeberg, DeMotte, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Nov. 3, 1971, Ser. No. 195,086**
**Int. Cl. C10b** *43/04*
**U.S. Cl. 15—93 A** **11 Claims**

A coke oven door cleaner has a vertically reciprocating frame which resiliently supports a pair of tool brackets. A vertical tool holder is mounted on each tool bracket. Each tool holder carries a plurality of vertically spaced tools in the form of a stainless steel plate having a scraping edge at its front end and a scraping edge along one side. The end scraping edge engages the bottom of the gas channel on the door frame and the side scraping edge which is shaped to conform to the door plug scraps the plug. Each tool plate extends downwardly toward the end scraping edge. Means are provided to prevent the tool brackets from spreading.



### 3,758,911
### WINDOW WIPER IN PARTICULAR FOR A VEHICLE WINDSCREEN

**Hubert de Lavenne, Meudon, and Andre Leger, Sartrouville, both of France, assignors to Automobiles Peugeot, Paris, and Regie National Des Usiner Renault, Billancourt, both of France**
**Filed June 16, 1971, Ser. No. 153,576**
**Claims priority, application France, June 16, 1970, 7022035; Nov. 30, 1970, 7042999; May 13, 1971, 7117379**
**Int. Cl. B60s** *1/34*
**U.S. Cl. 15—250.23** **4 Claims**



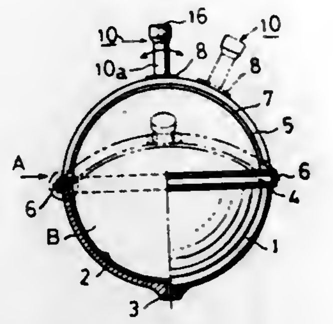
Windscreen wiper of particular utility as a single wiper for a windscreen instead of the usual two wipers. The wiper blade is pivotable about the wiper arm and a link connects a point of the blade offset from the pivot axis of the blade to a journal which is radially offset with respect to the pivot axis of the arm. Consequently, as the wiper arm swings across the windscreen, the wiper blade pivots slightly relative to the arm and wipes a larger area of the windscreen since the blade is practically parallel to the bottom edge of the windscreen at each extreme position.

Arrangements are disclosed for allowing the link to follow the movement of the arm when the latter is swung away from the windscreen for manually cleaning the latter.

### 3,758,912
### BALL CLEANING DEVICE

**Moritada Shibuya, 601-14 Nishinagai-cho, Sumiyoshi-ku, Osaka, and Iku Shibuya, c/o Matsubara Apt. House, 2470 Handa, Shibukawa-shi, Gumma-ken, both of Japan**
**Filed May 25, 1972, Ser. No. 256,744**
**Int. Cl. A63b** *47/04;* **A63d** *5/10*
**U.S. Cl. 15—302** **8 Claims**

A device for easily and quickly cleaning the balls used in a bowling or tenpins game and soiled with the oil applied to an alley, the dirt from the bowlers' hands and the like without interrupting the progress of the game. The device essentially comprises means for applying a cleansing agent onto the sur-



face of the ball to be cleaned, means for wiping the ball, and means for drying the ball.

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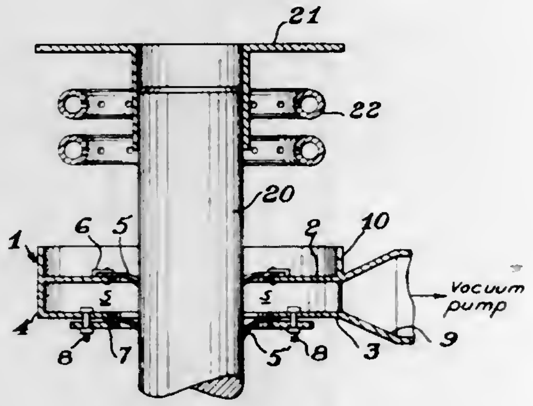
### 3,758,913
## APPARATUS FOR REMOVAL OF COOLANT FROM METAL SURFACES

**Herbert Elliott, and Frank A. Simons, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**
**Division of Ser. No. 59,075, July 29, 1970, Pat. No. 3,653,425. This application Nov. 17, 1971, Ser. No. 199,418**
**Int. Cl. A47l** *7/00*
**U.S. Cl. 15—308** **3 Claims**



An apparatus for removing coolant from a moving metal surface which comprises a housing defining a chamber, having an opening therein facing the moving metal surface; a flexible contacting member attached to at least the leading edge of the housing opening, and preferably to both the leading and trailing edges of the housing opening, in contact with the metal surface; and suction means connected to the housing to evacuate the chamber. Such apparatus can be used in a method of removing coolant from metal surfaces by contacting the surface with a flexible member and passing the surface through a suction zone.

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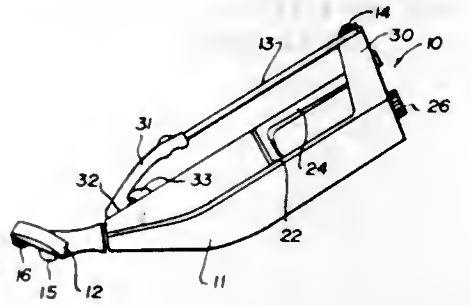
### 3,758,914
## VACUUM CLEANER WITH MOVABLE HANDLE STRUCTURE

**Donald L. Nupp, St. Joseph, Mich., and James R. Hilmanowski, St. Paul, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.**
**Filed Oct. 6, 1971, Ser. No. 186,982**
**Int. Cl. A47l** *5/24*
**U.S. Cl. 15—329** **13 Claims**

A vacuum cleaner having a handle movably carried on the body for selectively arranging the vacuum cleaner as a floor carried, upright vacuum cleaner, or a portable hand-carried vacuum cleaner. The vacuum cleaner includes a removable



dirt box which underlies the handle when the vacuum cleaner is arranged as a portable hand-carried unit.

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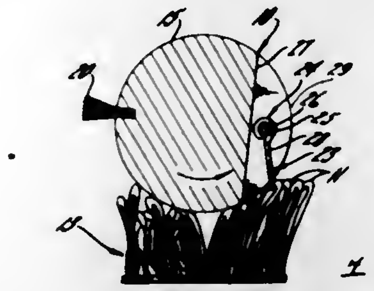
### 3,758,915
## ROLLER FOR COMBING SHAG RUGS

**Stephen J. Zeski, and Earl J. Carter, both of c/o Swanson Electric Shop, 1009 Broadway, Rockford, Ill.**
**Filed Sept. 13, 1971, Ser. No. 179,794**
**Int. Cl. A47l** *9/04;* **A47b** *13/00*
**U.S. Cl. 15—366** **6 Claims**



A roller for a vacuum sweeper includes a plurality of relatively rigid tines which are spaced axially from each other on the roller and are freely pivotable relative to the surface of the roller to be swung outwardly of the roller by centrifugal force as the roller is turned, the tines being whipped through the fibers of a shag rug to comb up the shag.

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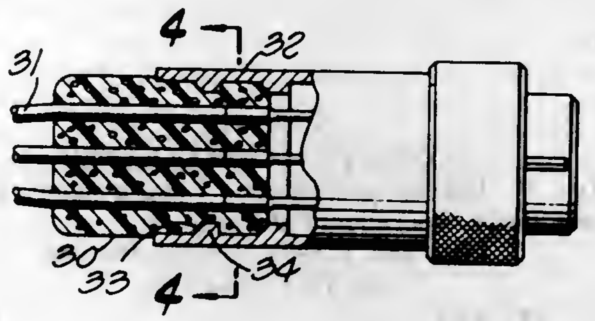
### 3,758,916
## HEAT RECOVERABLE ARTICLE AND PROCESS

**Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**
**Continuation of Ser. No. 812,789, April 2, 1969. This application Dec. 6, 1972, Ser. No. 312,702**
**Int. Cl. F16l** *11/10;* **H01b** *17/26;* **B29d** *27/00*
**U.S. Cl. 16—2** **6 Claims**



A heat recoverable article having intersticed walls, the interstices being filled with a compressible fluid so that the wall thickness of the article can be varied without appreciably varying the length of the article, together with the process of making such articles.

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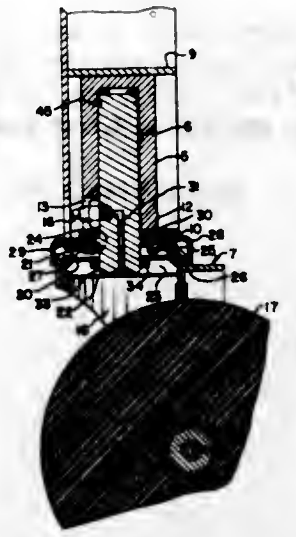
### 3,758,917
## CASTER AND MOUNTING STRUCTURE

**Gary J. Schroer, Kansas City, Mo., assignor to Schroer Manufacturing Company, Inc., Kansas City, Mo.**
**Filed Jan. 10, 1972, Ser. No. 216,384**
**Int. Cl. B60b** *33/00*
**U.S. Cl. 16—36** **3 Claims**



A caster and mounting structure particularly adapted for use with supported structures which are frequently cleaned in a manner removing lubricant from the caster. The structure to be supported has suitably arranged sockets or mounting portions each to receive a pintle supported on a horn for rotation of the caster. The mounting and pintle have interengageable surfaces to prevent relative rotation. A lubrication fitting mounted on a side of the pintle and communicates with a lubricant passage through the pintle and discharges within a lubricant chamber to provide lubrication for bearings rotatably supporting the horn on the pintle.

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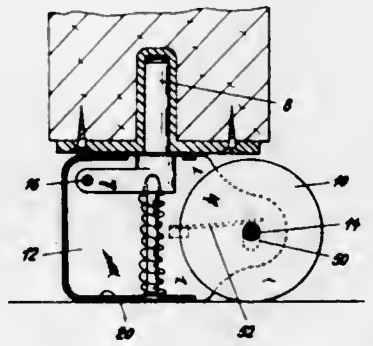
### 3,758,918
## FURNITURE WHEELS

**Kai Bruun, Bushajvej 33, Hojbjerg, Denmark**
**Filed June 17, 1971, Ser. No. 154,001**
**Int. Cl. A47b** *91/00*
**U.S. Cl. 16—44** **7 Claims**



1. A furniture support swivel wheel unit comprising a wheel mounted rotatably in a wheel holder, the wheel holder being swingably about a vertical shaft the axis of which is horizontally spaced from the axis of rotation of the wheel, said shaft being operable to swingably connect said wheel unit with the lower end of a furniture leg, the wheel being mounted so as to be vertically movable relatively to the shaft and associated with a spring for biasing the wheels in downward direction, the wheel holder having a lower surface which is operable to be rested plane against the floor in response to the wheel unit being pressed downwardly relatively to the wheel against the action of the bias. The bias is adjusted in such a manner that the piece of furniture is supported on the wheels when in unloaded position, whilst said lower surface of the wheel holder is pressed down against the floor when the furniture is loaded.

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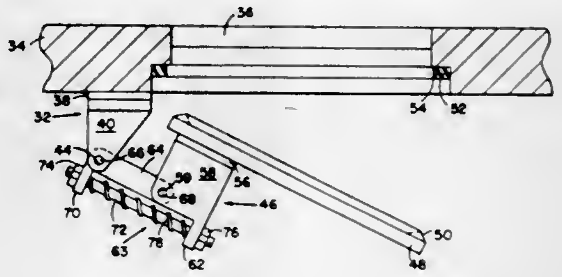
### 3,758,919
## HINGE

**Thomas E. Dilworth, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Aug. 19, 1971, Ser. No. 173,187**
**Int. Cl. E05d** *3/06*
**U.S. Cl. 16—163** **2 Claims**



A hinge for mounting a cover over an access opening in a wall that includes one hinge part mounted on the wall and a second hinge part on the cover. A link having one of its ends pivotally mounted in each hinge part is connected between the two hinge parts to allow perpendicular motion of the cover with respect to the wall during initial opening and final closing movements of the cover. A resilient adjustment means is connected between one end of the link and the hinge part mounted on the cover for controlling the angular position of the hinge parts relative to one another.

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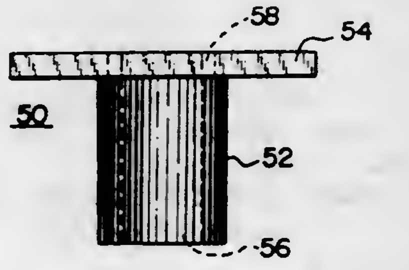
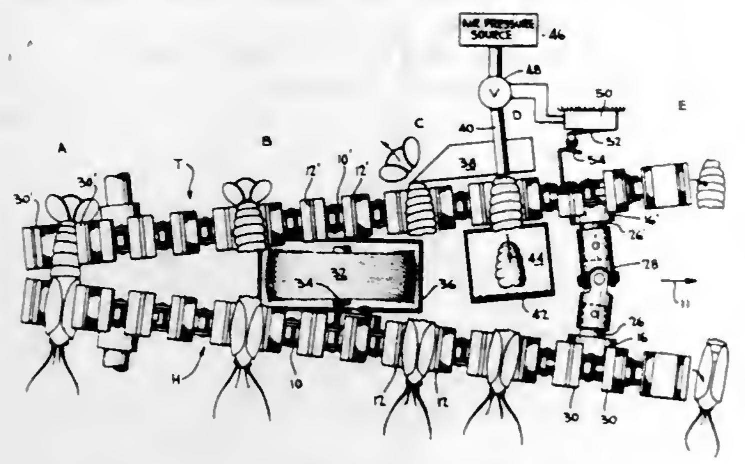
### 3,758,920
## PULL KNOB ASSEMBLY WITH INTERCHANGEABLE PLUG INSERTS

**Lew Dobrjanskyj, Flushing; Ruediger Einhorn, Katonah; Frank D. Flagg, Westport, and Lee Richard Chasen, Port Chester, all of N.Y., assignors to Coats & Clark, Inc., New York, N.Y.**
**Filed July 17, 1972, Ser. No. 272,404**
**Int. Cl. A47b** *95/02*
**U.S. Cl. 16—121** **24 Claims**



A pull knob assembly utilized for attachment to doors drawers and the like. The assembly comprises a body portion having a flange to be grasped for opening and closing of the door. A set of interchangeable plug elements fit within the body portion. One plug element is completely enclosed within the body portion while the other plug element projects slightly therefrom to provide a mounting for a grasping element to be used instead of the flange. A complete knob unit is assembled by inserting a plug element into the body portion, and this includes an internal fastening device that cooperates with an external fastening device for mounting the knob unit on the door. The internal fastening device may be formed either in the plug element or it may be formed in the body portion, in which case the plug element is formed with leg members slidably mounted on either side of the internal fastening device.

### 3,758,921
### CRAWFISH PEELER
**Edgar J. Ingalls, Kendalwod Rd., Baton Rouge, La.**
**Filed May 13, 1971, Ser. No. 142,944**
**Int. Cl. A22c** *29/00*
**U.S. Cl. 17—71** **3 Claims**



A machine for automatically peeling crawfish or other crustaceans in which the crustacean to be peeled has its head and tail respectiely held between grippers on separate conveyers having operative runs which diverge in the direction of their movement. The grippers of the two conveyers are in laterally opposed pairs which are located abreast of and adjacent to each other at the loading ends of the conveyers to receive the head and tail sections respectively of the crustacean and thereafter to separate the head and tail sections as they move apart due to the divergence of the operative conveyer runs, with the meat remaining in the tail section. The grippers of each pair are automatically spread apart for loading and discharge as the conveyers curve around supporting sprockets at the loading and discharge ends of each operative conveyer run and are in gripping engagement with the head and tail sections respectively of the crustacean throughout movement of the operative run between such sprockets.

Means is provided for removing any fat clinging to the head section. The meat retained within the tail section is ejected by shearing off the extremity of the tail section incident to movement of its associated conveyer, then injecting a plast of pressurized air into the tail section through the opening formed by such shearing operation, the empty shells then being discharged at the ends of the operative runs.

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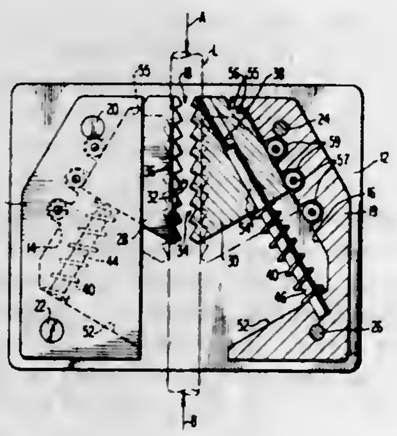
### 3,758,922
### SLIDING WEDGE CLEAT
**Gregory A. Field, Annapolis, Md., assignor to Sand R. Associates, Inc., Annapolis, Md.**
**Filed Oct. 29, 1971, Ser. No. 193,877**
**Int. Cl. F16g** *11/04*
**U.S. Cl. 24—115 R** **4 Claims**



A pair of sliding wedges having oppositely directed parallel frictional gripping surfaces are mounted on a base and slide on inclined wedging surfaces. The wedges are spring biased to closed nip position, but permitted to slide against the bias of the spring to facilitate entry of a line between the opposed frictional gripping surfaces while preventing retrograde movement by the presence of the line within the nip.

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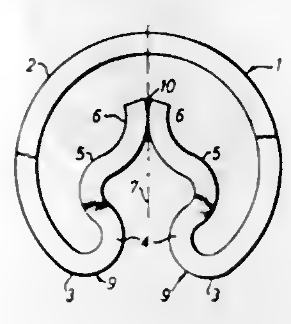
### 3,758,923
### CIRCLIP
**Stanley Morgan Maude, Ilkley, England, assignor to Anderton Springs Limited, Bingley, Yorkshire, England**
**Filed Oct. 5, 1971, Ser. No. 186,825**
**Claims priority, application Great Britain, Feb. 19, 1971, 5,000/71**
**Int. Cl. A44b** *21/00*
**U.S. Cl. 24—256** **7 Claims**



The invention comprises a circlip including a part-ring shaped body part with its end turned inwardly to form a pair of internal integral legs spaced apart where they turn inwardly and in back-to-back contact at their ends. The arrangement is such that three stressed working points of re-assertion are provided in triangular relationship.

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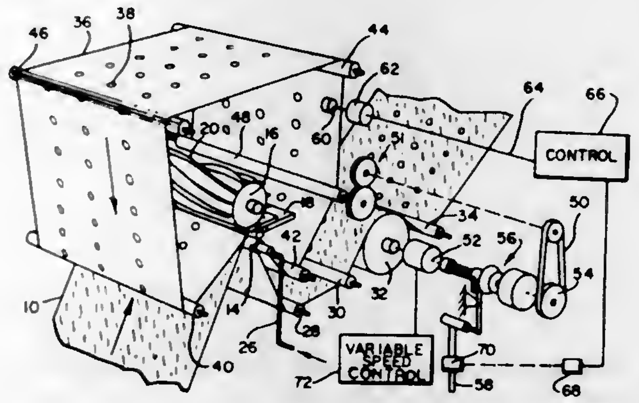
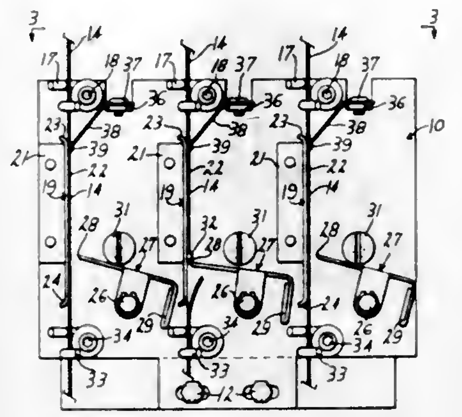
### 3,758,924
### APPARATUS FOR SHEARING PATTERNS ON PILE FABRICS
**William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.**
**Continuation-in-part of Ser. No. 204,601, Dec. 3, 1971, abandoned. This application Nov. 30, 1972, Ser. No. 310,849**
**Int. Cl. D06c** *23/02*
**U.S. Cl. 26—16** **1 Claim**



A continuous belt is formed with apertures in a selected pattern and guided into face to face engagement with a running cloth web. A shearing revolver, cooperating ledger knife and rest are located across the line of contact between the belt and the web to shear cloth fibers extending through the apertures of the belt and thereby produce an embossed pattern on the cloth. A control system is provided between the belt and the cloth drive to maintain synchronous movement between the belt and the cloth.

### 3,758,925
### APPARATUS FOR SENSING SLUBS CARRIED BY YARN
**Anthony T. Desaulniers, Rt. 1 300 May Ave., Talladega, Ala., and James A. Byars, 2917 Madden Dr., Columbus, Ga.**
**Filed Feb. 4, 1972, Ser. No. 223,509**
**Int. Cl. D01h** *13/22;* **D02j** *7/00*
**U.S. Cl. 28—64** **2 Claims**



Anvils are mounted adjacent individual strands of yarn intermediate separate supply bobbins and twisting apparatus. A member carrying a cutter blade at one end is pivotally mounted intermediate its ends adjacent one side of each anvil with the blade being movable selectively to a first position adjacent the anvil and to a second position spaced from the anvil for passing a strand of yarn therebetween. Each blade is positioned relative to its anvil to be engaged by a slub carried by an adjacent moving strand and moved thereby to said first position to sever the adjacent strand. Each blade is urged toward and remains in said second position until it is engaged by a slub.

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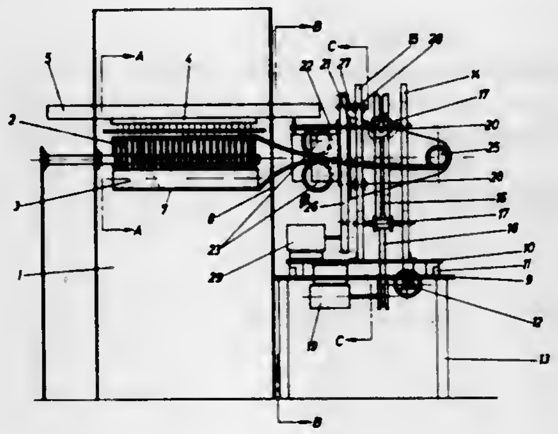
### 3,758,926
### METHOD OF MAKING A TUBULAR NEEDLED WEB
**Richard Dilo, Eberbach/Neckar, Germany**
**Continuation-in-part of Ser. No. 882,391, Jan. 7, 1970, which is a division of Ser. No. 741,492, July 1, 1969, Pat. No. 3,530,557. This application Feb. 17, 1971, Ser. No. 116,030**
**Int. Cl. D04h** *18/00*
**U.S. Cl. 28—72.2 R** **1 Claim**



A continuous fabric tubing is prepared by helically winding non-woven webs on a rotating drum in partly overlapping relationship, stitching the partly superimposed turns to each other by needling, and axially pulling the tubing so formed from the drum. The take-up mechanism, which pulls the tubing from the drum, rotates with the drum, and an automatic cut-off mechanism may be provided for automatically cutting the continuous tubing to uniform, adjustable lengths. The tubing may consist entirely of monofilaments and other smooth fibers not capable of normal felting.

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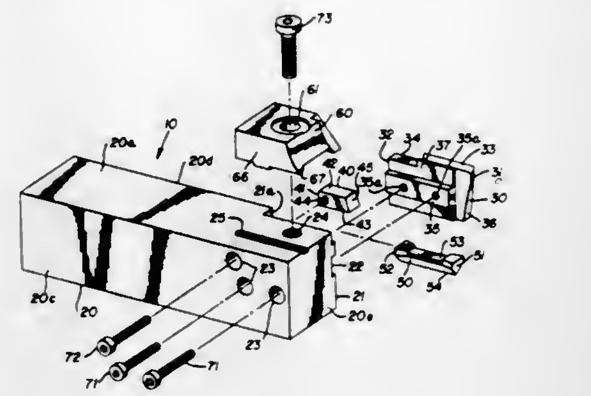
### 3,758,927
### CUTOFF TOOL
**William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio**
**Filed Dec. 13, 1971, Ser. No. 207,056**
**Int. Cl. B26d** *1/00*
**U.S. Cl. 29—96** **4 Claims**



An improved cutoff tool made up of a tool body, a support blade clamped thereto, and a clamping member adapted to be secured to the tool body and overlie the support blade so that an insert bit and stop member may be clamped between the clamping member and the support blade, with the support blade and the tool body interlocking so as to provide added rigidity and extreme compactness.

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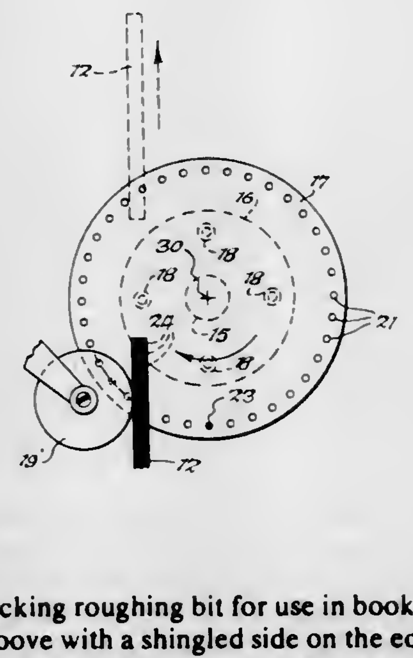
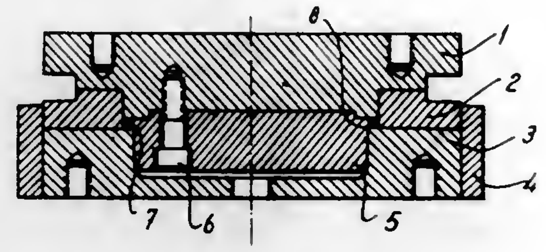
### 3,758,928
### TOOL FOR USE IN BOOK BINDING
**Francis R. Blake, Hamburg, N.Y., assignor to Peter Cooper Corporation, Gowanda, N.Y.**
**Filed July 3, 1972, Ser. No. 268,681**
**Int. Cl. B26d** *1/12*
**U.S. Cl. 29—105 A** **5 Claims**



An interlocking roughing bit for use in book binding and for providing groove with a shingled side on the edge of a plurality of adjacent pages which is to receive adhesive comprising a body portion for mounting on a rotating member having a center of rotation, a cutting bit on said body portion, a leading relatively sharp cutting edge on said cutting bit, first and second diverging sides extending from the cutting edge toward the trailing edge on said bit, said first side being closer to the center of rotation than said second side and having a portion extending substantially perpendicularly to a radius drawn from the center of rotation to said first side, and said second side extending at an acute angle with respect to said first side with said second side forming a plurality of overlapping flaps from said adjacent pages to provide the shingled side of said groove.

### 3,758,929
### MANUFACTURE OF A WIPING OR PISTON RING

**Manuel Punsola Fabregat, Portola St., 14, P.O. Box 589, Barcelona, Spain**
**Filed Mar. 29, 1971, Ser. No. 129,017**
**Int. Cl. B23p** *15/06*
**U.S. Cl. 29—156.6** **8 Claims**



This disclosure refers to improvements in the manufacture of a wiping ring comprising a grooved ring segment having an expander spring therein that presses radially all the exterior circumference of the segment against the wall of a surrounding cylinder and which radial pressure is graduated by the thickness and section of the expander. The segments are manufactured by compression, by means of a die-mold, the parts of which are partially or totally interchangeable.

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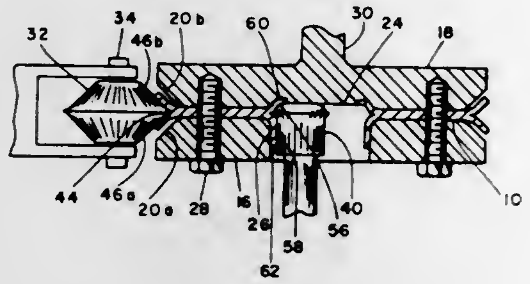
### 3,758,930
### METHOD OF MAKING HUB OR BEARING HOUSING, AND PULLEY

**Charles C. Frost, Kentwood, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to Frost Engineered Products, Inc., Grand Rapids, Mich.**
**Filed Nov. 18, 1971, Ser. No. 199,985**
**Int. Cl. B21d** *53/26*; **B21k** *1/28, 1/42*
**U.S. Cl. 29—159 R** **10 Claims**



This disclosure relates to a novel hub or bearing housing, pulley, and the like and to the method of fabricating such hub or bearing housings, grooved metal pulleys, and the like in which a hub flange forming the housing is formed from a one-piece metal disk utilizing metal-splitting techniques. The disk is provided with an inner opening in its central portion and is held between a pair of die members between the inner opening and its outer diameter thereby leaving the inner opening free so that the disk may be split and expanded toward the die. Flanges formed on the inner diameter of the die are shaped to receive and form a hub or bearing housing in the disk as the material is split and expanded toward the die. In another embodiment of the invention, a pulley groove and bearing housing are formed from a one-piece metal disk in a simultaneous splitting operation. Flanges on the inner and outer diameters of a pair of cooperating die members are shaped to receive and form a hub or bearing housing about the inner diameter while simultaneously receiving and forming the rim or pulley groove about the outer diameter of the disk.

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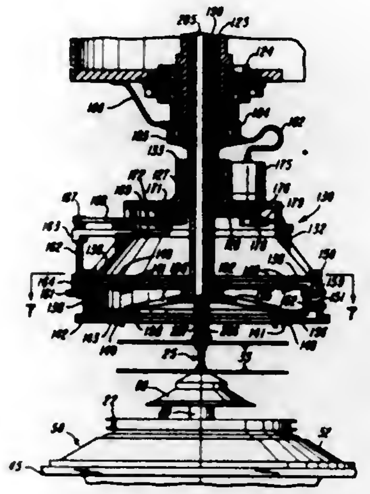
### 3,758,931
### WHEEL ASSEMBLY METHOD AND APPARATUS

**Richard A. Patterson, St. Paul, Minn., assignor to The Huffman Manufacturing Company, Miamisburg, Ohio**
**Filed Dec. 29, 1971, Ser. No. 213,342**
**Int. Cl. B21f** *39/00*; **B21k** *1/34*
**U.S. Cl. 29—159.02** **24 Claims**



A bicycle wheel rim is placed on a fixture mounted on a rotary indexing transfer table, and a plurality of spokes are attached to a hub which is supported by the fixture in concentric relation with the rim. The table indexes, and the hub and attached spokes are shifted by the fixture to a rotatable spoke orienting head which grips and spins the hub causing the spokes to be centrifugally positioned in substantially uniform angularly spaced relation. The outwardly extending spinning spokes are picked up by corresponding magnets carried by the rotating orienting head, and an inner group of spokes are shifted into crossing relation with an outer group of spokes. The hub and crossed spokes are then transferred to the table fixture where the oriented spokes are positioned in outwardly converging relation aligned with corresponding holes formed in the rim. The table indexes again to move the fixtured hub, rim and angularly positioned crossed spokes to a device which simultaneously extends corresponding nut-like threaded fasteners or nipples through the holes in the rim and tightens the nipples onto the end portions of the spokes to a predetermined uniform torque. The table then indexes to transfer the assembled wheel to a discharge station where the wheel is ejected from the table fixture by pins which extend upwardly to press the rim upwardly from the fixture.

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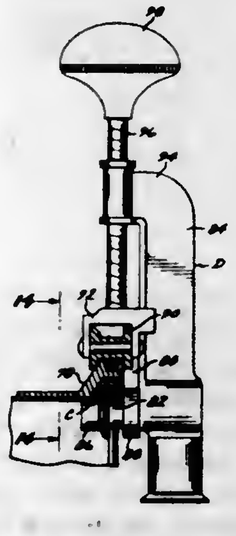
### 3,758,932
### TUBING FLARING TOOL

**Wilson A. Burtis, Westminster, Calif., assignor to Crane Co.**
**Division of Ser. No. 2,470, Jan. 13, 1970, Pat. No. 3,647,246.**
**This application Mar. 3, 1972, Ser. No. 231,515**
**Int. Cl. B23p** *19/00, 19/04*
**U.S. Cl. 29—200 B** **1 Claim**



A tool for use in forming a flare on the end portion of a length of tubing after a ferrule has been mounted on said end portion.

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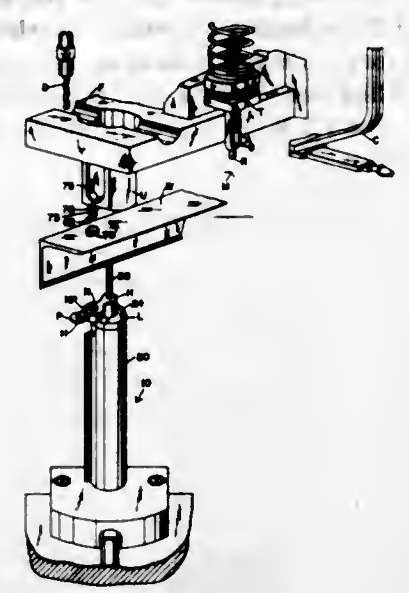
### 3,758,933
### PRESSURE FOOT GUIDE DEVICE

**Donald S. Gross, Sunnymead, Calif., assignor to Rohr Corporation, Chula Vista, Calif.**
**Filed Aug. 3, 1970, Ser. No. 60,247**
**Int. Cl. B23p** *19/00*
**U.S. Cl. 29—200 P** **3 Claims**



A drill and rivet aligning pilot pin on a lower pressure foot passes through a hole in a nut plate to index the same on the lower pressure foot. An upper pressure foot has a stepped projection which is receivable into an aperture in the workpiece and is also receivable into the nut of the nutplate as the pressure feet are brought together to clamp the nutplate and workpiece therebetween. The nut and workpiece aperture are thus properly aligned for drilling of the workpiece and the insertion and squeezing of a rivet.

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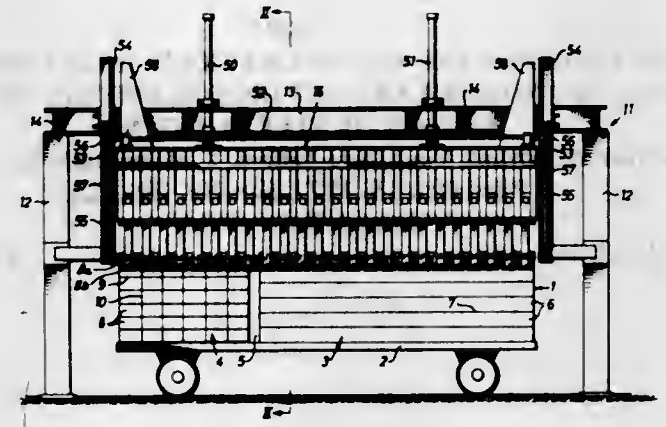
### 3,758,934
### METHOD OF AND APPARATUS FOR SEPARATING LIGHTWEIGHT (AERATED) CONCRETE ELEMENTS

**Borje Hasselgren, Taby, and Wilhelm Sebardt, Bromma, both of Sweden, assignors to Intong Aktiebolag, Hallabrottet, Sweden**
**Filed Feb. 24, 1972, Ser. No. 229,057**
**Claims priority, application Sweden, Feb. 24, 1971, 2352/71**
**Int. Cl. B28b** *13/04*; **B23p** *19/00, 19/02*
**U.S. Cl. 29—200 D** **16 Claims**



Apparatus for separating a stack of adhering lightweight concrete elements comprises upper and lower pairs of mutually opposite elongate clamping units, the units of each pair being mounted for generally horizontal relative clamping movement toward each other so that the two pairs can grip adjacent elements in the stack. At least one clamping unit, preferably in the upper pair, is mounted for movement normal to the clamping direction so as to pivot the upper element relative to the adjacent lower element and separate these elements. This unit, and preferably all the units, comprises a multitude of single clamping jaws arranged for individual and independent movement in the clamping direction so as to compensate for possible irregularities in the elements of the stack. The clamping jaws are carried by pivotally mounted arms, the arm being pivotally mounted on a vertically movable carrier so that the clamping jaws can be moved downwardly to effect separation of all elements in the stack. This avoids the necessity of removing an upper separated element before the next lower element can be separated. A method of separating the elements comprises the described operation of this preferred apparatus embodiment.

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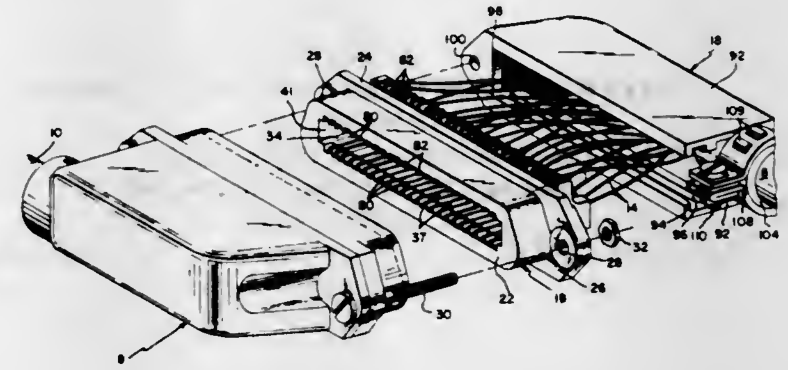
### 3,758,935
### APPARATUS FOR SECURING WIRES TO TERMINALS IN CONNECTORS

**Robert Alvin Long; Roderick William Over, both of Harrisburg, Pa.; Lincoln Edwin Roberts, Winston-Salem, and John Robert Shoemaker, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.**
**Filed May 27, 1971, Ser. No. 147,578**
**Int. Cl. H01r** *43/04*
**U.S. Cl. 29—203 MW** **12 Claims**



Apparatus for connecting each of a plurality of conductors to each of a plurality of terminals in an electrical device, such as an electrical connector, comprises a first jig for holding the electrical device in a predetermined position and a second jig for locating the conductors in predetermined positions. The conductors in the conductor holding jig are spaced apart by the same distances as the spacing between the terminals. A conductor inserting tool is moved past the second holding jig and towards the first jig to transfer the conductors from the first jig to the terminals in the electrical device. A shearing means, comprising one edge of the inserting tool and a stationary edge, is provided to trim the ends of the conductors while they are being transferred from the first jig to a connector.

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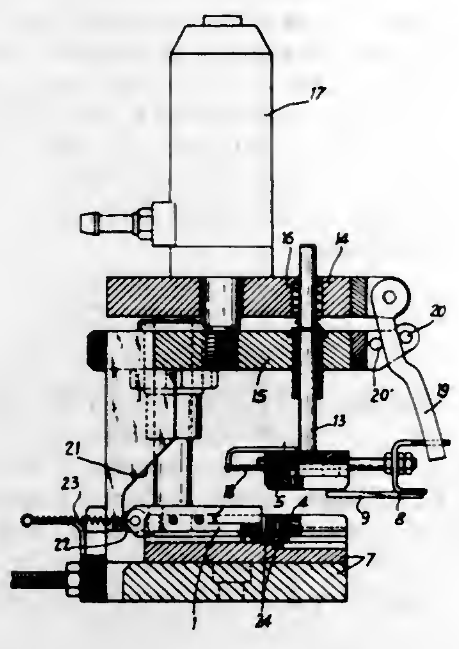
### 3,758,936
### MACHINE FOR AUTOMATICALLY FITTING INSULATING CAPS ON CONNECTING CLIPS

**Attilio Frisiani, Champareillan, France, assignor to Etablissements Proner, Montreuil, France**
**Filed Apr. 20, 1972, Ser. No. 245,716**
**Claims priority, application France, Apr. 21, 1971, 7114096**
**Int. Cl. H01r** *43/04*
**U.S. Cl. 29—203 D** **5 Claims**

A machine adapted to fit caps or sheaths on electric connecting clips wherein a carriage fed with caps or sheaths and a forked member reciprocate along a common path, while a casing constituted by superposed jaws receives the clips between its jaws. The jaws being first opened and then closed over a clip, the forked member holds said clip fast against longitudinal movement to allow the carriage to move forwardly and to fit the cap carried by it over the clip. This being done, the different parts separate and release the capped strip which is conveyed out of the machine.



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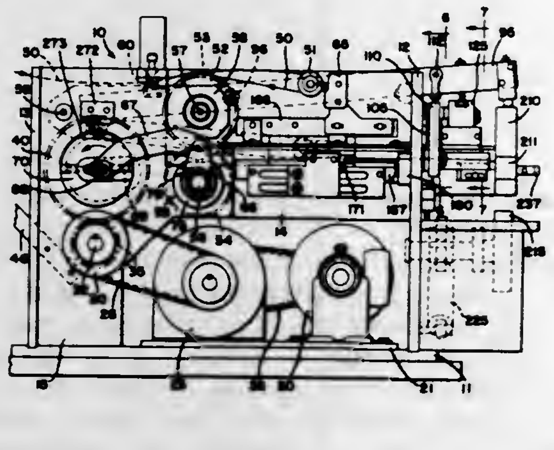
### 3,758,937
### APPARATUS FOR INSERTING INSULATORS IN ARMATURES

**Kenneth A. Ott, 5236 Subra Ave., Dayton, Ohio**
**Filed July 28, 1972, Ser. No. 276,250**
**Int. Cl. H02k** *15/10*
**U.S. Cl. 29—205 E** **8 Claims**



Apparatus for inserting cell insulating paper into armatures to be wound or for inserting coil stays or wedges in wound armatures includes forming rolls for partially forming a paper supplied from a continuous roll and means for intermittently advancing the paper through predetermined incremental lengths where blade is then cut. Cell insulating paper is then tamped into a forming die which forms the paper into a configuration corresponding generally to the shape of slidingly armature cell to be insulated. The knife is mounted on a second degree lever and the tamping blade is mounted on a third degree lever and both of these levers are actuated by a main operating arm so that after the paper is cut by the knife, the paper is immediately tamped into the forming means and continued movement of the knife will not bend or distort the end of the paper. A jam safety switch senses excessive resistance of the paper as it is moved from the forming die into the armature cell to cause a brake to be applied to immediately stop the operation of the device to prevent damage. A simplified loading mechanism includes an inclined pair of tracks and a loading chuck which picks up the armatures from the track and carries them to a position where they are loaded with insulating paper or coil stays and then returns the armatures to the same track. A stop located on the track slightly upstream of the axis of the loading chuck holds the armatures in position ready for loading and strips the armatures from the loading chuck after they have been loaded.

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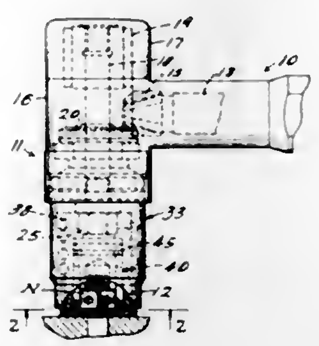
### 3,758,938
### TOOL FOR APPLYING AND LOCKING THREADED FASTENERS AND METHOD

**Roger Cleary Simmons, Shaker Heights; Horace Edward Boyd, Euclid, and Peter Mathis Kuchling, Cleveland Heights, all of Ohio, assignors to Cooper Industries, Inc., Houston, Tex.**
**Filed Nov. 3, 1971, Ser. No. 195,164**
**Int. Cl. B23p** *17/00, 19/00, 11/00*
**U.S. Cl. 29—400** **15 Claims**



A power driven tool and method for turning a conventional threaded fastener on a threaded shank to a predetermined tightness and automatically locking it in place by deforming or swaging the fastener to create controlled thread interference. The tool includes a power driven fastener socket surrounded by a plurality of radially movable punches which, when moved inwardly, will deform the fastener to effectively lock it in place. The punches are caused to move inwardly upon the fastener by a mechanism for converting rotary motion of the tool to a radial clamping force which is applied to the fastener as it begins to be tightened and which is effective to deform the fastener after it has reached a predetermined tightness. The tool also includes means to automatically retract the punches from the fastener after the fastener has been deformed to permit removal of the tool.

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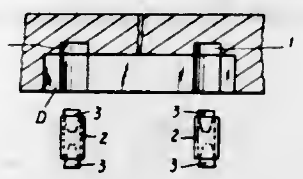
### 3,758,939
### METHOD FOR REPAIRING CRACKS IN INGOT MOLDS, PLATES AND SIMILAR CAST IRON ELEMENTS FOR USE IN IRON OR STEEL CASTING

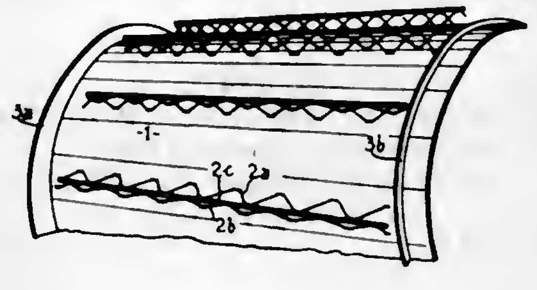
**Giovanni Galvani, Via Ettore Bellani, 2, Milan, Italy (20124)**
**Filed Oct. 15, 1971, Ser. No. 189,523**
**Int. Cl. B22d** *19/10*
**U.S. Cl. 29—402** **4 Claims**



Straddling the crack a metal plate is placed and fastened to the ingot mold or the like by pins, which are fastened to the ingot mold or the like by welding and by permanent deformation.

### 3,758,940
### METHOD OF PRODUCING COMPOSITE CONCRETE - STEEL PIPES AND JOINTS AND PIPE AND JOINT OBTAINED BY MEANS OF SAID METHOD

**Jacques Edouard Jean Lamy, Fontenay-Aux-Roses, France, assignor to Societe D'Etude du Transport et de La Valorisation Des Gaz Naturels du Sahara "S.E.G.A.N.S.", Paris (Seine), France**
**Filed Nov. 23, 1964, Ser. No. 415,561**
**Claims priority, application France, Nov. 25, 1963, 63954915**
**Int. Cl. B23k** *31/02*; **B28b** *17/00*
**U.S. Cl. 29—460** **6 Claims**



1. Method of producing a composite concrete-steel pipe comprising the steps of taking a thin mild steel sleeve to serve as the inner wall of the pipe, attaching metal reinforcing means to the outer face of said sleeve, forming an injecting mould about said sleeve by placing means acting as a moisture-permeable enclosure around said sleeve, said enclosure constituting the outer wall of said mould and said sleeve constituting the inner wall of said mould, injecting colloidal concrete into said mould, compressing the concrete before it has set by creating an internal hydraulic pressure in said sleeve so as to expand said sleeve beyond the elastic limit of said mild steel, releasing said hydraulic pressure in said sleeve after hardening of the concrete, and removing the resulting composite concrete-steel pipe comprising said concrete, said reinforcing means and said mild steel sleeve expanded against said concrete.

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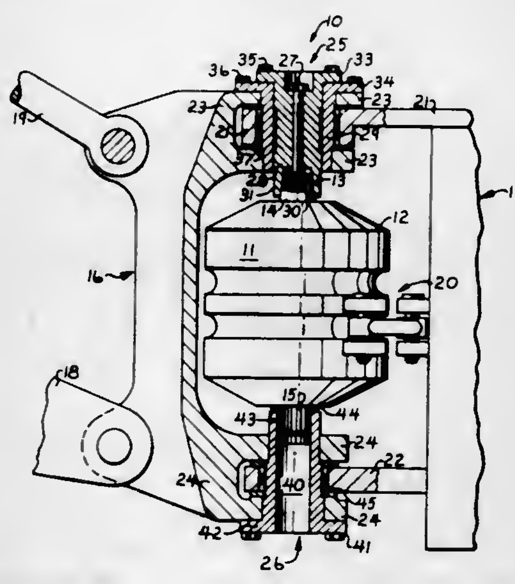
### 3,758,941
### SWING MOTOR MOUNTING ARRANGEMENT AND METHOD OF DISASSEMBLY

**James S. Jackson, Peoria, Ill., and Paul S. Lempio, Sausalito, Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Mar. 3, 1972, Ser. No. 231,705**
**Int. Cl. B23q** *3/00*
**U.S. Cl. 29—464** **30 Claims**



A swing motor has a shaft rotatably mounted in a housing thereof with the shaft projecting beyond each end of the housing. A support bracket and a frame are positioned on opposite sides of the motor and have a pair of overlapping bracket arms, positioned at each end of the motor, pivotally mounted together. A pin projects through each pair of bracket arms and is secured to one of the bracket arms and to a respective end of the shaft.

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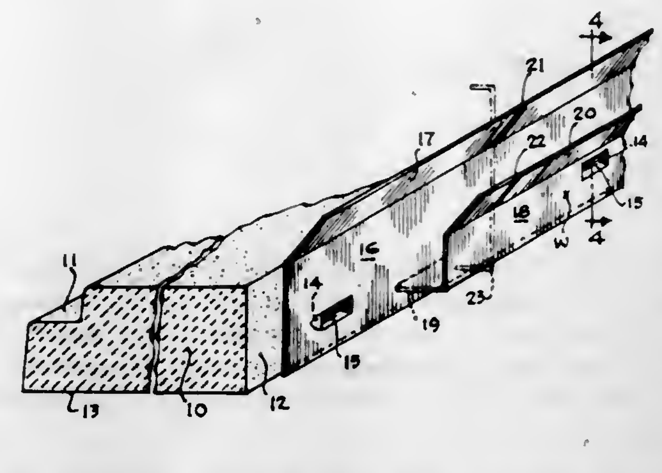
### 3,758,942
### METHOD OF MANUFACTURING REFRACTORY BOTTOM RINGS

**Ervin A. Marcec, 4800 Chicago Beach Dr., Chicago, Ill.**
**Continuation-in-part of Ser. No. 64,162, Aug. 17, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,719**
**Int. Cl. B22d** *7/10*
**U.S. Cl. 29—475** **7 Claims**



The invention provides dual wiper elements attached securely to refractory bottom rings for suspension from hot tops to be lowered into ingot molds prior to pouring hot metal thereinto, and a method of preassembling such wiper elements to said refractory bottom ring.

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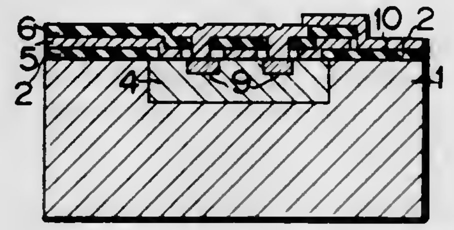
### 3,758,943
### METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

**Keizo Shibata, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan**
**Division of Ser. No. 878,002, Nov. 19, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,155**
**Claims priority, application Japan, Nov. 22, 1968, 43/85199**
**Int. Cl. B01j** *17/00*
**U.S. Cl. 29—578** **4 Claims**



A method for manufacturing a semiconductor device comprises forming a first region of one conductivity type in a substrate of an opposite conductivity type through a main surface of the substrate, depositing a first metal electrode layer on the first region and depositing an insulation film on the first electrode layer. The insulation film is etched over the first region with a plurality of relatively minute holes to expose the first metal electrode layer through the holes and the first metal electrode layer is etched with a plurality of holes to expose the first region through said holes, the holes in the first metal electrode layer being etched such that the holes of the first metal electrode layer are larger than that of the insulation film. A second region is formed in the first region through the holes of the first metal electrode layer and insulation film. The second region is of opposite conductivity to the first region. A second metal electrode layer is formed on the insulation film so as to electrically connected to each exposed section of the second region through the holes of the first metal electrode layer and insulation film.

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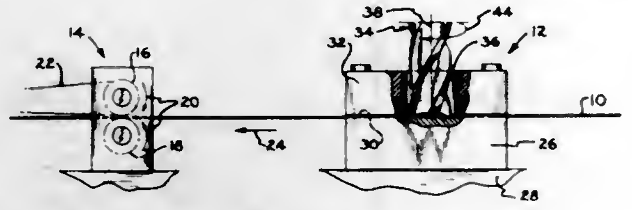
### 3,758,944
### TERMINAL METHOD AND MANUFACTURE

**Quentin Berg, New Cumberland, Pa., assignor to E. I. du Pont De Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 100,252, Dec. 21, 1970, Pat. No. 3,707,933. This application Jan. 24, 1972, Ser. No. 220,307**

**Int. Cl. H01r** *9/00*

**U.S. Cl. 29—630** **11 Claims**



An end mill is used to form a reduced thickness step in an indefinite length of strip material. If, due to tolerances and other factors the reduced thickness material is slightly too thick, it is swaged to a reduced thickness following which terminals are formed of both the thinned and original thickness material.

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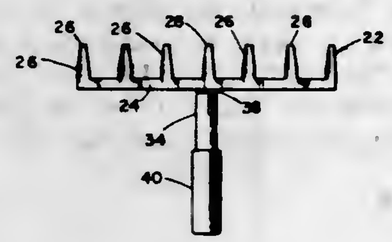
### 3,758,945
### MASONRY FLUTE RAKE

**Joseph F. Finnegan, Jr., York, Pa., assignor to York Stone & Supply Company, York, Pa.**

**Filed Jan. 7, 1972, Ser. No. 216,021**

**Int. Cl. E01c** *23/02*

**U.S. Cl. 30—172** **2 Claims**



A masonry flute rake having a plurality of similar tines arranged in a common plane and a handle extending rearwardly from said tines intermediately of the length of said row thereof, the plane of said tines being at an obtuse angle to the axis of the handle. The tines are adapted to rake simultaneously down a substantial number of flutes formed in the outer faces of certain types of masonry blocks to remove projecting mortar from the courses between horizontal rows of such blocks.

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### 3,758,946
### APPARATUS FOR REMOVING OVERLAPPED SIDING MATERIALS

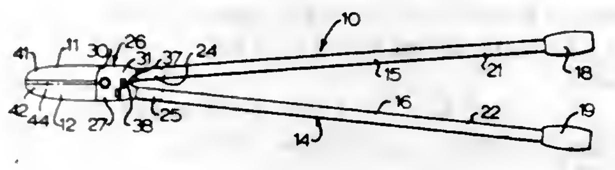
**William C. Peterson, 3828 S. Grand, Spokane, Wash.**

**Filed Dec. 30, 1971, Ser. No. 213,955**

**Int. Cl. B26b** *13/04*

**U.S. Cl. 30—257** **5 Claims**

A tool is described having thin, flexible, high-speed tool steel blades that are detachably mounted to a tool head. The blades may be manually manipulated by handle elements to pivot the blades in a shearing motion. The blades are sufficiently flexible to be unable to shear a nail under normal conditions. The tool is used to remove overlapped siding by inserting the thin flexible blades between the siding elements with the siding elements preventing the blades from twisting and maintaining the blades in a shearing plane to sever the nail.



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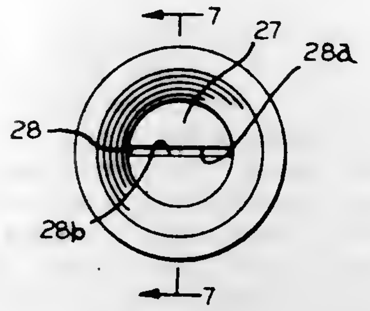
### 3,758,947
### ELASTOMERIC ORTHODONTIC DEVICE

**Peter C. Kesling, Green Acres, LaPorte, Ind.**

**Filed Dec. 17, 1971, Ser. No. 209,260**

**Int. Cl. A61c** *13/22*

**U.S. Cl. 32—14 A** **7 Claims**



A device for producing elastic forces including traction forces in orthodontic treatment including an annular elastomeric body having a uniform cross section defined by radially inward and outward facing sides, wherein the radially inward facing side includes a pair of annular beveled faces converging radially inward to a line edge.

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### 3,758,948
### STRAIGHT OR ANGLE DENTAL HANDPIECE

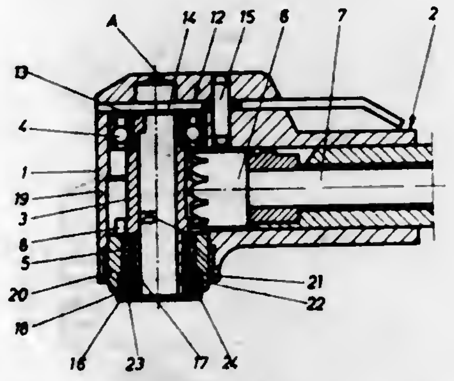
**Erich Bareth, Ummendorf, Germany, assignor to Kaltenbach & Voight, Biberach/Riss Bismarckring, Germany**

**Filed Mar. 17, 1972, Ser. No. 235,521**

**Claims priority, application Germany, Apr. 2, 1971, P 21 16 182.0**

**Int. Cl. A61c** *19/02*

**U.S. Cl. 32—26** **12 Claims**



A dental handpiece adapted for having a tool inserted into a rotationally drivable hollow shaft mounted in the nose of a straight handpiece or a head of an angle handpiece. At the end of the hollow shaft there is a radial annular flange which covers an annular bearing gap between the housing and the shaft at the end from which the tool projects. The annular flange abuts against a sealing ring which bears against the housing, and the sealing ring is completely covered by the annular flange. Between the sealing ring and the housing there is mounted a compression spring acting in the axial direction of the shaft.

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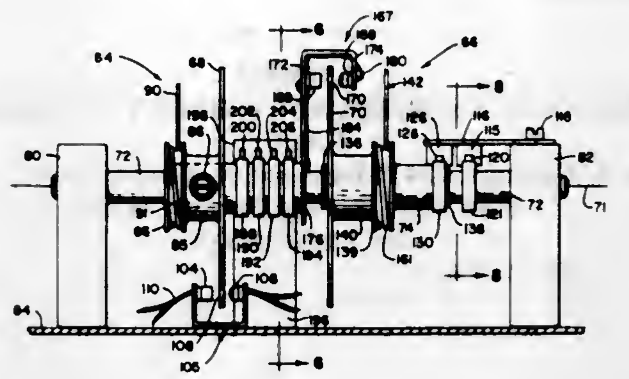
### 3,758,949
### DIGITIZER

**Charles A. Fausel, Chicago, Ill., and Allan A. Lorenz, Willowick, Ohio, assignors to Teletype Corporation, Skokie, Ill.**

**Filed Jan. 6, 1971, Ser. No. 104,381**

**Int. Cl. G09b** *29/10*

**U.S. Cl. 33—1 M** **12 Claims**



Digital readout data of coordinates of points in a two dimensional system is generated in a pair of counters in response to the angular positions of the following: (1) a first disc rotatable in response to movement of a first slider in a straight path to a selected position, and (2) a second disc rotatable in response to movement of the first slider and in response to movement of a second slider in a straight path to a selected position. The second slider is carried from the first slider and arranged for movement therewith and normally thereto independently thereof. Effect on readout due to movement of the second slider resulting from the movement of the first slider is prevented because the discs are mounted for rotation simultaneously upon movement of the first slider. A sensing assembly adapted for detecting the relative angular displacement of the second disc and actuating an associated counter is carried with said first disc for rotation relative to the second disc.

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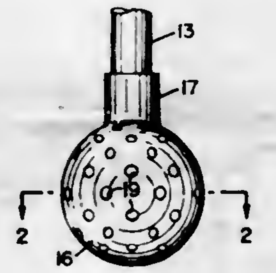
### 3,758,950
### DENTAL EJECTOR EQUIPMENT

**Kersam K. Krouzian, 1290 Chestnut St., San Francisco, Calif.**

**Continuation-in-part of Ser. No. 586,456, Oct. 13, 1966, abandoned, and a continuation-in-part of Ser. No. 797,427, Feb. 7, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,788**

**Int. Cl. A61c** *17/04*

**U.S. Cl. 32—33** **2 Claims**



A device for insertion into the mouth of a dental patient for removing saliva and particles. An inner hollow member has an outlet connected to a suction tube. The member is covered by a layer of soft resilient synthetic material which is porous and which is provided with spaced openings therethrough to pass solid particles.

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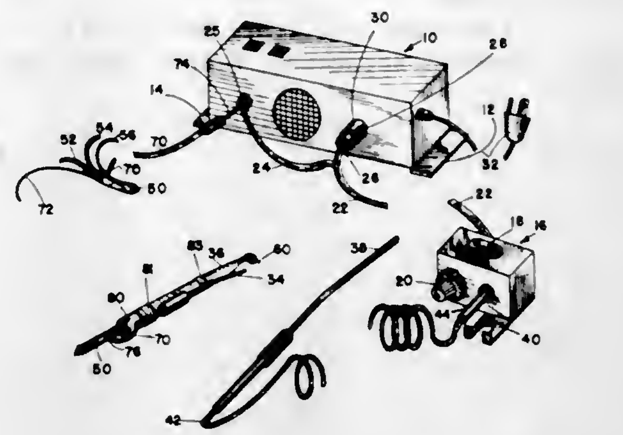
### 3,758,951
### DENTAL FIBER OPTIC ILLUMINATION SYSTEM

**Leonard Scrivo, Bronxville, N.Y.; Lionel J. La Plante, S. Bridge, Mass.; Vincent A. Chumenti, Bronx, N.Y., and Gotthard George Rubin, Garfield, N.J., assignors to Vicon Products Corp., Mamaroneck, N.Y.**

**Filed Nov. 8, 1971, Ser. No. 196,350**

**Int. Cl. A61c** *1/10*

**U.S. Cl. 32—27** **12 Claims**



A dental fiber optic illumination system is provided which comprises a control module for controlling the intensity of the light source, and which is adapted to be mounted on a dental tray. The use of the control module separate from the light source provides a convenient means for controlling the intensity of the light source and one which utilizes a minumim portion of the dentist's working area. There is further provided a dental handpiece hose which receives a fiber optic assembly connected to the light source. The dental handpiece hose comprises the usual conduits and a further conduit disposed between conduits for receiving a fiber optic assembly. One of the walls defining the further conduit may be made up of a pair of elongated interlocking members which permit the wall to be partially or completely opened for ready access to the further conduit.

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### ERRATUM

For Class 33—1 see:
Patent No. 3,758,949

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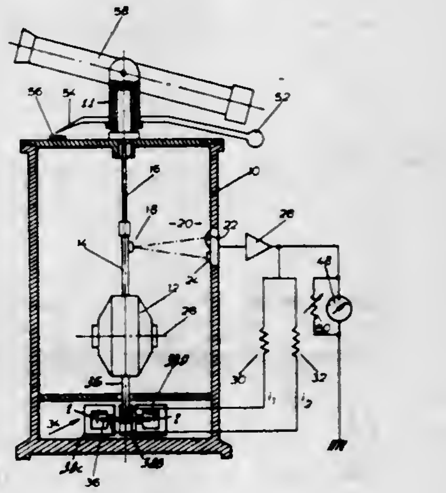
### 3,758,952
### MERIDIAN GYROSCOPIC INSTRUMENT

**Eduard Fischel, Uberlingen/Bodensee, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany**

**Filed Feb. 22, 1971, Ser. No. 117,813**

**Int. Cl. G01c** *19/38*

**U.S. Cl. 33—324** **5 Claims**



The damping device for a meridian gyroscope includes a torque motor between the gyro rotor housing and the frame from which the gyro is suspended by a tape. The torque motor is supplied with electric signals derived by a pickoff between the gyro rotor housing and the frame and applies a torque to the gyro rotor housing about an axis that is perpendicular to a plane which includes the tape and the gyro spin axis.

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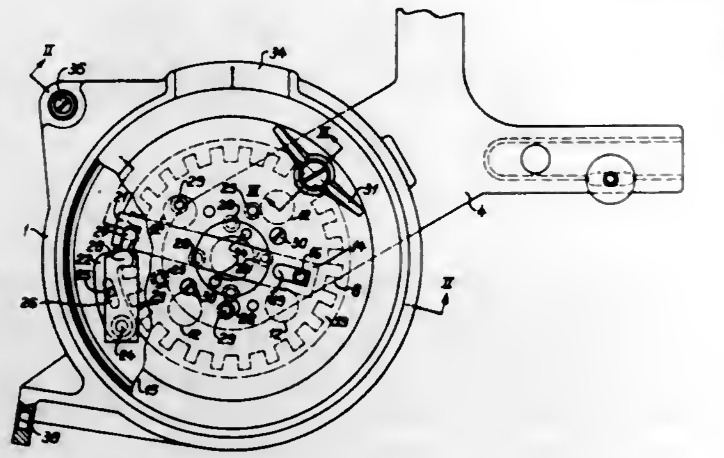
### 3,758,953
### DRAWING-BOARD PROTRACTOR UNIT

**Alain Bruneau, Besancon, France, assignor to Societe ALPIA, Besancon, France**
**Filed Sept. 2, 1971, Ser. No. 177,411**
**Claims priority, application France, Sept. 10, 1970, 7032925**
**Int. Cl. B43l** *13/08*
**U.S. Cl. 33—79 R** **4 Claims**



The protractor unit according to this invention is characterized in that the support consists of a single piece and is provided with a least one toothed wheel axially open and formed integrally with the support, an annular peripheral cavity being, also formed about said toothed wheel for receiving means for mutually detent-positioning a pair of teeth, said wheel being further provided with means for positioning a disk intended for locking said two movable portions in relation to the support, as a consequence of the bearing engagement of a shoe on said disk.

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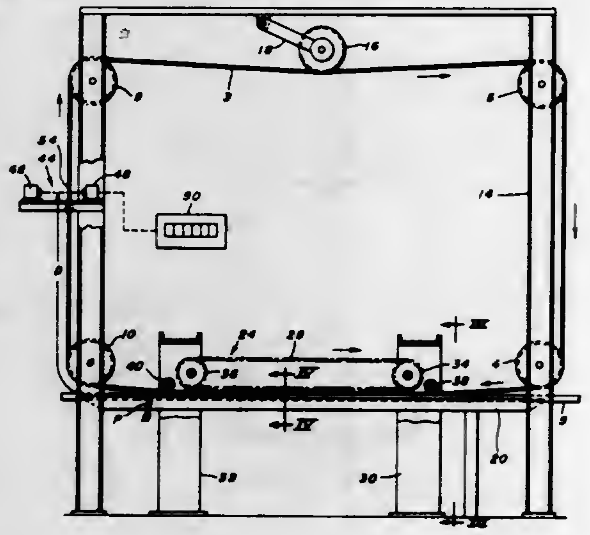
### 3,758,954
### APPARATUS FOR MEASURING LENGTHS OF LINEAR MATERIAL

**Alfred Teplitz, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Apr. 23, 1971, Ser. No. 136,806**
**Int. Cl. G01b** *3/12, 5/04, 7/04*
**U.S. Cl. 33—141 F** **13 Claims**



Apparatus and method include the use of an endless loop of accurately calibrated tape trained around a plurality of pulleys with means for maintaining contact between the tape and moving linear material to be measured. A leg of the endless loop is arranged to parallel the moving linear material in close proximity thereto. A ribbon of magnets or other clamping means mounted on an endless chain is positioned parallel to the aforementioned leg of the tape. The magnets releasably clamp the leg of the tape to the moving linear material, causing the leg (and thus the loop) of the tape to move exactly as the linear material moves. By counting the number of times the loop of tape has circulated (and adding to this number any fractional part of a length of loop that has passed), the exact length of linear material that has passed a fixed point can be determined.

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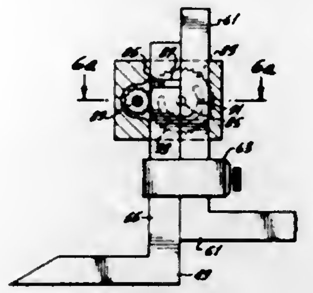
### 3,758,955
### ADJUSTABLE SCRIBER ATTACHMENT FOR HEIGHT GAUGE

**Jesse D. Garinger, 12421 Oakwood St., Garden Grove, Calif.**
**Filed Sept. 25, 1970, Ser. No. 75,435**
**Int. Cl. G01b** *3/20*
**U.S. Cl. 33—169 R** **1 Claim**



The attachment is comprised of two L-shaped members held together slideably, one having an arm extending in a first direction and adapted to be clamped to the measuring blade of a height gauge and the other L-shaped member having an arm parallel to the first arm, extending in a direction opposite thereto, and carrying a scribing edge at its end. By thus providing a scriber edge which is slideable relative to the height gauge the operation of any height gauge with which the attachment is used can be simplified and accelerated. A gear-driven eccentric pin and slot arrangement serves for manual relative adjustment of the L-shaped members.

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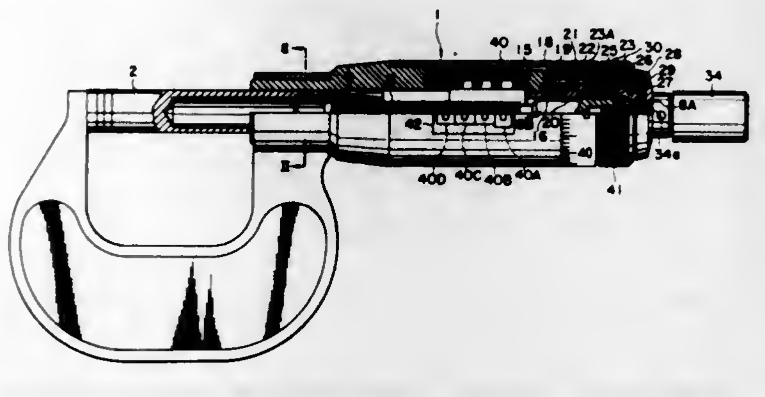
### 3,758,956
### MICROMETER COMPRISING A DIGITAL COUNTER

**Kiyohiro Nakata, Kure, Japan, assignor to Yehan Numata, Yokohama City, Japan**
**Filed May 1, 1972, Ser. No. 249,277**
**Claims priority, application Japan, May 11, 1971, 46/37649**
**Int. Cl. G01b** *3/18*
**U.S. Cl. 33—166** **2 Claims**



Micrometer comprises a spindle which is axially advanced by rotating a knob or ring and a digital indicating counter actuated in response to movement of said spindle and seated in the guide for said spindle. The micrometer comprises means for adjusting the counter and means for taking up any play between the spindle and spindle guide.

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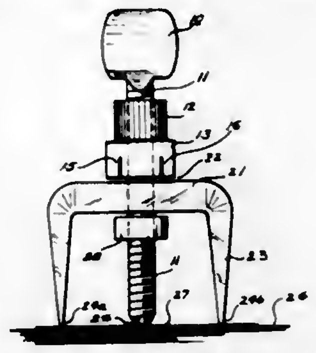
### 3,758,957
### WET FILM THICKNESS GUAGE

**Luther Eskijian, 2223 Midlothian Dr., Altadena, Calif.**
**Filed Apr. 6, 1972, Ser. No. 241,502**
**Int. Cl. G01b** *3/28*
**U.S. Cl. 33—169 F** **1 Claim**



An instrument having adjustment provision in the form of a threaded shank portion used to feel the Wet Film surface, and which moves to a selective degree outward or inward relative to a pair of astriding penetration forks, including a rotational gauge member calibrated to record said Wet Film thickness.

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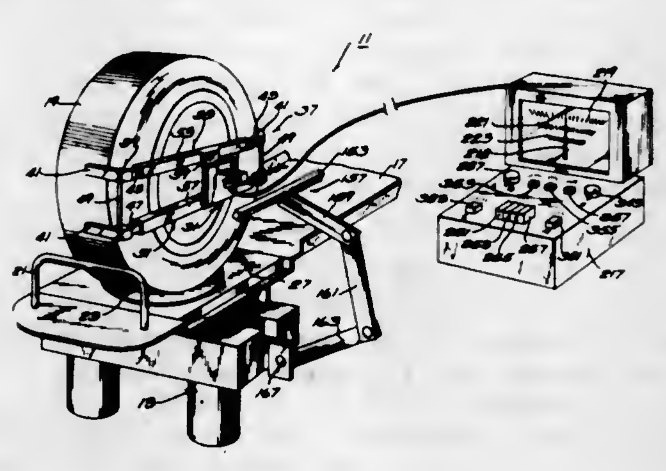
### 3,758,958
### WHEEL ALIGNING APPARATUS

**William I. Jordan, Belgium, Wis., assignor to Performance Equipment Inc., Milwaukee, Wis.**
**Filed Apr. 28, 1970, Ser. No. 32,508**
**Int. Cl. G01b** *5/24*
**U.S. Cl. 33—336** **22 Claims**



Disclosed herein is a wheel aligning apparatus for selectively measuring "camber", "caster", and "toe" conditions, which apparatus includes means adapted to be connected to a wheel and a measuring circuit including a sensor mounted on said means and including means variably passing current in accordance with the position of the sensor. The circuit also includes means for supplying alternating current thereto, means for measuring current flow from the sensor, camber, caster, and toe resistors in parallel electrical connection, and switch means connected to said camber, caster, and toe resistors for selectively connecting any one of the resistors in operative electrical connection in the circuit and for simultaneously disconnecting the other two of said resistors from the circuit. The aligning apparatus also includes a mounting arm supporting the sensor and means connecting the mounting arm to a tire clamp for affording pivotal movement of the mounting arm relative to the tire clamp about an axis transverse to the wheel axis.

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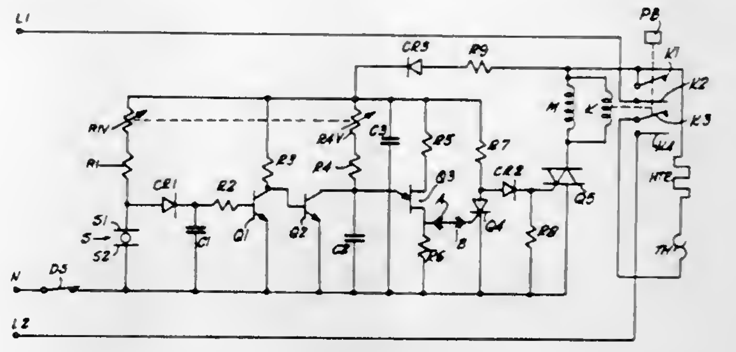
### 3,758,959
### DRYER CONTROL SYSTEM USING MOISTURE SENSOR AND SEMICONDUCTORS TO CONTROL CYCLE

**Joseph Karklys, Saint Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.**
**Filed Nov. 12, 1971, Ser. No. 198,198**
**Int. Cl. F26b** *19/00;* **G05b** *11/00*
**U.S. Cl. 34—45** **15 Claims**



A dryer control system for sensing the moisture content of clothes which bridge a pair of spaced apart sensing electrodes in a dryer employs means for adjusting the desired moisture retention, means for adjusting the moisture sensitivity of the circuit and the duration of a drying time period at the end of the dryer cycle, and means for rendering the system circuit insensitive to false indications caused by static charges applied across the moisture sensing electrodes. The system circuit is employed to directly control turn-off of the drive motor and heating means of a dryer and includes a further means for delaying for selected intervals termination of the drying cycle upon detection of the desired moisture retention condition.

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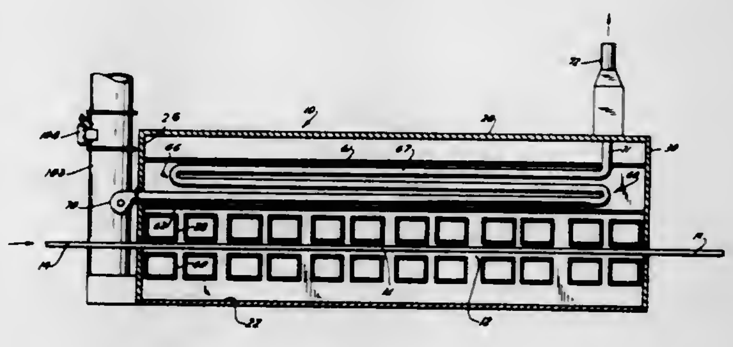
### 3,758,960
### APPARATUS FOR DRYING MATERIALS

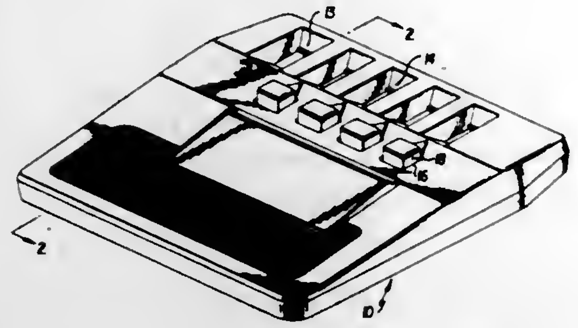
**David McCreary, Latham; John McCreary, Newtonville, and Harvey Anderson, Elnora, all of N.Y., assignors to McCreary Machine Works, Cohoes, N.Y.**
**Filed Apr. 21, 1971, Ser. No. 136,797**
**Int. Cl. F26b** *13/00*
**U.S. Cl. 34—156** **8 Claims**



Apparatus and method for continuous drying of materials including means and steps for passing the material to be dried into a drying chamber having a plurality of drying zones; uniformly directing heated fluid through the drying zones, each drying zone having means to direct the heated fluid substantially uniformly over the surfaces of the material to be dried; and having discharge fluid collecting means in communication with the drying zones to collect the discharged fluid, and means for moving substantially all of the discharged fluid through a heat exchanger means so as to uniformly heat substantially all of the discharged fluid to a desired temperature and means to conduct the uniformly heated fluid to the distributing means and temperature control means to maintain the fluid temperature in the drying chamber and then passing fluid through the distributing means whereby the uniformly heated fluid is conducted through the drying zones to continuously dry the material uniformly.

### 3,758,961
### EDUCATIONAL DEVICE

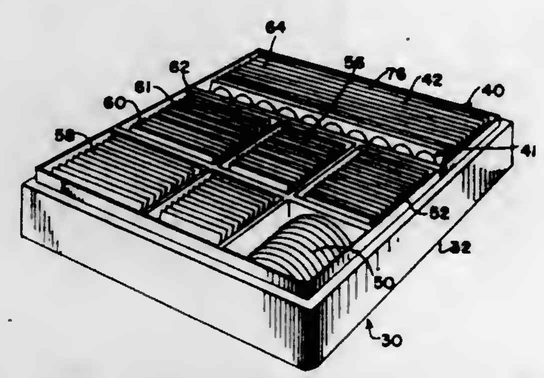
**Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan**
**Filed Apr. 25, 1972, Ser. No. 247,475**
**Int. Cl. G09b** *3/06*
**U.S. Cl. 35—9 A** **2 Claims**



An educational device featuring a housing provided with a slot within which a plurality of cards containing problems and multiple choice answers thereto are inserted, the housing being further provided with a plurality of buttons operatively connected to a plurality of fingers normally extending within the slot, the cards each being further provided with coded cut-out portions adjacent the correct answers, the fingers normally extending through the coded cut-out portions preventing the card from moving while actuation of the correct buttons withdraws the fingers from the coded cut-out portions permitting the card to move outwardly within the slot under the influence of a spring biasing mechanism to the next problem to be solved, after which the sequence is repeated.

### 3,758,962
### ARITHMETIC TEACHING AID KIT

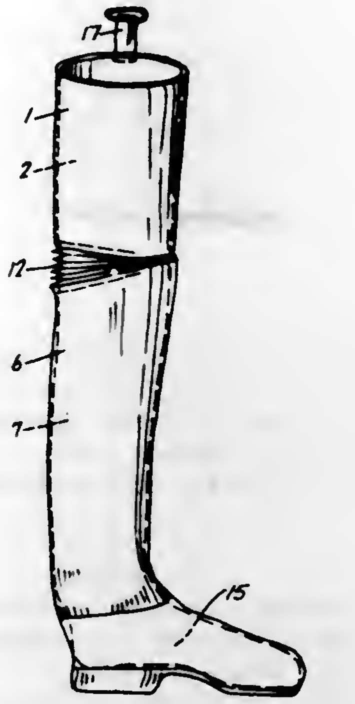
**Florica Bagdasar, 5901 N. Sheridan Rd., Apt. 13A, Chicago, Ill.**
**Filed July 19, 1971, Ser. No. 163,942**
**Int. Cl. G09b** *19/02*
**U.S. Cl. 35—31 R** **1 Claim**



The invention relates to a teaching aid kit for beginning arithmetic students. A preferred embodiment is disclosed which includes a container with compartments and a number of groups of instructional materials. In the disclosed preferred embodiment, the kit includes a container and at least three main kinds of materials: (a) discrete compact pieces from which the student can assemble and manipulate concrete representations of mathematical sets, (b) printed pieces showing indicia having predetermined sets and which the student uses to identify sub-sets, and (c) a series of printed pieces, each respective piece having a larger set shown thereon than the preceding member of the series, and which the student can use to identify, manipulate, and arrange in increasing or decreasing value. The pieces of the first group have a shape, e.g. a colored circle, which is repeated in the representation of the sets shown on the other printed material in the kit.

### 3,758,963
### SNAKE BITE PREVENTING DEVICE

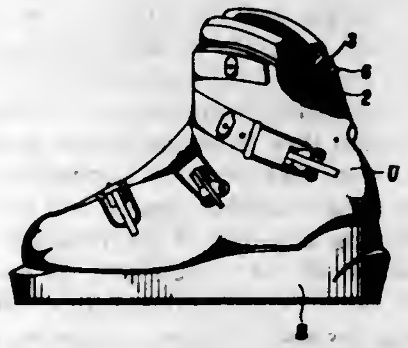
**Rex Knight, Garland, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.**
**Filed May 17, 1972, Ser. No. 254,263**
**Int. Cl. A41d** *17/00*
**U.S. Cl. 36—2 R** **7 Claims**



A snake bite preventing device comprises thigh protecting material adapted to be removably affixed to the thigh of the wearer. Leg protecting material is adapted to be removably affixed to the leg of the wearer. Foot protecting material is adapted to be removably affixed to the foot of the wearer. Flexible material is affixed to and extends between the thigh proteting material and the leg protecting material.

### 3,758,964
### SPORTS SHOE

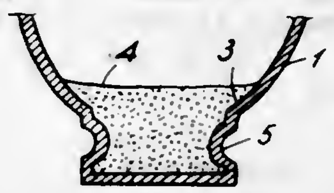
**Kazuyoshi Nishimura, Tokyo, Japan, assignor to Onitsuka Co. Ltd., Suma-ku, Kobe City, Japan, a part interest**
**Filed Mar. 8, 1972, Ser. No. 232,856**
**Claims priority, application Japan, Oct. 25, 1971, 46/84521; Nov. 13, 1971, 46/106033; Nov. 17, 1971, 46/107498**
**Int. Cl. A43b** *19/00*
**U.S. Cl. 36—2.5 AL** **7 Claims**



The present invention relates to a sports shoe which comprises an enclosed bag member which consists of a heel cover section for covering a heel portion of a wearer's foot and an instep cover section connected integrally with the heel cover section for covering an instep of the wearer's foot, said enclosed bag member having an air chamber formed therein; and a cushioning member which is made of cushioning material and adapted to cover the heel portion and both sides of the instep of the wearer's foot, said cushioning member being provided exteriorly of the air chamber of the enclosed bag member.

### 3,758,965
### SKI BOOT

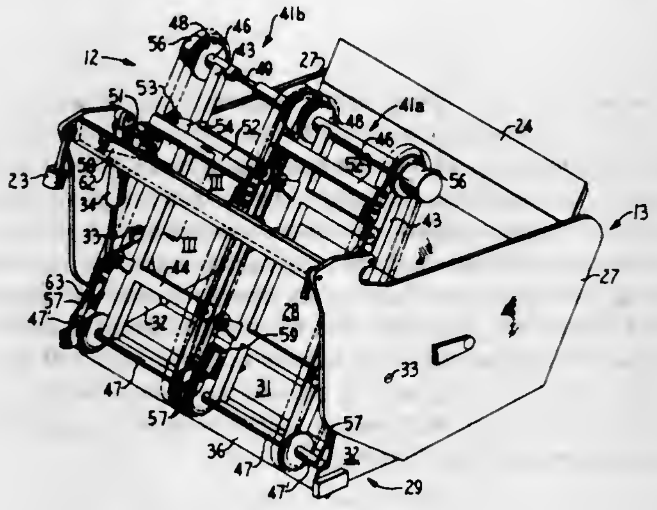
**Giovanni Caberlotto, Montebelluna, Italy, assignor to Calzaturificio Caber S.P.A., Montebelluna (Prov. Treviso) Italy**
**Filed Nov. 16, 1972, Ser. No. 306,133**
**Int. Cl. A43b**
**U.S. Cl. 36—2.5 AL** **4 Claims**



A ski boot comprising a rigid external body made of plastics material, in which said body is of almost uniform thickness. It comprises at the sole an internal longitudinal cavity provided externally with two longitudinal stiffening ribs, within said cavity there being disposed a wedge formed separately of a cellular plastics material.

### 3,758,966
### MULTI-ELEVATOR SCRAPER

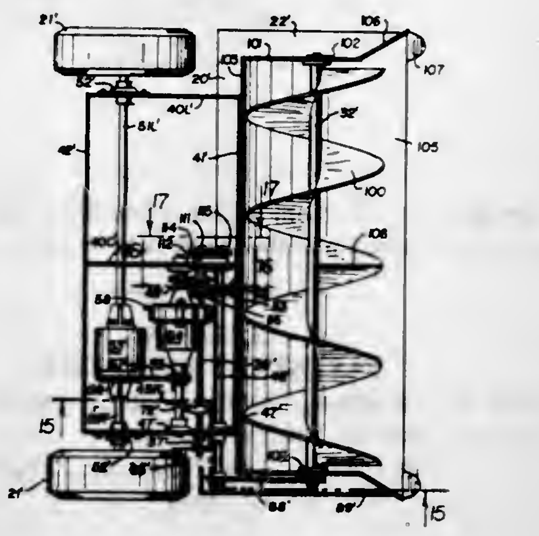
**Lawrence J. Miller, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Dec. 13, 1971, Ser. No. 207,388**
**Int. Cl. B60p** *1/36*
**U.S. Cl. 37—8** **6 Claims**



A tractor drawn earth moving scraper having a cutting edge for guiding earth into the open forward end of a bowl is provided with a pair of side-by-side powered elevators disposed above the cutting edge to forcibly assist the movement of earth into the bowl. The elevators are fastened to the bowl by linkage which provides for independent rising and falling of each elevator in response to the volume and resistance of earth beneath each individual elevator. This construction increases earth handling efficiency, reduces the stress on elevator flights and facilitates transportation of very large scrapers. One elevator may be driven from the scraper tractor engine while the other elevator is driven from the rear wheel engine to make more efficient use of available power.

### 3,758,967
### YARD MAINTENANCE APPARATUS

**David R. Thompson, Denver, Colo., assignor to Rental Equipment Manufacturing Co., Denver, Colo.**
**Continuation-in-part of Ser. No. 843,608, July 22, 1969, Pat. No. 3,579,702. This application May 14, 1971, Ser. No. 149,400. The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.**
**Int. Cl. E01h** *5/09*
**U.S. Cl. 37—43 E** **15 Claims**

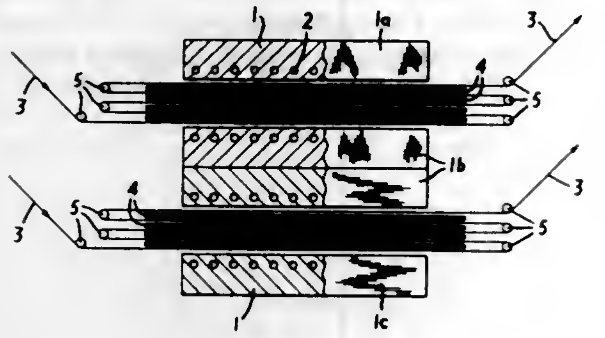


A self-propelled wheel mounted yard maintenance apparatus carrying an engine to drive the unit and a working element which may be a sweeper brush, a snowplow, a lawn mower or the like. The working element is direct-connected to the engine and is adapted to be rotated to function as the apparatus is moved across a yard. The apparatus includes a pair of drive wheels mounted upon a shaft to rotate to propel the unit. A differential is carried upon a driven shaft connected to the engine and a driving shaft connected to the drive wheel shaft. The differential is free to rotate upon these shafts and when rotating freely, it does not apply any driving torque to the driving shaft. A brake is provided to reduce the rate of rotation of this differential or to stop its rotation completely and in either case, the braking action will impart driving torque to the driving shaft. The driving shaft rotates in a direction opposite to the driven shaft when so restrained by the brake. The working element may rotate in a direction opposite to the direction of rotation of the drive wheels or in the same direction of rotation by the addition of reversing gears in the mechanisms between the engine and the working element.

### 3,758,968
### APPARATUS FOR CONTROLLING THE OPERATING TEMPERATURE OF A CONTINUOUS FLAT PRESS

**Kazutomo Ishizawa, 6, Doshomachi 1-chome; Yasunor Nagata, 13-11, Senrioka Higashi 1-chome; Yoshiaki Uematsu, 28-10, Senriyama Nishi 6-chome, and Uunnosuke Abe, 13-11, Senrioka Higashi 1-chome, all of Osaka, Japan**
**Continuation-in-part of Ser. No. 887,230, Dec. 22, 1969, abandoned, Continuation-in-part of Ser. No. 175,371, Aug. 26, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 247,044**
**Claims priority, application Japan, Dec. 29, 1968, 43/96480**
**Int. Cl. D06f** *71/34*
**U.S. Cl. 38—15** **19 Claims**

A method of pressing a fabric in a press at a given temperature. The temperature at which a fabric is pressed is set by developing a voltage corresponding to and representative of a desired or given temperature. A second voltage is developed and varied in response to a signal developed by sensing the press plate temperature and developing from the two first-mentioned voltage signals an integrated reference voltage signal that seeks to approximate the voltage representative of the desired temperature for pressing. This reference voltage is compared with another voltage developed by sensing the varying temperature of steam within a pressing plate of the press by which the pressing of the fabric is to be effected.



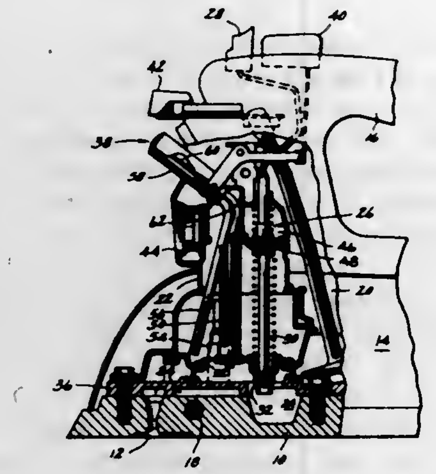
### 3,758,969
### FAST START SPRAY IRON

**William E. Davidson, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.**

**Filed Mar. 27, 1972, Ser. No. 238,456**

**Int. Cl. D06f** *75/06*

**U.S. Cl. 38—77.5** **6 Claims**



The invention discloses a steam and power spray iron wherein generated steam pressure is used to power the spray assembly. The invention is directed to an improvement in the spray assembly that provides a continuous steam tube directly connected at one end to the spray assembly and extending down into close proximity to the steam generator at the other end whereby, as soon as steam is generated, it is ducted directly and immediately to the spray assembly to provide steam power therefor without significant heat losses.

### 3,758,970
### PHOTOGRAPH BEARING IDENTIFICATION CARD STRUCTURE AND METHOD OF MANUFACTURE

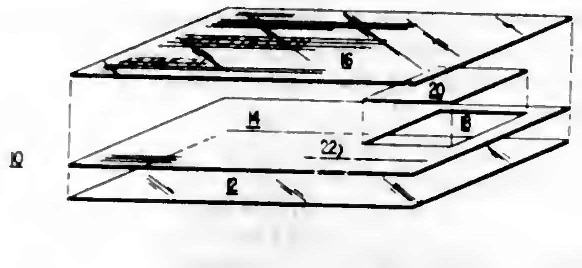
**Maurice Annenberg, Pikesville, Md., assignor to Maran Plastic Company, Baltimore, Md.**

**Filed June 8, 1971, Ser. No. 150,987**

**Int. Cl. G09f** *3/02*

**U.S. Cl. 40—2.2** **8 Claims**

An identification or credit card structure is disclosed which includes a photographic likeness of an individual as well as printed information relating to the individual. The card is preferably comprised of three layers of plastic material with the printed information printed in reverse on the back side of the uppermost layer of plastic. The photographic likeness may be on conventional photographic paper or may be imprinted directly on a plastic panel. When imprinted on a plastic panel, the photograph is fused into the overall card structure upon lamination to form a tamper-proof, solid plastic card. Other techniques for rendering the card resistant to tampering are also disclosed, including the use of special printing techniques and special inks.



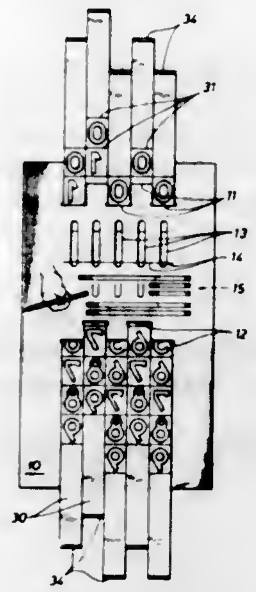
### 3,758,971
### SEQUENCE IDENTIFICATION APPARATUS

**Donald R. Tarrant, 3703 Woodvalley, Houston, Tex.**

**Filed Oct. 12, 1970, Ser. No. 80,032**

**Int. Cl. G09f** *11/30*

**U.S. Cl. 40—64 R** **3 Claims**



Apparatus for providing visual sequence identification information comprising a base plate having a window therein and at least one strip of flexible material on which is printed a sequenced series of identification characters for presentation through the image window in consecutive order. A manually operated embodiment includes an operating plate member, overlying the strip, and having an aperture therein through which the strip may be contacted for manipulation thereof. In a mechanized embodiment the strip is a continuous belt driven by a drive shaft. For a plurality of belts an index assembly engageable by the first belt drives adjacent belts on predetermined movement of the first belt.

### 3,758,972
### BILLBOARD

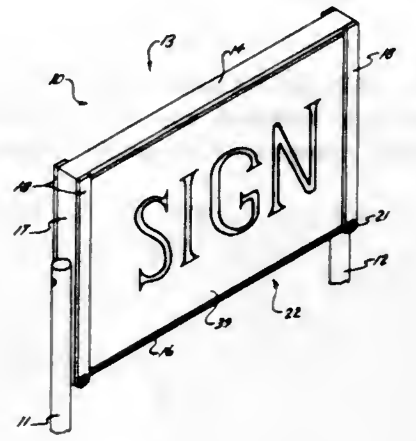
**George W. Egermayer, 1417 Pine Rd., Omaha, Nebr.**

**Filed Aug. 9, 1971, Ser. No. 169,943**

**Int. Cl. G09f** *01/12*

**U.S. Cl. 40—125 K** **2 Claims**

A billboard having a housing secured to a supporting structure, the housing removably receiving a sign panel comprising at least two nesting members which securely hold a sign therebetween. The sign is stretched across one of the members and its edges are tightly disposed between the members. Each member includes a plurality of struts each detachably connected in abutting relationship to its adjacent struts thus permitting the member to be readily disassembled for storage and transport. One of the members has a plurality of electrically connected outlets mounted thereon which are adapted to be connected to a power source thus providing lighting for the sign.



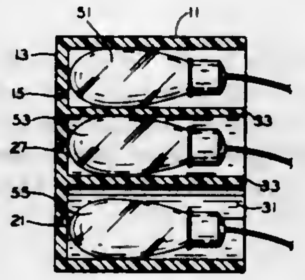
### 3,758,973
### ONE PIECE CHARACTER DISPLAY DEVICE

**Gary L. Miller, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.**

**Filed July 17, 1972, Ser. No. 272,246**

**Int. Cl. G09f** *9/34*

**U.S. Cl. 40—130 E** **12 Claims**



A one piece molded character display device, to be used in conjunction with a plurality of selectively energizable segment illuminators to thereby display a character in accordance with the selected illuminators when energized is disclosed, comprising a main housing of translucent material having a primary character display face and having a plurality of interior partitions integral with and substantially perpendicular to the face to form a plurality of cells within the housing, one for each segment illuminator. Each cell has associated therewith on the character display face a character forming or decimal point forming segment having a thickness substantially less than the surrounding portions of the face so as to transmit a substantially higher percentage of the light from within its associated cell to the exterior to thereby selectively illuminate the segments in accordance with whether the corresponding segment illuminator is energized or not.

### 3,758,974
### GARMENT HANGERS

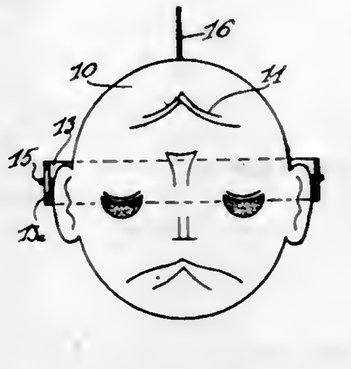
**Albert E. Malmer, P.O. Box 153, Blue Island, Ill.**

**Filed May 25, 1972, Ser. No. 256,790**

**Int. Cl. F16m** *13/00*

**U.S. Cl. 40—322** **5 Claims**

A garment hanger in the form of a plaque journaled at the sides in a wall bracket. The plaque has a hook at the top and a face on both sides with features expressing a frown. When the hook is drawn in forward direction to rotate the plaque and depend at the bottom to support a garment, the rear face of the plaque shows in front; and its inverted features express a smile. The plaque is journaled above center to make its lower portion heavier for rotating the plaque back to original position, when the hook is freed of the garment, to again present the frowning expression.



### ERRATUM

For Class 42—71 see:
Patent No. 3,758,978

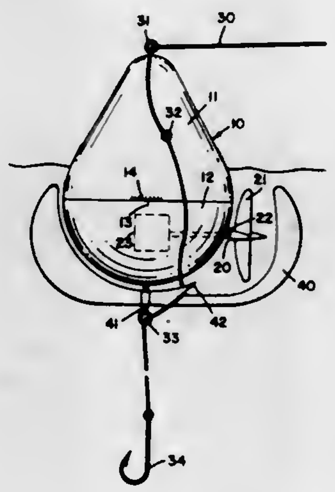
### 3,758,975
### SELF-PROPELLED BOBBER

**George Curtis, Rt. 3, Box 749, Salem, Oreg.**

**Filed May 24, 1972, Ser. No. 256,549**

**Int. Cl. A01k** *85/06, 93/00*

**U.S. Cl. 43—26.1** **2 Claims**



A self-propelled bobber for trolling a fishing line having a float, propulsion means for propelling the float, a steering rudder, and means for remotely setting the steering rudder at an angle to the direction of propulsion, thereby causing the bobber to troll in a circle.

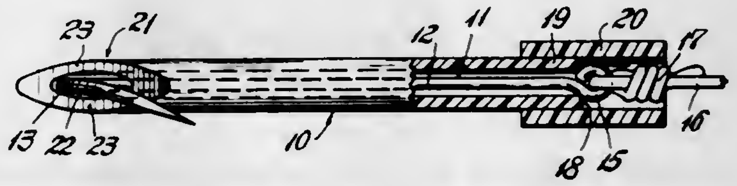
### 3,758,976
### FISH HOOK AND LURE ASSEMBLY

**Henry E. Szwolkon, 456 Hollister Ave., Bridgeport, Conn.**

**Filed Apr. 7, 1972, Ser. No. 241,948**

**Int. Cl. A01k** *85/00*

**U.S. Cl. 43—42.24** **1 Claim**



There is disclosed a fish hook and lure assembly having a plastic tube through which the shank of the hook extends with the barb end of the hook projecting through an oval opening at one end of the tube and the eye and leader knot lying in a cavity at the other end of the tube. The shank is movable in the tube to expose the eye for the reception of the end of the leader. The tube is resiliently yieldable to permit the leader and eye end of the hook to be inserted by placing the eye end in the oval opening and forcing the hook through the tube until the eye is located in said cavity. The cavity is formed by a sleeve attached at one end to said other end of the tube. The remainder of the sleeve has an internal dimeter greater than the diameter of the eye, while the tube has an internal diameter normally less than the eye diameter.

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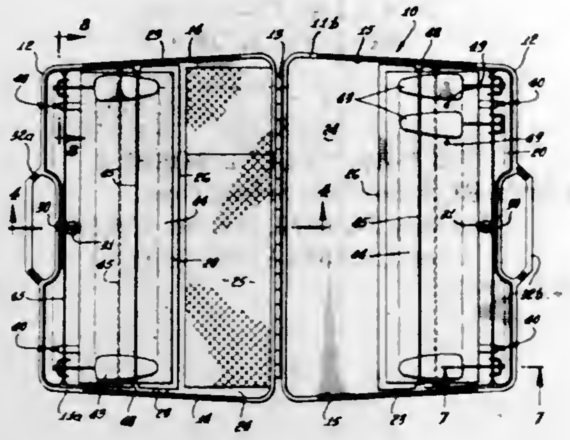
### 3,758,977
### FISHING TACKLE BOX

**Cecil V. Miller, 9243 La Rosa Dr., Temple City, Calif.**
**Filed Oct. 4, 1971, Ser. No. 186,088**
**Int. Cl. A01k** *97/06*
**U.S. Cl. 43—57.5 R** **9 Claims**



Removable panels are mounted in tackle boxes to be pivotable into and out of storage positions. The panels have recesses formed preferably on both sides in which the hook of a fish lure may be hooked with its pointed portion covered. Arrangements are included for holding lures in place on the panels including elastic retaining members, pockets formed in the panels, padding and stops mounted on the panels. An additional set of pivot mounts is formed in one embodiment of tackle box so that a removed panel may be mounted therein in a readily accessible position.

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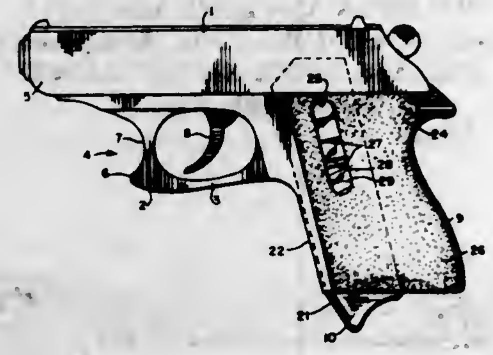
### 3,758,978
### GRIPS FOR HANDGUNS

**Paris Theodore, 24 E. 73rd St., New York, N.Y.**
**Filed Dec. 23, 1971, Ser. No. 211,530**
**Int. Cl. F41c** *23/00, 25/06*
**U.S. Cl. 42—71 P** **4 Claims**



Improved grips for handguns including transparent grip plates to permit viewing of the remaining ammunition in a magazine-fed automatic pistol, a magazine grip extension angled backward from the main grip line and of reduced thickness to provide an efficient grip for the little finger, and a forefinger pocket formed on the front of the trigger guard to provide a secure grip for the forefinger of the free (left) hand thus improving control of recoil when a two-handed hold is used by the shooter for fast firing.

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### 3,758,979
### TAPERED LEADER FOR FLY FISHING

**Leon L. Martuch, Midland, and Edward J. Russell, Gladwin, both of Mich., assignors to Scientific Anglers, Inc., Midland, Mich.**
**Filed Sept. 9, 1971, Ser. No. 179,035**
**Int. Cl. A01k** *91/00*
**U.S. Cl. 43—44.98** **20 Claims**

A novel tapered leader for fly fishing comprising a strength-supplying core, composed of a butt and a tippet end, and a weight-increasing coating which increases the weight of the leader but does not appreciably affect the stiffness of the leader. The leader may be knotless or sectional and joined together.

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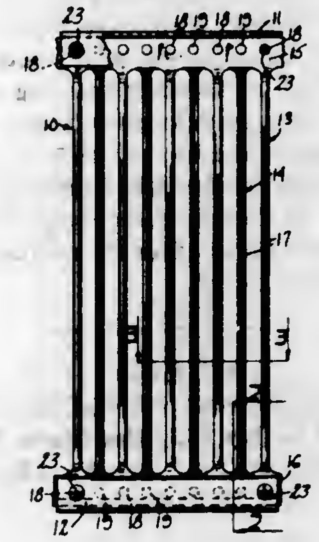
### 3,758,980
### ELECTRICAL GRID

**Walter Bialobrzeski, 92 Grove St., East Berlin, Conn.**
**Filed June 29, 1971, Ser. No. 157,845**
**Int. Cl. A01m** *1/22*
**U.S. Cl. 43—112** **3 Claims**



An electrical grid used as an insect electrocutor wherein two identical grid assemblies are mounted in essentially parallel, interdigitated relationship in two identical spaced apart insulating members.

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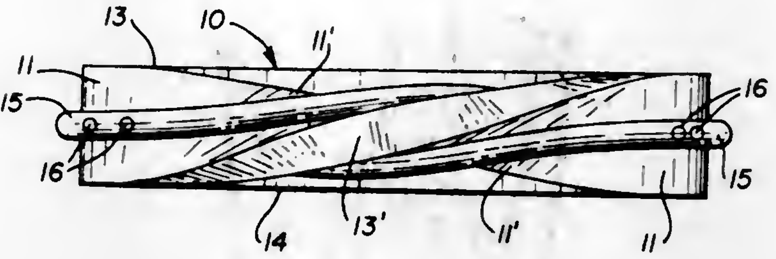
### 3,758,981
### MOBIUS BAND TYPE AMUSEMENT DEVICE

**Richard S. Hlasnicek, Jamestown Star Rt., Boulder Heights, Colo., and Paula Towne, N. 6107 Monroe, Spokane, Wash.**
**Filed Aug. 29, 1972, Ser. No. 284,665**
**Int. Cl. A63h** *33/00*
**U.S. Cl. 46—43** **5 Claims**



A Mobius band type amusement device comprising an initially flat rectangular elongated strip of flexible material having its ends joined after giving it a half twist (180°) or an odd number of half twists. A length of tubing, preferably transparent, is mounted on or integrally formed with both side surfaces of the Mobius strip, with its ends joined to form an endless tube which contains a ball or plurality of balls for travel in the tubing in a path which is continuous without going around an edge. Preferably the strip and tubing are made of flexible plastic material, not necessarily the same material, and the ball or balls are steel. Movement of the balls in the tubing may produce an audible sound which adds to the interest of the observer handling the device.

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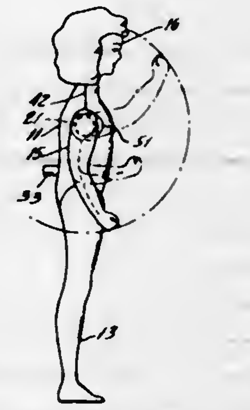
### 3,758,982
### ACTIVITY DOLL

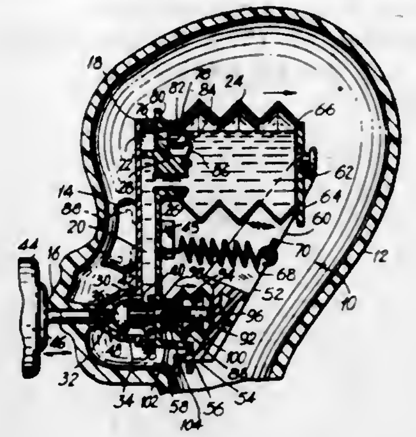
**Jerome H. Lemelson, 85 Rector St., Metuchen, N.J., and William Nutting, 125 Beach 124 St., Rockaway Park, N.Y.**
**Filed Oct. 13, 1972, Ser. No. 297,451**
**Int. Cl. A63h** *13/04*
**U.S. Cl. 46—119** **18 Claims**



A doll is provided having a hollow body with one or more pivotally mounted limbs arranged for movement from a normally retracted position at the side or in front of the body to an actuated position at a higher location or across the body by operating a manual actuator such as a depressible member which is accessible to the rear of the body. In another embodiment, a mechanism subassembly is constructed for selectively operating an arm and leg of a doll. The arm or leg of the doll is frictionally adjustable on its pivot mount permitting selective adjustment of the path through which movement is effected so as to permit the simulation of various human activities. In another embodiment, the limb is bendable on its mount so as to permit the simulation of still further human activities when the limb is actuated.

### 3,758,983
### DOLL WHICH TEARS ONLY IN HORIZONTAL POSITION

**George Cagen, Brooklyn, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.**
**Filed Dec. 22, 1971, Ser. No. 211,014**
**Int. Cl. A63h** *3/24*
**U.S. Cl. 46—135 A** **18 Claims**



A gravity influenced weeping device is provided for a doll having a head with eye sockets and an open mouth formed therein and is constructed to cause the doll to weep only when it is placed in a horizontal position. The device includes a liquid inlet conduit located adjacent the open mouth and a flexible reservoir in liquid communication with the inlet conduit; a selectively operable valve means is located in the inlet conduit to permit liquid to flow through the mouth to the reservoir when the valve is engaged with the nipple on the end of a liquid supply bottle. A second liquid conduit is formed between the reservoir and the eye sockets, and a gravity responsive valve member is located in the second conduit for opening that conduit for passage of liquid from the reservoir to the eye sockets when the doll is placed in a generally horizontal position while closing the second conduit when the doll is placed in a generally vertical position. Means are provided for compressing the flexible reservoir so that when the doll is in the horizontal position liquid is forced from the reservoir through the second conduit and valve means therein to the eye socket.

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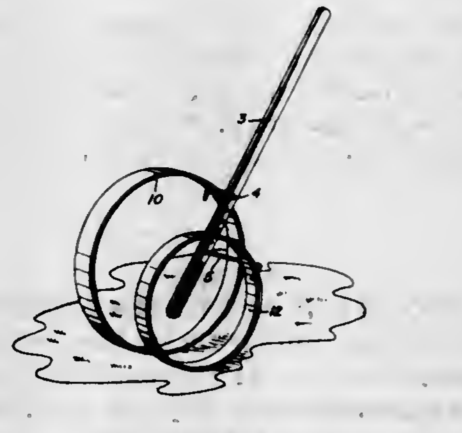
### 3,758,984
### AMUSEMENT AND EXERCISE DEVICE

**Brower C. Spransy, 4516 Rynex Dr., Alexandria, Va., and George Brower Spransy, 18 Dog Wood Acre, Chapel Hill, N.C.**
**Filed July 18, 1972, Ser. No. 272,881**
**Int. Cl. A63h** *33/02*
**U.S. Cl. 46—220** **5 Claims**



A handling stick is provided with a plurality of adjustably disposed pegs which are adapted to extend laterally therefrom and which carry retainer elements on their outer ends; and a plurality of ground-engaging hoops are adapted to be rotatably controlled by said pegs through manipulation of the handling stick; the distance between the retainer elements carried by the pegs being spaced approximately twice the width of a single ground-engaging hoop and the adjacent surface of the handling stick.

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**3,758,985**

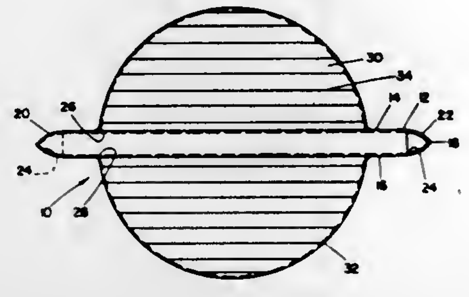
### DISCUS TOY

**Alan W. Heisler, San Rafael, Calif., assignor to Melvin R. Stidham, San Rafael, Calif.; a part interest**

**Filed July 17, 1972, Ser. No. 272,358**

**Int. Cl. A63h** *27/00*

**U.S. Cl. 46—74 D** **3 Claims**



The disclosure is of a discus toy comprising a hollow disc on the sides of which are carried inflatable members, preferably of hemispherical configuration. Openings in the sides bring the interior of the disc into communication with the interiors of the inflatable members. Air scoops are provided on the periphery of the disc so that when the disc is thrown and spun, the inflatable members will expand into a sphere.

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**3,758,986**

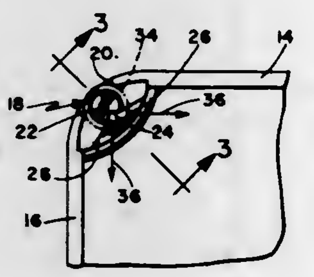
### PLANTER POT SPRINKLER UNIT

**James C. Roberts, 1860 Jeffrey, Escondido, Calif.**

**Filed Mar. 10, 1971, Ser. No. 122,671**

**Int. Cl. A01g** *27/00*

**U.S. Cl. 47—38** **9 Claims**



A sprinkler unit that is made integral with the side of a planter pot. The sprinkler unit has a plug that fits into a water supply hose and the plug has a restricted channel that directs the stream of water against a platform that is open on one side and has angled walls to direct the spray over the area of the pot.

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**3,758,987**

### AUTOMATIC PLANT WATERING DEVICE

**William B. Crane, Jr., 340 E. 57th St., New York, N.Y.**

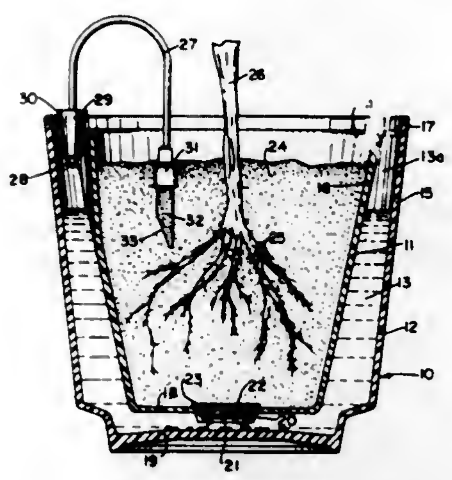
**Continuation of Ser. No. 161,270, July 9, 1971, abandoned.**

**This application July 5, 1972, Ser. No. 269,176**

**Int. Cl. A01g** *27/00*

**U.S. Cl. 47—38.1** **2 Claims**

An automatic plant watering device responsive to the plant's need for water is disclosed. The new watering device includes a porous sensing element that is inserted into the soil and responds to the moisture content of the soil to control the supply of water from a substantially airtight enclosure. The porous element consititutes an air valve. When the soil is relatively dry, air flows through the porous element, and water is released from the enclosure to the soil. When the soil is wet, air cannot pass through the sensing element and the flow of water is automatically shut off. The invention is also directed, in part, to a novel sensing and control device for incorporation in an automatic plant watering device or system. The device uses a basically new principle of operation and has no moving parts.



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**3,758,988**

### BLIND

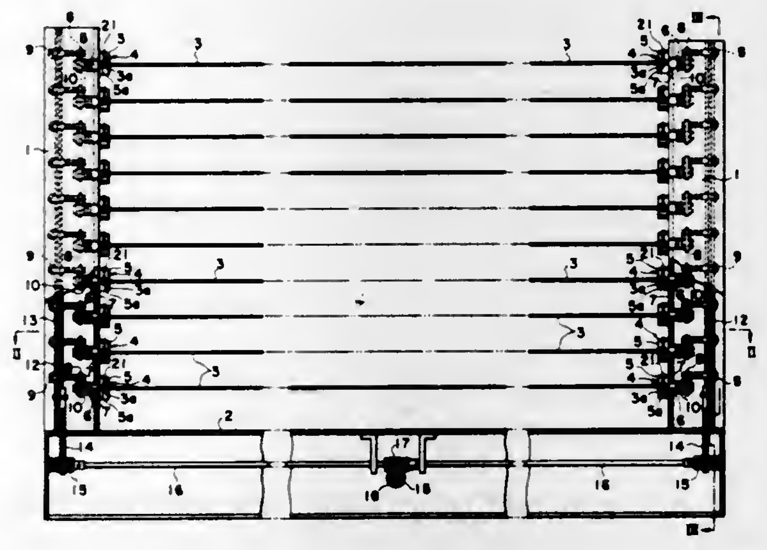
**Takeyoshi Tachikawa, Tokyo, Japan, assignor to Tachikawa Blind Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Feb. 3, 1972, Ser. No. 223,257**

**Claims priority, application Japan, June 2, 1971, 46/38420**

**Int. Cl. E05f** *17/00;* **E06b** *7/084*

**U.S. Cl. 49—85** **6 Claims**



A blind comprising a number of thin blades arranged in parallel to one another, wherein said blades are respectively mounted at opposite ends thereof in a manner of being constantly stretched and are adjustably rotated about their axes altogether for a same angle, whereby the blades made of thin flat plates can be held straight and uncollapsed condition with no support in the way of the span of the blades.

**3,758,989**

### LIFT DOOR

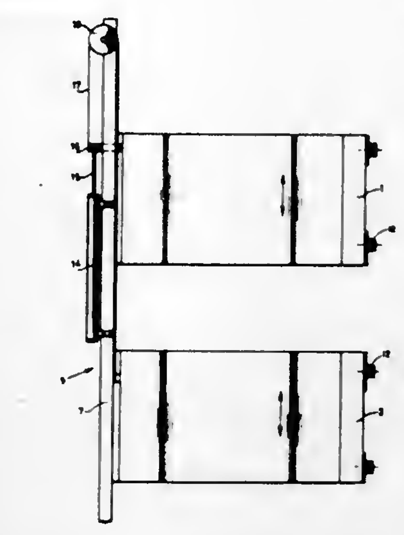
**Jozef Johannes Theresia Rompa, 14, Bredaseweg, Terheyden, Netherlands**

**Filed Dec. 27, 1971, Ser. No. 212,068**

**Claims priority, application Netherlands, Dec. 29, 1970, 7018980**

**Int. Cl. E05c** *7/06;* **E05f** *17/00*

**U.S. Cl. 49—120** **3 Claims**



Lift door comprising an upper half and a lower half coupled for simultaneous, opposed, vertical sliding movement on one side only, the other side of said door halves being restrained in a direction normal to the door only.

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**3,758,990**

### DOOR ARRANGEMENT FOR VEHICLES

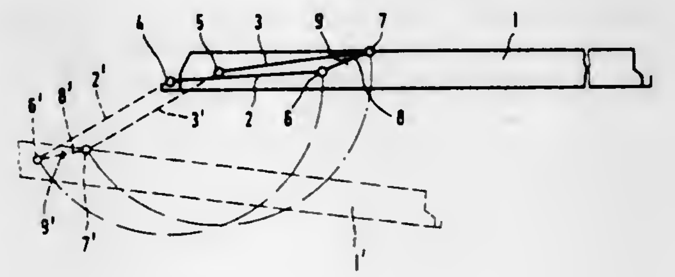
**Constantin Balanos, Wolfsburg, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany**

**Filed Sept. 17, 1971, Ser. No. 181,332**

**Claims priority, application Germany, Feb. 6, 1971, P 21 05 659.7**

**Int. Cl. E05d** *15/22*

**U.S. Cl. 49—153** **2 Claims**



A door arrangement for a door opening of a vehicle wherein hinge means and guide means interconnecting the door with the body of the vehicle are provided, the hinge and guide means including hinge struts and guide struts secured at one end to the vehicle body, and a rod member interconnecting the other ends of the hinge and guide struts. Releasable means are also provided for securing one of said hinge struts and said rod members to the door so that the door may be moved to an open position about the one end of the hinge and guide struts obliquely with respect to the plane of the door opening. Alternatively, the door may be accordingly moved to an open position about the one end of the hinge and guide struts perpendicularly with respect to the plane of the door opening.

**3,758,991**

### WINDOW WITH ROTATING MOVABLE FRAME

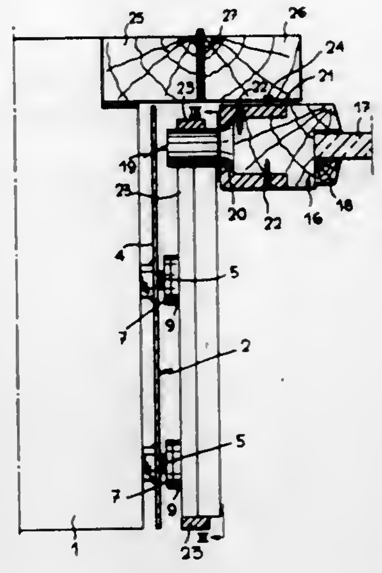
**Jacques Alexandre, 45, Dreve des Gendarmes, Bruxelles, Belgium**

**Filed Nov. 17, 1971, Ser. No. 199,567**

**Claims priority, application Belgium, Nov. 17, 1970, 96,438**

**Int. Cl. E05d** *15/58*

**U.S. Cl. 49—257** **5 Claims**



A pivoting window frame is provided having a mobile part provided with two coaxial pivots that slide transversally upon section steel pieces attached to a fixed part. The mobile part of the window can be moved between an extreme interior position, where it can be applied in a tight manner against the fixed part, and an opposite exterior position, in which it is sufficiently far away from the fixed part so as no longer to butt against the latter and so as to be able to pivot freely by at least one complete turn. The lateral posts of the fixed part present a retractable marginal element between a protruding position, in which it ensures the lateral tightness of the closed window, and a retracted position, in which it permits the free pivoting of the mobile part.

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**3,758,992**

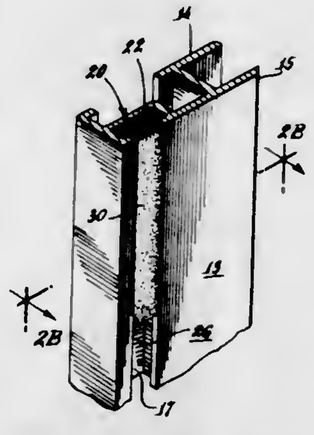
### SEALED CLOSURES WITH WEATHER-STRIPPING

**Harold G. Olson, Westport, Conn., assignor to H. G. Olson & Co., Inc., Amesbury, Mass.**

**Continuation-in-part of Ser. No. 44,977, June 10, 1970. This application Oct. 4, 1971, Ser. No. 186,237**

**Int. Cl. E06b** *7/23*

**U.S. Cl. 49—489** **6 Claims**



Weather-stripping especially for slidable closures such as windows, wherein the weather-stripping comprises a flexible plastic foam substrate provided on at least a part of its outer surface with a tough abrasion resistant skin. The weather-stripping is compressed into a confining channel in one closure member, and is provided with flocked fibers extending away therefrom to engage a second closure member to prevent the infiltration of air and water. The substrate may preferably comprise ionomer plastic foam. The outer skin may be of the same material as is the cellular substrate or it may be a different material, e.g. laminated to at least one side of the cellular substrate to provide a smooth yet abrasion resistant surface. Specific cross-sectional shapes of weather-stripping are disclosed, together with manufacturing methods wherein the weather-stripping is shaped while in sheet form and then is slit into strips for insertion into the channel member.

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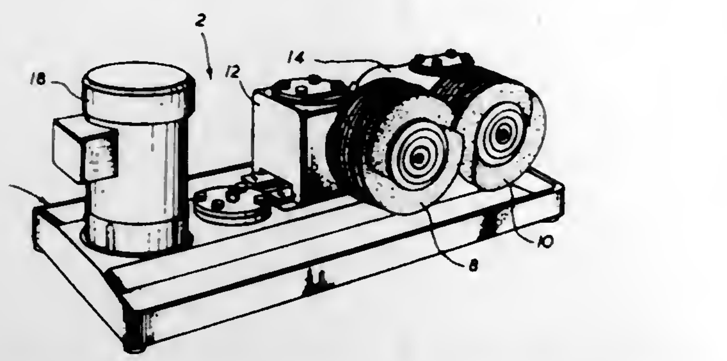
### 3,758,993
### GRINDING MACHINE

**Douglas H. Kirtz, Oberlin, Ohio, assignor to Nicholas Equipment Co., Sandusky, Ohio**
**Filed Aug. 11, 1971, Ser. No. 170,749**
**Int. Cl. B24b** *3/52*
**U.S. Cl. 51—80 BS** **11 Claims**



A grinding machine for honing the cutting edge of a cutting implement including a support member having a grinding assembly mounted on one side including a pair of interdigitated grinding wheels, and a drive mechanism supported on the opposite side being enclosed by the support member. Power means mounted in laterally spaced relation from the grinding assembly rotating the grinding wheels. At least one of the grinding wheels is mounted for adjustment with respect to the other grinding wheel. The drive mechanism includes an endless drive element for operating the grinding wheels in timed relation, and a speed-reducing mechanism connects the drive mechanism and grinding wheels for reducing the timing error resulting from adjustment thereof. Each grinding wheel includes a drive shaft journaled for rotation in the support member being arranged for driving connection with one side of the drive element for maximum power utilization and compactness.

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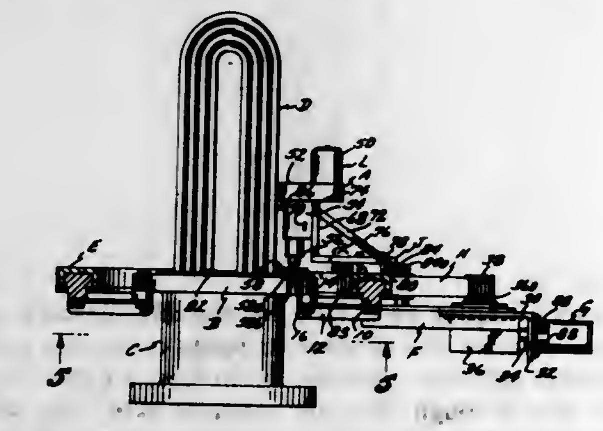
### 3,758,994
### PORTABLE POWER DRIVEN SURFACE FINISHING DEVICE

**Lester L. Dillinger, 218 Fourth St., Seal Beach, Calif.**
**Continuation-in-part of Ser. No. 80,690, Oct. 14, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,055**
**Int. Cl. B24b** *19/00*
**U.S. Cl. 51—241 S** **15 Claims**



A portable power driven surface finishing device that is removably mountable on a vessel that occupies a fixed position in such a manner that a gasket engaging portion of a flange on said vessel may be machined even though the vessel has tubes or other obstructions projecting outwardly from the flange. The machining of the gasket-engaging surface or other surface portions of the flange adjacent thereto may include polishing, grinding, milling, routing and the like, as well as the drilling of circumferentially spaced bores in the flange at any desired angle relative thereto.

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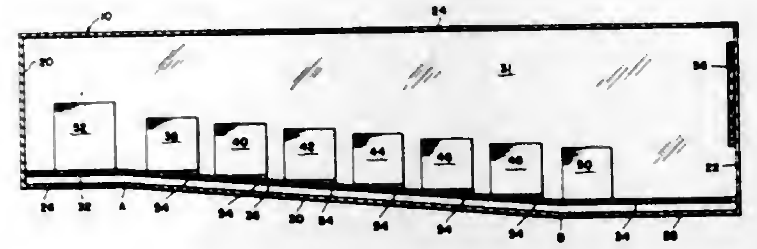
### 3,758,995
### MOBILE THEATER-TYPE CLASSROOM

**Ralph R. Connely, Jr., 710 W. 9th St., Claremore, Okla.**
**Filed Mar. 24, 1972, Ser. No. 237,771**
**Int. Cl. E04h** *3/08, 1/12*
**U.S. Cl. 52—8** **2 Claims**



A mobile theater-type classroom comprising an elongated and generally horizontally extending enclosure formed by a front vertical end wall, a rear vertical end wall, substantially vertical side walls spaced from each other and connecting at their side edges with the side edges of said end walls, a substantially horizontal roof extending across and connecting with the top edges of the side and end walls, and a floor member extending across and connecting with the bottom edges of the side and end walls, the floor member extending in a generally horizontal direction but having a major portion at least thereof inclined downwardly from a location near the front end of the enclosure towards and to a location near the rear end of said enclosure, the slope of said inclined portion being between 1½ inches and ¼ inch per foot.

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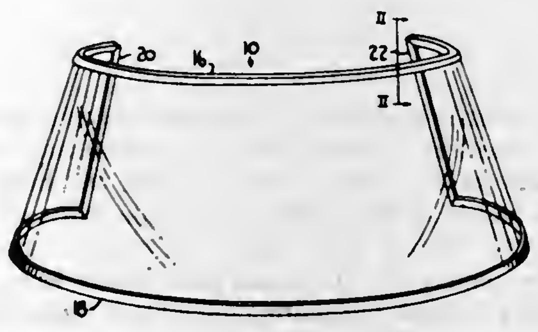
### 3,758,996
### MULTIPLE GLAZED UNIT

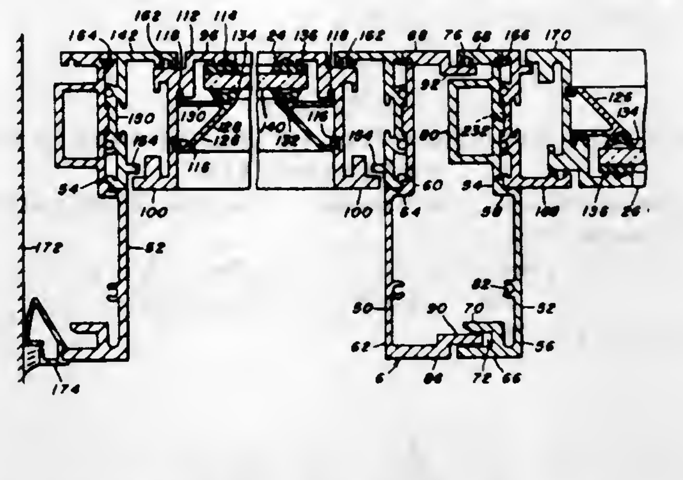
**George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**
**Continuation of Ser. No. 42,712, June 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 749,758, Aug. 2, 1968, abandoned. This application May 5, 1972, Ser. No. 250,717**
**Int. Cl. E06b** *7/12*
**U.S. Cl. 52—172** **22 Claims**



A hermetically sealed multiple glazed window unit containing an air space dehydrator element comprising a desiccant material dispersed in a matrix of moisture vapor transmittable material.

### 3,758,997
### BUILDING WALL ASSEMBLY

**Lawrence T. Vance, Pittsburgh, Pa., assignor to Engineered Products Inc. (EPI), Pittsburgh, Pa.**
**Division of Ser. No. 92,001, Nov. 23, 1970, Pat. No. 3,678,625. This application May 11, 1972, Ser. No. 252,503**
**Int. Cl. E06b** *1/16, 1/18*
**U.S. Cl. 52—97** **10 Claims**



A building wall assembly including hollow mullions which are adapted to receive recessed framing elements to provide maximum exposure of panel surfaces including decorative panels and both fixed and movable window panels or panes. The mullions are so configurated as to be assembled from two mullion elements which permit relative longitudinal sliding movement between the mullion parts responsive to thermally induced expansion and contraction. Each mullion forming element has a generally Z-shaped web portion and flanges extending in the same direction from opposed ends thereof. Framing elements, which are to a major extent recessed within the exterior of the mullion walls, are secured thereto by fastening means. A fastener clip or glazing bead is received within the framing elements. Compressible gasket means are secured within the framing elements and the fastener clip in order to compressibly engage opposed marginal portions of a fixed panel to sealingly secure the same in position.

A ventilating window structure incorporating a form of the mullion and frame elements described above. The window having a movable frame member provided with a web-like body portion, outwardly directed flanges defining an outwardly open channel for receipt of hinge means and corner joining means. A glazing bead received within recesses in the body portion of the movable frame element. A rearwardly disposed inwardly directed flange having a glazing strip receiving recess with a gasket or glazing strip secured therein. The glazing bead having a glazing strip receiving opening and a glazing strip disposed therein. The marginal portions of the window pane secured in compressible engagement between the glazing strips.

A rotating window structure having a movable frame member, a mullion as described above and an inwardly open channel shaped fixed frame member. The movable frame member having a tubular body with an inwardly projecting flange and glazing bead receiving openings securing a glazing bead in position. Glazing strips received within the inwardly projecting flange and the glazing bead to secure the window pane to the movable frame.

A compressible gasket or glazing strip element having an anchoring section, a compressible body portion and outer legs. The anchoring section having a resilient pilot section for assisting in introducing the gasket element into a recess. The body section is tubular and a rod-like connecting sector is interposed between the anchoring section and the tubular body section. Angularly rearwardly disposed resilient outer legs are connected with said tubular body section and project farther rearwardly than said tubular body section.

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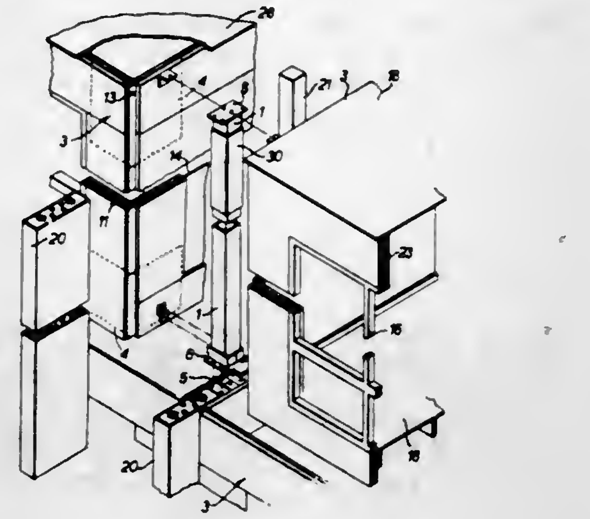
### 3,758,998
### MULTI STOREY BUILDING

**William John Bernard Ollis, Haddenham; Clive Beech Ansley Long, High Wycombe, and Ezra Levin, London, all of England, assignors to Timber Research and Development Association, Buckinghamshire, England**
**Filed June 17, 1970, Ser. No. 47,038**
**Claims priority, application Great Britain, June 20, 1969, 31253/69**
**Int. Cl. E04b** *1/348*
**U.S. Cl. 52—79** **7 Claims**



This invention is a method of building a housing block in which rigid boxes each in the form of a finished house with rooms and fittings, is lifted by a crane and the boxes are supported on vertical steel staunchions. The lower boxes do not carry the weight of higher boxes, and all the boxes give the vertical staunchion resistance against racking loads.

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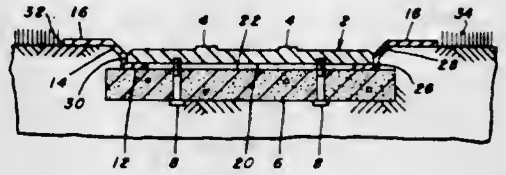
### 3,758,999
### GRAVE MARKER PROTECTIVE STRUCTURE

**Joseph J. Matvey, 208 Orin St., Pittsburgh, Pa.**
**Filed Aug. 4, 1972, Ser. No. 278,015**
**Int. Cl. E04h** *13/00*
**U.S. Cl. 52—103** **14 Claims**



A grave marker assembly having a marker protective structure including a generally horizontal base wall, a substantially continuous generally upwardly directed transition portion and an outwardly directed stabilizing ground engaging portion. The base wall and the transition portion cooperate to define a unitary marker receiving receptacle. At least a major portion of the receptacle disposed within an opening in the earth. The grave marker disposed within the receptacle and having at least a portion of the lower surface thereof in overlying contact with the upper surface of the protective structure base wall. A substantially rigid marker supporting base in underlying supporting position with respect to the protective structure base wall. Fastener means securing the grave marker to the underlying rigid marker supporting base with the base wall secured therebetween. The stabilizing ground engaging portion in overlying contact with the earth surrounding the receptacle.

The protective structure transition portion may preferably be in peripheral substantially continuous contact with the marginal edge of the grave marker. The ground engaging portion of the protective structure preferably has a transverse width of about 1.5 to 8 times the height of the transition portion. Drainage passageways may be provided through the transition portion to permit water within the receptacle to flow outwardly and be discharged to a position underlying the ground engaging flange. The transition portion may have a number of inwardly projecting spacer elements which cooperate with the marginal edge of the grave marker and other portions of the transition wall to define a number of vertical passageways. A water permeable material may be provided exteriorly of the receptacle to facilitate drainage of water therefrom.

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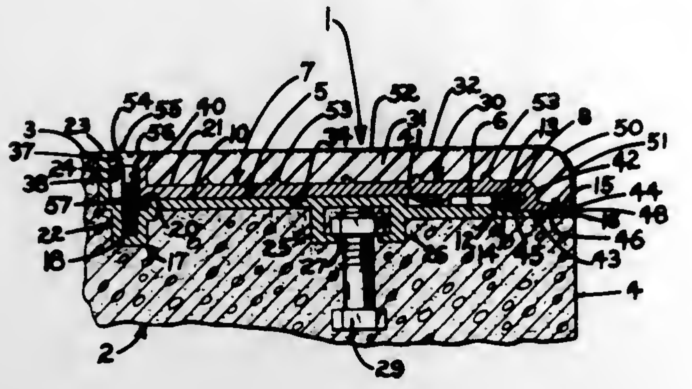
3,759,000
### STAIR NOSING STRUCTURE
**Claude P. Balzer; Almer A. Reiff, and Edward M. Corman, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.**
**Filed July 29, 1971, Ser. No. 167,257**
**Int. Cl. E04f** *11/16*
**U.S. Cl. 52—179** **12 Claims**



A stair nosing structure for a stair step having a tread surface and a riser or forward facing surface includes an elongated base member and a removable cover strip member interlocked therewith in a co-acting rigid non-slip tread stair nosing forming a portion of the step tread surface. The base member is anchored to the step and the cover strip positioned with a forward edge portion thereof in registry with the riser or forward facing surface of the stair step.

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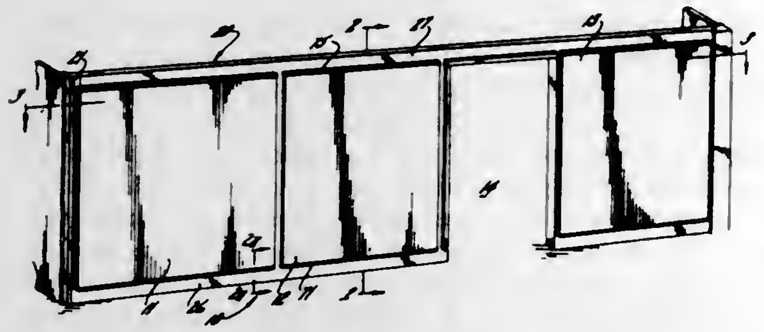
3,759,001
### DEMOUNTABLE WALL CONSTRUCTION
**Thomas E. Judkins, and David Jack Roles, both of Baltimore, Md., assignors to Eastern Products Corporation, Columbia, Md.**
**Filed Sept. 23, 1971, Ser. No. 183,149**
**Int. Cl. E04b** *2/74*
**U.S. Cl. 52—241** **7 Claims**



A modular wall construction for offices and the like employing widely spaced vertical studs with a wall panel extending between the studs and slightly overlapping them, the panel being secured to the studs by panel holders which extend along the respective lateral edges of the panel in the form of strips of zig-zag cross section, each panel holder having a forwardly projecting leg for enclosing the raw edge of the panel, a rearwardly projecting leg for positioning against the inside surface of the adjacent stud and a flat central portion which is sandwiched between the panel and the stud with means being provided on the studs for detented engagement of the rearwardly projecting leg to maintain the panel seated with respect to the front surface of the stud.

The studs are interconnected by upper and lower horizontal members of hollow rectangular cross section. The lower edge of the panel is supported upon a lower panel holder of channel shape and the upper edge of the panel is enclosed by a cap strip. Detented retention of the panel holders is accomplished by clips formed of spring metal which are secured to the inside surfaces of the studs, a single clip serving to retain panels on both sides of the studs. The raw lateral edges of the panel are held captive in the holders by sharp prongs struck out of the forwardly projecting leg and bent at right angles to penetrate the adjacent edge of the panel.

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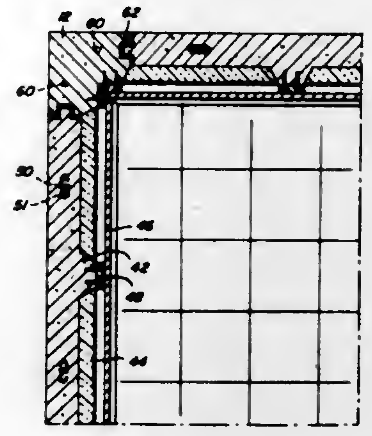
3,759,002
### BUILDING CONSTRUCTION OF SPACED PANELS WITH WEATHER SEALS
**Emanuel Cornella, and Thomas E. Cornella, both of 410 Williston St., Wheaton, Ill.**
**Filed June 16, 1971, Ser. No. 153,771**
**Int. Cl. E04b** *1/68*; **E04g** *15/06*
**U.S. Cl. 52—270** **1 Claim**



A compact, low cost building construction comprised of a poured concrete floor slab and foundation, a plurality of concrete corner columns extending upwardly from the floor with concrete walls extending between each corner column, and a row of insulated windows extending around the house between the top surfaces of the walls and a relatively flat roof structure to form a durable, long lasting housing structure. Each of the concrete corner columns has a pair of vertical channels or grooves, each of which receives a corresponding tongue portion of the abutting concrete side wall structure. Each side wall is poured after the corner columns have been completed with a steel spacer being inserted within each channel with a layer of tar paper, or similar material, wrapped around it; the spacer being removed after the concrete has set, thus providing an expansion type joint. The wall structures are provided with elongated insulation cells on the inside surface which are partially filled with fiber glass insulation and covered with a rigid panel or plasterboard to provide an attractive, yet durable and relatively inexpensive housing construction.

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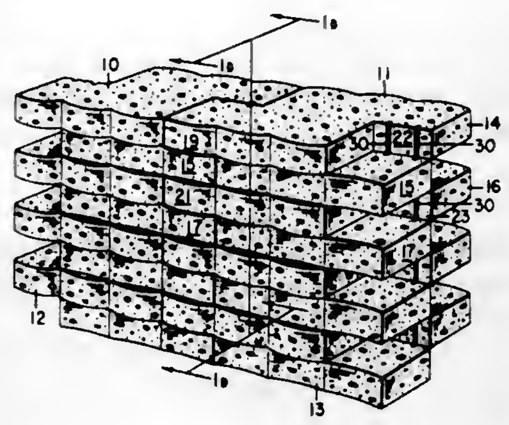
3,759,003
### PINNED JOINT
**John C. Wilson, 130 Homewood Ln., Rochester, N.Y.**
**Continuation-in-part of Ser. No. 67,004, Aug. 26, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,340**
**Int. Cl. E04c** *1/10*
**U.S. Cl. 52—285** **65 Claims**

A pinned joint connects joinable edges of two bodies having complementary projections arranged so that the bodies can be moved together with the projections alternately overlapping in a common parting region between confronting surfaces of the projections. The confronting surfaces of the projections have recesses that are aligned when the bodies are fitted together to form a slot extending along the common parting region transversely to the direction of fitting the bodies together, and a pin is placed into the slot to lock the bodies together. Such bodies can be formed in a simple, two-part mold, and easily assembled for construction and other purposes.



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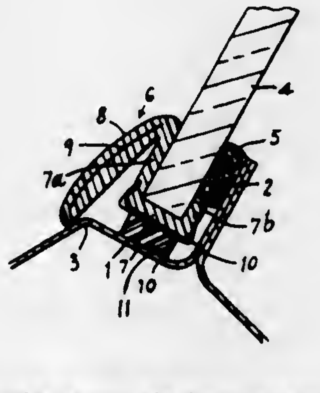
3,759,004
### GLAZING WINDOW OR WINDSCREEN OPENINGS, PARTICULARLY IN VEHICLE BODIES
**Cecil Kent, Woking, England, assignor to Creators Limited, Surrey, England**
**Continuation-in-part of Ser. No. 865,428, Oct. 10, 1969, Pat. No. 3,705,470, which is a continuation-in-part of Ser. No. 827,633, May 26, 1969, abandoned. This application Apr. 20, 1971, Ser. No. 135,574**
**Claims priority, application Great Britain, Apr. 23, 1970, 19644/70**
**Int. Cl. B60j** *1/00*
**U.S. Cl. 52—400** **13 Claims**



The invention relates to glazing window or windscreen openings, particularly in vehicle bodies by securing the glass, with a trim strip surrounding its edge, in the rebate of the opening by means of an adhesive pressed between the glass and/or the trim strip and the rebate. The trim strip is made of flexible plastics material with a channel portion which embraces the edge of the glass, and a front decorative strip portion which extends from and can hinge relative to the edge of the front wall of the channel portion which lies on the inside of the trim strip when it is fitted around the glass. The outer edge of the front portion bears against the rebate. By this construction the inside edge of the trim strip is kept against the glass, and any tendency to buckling is avoided.

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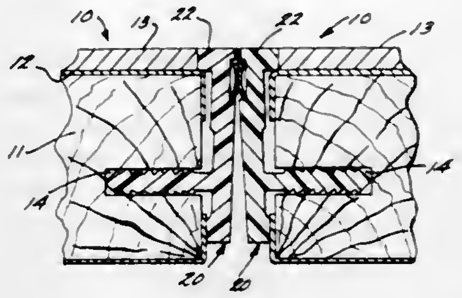
3,759,005
### PANEL EDGE AND SEAL STRUCTURE
**Irwin M. Smith, Grand Rapids, Mich., assignor to Walter Kidde & Company, Inc., Grand Rapids, Mich.**
**Filed Feb. 16, 1971, Ser. No. 115,632**
**Int. Cl. E04h** *1/62*
**U.S. Cl. 52—403** **5 Claims**

A panel edging and seal structure fabricated from a polymeric material including a trim portion of a relatively rigid polymer and a sealing portion of a relatively flexible polymer. The sealing and trim portions, in accordance with the preferred embodiment of this invention, are extruded simultaneously from suitable polymeric material.



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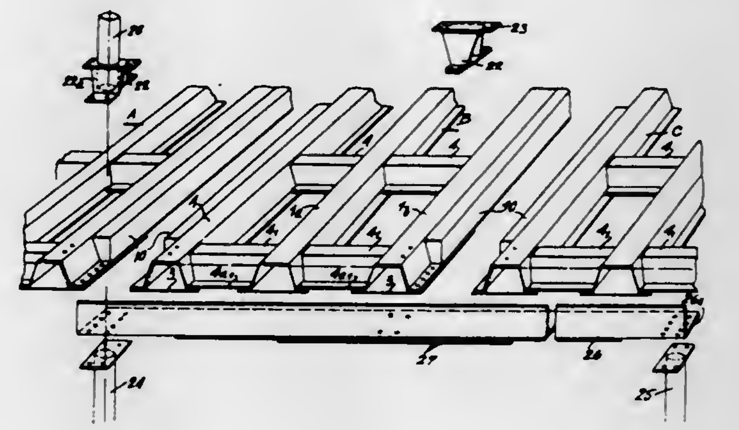
3,759,006
### METALLIC FRAMEWORK AND FLOOR RESULTING THEREFROM
**Maurice Paul Jean Joseph Tamboise, Crespieres, Yvelines, France, assignor to Entrepose, Paris, France**
**Filed Aug. 4, 1970, Ser. No. 60,849**
**Claims priority, application France, Aug. 12, 1969, 6927771**
**Int. Cl. E04b** *2/20*
**U.S. Cl. 52—406** **17 Claims**



The metallic frame-work and floor resulting therefrom is composed of lengthwise extending frame members closed on at least part of their length by an added metallic strip, crosspieces being secured to lateral sides of said frame members and Z-shaped terminal flanges connected to outer sides thereof.

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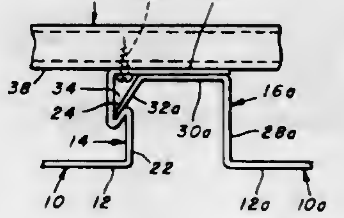
3,759,007
### PANEL JOINT ASSEMBLY WITH DRAINAGE CAVITY
**Robert E. Thiele, Murrysville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Sept. 14, 1971, Ser. No. 180,335**
**Int. Cl. E04c** *2/52*
**U.S. Cl. 52—533** **1 Claim**



A joint assembly between a first panel and an adjacent second panel is disclosed.

The first panel has a first exposed panel face and a female end on one end of the first panel. The female end of the first panel has a first end leg projecting inwardly from the end adjacent the female end of the first exposed panel face adjacent the female end of the first panel. The joint assembly has cooperating means on the male end of the first panel and on the female end of the second panel for preventing forward movement of the female end of the second panel toward the first exposed panel face of the first panel. This cooperating means is also operable to prevent sidewise movement of the female end of the second panel away from the first end leg of the male end of the first panel, to allow for expansion and contraction of the female end of the second panel with respect to the male end of the first panel, and to positively position the female end of the second panel with respect to the male end of the first panel.

The joint assembly has in addition a frame, fastening means for connecting the male end of the first panel to the frame, and either the male end of the second panel or the female end of the first panel covers the fastening means.

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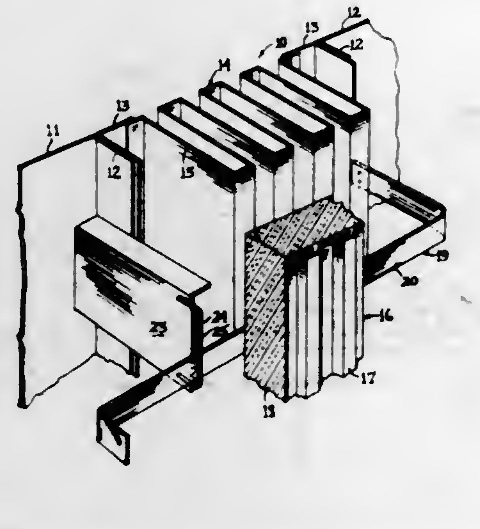
### 3,759,008
### INSULATED EXPANSION JOINT

**Charles Husz, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.**

**Filed June 28, 1971, Ser. No. 157,151**
**Int. Cl. F16l** ***27/12***

**U.S. Cl. 52—573** **2 Claims**



An expansion joint and support for a prefabricated metallically faced insulating panel used in the construction of duct work, with the joint comprising an expandable accordian-like or pleated metal plate providing a spaced support which extends beyond either side edge of the expandable plate, with the support being connected across the face of the plate for free vertical and horizontal movement relative thereto.

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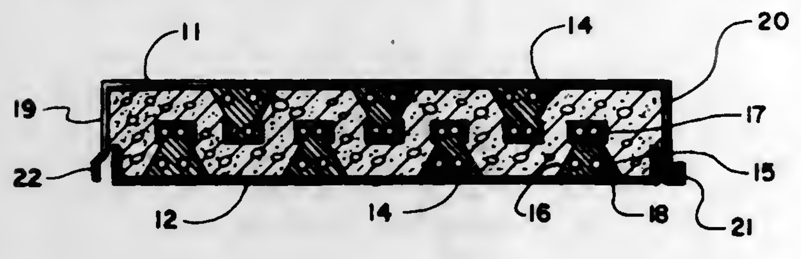
### 3,759,009
### COMPOSITE LOAD BEARING PANELS

**Frank F. Ransome, Livingston, N.J., assignor to Gordon T. Kinder, Martins Ferry, Ohio**

**Filed Jan. 28, 1971, Ser. No. 110,409**
**Int. Cl. E04b** ***5/04;*** **E04c** ***2/26***

**U.S. Cl. 52—598** **7 Claims**



Composite, load bearing panels comprising two thin metal sheets, preferably mild steel, having a low density cementatious core material therebetween. Each metal sheet has a plurality of integral keys pressed angularly outward the refrom to extend into the cementatious core material. The keys of one sheet, which extend to a depth greater than 50 per cent of the thickness of the core material, are alternately spaced in relation to the keys of the other sheet and act both as a mechanical bond for the sheets and the core material and as reinforcement to the panel giving it substantial strength in both tension and compression.

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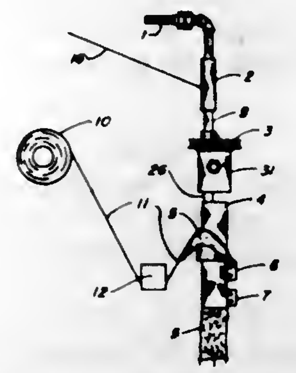
### 3,759,010
### SCREW JET PACK FOR TEXTILE FIBERS

**Beryl Aaron Boggs, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed Jan. 18, 1971, Ser. No. 107,386**
**Int. Cl. B65b** ***1/24***

**U.S. Cl. 53—24** **12 Claims**



This high speed yarn take-up system consists of a pneumatic injector nozzle rotatably mounted off-center of a single flighted rotating screw. Yarn is injected into the area exposed at the trailing edge of the screw and compressed and moved forward in a compression chamber by the feeding of the screw. A plastic tube is continuously formed around the compression chamber to receive the yarn mass as it discharges, thus forming a tube of indefinite unlimited length and from ¼ to 4 inches or larger in diameter. The tube may contain a single end or multiple ends of yarn. The yarn can be removed from the tube at high speeds by simply slitting the plastic as the yarn is pulled from the package.

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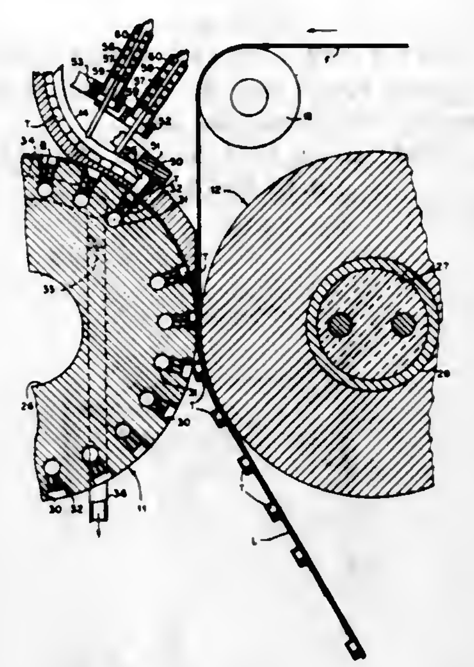
### 3,759,011
### PACKAGING MACHINE FOR PACKAGING UNIFORM ARTICLES SUCH AS PHARMACEUTICAL TABLETS

**Vambola Akke, Hackensack, N.J., assignor to Reed-Lane, Inc., Hackensack, N.J.**

**Filed May 4, 1972, Ser. No. 250,383**
**Int. Cl. B65b** ***47/10***

**U.S. Cl. 53—184** **1 Claim**

A machine for packaging articles of uniform size, such as pharmaceutical tablets, in a blister type package utilizing laminating rolls to form the package from a pair of webs of indefinite length and an article feeding device for positioning the articles between the two webs as they lead to the nip between the laminating rolls. The article feeding device is in the form of a generally vertical chute which at its lower end curves about the surface of one of the laminating rolls overlying the web passing over such roll. The roll itself contains a die cavity which passes beneath the curved lower portion of the chute, and the web prior to passing beneath the chute is deformed into the die cavity such that a pocket, i.e., a blister, is formed in the web as it passes beneath the chute. The lower end of the chute is terminated in a lateral passageway approximately perpendicular to the passageway through the chute, and a plunger is provided to transfer an article from the bottom of the chute through such lateral passageway into the pocket. The web with the pocket containing the tablet or other article is then immediately positioned against the other web at the nip of the laminating rolls and the two webs are caused to adhere by pressure, and heat or the application of adhesive to one of the webs.



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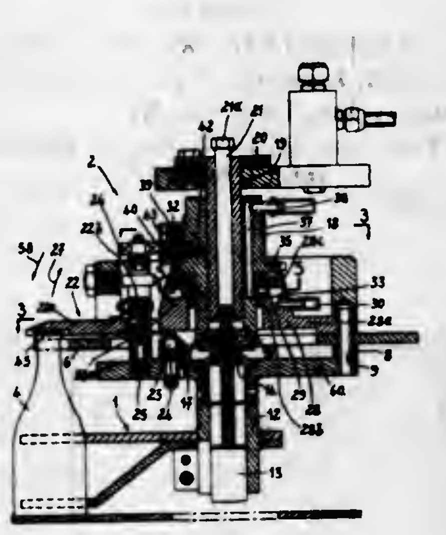
### 3,759,012
### DEVICE FOR FITTING CAPS TO CONTAINERS

**Roger Francois Mathieu Pagay, Lyon, France, assignor to Societe Nouvelle Baele Gangloff, Villeurbanne, France**

**Filed Oct. 19, 1971, Ser. No. 190,609**
**Claims priority, application France, Oct. 20, 1970, 7038640**
**Int. Cl. B65b** ***7/28***

**U.S. Cl. 53—306** **5 Claims**



This device for fitting closing caps to containers filled with liquid, semi-liquid or pulverulent products, as they emerge from a filling machine, is easily adapted to most existing filling machines. It comprises essentially a rotary spider having a vertical axis and adapted to receive the containers as they are delivered from the filling machine. Said spider carries a head adapted to revolve in synchronism therewith and to dispense the caps to be fitted to said containers. Said head comprises, in combination with each notch of said spider, a cranked lever fulcrumed about a horizontal axis, each lever having one end directed outwards and centered to the notch associated therewith, and provided on its lower face with cap gripping means enabling it to grip and retain the caps separately, means being provided for displacing angularly towards the neck of the container engaged in the relevant notch the aforesaid free end of said lever, after said lever has picked up a cap during its travel past the downstream end of a cap dispensing channel.

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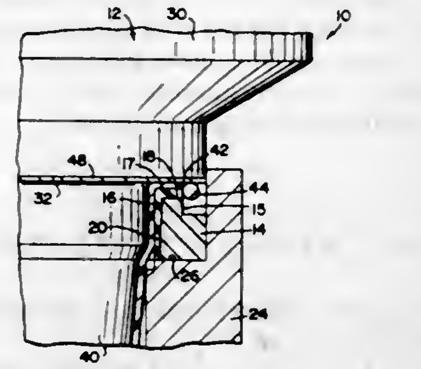
### 3,759,013
### CLOSURE APPARATUS

**Guenter Zimmermann, 600 Casler Ave., Clearwater, Fla.**

**Filed Dec. 13, 1971, Ser. No. 207,126**
**Int. Cl. B65b** ***7/28***

**U.S. Cl. 53—329** **5 Claims**



A method and apparatus for sealing aluminum containers comprising a plurality of annular cup retaining inserts mounted in rows and columns on a conveyor-like platform, each insert having a resilient sealing ring with substantially L-shaped cross-section fixedly attached to its upper surface and extending vertically downward along the internal vertical wall of the insert. A row of heat sealing heads, each having a horizontally disposed heat sealing face located at its lower extreme, is located above the conveyor-like platform, and each heat sealing head is concentrically aligned with and immediately above a correspondingly positioned container and insert at the sealing station. The sealing process comprises compressing a lid placed over the opening of the container and the upper surface of the rim of the container between the heat sealing face and the sealing ring whereby the lid and container are uniformaly sealed together to effectively isolate the contents of the container from the surrounding environment.

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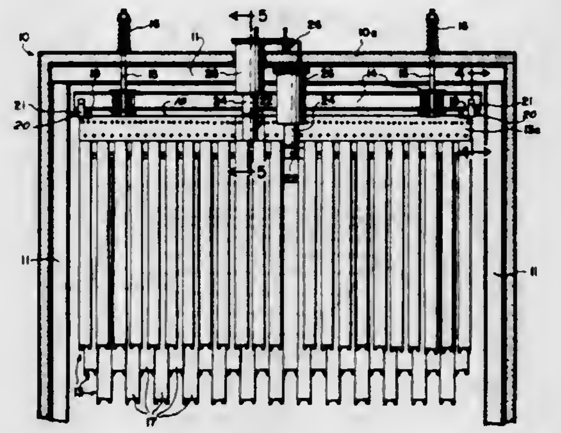
### 3,759,014
### METHOD AND APPARATUS FOR DISLODGING ACCUMULATED DUST FROM DUST COLLECTING ELEMENTS

**Harold B. Van Dyken, II, Keany, and Denard A. Brandt, Tucson Highway, both of Ariz., assignors to Kennecott Copper Corporation, New York, N.Y.**

**Filed May 12, 1971, Ser. No. 142,476**
**Int. Cl. B03c** ***3/76***

**U.S. Cl. 55—96** **13 Claims**



An electrostatic precipitator for industrial dusts has dust-collecting elements mounted for transverse vibration and vibrating means that insures maximum effectiveness in dislodging dust accumulations, without the destructive longitudinal rapping techniques customarily employed by the art. The dust-collecting elements are hinge mounted, either individually on respective axes or collectively on an axis in common, with the hinge axis or axes extending in general parallelism with the transverse vibratory motion, i.e. with the respective waves that travel along the lengths of the elements, so no force moments are transmitted to the supporting structure. Vibratory motion is applied by any suitable means, such as vibrators of various conventional types, through a moment arm located at or adjacent to the hinge mounting. The vibration is preferably controlled so as to match the natural frequency of the dust-collecting elements, and such elements are preferably selected on the basis of possessing easily induced natural frequencies. The entire dust-collecting structure is advantageously resiliently mounted with respect to the enclosing housing and its supporting framework.

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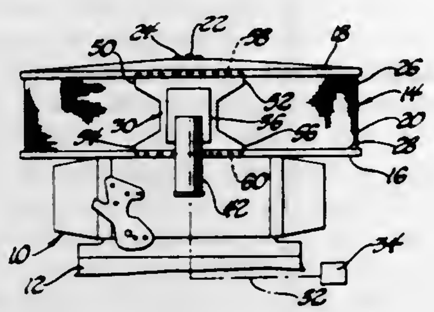
### 3,759,015
### POSITIVE CRANKCASE VENTILATION AIR FILTER BODY

**Richard M. Saxby, Detroit, Mich., assignor to Holley Carburetor Division, Warren, Mich.**

**Filed June 1, 1971, Ser. No. 148,344**

**Int. Cl. F02m** *35/00*

**U.S. Cl. 55—350** **4 Claims**



An air filter body has upper and lower flange portions which are respectively abutingly engaged with a downward turned lip or flange of an upper retainer plate of an associated engine air intake air cleaner assembly and with an upwardly turned lip or flange of a lower support plate of the same air cleaner assembly; the body includes a recess for carrying therein suitable filter means which is juxtaposed to the air cleaner assembly.

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### 3,759,016
### CENTRIFUGAL SEPARATORS

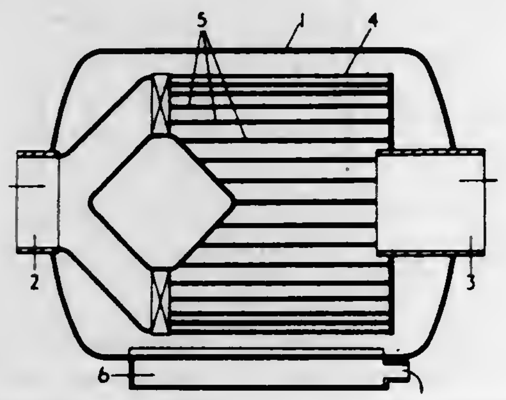
**Allen Smith, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Durham, England**

**Continuation-in-part of Ser. No. 850,172, Aug. 14, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,811**

**Claims priority, application Great Britain, Aug. 21, 1968, 40,050/68**

**Int. Cl. B01d** *45/12*

**U.S. Cl. 55—452** **6 Claims**



A centrifugal separator for separating liquid particles from a gas comprising a tubular member, means for imparting swirl to the gas as it enters the member, the member having elongated slots in its wall which slots extend in a generally axial direction of the member such that they lie transversely across the path of the gas in the region of the member, the edges of the walls defining the slots being aligned so as to provide a substantially smooth surface to the passage of the gas within the member.

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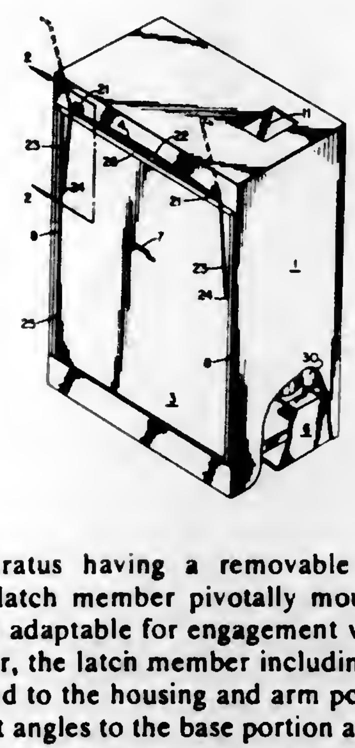
### 3,759,017
### LATCH FOR A FILTER APPARATUS

**George W. Young, Fern Creek, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**

**Filed Oct. 22, 1971, Ser. No. 191,942**

**Int. Cl. B01d** *27/08*

**U.S. Cl. 55—481** **7 Claims**



A filter apparatus having a removable door or panel member and a latch member pivotally mounted to a filter housing which is adaptable for engagement with the removable door member, the latch member including a base portion pivotally attached to the housing and arm portions extending generally at right angles to the base portion and being adaptable for engaging relationship with the door.

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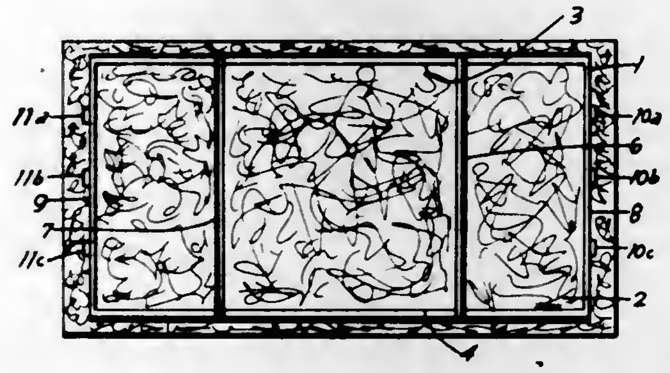
### 3,759,018
### U-SHAPED FLUID TREATING FILTER

**Howard O. Scholl, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**

**Filed Apr. 24, 1972, Ser. No. 246,558**

**Int. Cl. B01d** *27/00*

**U.S. Cl. 55—487** **6 Claims**



An improved air filter of U-shaped configuration including a frame having two longitudinally extending border members and a plurality of transversely extending support members; two of the transversely extending support members being exterior support members disposed at the outer extremity of the filter, one of these exterior support members being at generally the upper extremity of one side of the U-shaped filter and the other exterior support member being at the extremity of the opposite side of the U-shaped filter; two of said transversely extending support members being interior support members disposed at the juncture of each side with the base of the U-shaped frame; the border members being adapted to pivot about the axis of the interior transversely extending support members. The filter further includes mounting means on the exterior transversely extending support members for removably mounting of the filter in an air processing unit.

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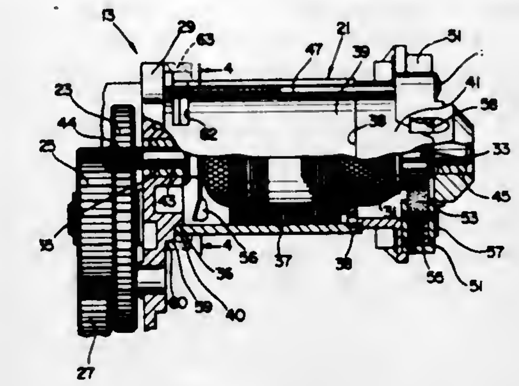
### 3,759,019
### CANTILEVER MOTOR MOUNTING AND BRUSH HOLD-DOWN

**Kenneth R. Wells, Joppa, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.**

**Continuation of Ser. No. 72,371, Sept. 15, 1970, abandoned. This application Sept. 6, 1972, Ser. No. 286,546**

**Int. Cl. A01d** *53/02*

**U.S. Cl. 56—10.5** **2 Claims**



An electric lawnmower including a frame supported for movement over the ground by wheels. A reel is supported upon the frame and cooperates with a bedknife to cut grass as the mower travels along the ground. An electric motor drives the reel and includes fastening means interconnecting its parts and attaching it upon the frame. In addition, the frame is constructed to accommodate different sizes (and capacities) of motors.

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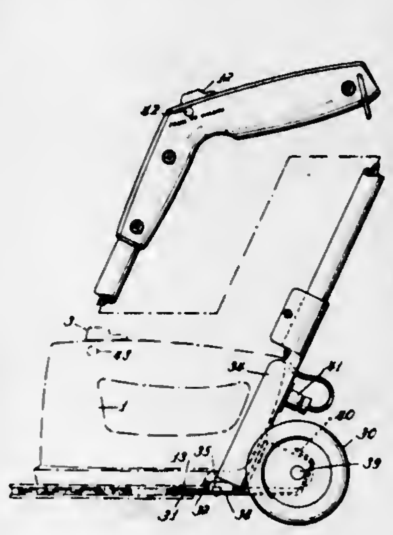
### 3,759,020
### GRASS CLIPPER

**Frank A. Simmons, Grayslake, Ill., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.**

**Filed July 31, 1972, Ser. No. 276,512**

**Int. Cl. A01d** *35/26*

**U.S. Cl. 56—17.5** **14 Claims**



A motor driven hand operated grass clipper for lawn trimming has a knife blade arranged for rotation between a pair of fixed grass combs. Grass accumulation at the hub of the rotor is avoided by the provision of a solid circular central area which may be a separate disk and which limits the blade cutting edges to the end portions only and throws out clippings that might otherwise wind around the rotating mechanism. An extension handle and a skid attachment are provided.

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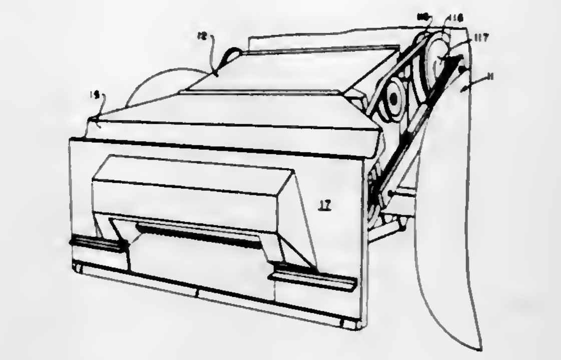
### 3,759,021
### GEAR DRIVE AND SUPPORT FOR CORN HARVESTING UNIT

**Lester Dale Schreiner, 301 N. Scott St., Ankeny, Iowa, and John Joseph Shindelar, 295 N. W. 66th Ave., Des Moines, Iowa**

**Division of Ser. No. 5,644, Jan. 21, 1970, Pat. No. 3,589,110, which is a continuation of Ser. No. 662,928, Aug. 24, 1967, abandoned. This application Oct. 22, 1970, Ser. No. 83,250**

**Int. Cl. A01d** *45/02*

**U.S. Cl. 56—106** **7 Claims**



A support and drive for a corn harvesting unit that includes a gear housing adapted for transverse adjustment along a transverse beam and having a transverse shaft receiving opening that permits adjustment of the gear housing along a transverse drive shaft, a corn harvesting unit framework supported at its rear end on the gear housing whereby the framework in the corn harvesting mechanism carried on the framework is supported in cantilever fashion on the gear housing, and gear mechanism within the gear housing having external terminal portions connected to the harvesting mechanism whereby the entire harvesting mechanism is driven by gears within the gear housing and the entire harvesting mechanism and its framework is supported on the gear housing.

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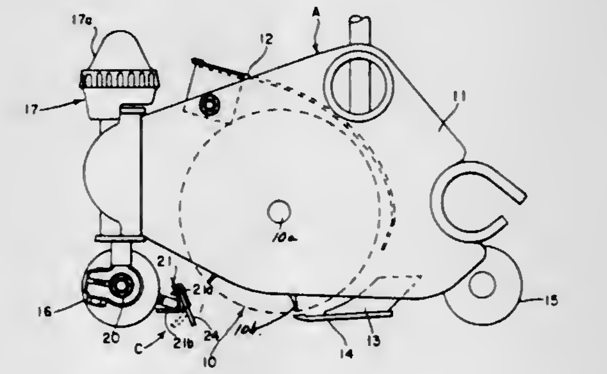
### 3,759,022
### MOWER COMB

**Merton F. Snyder; William C. Lindquist, and Dale A. Klemenhagen, all of Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.**

**Filed June 1, 1971, Ser. No. 148,574**

**Int. Cl. A01d** *55/20*

**U.S. Cl. 56—252** **12 Claims**



A comb assembly for use with a reel type mower in which the comb is mounted in advance of the reel so as to engage the grass in front of the reel to loosen the grass, and straighten up bent over blades, and loosen stringers which may have become loosely attached to the turf so as to maximize the number of blades and stringers available to the cutting action of the reel, and to provide a more thorough and high-quality cut, particularly on the putting greens of golf courses. The ground engaging portion of the comb is formed of a resilient plastic material which does not injure the grass, does not tear the turf, passes the twigs without damage to the turf and does not damage the reel or bed-knife should the teeth break off and pass between the reel blades and the bed-knife, the teeth being of such resiliency that they return to their normal condition when unstressed and do not quickly develop a stressed breakline through repeated flexing as metal will do. Furthermore, the teeth are sufficiently elastic to enable them to accurately follow the ground contour over which the mower is traveling. One version of the comb of this invention is also designed so that the comb assembly can also function as a scraper for one of the rollers so as to clean and remove therefrom, fresh clippings which tend to collect thereon and interfere with the proper operation of the mower. In another version, a portion of the comb assembly serves as a grass shield.

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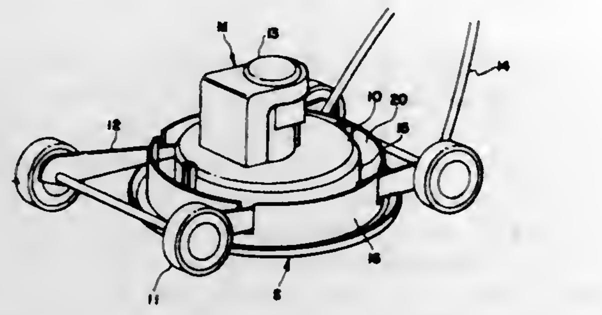
### 3,759,023
## MOWER SAFETY SHIELD

**Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.**
**Continuation-in-part of Ser. No. 179,802, Sept. 13, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,132**
**Int. Cl. A01d** *35/26*
**U.S. Cl. 56—320.1** **12 Claims**



An annular free floating shield for a rotary mower which rides freely on the ground being traversed and completely surrounds the periphery of the mower housing to prevent objects from escaping therefrom, the shield being movable simultaneously with the mower and free to float vertically relative thereto in accordance with ground contours without at any time exposing the space between the housing and the ground so as to permit objects to escape therefrom.

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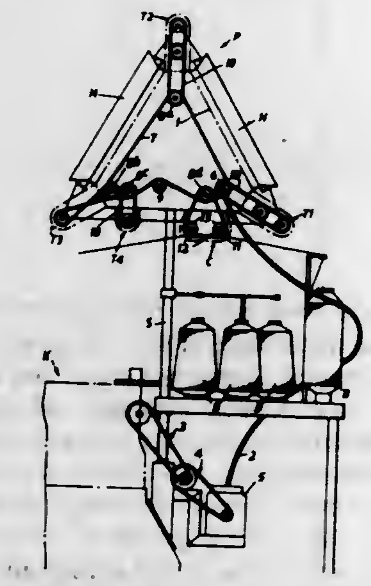
### 3,759,024
## METHOD OF AND APPARATUS FOR IMPARTING TWIST TO YARNS

**Lewis Henry Colton, 470 Mansfield Rd., Nottingham, England**
**Filed June 1, 1971, Ser. No. 148,837**
**Int. Cl. D01h** *13/28;* **D02g** *1/04*
**U.S. Cl. 57—34 HS** **7 Claims**



An apparatus for producing a plurality of pairs of matched yarns having identical twist characteristics in which yarns pass through a processing unit having heaters and twist heads.

A composite twist head may be used which has a plurality of annular twisting components driven at the same speed from a common drive source.

Alternatively, the twist head may have a single twisting component. The or each component receives one or more pairs of yarns, with the yarns in each pair travelling in respectively opposite directions through the component.

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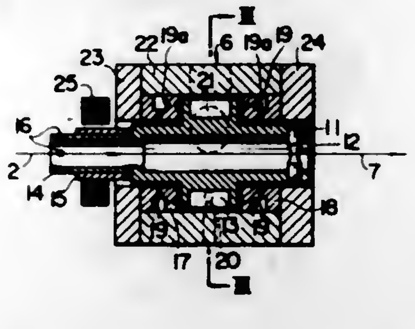
### 3,759,025
## FALSE TWISTER DEVICE FOR PRODUCING CRIMPS IN FILAMENT YARN

**Isao Takai, Komatsu-shi, Ishikawa-ken, and Junshiro Ogura, Ota-ku, Tokyo, both of Japan, assignors to Oda Gosen Kogyo Kabushiki Kaisha, Ishikawa-ken and Ogura Hoseki Seiki Kogyo Kabushiki Kaisha, Tokyo, both of Japan**
**Filed Dec. 6, 1971, Ser. No. 204,911**
**Claims priority, application Japan, Dec. 11, 1970, 45/109368**
**Int. Cl. D01h** *7/92;* **D03g** *1/04*
**U.S. Cl. 57—77.3** **6 Claims**



An improved, efficient false twister device for producing crimps in a filament yarn, which device can be rotated at the speed of at least 750,000 r.p.m. This device comprises a turbine-blade type high speed rotary member having blades formed on its outer periphery and having a filament yarn passageway formed axially therethrough, and a twister pin provided in the said passageway, the said rotary member being supported by gas-bearings within a casing, the said rotary member further comprising means for jetting a pressurized fluid onto the blades of the said rotary member. During the operation, the twister pin is cooled indirectly by the said pressurized fluid to prevent an elevation of the temperature of the said twister pin. By the use of this apparatus, the productivity of crimped yarn can be almost doubled as compared with that of the prior art.

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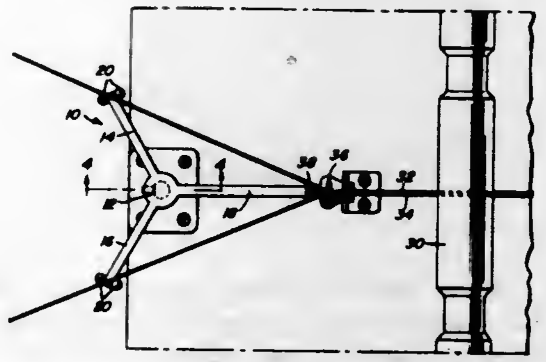
### 3,759,026
## YARN BREAKER AND SWITCH FOR SPINNING FRAMES

**William K. Hope, P.O. Box 224, Gastonia, N.C.**
**Filed Mar. 24, 1971, Ser. No. 127,655**
**Int. Cl. D01h** *13/16*
**U.S. Cl. 57—80** **7 Claims**



A yarn breaking machine control assembly is provided which automatically breaks one of a pair of moving yarns when the other has been broken or run out and controls an electrical circuit which disables the spinning frame. The assembly includes two pairs of spaced vertical guide pins with cutting surfaces thereon and a vertical stabilizing finger attached to a pivotally mounted support plate which in turn is connected to an electrical switch. Under normal operating conditions, a moving yarn passes between each pair of vertical guide pins, with the support plate being stabilized against rotation by the stabilizing finger confined against movement by the moving yarns on each side of and close to the pin. When one of the yarns breaks or runs out, the support plate, no longer stabilized by the stabilizing finger, rotates to both actuate the switch and to turn the guide pins such that their cutting surfaces grab onto and sever the remaining moving yarn.

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### 3,759,027
## EXTRUDED ASBESTOS YARN FOR PAPER DRYER FELTS

**Irvin Barnett, Martinsville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.**
**Continuation of Ser. No. 780,284, Nov. 29, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,451**
**Int. Cl. D02g** *3/04, 3/20*
**U.S. Cl. 57—140 BY** **13 Claims**

A process, a fabric, and a use thereof, the process including preferably uniformly weaving interlocked asbestos fibers into the fabric porous to a gas suitable for use as a felt in an apparatus for carrying wet paper and for drying the paper by passing the gas through the porous felt.

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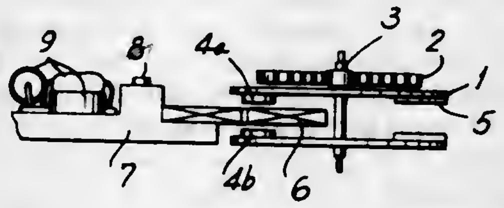
### 3,759,028
## ELECTRONIC WATCH

**Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**
**Filed Feb. 2, 1972, Ser. No. 222,962**
**Claims priority, application Japan, Feb. 10, 1971, 46/5219**
**Int. Cl. G04c** *3/04;* **G04b** *17/00*
**U.S. Cl. 58—28 A** **3 Claims**



An electronic watch having a balance wheel formed from two substantially round boards having at least a pair of flat permanent magnets mounted in facing relation on said boards. Said boards have an inertia of not more than 2,500 mg-mm², the balance wheel formed from said boards and a hair spring having a frequency of not less than 4 Hz. A two-terminal coil is positioned in the magnetic field defined by said pair of permanent magnets coupled to a driving circuit formed from at least one PNP transistor and one NPN transistor, and a battery. The collector electrode of one of said transistors is connected to one terminal of the coil, the collector electrode of the other of said transistors being connected to the other terminal of said coil. Said driving circuit connects said coil with said battery intermittently according to the vibration of the balance wheel to supply current pulses to the coil to drive said balance wheel.

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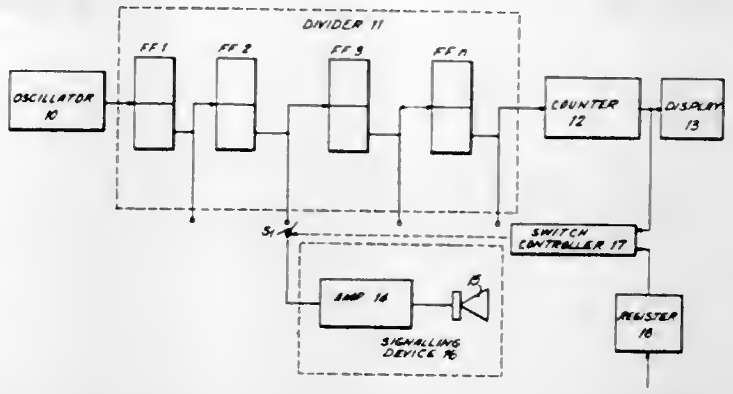
### 3,759,029
## ELECTRONIC TIMEPIECE WITH A TIME SIGNALLING DEVICE

**Shojiro Komaki, 231 Iguchi, Mataka-shi, Tokyo, Japan**
**Filed Nov. 30, 1972, Ser. No. 310,913**
**Claims priority, application Japan, Dec. 2, 1971, 46/113311; Dec. 2, 1971, 46/113313**
**Int. Cl. G04c** *21/16;* **G04b** *23/10*
**U.S. Cl. 58—38** **8 Claims**

An electronic timepiece with a time signalling device wherein to the time signalling device is applied an output signal with a predetermined frequency which is produced from one of a plurality of cascade connected, bistable multivibrator stages in a divider which is used for dividing a high frequency signal into a standard time signal of low frequency.



Further, a plurality of output signals produced from the corresponding stage are periodically and alternately applied to the time signalling device for enhancement of the tone of the time signalling sound.

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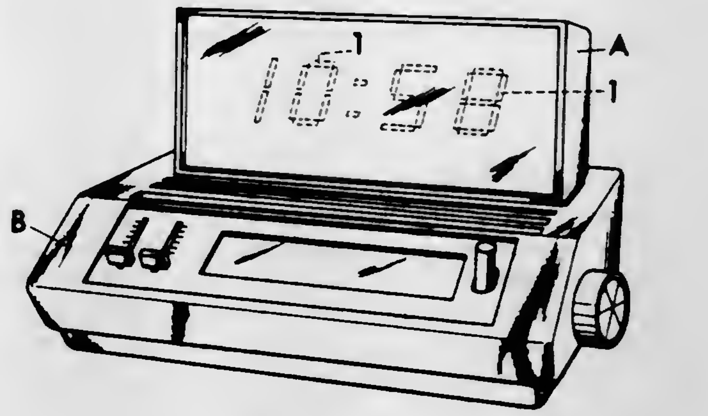
### 3,759,030
## DIGITAL CLOCK

**Yasuo Wakabayashi, No. F-191 Kamakura, No. 1362-293-Aza-Hyakuyanato, Zushi-City, Japan**
**Filed Oct. 12, 1971, Ser. No. 188,256**
**Claims priority, application Japan, Nov. 16, 1970, 45/100183; Apr. 28, 1971, 46/027532**
**Int. Cl. G04b** *19/30*
**U.S. Cl. 58—50 R** **9 Claims**

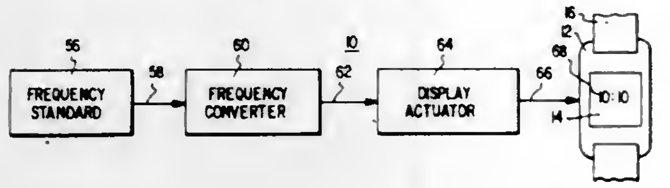


A digital clock comprising an indication section for indicating numerals which represents the time and a control section for forming required numerals. The indication section includes at least four electric lamp type numeral indicator each having seven-segmented electric bulbs which are selectively turned on or off to compose any required figure of 0 to 9. The control section includes switch means each electrically connected with corresponding one of the bulbs, and rotating drums one for each of said numeral indicators. The drums are rotated at respectively constant rate. The drums have control areas, such as grooves formed thereon which areas serve to actuate or deactuate the switch means according to the rotation of the drums to turn on or off the associated bulbs for providing digital indication of time.

### 3,759,031
### MODULAR SOLID STATE WRISTWATCH

**Robert E. McCullough, Lancaster, and Cleon W. Hougendobler, East Petersburg, both of Pa., assignors to HMW Industries, Inc., Lancaster, Pa.**

**Filed Jan. 26, 1972, Ser. No. 220,922**
**Int. Cl. G04b *19/30, 37/04, 27/00***
**U.S. Cl. 58—50 R 20 Claims**



Disclosed is a solid state wristwatch having no moving parts and utilizing a digital time display of light-emitting diodes. The watch features a modular construction for ease of assembly and reliability. Also disclosed is a setting magnet for the watch stored in the watch bracelet.

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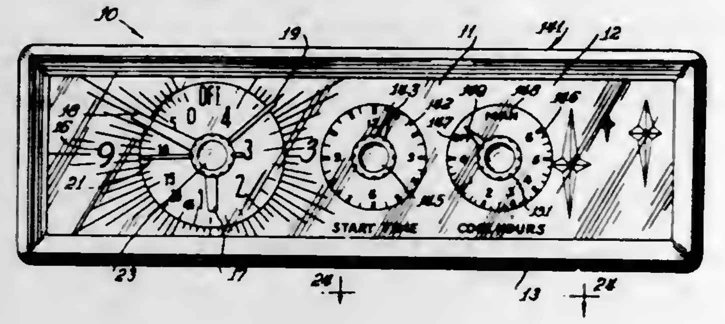
### 3,759,032
### MOTOR DRIVEN TIMER

**Ronald M. Bassett, and Joseph F. Gluth, both of Chicago, Ill., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.**

**Division of Ser. No. 878,618, Nov. 21, 1969, Pat. No. 3,601,473, which is a continuation-in-part of Ser. No. 817,500, April 18, 1969, abandoned. This application May 14, 1971, Ser. No. 143,630**
**Int. Cl. G04b *37/00;* G04c *23/00***
**U.S. Cl. 58—55 4 Claims**



A compact motor driven timer for cooking stoves includes a dial plate carrying time markings with one or more hands rotatable relative thereto on a shaft rotatably mounted on a mechanism plate on which the dial plate is supported. A plastic mechanism case encloses a gear train interconnecting a synchronous motor mounted on the case and the hand or hands. Shouldered portions of the case extend through the mechanism plate which has deformable ribs to hold the shouldered portions of the case and thereby the case itself in place. Screws extend through the case to secure it and the motor to the mechanism plate. The gear train includes one or more clutches to rotate an interval hand at different speeds. A buzzer arm is released to vibrate in the magnetic field of the motor at the end of the manually preset interval. Time indicating hands are also driven by the motor. The interval hand is concentrically mounted with the time indicating hands or is offset therefrom. A notch is provided in the mechanism case to hold the ends of the leads to the motor temperarily in position. The gear train also operates a range timer which includes contacts that are closed at the beginning of a variable time cycle to start a cooking operation at a preset time of day. The contacts are opened at the end of the preset time cycle. The range timer can be set for manual operation by manual closure of the contacts.

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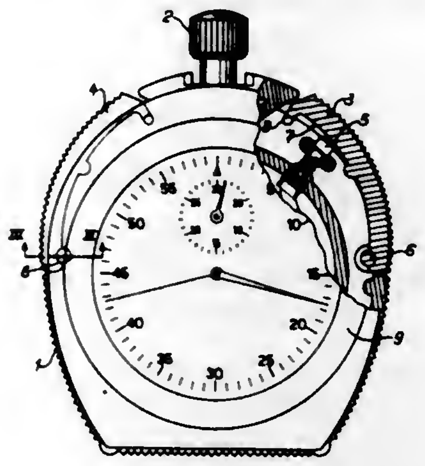
### 3,759,033
### TIMEPIECE

**Jacques Jeanmonod, Boudry, Switzerland, assignor to Heuer-Leonidas S.A., Bienne, Switzerland**

**Filed Feb. 17, 1972, Ser. No. 227,085**
**Claims priority, application Switzerland, Feb. 19, 1971, 2434/71**
**Int. Cl. G04f *7/04***
**U.S. Cl. 58—74 9 Claims**



In a timepiece comprising at least one slidably mounted push-piece, the push-piece is indirectly actuatable by a manually operable key pivotally mounted on the timepiece casing.

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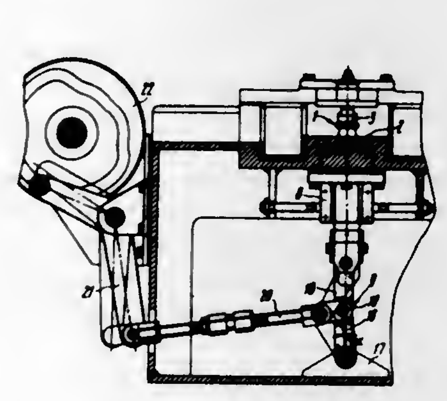
### 3,759,034
### DEVICE TO FORM CHAIN LINKS OF VARIOUS SHAPES FROM ROUND WIRE

**Igor Dmitrievich Trofimov, Mosfilmovskaya ulitsa 25, kv. 78; Jury Mikhailovich Korobeinikov, Deguninskaya ulitsa, 12, kv. 5; Vadim Alexandrovich Pavlov, Kropotkinskaya ulitsa, 40, kv. 15, all of Moscow; Jury Mikhailovich Smirnov, Ploschad III Internatsionala, 11, kv. 6, Azov; Lev Nikolaevich Shevyakov, deceased, late of Pestavsky pereulok, 6, kv. 5, Moscow; by Vera Stepanovna Shevyakova, Pestovsky pereulok, 6, kv. 5, Moscow; Natalya Lvovna Tiskovich, Petovsky pereulok, 6, kv. 5, Moscow, and Klavdia Andreevna Shevyakova, ulitsa Kuusinena, 17, kv. 126, Moscow, all of U.S.S.R. (administrators)**

**Filed Mar. 30, 1972, Ser. No. 239,623**
**Int. Cl. B21l *1/02***
**U.S. Cl. 59—27 2 Claims**



A chain making machine having a split bending mandrel consisting of a leverage-driven movable part and a stationary part engaging each other in a plane for joining which is disposed somewhat higher then the axis of symmetry of the link in order to completely rule out flash formation in the plane of symmetry of the link. The leverage provides for rigid engagement of the two parts of the mandrel, thus precluding flash formation in the plane of their joint.

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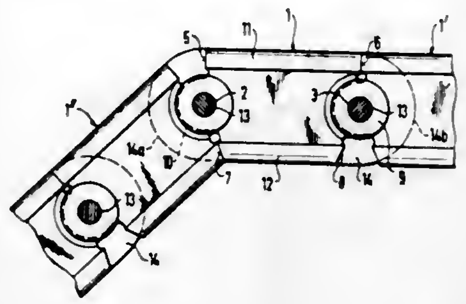
### 3,759,035
### SELF-SUPPORTING ARTICULATED CHAIN

**Hans-Peter Schmidberger, Munich, Germany, assignor to Gebr. Hennig GmbH, Dorstr., Germany**

**Filed May 18, 1972, Ser. No. 254,529**
**Claims priority, application Germany, May 26, 1971, G 71 205 45.3**
**Int. Cl. F16g *13/16***
**U.S. Cl. 59—78.1 8 Claims**



A self-supporting articulated chain composed of identical links pivoted to one another, each link terminating at its opposite ends on one side of its longitudinal center plane in parallel abutment edges and on the other side of such plane in obliquely disposed abutment edges, alternate ones of the links having cover members of such length as to project beyond both ends of its associated link to provide a cover for the gap which exists between adjacent links. One end of each link is displaced laterally by an amount corresponding to its wall thickness and the longitudinal edges of each link are bent to form edges of double wall thickness.

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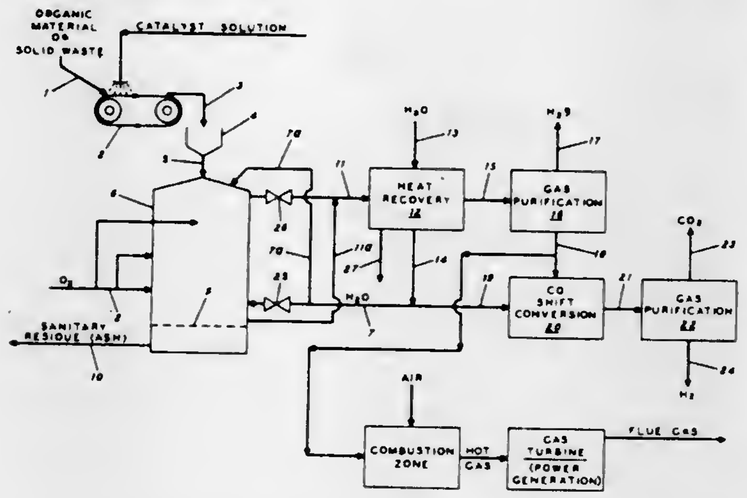
### 3,759,036
### POWER GENERATION

**Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 34,834, May 5, 1970. This application Mar. 1, 1970, Ser. No. 119,820**
**Int. Cl. F02g *3/00***
**U.S. Cl. 60—39.05 14 Claims**



A process for gasifying waste material and producing energy which comprises contacting a solid organic waste material containing at least 10 weight percent oxygen with steam in the presence of an alkali metal carbonate catalyst at an elevated temperature to obtain a gas, combusting at least a portion of said gas to obtain combusted gases, and expanding the combusted gases through a turbine to rotate the turbine. Preferably, the energy of the rotating turbine is used to drive an electricity generator. It is strongly preferred to use a potassium carbonate catalyst in the gasification of the oxygen-containing waste material. Preferably feedstocks include ordinary municipal refuse or garbage having the requisite oxygen content and usually having a more preferred oxygen content above at least 20 weight percent oxygen.

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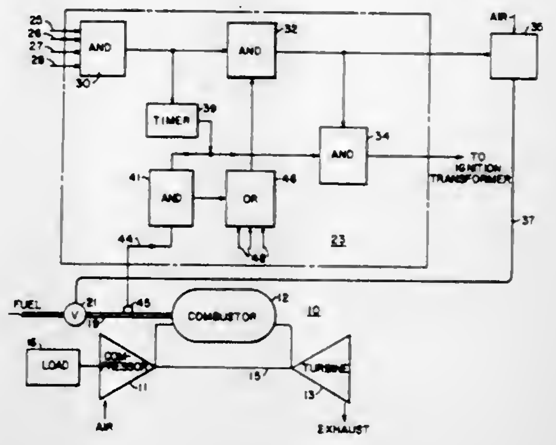
### 3,759,037
### OVER TEMPERATURE PROTECTION SYSTEM FOR A GAS TURBINE

**Roy W. Kiscaden, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Jan. 27, 1972, Ser. No. 221,184**
**Int. Cl. F02c *7/26***
**U.S. Cl. 60—39.14 4 Claims**



A system to protect the turbine against transient high temperatures during the ignition period of a gas turbine. The protection system measures the pressure or flow rate of the fuel entering the turbine. If the pressure or flow rate exceeds a value which will produce an over temperature condition, a signal is sent to a fuel shutoff valve to interrupt the fuel flow to the turbine.

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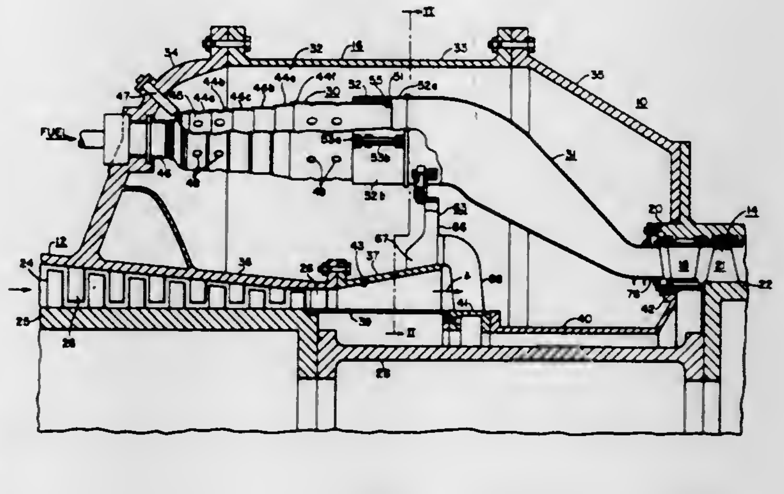
### 3,759,038
### SELF ALIGNING COMBUSTOR AND TRANSITION STRUCTURE FOR A GAS TURBINE

**Augustine J. Scalzo, Philadelphia., and Leroy D. McLaurin, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Dec. 9, 1971, Ser. No. 206,433**
**Int. Cl. F02c *7/20;* F01d *9/04***
**U.S. Cl. 60—39.32 9 Claims**



Gas turbine combustion apparatus in which the combustor is anchored at its upstream end and the transition member is anchored at its downstream end, the downstream end of the combustor and the upstream end of the transition member being disposed in mutual engagement and alignment and freely slidable relation during thermal expansion by a clevis support structure and sealed at their engaging portions by a slotted twin layer cuff spring.

### 3,759,039

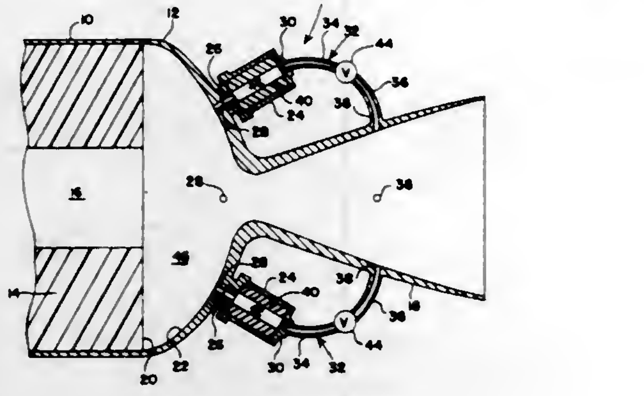
### THRUST CONTROL AND MODULATION SYSTEM

**Allan E. Williams, Kingsland, Ga., assignor to Thiokol Chemical Corporation, Bristol, Pa.**

**Continuation-in-part of Ser. No. 558,794, June 20, 1966, abandoned. This application Nov. 22, 1968, Ser. No. 778,172**

**Int. Cl. F02k** *1/14*

**U.S. Cl. 60—231** **1 Claim**



A device, more particularly a thrust control system, is disclosed wherein gases bled from the rocket motor combustion chamber are thereafter conduited to a canister having a perforated solid propellant grain therein, which is combusted by the gases bled from the main chamber and thereafter conducted to discharges arranged with respect to the rocket motor to provide thrust vector control, roll and/or pitch control and thrust modulation. Associated valve control means is also provided.

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### 3,759,040

### DEVICE FOR BETTER EXPLOITATION OF THE EXHAUST ENERGY FROM AN INTERNAL COMBUSTION ENGINE

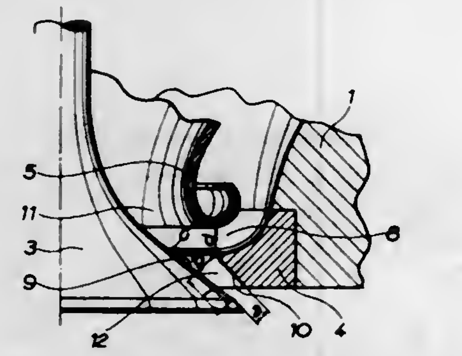
**Olavi Peltomaki, Frilundintie 3, Vaskiluoto, Finland**

**Filed Oct. 1, 1971, Ser. No. 185,520**

**Claims priority, application Sweden, Oct. 19, 1970, 14062/70**

**Int. Cl. F02b** *75/10, 37/04*

**U.S. Cl. 60—305** **6 Claims**



A device for better exploitation of the exhaust gas energy from an internal combustion engine equipped with poppet valves, in particular for an exhaust gas driven compressor. Subsequent to a narrow continuation succeeding the sealing point of the valve seat an annular opening is provided, to which air is supplied at atmospheric pressure or under appropriate pressure, said opening as well as the upper surface of the valve seat and the inner surface of the valve seat being shaped so that here is formed an ejector, in which the exhaust gases flowing at high speed pick up air that has been supplied to the opening.

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### 3,759,041

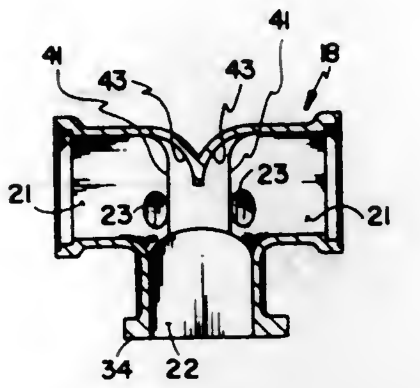
### EXHAUST WATER SEPARATOR FOR MARINE ENGINES

**Irving W. North, Oshkosh, and Herbert A. Bankstahl, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Chicago, Ill.**

**Filed Jan. 17, 1972, Ser. No. 218,315**

**Int. Cl. F01n** *3/02*

**U.S. Cl. 60—310** **10 Claims**



A water separator for a marine propulsion system. Arcuate exhaust elbows are provided which force cooling water in the exhaust to the outside by centrifugal action. This water is removed and expelled through the transom.

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### 3,759,042

### LIQUID PRESSURE DRIVING DEVICE

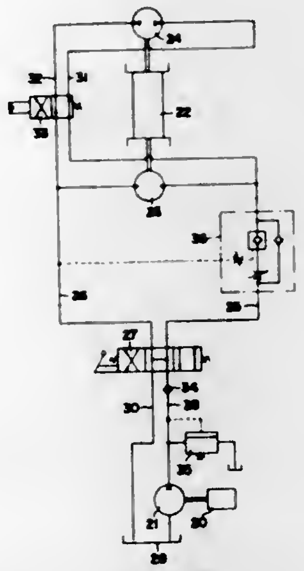
**Shigeru Shioda, Minata-ku, Tokyo; Fumio Ogasahara, Matsudo-shi, and Minoru Otomo, Ichikawa-shi, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed May 14, 1971, Ser. No. 143,457**

**Claims priority, application Japan, May 15, 1970, 45/40891**

**Int. Cl. F16h** *39/02*

**U.S. Cl. 60—483** **9 Claims**



A liquid pressure driving device for selective change of the rotary speed of a load member within its allowable output torque, which permits a change in a speed ratio from several to ten times or more between low and high speeds by use of a plurality of liquid pressure motors which are coupled to the load member which and are separated into individual pairs with a different displacement per revolution of the load member with such an arrangement as to make it possible to change connections of such liquid pressure motors in one of such pairs in either the forward or the reverse direction.

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### 3,759,043

### MOLDS FOR USE IN MANUFACTURING ENERGY DISSIPATING CONCRETE BLOCKS FOR RIVER AND MARINE WORKS

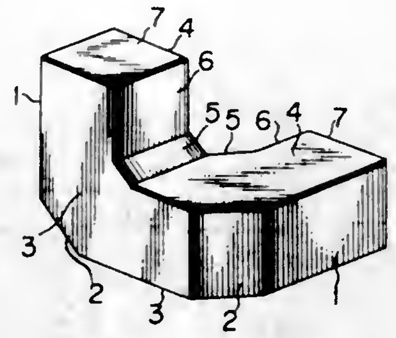
**Kazumi Tokunaga, No. 1410, Sakae-machi, City of Soka, Saitama Prefecture, Japan**

**Filed Aug. 25, 1969, Ser. No. 852,580**

**Claims priority, application Japan, Sept. 19, 1968, 43/67813**

**Int. Cl. E02b** *3/08, 3/14*

**U.S. Cl. 61—4** **1 Claim**



Molds for use in manufacturing energy dissipating concrete blocks for river and marine works are composed of a set of plates coming into contact with concrete, each having a simple geometrical shape in its plan view, and various type of molds can be obtained by the combination of the plates. The concrete blocks manufactured by the molds can be easily combined to form regular geometrical designs having specific percentages of voids respectively, resulting in their vast application in all sorts of marine and river works.

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### 3,759,044

### METHOD OF EARTH WALL CONSTRUCTION USING CEMENTITIOUS BENTONITIC MUD

**Claude Caron, Samoreau, and Jean Hurtado, Paris, both of France, assignors to Soletanche Societe Anonyme, Paris, France**

**Filed June 15, 1971, Ser. No. 153,424**

**Claims priority, application France, June 16, 1970, 7022101**

**Int. Cl. E02d** *5/18*

**U.S. Cl. 61—35** **11 Claims**

A method of constructing a fluid impermeable wall in the ground. A first trench is dug and simultaneously filled with a cementitious bentonitic mud, which is sufficiently viscous to prevent the sides of the trench from caving in. This first trench forms a first section of the wall. Before the mud of the firt section has set, a second trench is dug adjacent to and continuing or extending from the first trench, to form a second wall section, and the second trench is also simultaneously filled with cementitious bentonitic mud. The abuttting end sections then bond firmly together upon setting to form a continuous wall.

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### 3,759,045

### MONOMOORING SEA PLATFORM

**Vladimir Nastasic, San Donato Milanese, Italy, assignor to Interconsult S.p.A., Milan, Italy**

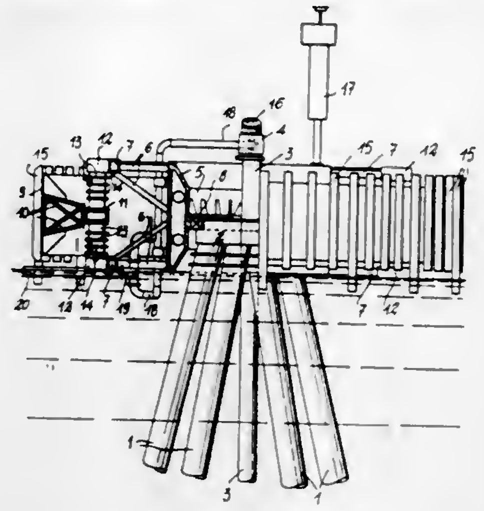
**Filed Feb. 4, 1972, Ser. No. 223,566**

**Claims priority, application Italy, Oct. 26, 1971, 30325 A/71**

**Int. Cl. B63b** *21/00*

**U.S. Cl. 61—46** **3 Claims**

A sea platform comprising a metal structure anchored to ground and a head projecting from the sea surface and carried by the metal structure by a bearing, to the vertical axis of which the head is freely rotable. The head comprises two annular bodies interconnected by resilient elements. The metal pipes extending from the inlets connectable to the hoses to the pipes upward extending from the ground are all enclosed within the periphery as defined by the rotable head. Thus, the risks are substantially reduced of damaging the platform and pipes carried thereby by vessels moored to the platform or passing through adjacent thereto.



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### 3,759,046

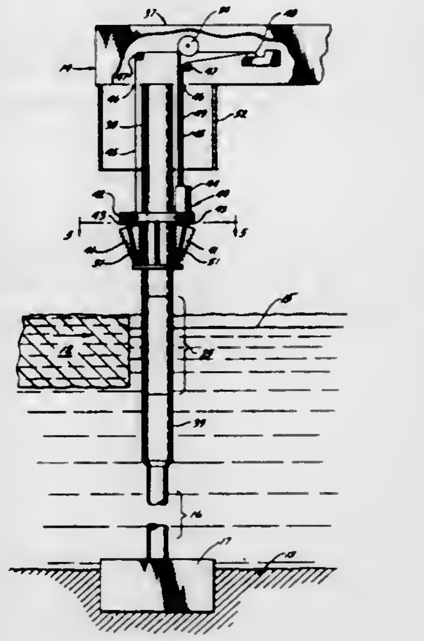
### MOVEMENT OF MARINE STRUCTURES IN SALINE ICE

**Edward O. Anders, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.**

**Continuation-in-part of Ser. No. 130,092, April 1, 1971. This application Mar. 23, 1972, Ser. No. 237,398**

**Int. Cl. E02b** *15/02;* **B63b** *35/12*

**U.S. Cl. 61—46.5** **18 Claims**



Relative movement between a surface-piercing marine structure and a sheet of saline ice is enabled by applying heat to the ice from the structure at a rate sufficient to cause ice proximately adjacent the structure to be heated essentially to its melting point, at which temperature the strength of the ice is reduced sufficiently to permit the structure to break through the ice, thus enabling the desired relative motion. Also, the rate of heat transfer from the structure may be sufficient, in terms of the rate of relative motion, to melt the ice adjacent the structure at a rate equal to the rate of relative motion.

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### 3,759,047

### VAPOR CONDENSATION SYSTEM AND METHOD

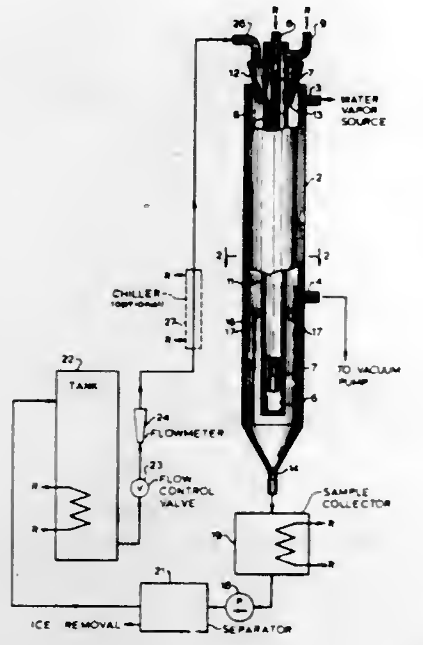
**Cary Judson King, III, Kensington; Romesh Kumar, Berkeley, and Scott Lynn, Walnut Creek, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.**

**Filed Nov. 22, 1971, Ser. No. 201,129**

**Int. Cl. B01d** *53/06*

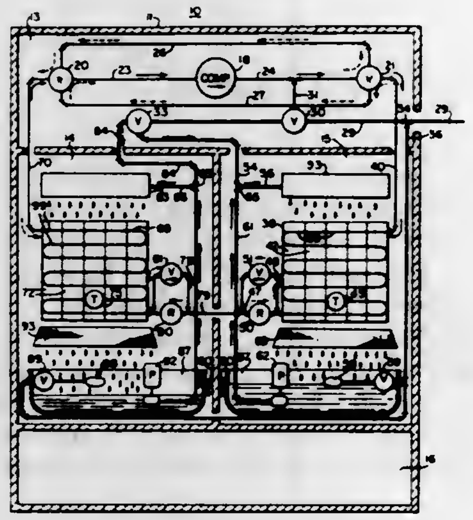
**U.S. Cl. 62—66** **12 Claims**

A flowing film of a composition of water and a solute over a refrigerated surface, is at such solute concentration and freezing temperature as to de-sublimate or condense the water vapor as ice which is carried away by the film, and subsequently separated from the composition by filtering or centrifuging. A terminal portion of the refrigerated surface is shielded to prevent access of water vapor thereto to effect removal as ice of water that may be absorbed in the film from the vapor, thereby maintaining the film concentration substantially uniform. A salt solution or brine provides an advantageous solute.



## 3,759,048
## REVERSIBLE CYCLE ICE MAKER

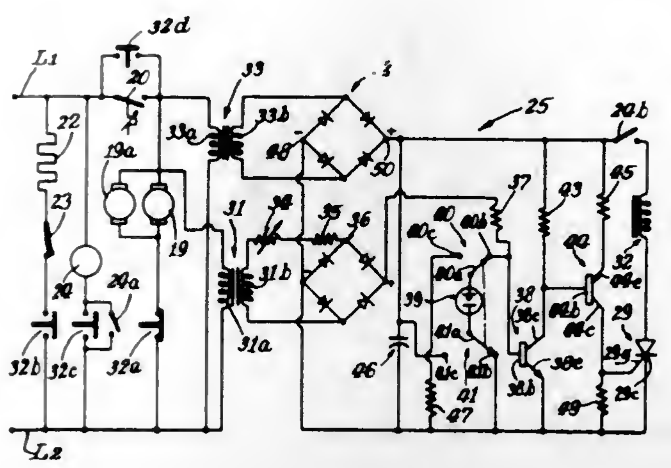
**Charles C. Cochran, 2467 Haymaker Dr., Monroeville, Pa.**
**Filed July 28, 1971, Ser. No. 166,836**
**Int. Cl. F25c** *1/12*
**U.S. Cl. 62—73** **11 Claims**



An ice maker comprising a compressor fluidly connected to two refrigerant coils, each coil in heat transfer relation with a corresponding water tube. Reversing valves alternately divert the refrigerant to the first and second coil to alternately produce ice in one of the tubes and to harvest ice in the other of the tubes.

## 3,759,049
## DEFROST CONTROL

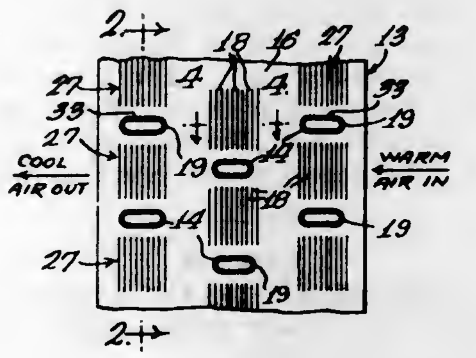
**Clarence A. Bell, Lubbock, Tex.; Ralph Gwinn, Red Oak, Iowa; Rolland N. Jennison, Manhattan, Kans.; Bryon Jones, Stillwater, Okla., and Philip W. Strauss, Norwood, Mass., assignors to Whirlpool Corporation, Benton Harbor, Mich.**
**Filed Feb. 25, 1972, Ser. No. 229,406**
**Int. Cl. F25d** *21/00*
**U.S. Cl. 62—80** **12 Claims**



A refrigeration apparatus having means for automatically controlling cyclical defrosting thereof. The control includes means responsive both to humidity conditions within the apparatus and to time for providing automatically initiation of the defrosting operation as a function of both such parameters.

## 3,759,050
## METHOD OF COOLING A GAS AND REMOVING MOISTURE THEREFROM

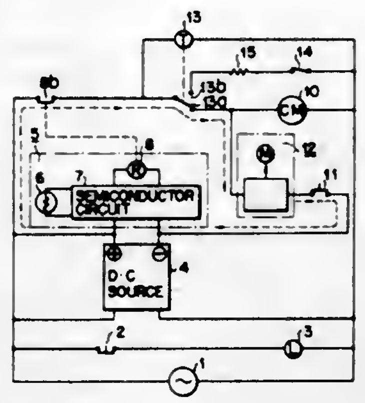
**Raymond S. Slaasted, and Jack C. Dudley, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.**
**Continuation of Ser. No. 807,492, March 17, 1969, abandoned. This application Feb. 24, 1972, Ser. No. 229,015**
**Int. Cl. F25d** *21/14*
**U.S. Cl. 62—93** **2 Claims**



The method of chilling a gas that contains moisture and simultaneously condensing and removing the moisture to prevent the condensate being blown in substantial amounts with the chilled gas in which the moisture containing gas is blown sideways across upright solid surfaces that are chilled to a temperature less than the dew point of the gas to form condensate on the surfaces, intercepting the condensate and directing it in paths of low surface tension along the surfaces and out of the gas stream.

## 3,759,051
## DUAL COMPARTMENT-TEMPERATURE REFRIGERATOR WITH POSITIVE INTERNAL AIR CIRCULATION

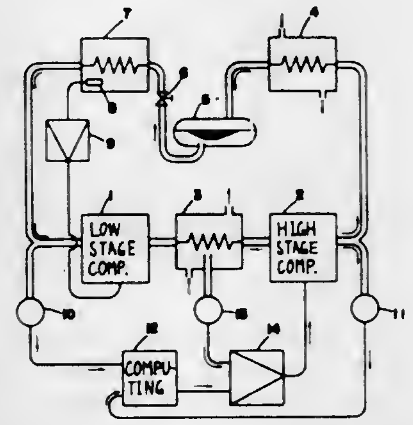
**Hiroshi Ohnishi, Higashi Sumiyoshi-ku, Osaka, Japan, assignor to Tokyo Shibaura Electric Co., Kawasaki-shi, Japan**
**Filed Aug. 3, 1971, Ser. No. 168,628**
**Claims priority, application Japan, Aug. 4, 1970, 45/77911; July 23, 1971, 46/55057**
**Int. Cl. F25d** *17/00*
**U.S. Cl. 62—180** **3 Claims**



In a refrigerator of the type having freezing and cold storage compartments and a fan for positive circulation of air over the evaporator and through the compartment, the efficiency of operation is marketly improved by utilizing as a drive motor for the fan, a variable speed brushless D.C. type motor with the greater portion of the speed and commutator control circuits arranged exteriorally of the refrigerated compartment.

## 3,759,052
## METHOD OF CONTROLLING HIGH STAGE AND LOW STAGE COMPRESSORS

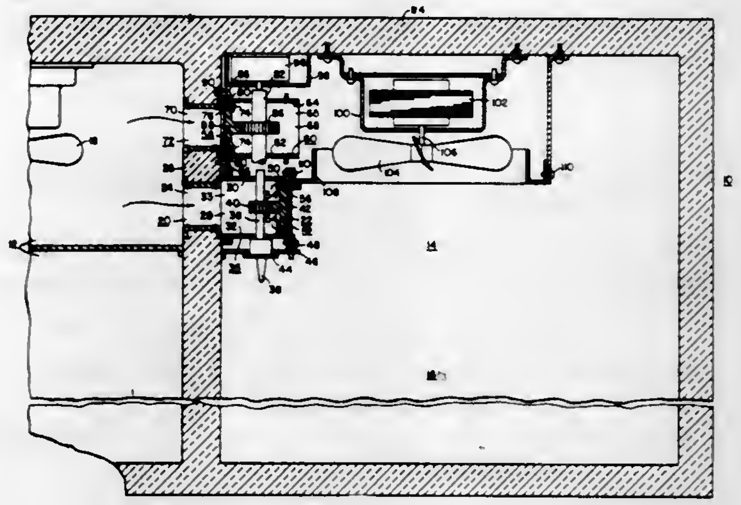
**Wahei Inoue, Ohta-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan**
**Filed Feb. 28, 1972, Ser. No. 229,726**
**Int. Cl. F25b** *1/10*
**U.S. Cl. 62—115** **3 Claims**



This invention relates to a method of controlling high stage and low stage compressors having non-linear control characteristics. Said method is characterized by comprising the steps of controlling the capacity of the low stage compressor during operation in accordance with a change in the temperature of a load for an evaporator, automatically computing the square root of the product of the pressure at which gas is drawn by suction into the low stage compressor and the pressure at which gas is discharged from the high stage compressor or an approximation thereof by means of an automatic computing unit, comparing the output of the automatic computing unit with the pressure of an intermediate cooler interposed between the low stage compressor and high stage compressor, and subordinatively controlling the ratio of the capacity of the low stage compressor to that of the high stage compressor by the result of the comparison.

## 3,759,053
## AIR CONTROL FOR FRESH FOOD COMPARTMENT QUICK CHILL OPERATION

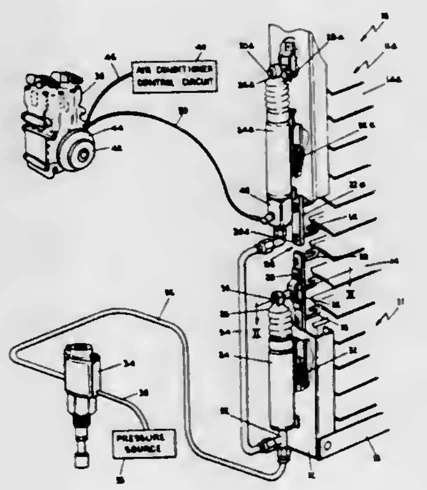
**Anthony J. Swaneck, Jr., Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Dec. 15, 1971, Ser. No. 208,219**
**Int. Cl. F25d** *17/04*
**U.S. Cl. 62—157** **8 Claims**



The invention provides a pair of mechanically controlled air regulating dampers used in the fresh food compartment of a refrigerator. Each of the dampers controls the admission of air from the freezer compartment into the quick chill portion of the fresh food compartment, with one of the dampers being manually set to maintain a desired temperature range within the fresh food compartment during normal operation without quick chill, and the other (quick chill) damper being used to control during a quick chill operation. The quick chill damper is coupled to a timer mechanism so that an increased setting of timer period for quick chill also increases the quick chill damper opening so that those items having a heavy cooling load to obtain quick chill have their requirements met by the simultaneous setting of the quick chill damper and the quick chill timer. The quick chill damper is arranged to be closed for any timer setting of say ten minutes or less. This feature provides for the quick chill cooling of food by only that air which is being circulated within the fresh food compartment.

## 3,759,054
## SPLIT SHUTTER CONTROL SYSTEM

**Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.**
**Filed July 3, 1972, Ser. No. 268,486**
**Int. Cl. F25b** *39/04*
**U.S. Cl. 62—183** **14 Claims**



A shutter assembly including a plurality of louvers shiftable between open and closed positions for controlling air flow over radiator and condenser elements in a vehicle. The shutter assembly is divided into two independently operable louver sections or shutter means, one of which is operated to control air flow over the condenser while the other is operated with the first to control air flow over the radiator. A pair of actuator elements responsive to engine temperature control both sections. Valve means associated with one of the actuators is responsive to operation of the vehicle air conditioner compressor to open the louvers covering the condenser a limited amount controlled by cooperative stop means and stop abutment means between the two shutter means when the entire louver assembly is closed.

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### 3,759,055

## REVERSIBLY HEAT-RECOVERING TYPE HEAT PUMP THROUGH AIR HEAT SOURCE

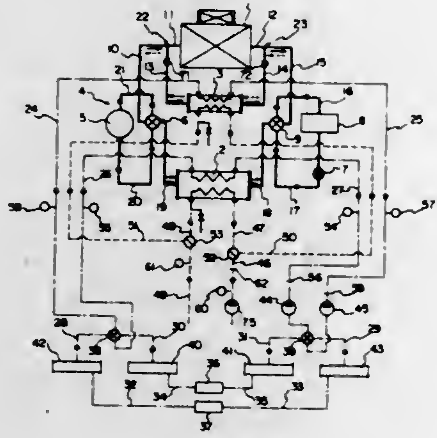
**Takashi Shimanuki, Nara-ken, Nara-shi, and Yoshinori Inoue, Osaka-shi, Kita-ku, both of Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka, Japan**

**Filed July 19, 1972, Ser. No. 273,305**

**Claims priority, application Japan, July 22, 1971, 46/55126**

**Int. Cl. F25b** *13/00*

**U.S. Cl. 62—160** **11 Claims**



A reversibly heat-recovering type heat pump through air heat source comprising an outer heat-exchanger exchanging heat between refrigerant and outer air, two inner heat-exchanger acting as condenser or evaporator of the refrigerant, a compressor and an expansion valve. The outer heat-exchanger performs selectively heat discharge to and heat absorption from the outer air. One of the inner heat-exchangers acts as condenser and the other as evaporator.

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### 3,759,056

## SHUTTER CONTROL SYSTEM

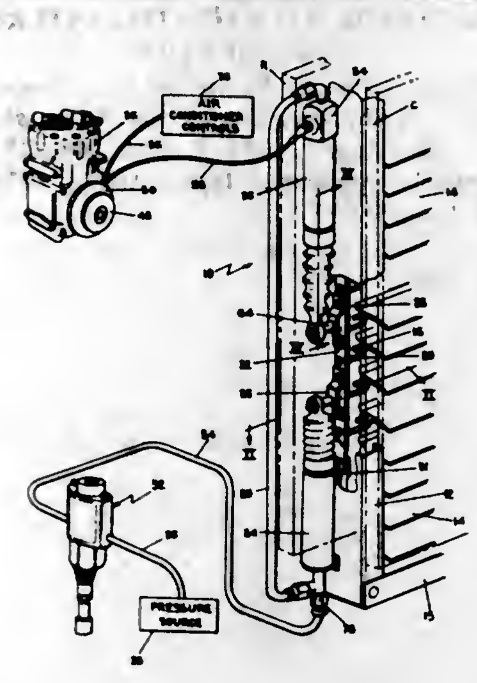
**Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.**

**Filed July 3, 1972, Ser. No. 268,575**

**Int. Cl. F25b** *39/04*

**U.S. Cl. 62—183** **13 Claims**

A unified shutter assembly for controlling air flow over radiator and air conditioner condenser elements in a vehicle is normally biased to an open position and is closable in response to engine heating requirements by a first actuator to regulate the amount of flow of cooling air. A second actuator positioned for movement in opposition to the first is operated simultaneously with the air conditioning system to force the shutters open a controlled, limited amount to allow controlled air flow over the condenser sufficient for condenser cooling without being detrimental to engine temperature control, i.e., without significantly lowering the engine temperature.



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### 3,759,057

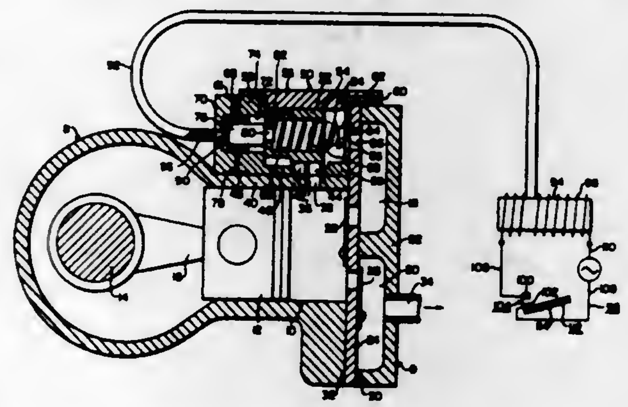
## ROOM AIR CONDITIONER HAVING COMPRESSOR WITH VARIABLE CAPACITY AND CONTROL THEREFOR

**William A. English, Export, and Robert R. Young, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 2,838, Jan. 14, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,414**

**Int. Cl. F25b** *41/00*

**U.S. Cl. 62—196** **7 Claims**



A room air conditioner with a compressor having variable capacity is provided by the invention, with the variable capacity automatically adjusted to balance with the refrigeration load of the space being cooled. A movable valve progressively opens a portion of the compressor cylinder to the suction side of the system so that a progressively reduced volume of active cylinder is available for compression. The volume available for compression is automatically proportioned by a control arrangement which is actuated by the temperature of the space being cooled.

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### 3,759,058

## COMPRESSOR SHAFT SEAL HEATER

**James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

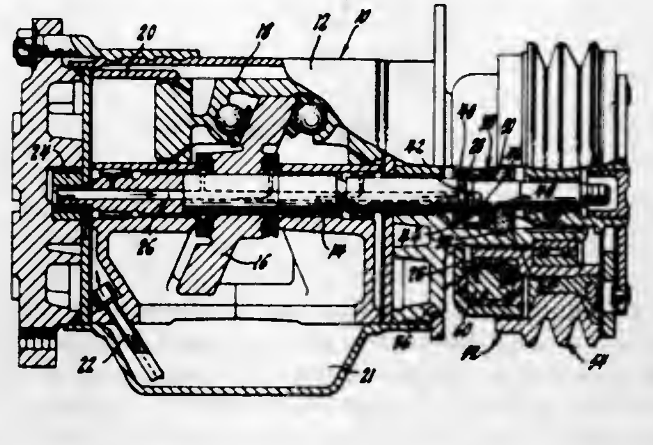
**Filed June 30, 1972, Ser. No. 268,069**

**Int. Cl. F25b** *27/00*

**U.S. Cl. 62—228** **3 Claims**

A vehicle air conditioning compressor is selectively driven by the engine as required to cool the passenger compartment.

The compressor includes a rotating shaft supporting a driving pulley and an electrically actuated clutch assembly connecting the shaft with the pulley during periods of air conditioning. The electrically actuated clutch includes a solenoid coil disposed in the proximity of a fluid seal preventing loss of refrigerant from the compressor around the compressor shaft. Control circuitry is provided in series with the ignition switch and includes a first current path to the clutch solenoid coil for energizing the clutch and connecting the compressor with the engine. A second current path is provided between the ignition switch and the solenoid coil, the second path including a resistance of a predetermined value thereby limiting the amount of current flow to the solenoid coil so that when the circuit is completed through the second current path the solenoid coil acts as a heater and warms the shaft seal preventing damage thereto during cold weather conditions. The resistance in the second current flow path can also be positioned in proximity to the fluid seal and likewise act as a heater in conjunction with the solenoid coil to warm the fluid seal during low temperature conditions. A bimetallic switch assembly is provided in both the first and second current paths and responds to ambient temperatures above a predetermined value to complete the circuit through the first current path so that the compressor may be drivingly connected to the engine by the clutch and cool the passenger compartment. When temperatures reach a predetermined low value the ambient temperature sensing switch moves to complete the circuit through the second current path so that the resistance and the solenoid coil can be energized to warm the fluid seal prior to operation of the compressor thereby preventing damage to the seal that would ordinarily occur.



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### 3,759,059

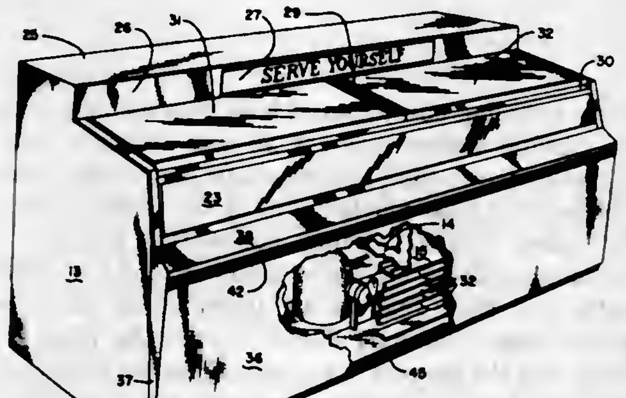
## REFRIGERATED DISPLAY CABINET

**Andre J. Kenyon, Rosemount, Minn., assignor to Schaefer Corporation, Minneapolis, Minn.**

**Filed Dec. 30, 1971, Ser. No. 214,355**

**Int. Cl. A47f** *3/04*

**U.S. Cl. 62—246** **8 Claims**



A cooling arrangement for the condenser of a refrigerated display cabinet, in which there is an upper refrigerated display chamber and a lower nonrefrigerated chamber with the condenser being located in the lower chamber, the cooling arrangement involving drawing in the ambient air through the front of the cabinet well above the floor and after it is used to cool the condenser, discharging it into the toe space of the cabinet adjacent the floor. The cabinet has a sloping front panel spaced from the insulated front wall of the cabinet and the cooling air is drawn in adjacent the top of this front panel. A portion of the air, after passing over the condenser, is directed over the condensate drain passage in the rear of the cabinet.

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### 3,759,060

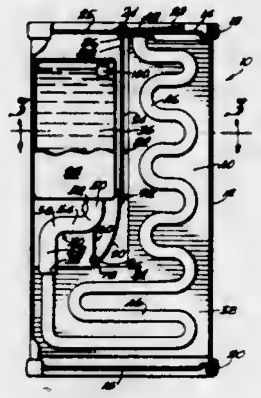
## DISPOSABLE REFRIGERATED CONTAINER THAT CAN BE REFILLED, REUSED OR RECYCLED

**Harold E. Chase, Coral Gables, Fla., assignor to Marian Cax; Walter C. Dunigan; Alfred Browning Parker; Whelan Malcolm Golson; Robert R. McKeown and Elizabeth Preston, Miami, Fla., part interest to each**

**Filed June 28, 1972, Ser. No. 266,975**

**Int. Cl. F25d** *3/10*

**U.S. Cl. 62—294** **6 Claims**



A disposable container providing an internal cylinder containing a pressurized refrigerant and a valve means operable by an exterior pull-tab to open the valve means to permit the pressurized refrigerant to expand into a heat exchanger whereby heat is absorbed from the contents of the container, thereby cooling said contents. The device is preferably adapted to a container of the widely used type commonly called a "Tap Top Can" and connection means between the pull-tab and the valve opens said valve simultaneously with the opening of the container resulting in a rapid cooling of the container contents.

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### 3,759,061

## TUBE ICE GENERATOR

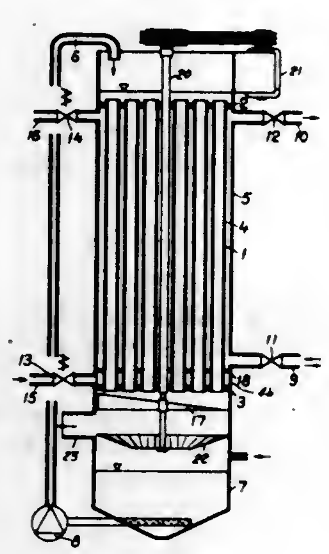
**Nils Edvin Folke Nilsson, and Jimmie Arne Eurenius, both of Norrkoping, Sweden, assignors to STAL Refrigeration AB, Norrkoping, Sweden**

**Filed Sept. 7, 1971, Ser. No. 178,029**

**Int. Cl. F25c** *5/10*

**U.S. Cl. 62—352** **3 Claims**

Ice generator in which water is frozen in tubes extending vertically within a surrounding casing defining a freezing chamber spaced above the bottom of which is a distributor plate having apertures surrounding the tubes and defining a separate chamber into which a warm gas is passed to heat the tubes to cause the ice rods to slide therefrom.



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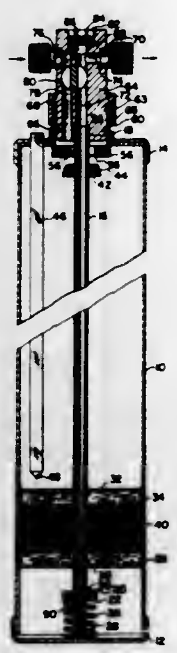
### 3,759,062
### RECEIVER DRIER HOUSING FOR AUTOMOBILE AIR CONDITIONING SYSTEMS

**George T. Wrenn, Crittenden, and H. William Mann, Portsmouth, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.**

**Filed Aug. 14, 1972, Ser. No. 280,311**
**Int. Cl. F25b *43/00***

**U.S. Cl. 62—474** **15 Claims**



Air conditioning and refrigeration systems, particularly a precharged receiver drier housing, including a valve connector port at the top fittable with a conventional air conditioning or refrigeration system so as to charge the system with a refrigerant gas. The housing includes an axially depressible induction tube extending from the connector port beneath a molecular sieve positioned within the housing. The unit is activated or deactivated with respect to the air conditioning system by simply turning a valve in the connector port. This valve enables convenient and money-saving retention of the refrigeration charge in the air conditioning system, while the filter drier is being replaced and, therefore, has particular application in automobile air conditioning systems.

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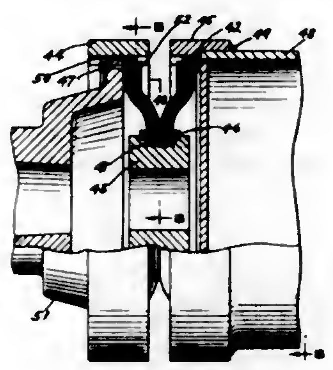
### 3,759,063
### LAMINATED DIAPHRAGM COUPLINGS

**Wilfrid H. Bendall, 19 N. Broad St., Pawcatuck, Conn.**

**Filed Oct. 28, 1971, Ser. No. 193,352**
**Int. Cl. F16d *3/78***

**U.S. Cl. 64—11 R** **10 Claims**



A laminated diaphragm coupling for drive shafts having a plurality of identically corrugated annular laminas flexibly conformable to a common center of corrugation curvature. The laminas assemble in coaxial interlaminary supporting contact to provide a torsionally stiff and axially flexible laminated diaphragm. The diaphragms have inner and outer circumferential edge portions adapted for interconnection with each other and with coupling members.

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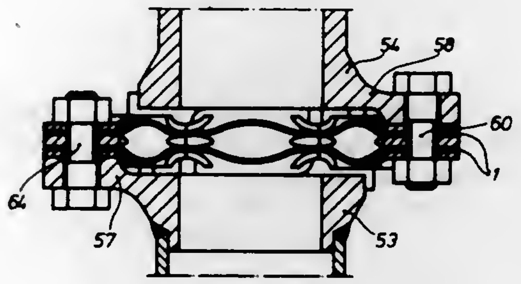
### 3,759,064
### COMPOSITE FLEXIBLE COUPLING FOR INTERCONNECTING TWO SHAFTS

**Raoul Jorn, D-8992 Hengnau, and Peter Reichardt, Grasinger Rain 4, D-7012 Fellbach**

**Filed Sept. 10, 1971, Ser. No. 179,444**
**Int. Cl. F16d *3/78***

**U.S. Cl. 64—13** **6 Claims**



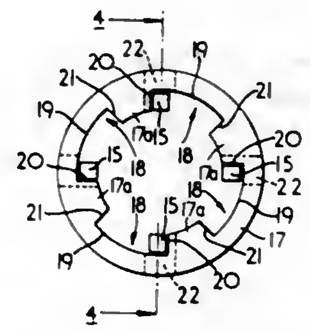
A flexible coupling comprises at least two metallic rings of polygonal outline whose corners all are coplanar and alternately connected to the opposite shafts and whose sides are curved (bowed) at least partially out of the plane of the corners, the other corners being connected together. An elastomer such as rubber can be bonded between the two rings at the sides and rigid spacers are provided at the corners between the rings. Clamping bodies overlie the rings at the corners and, like the spacers, have edges running transverse to the longitudinal axes of the respective sides which are rounded for best bending of the sides. The rings can be S-shaped at their sides or the sides can arch away from each other while being of reduced width in the central regions of the sides. In addition each ring can be made of a plurality of side members joined to the neighboring side members at the corners.

### 3,759,065
### KEYED JOINT

**Herbert Ralph Montefiore, deceased, late of "Clifton," Station Rd., West Horndon, Essex, and by National Westminster Bank, Limited, executor, 41 Lothbury, London, both of England**

**Filed May 7, 1971, Ser. No. 141,170**
**Int. Cl. F16d *3/06***

**U.S. Cl. 64—23** **4 Claims**



A keyed joint for enabling relative longitudinal movement to take place between a driving and a driven member under high torque loading conditions includes a shaft member and a coaxial sleeve member. A key is formed on one of the members and a keyway on the other member, the key and keyway each having a face transverse to the circumferential direction and spaced apart circumferentially. A plurality of rollers are located between said faces and the faces are profiled to correspond to the contacting surface of the rollers.

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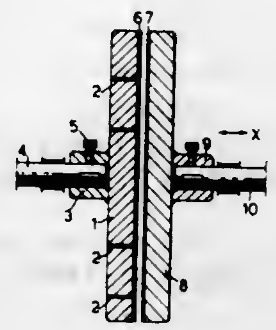
### 3,759,066
### ELASTIC POWER TRANSMITTING ELEMENT

**Samuel Portnoy, Simtat Beth Habad 9, Hod Hasharon, Israel**

**Filed Sept. 7, 1971, Ser. No. 178,164**
**Int. Cl. F16d *3/14***

**U.S. Cl. 64—27 S** **6 Claims**



An elastic power transmitting element comprises at least one disc- or plate-shaped member in which there is cut a spiral slot extending from near the center of the said element towards the periphery thereof, means being provided on the said disc- or plate-shaped member for connection thereof to the driving or driven shaft of a power transmission.

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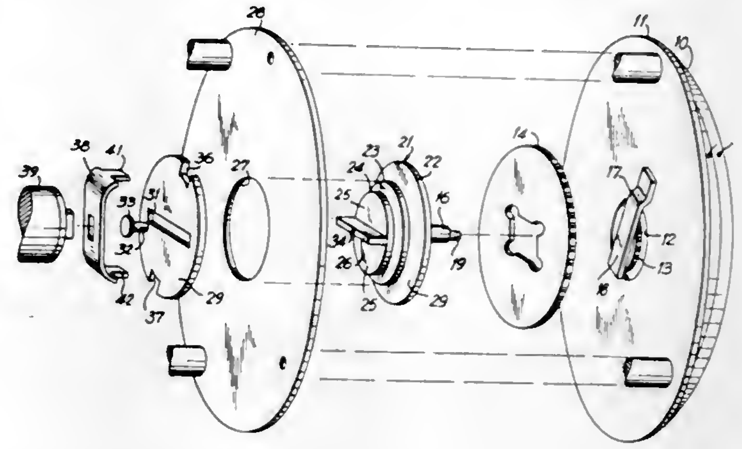
### 3,759,067
### SHAFT COUPLING WITH SLIDING PLATE

**Frank W. Perazzella, Wolcott, Conn., assignor to North American Philips Corporation, New York, N.Y.**

**Filed Feb. 27, 1970, Ser. No. 15,031**
**Int. Cl. F16d *3/04***

**U.S. Cl. 64—31** **3 Claims**

A shaft coupling to transmit rotation from one shaft to another not co-linear therewith. The coupling comprises a plate which is transverse to one of the shafts and connected thereto, the plate having limited freedom of movement back and forth in one direction transverse to the other shaft, and fitting over a promontory on the one shaft which is disposed within a slot in the plate so as to allow movement only in one direction. A finger on the other shaft intersects grooves in the plate to complete the coupling. A motor connected through a gear train may be used to rotate one of the shafts.



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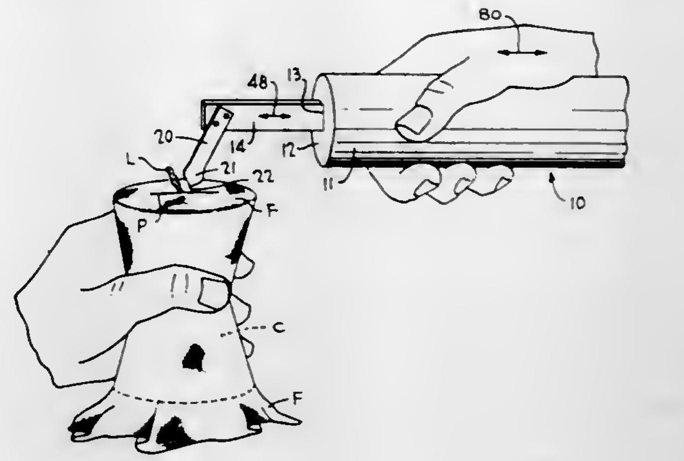
### 3,759,068
### METHOD AND APPARATUS FOR MENDING KNIT FABRIC

**Lonnie Reynolds Davenport, Princeton, Ky., assignor to Pair-X, Inc., Princeton, Ky.**

**Filed Aug. 6, 1971, Ser. No. 169,702**
**Int. Cl. D04b *35/00***

**U.S. Cl. 66—1** **16 Claims**



Disclosed is a method and apparatus for mending snags and pulls in knit fabrics. The invention is particularly applicable for knit fabrics used in apparel and to light weight fabric with a lock stitch such as "no run" hosiery. A preferred embodiment of the apparatus includes a mending device with a blade member driven in a reciprocal fashion such that the tip of the blade traces a linear or near linear path. A preferred method is disclosed wherein the reciprocating blade tip is applied to a piece of snagged fabric that is stretched over a mending cup. The mending device is maneuvered so that the path traced by the blade tip corresponds to the "pull thread line" formed by the distorted knit stitches until the yarn loop is drawn back into the fabric and the distorted stitches resume their original shape.

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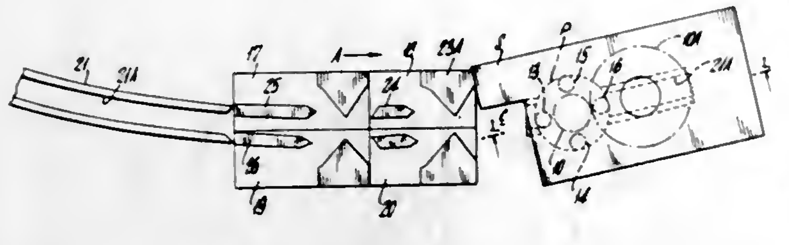
### 3,759,069
### CONTROL APPARATUS FOR THE PATTERN DRUM OF A KNITTING MACHINE

**Holger Scheffler, Lichtenstein; Konrad Bannehr, Leukersdorf, and Ingo Ziprian, Gersdorf, all of Germany, assignors to VEB Wirkmaschinenbau, Karl-Marx-Stadt, Germany**

**Filed Apr. 12, 1972, Ser. No. 243,325**
**Int. Cl. D04b *9/00***

**U.S. Cl. 66—50 B** **9 Claims**

A pattern drum is intermittently rotated forward or backward, by variable numbers of steps, by a control star rotor having uniformly spaced pins. A pair of pin engaging control members can be set to control such a pin for forward motion (by activating one member of the pair), or for backward motion (by activating the other member of the pair), or for zero motion (by deactivating both members). For these purposes, the control members rotate with an annular guide system past the control star and drum.



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### 3,759,070
### FULL-FASHIONED KNOT FABRIC AND METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

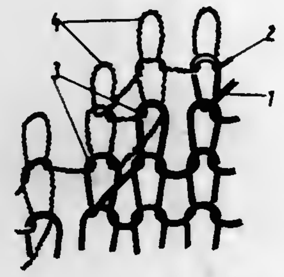
**Heinz Mutze, Karl-Marx-Stadt; Gerhard Barth, Dittersdorf, and Kurt Pfuller, Karl-Marx-Stadt, all of Germany, assignors to VEB Wirkmaschinenbau, Karl-Marx-Stadt, Germany**

**Filed Dec. 28, 1970, Ser. No. 101,929**

**Claims priority, application Italy, June 15, 1970, 51414 A/70**

**Int. Cl. D04b** *7/00*

**U.S. Cl. 66—189** **5 Claims**



Full-fashioned knit fabric having a narrowed edge, each outermost stitch of the narrowed edge consisting of a second yarn of substantially lesser denier than the denier of a first yarn of which the other stitches are comprised and the second yarn is a stretch yarn of the twist type having high stretch and rapid recovery.

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### 3,759,071
### SYSTEM FOR DYEING TEXTILES AND THE LIKE

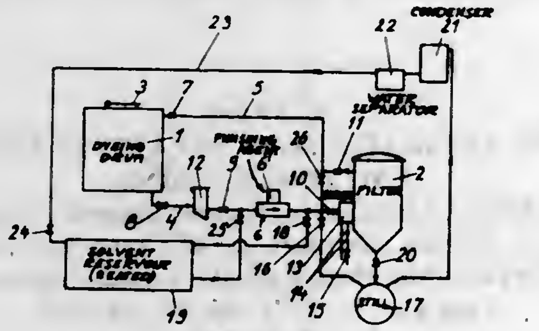
**Heinrich Fuhring, Augsburg, and Johannes Helmut Sieber, Aystetten, both of Germany, assignors to Bowe, Bohler & Weber KG, Augsburg, Germany**

**Filed Sept. 27, 1971, Ser. No. 183,915**

**Claims priority, application Germany, Sept. 25, 1970, P 20 47 192.5**

**Int. Cl. D06f** *39/10*

**U.S. Cl. 68—18 C** **7 Claims**



An organic dyeing liquor, circulating hot through a vat filled with textiles to be dyed, is passed in a terminal stage through a cooler in cascade with a filter. As the temperature of the solvent progressively decreases, dyestuff is precipitated in the filter which is positioned close to the cooler, preferably in a common housing. Upon final rinsing with the substantially dyestuff-free solvent, impregnants or other treatment agents may be admixed therewith.

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### 3,759,072
### LOCK

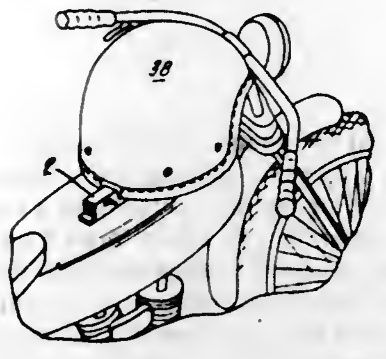
**Robert Porter McLarnon, P.O. Box 215, Stittsville, Ontario, Canada**

**Filed May 7, 1971, Ser. No. 141,285**

**Claims priority, application Canada, May 15, 1970, 082942**

**Int. Cl. E05b** *69/00;* **A42b** *3/00*

**U.S. Cl. 70—59** **2 Claims**



A locking mechanism for a variety of uses is disclosed. The mechanism consists of a lock housing and one or more flat-bottomed slots in the housing to receive a flange or flanges from an article or articles to be secured to the housing and a key-operated locking shaft reciprocally mounted for movement across each of the slots. The locking mechanism may be used in a manner comparable to a padlock or may be secured to a supporting structure such as a motorcycle and be used to secure articles such as a safety helmet to the motorcycle.

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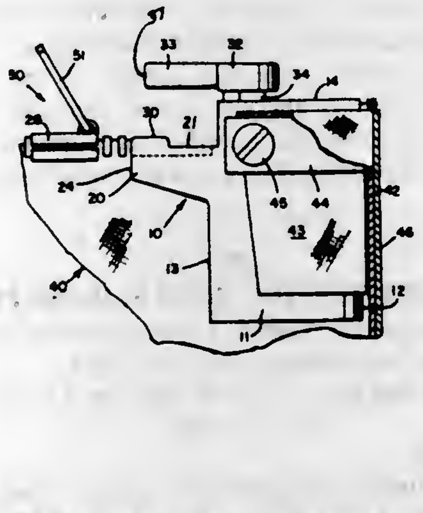
### 3,759,073
### FLEXIBLE WALLED SECURITY CONTAINER

**Arnold S. Rifkin, Wilkes-Barre, Pa., assignor to A. Rifkin, Co., Wilkes-Barre, Pa.**

**Filed July 9, 1971, Ser. No. 145,127**

**Int. Cl. E05b** *65/52;* **A44b** *19/30*

**U.S. Cl. 70—68** **3 Claims**



A flexible walled security container having an opening provided with slide fastener means along the edges of the opening and locking means carried by the container in position to releasably retain the slider of the slide fastener means in position closing the container.

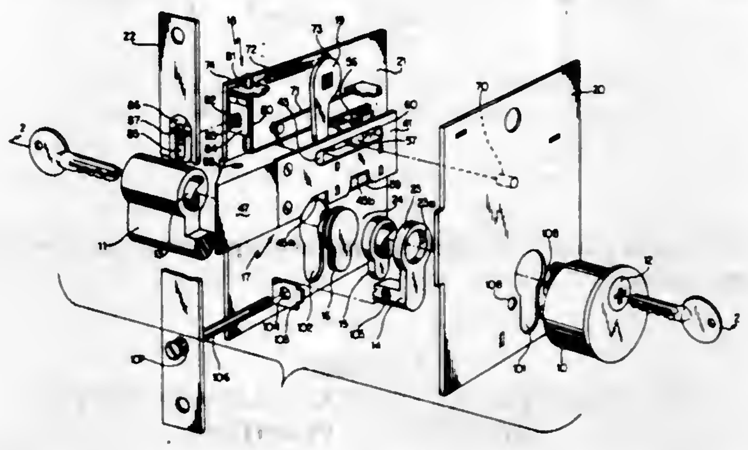
### 3,759,074
### LOCKING MECHANISM HAVING KEY OPERATION ON TWO SIDES

**Herman Prahl, 48-38 58th Ln., Woodside, N.Y.**

**Filed Sept. 22, 1971, Ser. No. 182,590**

**Int. Cl. E05b** *63/14*

**U.S. Cl. 70—143** **12 Claims**



A locking mechanism operable by a key from either of two sides thereof is disclosed having two cylindrical housings operatively connected by a bridge whereby a U-shaped space is formed between the cylindrical housings. Each of the cylindrical housings contains a key plug of the tumbler type. The key plugs extend into the U-shaped space where fingers are mounted thereon for operation of a bolt element. The bolt element is slideably mounted between a pair of parallel assembly plates which have aligned apertures therein of the same configuration as one of the cylindrical housings so that the cylindrical housipg may be passed through said apertures to position the U-shaped space between the plates. The bolt element is formed of a pair of parallel bolt plates operatively connected together at its internal end and having a solid portion with a strike camming surface connected at its opposite end for cooperation with a door frame. The solid portion is connected to the bolt plates of the bolt element on each side thereof by oppositely and symetrically positioned screws to enable the solid portion to be mounted to the bolt plates with its strike camming surface facing either direction. A pin structured keeper is mounted for movement transverse to the sliding movement of said bolt element for insertion into a bore in the solid portion of the bolt element and thereby maintain the bolt element in a retracted position.

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### 3,759,075
### PROTECTING DEVICE FOR AN ACCESS ORIFICE TO A TANK

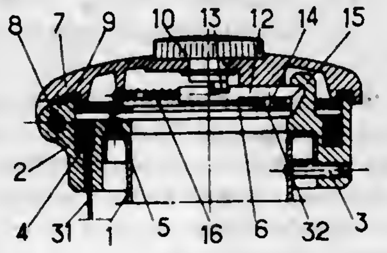
**Paul Lipschutz, Croissy sur Seine, France, assignor to Societe d'Exploitation des Brevets NEIMAN, Neuilly-sur-Seine, France**

**Filed July 13, 1971, Ser. No. 162,080**

**Claims priority, application France, July 15, 1970, 7025920; Mar. 2, 1971, 7107053**

**Int. Cl. B65d** *55/14;* **B60r** *25/00*

**U.S. Cl. 70—159** **14 Claims**



A protecting device for an access orifice to a fuel tank of an automotive vehicle with a heat engine, a driver's station and a power source, said device comprising a movable cover to be locked in closed position, an actuator for unlocking said cover and connected to said power source and manual means for remote-controlling said actuator, located in the driver's station and inserted between said power source and said actuator to selectively operate the latter.

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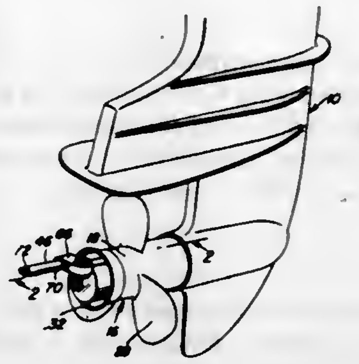
### 3,759,076
### MARINE PROPELLER LOCK

**John B. Reese, 1033 Southwood Dr., Waco, Tex.**

**Filed Dec. 13, 1971, Ser. No. 207,344**

**Int. Cl. F16b** *41/00;* **B60r** *25/00*

**U.S. Cl. 70—232** **9 Claims**



An elongated bar for lengthwise insertion longitudinally between the inner and outer sleeve portions of a marine propeller. The bar includes hook structure on the end to be inserted between the sleeve portions for hooked engagement with one of the generally radial lugs supporting the outer sleeve portion from the inner sleeve portion and a slide member is mounted on the other end portion of the rod and includes a laterally offset portion defining a recess opening toward the hooked end of the rod. The slide member is slideable along the rod into position to overlie and telescopingly receive an associated propeller retaining nut in the recess defined by the offset portion and a lock assembly is provided for releasably locking the slide member in position against movement away from the hooked end of the rod whereby access to the propeller retaining nut by a wrench or other nut removing tool is prevented and unauthorized removal of the propeller from the associated propeller shaft is prevented. As a safety measure, the propeller lock is free of portions which would interfere with normal turning of the associated propeller and thus inadvertent operation of the associated motor without first removing the propeller lock will not cause damage to the propeller or other associated running gear even though a turning propeller having the propeller lock mounted thereon will cause an apparent vibration so as to immediately remind a person who has inadvertently started the associated motor that the propeller lock has not been removed.

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### 3,759,077
### METHOD AND APPARATUS FOR FEEDING ELONGATED ROTARY WORKPIECES IN STRAIGHTENING MACHINES OR THE LIKE

**Heinz Hartkopf, Solingen, Germany, assignor to TH. Kieserling & Albrecht, Solingen, Germany**

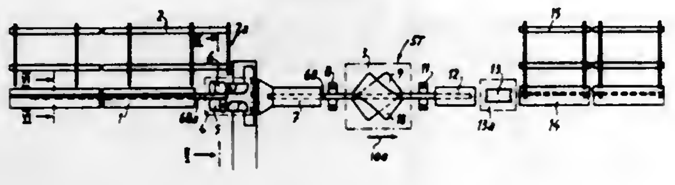
**Filed Oct. 14, 1971, Ser. No. 189,213**

**Claims priority, application Germany, Oct. 17, 1970, P 20 51 087.6**

**Int. Cl. B21d** *3/02*

**U.S. Cl. 72—99** **20 Claims**

A straightening machine for tubular or rod-like workpieces has concave straightening rolls which treat successive workpieces while such workpieces move lengthwise and rotate about their own axes. The feeding unit which advances workpieces into the range of the straightening rolls employs a pair of driven concave advancing rollers whose axes are inclined with reference to the axis of a workpiece between their concave surfaces. The advancing rollers can move successive workpieces at a higher speed so that the leading end of the workpiece between the advancing rollers catches up with the trailing end of the preceding workpiece which is being treated by the straightening rolls, and thereupon at a lower speed which corresponds to the speed of lengthwise transport of the workpiece at the straightening station. The speed of workpieces which are being transported by the advancing rollers can be varied by changing the inclination of the axes of rollers with reference to the axis of the advanced workpiece or by changing the operating speeds of series-connected hydraulic motors which rotate the advancing rollers.



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### 3,759,078
### ROLL SUPPORTING MEANS FOR A ROLLING MILL

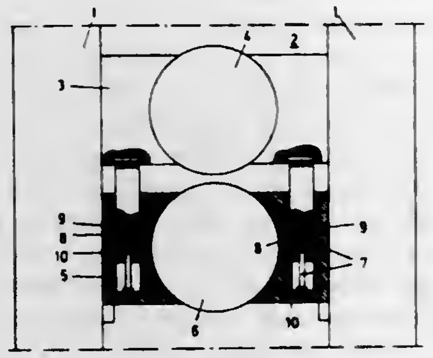
**Friedrich Rotter, Kreuztal-Kredenback, Germany, assignor to Siemag Siegener Maschinenbau, G.m.b.H.**

**Filed May 30, 1972, Ser. No. 257,507**

**Claims priority, application Germany, June 26, 1971, P 21 31 882.1**

**Int. Cl. B21b** *31/08*

**U.S. Cl. 72—238** **7 Claims**



The disclosure pertains to a rolling mill having balance piston cylinder assemblies arranged in the lower work roll bearing chocks and extending towards and engaging the cooperative bearing chocks of the upper work roll. A supporting pressure for the piston cylinder assemblies is generated by hydrostatic compression of elastomers, self-contained within the cylinders, which material has a prestressed pressure larger than the combined weights of the upper work roll and its chocks which it is designed to support during roll changing of the rolls.

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### 3,759,079
### PUNCHING AND FORMING TOOL WITH STRAIGHTENING FACILITY FOR METAL STRIP

**Edmund Nowak, Warszawa, Poland, assignor to Zaklad Doswiadczalny Pras Automatycznych HYDOMAT przy Zakladach Mechanicznych "Tarnow", Warszawa, Poland**

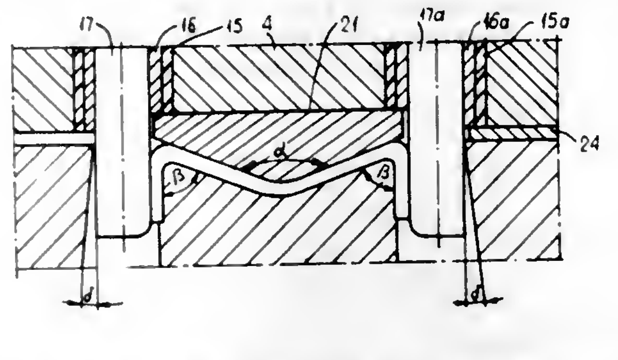
**Filed June 7, 1971, Ser. No. 150,578**

**Claims priority, application Poland, June 13, 1970, 141338**

**Int. Cl. B21d** *31/02*

**U.S. Cl. 72—330** **2 Claims**

A tool for the punching and forming of a metal strip while simultaneously straightening same under elevated pressure, comprises a pressure plate adapted to urge the metal strip against a matrix plate under hydraulic pressure and forming a guide for a plurality of punches displaceable by advance of the member carrying the hydraulic devices toward the matrix plate. Springs between the matrix plate and the guide plate urge the latter in the opposite direction. The pressure-guide plate is provided with an insert cooperating with a recess in the matrix plate to deflect the metal strip during the forming operation.



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### 3,759,080
### COLD FORCING METHOD AND APPARATUS FOR PRODUCING A TERMINAL

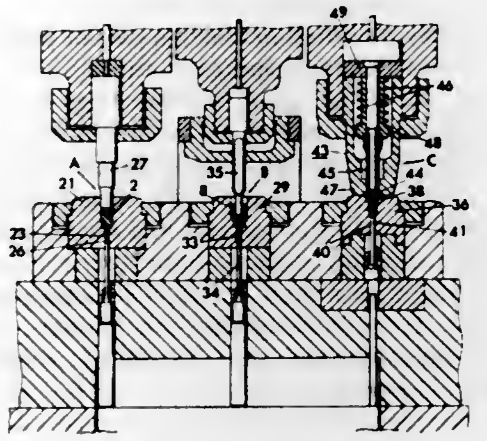
**Norio Sugahara, Oogaki-City, and Tomiji Oguri, Seto-City, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Pref., Japan**

**Filed June 12, 1972, Ser. No. 261,771**

**Claims priority, application Japan, June 14, 1971, 46/42410**

**Int. Cl. B21k** *21/00*

**U.S. Cl. 72—356** **2 Claims**



A cold forging method and apparatus for producing a terminal comprising the steps of:

A first process for feeding a cylindrical blank material into a swaging die and swaging said cylindrical blank material with a first punch to form an enlarged head portion having a shallow recess and a center projection respectively above and below a middle portion maintaining the original outer diameter of the blank material; a second process for feeding an intermediate product obtained in the first process into a pre-pressing die and deeply driving a second punch into the center of said recess in said enlarged head to extrude the material backward increasing its axial length thereby to form a deep center hole which substantially corresponds in diameter with the outer diameter of said second punch; and a third process for feeding an intermediate product obtained in the second process into a forming die except the head and striking it with a third punch comprising a center, a tubular and an outer punch, said center punch being inserted into the center hole of the intermediate product to hold the inner peripheral shape thereof, said tubular punch striking an upper surface of the head, to form, in cooperation with an inner periphery of the outer punch, a flange between the outer punch and a corresponding contact surface of the forming die and a plurality of detent projections on the bottom surface of the flange.

In the cold forging method according to the present invention, the terminal can be manufactured with the same accuracy as that of the cut products in the prior art without causing any waste of the material and the production cost can be reduced remarkably.

### 3,759,081
### METHOD OF MANUFACTURING STEEL PLATES FOR EXTRA DEEP DRAWING

**Kazuo Matsudo, and Takayoshi Shimomura, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed July 17, 1970, Ser. No. 55,862**

**Claims priority, application Japan, July 28, 1969, 44/58949**

**Int. Cl. B21b** *3/00*

**U.S. Cl. 72—364** **3 Claims**

A method for improving the deep drawing properties of low carbon rimmed steel sheets in which the sheets are cold rolled to at least 80 percent reduction in two stages with an interstage and a final anneal. The annealing steps are carefully selected, depending upon the carbon content of the steel, so that the deep drawing properties are maximized, as exemplified by the Rankford value or Normal Anisotropy and the Planar Anisotropy.

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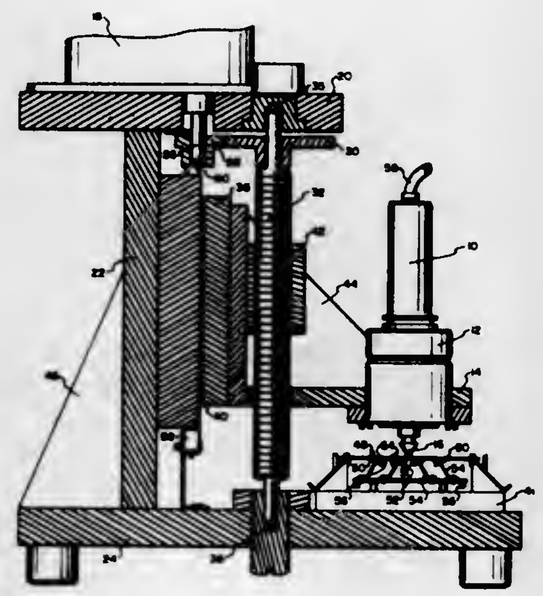
### 3,759,082
### APPARATUS FOR TESTING STRESS-SENSITIVE SEMICONDUCTOR TRANSDUCER

**Joseph Charles Provenzano, Glenview; David F. Hiestand, Lombard, and James A. Krabec, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Jan. 20, 1972, Ser. No. 219,352**

**Int. Cl. G01l** *25/00*

**U.S. Cl. 73—1 B** **10 Claims**



A motor driven force transducer applies stress at a selected rate to a substrate bearing a stress-sensitive test specimen. The analog electrical outputs of the specimen under test and the force transducer are converted to digital form for correlation by a computer.

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### 3,759,083
### SENSING ELEMENT RESPONSE TIME MEASURING SYSTEM

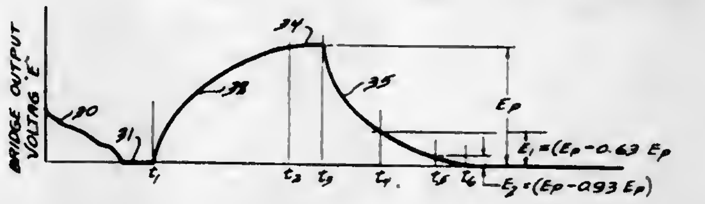
**Gerald L. Erickson, Rutland, Wash.; David A. Jaszkowiak, Star, Idaho, and Joseph E. Kaveckis, Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Apr. 19, 1972, Ser. No. 245,337**

**Int. Cl. G01k** *15/00*

**U.S. Cl. 73—1 F** **7 Claims**

A resistance temperature detector, which is one arm of a bridge circuit, is heated by an electric current separate from the bridge exciting current, to a temperature higher than its environmental temperature. The time required for the RTD to cool through a predetermined temperature range after the heating current is removed is measured to determine the response time of the RTD.



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### 3,759,084
### HEADLAMPS OF VEHICLES

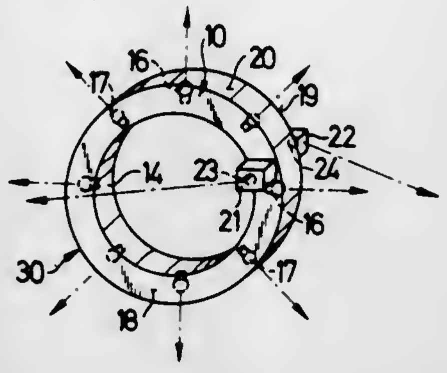
**Anna B. Plewka, Hauptstrasse 12, Kettwig/Ruhr, Germany**

**Filed Aug. 27, 1970, Ser. No. 67,552**

**Claims priority, application Germany, Aug. 28, 1969, P 19 43 640.9**

**Int. Cl. B60q** *1/18*

**U.S. Cl. 240—7.1 R** **5 Claims**



Headlights particularly for motor vehicles in which a supplemental light or lights is provided around the headlight and adjacent thereto so that the beams of light therefrom will be projected in directions other than the rays which are projected from the main headlight.

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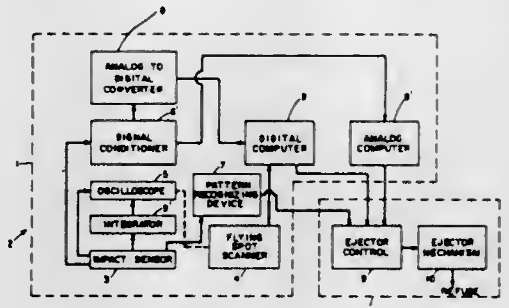
### 3,759,085
### IMPACT SENSOR AND CODER APPARATUS

**David G. Wilson, Cambridge, Mass., and Ora E. Smith, Cincinnati, Ohio, assignors to Massachusettes Institute of Technology, Cambridge, Mass.**

**Filed Mar. 4, 1971, Ser. No. 120,857**

**Int. Cl. G01n** *3/08*

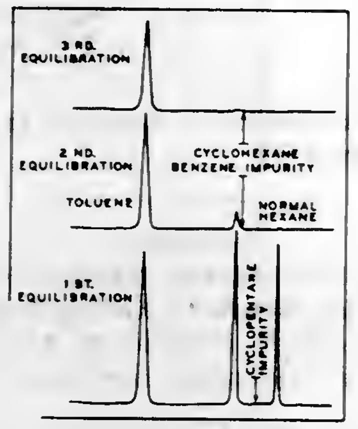
**U.S. Cl. 73—12** **8 Claims**



Impact sensor and coder apparatus for use in a materials-sorting system. The embodiment described in greatest detail includes a movable rigid body adapted to strike individual pieces of the materials. An accelerometer associated with the rigid body measures the rate of deceleration of the rigid body, as a function of time, in terms of a voltage signal waveform. The waveform thus derived is compared with a group of typical waveforms to determine which of the waveforms of the group conforms most closely to that of the sample, thereby to identify the sample.

### 3,759,086
### ANALYSIS METHOD

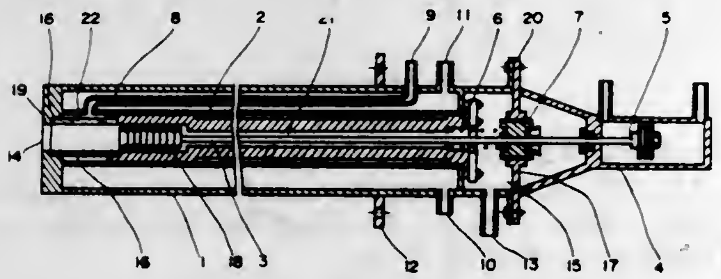
**Clayton D. McAuliffe, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.**
**Filed May 24, 1971, Ser. No. 146,348**
**Int. Cl. B01d** *57/00*
**U.S. Cl. 73—19** **4 Claims**



A method is provided for determining the presence of compounds in aqueous solutions by utilizing repeated equilibrations of a nonreactive gas with an aqueous sample containing such compounds and analyzing the gas from such repeated equilibrations to determine compounds present in the liquid.

### 3,759,087
### SAMPLING APPARATUS FOR ANALYZING GAS

**Norito Iwao; Akira Ezaki; Shigemi Hayashi; Yukio Nakamori; Keihachiro Tanaka; Nobukuni Nakano, all of Kitakyushu, and Toshihito Morita, Chiba, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan**
**Filed Apr. 8, 1971, Ser. No. 132,484**
**Int. Cl. G01n** *1/00*
**U.S. Cl. 73—23** **6 Claims**

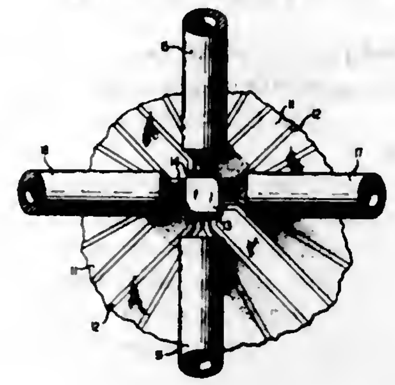


A gas sampling apparatus, which is a high temperature dry sampling apparatus, which makes it possible to carry out quickly and accurately a stabilized analysis of dust-rich, high temperature and high humidity gas generated from a gas generating source, such as, for example, a shaft furnace, converter, open-hearth furnace and the like, comprising, as a typical example, a ceramic filter fitted to the tip of a gas outlet pipe provided within a cooling cylinder, a mechanism for blowing gas for removing dust, said mechanism being set near the filter and a thermal expansion absorbing mechanism installed in the gas outlet pipe.

### 3,759,088
### METHOD OF AND APPARATUS FOR TESTING THE QUALITY OF BONDED CONNECTIONS OF SEMICONDUCTOR DEVICES

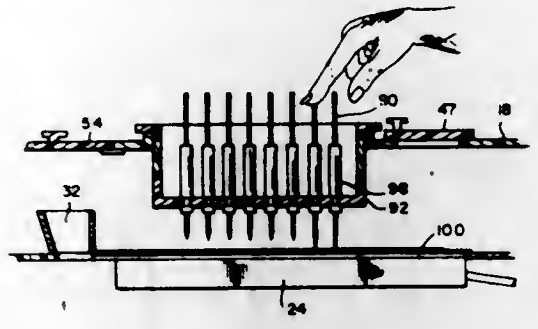
**Nathan Everette Hardwick, III, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**
**Filed June 2, 1972, Ser. No. 259,272**
**Int. Cl. G01m** *3/02*
**U.S. Cl. 73—37** **2 Claims**

An apparatus is disclosed for the nondestructive testing of the integrity of a semiconductor device of the beam lead or flip chip type after it has been bonded to a mounting substrate. The apparatus comprises an air blast tester having at least two opposed air ducts to produce impinging fluid jets beneath the bonded chip. The opposed impinging jets result in a pressure buildup because of the deceleration of flow thereby resulting in a force on the underside of the semiconductor chip.



### 3,759,089
### TEST METHOD FOR FILM-FORMING MATERIALS

**Moustafa M. Sharabash, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**
**Filed Oct. 26, 1971, Ser. No. 192,013**
**Int. Cl. G01n** *19/04*
**U.S. Cl. 73—64.1** **12 Claims**

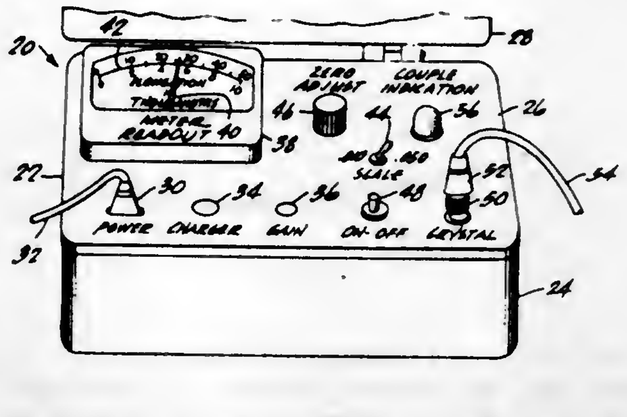


A gelatin film is spread on a flat steel plate from a spreader bucket and blade moved over the plate at uniform speed. To provide controlled gelling conditions, the plate temperature is held constant by water flow across its bottom and conditioned air is circulated through a housing over the plate. A plurality of test probes mounted above the plate are depressed into contact with and withdrawn from the gelatin film, in timed sequence. The probes are wetted by un-gelled film and draw strands therefrom which remain connected to the probes, whereas the probes do not draw strands from gelled film but form dimples therein. The strands and dimples may be retained as a record, and gelation time is accurately determined by observing either or both of when the successively depressed probes cease to draw strands or start to form dimples. Strand thickness and dimple size varies at different stages to reveal gelation characteristics.

### 3,759,090
### ULTRASONIC EXTENSOMETER

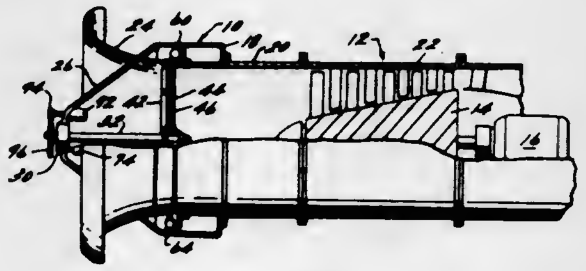
**Howard J. McFaul, Westminster; Donald C. Erdman, and Evan B. Friedmann, both of Pasadena, all of Calif., assignors to McDonnell Douglas and Donald C. Erdman Co., a part interest to each**
**Filed Feb. 22, 1971, Ser. No. 117,635**
**Int. Cl. G01n** *29/00*
**U.S. Cl. 73—67.6** **20 Claims**

An ultrasonic extensometer for measuring the elongation of a bolt or the like being tightened against structure which it fastens, the extensometer including a transducer magnetically coupled to one end of the bolt, a pulser/receiver for generating a periodic pulse signal which energizes the transducer that is subsequently energized by the echo pulse from the far end of the bolt to provide an echo signal which is received and amplified, indicating circuit means for detecting and providing a correct couple indication between the transducer and its associated bolt end, and measuring circuit means for displaying a variable duration meter signal responsively produced by the amplified echo signal and controlled in duration by a vernier signal responsively produced by the pulse signal after a predetermined delay which is adjustable to index the vernier signal a desired amount with respect to the meter signal so that when the bolt has been elongated the proper amount, the amplified echo signal then coincides with the indexing vernier signal and the duration of the meter signal is reduced to zero.



### 3,759,091
### ENGINE INLET DISTORTION TESTING APPARATUS

**Robert M. Reimer, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio**
**Filed July 2, 1971, Ser. No. 159,393**
**Int. Cl. G01m** *15/00*
**U.S. Cl. 73—116** **7 Claims**

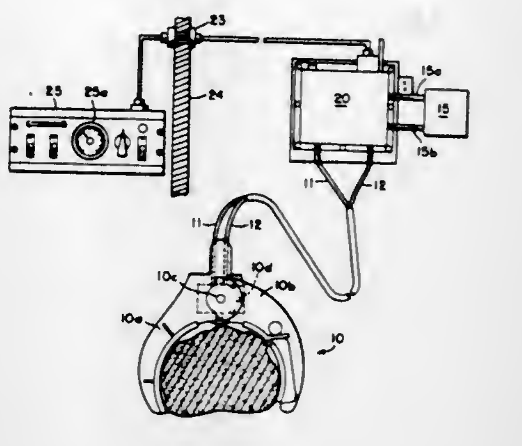


Apparatus is disclosed for testing the capability of a compressor or gas turbine engine to operate under conditions where the normal, generally uniform pressure distribution of the inlet is distorted by pressure gradients as may be encountered in aircraft maneuvers. Three discs are provided in a simulated engine inlet. All of the discs have equispaced, registerable apertures. The middle disc comprises inner and outer sectors which are angularly adjustable to control the extent to which their apertures are registered with the apertures of the immediately adjacent downstream disc and thus the degree and location of distortion. The upstream disc is rotatable to provide dynamic pressure distortion patterns. The upstream disc is adjustable toward and away from the other discs to vary the severity of the dynamic distortions.

### 3,759,092
### DIFFERENTIAL PRESSURE TRANSDUCER AND READOUT FOR SENSING CLAW GRIP FORCE

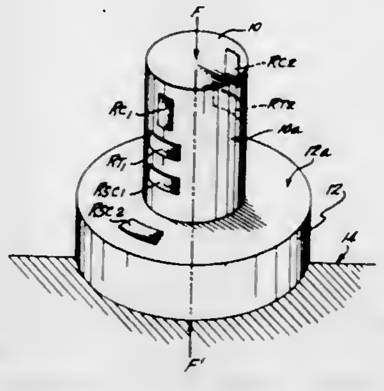
**Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy**
**Filed June 9, 1971, Ser. No. 151,336**
**Int. Cl. G01l** *1/02*
**U.S. Cl. 73—141** **3 Claims**

A submersible having an externally mounted hydraulic system is provided with a differential pressure transducer connected between the supply and return lines which articulate a remotely disposed claw. The transducer is responsive to produce a signal representative of the pressure differential between the internal pressures in the lines. This signal is fed through the pressure hull of the submersible to an internally carried meter to enable the determination of the claw's gripping force. Although the meter actually "reads" differential pressure, it is calibrated in units of grip force, in this case, pounds (OF FORCE). This is possible because the differential pressure is proportional to the claw grip force. Being thusly arranged, the sensing or readout devices are removed from the near proximity of the claw and are less vulnerable to damage.



### 3,759,093
### LINEAR LOAD CELL BRIDGE INCLUDING A NON-LINEAR STRAIN SENSITIVE ELEMENT

**Emory W. Farr, 830 Del Cerro Ave., West Covina, Calif.**
**Filed Nov. 10, 1971, Ser. No. 197,413**
**Int. Cl. G01l** *5/18*
**U.S. Cl. 73—141 A** **8 Claims**



To compensate for non-linearities in a bridge circuit comprising a plurality of strain gauge transducers arranged to provide an output signal proportional to the load on a member, a non-linear strain sensitive element is mounted in the area of the member sensitive to load strain and electrically connected in series in one arm of the bridge. A matching non-linear strain sensitive element is mounted in an area of the member not sensitive to load strain and is connected in an adjacent arm of the bridge to compensate for temperature-dependent non-linearities.

### 3,759,094
### METHOD FOR MONITORING THE FORCES IN THE MOORING CABLE OF A SINGLE-POINT MOORING SYSTEM

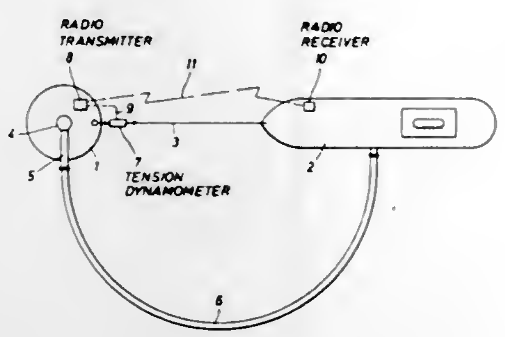
**Jan J. Al, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.**

**Filed June 29, 1971, Ser. No. 157,837**

**Claims priority, application Netherlands, July 10, 1970, 7010213**

**Int. Cl. G01l** *5/10*

**U.S. Cl. 73—143** **3 Claims**



A system for monitoring the force in a mooring cable of a single-point mooring system and transmitting from the single-point mooring system to a ship moored thereto a signal related to the measured force whereby said ship can disconnect from said single-point mooring system when said signal exceeds a preset maximum value.

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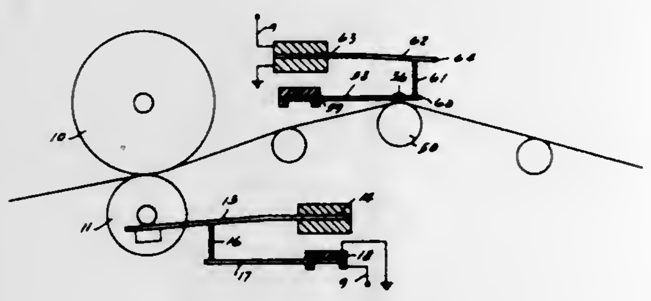
### 3,759,095
### STRIP DETECTION APPARATUS

**Ray L. Short, Jr., Glenview; Howard Bowen, Wilmette, and David L. Henderson, Mundelein, all of Ill., assignors to Research Technology Incorporated, Skokie, Ill.**

**Filed July 16, 1971, Ser. No. 163,243**

**Int. Cl. G01n** *3/20*

**U.S. Cl. 73—157** **12 Claims**



A device for detecting flaws in a film strip having a feeler for sensing the surface of the film as it is moved rapidly through the device and using a piezoelectric element in response to movement of the feeler for generating a pulse whenever a flaw is detected in the film. The circuit which couples the electrical signal from the piezoelectric crystal to a utilization point such as a counter, includes a capacitor having a value of capacitance which is designed to block gradually changing electrical signals from the piezoelectric element and to pass signals which change rapidly. In this way gradual changes in thickness in the film do not produce a readable output signal, while cracks in the edge of the film or damaged sprocket holes or tape splices will generate a sudden output signal which may be read as a flaw in the film.

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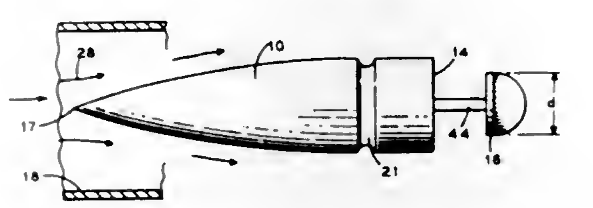
### 3,759,096
### MEASURING THE VELOCITY OF A FLOWING FLUID

**Douglas F. White, Bedminster, N.J., assignor to American Standard Inc., New York, N.Y.**

**Filed Oct. 27, 1969, Ser. No. 869,709**

**Int. Cl. G01f** *1/00*

**U.S. Cl. 73—194 B** **12 Claims**



The velocity of a flowing fluid is determined by means of a device which includes an upstream cylindrical member and a downstream disc-like member spaced from the cylindrical member by a predetermined distance. Oscillations are produced in the fluid which passes around the cylindrical and disc structures and the frequency of the oscillations is measured. The cylindrical member when a streamlined nose is employed can have a diameter on the order of less than ½ inch by providing the cylindrical member with an annular discontinuity, such as a ring.

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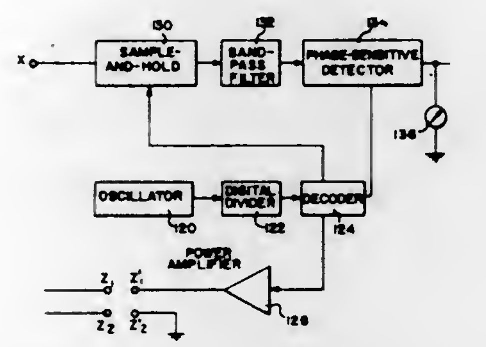
### 3,759,097
### ELECTROMAGNETIC WATER CURRENT METER

**Vincent J. Cushing, 9804 Hillridge Dr., Kensington, Md.**

**Filed Sept. 1, 1970, Ser. No. 68,674**

**Int. Cl. G01p** *5/08*

**U.S. Cl. 73—194 EM** **18 Claims**



A body means of electrically non-conductive material supports at least one pair of electrically conductive detecting electrodes disposed at opposite portions of the body means. Means is supported within the body means between the electrodes for producing an alternating magnetic field. An electrical circuit is connected to the detecting electrodes and includes indicating means. In one form of the invention, electrically conductive guard means is disposed adjacent the electrodes and means is provided for establishing a potential on the guard means which is directly proportional to the potential on the detecting electrodes. In another form of the invention, means is provided for driving the electomagnet to produce an alternating magnetic field at a predetermined frequency wherein the magnetic field is driven to a finite value for a predetermined time interval during each cycle, and the electrical circuit includes means for measuring the signal from the detecting electrodes during a time delayed portion of said time interval. In a further form of the invention, pairs of oppositely disposed detecting electrodes are provided at right angles to one another so as to indicate the direction of water current flow. In each form of the invention, shield means is preferably employed in the form of electrically conductive material disposed between the detecting electrodes and the means for producing the magnetic field.

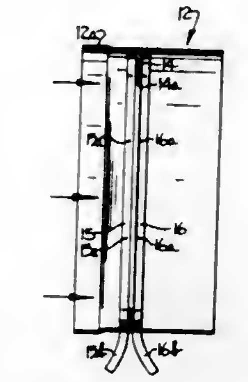
### 3,759,098
### APPARATUS FOR DETERMINING FLUID FLOW IN A CONDUIT

**Hillard Glenn Logsdon, and Ernest August Werder, both of Charlotte, N.C., assignors to Aeronca, Inc., Pineville, N.C.**

**Filed Jan. 27, 1972, Ser. No. 221,186**

**Int. Cl. G01f** *1/00*

**U.S. Cl. 73—205 R** **10 Claims**



An open-ended housing is adapted to be communicatively connected to a conduit for receiving fluid flowing therethrough, and has a plate means defining an orifice within the housing for restricting the flow of fluid therethrough, with novel sensing means so arranged on opposite sides of the orifice as to sense relatively high static pressure at a plurality of points upstream of the orifice and to sense sub-atmospheric static pressure at a plurality of points downstream of the orifice, and a pressure responsive means is operatively connected to the sensing means for determining the differential pressure on opposite sides of the orifice.

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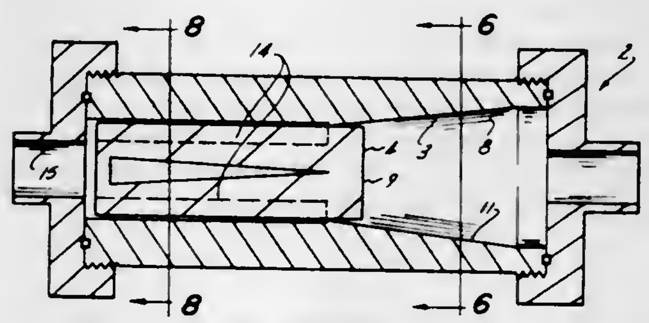
### 3,759,099
### FLOWMETER

**Rob Roy McGregor, 2951 Henesy, Imlay City, Mich.**

**Filed Apr. 3, 1972, Ser. No. 240,560**

**Int. Cl. G01l** *3/26*

**U.S. Cl. 73—207** **2 Claims**



This invention relates to a flowmeter of particular structure providing immediate continuous indication of rate of fluid flow in a conduit by utilizing in the path of fluid flow a particular float structure the variable position of which directly corresponds to the variable rate of fluid flow, which variable position is immediately continuously indicated by a particularly arranged light source, a light sensor, and a readout device with necessary electrical circuitry.

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### 3,759,100
### FLOWMETER

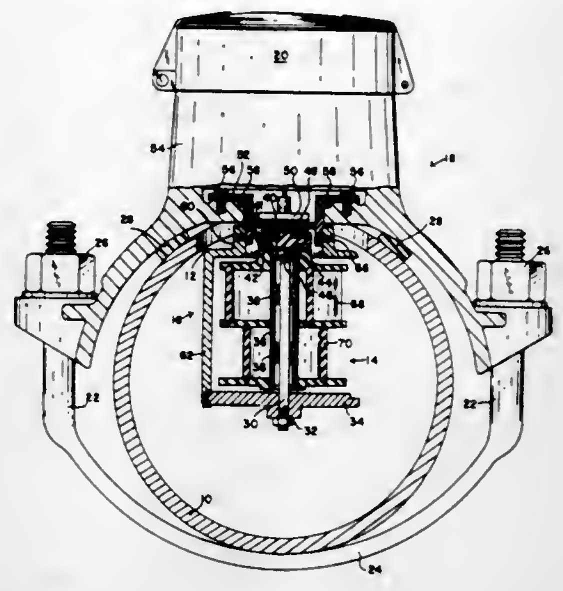
**William J. Medwig, Pittsburgh, and Ronald N. Koch, Allison Park, both of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.**

**Filed July 15, 1971, Ser. No. 162,949**

**Int. Cl. G01f** *1/08*

**U.S. Cl. 73—230** **15 Claims**

An in-line magnetic drive flowmeter comprising a meter and housing, an impeller insertable through the wall of a pipeline, and a saddle assembly to mount the meter in the pipeline. The meter is particularly characterized by calibration means involving rotation of a housing about the impeller only, the housing having a unique tapered slot calibration opening and a stacked set of rotor elements comprising the meter impeller.



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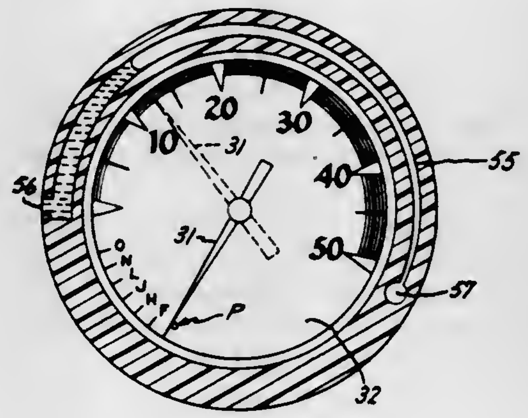
### 3,759,101
### COMBINED DEPTH GAUGE AND PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT

**Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 16, 1971, Ser. No. 181,096. The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed.**

**Int. Cl. G01f** *23/14;* **G06g** *5/00*

**U.S. Cl. 73—291** **6 Claims**



In this computer for calculating and indicating safe minimum-duration decompression schedules, a porous body serves the double purpose of supporting the gas diffusion membrane and providing a substantially constant gas chamber. Additionally, the immersible housing of the instrument has an integrally-formed depth gauge in the form of an arcuate rib portion having a tapered axial bore open only at its larger end. A single instrument dial serves both the computer gauge and the depth gauge in this coordinated assembly.

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### 3,759,102
### APPARATUS FOR DETERMINING CORRECT PYROMETER READINGS WITH STEAM INTERFERENCE PRESENT

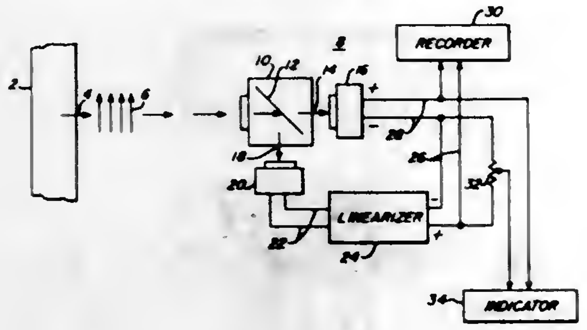
**Thomas P. Murray, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Mar. 25, 1971, Ser. No. 127,900**

**Int. Cl. G01j** *5/06, 5/10, 5/60*

**U.S. Cl. 73—355 R** **10 Claims**

Apparatus for determining correct pyrometer readings with steam interference present uses a silicon cell pyrometer and a total-radiation pyrometer to measure surface temperature of a steel slab at hot-rolling temperature. The output of the silicon cell is linearized as a multiple of the total-radiation pyrometer output by the ratio of the error of the two pyrometer readings when steam is present. The two outputs are combined to provide a true temperature reading.



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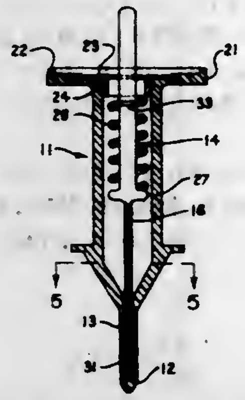
### 3,759,103
### DISPOSABLE COOKING THERMOMETER

**Anthony J. Volk, 173 E. Syracuse St., Turlock, Calif.**

**Filed Mar. 1, 1971, Ser. No. 122,604**

**Int. Cl. G01k** *11/08*

**U.S. Cl. 73—358** **5 Claims**



A thermometer including a rod movable axially of a tube having a closed tip end with a thermally plastic material disposed in the bore in the tip end of the tube and a spring compressed in the tube about the rod and urging the rod into the tube. The rod extends from the rear end of the tube as an indicator and as the thermally plastic material softens with increasing temperature, the rod is forced by the spring into the bore to squeeze material past the rod.

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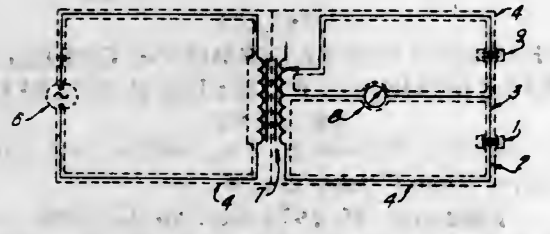
### 3,759,104
### CAPACITANCE THERMOMETER

**Max C. Robinson, 1270 Queenneville No. 116, Montreal, Quebec, Canada**

**Continuation of Ser. No. 44,431, June 8, 1970. This application Mar. 9, 1972, Ser. No. 233,372**

**Int. Cl. G01k** *7/34*

**U.S. Cl. 73—362 R** **5 Claims**



A thermometer having a sensor formed by a three-terminal capacitor with a suitable temperature-sensitive dielectric interposed between the sensing electrodes, with the sensor being connected to a suitable measuring means, such as a transformer bridge, capable of measuring the direct capacitance of a three-terminal capacitor.

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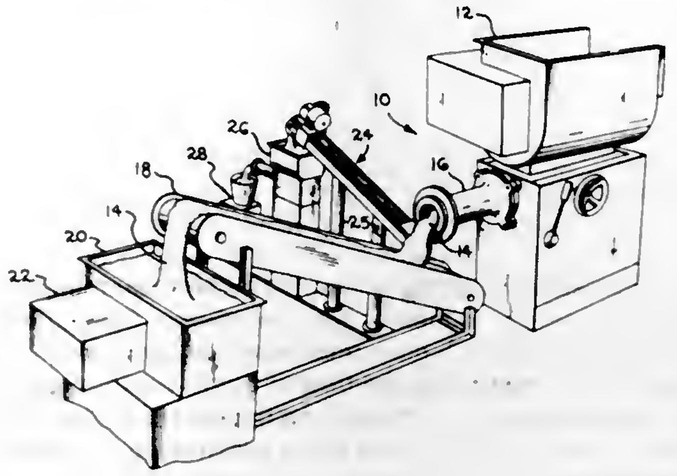
### 3,759,105
### METHOD AND APPARATUS FOR SAMPLING GROUND MEAT

**Charles H. Wallace, Carrollton, Va., and Frank L. Smith, Toledo, Ohio, assignors to Huss Equipment Corporation, Toledo, Ohio**

**Filed June 18, 1971, Ser. No. 154,443**

**Int. Cl. G01n** *1/02*

**U.S. Cl. 73—421 A** **10 Claims**



This invention relates to a method and apparatus for continuously sampling a ground meat product. Government restrictions on fat content in ground meat now necessitate more frequent sampling of the ground meat product at the processing plant. Heretofore, such samples have been taken periodically from the meat being processed and tested in a fat analyzer. The present invention continuously takes a sample portion of meat from the meat processing equipment and continuously conveys it to the fat analyzing equipment. By obtaining a continuous sample of the ground meat, a more accurate or representative analysis can be obtained. Further, less labor is involved in obtaining and analyzing the samples. The analyses can also be made more rapidly and corrective action, if needed, taken sooner. To obtain a continuous sample, a small conveyor with a variable entrance opening is positioned under a discharge spout of a meat grinder of the processing equipment and continuously receives and conveys a small portion of the ground meat exiting from the spout of the grinder. This meat is carried to one side where it can be further processed and the fat determination made.

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### 3,759,106
### GAS OR DUST DETECTING AND MEASURING APPARATUS

**Karl-August Wachter, Lubeck, and Horst Rabenecker, Bad Schwartau, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany**

**Filed Sept. 8, 1972, Ser. No. 287,220**

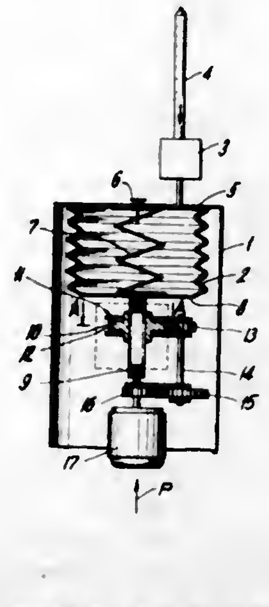
**Claims priority, application Germany, Sept. 16, 1971, P 21 46 248.6**

**Int. Cl. G01n** *1/24*

**U.S. Cl. 73—421.5 R** **10 Claims**

The apparatus includes a bellows pump for drawing in a sample to be analyzed, with the pump having a movable part and being expanded by spring bias, during a working stroke, and collapsed, by a mechanical drive, during a return stroke. The mechanical drive is a continuously driven spindle drive including a driving motor. The spindle drive is automatically coupled to the movable part of the pump responsive to termination of the working stroke thereof, and is automatically uncoupled from the movable part of the pump responsive to the termination of the return stroke. In one embodiment of the invention, the spindle drive includes a stationary threaded spindle secured to the movable pump part and a split nut

rotatable by the motor and movable into and out of threaded engagement with the spindle. A toggle or tilting lever mechanism effects engagement and disengagement of the split nut with the stationary spindle. In a second embodiment, the motor drives two rotatable threaded spindles having their axes in spaced parallel relation, and a connecting bar, having threads at each end, is connected to the movable part of the pump and is swung into and out of threaded engagement with the two spindles. The third embodiment also has two rotatable threaded spindles driven by the motor but cooperable with a split nut in the same manner as in the first embodiment.



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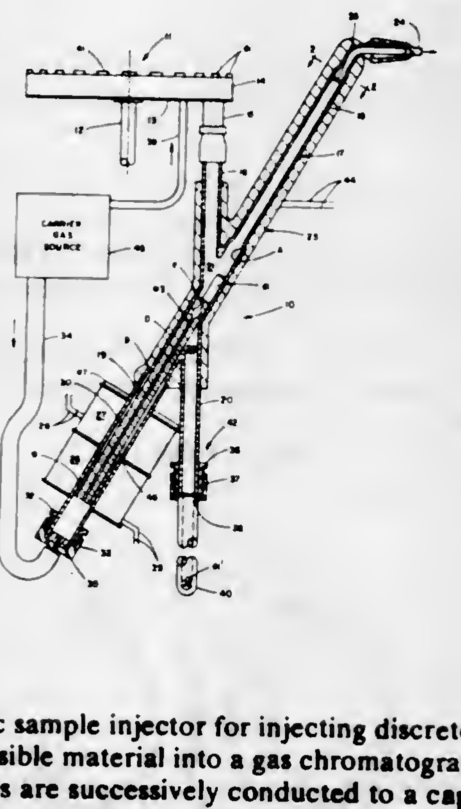
### 3,759,107
### BALLISTIC INJECTION FOR GAS CHROMATOGRAPHY

**Stewart A. Fox, Lyons, and Robert J. Magill, Barrington, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.**

**Filed Oct. 5, 1972, Ser. No. 295,257**

**Int. Cl. G01n** *31/38*

**U.S. Cl. 73—422 GC** **7 Claims**



An automatic sample injector for injecting discrete samples of a heat expansible material into a gas chromatographic unit. Sample capsules are successively conducted to a capsule ram which forces the capsules up an inclined passageway where these capsules are heated. The sample material expands upon heating, and is carried in vaporized form by a carrier gas to a gas chromatograph. The capsule ram is withdrawn down the inclined passageway past a discharge conduit where the component parts of the sample capsule fall into a collection area.

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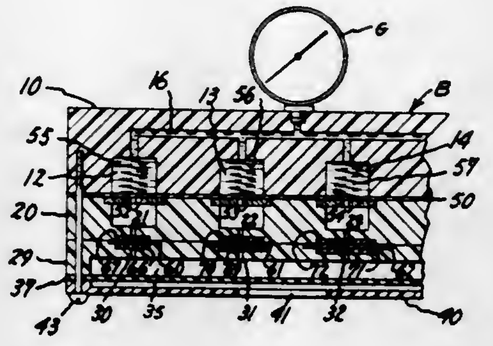
### 3,759,108
### SINGLE GAUGE MULTI-TIME CONSTANT AND MULTI-TISSUE RATIO AUTOMATIC DECOMPRESSION INSTRUMENTS

**Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 16, 1971, Ser. No. 181,107. The portion of the term of the patent subsequent to Jan. 16, 1990 has been disclaimed.**

**Int. Cl. G06g** *5/00*

**U.S. Cl. 73—432** **7 Claims**



These instruments for guiding a diver's rapid, safe return to the surface have in each instance a single gauge which through an automatic switching feature serves a number of different time-constant gas chambers of the pneumatic analogue computing means and indicates the maximum gas pressure prevailing in the gas chamber array. The instrument also includes a tissue-ratio compensating feature in the form of springs of different appropriate constants situated in the gas chambers.

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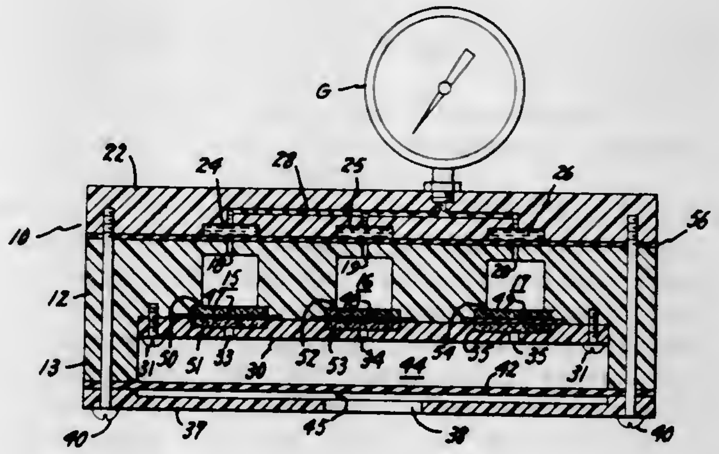
### 3,759,109
### MULTI-TIME CONSTANT PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENTS

**Lyman A. Johnson, and Marcus P. Borom, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 16, 1971, Ser. No. 181,107. The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed.**

**Int. Cl. G06g** *5/00*

**U.S. Cl. 73—432 R** **8 Claims**



A decompression meter to guide a diver in rapidly and safely returning to the surface is described. It includes as key elements a number of separate semipermeable membranes through which a gas diffuses at different rates in simulation of the uptake and release of nitrogen by a plurality of different time-constant tissues of the diver's body during the hyperbaric exposures of his underwater excursion.

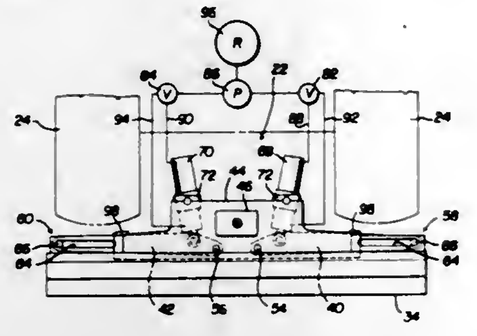
### 3,759,110
### HYDRAULIC ANGLE DOZER

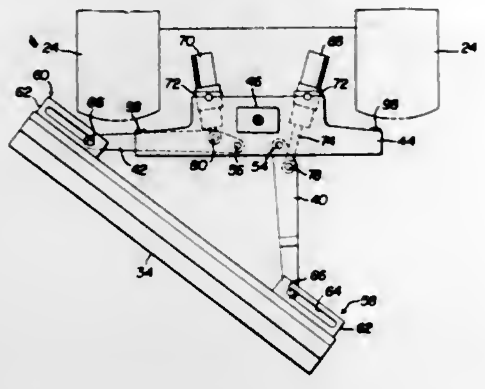
**Charles J. Davis, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.**

**Filed Jan. 10, 1972, Ser. No. 216,366**

**Int. Cl. F16h** *21/44*

**U.S. Cl. 74—99** **13 Claims**





This disclosure relates to an angling mechanism for a bull dozer blade, or the like, which is adapted to extend and angle the dozer blade and is capable of automatically shifting the blade laterally, in the angled position, to provide a blade overhang. The angling mechanism includes a pair of arms which are pivotally supported at one end on the dozer frame for horizontal swinging movement; the opposed ends are attached to the dozer blade by pivotal connections. the dozer blade includes a pair of slots which receive the pivotal connections to the arms and permit angling of the blade and lateral movement as described above. The arms are rotated in the disclosed embodiment by hydraulic cylinders connected to the arms, between the pivotal connections, and the cylinders are operable, independently, to extend the blade in parallel relation to the dozer frame or angle the blade, as described above.

### 3,759,111
### HIGH SPEED VARIABLE RATIO PULLEY

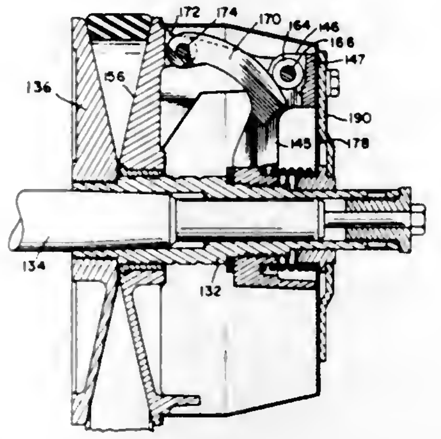
**Stephen J. Hoff, Richmond, Ind., assignor to Hoffco Inc., Richmond, Ind.**

**Continuation-in-part of Ser. No. 202,270, Nov. 26, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,721**

**Int. Cl. F16h** *35/52*

**U.S. Cl. 74—230.17 E** **11 Claims**

Improved safety and operation is obtained in a high-speed variable ratio pulley having a movable pulley flange which is driven rotatively by torque transmitting engagement between fixed spider arms and drive posts adjacent the periphery of the movable pulley flange, and is thrust axially toward a fixed pulley flange by centrifugal cam levers acting between the movable pulley flange and the spider arms. The drive posts closely straddle the thrust line and are long enough to give clearance for the intended flange movement, and their ends are tied together by a tie plate and a ductile bell housing which also engage an outboard bearing to support the posts and movable pulley flange against tilting. Cam movement of the pulley flange is limited, in one case by providing the cam levers with hooked ends which stop their swing at a point short of thrusting the movable pulley flange into forceful abutment with the fixed pulley flange, and in another case by positioning the tie plate to move as a stop against the ends of the spider, substantially on the cam thrust line. For special applications, the spider is adjustably positioned to provide different cam locations and engaging speeds.



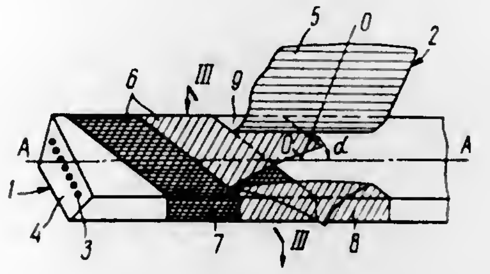
### 3,759,112
### V-BELT

**Ivan Vasilievich Polshikov, ulitsa Parkovaya, 10 kv. 5, Kursk; Lev Nikolaevich Kurdin, ulitsa Pervomaiskays 90, kv. 57, and Alexandr Timofeevich Titarenko, Poselok NIIRP2, kv. 77, both of Zagorsk Moskovskoi oblasti, all of U.S.S.R.**

**Filed Sept. 1, 1971, Ser. No. 177,065**

**Int. Cl. F16g** *5/00*

**U.S. Cl. 74—231** **1 Claim**



A V-belt, wound on whose core at an angle of 45° is a rubberized fabric strip produced by warpwise cutting of this fabric. The strip is helically lap-wound on the core to form belt covering layers, the number of which is obtained by the displacement of the strip convolutions, and depends on the strip width.

### 3,759,113
### ROLLER THREADED SPINDLE WITH NUT

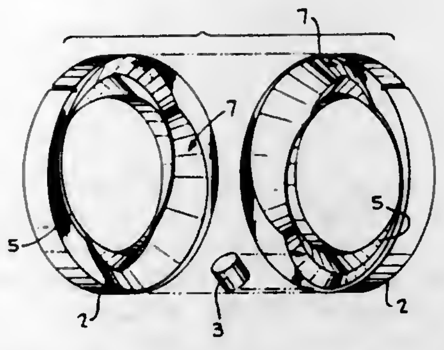
**Friedrich Orend, An der Wick 2, 3353 Bad Gandersheim, Germany**

**Filed Mar. 4, 1971, Ser. No. 120,920**

**Claims priority, application Germany, Mar. 4, 1970, P 20 09 984.7**

**Int. Cl. F16h** *1/18*

**U.S. Cl. 74—424.8** **12 Claims**



A threaded spindle which transmits axial thrust to a nut disposed for a relative rotation thereon, through rollers, the nut having an endless raceway of zero pitch around its inner periphery with the rollers disposed for simultaneous engagement with opposing flanks of the raceway and the screw thread to transmit axial thrust resulting from relative rotation of the screw and nut, the raceway being in the shape of an Archimedean spiral having sufficient clearance at diametrically opposed locations on opposite sides of the screw for the rollers to disengage from and move axially across the crest of the thread of the screw incident to their movement around the raceway.

### 3,759,114
### DOUBLE-LEVER BRAKE CONTROL FOR BICYCLES

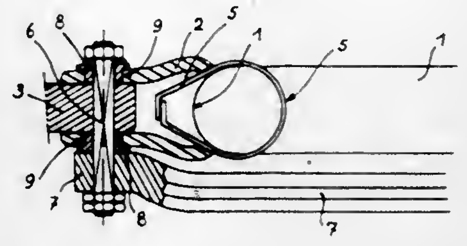
**Jean-Marie DeFour, Vertes Feuilles, France, assignor to Angenieux-CIB S.A., Saint-Etienne, France**

**Filed Jan. 7, 1972, Ser. No. 216,107**

**Claims priority, application France, Jan. 29, 1971, 7103673**

**Int. Cl. G05g** *11/00*

**U.S. Cl. 74—489** **4 Claims**



In this dual control of bicycle brakes the main or racing lever and the auxiliary or sports lever are rigidly interconnected through a common fulcrum pin. The main lever and the auxiliary lever each comprise, in the portion connected to the brake lever fulcrum bracket, a polygonal hole or eye adapted to receive therethrough a fulcrum pin having a matching cross-sectional polygonal contour, so that the levers and pin are rotatably rigid with one another, rings also formed with a corresponding polygonal hole being adapted to be fitted on the fulcrum pin and having a cylindrical outer peripheral contour such that the fulcrum pin is pivotally mounted therethrough in a bearing provided to this end in the brake lever fulcrum bracket.

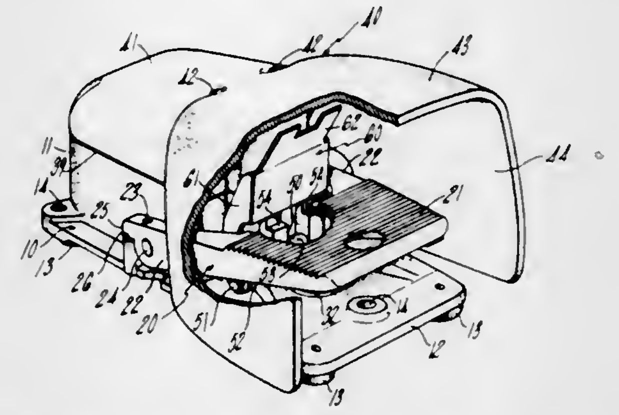
### 3,759,115
### SAFETY FOOT CONTROL

**Alfred R. Dibonaventura, and Leroy H. Ford, both of Woodstock, Conn., assignors to The Linemaster Switch Corporation, Woodstock, Conn.**

**Filed Apr. 19, 1972, Ser. No. 245,591**

**Int. Cl. G05g** *1/14*

**U.S. Cl. 74—512** **8 Claims**



A foot control such as a switch or valve of the treadle-operated type is provided with a guard cover inclosing the sides and top of the treadle and a movable abutment or stop normally retaining and locking the treadle in normal elevated unactuated position, the abutment or stop being disengageable by inward movement of a pivoted trip lever disposed at the inner end of the guard cover and treadle for actuation by the toe of the operator and being accessible only by insertion of the foot of the operator between the treadle and guard cover from the outer open end thereof. An additional safety measure may be the use of dual return springs for the treadle and stop.

### 3,759,116
### DRIVE FOR CONVERTERS, ROTARY TROMMELS, PLATE CONVEYORS AND THE LIKE

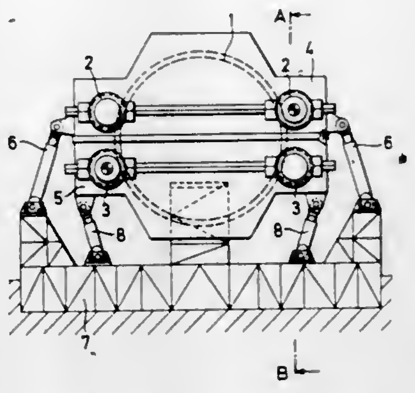
**Walter Schroder, Stemmansfeld 10, Bochum-Stiepel, Germany**

**Filed June 22, 1972, Ser. No. 265,284**

**Claims priority, application Germany, June 22, 1971, P 21 30 781.3**

**Int. Cl. F16h** *57/02*

**U.S. Cl. 74—606 R** **7 Claims**



Drive for converters, rotary trommels, plate conveyors and similar machines having a machine foundation and a machine shaft or a transmission drive shaft includes a large gear mounted on the shaft and disposed in a vertical plane, at least four pinions in meshing engagement with the gear at given engagement points along the periphery thereof, the pinions being mounted in pairs on respective pinion carriers, one of the carriers being located below the horizontal central plane of the gear, and link members connected to the machine foundation and extending parallel to tangents to the periphery of the gear located at the engagement points, respectively, each of the pinion carriers being individually supported independently of the gear, by the link members, for universal movement relative to the foundation.

### 3,759,117
### GEAR FOR DRIVING FLYING SHEARS

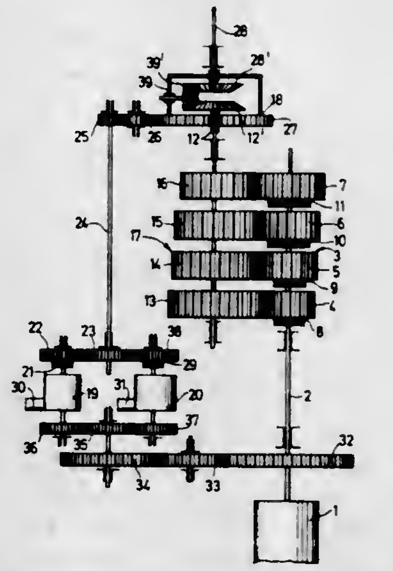
**Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim, Germany**

**Filed Jan. 29, 1971, Ser. No. 110,820**

**Claims priority, application Germany, Jan. 29, 1970, P 20 03 922.9**

**Int. Cl. F16h** *37/06;* **B26d** *1/56*

**U.S. Cl. 74—681** **9 Claims**



In a change speed gear associated with flying shears for varying the travelling speed thereof and thus changing at will the sectional length of a material fed through the shears at a constant speed and severed by said shears, there are provided two steplessly shiftable drive assemblies continuously connected to a drive motor and selectably connectable to an output shaft continuously connected to the flying shears.

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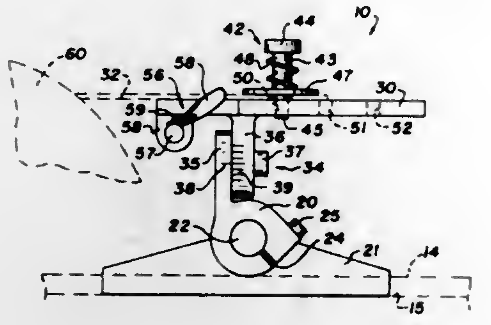
**3,759,118**

## CIRCULAR SAW GRINDING ATTACHMENT

**Dirk Glas, 4976 Rumble St., Burnaby, B. C., Canada**
**Filed Aug. 9, 1971, Ser. No. 93,118**
**Int. Cl. B23d** *63/12*
**U.S. Cl. 76—43** **7 Claims**



An attachment is provided for sharpening a blade of a bench saw or a radial arm saw when such a blade is removed from the driven arbor of the saw and is temporarily replaced by a grinding wheel. The attachment has a base and a guide which respectively engage and enter the work table top of the saw and the miter groove formed in the table with a shaft normal to the miter groove interconnecting the base and guide. A plate is mounted on the base so that the plate can be rocked to selected positions about the longitudinal axis of the shaft and about a horizontal axis disposed at right angles to said shaft axis. Securing means is provided to fasten the saw blade to the top of the plate so that the blade can be rotated progressively during the sharpening operation. The plate is fitted with stop means which engage the teeth of the saw blade as it is progressively rotated whereby to properly align other teeth with the grinding wheel.

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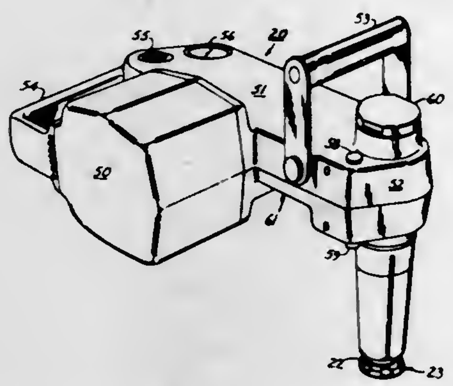
**3,759,119**

## INTERNALLY REACTIVE STRUCTURAL JOINDER SYSTEM

**George S. Wing, 605 Paseo del Mar, Palos Verdes Estates, Calif.**
**Filed Sept. 13, 1971, Ser. No. 179,799**
**Int. Cl. B25b** *13/46, 17/00*
**U.S. Cl. 81—57.39** **14 Claims**



An internally reactive system for attaching one of its elements to another at a predetermined torque and axial tensile pre-load. The system includes a driver element, a fastener element, a workpiece element, and an interlinking element for interlinking the driver element and the workpiece element. The driver element constitutes a wrench with a driving arm, and a pressure-regulated fluid motor which turns the arm. The fluid motor exerts a force limited by the pressure of its motive fluid, and this force is directly proportional to the resulting torque level, because the system has no portion which during driving accelerates independently of any other portion, and no portion which overruns or impacts any other portion. The interlinking means may be a washer engaged by the frame of the driver element, and restrained relative to the workpiece element.

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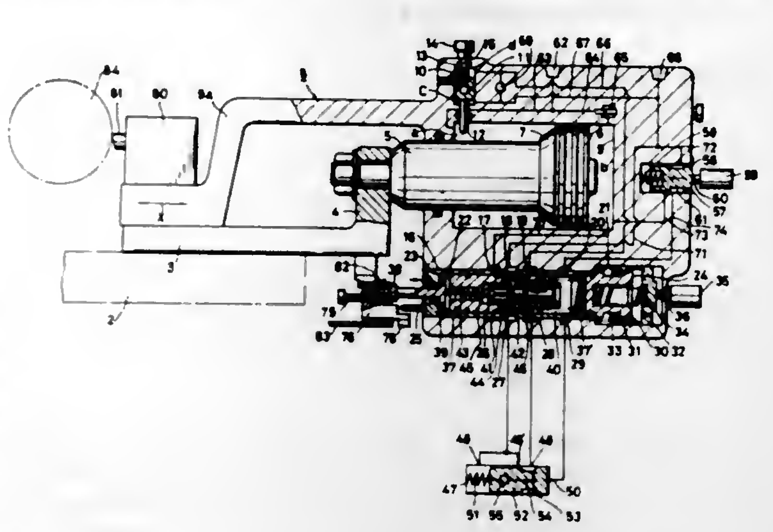
**3,759,120**

## CYCLIC MOTION CONTROL DEVICE FOR MULTI-CYCLE PROFILING MACHINES

**Haruo Iwata, Nagoya, Japan, assignor to Washino Kikai Kabushiki Kaisha, Nagoya, Japan**
**Filed Nov. 16, 1971, Ser. No. 199,132**
**Int. Cl. B23b** *3/28*
**U.S. Cl. 82—14 A** **2 Claims**



A device for controlling the cyclic motion of a multi-cycle profiling machine, so as to selectively actuate a cylindrical cycle, a shaping cycle, or a composite cycle, simply by adjusting the relative operative positions of two switches and the retarding stroke of a cut spool, without necessitating any change of machine parts. The two switches are related to said cut spool, a profiling slide, and a stylus.

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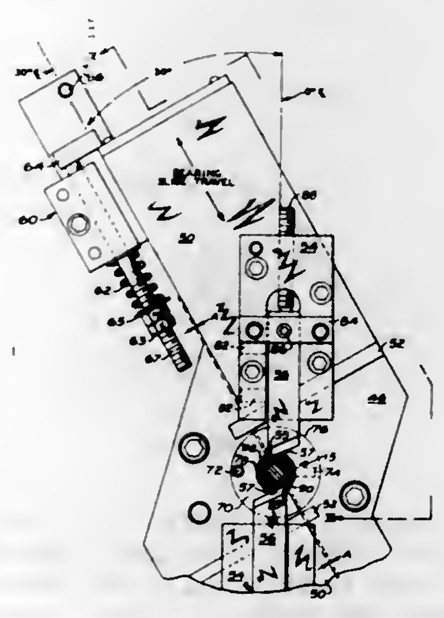
**3,759,121**

## APPARATUS FOR SKIVING REINFORCED HYDRAULIC HOSE

**Christian A. Rassi, Morton, and Lyonell P. Dick, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Dec. 20, 1971, Ser. No. 209,628**
**Int. Cl. B23b** *5/00, 5/04*
**U.S. Cl. 82—20 R** **12 Claims**



A portable, self-contained machine for skiving reinforced hose fixedly held in position by a mandrel while a rotary cutting assembly moves longitudinally along the portion of the hose which is to be skived. A pair of cutting members are held in tool blocks in the cutting assembly and are positioned on diametrically opposite sides of the mandrel and are in parallel alignment. The tool blocks can be advanced to a point of contact with a stop member which abuts an outer diameter of a collar portion of the mandrel. A spring system forces the cutting members against the reinforced hose until contact is made with a stop member. The cutting edges of the cutting members are displaced slightly ahead of the plane of the reinforced portion of the hose to permit a heel portion only of said cutting members to ride upon the surface of the reinforced hose when the hose has been skived in order to prevent the cutting edge from damaging the reinforced portion of the hose when an oversized diameter reinforced hose is encountered. Opposite sides of said cutting edges are chamfered to assist the cutting edge in biting radially into the outer resilient covering and to produce a chamfered edge on the resilient outer covering which remains on the unskived portion of the reinforced hose.

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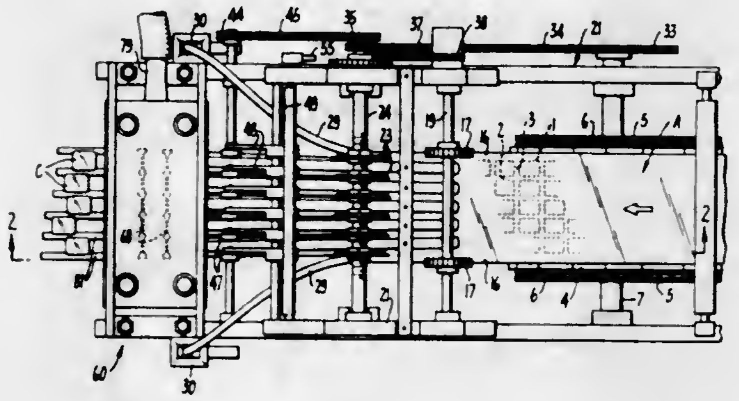
**3,759,122**

## PACKAGE SEPARATOR AND CORNER CUTTING DIE FOR INDIVIDUAL PORTIONS, AND METHOD

**William A. Lane, Danville, and Konrad E. Meissner, Lafayette, both of Calif., assignors to Filper Corporation, San Ramon, Calif.**
**Filed May 22, 1972, Ser. No. 255,754**
**Int. Cl. B65b** *61/08*
**U.S. Cl. 83—24** **14 Claims**



Apparatus for separating filled and covered cavities that are formed in alignment in spaced transverse and longitudinally extending rows in a sheet of plastic with planar webs of said sheet and cover extending around and connecting said cavities and for also rounding the corners of the webs. The apparatus is a combination of knives for bisecting the webs connecting said cavities in a direction longitudinally of said rows without removing material of the longitudinally extending webs and bisecting the webs that extend between the transversely aligned rows by die cutting a thin strip between adjacent transversely extending rows and also the portions at the intersections between transversely extending rows and transversely extending webs to form the rounded corners on the webs of the individual portions.

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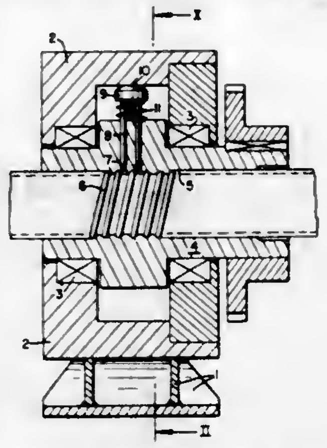
**3,759,123**

## METHOD AND DEVICE FOR CUTTING OUT APERTURES IN THE WALL OF A PLASTIC TUBE

**Cornelis Van Zon, Zwolle, Netherlands, assignor to Wavin N.V., Zwolle, Netherlands**
**Division of Ser. No. 756,237, Aug. 29, 1968, Pat. No. 3,604,301. This application June 8, 1971, Ser. No. 151,146**
**Int. Cl. B26d** *3/00, 5/16*
**U.S. Cl. 83—54** **3 Claims**

A process of forming apertures in the wall of a corrugated thermoplastic tube by punching the wall with a punch. The outer circumference of the tube is engaged with a hollow tubular guide in the region of punching and the inner surface of the tube is completely unsupported.



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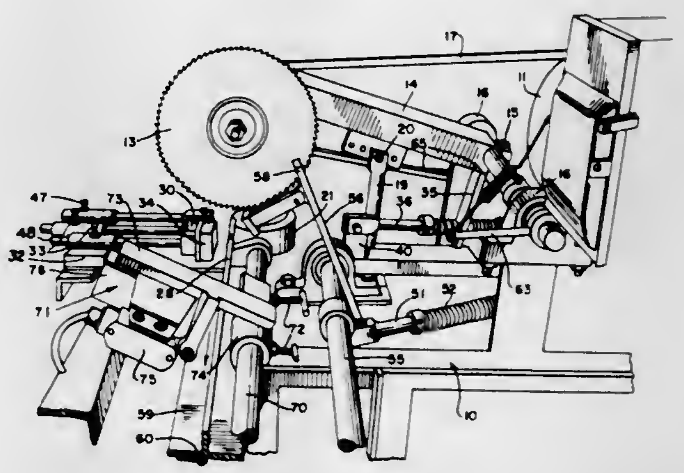
**3,759,124**

## AUTOMATIC CUT-OFF SAW

**Berl E. Bashor, 802 15th Ave., Conway, S.C.**
**Filed Dec. 28, 1970, Ser. No. 101,853**
**Int. Cl. B27b** *5/06;* **B26d** *7/06*
**U.S. Cl. 83—81** **3 Claims**



When a cut-off saw moves to a non-cutting position, a first linkage is operated to shift a lumber feeding roller into active engagement with the lumber and to simultaneously de-activate a lumber holding brake. The lumber is fed longitudinally until its leading end engages a limit switch. This switch activates means to move the saw toward a cut-off position and this movement of the saw de-activates the feed roller and resets the lumber holding brake during the cut. As the saw completes the cut, a second linkage is operated to cause quick dumping of the lumber from the machine. As the lumber disengages the limit switch, the machine automatically recycles to the starting condition.

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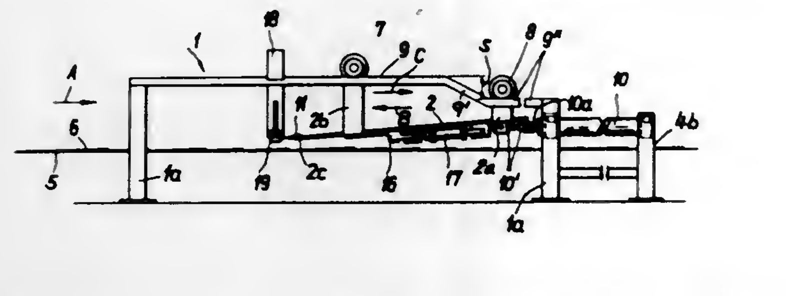
**3,759,125**

## APPARATUS FOR GATHERING AND CUTTING ROLLED-WIRE COILS

**Klaus Vortkamp, Neuss, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**
**Filed Feb. 22, 1972, Ser. No. 228,123**
**Claims priority, application Germany, Feb. 25, 1971, P 21 08 907.6**
**Int. Cl. B26d** *7/06*
**U.S. Cl. 83—90** **10 Claims**

Successive overlapping coils of wire, e.g. from a wire-rolling mill, are displaced along a transport path past a cutting and collecting station provided with a collecting plate which can be tilted to cause the coils to ride up along this plate. The latter is provided with a gate which, when swung away by a fluid-responsive actuator, exposes a guide notch into which the wire tying the collected coils to the coils and the conveyor is received and severed. A stripper arrangement enables



withdrawal of the plate and the discharge of the collected turns onto the conveyor.

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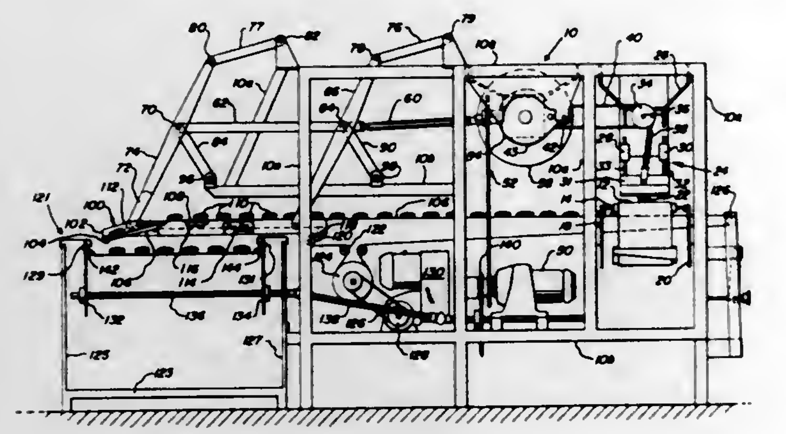
### 3,759,126
### TRANSFERRING, CUTTING AND DEPOSITING APPARATUS FOR BAKERY GOODS

**Ralph D. Burgess, Excelsior, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.**

**Filed May 12, 1972, Ser. No. 255,877**

**Int. Cl. B26d** *4/46*, *5/22*; **B65g** *47/26*

**U.S. Cl. 82—112** **10 Claims**



A strip of dough is fed continuously through a cutter consisting of a reciprocating blade which slices the dough strip into pieces of equal thickness. The cut pieces fall onto a horizontally disposed endless belt conveyor that transfers them onto a carriage adapted to be moved along an axis aligned with the direction of motion of the pieces on the conveyor. The carriage includes first and second conveyor belt rolls. The first is located at the free end of the carriage and the second is located at the end of the carriage closest to the cutter. The carriage is supported at the lower end of downwardly hanging support links connected at their upward ends to rocker links which are secured to a supporting framework. Each support link is pivotally connected at its center to a toggle link which is pivoted to the framework at its lower end. The pivot point between the support link and the toggle link is oscillated by a connecting rod secured at its other end to a rotating crank. In this way the links support the carriage and cause it to reciprocate along a stright line thereby depositing the pieces in aligned rows on a tray conveyor beneath the carriage.

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### 3,759,127
### IRIS TYPE CUT OFF KNIFE

**Donald N. Mills, Fonthill, Ontario, Canada, assignor to Union Carbide Canada Limited, Toronto, Ontario, Canada**

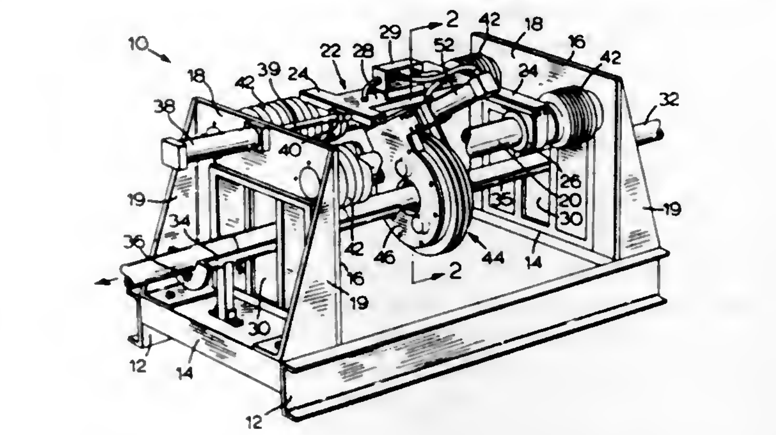
**Filed Feb. 11, 1972, Ser. No. 225,464**

**Claims priority, application Canada, Jan. 6, 1972, 131773**

**Int. Cl. B23d** *25/04*

**U.S. Cl. 83—318** **8 Claims**

An iris type cutting apparatus for cutting stock, particularly cylindrical or tubular carbon electrodes, is described. The apparatus consists generally of a plurality of rotatable shafts mounted on a framework and spaced around the stock, each shaft carrying an eccentrically mounted platelike circular cutting knife adapted for rotation with the shaft and a means



on said apparatus for causing all the shafts to rotate simultaneously to carry the knives simultaneously toward and to cut at least part way into the stock and away from the stock.

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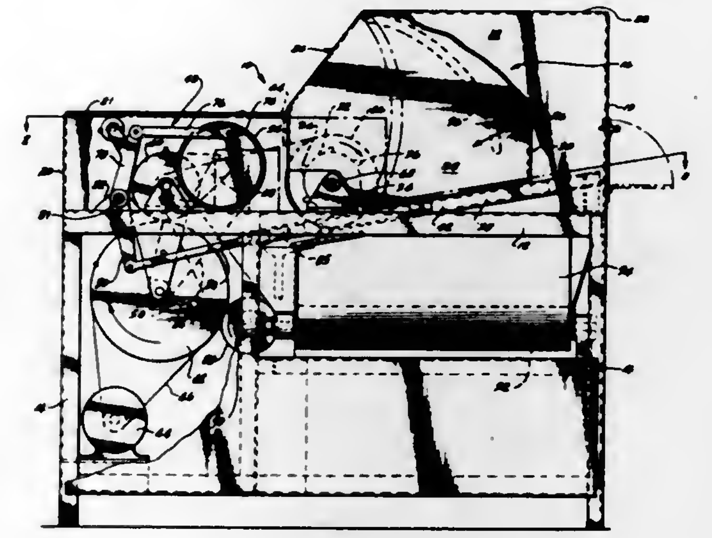
### 3,759,128
### MEAT SLICING MACHINE

**Bert F. Dewhurst, 1244 Justin Ave., Glendale, Calif.**

**Filed June 28, 1972, Ser. No. 266,992**

**Int. Cl. B26d** *4/06*, *7/06*

**U.S. Cl. 83—411 R** **5 Claims**



A meat slicing machine includes a supporting framework, a hopper attached to the framework, and a rotatable drum in the bottom of the hopper. A set of parallel, longitudinally reciprocating blades having upwardly facing cutting edges are disposed below the drum. Several series of longitudinally spaced apart fingers project outwardly from the drum surface. A piece of meat disposed in the hopper is forced against the fingers with the aid of a pressure plate in the hopper. The fingers stab the meat, and the drum rotates the meat progressively into contact with the reciprocating knife blades to slice the meat into several cuts. Meat can be continuously fed into the hopper and sliced, and an endless conveyor belt below the blades continuously discharges the cuts from the machine to a suitable receptacle.

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### 3,759,129
### POWER UNIT

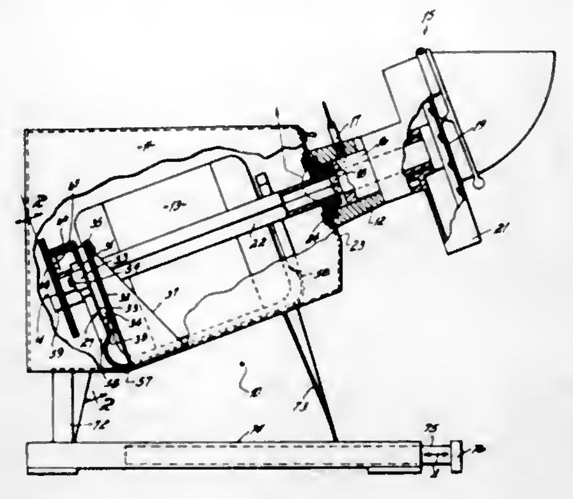
**Melvin E. Bricker, and Thomas E. Dugle, both of Cincinnati, Ohio, assignors to Bricker Products, Inc., Cincinnati, Ohio**

**Filed May 4, 1972, Ser. No. 250,211**

**Int. Cl. B26d** *7/26*, *4/22*

**U.S. Cl. 83—444** **12 Claims**

An improved power unit for driving vegetable cutting attachments comprises a housing, a motor mounted within the housing, an attachment supporting hub mounted on the front of the housing and a drive for connecting the motor to a shaft extension of the attachment. The drive includes a drive sleeve mounted for rotation and radial displacement in the hub, a sprocket attached to the rear of the sleeve and a resilient bracket for universally and rotatably supporting the rear end of the sleeve. The shaft extension of the vegetable cutter extends a relatively short distance into the front end of the drive



sleeve to provide, in combination with the radial displacement of the sleeve and with the resilient rear bracket, a universal driving connection therebetween. A tensioner is provided to tension a chain connecting the sprocket attached to the sleeve and a sprocket on a motor output shaft. The drive components are releasably secured together to facilitate unskilled disassembly for repair.

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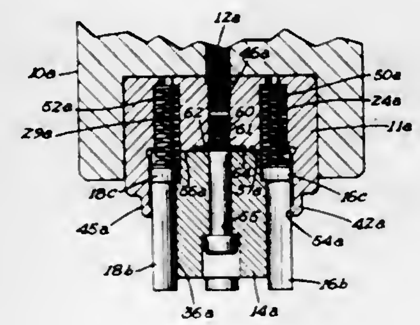
### 3,759,130
### REPLACEABLE TIP SHEAR PROOF PUNCH

**Clinton E. Patterson, Minneapolis, Minn., assignor to Mate Punch and Die Company, Anoka, Minn.**

**Filed Apr. 13, 1972, Ser. No. 243,696**

**Int. Cl. B26f** *1/12*

**U.S. Cl. 83—637** **7 Claims**



A shear proof punch with heel aligning structure formed as a part of the punch tip retainer but without difficult machining tolerances.

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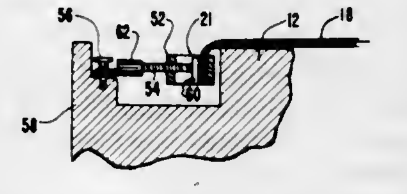
### 3,759,131
### BOW FOR STRINGED INSTRUMENTS

**Myron R. Brock, 11408 Cedar Ln., Beltsville, Md.**

**Filed Feb. 24, 1972, Ser. No. 228,993**

**Int. Cl. G10d** *1/02*

**U.S. Cl. 84—282** **4 Claims**



The bow is equipped with a ribbon of hair strands having its outer end fixedly mounted in the bow head or tip element and its inner end mounted in a clamp with a pivotal mounting which is axially adjustable within the bow frog which is itself axially adjustable on the bow so as to suitably adjust the tension applied to the ribbon of hair, while the pivotal mounting of its inner end provides an automatic equalization of the tension at both edges of the ribbon, so as to assure a clear tone for full, broad stroke as well as off-the-string bowing on the string instrument which may be played.

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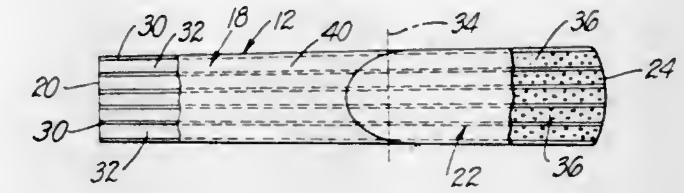
### 3,759,132
### COMPOSITE WOODWIND REED

**John G. Backus, Palos Verdes Estates, Calif., assignor to University of Southern California, Los Angeles, Calif.**

**Filed Nov. 6, 1972, Ser. No. 303,700**

**Int. Cl. B26d** *5/42*

**U.S. Cl. 84—383** **6 Claims**



A composite woodwind reed including a body portion having a butt end and including a tapered vamp portion terminating in a tip end. Embedded in the reed are laterally spaced, longitudinal ribs at least some of which extend substantially from the butt end of the reed to the tip end thereof. A low density filler material fills the spaces between the stiffening ribs, the filler material comprising hollow bodies having diameters of a few thousandths of an inch and embedded in plastic. The upper and lower sides of the reed are covered by plastic coatings bonded to the body portion and the vamp portion.

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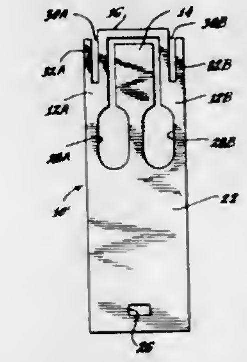
### 3,759,133
### VIBRATOR STRUCTURE AND METHOD AND APPARATUS FOR ADJUSTING THE FREQUENCY THEREOF

**Irvin Budych, Lake Geneva; LaVerne Lawrence Frey, Delavan, both of Wis., and William Edward Reefman, Santa Barbara, Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.**

**Filed Jan. 24, 1972, Ser. No. 220,357**

**Int. Cl. G04c** *3/00*

**U.S. Cl. 84—457** **9 Claims**



A method and apparatus for tuning and adjusting the frequency of a vibrator structure such as a tuning fork of the type formed from a single thin strip of low molecular loss material. Tuning is effected by bending one or more of the tines of the fork or preferably by bending an ear formed for this purpose on a tine. In the alternative, the frequency may be controlled by selectively removing material from an ear.

In order to maintain the balance of the structure it is desirable that tuning be performed on both tines of a fork. A preferred method for performing the tuning involves forming the structure in a manner such that its frequency is always lower than required. This frequency is then measured and half the difference in frequency is corrected by bending ears formed on an outer tine. Material is then removed from an inner tine by, for example, burning the material off with a laser, to raise the frequency to the desired value.

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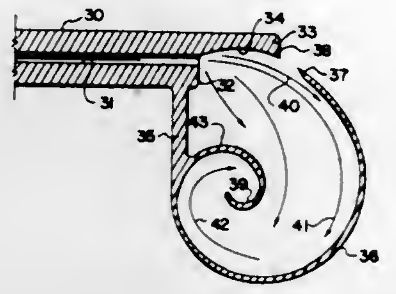
### 3,759,134
### SUPERSONIC FLOW DEFLECTOR AND SILENCER

**Lyndon S. Cox, Silver Spring, Md., and Chris E. Spyropoulos, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Dec. 27, 1971, Ser. No. 211,996**
**Int. Cl. F41f** *17/12*
**U.S. Cl. 89—14 D** **3 Claims**



A super-sonic flow deflector for deflection of under-expanded gas flow at an angle as great as the exit angle of the deflector surface. A scroll container accompanies said deflector to act as a collector for the exhaust gases after deflection.

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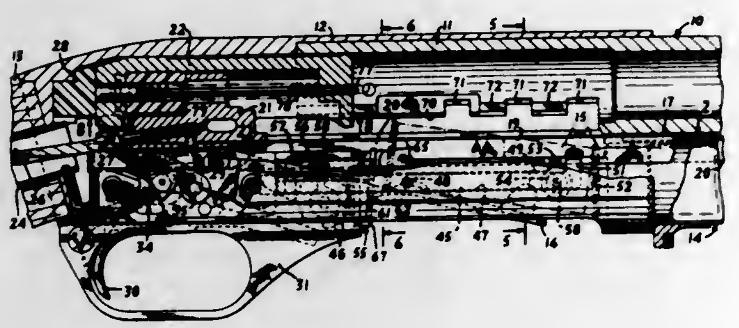
### 3,759,135
### SEMI-AUTOMATIC SHOTGUN

**James Tollinger, Ithaca, N.Y., assignor to Ithaca Gun Company, Incorporated, Ithaca, N.Y.**

**Division of Ser. No. 864,446, Oct. 7, 1969, Pat. No. 3,680,433. This application Nov. 9, 1971, Ser. No. 197,178**
**Int. Cl. F41c** *13/00*
**U.S. Cl. 89—33 B** **3 Claims**



In the particular embodiment of the invention described herein, a semi-automatic shotgun is provided with a piston which is independently movable in a cylinder to drive the action of the gun rearwardly, a single cartridge stop normally retaining cartridges in a magazine and released by rearward motion of the action, and a carrier latch which slides rearwardly to release the carrier when the cartridge being chambered is fully disposed on the carrier, thereby permitting that cartridge to retain other cartridges in the magazine until the cartridge stop is restored to its cartridge blocking position. To chamber the cartridge, a rotatable breech block is rotated from its open to its locked position by axial motion of a bolt support extending through a cam slot in the bolt.

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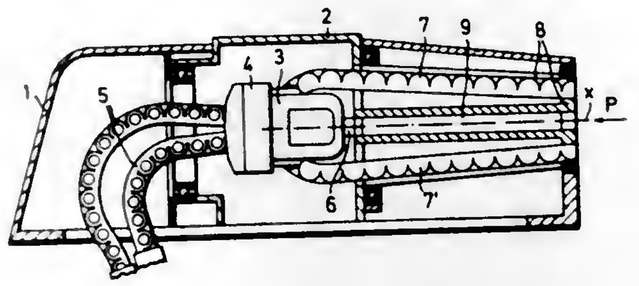
### 3,759,136
### AUTOMATIC FIREARM DISPOSED IN A GUN TURRET AND PIVOTABLE IN THE VERTICAL DIRECTION

**Karl Fammler, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany**

**Filed May 9, 1972, Ser. No. 251,788**
**Int. Cl. F41d** *9/02*
**U.S. Cl. 89—33 BB** **16 Claims**



A discharge duct arrangement for discharging belt links of a disintegrating cartridge belt from a firearm. The discharge duct arrangement is particularly adapted for belt links consisting of a double clip for holding a cartridge, a single clip for connecting the link to the next adjacent cartridge and a bracket connecting the double clip to the single clip. Three guide tracks are arranged in the discharge duct for slidably engaging the respective single clip, double clip and bracket as the links pass through the duct. These guide tracks are positioned such that only two of the tracks engage the belt at any given time and such that the belt link is inclined slightly as it is guided through the duct. When used with a pivotable turret, rotation of the duct with the turret may cause a tilting of the belt clip and consequent disengagement from one of the guide tracks and engagement with another previously disengaged guide track, with the third guide track remaining in engagement. Two similar discharge ducts can be arranged mirror-like in a common rotatable support at opposite sides of a cartridge ejection duct also in the support.

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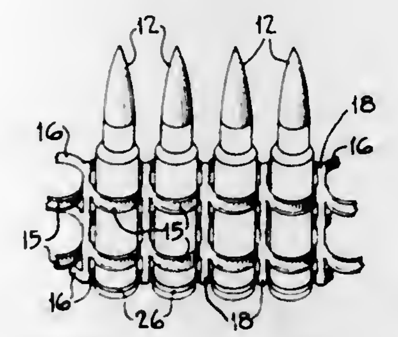
### 3,759,137
### CARTRIDGE LADDER LINK

**Andrew J. Grandy, North Hills, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Aug. 13, 1971, Ser. No. 171,601**
**Int. Cl. F41f** *9/02*
**U.S. Cl. 89—35 R** **2 Claims**



A cartridge ladder link which is lightweight and inexpensive. It is constructed as a continuous strip of thin metal formed from a pre-slitted blank. The slit strip is formed to provide alternately disposed loop members in each of similar successive sections. The loops of each section form a receptacle for an annumition cartridge such that a plurality of cartridges can be successively delivered to a predetermined loaded position in an automatic weapon. The ladder link can have all closed loops for use in weapons such as a linkless feed minigun or contain selected open loops for use in other types of weapons such as conventional machine guns.

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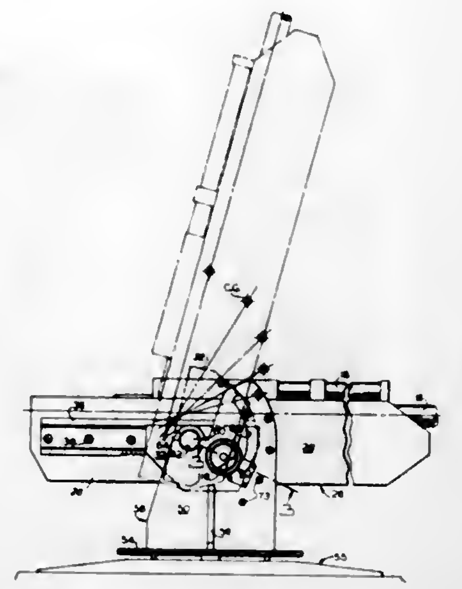
### 3,759,138
### ADJUSTABLE PIVOTING CRADLE FOR LARGE CALIBER GUNS

**Frederick S. Schrage, Rock Island, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Dec. 14, 1970, Ser. No. 97,644**
**Int. Cl. F41f** *21/04*
**U.S. Cl. 89—37 R** **2 Claims**



In order to increase the firing stability of a gun mount wherein a traversing carriage is rotatably supported on a stationary firing platform, the recoiling parts of the gun are slidably housed in a cradle formed by an outer frame pivoted in the carriage and an inner frame slidably seated in the outer frame to extend substantially rearward of the pivot point of the latter, the cradle also including means responsive to changes in the elevation angle of the gun for relocating the center of gravity of the cradle relative to the central vertical axis of the firing platform to minimize the overturning movement thereof during the firing of the gun.

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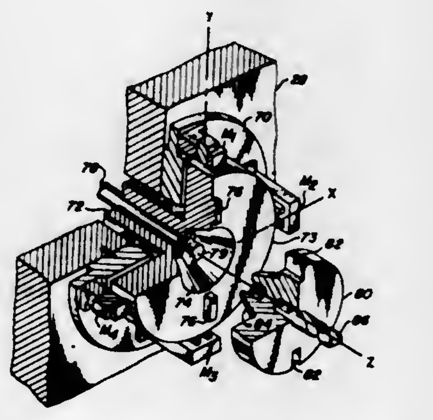
### 3,759,139
### RUNOUT COMPENSATION FOR MAGNETIC MILLING FORCE SENSORS

**William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.**

**Filed Jan. 26, 1972, Ser. No. 220,749**
**Int. Cl. B23c** *1/16*
**U.S. Cl. 90—11 A** **4 Claims**



An improved system is provided for sensing spindle deflection of a milling machine and developing a feedrate control signal in accordance therewith to achieve optimum tool life consistant with high metal removal rate from a workpiece. A plurality of magnetic transducers are disposed adjacent the spindle or spindles of a milling machine, and each magnetic transducer is excited by an audio frequency signal such that, as deflection of a spindle brings the spindle closer to or moves it further from a transducer, a corresponding change in the impedance characteristics of the transducer is utilized to develop an a-c signal of a given amplitude. Signals developed from opposing transducers are fed to a differential amplifier to derive a difference signal which is demodulated by a phase detector, rectified and filtered, and then passed through a squaring circuit in order that signals corresponding to the square of the deflection sensed by each transducer pair may be mixed to provide a d-c voltage representing the sum of the squares representing the deflection components. The square root of the sum of the squares is then taken to give a feedback signal proportional to the vector sum of spindle deflection for utilization as a feedrate correction signal. For milling machines utilizing multiple spindles simultaneously, a peak detector circuit is utilized to select the largest sum of the squares only for subsequent development of the feedrate correction signal.

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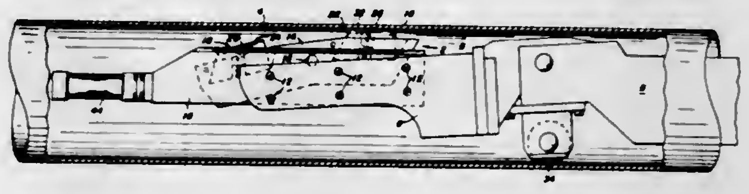
### 3,759,140
### INSIDE FLASH BEAD TRIMMER APPARATUS FOR WELDED METAL PIPE HAVING ALTERNATELY REMOTELY POSITIONABLE FLASH BEAD CUTTERS

**Eugene B. Connelly, Churchill Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Mar. 29, 1972, Ser. No. 239,147**
**Int. Cl. B23d** *1/02*
**U.S. Cl. 90—24 B** **6 Claims**



Apparatus includes a frame rigidly supported on the inner end of a boom extending into a welded tube or pipe, the pipe being longitudinally movable relative to the boom; an elongated rocker body having an inner flash bead cutter thereon adjacent each end thereof pivotally mounted intermediate its ends in the frame; a cam mounted for longitudinal movement in the frame subjacent and relative to the rocker body for alternately raising the ends of the rocker body so as to place one of the cutters into operating position when the other cutter becomes worn; and remotely operable means mounted on the frame and connected with the cam for moving it relative to the rocker body.

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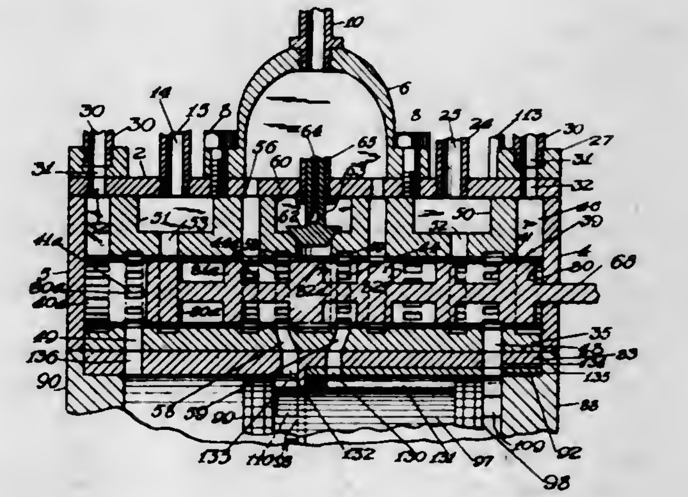
### 3,759,141
### STEAM ENGINE

**Joseph Zibrun, 1741 W. 33rd St., Chicago, Ill.**

**Filed Dec. 27, 1971, Ser. No. 212,564**
**Int. Cl. F01b** *25/02, 1/02*
**U.S. Cl. 91—20** **4 Claims**



A novel multi-cycle compound steam engine having novel means for providing a double use of steam and wherein the steam on opposite sides of a reciprocating piston having rectilinear movements in a cylinder may be pressure equalized and wherein the maximum amount of high pressure steam may be efficiently employed. Said piston having separate connected terminal heads with a close fitting working engagement with the cylinder wall, and wherein the body of the piston is of less diameter than the heads so that the steam chamber is provided between the heads and between the cylinder wall and the piston body, so that the steam chamber is divided into two separate compartments; and having steam compartments within the cylinder between the ends thereof and the adjacent heads of the piston; said engine being optionally usable as a double engine, or as a simple engine, and which has novel valve means as described.

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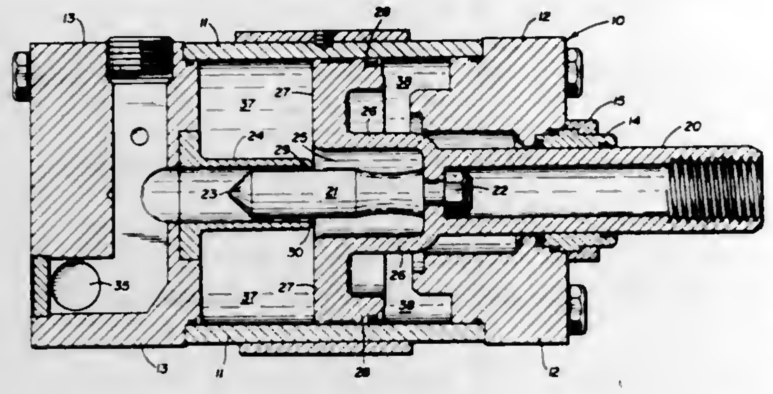
### 3,759,142
## AIR SPRING CYLINDER ASSEMBLIES

**John Hardy Maytag, Denver, Colo., assignor to Coors Container Company, Golden, Colo.**
**Filed Oct. 8, 1971, Ser. No. 187,629**
**Int. Cl. F15b** *15/22, 15/17*
**U.S. Cl. 91—396** **8 Claims**



An air spring cylinder assembly for maintaining contact between a cam and its follower in a machine wherein a machine element is actuated by cam and follower mechanism, comprising an air cylinder, a rod and piston reciprocably mounted in the cylinder, the piston having a contoured nose which is non-uniform in diameter and movable in axial directions in an orifice bushing to vary the rate of air escape from the rear of the piston, including a pressurized air supply and valve means admitting air continuously to an air chamber rearward of the piston and alternately admitting and exhausting air from an air chamber forward of the piston to thereby produce close correspondence between actual and required force to restrain the machine element.

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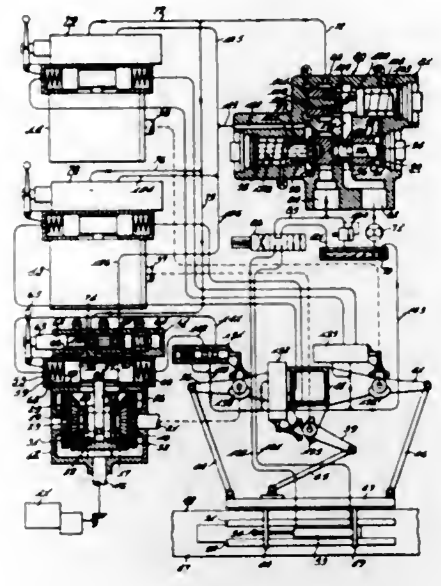
### 3,759,143
## FLUID CONTROL SYSTEM FOR EARTHWORKING APPARATUS INCLUDING AUTOMATIC PRESSURE REGULATING MEANS

**Ferris L. McRay, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.**
**Filed May 6, 1971, Ser. No. 140,698**
**Int. Cl. F15b** *11.16*
**U.S. Cl. 91—414** **10 Claims**

The control box jaw clutches of a motor grader are hydraulically operated through parallel connected closed center control valves. An automatic pressure regulator is interposed between the source of pressurized fluid and the parallel connected inputs to the control valves. When all the control valves are in neutral, an unloading valve in the pressure regulator bypasses fluid flow from the pressure source to the reservoir at a moderate pressure. When any one of the control valves is moved to an operating position, the unloading valve is automatically conditioned to establish a higher operating pressure. The higher operating pressure is established by hydraulically biasing the unloading valve fluid flow control element by pressurized fluid delivered to the jaw clutch actuators by the associated control valve. Upon the controlled apparatus moving to a limit position, a dumping valve is opened, thereby reducing the pressure to the jaw clutch actuator allowing the centering spring in the jaw clutch mechanism to return it to neutral position even though its control valve is still in an operating position. The reduction in control valve operating pressure, resulting from opening of the dumping valve, reduces the fluid pressure bias on the unloading valve flow control element thereby reducing the bypass pressure level until the 100 psi level is re-established. Fluid bypassed by the unloading valve element is delivered to an auxiliary control valve circuit having a high pressure relief valve. A pressure limiting valve downstream of the unloading valve prevents the jaw clutch control circuits from being subjected to more than an intermediate pressure. mooooomu



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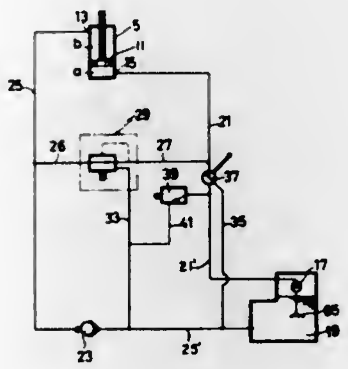
### 3,759,144
## HYDRAULIC ACTUATING SYSTEM FOR HYDRAULICALLY OPERATED BENDING MACHINE

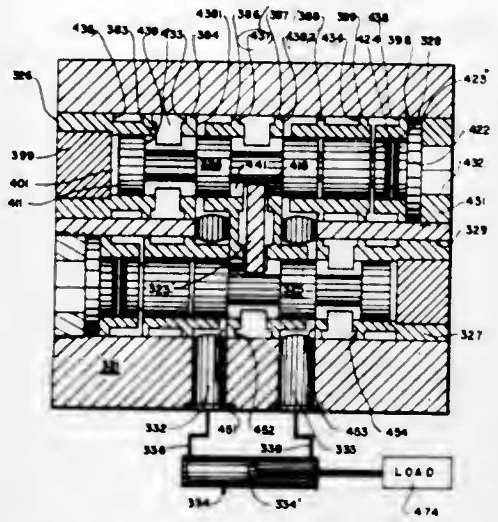
**Hidekatsu Ikeda, Kanagawa-ken, Japan, assignor to Amada Company Limited, Isehara-shi, Japan**
**Filed Aug. 11, 1971, Ser. No. 170,876**
**Claims priority, application Japan, Aug. 17, 1970, 45/71412**
**Int. Cl. F15b** *11/08, 13/042*
**U.S. Cl. 91—436** **2 Claims**



A hydraulic actuating system for a hydraulically operated bending machine which is so designed and constructed that, by using an automatically operable pressure-sensitive valve, the hydraulic ram and driving apron is caused to move at an increased speed during its idle movement towards the workpiece by bypassing fluid from the discharge chamber of the ram to the drive chamber and at a decreased speed but increased force during the bending operation by passing fluid from the discharge chamber to the tank.

### 3,759,145
## SERVOMECHANISM

**William W. Taylor, Suite 103 - 5300 Hamilton Avenue, Cincinnati, Ohio**
**Continuation-in-part of Ser. No. 71,133, Sept. 10, 1970, abandoned. This application June 1, 1971, Ser. No. 148,695**
**Int. Cl. F15b** *13/044;* **F16k** *11/07*
**U.S. Cl. 91—459** **16 Claims**



A servomechanism in which a torque motor drives a flapper arm. The flapper arm controls positioning of a pair of spool members. Each of the spool members moves inside a ported bushing. Movement of each spool controls ports which can be used to supply fluid under pressure to a hydraulic motor. The housing of the torque motor is mounted for swinging about a pair of transversely extending axes to set both the relative axial positions of the spool members and their null positions relative to the ported bushings.

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## ERRATUM

For Class 91—475 see:
Patent No. 3,758,899

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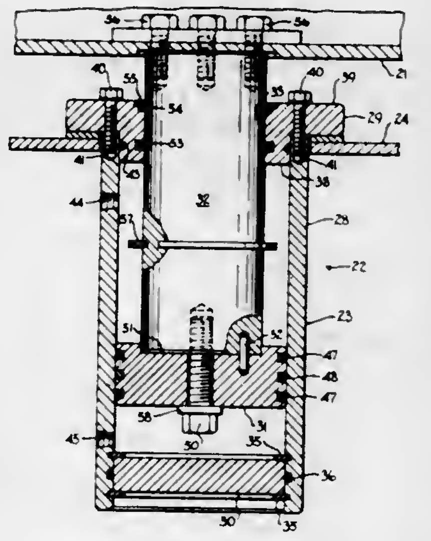
### 3,759,146
## BELT TENSIONER FOR WIDE BELT SANDING MACHINES

**Cecil D. Brotherton, Coon Rapids, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.**
**Filed Apr. 7, 1972, Ser. No. 241,953**
**Int. Cl. F16j** *1/00, 11/02, 15/18*
**U.S. Cl. 92—13.6** **1 Claim**



The cylinder of a fluid motor comprises a length of steel tubing, a disc-like closure member secured in one end thereof by snap rings, and an apertured closure member secured to its other end by cap screws threaded axially into its wall. A concentric cap screw through the piston secures it to a rod made of a length of shafting. The piston extension stroke limit is defined by a snap ring on the rod, engageable with the apertured closure member; the retraction limit by engagement of the head of the concentric cap screw against the other closure member.

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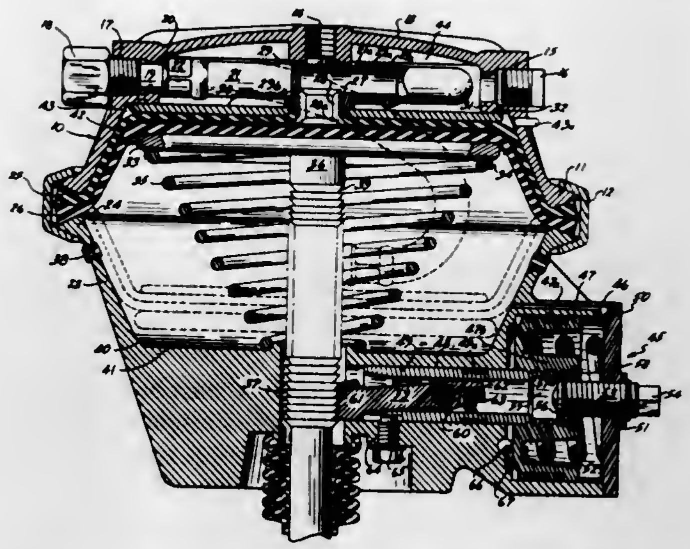
### 3,759,147
## DIAPHRAGM BRAKE ACTUATOR

**Carl E. Johnsson, Johanneshov, Sweden, and Kenneth D. Swander, Jr., Prairie Village, Kans., assignors to Certain-Teed Saint Gobain Insulation Corporation, Valley Forge, Pa.**
**Filed Feb. 24, 1971, Ser. No. 118,440**
**Int. Cl. F01b** *19/02;* **F15b** *15/26*
**U.S. Cl. 92—19** **7 Claims**



An improved service brake air diaphragm chamber having two diaphragms placed close to each other therewithin and held in position inside the service chamber by a single clamp band, the outer of said diaphragms having an air hose fitting, whereby air pressure may be fed through said fitting to the space between the diaphragms by means of a flexible air hose connected to the fitting and an inlet port on the outer pressure plate of the service chamber, the service chamber having its rear cover or pressure plate made with a cavity behind the outer diaphragm for lodging the half-coil flexible hose and a second inlet port outboard of the outboard diaphragm to feed air pressure outboard thereof.

Service brake locking means including a push rod made with saw-tooth grooves on a length thereof spaced from a push rod disc on one end thereof abutting the inner of said two diaphragms, the saw-tooth grooves operating as a ratchet to be held in a locked position by means of a spring actuated pawl, when the diaphragms have transmitted their force to the push rod (locking the brake in on position), the pawl being part of a piston which, on one side thereof, is actuated by spring force and the other side actuated by air pressure;

The combination of the service brake air diaphragm chamber with two diaphragms and the air hose fitting with, as a first option, an outboard spring emergency and parking brake unit and, as a second option, an inboard spring emergency and parking brake power unit, neither of these two latter forms employing a lock mechanism.

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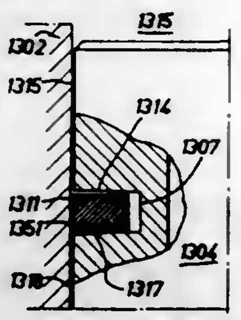
### 3,759,148
## PISTON AND PISTON RINGS UNIT FOR AN INTERNAL COMBUSTION ENGINE

**Robert Geffroy, Neuilly-sur-Seine, France, assignor to Sealfire, Luxembourg, Germany**
**Filed Feb. 13, 1968, Ser. No. 705,083**
**Claims priority, application France, Feb. 17, 1967, 6795532; June 29, 1968, 68112517; Jan. 18, 1968, 68136565**
**Int. Cl. F01b** *31/10*
**U.S. Cl. 92—160** **48 Claims**

A piston and compression and oil control piston rings unit for internal combustion engines, said unit being placed in a cylinder delimiting a combustion chamber with its head and said piston which comprises a body formed with a head and a skirt, grooves receiving said rings, oil return orifices and a central cavity, each piston ring and its groove comprising a pair of upper contiguous faces and a pair of lower contiguous faces one of said faces of each piston ring being a face assuming the main work of the piston ring, in which:

an efficient sealing means is placed between the face of



each piston ring assuming the main work of the piston ring and the contiguous face of its groove, on at least a circle adjoining the inner limit of the face of the piston ring,

and an access means is placed on at least one important part of the area between the upper contiguous faces of each piston ring and its groove, for the pressure existing above the piston ring.

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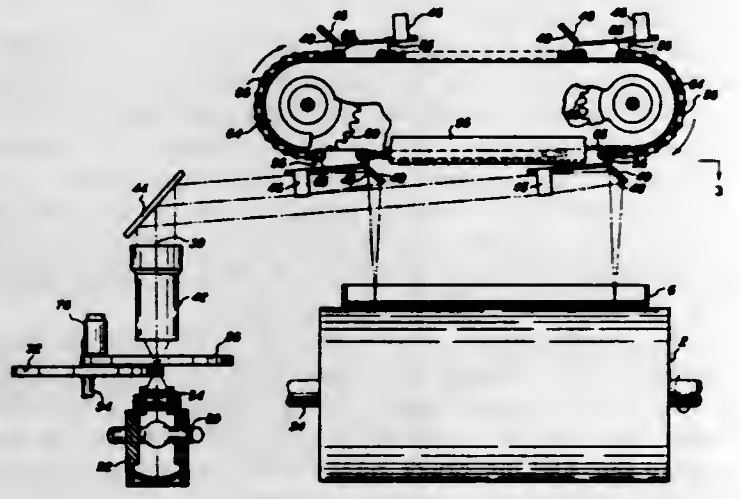
### 3,759,149
## MULTIPLE FLASH LAMP ALPHANUMERIC PROJECTION DISC ASSEMBLY

**Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Sept. 13, 1972, Ser. No. 288,612**
**Int. Cl. B41b** *15/08, 21/14*
**U.S. Cl. 95—4.5** **2 Claims**



A recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed that intercept the projected image and focus it onto a photoreceptive recording medium. Sets of characters on the character disc pass through alternate exposure zones, each zone being associated with a different flash lamp, so that the lamps have sufficient time to recover after flashing.

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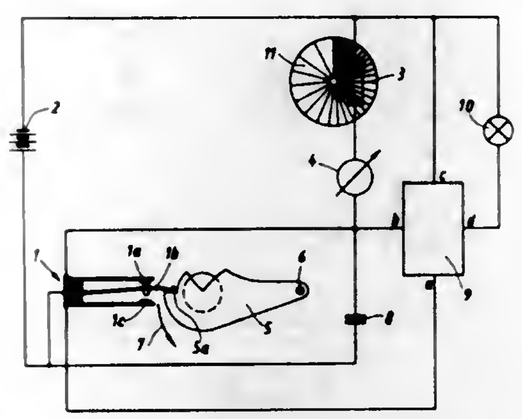
### 3,759,150
## TIMING ARRANGEMENT FOR USE IN CAMERAS ADAPTED TO BE USED FOR MAKING LONG EXPOSURES

**Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**Filed June 14, 1972, Ser. No. 262,725**

**Claims priority, application Germany, June 18, 1971, P 21 30 197.3**

**Int. Cl. G03b** *7/08, 9/08*
**U.S. Cl. 95—10 C** **8 Claims**



A photographic camera can be used for making long exposures of the type requiring the user to effect opening of the shutter and then to positively effect closing of the shutter after the elapse of an appropriate exposure time. A timing arrangement which notifies the user when to close the shutter comprises an energy-storing element, and supply means for supplying energy to the energy storing element. A photosensitive element, exposed to scene light, controls the rate of change of energy stored by the energy-storing element as a function of scene brightness, after the shutter has been opened, and permits the amount of energy stored by the energy-storing element to reach a predetermined value corresponding to a predetermined total amount of light impingement on the photosensitive element. An electronic threshold detector, connected with the energy-storing element and having an output, produces at its output a control signal only when the energy stored by the energy-storing element has reached the aforesaid predetermined value. An electrical signalling unit, such as a lamp or buzzer, is connected to the output of the threshold detector, and furnishes to the user of the camera a readily observable timing signal in response to generation by the threshold detector of the aforementioned control signal, thus notifying the user that closing of the shutter should be effected.

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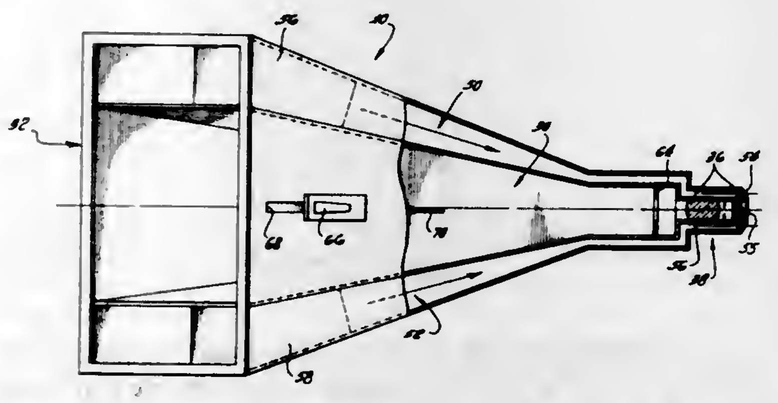
### 3,759,151
## INSPECTION CAMERA

**Raymond W. Metz, P.O. Box 271, Norco, Calif.**

**Filed Sept. 21, 1971, Ser. No. 182,374**
**Int. Cl. G03b** *37/00;* **G01n** *21/16*
**U.S. Cl. 95—11** **3 Claims**



A camera constructed to photograph the interior of aircraft engine cylinders through spark plug holes which includes a light-sealed housing angled to focus the interior cylinder image. The camera includes a flash reflector tunnel which illuminates the specific area being photographed.

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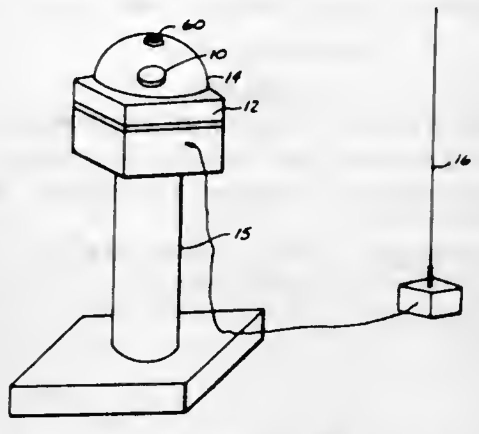
### 3,759,152
## AUTOMATIC LIGHTNING DETECTION AND PHOTOGRAPHIC SYSTEM

**James C. Fletcher, Administrator of the National Aeronautics & Space Administration with respect to an invention of; Ronald J. Wojtasinski, Cocoa Beach; Larry D. Holley, Merritt Island; Jimmie L. Gray, and Robert B. Hoover, both of Titusville, all of Fla.**

**Filed Sept. 27, 1972, Ser. No. 292,682**
**Int. Cl. G03b** *17/38*
**U.S. Cl. 95—11** **4 Claims**



A system for monitoring and recording lightning strokes within a predetermined area with a camera having an electrically operated shutter with means for advancing the film in the camera after activating the shutter. The system includes an antenna for sensing lightning strikes which, in turn, generates a signal, that is fed to an electronic circuit which generates signals for operating the shutter of the camera. Circuitry is provided for preventing activation of the shutter as the film in the camera is being advanced.

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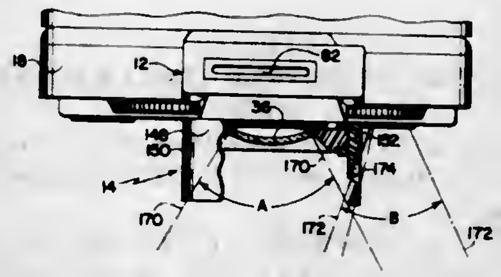
### 3,759,153
## LENS SHADE

**Karl H. Almo, Cambridge, and Philip G. Baker, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed Oct. 25, 1972, Ser. No. 300,809**
**Int. Cl. G01j** *1/06;* **G03b** *17/12*
**U.S. Cl. 95—11 R** **21 Claims**



A lens shade is provided for use with compact photographic apparatus, e.g., a camera, of the type having an objective lens and a light sensing device mounted thereon in close proximity to one another. The lens shade extends outwardly from the camera housing and shades the lens without blocking its field of view, however, the shade does extend into the overlapping field of view of the light sensing device. To overcome this problem, the lens shade is provided with a light transmitting section or louvered opening therein for selectively transmitting and directing light from portions of the overlapping field of view to the light sensing device.

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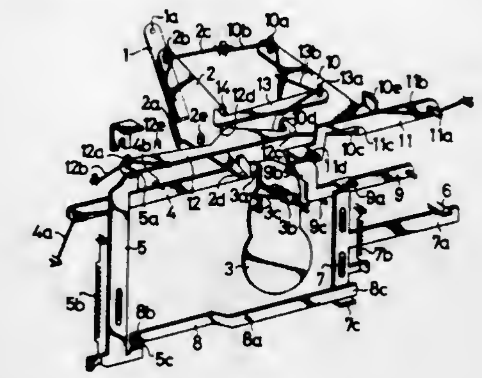
### 3,759,154
## DEVICE FOR AUTOMATICALLY FIRING FLASH BULBS IN CAMERA

**Akira Yamanaka, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed May 17, 1971, Ser. No. 144,187**

**Claims priority, application Japan, May 19, 1970, 45/43228; May 30, 1970, 45/46554**

**Int. Cl. G03b** *15/04*
**U.S. Cl. 95—11.5 R** **7 Claims**



The device includes an ignition initiating member to be tensioned in operative relation to tensioning of a shutter opening member and locked in the tensioned position by two retaining members. Only when flashlight is required for taking a photograph, the ignition initiating member is disengaged from the first of the two retaining members by the movement of a member responsive to the brightness of the subject upon shutter release. In synchronism with the action of the shutter opening member, the ignition initiating member is further released from the second retaining member. The ignition initiating member functions to fire the flash bulb only when freed from engagement with both of the retaining members by effecting the striking of a piezo-electric element whose electrical output ignites the flash bulb or the striking of the leg of a percussion ignitable flash bulb.

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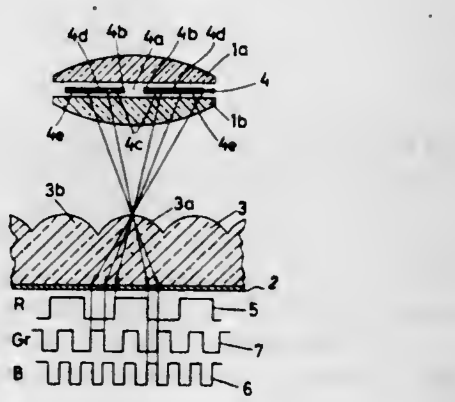
### 3,759,155
## METHOD OF PHOTOGRAPHIC COLOR RECORDING

**Friedrich Bestenreiner, Grunwald near Munich, and Reinhold Deml, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 830,065, June 3, 1969, Pat. No. 3,641,895, which is a continuation-in-part of Ser. No. 803,676, March 3, 1969. This application Jan. 10, 1972, Ser. No. 216,544**

**Claims priority, application Germany, Mar. 2, 1968, P 16 22 865.2; June 4, 1968, P 17 72 568.7**

**Int. Cl. G03b** *33/14*
**U.S. Cl. 95—12.2** **3 Claims**



A photographic objective, in whose plane a set of filter strips associated with different colors is located, forms an image on a black and white film while the lens elements of a lenticular grating form images of the set of colored strips on the corresponding areas of the film. All strip images together form a strip grating on the film so that the image formed by the objective can be reproduced as a color picture by the diffraction orders of the strip grating.

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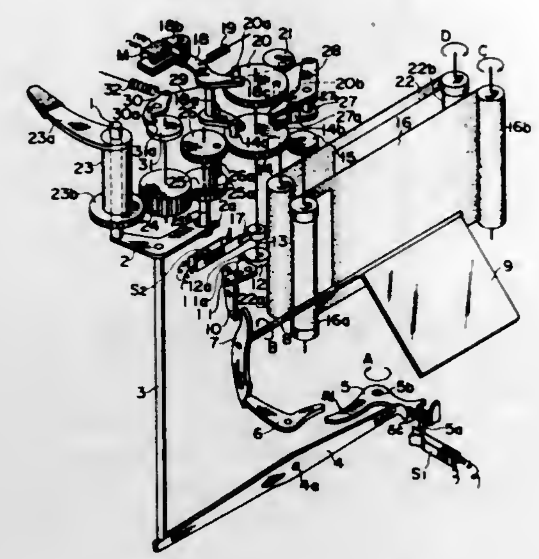
### 3,759,156
### PHOTOGRAPHIC CAMERA PROVIDED WITH ELECTRICALLY CONTROLLED SHUTTER

**Toshio Kobori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed June 2, 1972, Ser. No. 259,194**
**Int. Cl. G03b** *19/04, 9/00, 9/28*
**U.S. Cl. 95—31 AC** **6 Claims**



A photographic camera provided with a curtain shutter in which the time interval between the actuation of an opening curtain and a closing curtain is controlled by an electrical control circuit, wherein when a winding means winds a film and the shutter is cocked, a stop lever restrains the turning of the winding means and releases the restraint of the winding means with the termination of the driving of the closing curtain to the rest position in response to the shutter release operation. A detecting member detects the power voltage drop in an electrical control circuit, which voltage drop is lower than a predetermined value at which proper exposure control becomes impossible to be effected by the electrical control circuit. The detecting member prevents the release of the winding means which is restrained by the stop lever at the time of exposure termination and also prevents the shutter curtain from being wound to the cocked position so as to prevent repeated photographing under improper exposure conditions.

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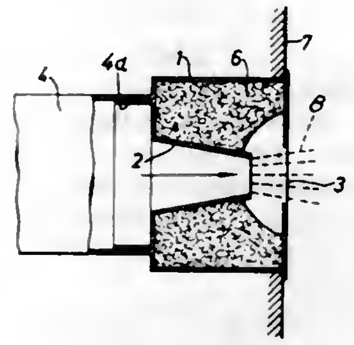
### 3,759,157
### CROSS-TALK ATTENUATING SUPPLY AIR AND EXHAUST AIR DEVICE IN VENTILATION INSTALLATIONS

**Birger Larkfeldt, Barnap; Stellan Akesson, and Ingmar Josefsson, both of Jonkoping, all of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Necka, Sweden**

**Filed Dec. 1, 1971, Ser. No. 203,533**
**Claims priority, application Sweden, Dec. 17, 1970, 17175/70**
**Int. Cl. F24f** *7/00*
**U.S. Cl. 98—37** **10 Claims**

A device for supplying or exhausting air in the rooms of a multiple-room building having a central system with ducts common to several rooms. The device is a chamber which has a convergent tubular inlet frustum for delivering a stream into the chamber, and an outlet opening for delivering the air from the chamber. A silencer passageway is between the smaller open end of the tubular frustum and the outlet opening for attenuating cross-talk. The passageway is preferably surrounded by sound-absorbing material such as mineral wool.



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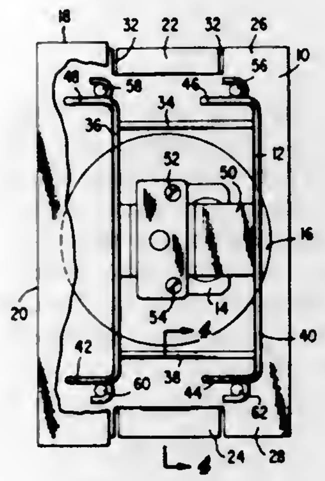
### 3,759,158
### DUCT AND BLOWER ARRANGEMENT

**James Henry, Levittown, and Malcolm MacMaster, Yardley, both of Pa., assignors to Emhart Corporation, Bloomfield, Conn.**

**Filed May 1, 1972, Ser. No. 248,826**
**Int. Cl. F24f** *13/00*
**U.S. Cl. 98—33** **10 Claims**



A Duct and Blower Arrangement is herein described which duct may be formed to define an opening in a side wall portion thereof to receive the blower. A flange may be formed in the duct for operatively supporting the blower within the duct, upon inserting the blower therein. A closure member may be connected with the blower for covering the opening in response to the proper insertion of the blower into the duct.

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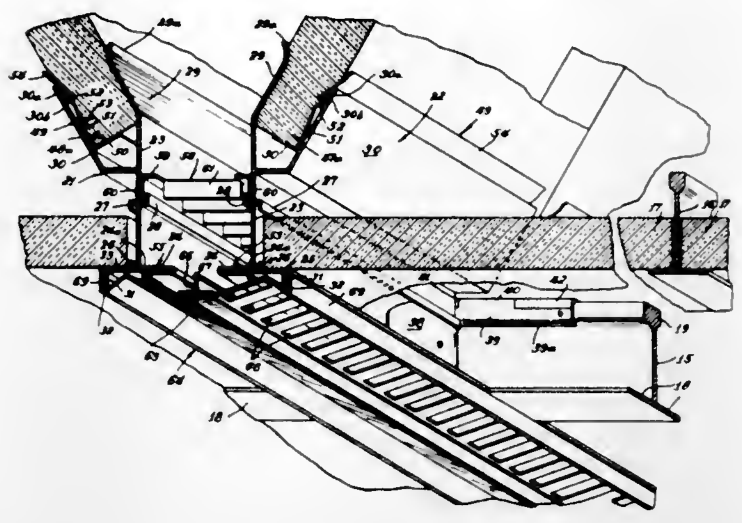
### 3,759,159
### VENTILATING AIR DISTRIBUTING CHANNEL-DUCT JOINT

**Joel R. Rachlin, 1785 Wedgewood West, Elm Grove, Wis., and Rudolph Otto Neudek, W. 271 N. 1275 Meadowbrook Rd., Waukesha, Wis.**

**Division of Ser. No. 10,508, Feb. 11, 1970, Pat. No. 3,673,945. This application June 12, 1972, Ser. No. 262,041**
**Int. Cl. F24f** *7/04*
**U.S. Cl. 98—40 C** **6 Claims**

The supporting grid (e.g., main and cross inverted tees) of a suspended ceiling also completely supports ventilation air-distributing apparatus which includes the air supply duct. This apparatus, which is completely assembled before mounting in the grid, comprises a lower air flow channel section formed of two extruded metal bars having vertical webs with hooks on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the opposite side of the tee to align channels. Along the top of the web of each bar are two outwardly extending spaced arms which are used to hold the sides of a fiberglass air duct. A releasable retainer clip held in engagement with detent means on the arms by the compressed resilient fiberblass locks the duct to the channel assembly. The air from the duct discharges out through the opening between the webs. At the bottom of the webs are flanges forming supports for ceiling panels and air flow control dampers.



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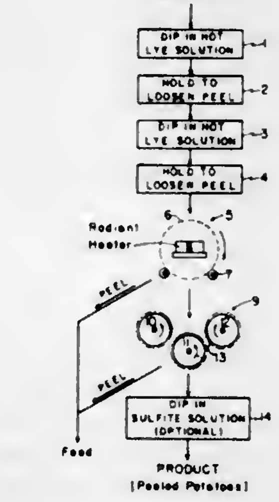
### 3,759,160
### PROCESS FOR PEELING POTATOES

**Charles C. Huxsoll; Robert P. Graham, both of El Cerrito, and Merle L. Weaver, Martinez, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Aug. 11, 1971, Ser. No. 170,939**
**Int. Cl. A23n** *7/02*
**U.S. Cl. 99—233.3** **5 Claims**



The potato peel is loosened by a double treatment with hot lye solution, each treatment being followed by a holding period. The potato is subsequently exposed to radiant heat and the loosened peel is removed in the dry state by brushing.

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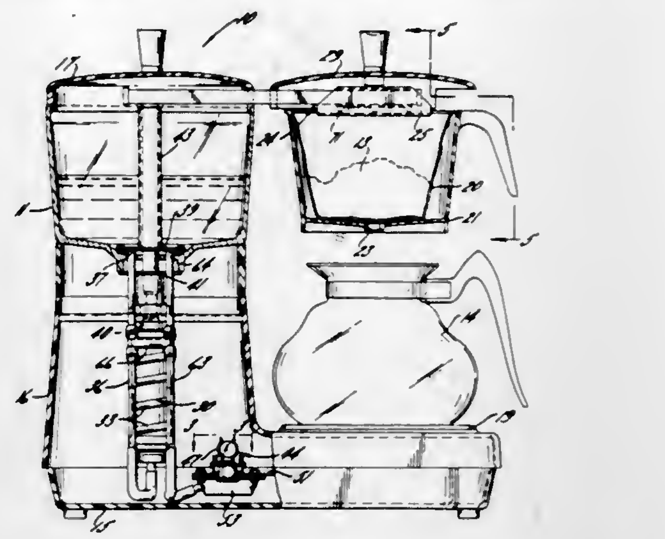
### 3,759,161
### DRIP-TYPE COFFEE MAKER AND THE LIKE

**Gordon R. Anderson, Rockton, Ill., assignor to Erling J. Hansen, Barrington, Ill.**

**Filed Mar. 1, 1972, Ser. No. 230,613**
**Int. Cl. A47j** *31/057;* **H01h** *35/34*
**U.S. Cl. 99—282** **6 Claims**

Water withdrawn from a supply tank is heated by an electric heater and is pumped upwardly through a distributor for discharge through a bed of ground coffee. An electric switch is responsive to the pressure of the water head in the tank and de-energizes the heater immediately upon substantially complete emptying of the tank so that no water remains in the tank to form evaporation deposits. Downwardly inclined baffles underlie the outlet of the distributor and disperse the discharged water through the coffee bed while reducing clogging of the distributor outlet due to evaporation deposits.



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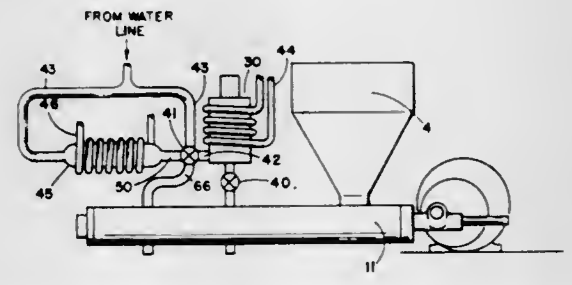
### 3,759,162
### COFFEE MAKER FOR REPETITIVELY BREWING SINGLE CUPS OF FRESH COFFEE

**Keaton Bruce Maxwell, 3030 N. 7th St., No. 108, Phoenix, Ariz.**

**Continuation-in-part of Ser. No. 862,894, Oct. 1, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,432**
**Int. Cl. A47j** *31/40*
**U.S. Cl. 99—289** **4 Claims**



Apparatus is provided for brewing coffee a single cup at a time. A longitudinally traversing piston within a cylinder is provided with a transverse bore which registers, successively, with a hopper which fills the bore with coffee grounds, with opposed hot water receiving and dispensing ports, and with fresh water receiving and flushing ports. The hot water utilized in brewing the coffee is received from a hot water chamber which contains a predetermined measure of water and also compression spring means for forcing the water through the grounds at a controlled rate by acting upon a piston which functions as a deflectable wall of the hot water chamber. The hot water chamber is refilled after use and the dispensing piston reset by water under the line pressure which is sufficient to compress the spring to a predetermined position.

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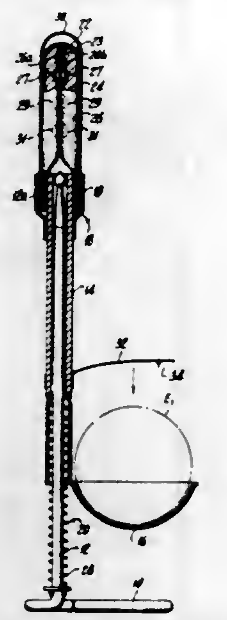
### 3,759,163
### COMBINATION EGG HOLDER AND TIMER

**Harold L. Walker, Whitestone, N.Y., assignor to Eggmatic Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 846,174, July 30, 1969, abandoned. This application Dec. 4, 1970, Ser. No. 95,222**
**Int. Cl. A47j** *29/02*
**U.S. Cl. 99—336** **20 Claims**

A boiled egg holder and timer in which the timing may be set for several types of boiled eggs, such as soft, medium and hard. The device is set in boiling water and a solid-to-liquid trigger, which is out of direct contact with the boiling water, actuates the elevating mechanism whereby the egg is lifted out of the boiling water when the egg is boiled to the selected consistency.



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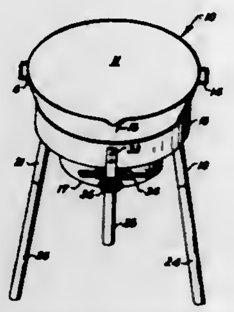
### 3,759,164
### INDOOR-OUTDOOR COOKER

**Sirman Robinson, 2335 Whispering Pines Rd. Apt. No. 1, Albany, Ga.**

**Filed Oct. 13, 1971, Ser. No. 188,783**
**Int. Cl. A47j** *37/12*
**U.S. Cl. 99—413 9 Claims**



A portable cooking apparatus for the preparation of food wherein a large cooking bowl is included as part of the apparatus. A fuel burner is centrally positioned below the bowl and within concentric baffle rings to provide a combustion and heat chamber to improve the efficiency of the burner. The curve-sided cooking bowl rests within the outer baffle ring and is spaced from this ring to obtain improved temperature control. Extendible legs are provided to position the cooking bowl at a convenient height for outdoor or indoor usage. An open mesh basket having a configuration similar to the bowl is positioned inside the bowl to facilitate the food handling. Various burner and valve combinations are included for use with the heat chamber.

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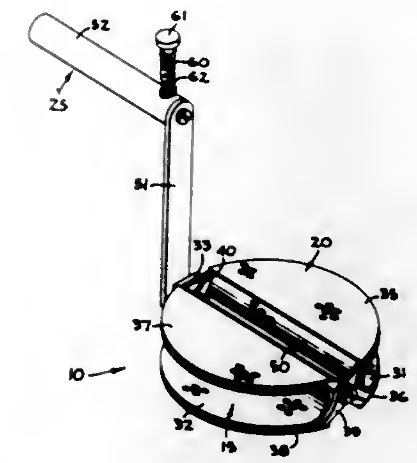
### 3,759,165
### DEVICE FOR HOLDING TORTILLA DURING THE COOKING THEREOF

**David C. Wallace, 1245 Peralta Dr., San Jose, Calif.**

**Filed Dec. 8, 1971, Ser. No. 205,847**
**Int. Cl. A47j** *43/18*
**U.S. Cl. 99—427 3 Claims**

A device for holding folded-over tortillas while the tortillas are immersed in oil during the cooking thereof. The device comprises an inner support against which folded spaced tortillas are placed. The inner support is disposed within an outer retainer which serves to retain the tortillas against the inner support. A suitable handle carries the inner support and outer retainer so that an operator can immerse the tortillas in hot oil for cooking, such as in a deep fry process. Means are provided on the handle for rotating the inner support and outer retainer 180° for a flip-over action in cooking the folded-over tortillas. The inner support and the outer retainer are constructed so that the tortillas are cooked in a preformed configuration suitable for use in the preparation of tacos.



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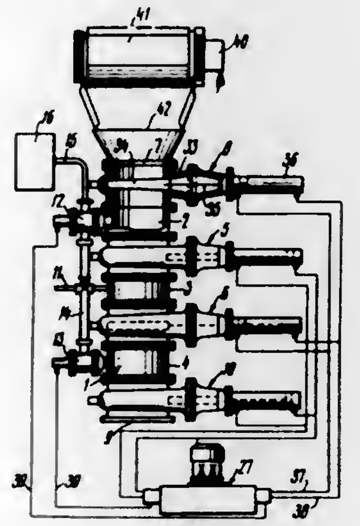
### 3,759,166
### APPARATUS FOR PEELING FRUITS AND VEGETABLES

**Georgy Gavrilovich Trandin; Vladimir Andreevich Khrichev; Evgeny Petrovich Sykalo; Valery Petrovich Burakov, all of Krasnodar, U.S.S.R.; Vasily Ilich Krasnobaev, deceased, late of Krasnodar, U.S.S.R., and by Anna Nikolaevna Krasnobaeva, administratrix, Krasnodar, U.S.S.R.**

**Filed Apr. 16, 1971, Ser. No. 134,691**
**Int. Cl. A23n** *7/00*
**U.S. Cl. 99—472 3 Claims**



An apparatus for peeling produce in which a chamber is gravity-fed and fruits or vegetables charged thereinto are hermetically sealed by gates and the chamber is supplied with a pressurized steam, and after subjecting the fruits or vegetables to steam, the pressure in the chamber is instantaneously dropped to a value below atmoshperic pressure by means of a vacuum condenser through the intermediary of a valve and the produce is peeled.

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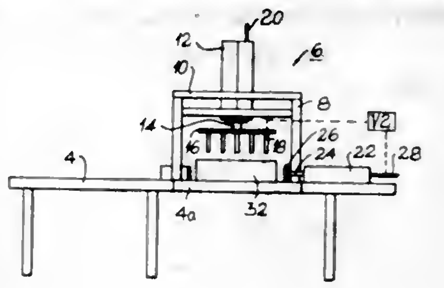
### 3,759,167
### DOUGH TREATING MACHINE

**Abner Meiberg, 8 Borohov St., Givatayim, Israel**

**Filed June 19, 1972, Ser. No. 264,265**
**Claims priority, application Israel, Oct. 14, 1971, 37,928**
**Int. Cl. A21d** *8/00*
**U.S. Cl. 99—485 7 Claims**

Apparatus for producing bread loaves and buns having a plaited appearance comprises a table for receiving the lumps

of dough for baking, and a forming device overlying the table. The forming device includes a plurality of forming members for simulating plaits on the lumps of dough, and advancing and retracting means for actuating such members. In one described embodiment the lumps of dough are manually fed to the forming device, and in a second described embodiment, they are fed by an automatically controlled conveyor.



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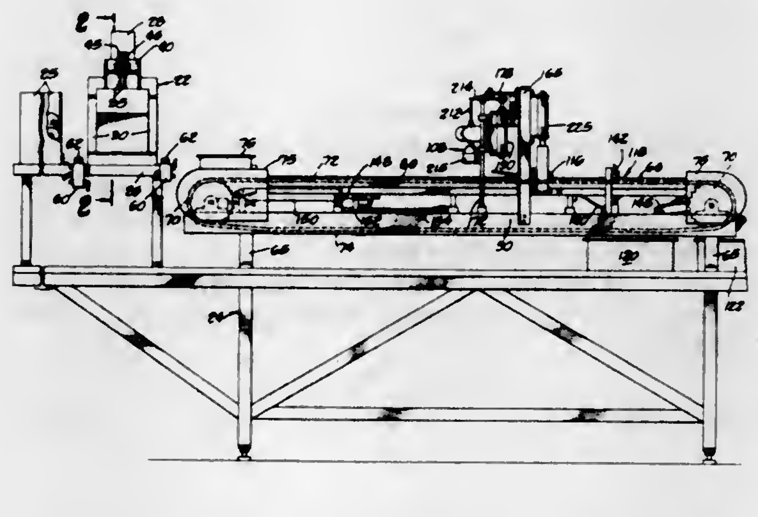
### 3,759,168
### FRUIT SLICER

**Maurice V. Johnson, Jr., Upland; Ned C. Carter, Chino; Kenneth W. Koenig; Frederick W. Riddington, both of Ontario; John M. Ross, Upland, and Ronald T. Smith, Ontario, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.**

**Filed June 17, 1971, Ser. No. 154,024**
**Int. Cl. A23n** *15/00*
**U.S. Cl. 99—545 30 Claims**



Slices of citrus fruit with peripheral portions of skin are conveyed through a succession of stations, including a station where a reciprocating circular knife severs central portions of the slices from surrounding ring-shaped portions of the slices. At a subsequent station the central fruit portions are bisected. At later stations the bisected fruit portions are discharged and the ring-shaped fruit portions are discarded.

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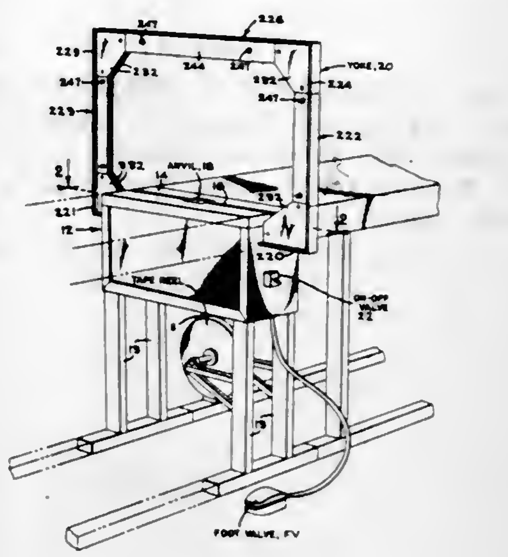
### 3,759,169
### STRAPPING MACHINE

**George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.**

**Filed Nov. 15, 1971, Ser. No. 198,862**
**Int. Cl. B65b** *13/32*
**U.S. Cl. 100—29 12 Claims**

This machine straps a package with heat sealable plastic strapping. The strap is fed by geared feed and tension wheels around a yoke and against a stop. The strap is gripped against a side-retractable anvil on opposite sides of a vertically moving platen and knife assembly, while straddling a retractable tongue. A heated blade replaces the tongue whereupon the platen squeezes the heated joint and cuts the strap. The anvil and tongue are withdrawn for removal of the strapped package. The platen, tongue, anvil and sealing blade are controlled by a set of cams on a linear actuator.



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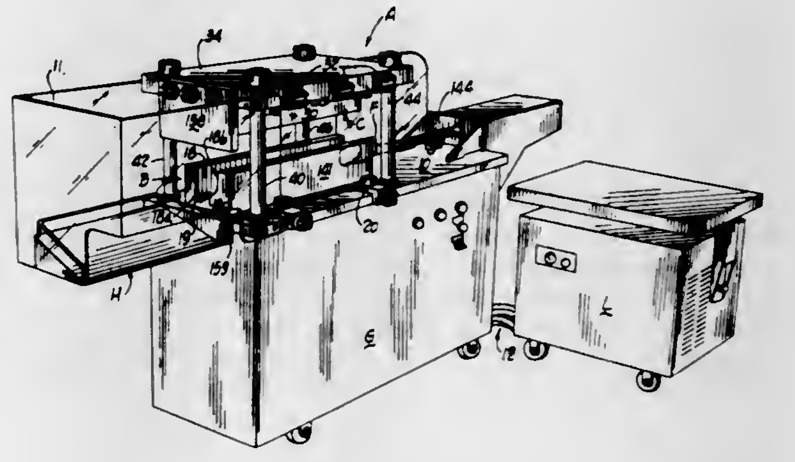
### 3,759,170
### FOOD PRESS

**Louis A. Bettcher, Amherst, Ohio, assignor to The Bettcher Industries, Inc., Birmingham, Ohio**

**Continuation-in-part of Ser. No. 67,482, Aug. 27, 1960, Pat. No. 3,683,797, which is a continuation-in-part of Ser. No. 878,439, Nov. 20, 1969, Pat. No. 3,687,067. This application Aug. 31, 1972, Ser. No. 285,479**
**Int. Cl. B30b** *7/04*
**U.S. Cl. 100—42 17 Claims**



A press for shaping comestible products, such as meat and the like, having relatively movable die means which when in a predetermined position relative to one another provide a tubular die aperture of uniform cross section and a ram reciprocable therein. A channel-shaped stationary die means is carried by a plate-like support detachably connected to and exclusively carried by a cabinet-type base, and a movable die means at least partially receivable in the stationary die means is supported for movement towards and from the stationary die means. The movable die means is guided by the support for the stationary die means is moved by a toggle link mechanism and a cylinder and piston-type fluid actuator located beneath the support for the stationary die means. A supplementary guide means is provided below the support for the stationary die means to assist the support for the stationary die means in guiding the movable die means. The fluid actuator is beneath the stationary die means and pivotally supported, oriented to act predominantly transverse to the direction of die movement when the dies are fully separated, and pivots to act predominantly along the direction of die movement as the dies reach a closed position, providing a compact structure in which reaction forces from the actuator are applied to the stationary die support in a direction counter to the applied force of the dies.

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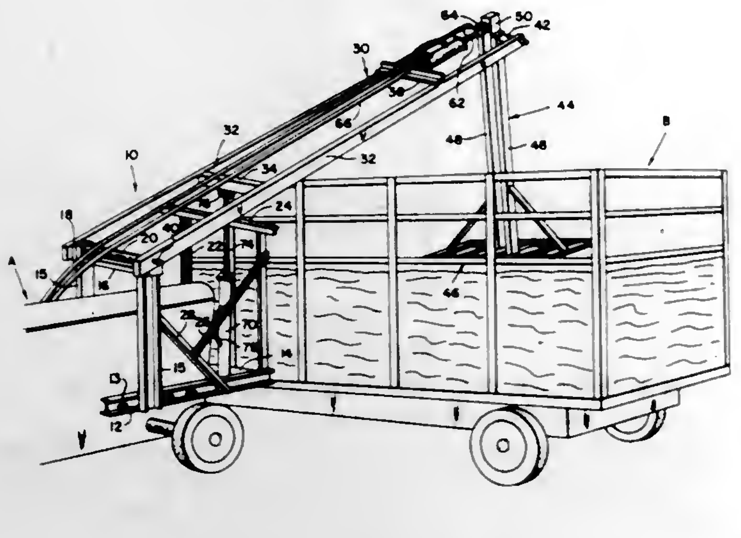
### 3,759,171
### TRACTOR MOUNTED MATERIAL COMPACTOR

**Harold R. Vocker, 109 Kentucky St., Monroe, La.; David L. Marcovitz, 2022 Valencia St., Monroe, La.; I. L. Thompson, Rt. 4, Box 192, and Woodrow Wallace, Rt. 4, Box 404, both of Holly Ridge, La.**

**Filed Mar. 9, 1972, Ser. No. 233,569**
**Int. Cl. B30b** *15/00*
**U.S. Cl. 100—100** **4 Claims**



An apparatus for compacting loose material in an open container, such as a trailer, consists of a frame attached to a tractor with a boom and packer foot which can be extended over an open trailer and moved up and down to compact material, such as raw cottom, in the trailer. The boom may be operated from the hydraulic system of the tractor.

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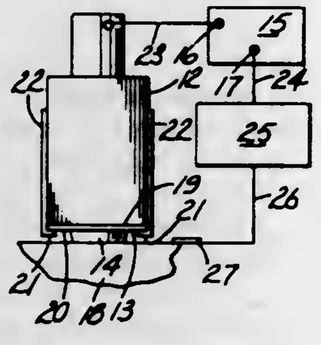
### 3,759,172
### BRANDING APPARATUS AND METHOD

**Paul W. Conklin, Kansas City, Mo., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Feb. 28, 1972, Ser. No. 229,931**
**Int. Cl. B44b** *5/00, 7/02*
**U.S. Cl. 101—9** **10 Claims**



Indicia such as a vehicle identification number or unit serial number is electrically branded on a metal workpiece such as an automobile by a metal strip with embossed indicia. Electrical current from a welding current supply source is passed through the metal strip with the indicia in contact with the workpiece and this electrically brands the indicia onto the workpiece. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

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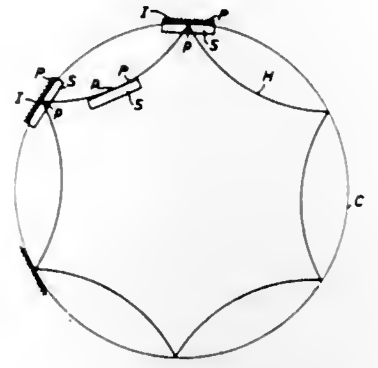
### 3,759,173
### MEANS FOR SUPPORTING AND PRINTING ON TICKET STRIP MATERIAL

**Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France**

**Filed Mar. 30, 1971, Ser. No. 129,457**
**Claims priority, application France, Apr. 3, 1970, 7012290**
**Int. Cl. B41l** *45/02*
**U.S. Cl. 101—66** **10 Claims**



Printing machine for printing tickets, for example, in particular for prepayment installations providing automatic distribution of transportation tickets of the type in which a large number of pre-displayable indications are to be printed on the ticket and includes a series of fixed printing plates having modifiable signs or characters, at least one support bracket having a flat face for carrying the sheet to be printed, means whereby one point of the flat face is caused to follow a path having a shape closely related to that of a closed hypocycloid having a number of cusps, flat printing plates tangent to the circle which is circumscribed about the path being disposed at least at a number of cusps of the path and, means for ensuring that the flat face of the support bracket is also tangent to the circle which is circumscribed about the cusps.

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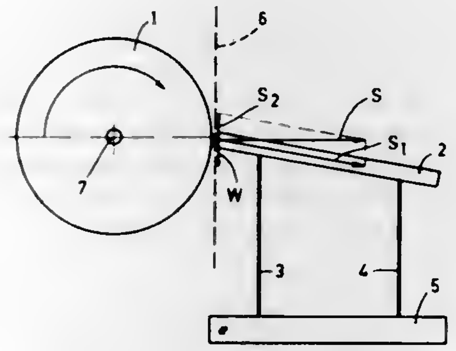
### 3,759,174
### PRINT HAMMER STRIKING MOVING TYPE AT AN ANGLE TO COMPENSATE FOR FRICTIONAL FORCE

**Marius Quirijnen, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed May 21, 1971, Ser. No. 145,692**
**Claims priority, application Netherlands, June 4, 1970, 7008102**
**Int. Cl. B41j** *9/02*
**U.S. Cl. 101—93 C** **3 Claims**



A printing device comprising a type support and one or more hammers cooperating therewith. Each hammer has an impact beam which is arranged so that it strikes the face of the type support at an angle in such manner that the reaction force exerted on the impact beam during a stroke of the impact beam against said face has a component, in addition to a component in the direction of the impact beam equal to the frictional force exerted on the impact beam.

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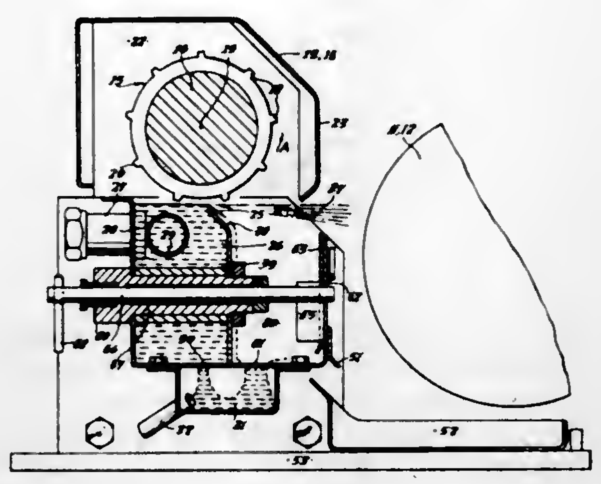
### 3,759,175
### DAMPENING APPARATUS WITH ROTOR FOR PROJECTING SPRAY

**Arthur Graham Alsop, Sea Mills, Bristol, England, assignor to Strachan & Henshaw Limited, Bristol, England**

**Filed Mar. 8, 1971, Ser. No. 121,964**
**Claims priority, application Great Britain, Mar. 10, 1970, 11,479/70**
**Int. Cl. B41f** *7/30*
**U.S. Cl. 101—148** **6 Claims**



A plate-dampening apparatus for a printing press projects a spray of dampening liquid onto a transfer roll. The apparatus includes a weir over which dampening liquid continuously spills, and a rotor having projections which are moved at speed to cut through the thickness of the liquid, without striking the weir, as the liquid spills over the wier and project a spray from it.

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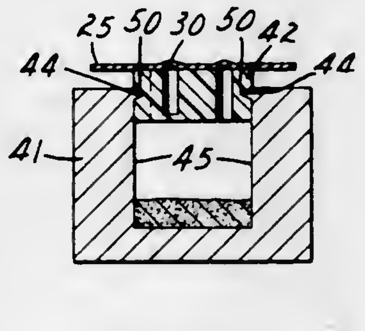
### 3,759,176
### METHOD OF INTAGLIO PRINTING ON TACKY SHEET MATERIAL

**Theodore F. Schwandt, Maplewood, N.J., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Division of Ser. No. 806,980, March 13, 1969, Pat. No. 3,633,502. This application May 27, 1971, Ser. No. 147,330**
**Int. Cl. B41k** *1/44, 1/30*
**U.S. Cl. 101—170** **3 Claims**

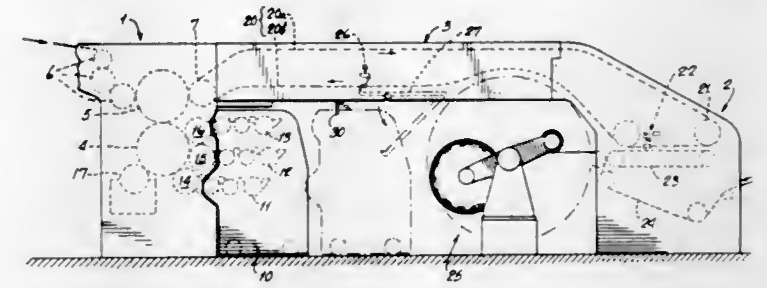


For applying characters to tacky sheet material, an apparatus comprising a holding means which releasably holds at least one printing block having at least one intaglio printing face formed by at least one image well, at least a portion of which forms a reservoir for containing a supply of freely flowable powdered ink. A flexible tacky sheet material is adhered over the printing blocks and ink adhered to the tacky surface to provide a desired character arrangement. The printed tacky sheet material can then be adhered to, or the characters transferred to, any desired surface such as signs, posters, etc.

### 3,759,177
### PRINTING PRESS WITH SHEET INSPECTION STATION

**Ivaldo Gazzola, Lausanne, Switzerland; Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.**

**Filed Oct. 12, 1971, Ser. No. 188,195**
**Int. Cl. B41f** *21/08;* **B65h** *29/04*
**U.S. Cl. 101—232** **5 Claims**



The printing press shown has a printing station which discharges printed sheets above the head of the press operator. An overhead conveyor having spaced grippers picks up sheets discharged at the printing station and carries them to a sheet delivery station, where the grippers engage a gripper release mechanism and the sheets are dropped. The return reach of the conveyor, also above the operator's head, passes an inspection station between the sheet delivery station and the printing station. The gripper release mechanism at the delivery station is retractable to allow a selected sheet to pass the delivery station. At the inspection station, a fixed gripper release is provided which releases all the grippers on the passing conveyor. The inspection station includes a tray located under the conveyor to receive any sheet dropped there. The tray is pivoted along one edge and is movable between a sheet receiving position close to the conveyor, and an inspection position below the conveyor, where the operator may inspect the printed sheet. The tray may be movable by a motor controlled by a photoelectric cell on the tray so that the tray is lowered to the inspection position when a sheet is deposited there and the tray remains in its sheet receiving position when there is no sheet on the tray.

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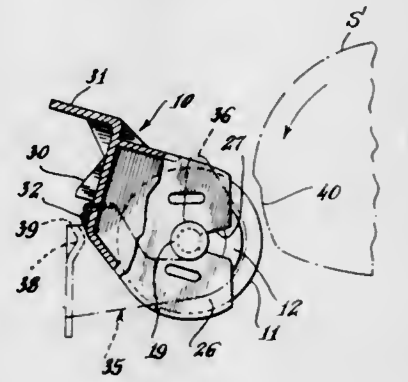
### 3,759,178
### INKING ROLLER ASSEMBLY

**Paul G. Franchinot, Stamford, and Lawrence J. Kresan, Springdale, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.**

**Filed Feb. 3, 1971, Ser. No. 112,128**
**Int. Cl. B41f** *31/30*
**U.S. Cl. 101—349** **6 Claims**



An inking roller for a rotary printing drum such as found in a postage printing machine for rotation on a shaft removably mounted on a separable holder. The holder, when it is to be assembled to the machine, is manipulated so that the ends of the shaft enter slots in a bracket fixed to the machine, after which the holder may be pivoted about the shaft into assembled relation to the bracket, with the roller in position to engage the printing surface of said drum and to rotate therewith. The rotation of the drum is such as to apply torque to the holder when rotating the roller, whereby to help maintain the holder assembled to the bracket.

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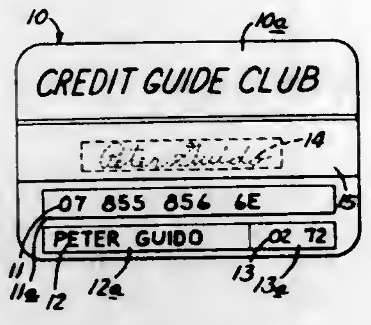
### 3,759,179
### CREDIT CARD AND SIGNATURE VERIFICATION SYSTEM

**Peter Guido, 6386 No. Hiawatha Ave., Chicago, Ill.**
**Filed May 5, 1971, Ser. No. 140,462**
**Int. Cl. B41l** *47/04*
**U.S. Cl. 101—368** **4 Claims**



An improved system of signature identification for credit card users includes an embossed reverse image of the true signature of the authorized card holder. The card code or account number may also be embossed in reverse script on the print face of the card.

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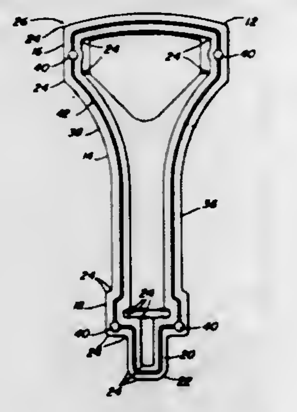
### 3,759,180
### HOLLOW STAMP HANDLE

**Edward J. Gibbons, 381 Summer St., Brighton, and Norman O. Daigle, Fitchburg, both of Mass., assignors to said Gibbons, by said Daigle, Brighton, Mass.**
**Filed Nov. 1, 1971, Ser. No. 194,650**
**Int. Cl. B41k** *1/56*
**U.S. Cl. 101—405** **5 Claims**



A hollow, two-part elongated plastic handle including first and second matching parts parted along a longitudinal plane, each of the parts including a cap portion of uniform wall thickness, a gently tapered neck portion having a uniform wall thickness, an intermediate section interconnecting the cap portion and the larger end of the neck portion, an enlarged shoulder portion at the narrow end of the neck portion and a tendon portion suspended from the shoulder portion and having uniform wall thickness and gently tapering to a smaller cross-section at its outer end, remote from the shoulder portion.

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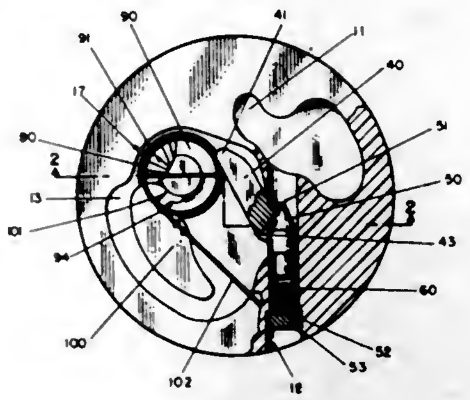
### 3,759,181
### ANTI-DISTURBANCE FUZE

**George P. Mellen, Wayzata, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Jan. 21, 1972, Ser. No. 219,620**
**Int. Cl. F42b** *23/26*
**U.S. Cl. 102—8** **5 Claims**



This invention relates to an anti-disturbance fuze capable of aerial dispersion for detecting the presence of intruders having a housing means, an arming delay means operatively positioned in the housing means for holding the fuze in a safe mode during dispersal, a pendulous inertial mass held in cantilever fashion as a disturbance sensing means proximate to the arming delay for detecting impulses to the fuze, and a firing means operatively connected to the sensing means for firing of an integral detonator. The fuze is immersed in a fluorocarbon liquid during the dispersal stage and is held in a safe mode by the arming delay means. Upon evaporation of the fluorocarbon liquid the arming delay, after a short interval, of time actuates the disturbance sensing means, the latter is then sensitive to subsequent impulses or movements of the device and operates a biased firing mechanism to cause a detonation.

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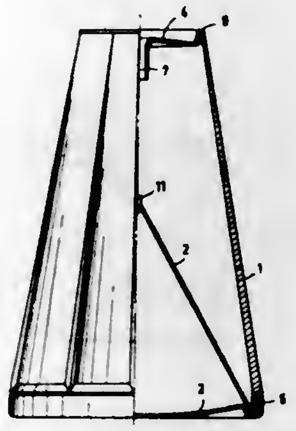
### 3,759,182
### HOLLOW CHARGE HAVING A DIRECTED EXPLOSIVE EFFECT

**Reiji Levamaki, Helsinki; Mikko Vehvilainen, Jokela, and Tapani Suhonen, Helsinki, all of Finland**
**Division of Ser. No. 749,067, July 31, 1968, Pat. No. 3,613,582. This application June 9, 1971, Ser. No. 151,431**
**Int. Cl. F42d** *3/04*
**U.S. Cl. 102—23** **4 Claims**



A method for carrying out underwater demolition work with a hollow charge constituted as a hollow body with a front, a back, an outer shell of frusto-conical shape and an inner shell of conical shape. The shells diverge toward the front of the body with the ends of said shells being joined at the front to define a space between the shells containing an explosive charge. A cover is mounted on the back of the body, and a base is mounted on the front of the body. The hollow charge is placed underwater on the submerged surface to be blasted and the explosive charge in the hollow body is detonated to cause the inner metal shell to be melted and a part thereof formed into a thin metal jet which is propelled through the front of the body to produce vaporization of the surrounding water.

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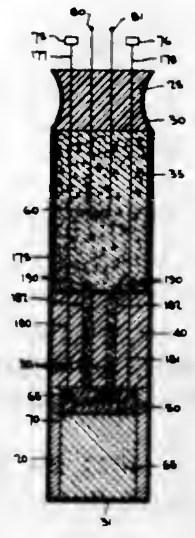
### 3,759,183
### MULTIPLE OPTION ELECTRIC DETONATOR

**Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Dec. 17, 1971, Ser. No. 209,057**
**Int. Cl. F42b** *3/16*
**U.S. Cl. 102—28 R** **5 Claims**



A multiple option detonator comprising an instantaneous electric detonator and a delay electric initiator connected to an electric circuit which provides a means for starting the instantaneous detonator and the delay initiator simultaneously and alternatively. The instantaneous detonator and the delay initiator are juxtaposed in tandem in a single structure. The instantaneous detonator comprises a base charge; a primer charge; and an element of high electrical resistance. The delay initiator comprises a pyrotechnic mixture, a molded insulating plug, and a second element of high electrical resistance. The molded insulating plug has several holes and passageways in it. The holes are filled with a portion of the pyrotechnic mixture. This pyrotechnic mixture is capable of initiating the primer charge in the instantaneous detonator. Another portion of the pyrotechnic delay charge is located behind the insulating plug and is ignitable by the element of high electrical resistance therein. By selectively energizing the proper element either an instantaneous function or a delay function may be achieved. If both bridges are fired simultaneously, the delay provides a backup in case the instantaneous bridge fails.

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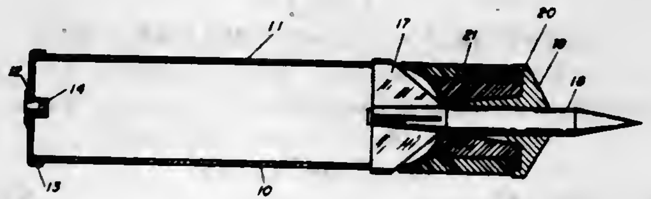
### 3,759,184
### SELF-OBTURATING, EXPELLABLE CARTRIDGE CASE

**Raymond S. Blajda, Parsippany, and Kenneth D. Rubin, Sparta, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Jan. 27, 1972, Ser. No. 221,283**
**Int. Cl. F42b** *5/10*
**U.S. Cl. 102—38** **7 Claims**



A novel cartridge possesses a fin-stabilized, high velocity projectile attached to a propellant casing, which is self-obturating and expelled from the weapon together with the projectile and separated from the latter on muzzle exit. The projectile is located such that its finned end is within the casing and its front end projects beyond the closed front end of the casing which has a ventable closure at its breech end. Sabot means are removably mounted on the projecting part of the projectile such that they abut against the front end of the casing and are thrown off by aerodynamic forces and centrifugal force of low spin generated by engagement of the casing with the rifling.

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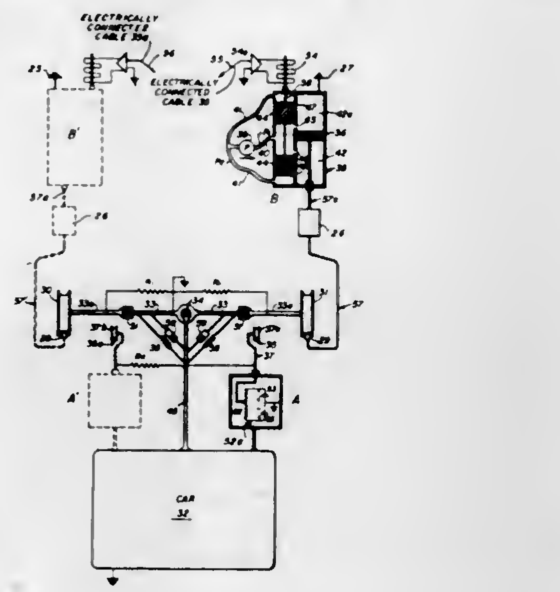
### 3,759,185
### SERVO-PROGRAMMED CABLE RAILWAY

**Serge A. Scherbatskoy, 427 Wright Bldg., Tulsa, Okla.**
**Continuation-in-part of Ser. No. 847,530, July 31, 1969, abandoned. This application Dec. 3, 1970, Ser. No. 94,858**
**Int. Cl. B61b** *7/06*
**U.S. Cl. 104—112** **11 Claims**



A transportation system having a cable support means, a car carried on the cable, a means for generating a guidance signal relative to a reference path of travel, and means responsive to the signal for acting upon the suspension means to maintain the travel of the car in a selected course.

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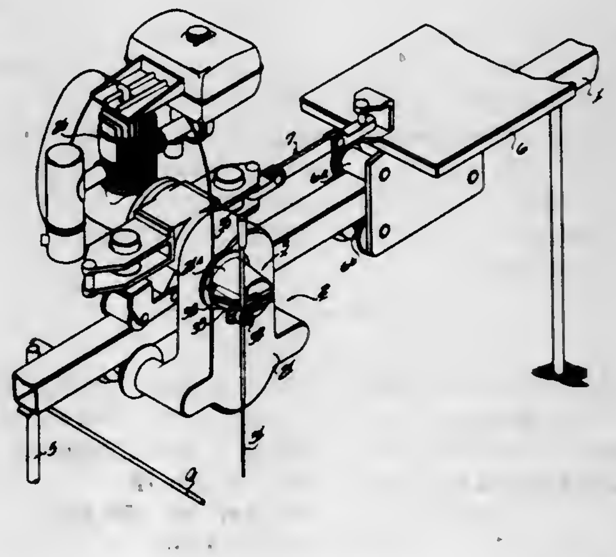
### 3,759,186
### MONORAIL RAILWAY TRANSPORTATION SYSTEM

**Minoru Sugimoto, 141-1 Minamikoto, Jodo-cho, Jodo-gun, Okayama-ken, Japan**
**Filed Oct. 26, 1971, Ser. No. 192,229**
**Int. Cl. B61b** *13/04;* **B61c** *11/04, 13/04*
**U.S. Cl. 104—120** **2 Claims**



A hauling system with a monorail comprises a rail body having a rack portion disposed under said rail body, and a tractor with an automatically disengagable clutch controling the speed of an engine having upper and lower rollers between which said rail body is pinched and a driving wheel with a plurality of engaging members circularly arranged and intermeshed with said rack portion.

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**3,759,187**

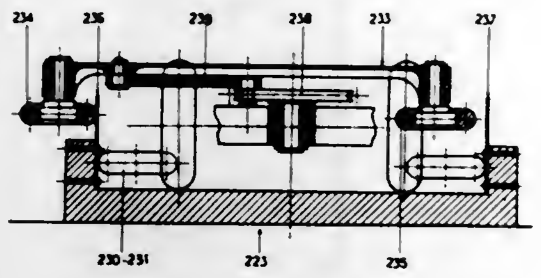
## RAIL VEHICLE STEERING SYSTEM

**Jean Gayot, Meudon, (Hauts de Seine), France, assignor to Engins Matra, Paris, France**

**Filed Nov. 2, 1970, Ser. No. 85,963**

**Int. Cl. B61b** *13/00;* **E01b** *25/28*

**U.S. Cl. 104—130** **1 Claim**



This invention relates to an installation for continuous transport by trains made up of programmed (computer-controlled) vehicles, the installation comprising a main track serving stations via secondary tracks and having trains made up of at least one vehicle moving along the main track, the installation further being one wherein each vehicle is fitted with its own means for programming driving and braking, allowing the destination station to be selected and reached after extraction of the vehicles allocated for the station.

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**3,759,188**

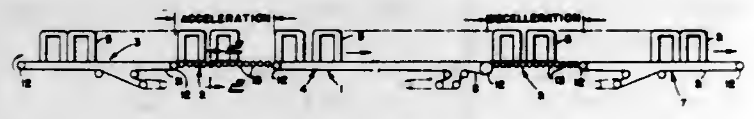
## VARIABLE SPEED CONVEYOR

**Harry E. Woods, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Jan. 4, 1971, Ser. No. 103,656**

**Int. Cl. B61b** *13/00*

**U.S. Cl. 104—168** **17 Claims**



A conveying system for accelerating or decelerating passenger or load carrying platforms in which driving rollers, having a substantially conical shape, support rails mounted under the platform and a change in speed of the platform is obtained by changing the points of engagement of the rails with the rollers. The rails may be pivotally mounted on the platforms or the rails may be fixedly mounted in a canted position to engage adjacent rollers at surfaces moving at the same peripheral speed.

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**3,759,189**

## ANTI-BACK-UP DEVICE FOR WORK CARRIERS ON POWER-AND-FREE CONVEYOR SYSTEMS

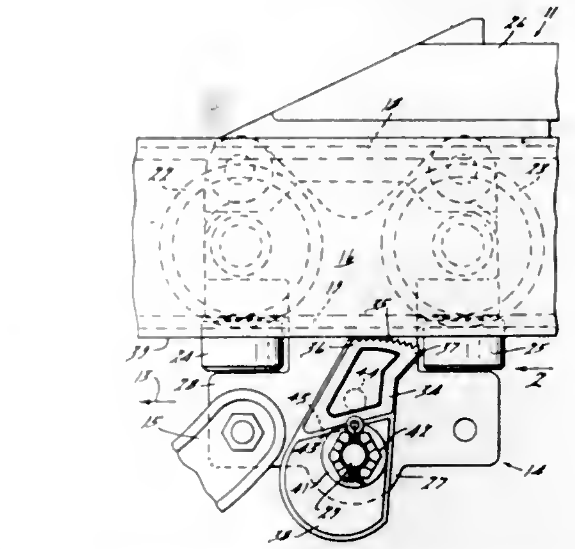
**Dennis W. Desilets, Sterling Heights, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.**

**Filed Sept. 14, 1971, Ser. No. 180,401**

**Int. Cl. B61b** *13/00*

**U.S. Cl. 104—172 S** **2 Claims**

A work carrier for a power-and-free conveyor system has anti-back-up means comprising a pair of serrated cams mounted on the carrier frame and weight-biased into one-way frictional engagement with the undersurfaces of the track channels.



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**3,759,190**

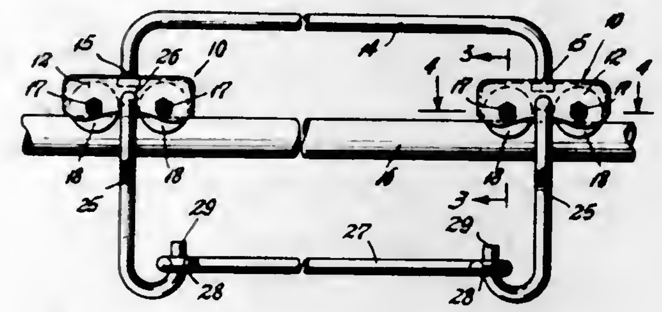
## TROLLEY WHEEL

**William K. Harvey, Trumbull, Conn., assignor to Fair-Conn, Inc., Bridgeport, Conn.**

**Filed Feb. 14, 1972, Ser. No. 225,746**

**Int. Cl. B61b** *3/00*

**U.S. Cl. 105—150** **1 Claim**



A trolley for pipe rail conveyor systems provided with a plurality of rail-engaging wheels, each wheel comprising two companion wheel sections which are mounted for independent rotation which occurs when the trolley traverses a curved portion of the pipe rail, said wheel sections when so mounted forming between them a circumferential groove to receive the pipe rail on which the wheel is to ride, the inner end of said wheel sections being spaced from each other, the groove having a contour formed by arcs having a common center and a radius equal to the radial distance from said common center to the circumference of the pipe rail, the contour of the groove including straight outer portions which are continuations of said arcs and tangent to said arcs, said tangent portions serving to resist lateral bodily movement of the wheel sections or swinging movement of the trolley on the wheel about the axis of the pipe rail.

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**3,759,191**

## REVERSIBLE CABINET SHELF BRACKET

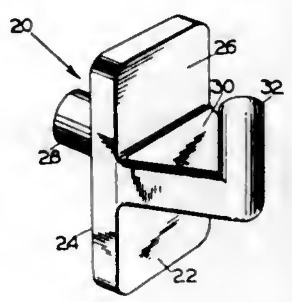
**Dixon L. Freeman, Tacoma, Wash., assignor to Monitor Cabinets, A Division of Comerco, Inc., Tacoma, Wash.**

**Filed July 28, 1971, Ser. No. 166,858**

**Int. Cl. A47b** *23/00*

**U.S. Cl. 108—42** **5 Claims**

A bracket for supporting cabinet shelves is secured to the cabinet side wall and is rotatable angularly through 180° between two positions. In one, a pin on the bracket extends upwardly and is insertable in a shelf socket for releasably interlocking the shelf to the cabinet side wall. In the other, the pin extends downwardly in a disengaged condition, permitting free separation of the shelf from the cabinet side wall. In both positions of the pin, the shelf is supported by the bracket in substantially the same horizontal plane.



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**3,759,192**

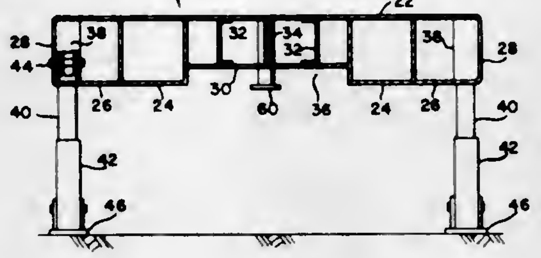
## LOAD PALLET CONSTRUCTION

**Carl W. Oehler, Deerfield Beach, Fla., assignor to Oehler Steel Company, Akron, Ohio**

**Filed Jan. 28, 1971, Ser. No. 110,487**

**Int. Cl. A47b** *23/00;* **B60p** *1/64*

**U.S. Cl. 108—44** **4 Claims**



A load pallet is constructed of modular sections. The individual modular units are each of box girder construction with the sides of the sections being formed of deeper box girders than the center portions. A number of modular sections are joined together to construct a pallet of the desired length with solid end plates being provided between each of the adjacent sections. The pallets are suitable for any use such as load bearing pallets in a tractor-trailer pallet load carrying assembly.

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**3,759,193**

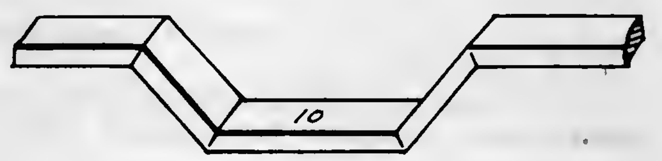
## PALLET SKIDS

**Ethridge S. Branch, 512 Mitchell Dr., Adel, Ga.**

**Filed Aug. 5, 1971, Ser. No. 169,450**

**Int. Cl. B65d** *19/00*

**U.S. Cl. 108—51** **3 Claims**



Pallet support members with recessed-shaped sections made from a sheet material of uniform thickness and having a pair of V-shaped parallel channels on one surface of the sheet material, spaced apart from each other a predetermined distance and a second pair of V-shaped parallel channels in the second surface of the sheet material formed intermittent and parallel to the first pair of channels and spaced apart therefrom a predetermined distance whereby said sheet material being connected along the apices of the V-shaped channels to produce a recess-shaped section when the surfaces between immediately adjacent channels are angularly displaced to substantially close said V-shaped channels thereby defining a pallet support member as disclosed herein. Preferably the support members are formed in pairs in longitudinal frame members of a platform.

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**3,759,194**

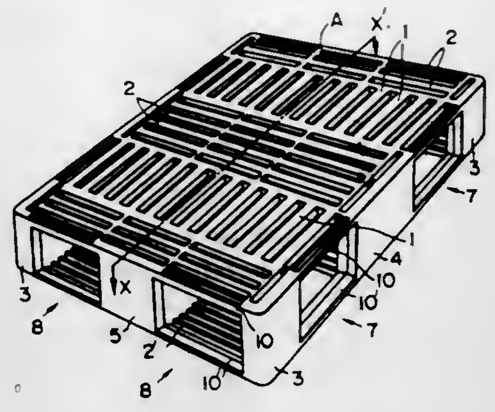
## PLASTIC PALLET

**Mitsuru Fujii, Saitama-ken, Urawa-shi, and Izumi Narusawa, Takaido, Suginami-ku, Tokyo, both of Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan**

**Filed Dec. 7, 1971, Ser. No. 205,639**

**Int. Cl. B65d** *19/38, 19/00*

**U.S. Cl. 108—58** **1 Claim**



A four-side insertion pallet of one-piece construction formed from plastics having a suitable rigidity which can receive the insertion of the fork or fingers of a forklift from any of its four sides.

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**3,759,195**

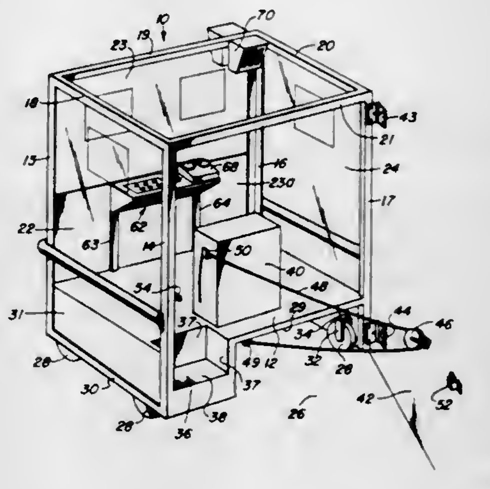
## PROTECTIVE ENCLOSURE

**Paul Hitrys, 92 Columbia St., Brookline, and Joshua S. Walner, 26 Prince St., Milton, both of Mass.**

**Filed July 6, 1972, Ser. No. 269,445**

**Int. Cl. E05g** *3/00*

**U.S. Cl. 109—9** **2 Claims**



A bulletproof enclosure for use in a bank for stationing at least one guard therein includes access means so that the guard can enter the enclosure, communication means coupled to a local police station, for example, and loudspeakers, one of which may be disposed outside of the bank. The enclosure is preferably pivotable toward and away from a wall proximate to the tellers location in the bank and may be secured against the wall after the guard has entered the enclosure.

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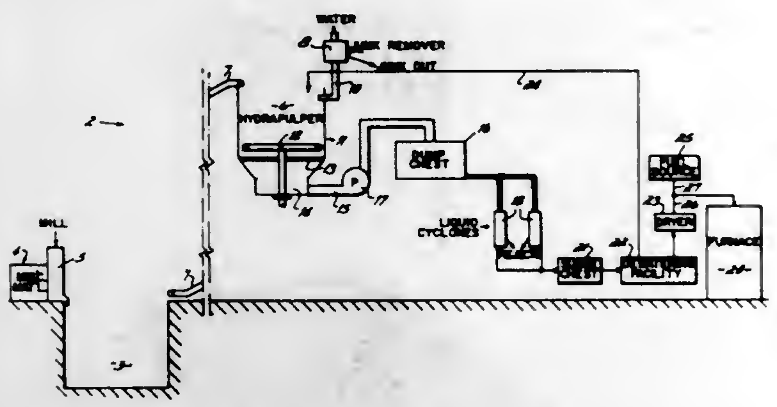
### 3,759,196
### REFUSE DISPOSAL AND HEAT RECOVERY IN STEAM BOILERS

**Paul W. Spaite, Cincinnati, Ohio, assignor to A. M. Kinney, Inc., Cincinnati, Ohio**

**Filed Dec. 13, 1971, Ser. No. 207,143**

**Int. Cl. F23g** *5/00*

**U.S. Cl. 110—8 R** **12 Claims**



This invention is directed to a process for disposing of refuse and recovering heat therefrom for use in conventional steam boiler furnaces. The process involves the production of pulped refuse for firing with primary carbonaceous fuels of the gas, coal and oil type while maintaining consistency and stability in boiler power plant operation. Significant economies and ecological advantages are also achieved in the two-fold function of waste disposal and heat recovery in accordance with the method disclosed.

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### 3,759,197
### PROCESS FOR THE AGGLOMERATION OF PARTICULATE MATERIALS

**William J. I. Bracke, Ransbeekstraat 120, Bruxelles, Belgium**

**Filed Sept. 22, 1971, Ser. No. 182,905**

**Int. Cl. E02d** *3/12*

**U.S. Cl. 111—1** **10 Claims**

A process for the agglomeration of particulate material comprising contacting said particulate material with an aqueous solution of polymer of acrylamide and an aqueous solution of dialdehyde having the formula $O=CH-(R)_n-CH=O$, where R is a divalent hydrocarbon radical having from 1 to 8 carbon atoms, and *n* is 0 or 1, at a temperature in the range from 0° to 100°C.

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### 3,759,198
### APPARATUS FOR THE CLOSURE IN PIPING OF OPENED FABRICS TO WIND UP ROLLS FOR PRODUCING BIAS TAPES

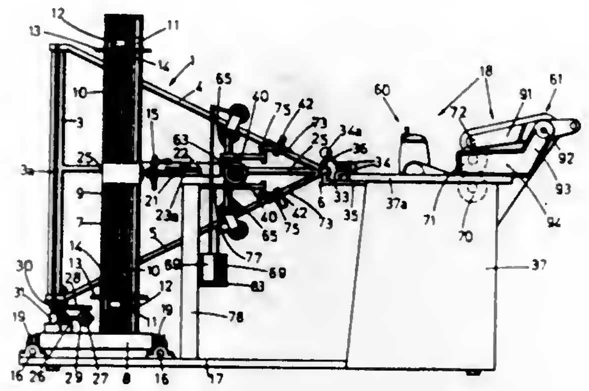
**Luigi Pisani, Cilavegna, Italy, assignor to Virginio Rimoldi & C., S.p.A., Milan, Italy**

**Filed May 24, 1971, Ser. No. 256,387**

**Int. Cl. D05b** *23/00*

**U.S. Cl. 112—63** **7 Claims**

A folding frame for continuously folding a length of cloth in half with its edges in registry for subsequent sewing in which a triangular like folding frame is provided about which the traveling web of textile material is fed and then doubled back upon itself. The frame is mounted so that its incoming edge extends in a substantially vertical direction and the two sides forming the remainder of the triangular shape converge from the upper and lower ends of the incoming side to a terminal apex. This folding frame is mounted so it can be moved laterally back and forth with respect to the supporting structure and can also be oscillated about its own horizontal and vertical axes. Sensing means to automatically respond to lack of registry at the cloth edges is provided together with means to move the edges back into registry when required.



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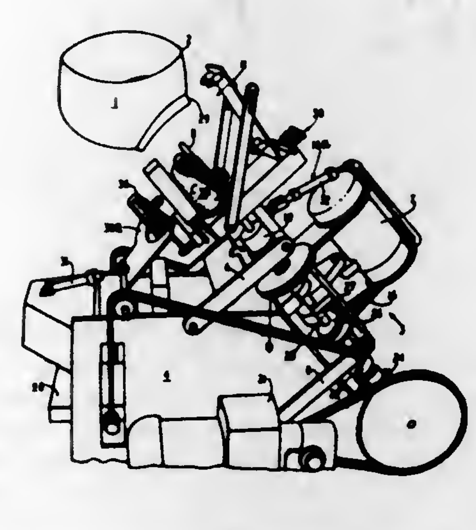
### 3,759,199
### APPARATUS FOR EDGE FINISHING BODY OPENING IN GARMENTS

**Harold Barry Lee, Heidelberg, Australia, assignor to Bond's-Wear Ptg. Limited, Camperdown, New South Wales, Australia**

**Filed Mar. 30, 1972, Ser. No. 239,520**

**Int. Cl. D05b** *21/00*

**U.S. Cl. 112—121.12** **6 Claims**



An edge finishing machine for an opening in a garment, the machine comprising a table movable on a frame by cam means, a sewing machine mounted on a shaft rotatably supported on the table. The cam means and the rotational movement of the sewing machine causing the sewing machine needle to traverse a path which is a duplicate of the profile of the garment opening and a garment support located adjacent the machine.

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### 3,759,200
### APPARATUS FOR PRODUCING STITCHING PATTERNS WITH ADJUSTABLE WORKCLAMP APERTURES

**Nerino Marforio, Milan, Italy, assignor to Virginio Rimoldi & C., S.p.A., Milan, Italy**

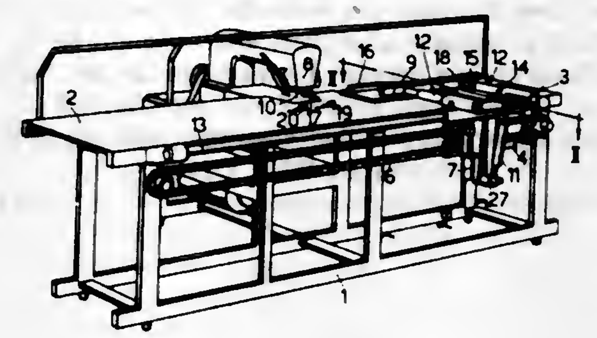
**Filed May 17, 1972, Ser. No. 254,245**

**Claims priority, application Italy, June 19, 1971, 26081 A/71**

**Int. Cl. D05b** *21/00*; **F01b** *15/00*

**U.S. Cl. 112—121.15** **7 Claims**

A clamping device for moving a fabric workpiece along a supporting surface and through a sewing area in an apparatus for producing stitching patterns in the fabric. The clamping device being provided with control elements for varying the distance between the fabric engaging surface thereof and the supporting surface to effect insertion, adjustment, clamping and release of the fabric as well as return of the clamping device to its initial position for repeating the cycle.



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### 3,759,201
### RIBBON POSITIONING APPARATUS FOR USE IN THE AUTOMATIC MANUFACTURE OF AN ANNULAR RIBBON

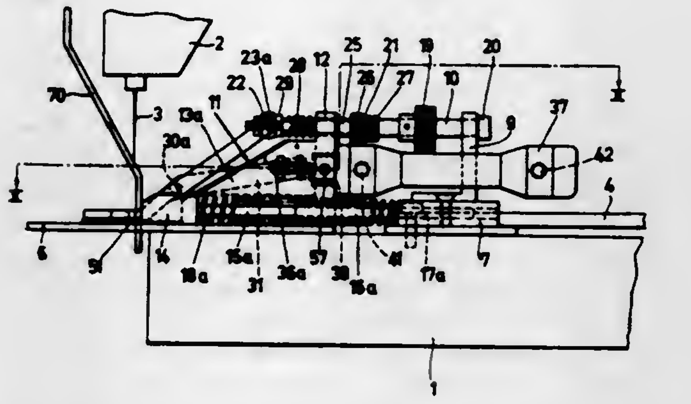
**Sven-Erik Backlund, Uddevalla, Sweden, assignor to Sven Gerhard Anderson, Ljungskile, Sweden**

**Filed Apr. 12, 1972, Ser. No. 243,146**

**Claims priority, application Sweden, Apr. 15, 1971, 4882/71**

**Int. Cl. D05b** *21/00, 35/06*

**U.S. Cl. 112—121.27** **12 Claims**



A positioning apparatus is provided, in conjunction with a known apparatus for cutting a length of elastic ribbon and for overlapping the ends thereof to form an annular loop of ribbon, to maintain the overlapped ends in proper parallel and overlapping relation to one another during the sewing together of said overlapped ends by a sewing machine. The positioning apparatus comprises guide means associated with the movable presser foot of the sewing machine for guiding the overlapped ends to predetermined positions relative to one another as said presser foot is moved into pressure engagement with said overlapped ends. The apparatus is operative to move the presser foot downward to a first position in which it presses the overlapped ribbon ends relatively slightly against an underlying support, whereafter the presser foot is moved downward further to a sewing position in which it firmly presses the overlapped ribbon ends against said support.

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### 3,759,202
### SELF-CENTERING FOOT FOR SEWING MACHINES

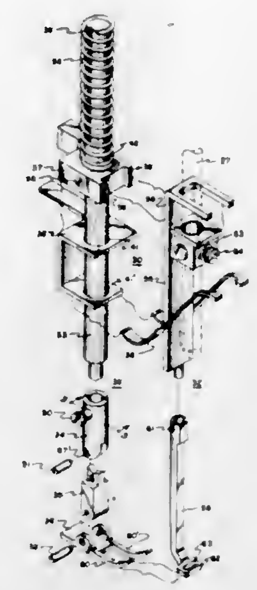
**Ferdinand H. Jean-Blanc, 2719 N. Thirty-Sixth St., Boise, Idaho**

**Filed Oct. 21, 1971, Ser. No. 191,298**

**Int. Cl. D05b** *29/08*

**U.S. Cl. 112—239** **4 Claims**

The present invention comprises a pressure foot assembly operable to resiliently urge layers of fabric downwardly against a feed dog assembly of a sewing machine and which may be urged rearwardly in response to layers of fabric tending to gather or "pucker" therebetween. The pressure foot assembly of this invention is operable to be instantaneously lifted from the layers of fabric in response to movement of the needle shaft operation and, thereby, tends to avoid stretching fabric and layers of fabric advanced between the pressure foot assembly of this invention and a feed dog assembly. In order to maintain a substantially uniform pressure upon layers of fabric being advanced through the machine, a holding foot assembly is provided to resiliently urge downwardly against layers of fabric during the instantaneous lifting of the pressure foot assembly, and to be raised upwardly out of engagement with layers of fabric in response to movement of the needle bar shaft alternately with the pressure foot assembly, the pressure foot assembly and the holding foot assembly being operable to permit sewing of stretchable elastic fabrics without stretching the respective layers. The holding foot assembly is juxtapositioned so as not to coact with the feed dog assembly.



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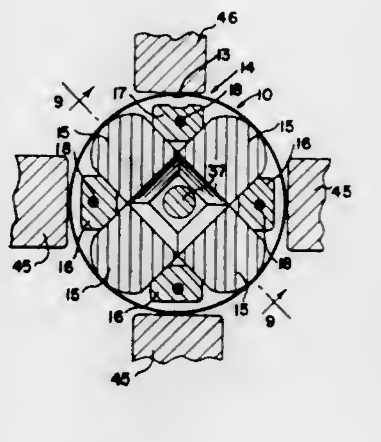
### 3,759,203
### CONTAINER SHAPING APPARATUS

**Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.**

**Filed Dec. 30, 1970, Ser. No. 102,742**

**Int. Cl. B21d** *51/26*

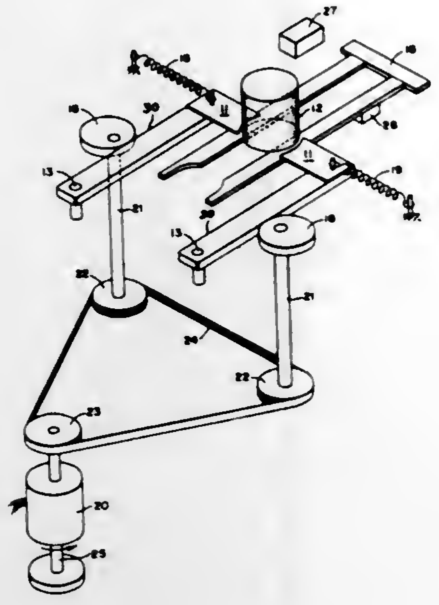
**U.S. Cl. 113—1 G** **4 Claims**



An apparatus for reforming a cylindrical can body to a generally rectangular body. The apparatus includes means for holding the side seam clamped while the can body is being stretched into rectangular shape.

### 3,759,204
### CUTOFF MECHANISM FOR CONTAINER CLOSURE LINING MACHINES

**William B. Harrison, Dedham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.**
**Filed Nov. 9, 1970, Ser. No. 88,019**
**Int. Cl. B21d** *43/00*
**U.S. Cl. 113—114 BE** **2 Claims**



An improved cutoff mechanism for container closure lining machines having reciprocating slides which feed closures to a rotary chuck. The knives which cut off a closure from the in-feed stack and drop it on to the work surface, to be fed to a chuck by fingers on the slide, move transversely to the slide axis of the machine. Compression or tension springs push the knives outwardly. Cams force the knives into cut-off position. Alternatively, the cams may carry a slot cam track, and the knives carry a cam roller.

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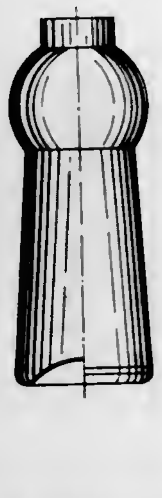
### 3,759,205
### PROCESS FOR MAKING METALLIC HOLLOW ARTICLES

**Gilbert Dolveck, Avenue Jean Gaures, F. 38 Beaurepaire, France**
**Continuation-in-part of Ser. No. 739,400, June 24, 1968, abandoned. This application June 4, 1970, Ser. No. 43,548**
**Claims priority, application Switzerland, June 26, 1967, 9050/67**
**Int. Cl. B21d** *51/00*
**U.S. Cl. 113—120 H** **11 Claims**



A process for making a hollow metallic article from a tubular blank closed at one end, comprises deforming the entire periphery of the wall of the said blank over its entire length from one end to the opposite end.

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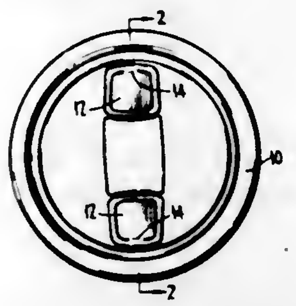
### 3,759,206
### PUSH-IN EASY-OPENING CLOSURES

**Alan George Dalli, Warrandyte, Victoria; Michael Debenham, Frankston, Victoria, and Ralph Edward Schackleford, Ferntree Gully, Victoria, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia**
**Filed Sept. 15, 1971, Ser. No. 180,785**
**Claims priority, application Australia, Sept. 16, 1970, 2556**
**Int. Cl. B21d** *51/00*
**U.S. Cl. 113—121 C** **21 Claims**



This specification dislcoses an easy-opening closure for a can end which comprises an opening formed by partially severing a portion from the can end to leave the portion attached thereto by an integral neck, and a closure member formed from said severed portion and which is larger than said opening. The sheet metal adjacent the free edge of the opening is downwardly turned while the sheet metal adjacent the free edge of the closure member is upwardly turned, said free edges being in contact with or in close proximity to each other. A sealant is applied at least in the region of the free edges if required by the purpose for which the can end is to be used. The specification also discloses a method of forming such a closure comprising the steps of: forming an upwardly directed bulge in the sheet metal, thus stretching the sheet; partially severing a central portion of said bulge, to define an opening and said severed portion defining a closure member for said opening, and displacing the closure member downwardly so that its free edge is below the free edge of the opening; partially flattening the thus truncated bulge of sheet metal around said opening to reduce its size, and turning downwardly said free edge defining said opening; partially flattening the closure member to increase its size, and turning upwardly said free edge of the closure member, the free edge portion of said closure member being in contact with or in close proximity to said free edge defining said opening, and applying a sealant at least in the region of the free edges of the opening and the closure member to seal the closure if required by the purpose for which said container member is to be used.

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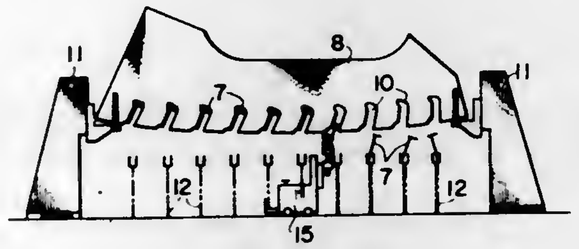
### 3,759,207
### APPARATUS FOR ASSEMBLING CURVED SKIN BLOCK FRAMES OF A HULL AND A METHOD THEREFOR

**Kiyoshi Terai, Ashiya-shi, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan**
**Filed Mar. 8, 1971, Ser. No. 122,014**
**Claims priority, application Japan, Mar. 7, 1970, 45/19546**
**Int. Cl. B63b** *3/18*
**U.S. Cl. 114—65 R** **2 Claims**



Apparatus for assembling curved skin block frames of a hull, which comprises (1) sets of oppositely disposed devices for positioning slotted transverse reinforcing members which have a transverse member clamping mechanism for holding the transverse members near both ends thereof in such a manner that the slots of the transverse members face downwardly and so as to position several transverse members therebetween, a transverse member supporting stool, a mechanism for adjusting the oblique angles of the transverse members, and a mechanism for adjusting the positions of the elevational direction, longitudinal direction and transverse direction of the transverse members; and (2) a device for positioning longitudinal reinforcing members, which comprises a longitudinal member clamping device for carrying longitudinal members corresponding to the slots of the transverse members, positioned previously in tentative longitudinal member positions, so as to insert the longitudinal members from the underside of the transverse members into the slots thereof, a longitudinal member supporting stool, a mechanism for adjusting the oblique angle of the transverse direction of the longitudinal members, a mechanism for adjusting the oblique angle of the longitudinal direction of the longitudinal members, a mechanism for adjusting the position of the longitudinal direction by lifting the longitudinal members, and an assembly for carrying the longitudinal members from the tentative longitudinal member positions to the slot positions; and a method therefor.

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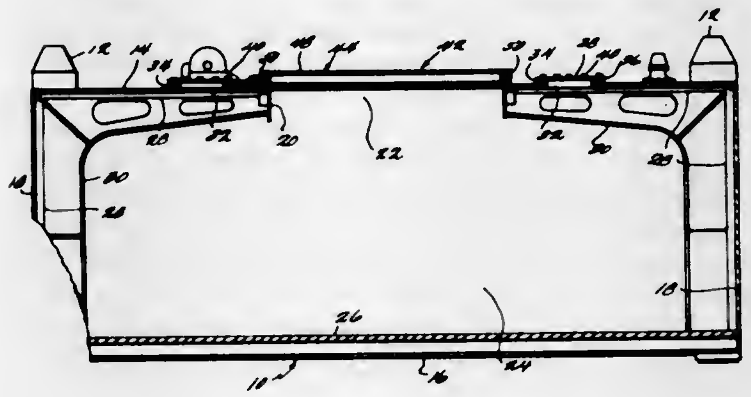
### 3,759,208
### MULTI-CARGO BARGE

**Cecil M. Keeney, New Orleans, La., assignor to Equitable Equipment Company, Inc., New Orleans, La.**
**Filed Apr. 5, 1971, Ser. No. 131,379**
**Int. Cl. B63b** *25/02*
**U.S. Cl. 114—73** **2 Claims**



A stackable lighter having a deck is provided with a main hatch having a cover and extending the entire length of the lighter along the centerline thereof. The hatch is of a width about one-third that of the lighter and opens to a hold having a length co-extensive with the hatch and width equal to that of the lighter. On the deck at either side of the hatch are disposed a plurality of small hatches properly sized for grain loading equipment and provided with removable covers.

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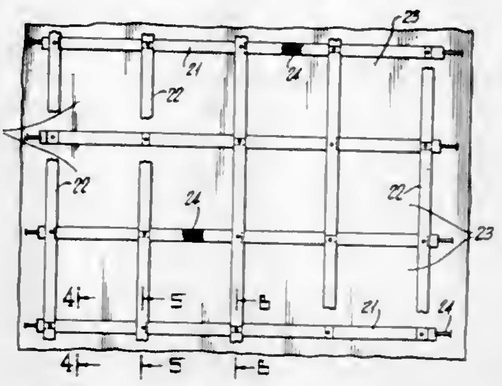
### 3,759,209
### GRID SYSTEM FOR EXTERNAL INSULATION TANKER

**Frank J. Iarossi, Middletown, N.J., and Walter C. Cowles, Cobnan, Surrey, England, assignors to Esso Research and Engineering Company, Linden, N.J.**
**Filed May 18, 1971, Ser. No. 144,422**
**Int. Cl. B63b** *25/16*
**U.S. Cl. 114—74** **12 Claims**

A tanker vessel intended especially for the transport of liquid cargoes at temperatures differing from ambient temperature having external insulation covering the midbody of the vessel. The insulation is secured to the vessel midbody by means of a grid of intersecting frames or firring members attached to the vessel hull with the insulating material being fitted, foamed or sprayed in the lattice spaces defined by the intersecting members. An outer covering or skin may be disposed over the insulation to provide a watertight and abrasion resistant skin that will prevent damage to or deterioration of the external insulation.



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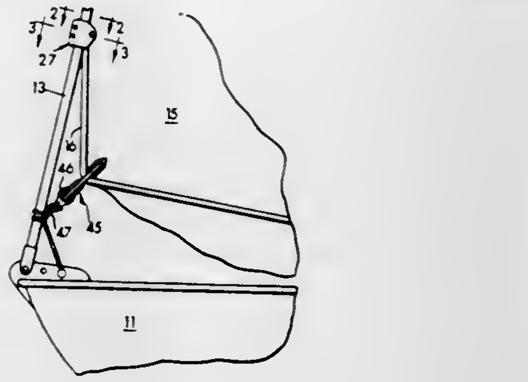
### 3,759,210
### SAIL GUIDE SYSTEM

**Harry T. Davis, West Peabody, Mass., assignor to Hood Sailmakers, Inc., Marblehead, Mass.**
**Filed Jan. 21, 1972, Ser. No. 219,787**
**Int. Cl. B63h** *9/04*
**U.S. Cl. 114—105** **5 Claims**



In the system disclosed herein, a generally C-shaped sail guide member, used for leading a bead on the luff of a sail into a keyway, is arranged so that the open side or gap in the C can face to either port or starboard. In raising this sail, the sail then bends around one or the other of a pair of rounded sail-engaging elements mounted on either side of the mouth of the C-shaped guide.

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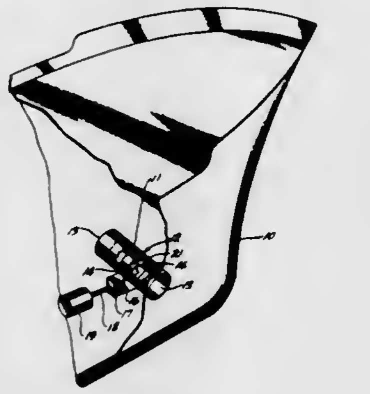
### 3,759,211
### CONTROLLABLE PITCH TUNNEL THRUSTER FOR SHIP POSITIONING

**Francis A. Kuntz, Jr., San Pedro, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.**
**Filed Oct. 26, 1971, Ser. No. 192,036**
**Int. Cl. B63h** *25/42*
**U.S. Cl. 114—148** **7 Claims**



A ship is described having a transverse thruster arranged in a tunnel running athwartship preferably, for example, near the bow so as to enhance steering or for slowly moving the ship sideways. The thruster comprises a movable portion of the tunnel wall having inwardly extending blades. The movable wall and blades are driven together in rotation about the axis of the tunnel so that the blades propel water therethrough. In addition, the pitch of the blades relative to a plane transverse to the tunnel axis is controllable for continuous variation of thrust from a maximum in one direction to a maximum in the opposite direction. Means are provided for controlling pitch of the blades while the thruster is rotating.

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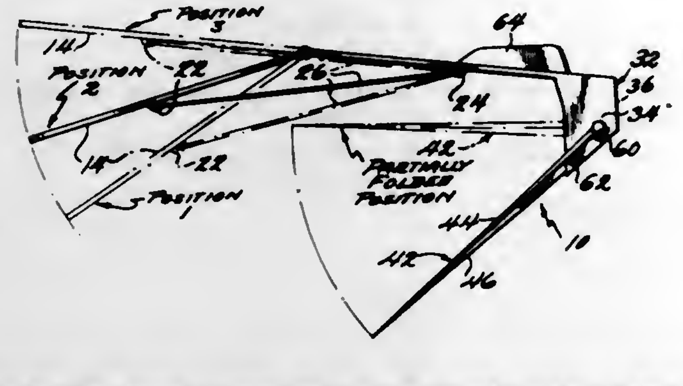
### 3,759,212
### ANCHOR

**David G. Cluett, 151 Barton Ave., Palm Beach, Fla.**
**Filed Feb. 2, 1972, Ser. No. 222,856**
**Int. Cl. B63b** *21/40*
**U.S. Cl. 114—208** **10 Claims**



The anchor shank comprises two sections, hinged together and provided with an elastically extensible shock cord secured at its ends to the two sections intermediate the ends thereof. The shock cord is short enough that the shank is bowed at its hinge, unless tensile stress on the shank straightens the shank and elastically extends the shock cord. The anchor preferably includes a single, replaceable fluke which is pinned at an angle to the shank during use, and which can be folded for storage. An angled skeg may be provided on the shank to assist in upsetting the anchor to a working position.

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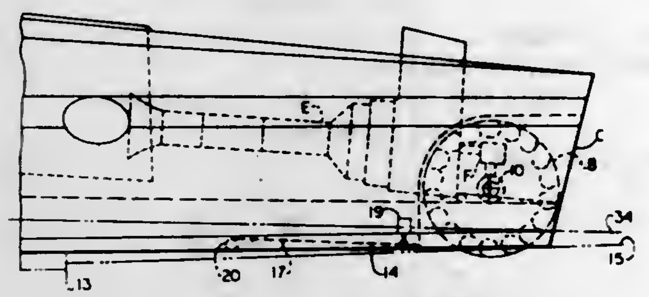
### 3,759,213
### TANGENTIAL FLOW PULSE JET PUMP PROPULSION FOR WATER CRAFT

**John C. Quady, La Jolla, Calif., assignor to Rohr Corporation, Chula Vista, Calif.**
**Filed Jan. 28, 1971, Ser. No. 110,522**
**Int. Cl. B63h** *11/02*
**U.S. Cl. 115—16** **19 Claims**



Propulsion mechanism for water craft comprises a power driven pulse jet pump which operates at a selected shallow immersion depth, preferably on a smooth wake created by a planing surface of the craft. The pump comprises a propulsion wheel having concavo-convex curved blades mounted with their concave sides facing in the direction of forward rotation of the wheel, and the tip edges of the blades are sharpened. At and above cruising speed the blades are immersed substantially less than one half of their width, and are so angularly adjusted that each blade slices cleanly into the wake and in effect severs a "chip" of water therefrom in somewhat the same manner as a blade of a power wood planer or metal-milling cutter. These water "chips", by inertia, are forced upwardly and around the concave faces of the blades, so that by a combination of the rotative orbit of the blades, and their curved conformation, the "chips" are discharged rearwardly through the air at a velocity greater than the tip speed of the blades, thereby generating a reaction thrust which propels the craft forward. The wheel preferably is vented to act additionally as an air impeller so as to discharge a high velocity air stream rearwardly along with the pulse jet stream of water "chips."

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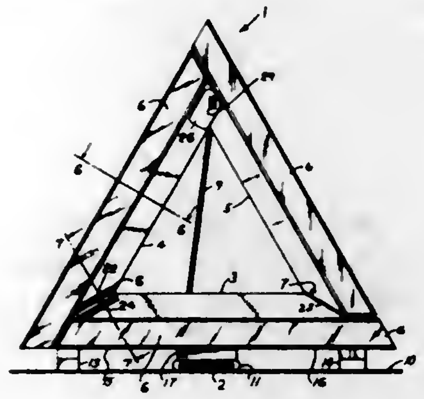
### 3,759,214
### ONE PIECE TRIANGULAR SIGNAL DEVICE

**Robert V. Evans, Independence; Thomas M. Stiles, and Kenneth C. Ploeger, both of Blue Springs, all of Mo., assignors to Rupert Manufacturing Company, Inc., Blue Springs, Mo.**
**Filed Oct. 18, 1971, Ser. No. 189,988**
**Int. Cl. E01f** *9/10*
**U.S. Cl. 116—63 P** **8 Claims**



A collapsible emergency traffic signal device for placing on or near motor vehicles to warn drivers of other motor vehicles to avoid the vehicle and including a support member with a base leg mounted on the support member and a pair of side legs cooperating with the base leg for forming a triangle having reflective material retained on at least one side thereof. One integral hinge connects one leg to one end of another leg and an other integral hinge connects a second leg to said another leg whereby the legs are foldable and movable to a position for storage. At least one brace member extends between the support member and an upper portion of the triangular form for maintaining the triangular form in an upstanding position.

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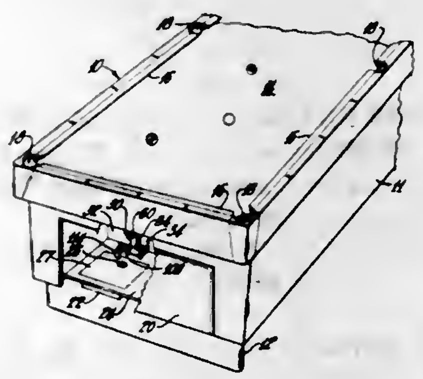
### 3,759,215
### ALARM SYSTEM AND APPARATUS

**Stuart C. Bagley, Tipton, Mo., assignor to Questor Corporation, Toledo, Ohio**
**Filed July 28, 1971, Ser. No. 166,883**
**Int. Cl. G08b** *13/08*
**U.S. Cl. 116—76** **7 Claims**



The disclosure embraces a system or apparatus particulary for use with a receptacle or body such as a coin box associated with a game device or vending machine for automatically providing an audible alarm for the purpose of combating thievery upon attempts by unauthorized persons to pilfer, dislodge or open the receptacle or coin box.

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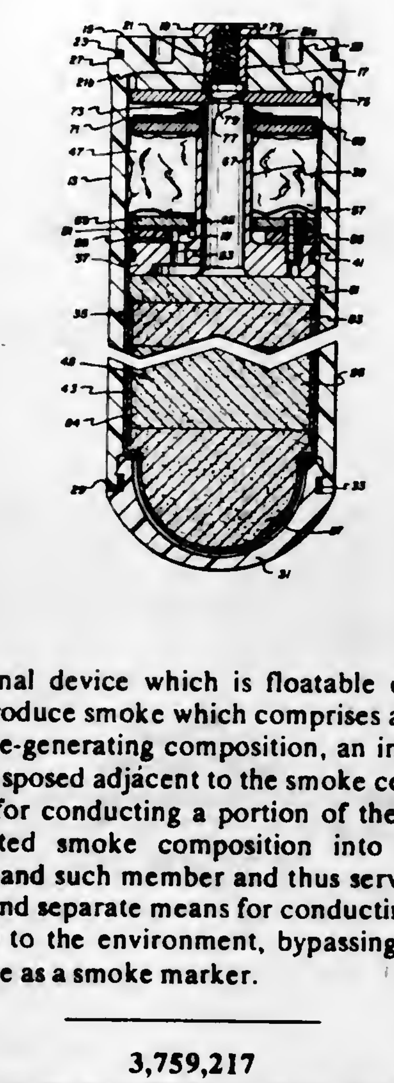
### 3,759,216
### SMOKE FLARE SIGNALLING AND MARKING DEVICE

**Victor M. Sanders, deceased, late of Asheville, N.C. (by Nellie M. Sanders, executrix), and Andrew A. Scotchie, Asheville, N.C., assignors to Northrop Carolina, Inc., Swannanoa, N.C.**
**Filed Dec. 4, 1970, Ser. No. 95,111**
**Int. Cl. G09f** *9/00*
**U.S. Cl. 116—124 B** **7 Claims**



A visual signal device which is floatable on water when energized to produce smoke which comprises a cartridge containing a smoke-generating composition, an inflatable floatation member disposed adjacent to the smoke composition cartridge, means for conducting a portion of the gas generated from the ignited smoke composition into the floatation member to expand such member and thus serve as a float for the cartridge, and separate means for conducting a major portion of the gas to the environment, bypassing the floatation member to serve as a smoke marker.

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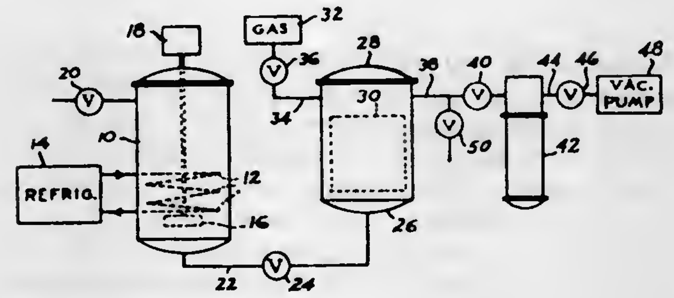
### 3,759,217
### APPARATUS FOR IMPREGNATING WOOD WITH SYNTHETIC RESIN

**Karl H. Wiegmann, Huntingdon Valley, Pa., assignor to Hull Corporation, Hatboro, Pa.**
**Filed June 5, 1969, Ser. No. 830,655**
**Int. Cl. B05c** *11/14*
**U.S. Cl. 118—5** **10 Claims**



Pieces of wood in a perforate container in a chamber are evacuated and then immersed in a liquid mixture of monomeric synthetic resin and catalyst under elevated pressure. The container of resin-impregnated wood then is transferred to a rotary chamber and tumbled under elevated gas pressure and controlled polymerization temperature to effect polymerization of the impregnated resin.

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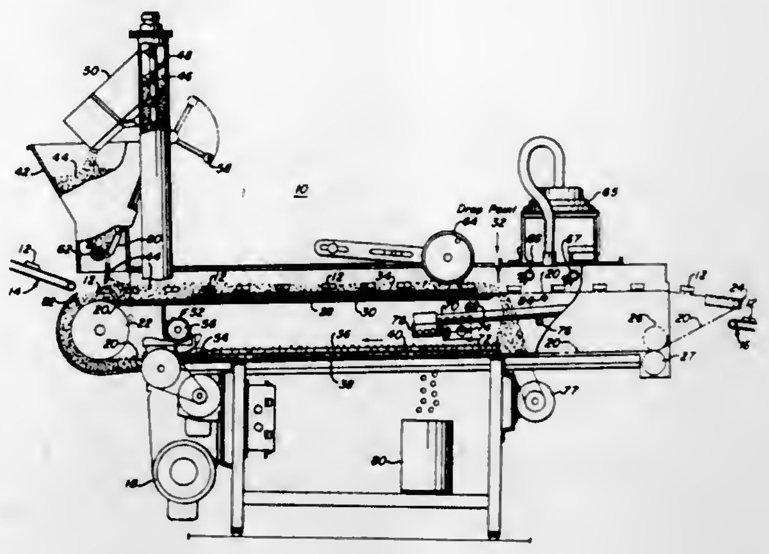
### 3,759,218
### BREADING APPARATUS

**Harald O. Korstvedt, 116 Winthrop Rd., Brookline, Mass.**
**Filed Aug. 3, 1971, Ser. No. 168,698**
**Int. Cl. A21c** *9/04*
**U.S. Cl. 118—18** **4 Claims**



An apparatus for applying comminuted material such as breading to a food product whereby an abundance of comminuted breading is applied to a moistened food product until thoroughly covered, whereupon the excess loose breading and any resulting lump particles of moisture and breading and/or undesirable particles of food product are removed and immediately sifted to separate said excess loose breading from said lump particles to prevent contamination of said excess loose breading by extended association with said particles on conveyor or other transporting means. A vibrating sifter device is utilized to effect separation of the excess loose breading from the lump particles immediately following the breading operation before transporting said mixture via belts or other transporting means.

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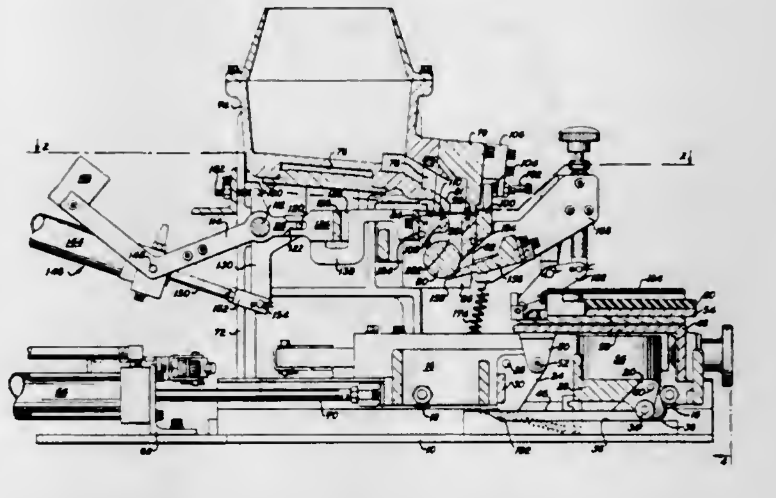
### 3,759,219
### COATING MACHINE

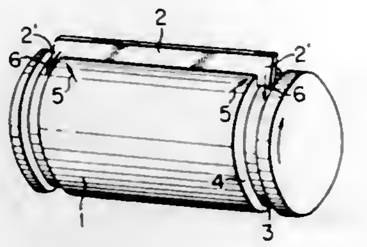
**Carl H. Brastow, Foxborough, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.**
**Filed Sept. 30, 1971, Ser. No. 185,022**
**Int. Cl. B05c** *1/08, 11/00*
**U.S. Cl. 118—261** **14 Claims**



A machine for applying coating material, by means of an applicator roll and a scraper member, to a portion of the vamp of a shoe upper that is mounted on a carriage that moves past the applicator roll and the scraper member to form a box toe.

### 3,759,220
### CLEANING DEVICE IN ELECTROPHOTOGRAPHY

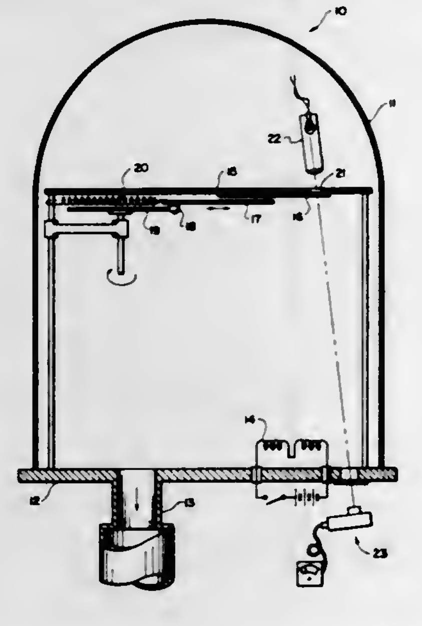
**Takashi Saito, and Toshihide Iida, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan**
**Filed Nov. 2, 1971, Ser. No. 194,956**
**Claims priority, application Japan, Nov. 4, 1970, 45/109363**
**Int. Cl. G03g** *13/00*
**U.S. Cl. 118—261** **4 Claims**



A cleaning device for an electrophotographic copying apparatus comprising a photosensitive medium having liquid collection grooves formed at the opposite end portions thereof, and a cleaning blade of resilient material having an edge adapted to bear against the surface of the photosensitive medium. The cleaning blade has projections formed at the opposite ends thereof so that when the blade is brought to its cleaning position, the inner side walls of the projections thereof may keep liquid-tight contact with the inner side walls of the liquid collection grooves. Thus, relative sliding movement between the blade and the photosensitive medium removes any amount of developing liquid remaining of the surface of the photosensitive medium after an image transfer has been completed.

### 3,759,221
### VAPOR COATING USING A CAM CONTROLLED SHUTTER

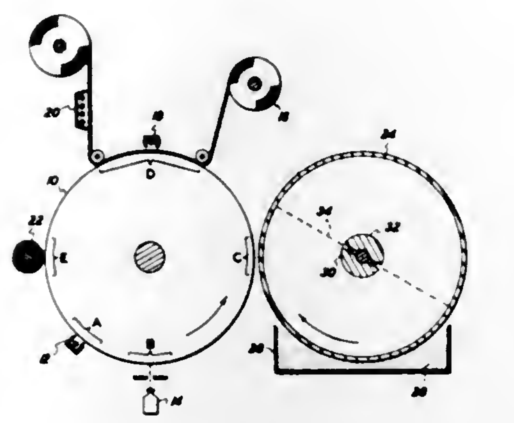
**Alan P. Bradford, Alexandria, and Lee R. Reed, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed June 14, 1972, Ser. No. 262,902**
**Int. Cl. C23c** *13/08*
**U.S. Cl. 118—504** **3 Claims**



A device for controlling the coating of a filter substrate for producing a linearly variable material deposit thereon. A heart-shaped cam arrangement derived from an Archimedean spiral provides substantially constant linear reciprocal motion to a shutter which moves over the filter base; thereby exposing the filter base to the deposition of coating material.

### 3,759,222
### MICROFIELD DONOR WITH CONTINUOUSLY REVERSING MICROFIELDS

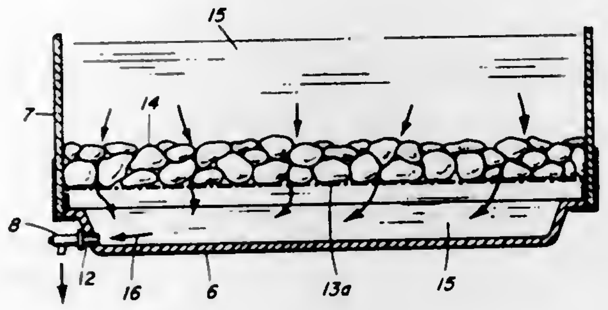
**John Maksymiak, Penfield, and Richard B. Lewis, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**
**Filed Mar. 4, 1971, Ser. No. 121,090**
**Int. Cl. G03g** *13/08, 15/08*
**U.S. Cl. 118—637** **4 Claims**



Electrostatic latent image development method is carried out by an apparatus employing a microfield donor member wherein the microfields are continuously reversed to nullify the effect of charge buildup at dielectric interfaces and within the bulk of the dielectrics.

### 3,759,223
### AQUARIUMS

**Robert A. D'Andrea, 2027 Ramblewood Rd., Baltimore, Md.**
**Filed May 11, 1971, Ser. No. 142,247**
**Int. Cl. A01k** *63/00*
**U.S. Cl. 119—5** **5 Claims**



A fish aquarium is provided which is of unique construction and arrangement so that the water used in the bottom of the aquarium, including any sediment therein, can be readily drained from the aquarium and replaced with fresh water. The aquarium consists of an enclosure having four glass walls and a top, if necessary, which can be opened or closed. The bottom of the aquarium is recessed to form a septic sump for collection of sediments, and the like. A filter is positioned above the recessed bottom of the aquarium and stones are positioned on top of the filter. The sediments in the water settle to the bottom of the base, that is, in the recessed bottom after passing through the stones and filter. The sediments and old water are periodically withdrawn from the fish aquarium through a drain spigot system connected to the septic sump through the bottom of the sides below the gravel level. The construction of the invention can apply equally well to swimming pools and the like.

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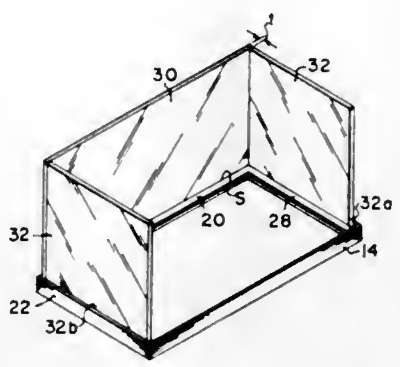
### 3,759,224
### AQUARIUM

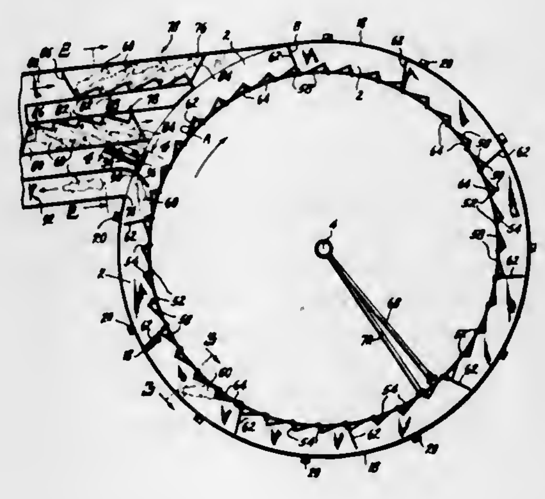
**Frank Kenneth Hall, Saginaw, Mich., assignor to O'Dell Manufacturing Inc., Saginaw, Mich.**
**Filed Dec. 17, 1971, Ser. No. 209,101**
**Int. Cl. A01k** *64/00*
**U.S. Cl. 119—5** **11 Claims**



An aquarium having vertically spaced apart, enveloping, upper and lower integral frames holding a plurality of transparent side walls in sealed engagement, the lower frame member during assembly of the aquarium functioning to initially locate and support the side walls and a transparent bottom wall, and the upper frame functioning to assist the lower frame to hold the side walls while adhesive applied to join them in sealed relation is curing.

### 3,759,225
### BATCH OPERATED MILKING APPARATUS

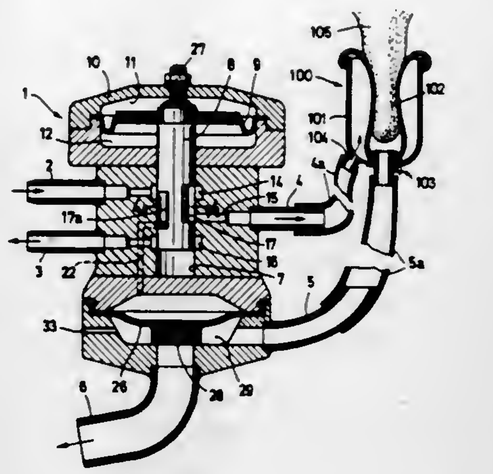
**Francis A. Galbraith, 3472 N. Haverhill Rd., West Palm Beach, Fla.**
**Filed Aug. 29, 1972, Ser. No. 284,495**
**Int. Cl. A01j** *5/00*
**U.S. Cl. 119—14.04** **10 Claims**



A rotary platform is divided into sectors, each sector containing a plurality of milking stalls. Preparation enclosures each hold a plurality of cows equal in number to the number of stalls in each sector so that the cows are prepared for milking, placed on the rotating platform, milked and discharged from the platform in batches rather than in single sequence. Batches of cows are admitted to the platform alternately from the preparation enclosures.

### 3,759,226
### PROCESS FOR MILKING ANIMALS AND APPARATUS FOR USE THEREWITH

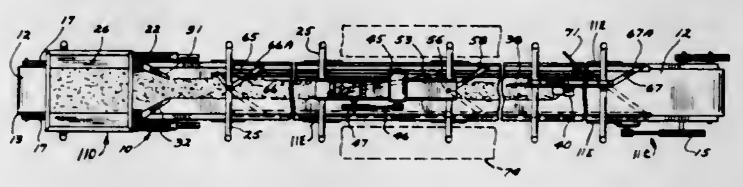
**August Rudle, Stuttgart-Bad Cannstatt, and Kurt Striebel, Endingen, Wurtt, both of Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Wilhelm Kraut-Strasse, Germany**
**Filed Nov. 16, 1971, Ser. No. 199,146**
**Claims priority, application Germany, Nov. 20, 1970, P 20 57 100.0**
**Int. Cl. A01j** *05/16*
**U.S. Cl. 119—14.36** **13 Claims**



A process for milking animals by machine consists in relieving the normal vacuum maintained in the milk line of the teat cup only during the time when the pressure in the massaging line has already been initiated and restoring the vacuum in the milk line before a vacuum is restored in the massaging line. This is accomplished by displacing the separate valving recesses of the sliding valve of a pulsator to regulate the timing of the connections between the teat cup and the pressure and vacuum sources.

### 3,759,227
### BELT TYPE CATTLE FEEDER

**Walter W. Wolfe, Mound; Jack D. Messner, Wayzata, and Elvind M. Rambo, Maple Plain, all of Minn., assignors to Van Dusen & Co., Inc., Wayzata, Minn.**
**Filed Dec. 20, 1971, Ser. No. 209,645**
**Int. Cl. A01k** *5/02*
**U.S. Cl. 119—52 B** **12 Claims**

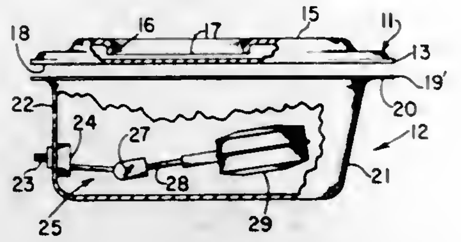


A belt type cattle feeder having a storage hopper at one end, a movable endless belt for moving material from said hopper, and a transversely movable sweep member that passes laterally across the belt when a windrow of cattle feed has reached a preselected position in relation to the hopper, and to thereby push the material from the belt into a feed bunk or a feeding location.

### 3,759,228
### PET WATERING APPARATUS

**Rodway W. Keen, 1609 Tanglewood, Odessa, Tex.**
**Filed Dec. 20, 1971, Ser. No. 209,974**
**Int. Cl. A01k** *07/02*
**U.S. Cl. 119—79** **4 Claims**

Watering apparatus for pets comprised of an enclosure means and a closure means, and which can be connected to a suitable source of water and placed at a convenient location in or about the home so as to provide a readily available supply of water for the pet. A float actuated valve assembly is disposed within the enclosure for maintaining a suitable liquid level therein. The pet gains access to the interior of the enclosure by means of a rolled port which is formed within a lid of the container. The location of the port relative to the float precludes inadvertent spillage of water from the container. The closure means has a circumferentially extending grooved section on the inner wall of its lower circumferential terminal edge portion to releasable engage the upper circumferential terminal edge portion of the enclosure means. The edge portions are spaced from the respective wall portions of the members by horizontal flat marginal areas.



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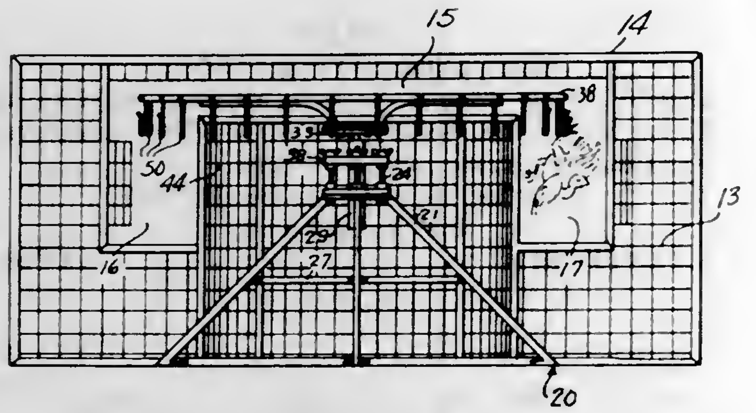
### 3,759,229
### DEBEAKING, VACCINATING AND CULLING WHEEL AND PANEL FOR POULTRY

**Floyd G. Farrington, Rt. 2, Box 142, San Angelo, Tex.**

**Filed May 19, 1972, Ser. No. 255,102**

**Int. Cl. A01k *37/00***

**U.S. Cl. 119—97 R** **8 Claims**



A device for debeaking, vaccinating, grading or otherwise processing live poultry consisting of a fenced enclosure with a horizontal rotary wheel having hooks on which the poultry can be secured. One panel of the enclosure has an inverted U-shaped slot through which the wheel can be passed and the wheel has an axial journal support located so that a portion of the wheel extends outwardly through the slot and so that poultry hooked on the wheel in the enclosure can be turned to a position outside the enclosure for treatment.

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### 3,759,230
### GAS FIRED FLUID HEATING APPARATUS

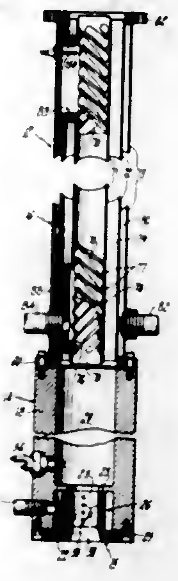
**Ralph D. Cooksley, Waterford, Conn., assignor to Tagh, Inc., Westbrook, Conn.**

**Filed July 19, 1971, Ser. No. 163,812**

**Int. Cl. F22b *13/02***

**U.S. Cl. 122—156** **7 Claims**

A home hot water supply and heating system having a tankless gas fired water heater with an upstanding fire box, a mixing nozzle for directing a gas and air mixture upwardly into the fire box, and an elongated and upstanding combined exhaust stack and heat exchanger above the fire box having a plurality of elongated generally coaxial tubes providing alternate water and exhaust passageways.



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### 3,759,231
### ELECTRICAL FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

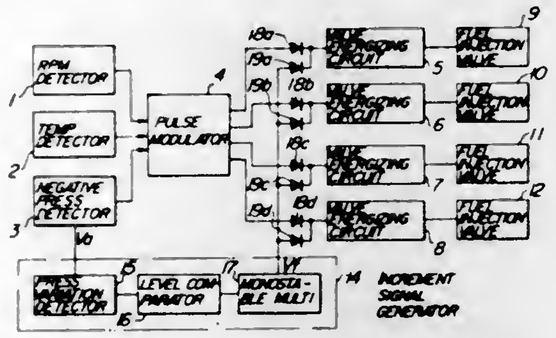
**Kunio Endo, Anjo, Japan, assignor to Toyoto Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, and Nippondenso Co., Ltd., Aichi-ken, both of Japan**

**Filed Apr. 30, 1971, Ser. No. 138,918**

**Claims priority, application Japan, May 7, 1970, 45/39106; June 6, 1970, 45/49050**

**Int. Cl. F02b *3/00*; F02m *39/00***

**U.S. Cl. 123—32 EA** **8 Claims**



A system for electrically controlling the fuel injection in an internal combustion engine having means for delivering output voltages representative of various parameters indicative of the operating conditions of the engine, a pulse modulator connected to the above means for generating a pulse signal having a pulse width corresponding to the sum of the input voltages applied from these means, and means for sequentially distributing the pulse signal delivered from the pulse modulator to solenoid operated fuel injection valves associated with individual cylinders of the engine in a predetermined order for causing the fuel injection valves to inject fuel in an amount corresponding to the pulse width of the pulse signal. The system is provided with means for delivering a voltage representative of a variation relative in time to the negative pressure in the air intake manifold during the acceleration of the engine. The width of the pulse signal is modified by this voltage and the amount of fuel injected into each individual cylinder during the acceleration of the engine is controlled by this modified pulse signal so as to improve the acceleration characteristics of the engine.

### 3,759,232
### METHOD AND APPARATUS TO REMOVE POLLUTING COMPONENTS FROM THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

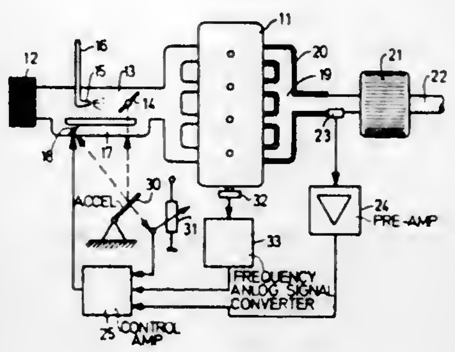
**Josef Wahl, Stuttgart, and Peter Jurgen Schmidt, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany**

**Filed June 23, 1972, Ser. No. 265,547**

**Claims priority, application Germany, Jan. 29, 1972, P 22 04 192.5**

**Int. Cl. F02b *3/00*; F02m *37/00***

**U.S. Cl. 123—32 EA** **45 Claims**



Air and fuel are applied to the inlet manifold of an internal combustion engine over a first path, the amount of air being controlled in accordance with a command input, for example to control operation of the engine. The oxygen content in the exhaust gases is measured and additional air is applied to the inlet manifold of the engine over a second path, the amount of additional air being supplied over the second path being controlled in accordance with (*a*) the amount of air admitted through the first path and, additionally, (*b*) in accordance with the measured oxygen content of the exhaust gases.

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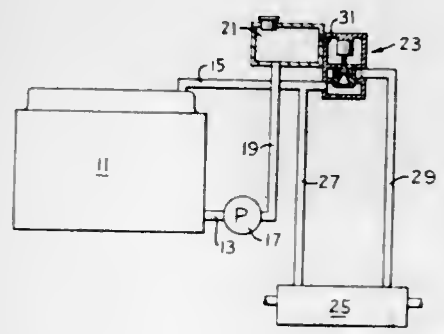
### 3,759,233
### ENGINE COOLING SYSTEM

**Edward J. Schlaffer, East Peoria, and Stevens E. Wilder, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Filed May 23, 1969, Ser. No. 827,304**

**Int. Cl. F01p *7/16***

**U.S. Cl. 123—41.1** **2 Claims**



A thermostat assembly having a hot coolant chamber, cold coolant chamber, and a mixing chamber. Heated coolant from the engine enters the hot coolant chamber, causing the thermostatic sensing unit to move a portion of the thermostat assembly so as to allow cold coolant to enter the cold coolant chamber. The heated coolant and the cold coolant both enter the mixing chamber and then pass to an expansion tank, through which they pass to the coolant pump in mixed form.

### 3,759,234
### FUEL SYSTEM

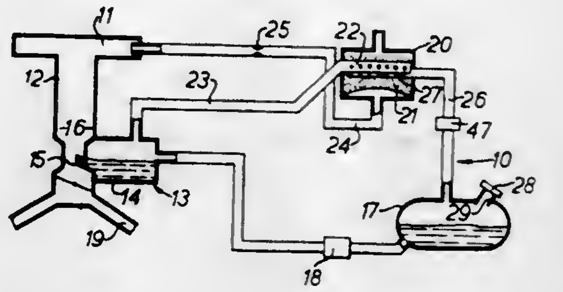
**Keither Stewart Buckton, Wantage, and Ian Rowland Fraser, Oxford, both of England, assignors to Esso Research and Engineering Company, Linden, N.J.**

**Continuation of Ser. No. 733,395, May 31, 1968, abandoned. This application Nov. 24, 1971, Ser. No. 201,849**

**Claims priority, application Great Britain, June 21, 1967, 28,563/67; July 9, 1967, 40,970/67**

**Int. Cl. F02m *37/02***

**U.S. Cl. 123—136** **7 Claims**



Fuel vapors from the fuel system of an internal combustion engine are absorbed in the uppermost layer of a body of material capable of reversibly absorbing fuel vapors. Desorption of the material occurs during engine operation.

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### 3,759,235
### INJECTION DEVICES FOR INTERNAL COMBUSTION ENGINES

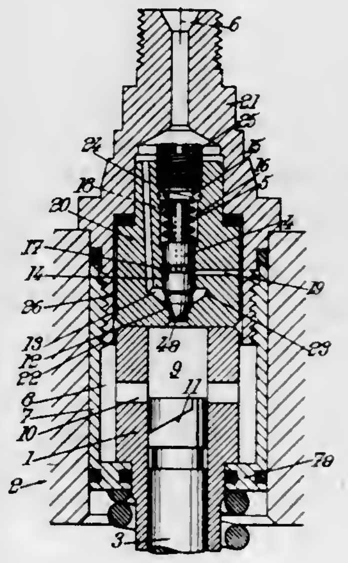
**Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Venissieux, France**

**Filed Dec. 3, 1971, Ser. No. 204,442**

**Claims priority, application France, Dec. 4, 1970, 7043751**

**Int. Cl. F02m *63/00***

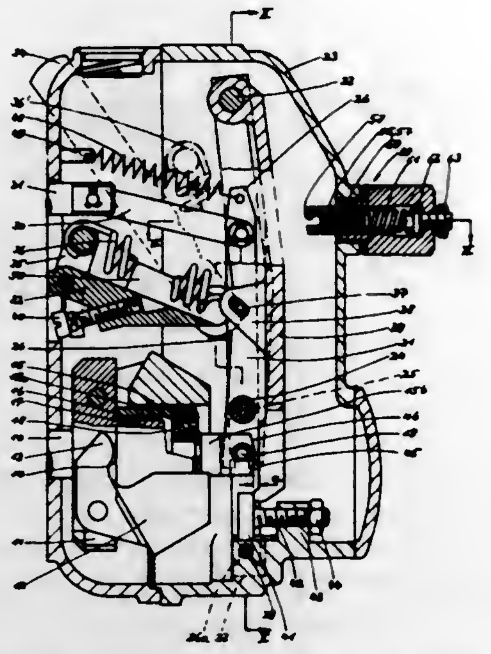
**U.S. Cl. 123—139 DP** **3 Claims**



The device comprises in addition to a delivery valve, reaspirating means. The reaspirating means are constituted by the delivery valve itself which cooperates, through a cylindrical portion of greater diameter than the maximum diameter of the annular zone of contact of a collar of the valve, with a seating. The valve slides in a cylindrical guide bore in which the cylindrical part moves in a fluid-tight manner. The device has the advantage of simplified construction.

### 3,759,236
### CENTRIFUGAL GOVERNOR FOR REGULATING THE RPM OF INTERNAL COMBUSTION ENGINES

**Heinrich Staudt, Markgroningen-Talhausen, and Ernst Ritter, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**
**Filed Oct. 4, 1971, Ser. No. 186,194**
**Claims priority, application Germany, Oct. 3, 1970, P 20 48 635.5**
**Int. Cl. F02d** *1/04*
**U.S. Cl. 123—140 R** **3 Claims**



In a centrifugal governor for regulating the rpm of an internal combustion engine, there is provided a governor member which, through a linkage system, controls the position of the fuel quantity control rod of a fuel injection pump. The rpm regulator includes a main regulator spring which opposes the displacing force of the governor member and the tension of which is variable by an arbitrarily settable operator lever for determining the engine rpm. The rpm regulator further includes an additional idling spring affecting the motion of the governor member during an arbitrarily variable portion of the travelling path of the governor member. The length of said portion is changed as a function of the position assumed by said operator lever.

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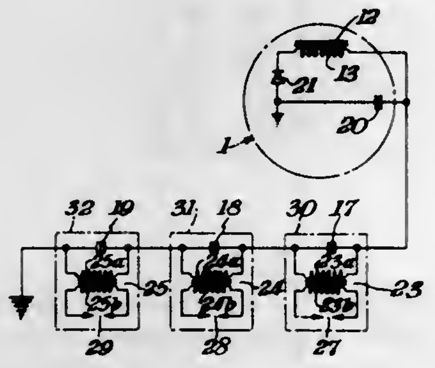
### 3,759,237
### IGNITER FOR TWO-CYCLE MULTI-CYLINDER ENGINE

**Goro Shino; Katsuyuki Okamoto, and Katsumi Shimura, all of Sawafuji Denki Kabushiki Kaisha, 10, 6-chome, Maino-cho, Itabashi-ku, Tokyo, Japan**
**Filed Oct. 22, 1971, Ser. No. 191,607**
**Int. Cl. F02p** *1/00*
**U.S. Cl. 123—148 E** **5 Claims**



An igniter for a multi-cylinder engine comprises a plurality of ignition circuits each consisting of a breaker, an ignition coil and a spark plug. The circuits are connected in series to one another and to one end of an ignition generator coil of an engine driven magneto. The ends of the ignition circuits and the other end of the ignition generator coil are grounded.

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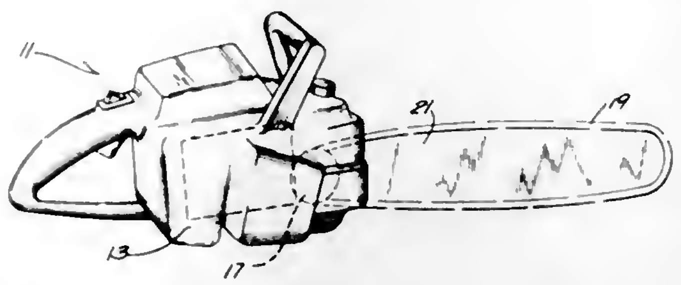
### 3,759,238
### BALANCING SYSTEM

**Finn T. Irgens, Wauwatosa, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.**
**Filed Jan. 21, 1971, Ser. No. 108,443**
**Int. Cl. F16f** *15/26*
**U.S. Cl. 123—192 B** **3 Claims**



Disclosed herein is a chain saw including a balanced two-stroke single cylinder engine in which balancing is provided, at least in part, exteriorly of the crankcase so as to maintain the volume of the crankcase as small as practical and thereby improve crankcase pumping action. More specifically, in the disclosed construction, rotary counterweights are carried at opposite ends of an engine block exteriorly of the crankcase. In one embodiment of the invention, one of the counterweights is driven by the same pinion which drives the chain sprocket. In another embodiment of the invention, one of the rotary counterweights is also a part of a lubricating oil pump.

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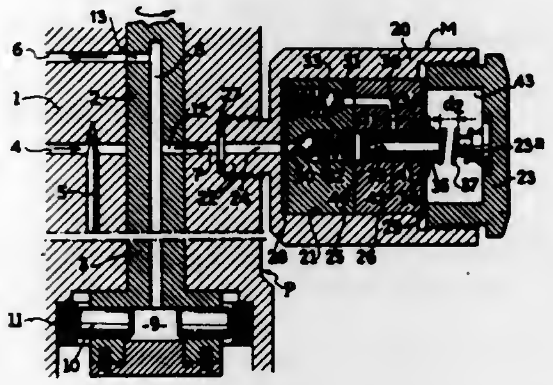
### 3,759,239
### INJECTION DEVICES FOR COMPRESSION-IGNITED INTERNAL COMBUSTION ENGINES

**Marcel Regneault, Colombes, and Maurice LeCreurer, Taverny, both of France, assignors to Automobiles Peugeot, Paris, France**
**Filed May 11, 1971, Ser. No. 142,169**
**Claims priority, application France, June 8, 1970, 7020929**
**Int. Cl. F02d** *1/04, 1/06;* **F02m** *39/00*
**U.S. Cl. 123—32 G** **10 Claims**



Injection device for a compression-ignited combustion engine comprising a modifying device between the injector and the fuel supply pump. The modifying device operates by taking off and restoring fuel so as to modify the injection law of the injection device. The injection device comprises an injection pump having a delivery chamber in which are movable pumping and/or distributing means which comprise first means for ensuring the non-simultaneous openings of communications between the delivery chamber and the injector and the delivery chamber and the modifying device. The modifying device comprises means for retarding the restoration of the fuel taken off to the delivery chamber so long as the first means leave the modifying device in communication with the delivery chamber.

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### 3,759,240
### IRON-CONTAINING PORCELAIN ENAMELS FOR SELF-CLEANING COOKING OVEN

**Bernard J. Borowski, Cleveland, Ohio, assignor to Ferro Corporation, Cleveland, Ohio**
**Continuation-in-part of Ser. No. 234,438, March 13, 1972, which is a division of Ser. No. 43,971, June 5, 1970, Pat. No. 3,671,278. This application Aug. 21, 1972, Ser. No. 282,267.**
**The portion of the term of the patent subsequent to June 27, 1989, has been disclaimed.**
**Int. Cl. A21b** *1/00*
**U.S. Cl. 126—19 R** **6 Claims**

A porcelain enamel frit, containing a relatively high level of the oxide equivalent of iron, said frit adaptable to be incorporated into a vitreous porcelain enamel for application to an oven liner, said enamel characterized by the ability to oxidize oven soils when heated to a point above 350°F., but below 600°F., the method of utilizing same as a self-cleaning oven liner coating, and an oven liner coated therewith.

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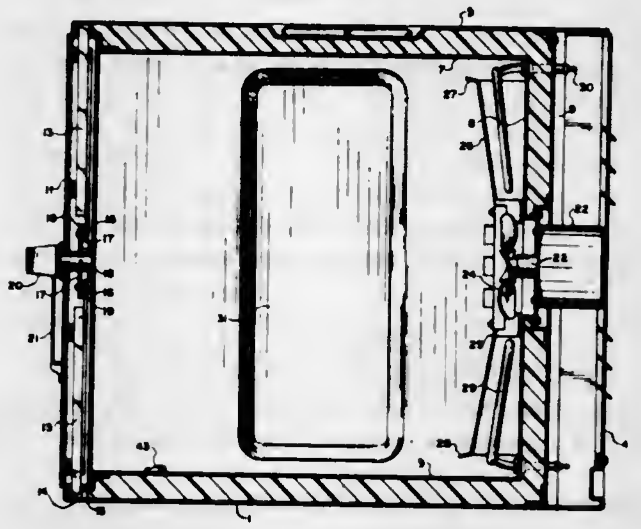
### 3,759,241
### OVEN

**Paul G. C. A. Berkhoudt, Jutphaas, Netherlands, assignor to Koninklijke Fabriek Inventum N.V., Bilthoven, Netherlands**
**Filed Mar. 6, 1972, Ser. No. 231,886**
**Claims priority, application Netherlands, Dec. 16, 1971, 7117236**
**Int. Cl. A21b** *1/26;* **F24c** *15/32*
**U.S. Cl. 126—21 A** **7 Claims**



The oven is adapted to uniformly and rapidly heat foodstuffs carried therein and is particularly useful in aircraft. The oven includes a housing having side walls, a top wall, and a bottom wall. An open space is defined between the top and bottom walls. Heating members for heating air within the oven are located therein together with a blower for circulating the heated air within the oven. A perforated rear plate is located within the oven and a plurality of foodstuff-receiving plates are arranged one above the other within the open space. Hot air is supplied to the space through open sides and an open front of the space and is conducted away from the space through the perforated rear wall.

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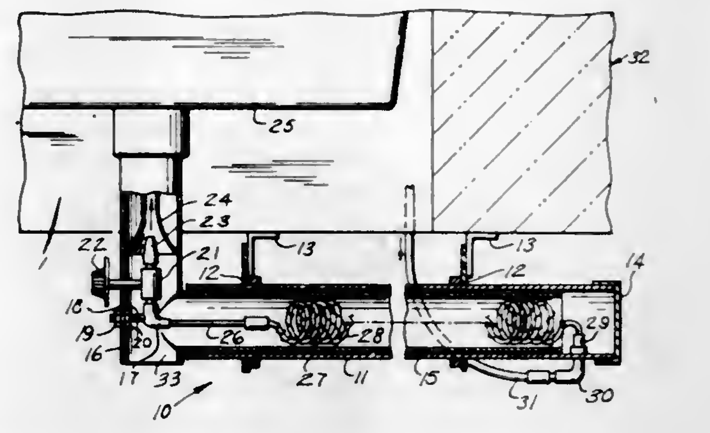
### 3,759,242
### BAR-BE-CUE DEVICE

**Maurice G. Mauger, 223 Ingall Ave., N.E., Massillon, Ohio**
**Filed Nov. 3, 1971, Ser. No. 195,282**
**Int. Cl. A47j** *37/07*
**U.S. Cl. 126—25** **2 Claims**

A retractable bar-be-cue device. This device consists primarily of a telescoping sleeve which may be extended from the trailer or the like. The device carries a flexible tube to which is attached bottled gas within the trailer and the extended end contains the grill portion having an adjustable burner in the lower tube portion thereof.



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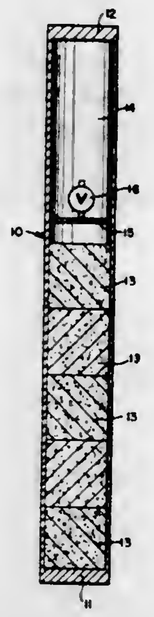
### 3,759,243
### NUCLEAR FUEL ELEMENT

**William R. Masetti, Elmsford, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.**
**Filed Mar. 25, 1970, Ser. No. 22,417**
**Int. Cl. G21c** *3/18*
**U.S. Cl. 176—68** **6 Claims**



A nuclear reactor fuel element in tubular form and closed at both ends has at least one chamber for receiving gaseous fission products through pressure-responsive entrance means, the remainder of the fuel element tube being approximately filled with fissionable material. The pressure within the fueled portion of the element rises quickly to approximately the operating pressure of the reactor in which the fuel element is installed and remains approximately at that pressure throughout the life of the fuel element. This is accomplished by admitting gaseous fission products to the chamber whenever, during the operating life of the element, the pressure rises to the predetermined pressure to which the entrance means is responsive.

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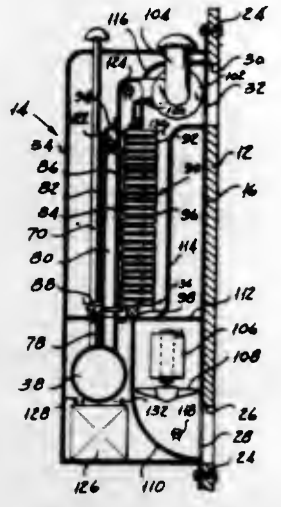
### 3,759,244
### VEHICLE HEATER

**Henry Konet, Hohokus, N.J., assignor to Nellford Leasing, Inc., Secaucus, N.J.**
**Filed May 11, 1971, Ser. No. 142,134**
**Int. Cl. F24h** *3/10*
**U.S. Cl. 126—110 R** **2 Claims**

A self-contained automatic heater unit for a vehicle such as a truck trailer or the like in which a temperature sensor automatically ignites a pre-heater by means including a rechargeable power source to supply a mixture of hot air and fuel to a burner plate of large area the burners of which are ignited when the pre-heated mixture reaches a certain temperature and the products of combustion of which are first brought into contact with the hot junctions of a thermopile and then are passed through a heat exchanger to which air from the space to be heated is supplied by a fan which first moves this cool air past the cold junctions of the thermopile and then through the heat exchanger to the space to be heated and in which the voltage produced by the thermopile recharges the battery which provides a power source for the system.



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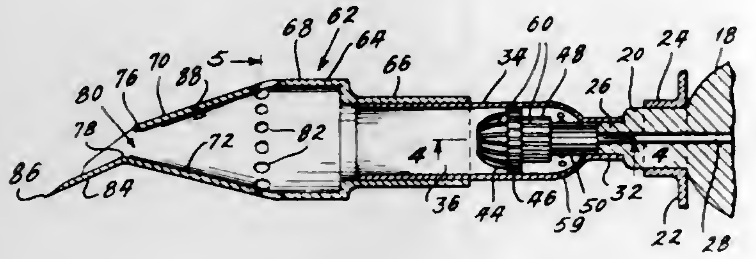
### 3,759,245
### HEATING TORCH

**Phillip V. Greco, Sr., 1630 Maldon Ln., Dellwood, Mo.**
**Filed Dec. 10, 1971, Ser. No. 206,693**
**Int. Cl. B44b** *7/00*; **F23d** *13/00*
**U.S. Cl. 126—406** **16 Claims**



A portable heating torch for applying heat generated from a flame in a uniformly distributed pattern to a work surface in order to enable the performance of manual work such as cutting, scraping or the like on such work surface. The torch comprises a handle capable of being grasped by the hand of an operator and which is provided with a fuel delivery tube or other flexible fuel delivery means for connection to a suitable source of an ignitable fuel, and preferably a gaseous fuel such as propane or the like. A metal housing which forms an internal fuel receiving chamber is attached to and carried by the handle. The fuel employed is generally a gaseous fuel under pressure and is delivered to the fuel receiving chamber from the source through this tube or other flexible means and through a duct in the handle which is in fluid communication with the fuel delivery tube and the fuel receiving chamber. The fuel is injected into the fuel receiving chamber through an orifice therein and is mixed with air introduced into the fuel receiving chamber through a plurality of air intake apertures formed in the chamber wall. A heat application head is connected to the fuel receiving chamber and is in fluid communication therewith for receiving the fuel-air mixture and enabling a flame supported by combustion of the ignitable fuel-air mixture to be uniformly applied across a preselected area of the work surface. In a preferred embodiment of the invention, a work element such as a cutting member or a scraping member is mounted on and carried by the heat application head and is located in the path of the flame so that it is simultaneously heated along with the heat applied to the work surface, and in this way permits manual work to be performed by use of the work element on the heated work surface.

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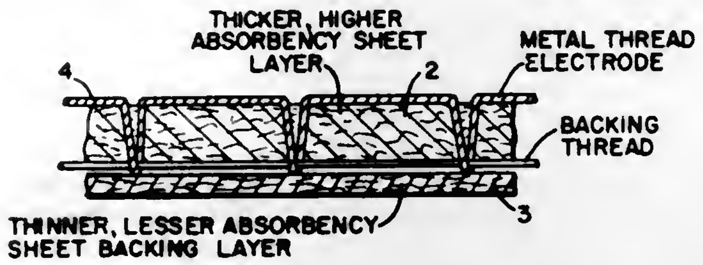
### 3,759,246
### INCONTINENCE MEASUREMENT SENSOR

**Frederick Colin Flack, and Evan Douglas James, both of Devon, England, assignors to National Research Development Corporation, London, England**
**Filed Apr. 23, 1971, Ser. No. 136,710**
**Claims priority, application Great Britain, Apr. 29, 1970, 20,514/70**
**Int. Cl. A61b** *5/00*
**U.S. Cl. 128—2 R** **6 Claims**


THICKER, HIGHER ABSORBENCY SHEET LAYER
METAL THREAD ELECTRODE
4
2
BACKING THREAD
3
THINNER, LESSER ABSORBENCY SHEET BACKING LAYER

Urinary incontinence can be evaluated both in respect of frequency and quantity by use of a detector device in the form of a flexible sheet of absorbent material having elongate electrodes supported in it in an interleaved, uniformly spaced array. This device is worn as a diaper and any incontinence will vary and be detectable and measurable by the electrical conductivity of the sheet material between the electrodes. Any undesirable variations in this technique due to compression of the sheet in use can be offset by supporting the electrodes in a waved manner along their lengths and through the sheet thickness, and by quilting the sheet. Other variations due to differing urine salts content can be taken into account by preloading the sheet with a salt to give a datum or bias salt level above which such variations are less significant.

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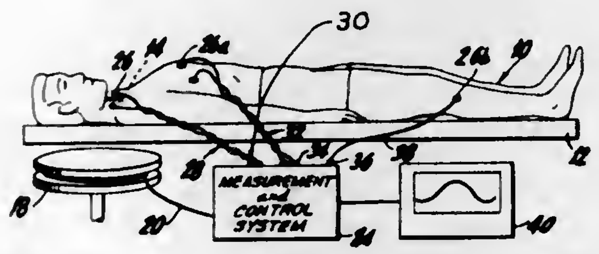
### 3,759,247
### ELECTROMAGNETIC FLOWMETER

**Henri Georges Doll, New York, and Hans J. Broner, Glendale, both of N.Y., assignors to Doll Research, Inc., New York, N.Y.**
**Continuation-in-part of Ser. No. 66,240, Aug. 24, 1970, Pat. No. 3,659,591. This application July 1, 1971, Ser. No. 158,697**
**Int. Cl. A61b** *5/02*
**U.S. Cl. 128—2.05 F** **7 Claims**



A noninvasive electromagnetic flowmeter particularly adapted to measure arterial blood flow in human beings is provided. A homogeneous magnetic field is produced in the region of the artery under measurement by means of at least one electromagnetic coil or a permanent magnet suitably positioned near the human being. Blood flow induced signals are sensed by electrodes placed on the skin adjacent the artery and fed to a measurement and control circuit. Electrocardiogram signals are sensed by a second pair of electrodes placed on the body near the heart and synchronize the operation of this system.

One embodiment of the control and measurement system comprises a pair of auxiliary electrodes located where a strong and sharp cardiogram pulse can be repeatedly obtained to be used as a synchronizing signal and as a clock, at least one coil of large enough size having enough turns of wire to be adequate for the production of a strong and homogeneous magnetic field in the region of the artery under study, a source of D.C. current to feed that coil, means to reverse that D.C. current after a given number of heart cycles in accordance with a program controlled by the sychronizing signal, a pair of measuring electrodes placed on the skin adjacent the artery, an amplifier to amplify the signal appearing between said measuring elecrodes, with filtering means to eliminate the D.C. unbalance of the electrodes and the high frequency noise, means to paralyze the amplifier and to reverse its output during current reversal, and means synchronized by the synchronizing signal to average the pulsatile signal measured between the measuring electrodes during successive heart cycles so as to extract the repetitive wave shape of the blood flow pulses from the large random noise in which it is otherwise buried.

In another embodiment of the control and measurement system, the coil in which a stable current is maintained during all the measuring intervals, as described in the paragraph above, is replaced by an electrically reversible permanent magnet. This permanent magnet is surrounded by a magnetizing coil in which DC current pulses of short duration are passed only at the times when the polarity of the magnetic field, and therefore the polarity of the permanent magnet, have to be reversed. There is no current in the magnetizing coil during the intervals when measurements of blood flow cycles are made and averaged.

In still another embodiment of the control and measurement system, a permanent magnet is also used, but the reversal of the magnetic field, at the times when it is needed, is obtained by mechanically reversing or displacing the permanent magnet.

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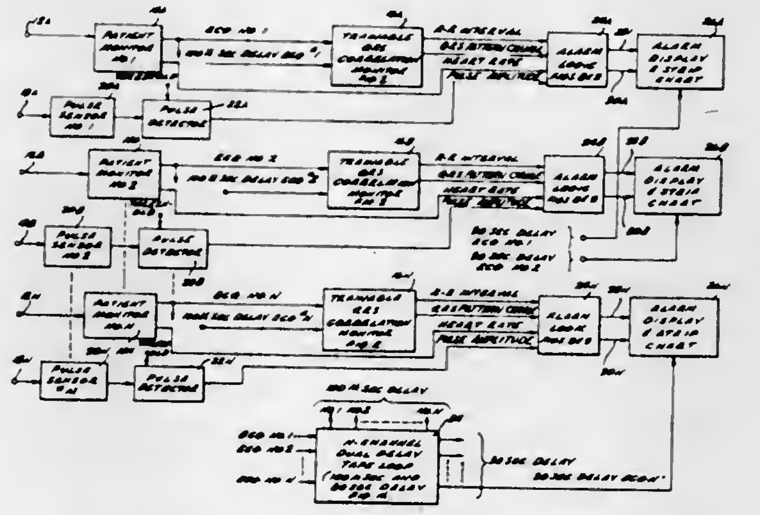
### 3,759,248
### CARDIAC ARRYTHMIA DETECTOR

**Donley J. Valiquette, Northridge, Calif., assignor to Spacelabs, Inc., Van Nuys, Calif.**
**Division of Ser. No. 791,638, Jan. 16, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,331**
**Int. Cl. A61b** *5/04*
**U.S. Cl. 128—2.06 A** **20 Claims**



A system is described to continuously monitor a number of cardiac patients in a hospital. Electrocardiogram probes are placed upon a plurality of patients and simultaneously monitored by this system for changes in the normal electrocardiogram (ECG) waveforms. Each ECG waveform is recorded on a 30 second tape loop delay for retrieval during an alarm condition for a determination of the cause of the alarm. This tape loop also provides a 100 millisecond delay of ECG for correlation monitoring of the QRS complex of the ECG. An R wave trigger is generated and is utilized for R-R interval measurements. A correlation monitor is provided and quantizes the ECG QRS complexes and stores each segment thereof for comparison with subsequent waveforms. The stored waveform provides a running average of several QRS complexes just prior to the complex being compared. A segment element is trained by this running average of the QRS waveform. By comparing each segment of the waveform to the appropriate segment of the stored waveform, a correlation is established. If an aberrant QRS complex is sensed and compared, several points of difference will be detected. The R-R interval is simultaneously compared on a running average to assist in establishing a premature ventricular contraction of the patient. A photoplethysmograph is provided to monitor mechanical heart action. The signals provided by the R-R interval monitor, a change in the QRS complex, pulse signals provided by the photoplethysmograph and the heart rate of the patient provide certain criteria which are monitored by a logic circuit to provide a minor alarm on certain criteria and a major alarm on any combination of the waveforms.

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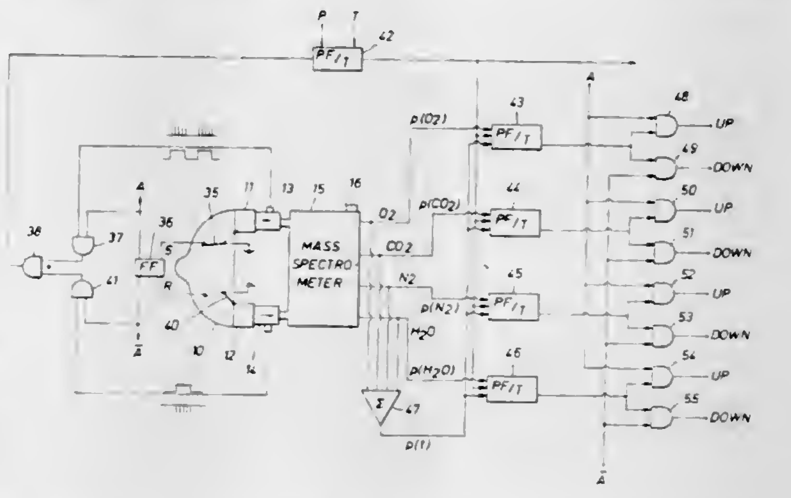
### 3,759,249
### RESPIRATORY ANALYSIS SYSTEM AND METHOD

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; and Frederick F. Liu, 17812 Community St., Northridge, Calif.**
**Filed Aug. 19, 1971, Ser. No. 173,190**
**Int. Cl. A61b** *5/08*
**U.S. Cl. 128—2.08** **7 Claims**

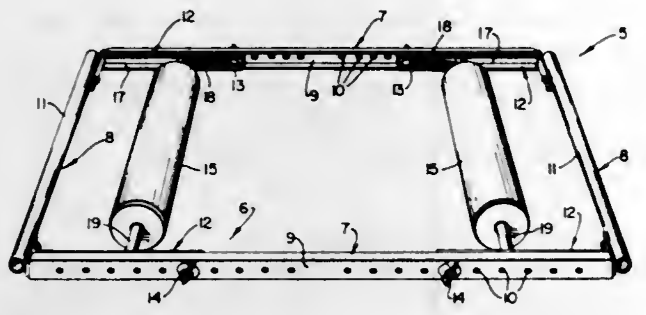


A system for monitoring the respiratory process wherein the gas flow rate and the frequency of respiration and expiration cycles can be determined on a real time basis. A face mask is provided with one-way inlet and outlet valves where the gas flow is through independent flowmeters and through a mass spectrometer. The opening and closing of a valve operates an electrical switch, and the combination of the two switches produces a low frequency electrical signal of the respiratory inhalation and exhalation cycles. During the time a switch is operated, the corresponding flowmeter produces electric pulses representative of the flow rate, the electrical pulses being at a higher frequency than that of the breathing cycle and combined with the low frequency signal. The high frequency pulses are supplied to a conventional analyzer computer which also receives temperature and pressure inputs and computes mass flow rate and totalized mass flow of gas. From the mass spectrometer, components of the gas are separately computed as to flow rate as well. The electrical switches cause operation of up-down inputs of a reversible counter. To measure a real time, a 1-minute clock pulse is used to operate the counter. The occurrence of a pulse alerts the counter, and the next succeeding reverse from down to up in the breathing cycle causes an electrical sequence to occur in which the counter is momentarily inhibited while the count therein is transferred to a printer. The electrical sequence is complete before the next up-to-down reverse in the breathing cycle occurs, so that there is no loss in the counting of cycles. Thus, the number of cycles closest to one-minute time are measured.

The respective up and down cycles can be individually monitored and combined for various respiratory measurements.

### 3,759,250
### MASSAGING DEVICE

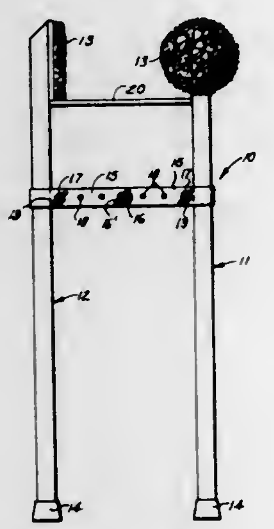
**Dominic R. Salata, 2593 Coral Way West, Daytona Beach, Fla.**
**Filed Oct. 19, 1971, Ser. No. 190,617**
**Int. Cl. A61h** *15/00*
**U.S. Cl. 128—57 7 Claims**



A device for massaging various parts of the human body, especially the arms and legs, to reduce and firm said parts, including a frame in which a pair of rollers are rotatively mounted in spaced apart, substantially in parallel relation to one another. The frame includes extensibly mounted end portions, each carrying a roller, for varying the spacing between the rollers to enable the rollers to straddle portions of the body of different cross sectional sizes, such as the thighs, calves, upper arms and forearms. Springs connect the rollers to the frame and yieldably urge the rollers toward one another in their different adjusted positions, for applying a yieldable compressive force to the body portion being massaged.

### 3,759,251
### KNEE ALIGNING INSTRUMENT

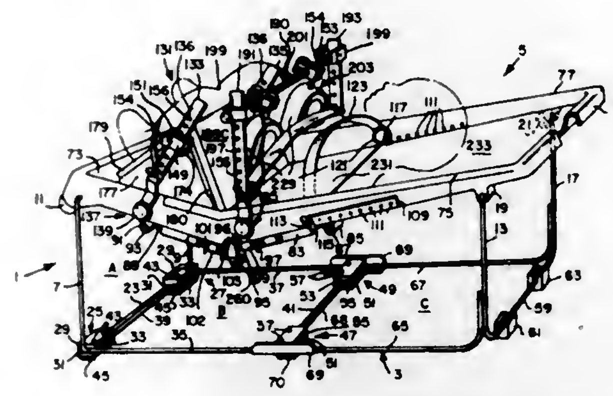
**Fred C. Adams, 3505 Grove Ave., Richmond, Va.**
**Filed July 10, 1972, Ser. No. 270,493**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—69 4 Claims**



A device for aligning one's knee when it is locked in a cocked position. This device consists primarily of a pair of spaced apart rods with handle portions, the rods being secured together by pivotal cross bars which are adjustable by means of bolt and nut fasteners, the ends of the rods having pad portions for comfort when the device is placed in use.

### 3,759,252
### APPARATUS FOR HIP DISLOCATION TREATMENT

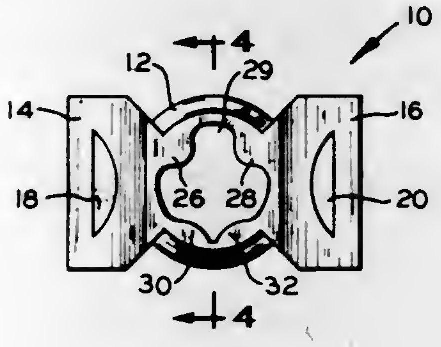
**Seymour S. Berman, 2001 Fallen Leaf Ln., Los Altos, Calif.**
**Filed Oct. 10, 1972, Ser. No. 296,332**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—70 26 Claims**



Apparatus for hip dislocation treatment adapted for positioning and securing the bones of the leg and hip of an individual patient in a selected relative position for immobilizing said bones during a healing period. The apparatus comprises a cradle shell for cradling the patient's body; a first support bar for engaging the individual about the underneath side of the individual's knees so as to support the patient's legs at a fixed elevation, said first support bar being positionally adjustable to select the degree of flexion of the individual's legs relative to his trunk; and an adjustable support yoke assembly for engaging about the top side of the patient's leg to anchor the leg in a fixed degree of abduction and to anchor the leg in said degree of flexion and abduction.

### 3,759,253
### HUMAN MALE APPLIANCE

**Charles A. Cray, 4801 Eastwick Dr., Toledo, Ohio**
**Filed Apr. 19, 1972, Ser. No. 245,539**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—79 6 Claims**

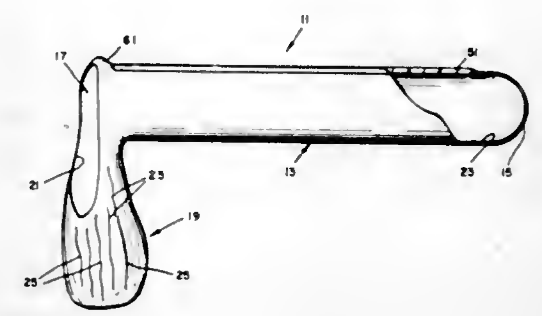


An appliance for use by the human male for facilitating erection of the penis which reacts on a circulatory blood flow in a manner which will impede the flow of blood from the penis and simultaneously not materially impede the flow of blood to the organ.

### 3,759,254
### HYGIENIC APPLIANCE

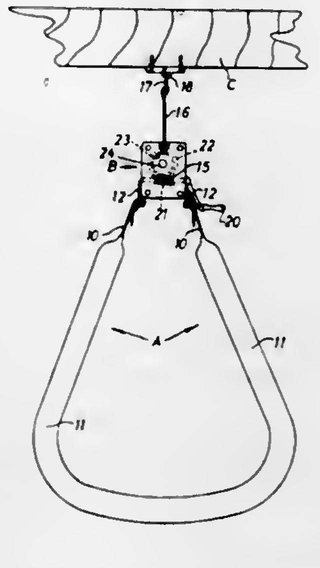
**Claud W. Clark, P. O. Box 342, Hermosa Beach, Calif.**
**Filed June 14, 1972, Ser. No. 262,570**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—79 6 Claims**

A resilient and flexible prophylactic and contraceptive generative male organ appliance having a thin-walled elongated tubular portion with a closed end, and having an integrally formed thin-walled scrotum sack portion immediately adjacent an open end of the tubular portion, the open end of the tubular portion being a part of an elongated opening extending a predetermined distance to the sack portion. The appliance may also include an elongated cartilaginous rib portion along the length of the tubular portion as a prosthesic aid to copulation.



### 3,759,255
### SPINAL TRACTION APPARATUS

**Eric William Taylor, 20 Ridgeway Ave., Rhyl Flintshire, North Wales**
**Filed Dec. 10, 1971, Ser. No. 206,847**
**Claims priority, application Great Britain, Dec. 22, 1970, 60,759/70**
**Int. Cl. A61h** *1/02*
**U.S. Cl. 128—75 2 Claims**

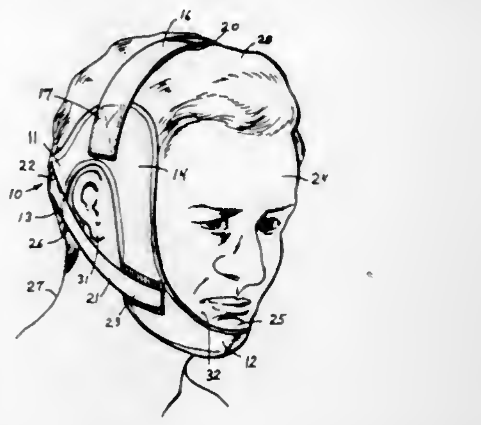


A spinal or cervical traction device for home use, having a harness for fitting around the body below at least in part the arms, or to the head, a hand operable winch means associated with said harness, and a connector attached to said winch for engagement with a fitting secured in an elevated position, e.g. to a door lintel.

### 3,759,256
### SPLINT FOR IMMOBILIZATION OF THE MANDIBLE

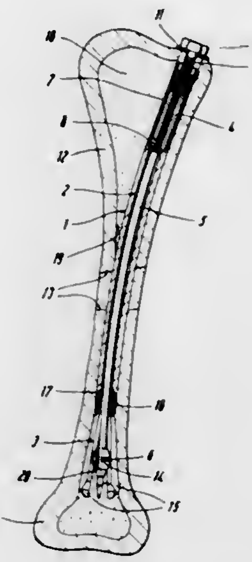
**Joseph E. O'Malley, 95 W. Gore St., Orlando, Fla.**
**Filed Jan. 17, 1972, Ser. No. 218,213**
**Int. Cl. A61f** *5/04*
**U.S. Cl. 128—89 A 3 Claims**

A simplified splint for precise immobilization of the mandible or lower jawbone in mandibular injuries having a main or supporting harness of a single piece of material with a chin support and an occiput engaging support connected by curved portions passing over the ears on either side of the patient's head. A top-of-the-head strap connects the curved portions of the supporting harness together with a quick connect Velcro connection and a pair of posterior straps connect the occiput engaging portion and the chin support portion of the supporting harness together below the ears, each strap having a quick connect Velcro connection so that a splint is provided which may be rapidly placed on a patient without interference with the patient's ears and forehead.



### 3,759,257
### CONNECTOR FOR FRACTURED TUBULAR BONES

**Artur Fischer, Altheimel Strasse 219, Tumlingen, Germany, and Jean-Nicolas Muller, Strassburg, France, assignors to said Fischer, by said Muller**
**Filed Mar. 13, 1972, Ser. No. 234,097**
**Claims priority, application Germany, Mar. 13, 1971, P 21 12 138.0**
**Int. Cl. A61f** *5/04*
**U.S. Cl. 128—92 BC 9 Claims**

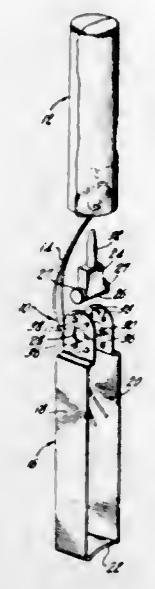


An elongated rod-shaped element can be inserted into the curved longitudinal cavity of a fractured tubular bone. At its front end it is provided with an expander portion by means of which it can expand an expansion element provided at the front end of a tubular sleeve which surrounds the rod, when the latter is moved axially and rearwardly with respect to the front end of the tubular sleeve. The expander portion may be releasably connected with the rod for which purpose inter-engaging coupling portions may be provided on the rod and on the expander portion.

### 3,759,258
### COMBINATION TAMPON APPLICATION AND PLUNGER

**Michael Loyer, South Somerville, N.J., assignor to Personal Products Company, Milltown, N.J.**
**Filed June 6, 1972, Ser. No. 260,086**
**Int. Cl. A61f** *15/00*
**U.S. Cl. 128—263 7 Claims**

A tampon applicator of reduced length is provided which is not substantially larger then the tampon itself, is economical to produce and simple to use. The applicator comprises a holder having a bottom and upstanding side members forming a frame for enclosing a tampon. Pivotably mounted at the top of and between said side members is a pivot element provided with means for securing the bottom of a tampon thereto; whereby the tampon may be rotated so as to be enclosed within the frame of the holder for packaging and storage. In use, the tampon may be rotated to a position above the holder; the holder then forming a convenient applicator.



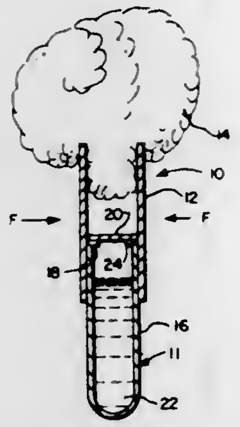
### 3,759,259
### MEDICATOR WITH FRANGIBLE SEAL

**Andrew Truhan, R.D. 3, Box 392 T, Somerset, N.J.**

**Continuation-in-part of Ser. No. 877,639, Nov. 18, 1969, abandoned. This application Mar. 8, 1971, Ser. No. 122,011. The portion of the term of the patent subsequent to July 7, 1987, has been disclaimed.**

**Int. Cl. A61m** *35/00*

**U.S. Cl. 128—269** **2 Claims**



A medicator having an applicator with a medicament container connected thereto. A seal, frangible upon the application of lateral pressure thereto normally blocks communication between the applicator and the container.

### 3,759,260
### POST-SURGICAL DRAINAGE COLLECTION POUCH

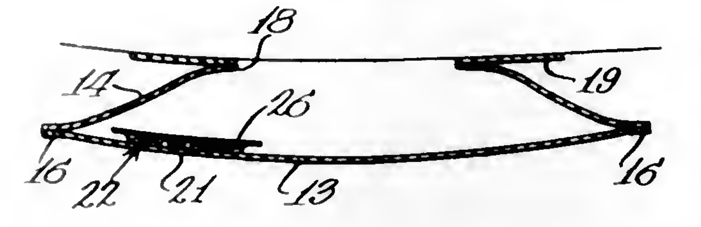
**John L. Nolan, Glenview, and Donald E. Etes, Crystal Lake, both of Ill., assignors to Hollister Incorporated, Chicago, Ill.**

**Filed Sept. 20, 1971, Ser. No. 181,961**

**Int. Cl. A61f** *5/44*

**U.S. Cl. 128—283** **15 Claims**

A collection pouch for receiving drainage from an abdominal opening following surgery comprising a flexible fluid-tight bag having a lateral opening adapted to register with the abdominal opening, means for sealing the bag to the abdomen around the registered openings in the abdomen and the bag, and means for venting the bag under controlled circumstances to exhaust gases which may have unpleasant odors. In one form of the invention, a vent aperture is provided in the bag for exhausting gases, together with releasable means adhesively secured to the bag to close the vent aperture in a manner which permits removal of the releasable means to vent the bag in privacy and replacement of the releasable means to again close the vent aperture. In another form, a vent aperture is provided in the bag for exhausting gases, and a filter is secured to the bag adjacent the vent aperture for deodorizing the gases exhausted through the aperture.



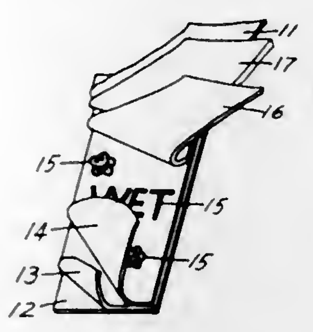
### 3,759,261
### DIAPERS, DISPOSABLE DIAPERS AND DISPOSABLE DIAPERS WITH WATER-PROOF LAYER

**Rong-Shuang Wang, 24-A Gate House Apts., Beverly, N.J.**

**Filed Mar. 9, 1972, Ser. No. 233,160**

**Int. Cl. A61f** *13/16*

**U.S. Cl. 128—287** **6 Claims**



A diaper which is capable of providing a readily visible indication when wet includes an inner layer of absorbent material, a layer carrying a printed pattern, and at least one outer layer which is of sufficient density as to conceal the printed pattern when the diaper is dry while rendering the printed pattern readily visible when the diaper is wet.

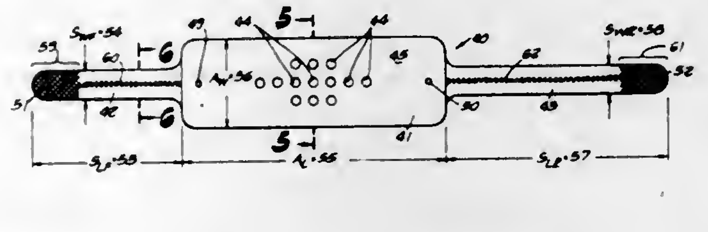
### 3,759,262
### INTEGRAL STRAP TISSUE NAPKIN

**John Leslie Jones, Sr., 1070 Glen Oaks Boulevard, Pasadena, Calif.**

**Filed Apr. 7, 1971, Ser. No. 131,883**

**Int. Cl. A61f** *13/16*

**U.S. Cl. 128—290 R** **17 Claims**



This invention teaches a new menstrual napkin modification embodying multiple ply tissue paper sheets disposed coplanarly adjacent and forming a menstrual fluid elongated absorptive section area. One of a pair of integral napkin mounting and securing, multiple ply, tissue paper sheet narrow straps are disposed at each opposed end of the absorptive section area, symmetrically disposed about the napkin elongated length axis. The straps are formed of integral extensions of the coplanarly disposed tissue paper sheets. A reversible menstrual napkin has a pair of equal length integral napkin mounting and securing narrow straps. The reversible menstrual napkin is optimally formed by multiple die cutting the interlocking reversible napkin modifications from a wide web of multiple ply tissue paper sheets.

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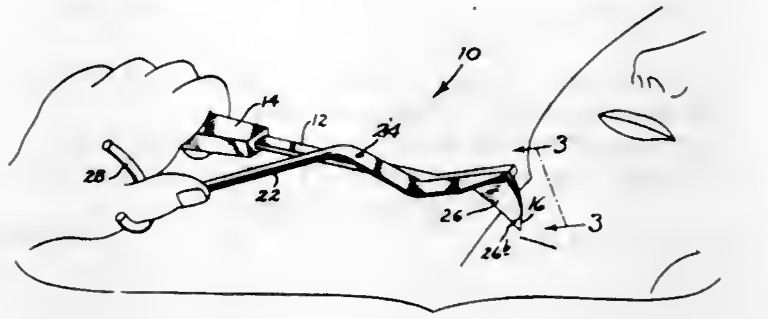
### 3,759,263
### CUTTING AND DIALATING SURGICAL DEVICE

**Duane F. Taylor, 680 Winter St., Salem, Oreg.**

**Filed Nov. 10, 1971, Ser. No. 203,095**

**Int. Cl. A61b** *17/34, 13/32*

**U.S. Cl. 128—305** **8 Claims**



A surgical device, such as may be used in performing emergency tracheotomies, including an elongate handle and an arm pivotally connected thereto intermediate its ends. The arm and handle have a pair of adjacent ends which move toward and away from each other on relative swinging of the arm and handle about their pivot connection. A first blade is secured to one of the adjacent ends and a second blade is secured to the other. The first blade has a sharpened end spaced outwardly from the handle and sharpened, opposed, diverging edges extending from the sharpened end toward the handle. The second blade is adapted to rest in face-to-face contact with the first blade when the adjacent ends of the arm and handle are moved together. The blades when in this position define an integral cutting element. The other ends of the arm and handle include portions which may be gripped by an operator and squeezed toward each other, with such urging the two blades to move apart and spreadthe edges of a cut made by the integral cutting element formed by the two blades.

### 3,759,264
### SURGICAL METHOD

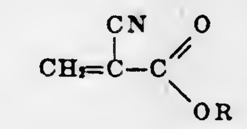
**Harry W. Coover, Jr., Kingsport, Tenn., and David W. Fassett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Apr. 7, 1966, Ser. No. 541,026**

**Int. Cl. A61b** *17/04*

**U.S. Cl. 128—334 R** **12 Claims**

This invention relates to the surgical use of monomeric esters of α-cyanoacrylic acid having the formula



$$CH_2{=}C(CN){-}C({=}O){-}OR$$

wherein *R* is a saturated hydrocarbon radical of two to 10 carbon atoms for the purpose of bonding together living tissue.

### 3,759,265
### PULSE-WIDTH CONTROLLED HEARTBEAT STIMULATING APPARATUS MONITORING SYSTEM

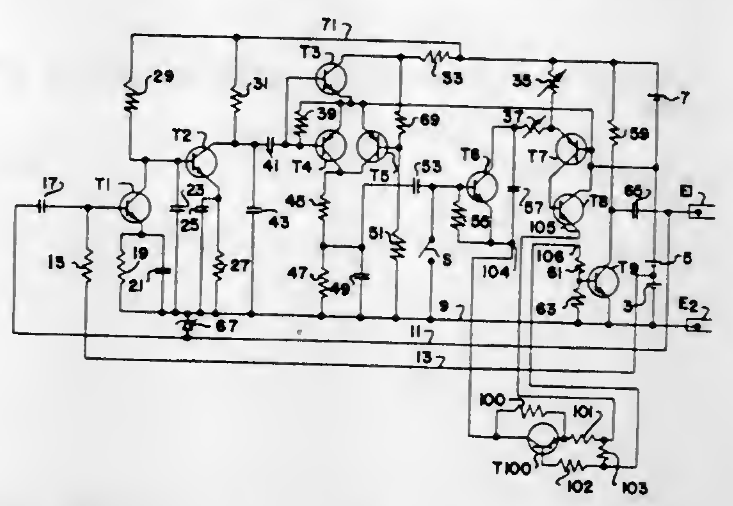
**Sherwood S. Thaler, Lexington, and Barough V. Berkovits, Newton Highlands, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Division of Ser. No. 163,619, July 19, 1971, which is a continuation-in-part of Ser. No. 16,478, March 4, 1970, Pat. No. 3,674,015, which is a division of Ser. No. 727,129, April 11, 1968, Pat. No. 3,528,428. This application May 8, 1972, Ser. No. 251,412**

**Int. Cl. A61n** *1/36*

**U.S. Cl. 128—419 P** **2 Claims**

Pulse-width controlled heartbeat stimulating apparatus. The apparatus includes an electrical power supply and a pulser for generating stimulation pulses on terminals connected to a patient's heart. An integral control is provided for automatically varying the width of the stimulation pulses as a function of the power supply (energy source) value to maintain the energy output above a predetermined level. The present invention can be used with many types of heart stimulating devices including extra-corporeal pacers, but is particularly useful when utilized with non-accessible or implanted pacers. In an illustrative embodiment, a circuit is provided for indicating the approximate amount of remaining power supply life and for controlling energy supplied to the heart with each stimulation pulse to greater than a minimum required value regardless of energy source variation.



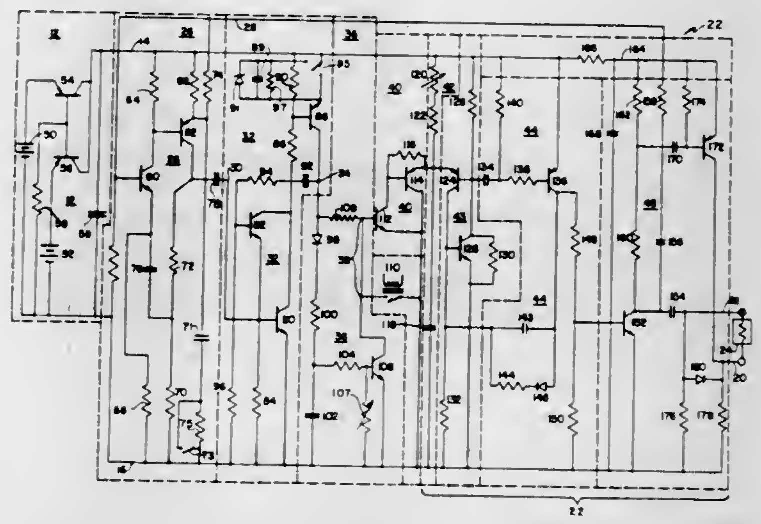
### 3,759,266
### CARDIAC-AUTOPACER WITH VARIABLE REFRACTORY, NON-LINEAR FEEDBACK, LATCHING RESET AND VOLTAGE INCREASING CIRCUITS

**Jin W. Lee, North Miami, Fla., assignor to Medcor, Inc., Hollywood, Fla.**

**Filed Oct. 7, 1970, Ser. No. 78,659**

**Int. Cl. A61n** *1/36*

**U.S. Cl. 128—419 P** **24 Claims**



A self-contained, implantable cardiac-autopacer providing ultra long battery life and high reliability through parallel battery redundancy and circuit techniques. The cardiac-autopacer operates in a demand mode with a variable simulated refractory period which is long during artificial stimulation and short during natural ventricular depolarization. In this way the demand functioning of the cardiac-autopacer is maintained from normal to tachycardia rates. In the presence of noise or interfering signals with frequencies beyond the tachycardia rate the autopacer will continuously generate artificial heart stimulating pulses of a predetermined interval. Both artificial pulse duration and interval are maintained independent of load variation, but pulse interval varies with battery voltage making it possible to externally monitor battery condition by triggering the autopacer into a continuous pulse mode.

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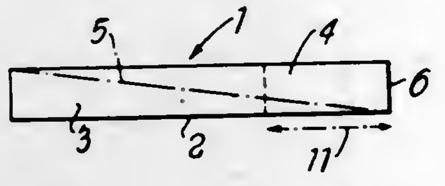
### 3,759,267
### SMOKING ARTICLES

**Raymond E. Thornton, Dibden Purlieu, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.**
**Filed Apr. 28, 1972, Ser. No. 248,743**
**Claims priority, application Great Britain, May 18, 1971, 15,580/71**
**Int. Cl. A24d** *01/100*
**U.S. Cl. 131—8 R** **2 Claims**



A cigarette filter which can be adapted to any kind of cigarette, regular or filter, and be torn off if desired. It could be constitution, comprising shredded natural tobacco, reconstituted tobacco, tobacco substitute and/or filler. The said portions adjoin each other at a surface inclined in relation to the axis of the article. The two portions may be wedge shaped and adjoin each other at a plane inclined in relation to the longitudinal axis of the article. Alternatively, one portion is a core of conical or frusto-conical shape and is surrounded by the other portion.

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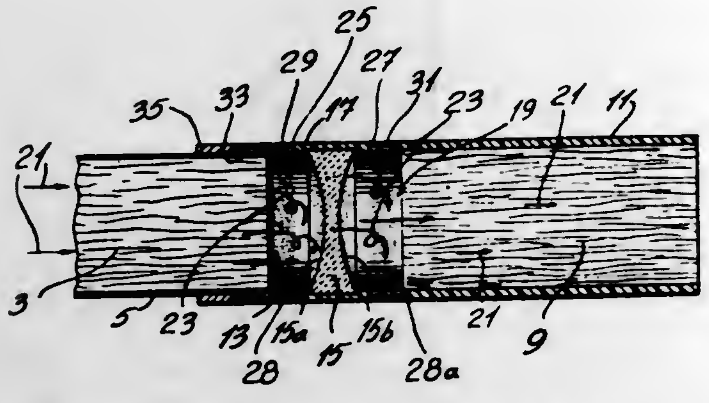
### 3,759,268
### SELECTIVE AIR DOSING MEANS FOR CIGARETTES

**Jacques Plourde, 1525 Ave. des Flandres, Ste-Foy, Quebec 10, Canada**
**Filed Aug. 5, 1970, Ser. No. 61,086**
**Claims priority, application Canada, May 25, 1970, 083,703**
**Int. Cl. A24d** *01/04*
**U.S. Cl. 131—9** **7 Claims**



A cigarette filter which can be adapted to any kind of cigarette, regular or filter, and be torn off if desired. It could be used for filtering smoke and selectively diluting said smoke with air. When used in combination with an ordinary cigarette, the resulting cigarette comprises a cylindrical tobacco roll, surrounded with its usual paper wrapper, and a filter. The filter is spacedly mounted at one end of the tobacco roll to define a hollow cylindrical inner space therebetween. Inside the hollow cylindrical inner space, there is a porous disc, in which the opposite faces are preferably both concave. This disc is positioned substantially half-way between the end of the cylindrical tobacco roll and the filter to divide the hollow cylindrical space into a first and a second smoke cooling chamber. Perforations are provided in the walls of both smoke cooling chambers and the perforations can at will be covered or uncovered to cause one or both chambers to become permeable to air. In this manner, when only filtering of the smoke is desired the filter cigarette is used as such. When smoke diluted with air is desired, the first cooling chamber is made permeable to air. Finally, if air exclusively is intended to be inhaled, both cooling chambers are rendered permeable to air thus precluding any substantial inhaling of smoke. The disclosure also relates to a filter cigarette adapted with the above supplementary filtering device.

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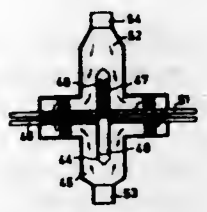
### 3,759,269
### APPARATUS FOR STRETCHING AND SMOOTHING A NATURAL TOBACCO LEAF

**Nils Wallenborn, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden**
**Division of Ser. No. 853,418, Aug. 27, 1969, Pat. No. 3,612,067. This application Dec. 11, 1970, Ser. No. 97,348**
**Int. Cl. A24b** *05/04, 05/14*
**U.S. Cl. 131—123** **6 Claims**



An apparatus for stretching and smoothing tobacco leaves comprising an intermittently advanced, air-permeable, stretchable conveyor belt for carrying leaves from a receiving station to a smoothing station to a stretching station. A moist leaf placed and aligned on the belt at the receiving station, and held thereon by suction through the belt, is advanced to the smoothing station where it is clamped by its central vein and subjected to diverging air currents that flutter the edges of the leaf outwardly. Suction is then reapplied to hold the leaf and it is advanced to the stretching station where the belt is transversely stretched to thereby stretch the leaf as well.

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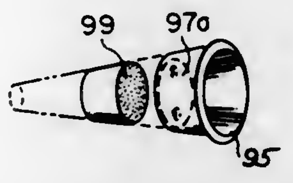
### 3,759,270
### MULTI-PIECE FILTER FOR SMOKING DEVICE

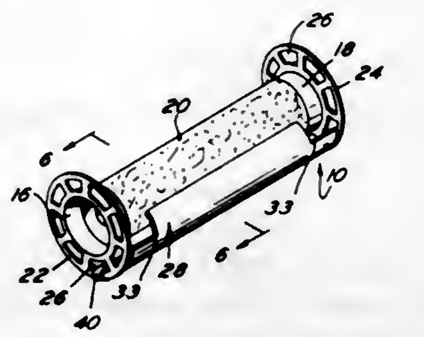
**Marjorie E. Wright, 929 Greentree Dr., Winter Park, Fla.**
**Continuation-in-part of Ser. No. 593,876, Nov. 14, 1966, abandoned. This application Jan. 21, 1970, Ser. No. 4,717**
**Int. Cl. A24d** *01/04*; **A24f** *07/04, 13/06*
**U.S. Cl. 131—261 B** **1 Claim**



A multi-piece filter assembly for use in a smoking device such as a cigarette, cigarette holder or the like in order to filter out tars and other harmful products from the smoke emanating from burning tobacco, comprising a primary filter and a secondary filter, with the primary filter including a member containing two or more minute holes, with the smoke passing through these minute holes being caused to increase in velocity as a result of the small size of the holes, and therafter decrease in velocity, with this decrease in velocity causing a depositing out of the tars and related undesirable substances. Various arrangements are provided for disposing the primary filter disk in the desired relationship to the tobacco of the smoking device, and may include the use of a generally cylindrical supporting means that tends to heat up during use as the smoke passes through, with such heating causing an enhancement of the filtering action.

### 3,759,271
### HAIR CURLER

**Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa.**
**Filed June 12, 1972, Ser. No. 261,848**
**Int. Cl. A45d** *2/12*
**U.S. Cl. 132—33 G** **9 Claims**



A hair curler for subjecting hair to hot steam to effect a curling action includes a hollow perforated core surrounded by a compressible porous foam pad mounted within a generally semi-cylindrical shield to protect the scalp from being subjected to the hot steam.

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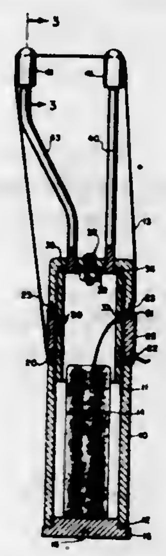
### 3,759,272
### DENTAL FLOSS HOLDER AND DISPENSER

**Angelo D. Di Vincenti, 1921 Ormandy Dr., Baton Rouge, La.**
**Filed Sept. 7, 1971, Ser. No. 178,053**
**Int. Cl. A61c** *15/00*
**U.S. Cl. 132—92 R** **9 Claims**



A dispenser and holder for dental floss and other teeth cleaning materials which includes two prongs over which the dental floss is strung, the prongs being attached to a case containing a roll of dental floss, and means for holding the dental floss tightly over the prongs.

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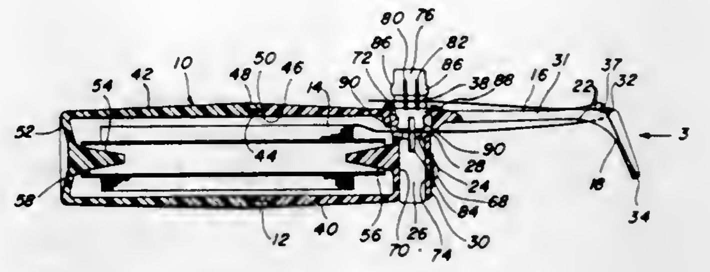
### 3,759,273
### DENTAL FLOSS HOLDER

**Heimo A. Knaus, Rt. 3, Box 552-B, Escondido, Calif.**
**Filed Mar. 31, 1972, Ser. No. 239,994**
**Int. Cl. A61c** *15/00*
**U.S. Cl. 132—92 R** **7 Claims**

A dental floss holder comprising a unit including a container for a spool of dental floss and a fork having tines across which the floss is stretched by manipulating a lock, the construction being such that the soiled floss never contacts the clean floss.



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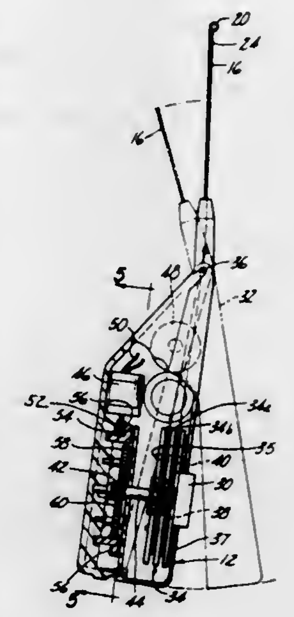
### 3,759,274
### DENTAL INSTRUMENT

**C. Edward Warner, 2221 Thornridge Rd., Charlotte, N.C.**
**Filed Mar. 12, 1973, Ser. No. 340,597**
**Int. Cl. A61c** *15/00*
**U.S. Cl. 132—92 R** **15 Claims**



The device uses a strand of dental floss for removing particles entrapped between teeth or around the bases of teeth. The strand of dental floss is mounted on an extended fork used for supporting the strand and to allow oscillating movement when used in a cleaning operation. A drive means is included for imparting the oscillating movement to the strand. There is also included a device cooperating with the spool for carrying the strand and supporting the strand for registering a new, unused strand of dental floss for operation subsequent to each cleaning cycle.

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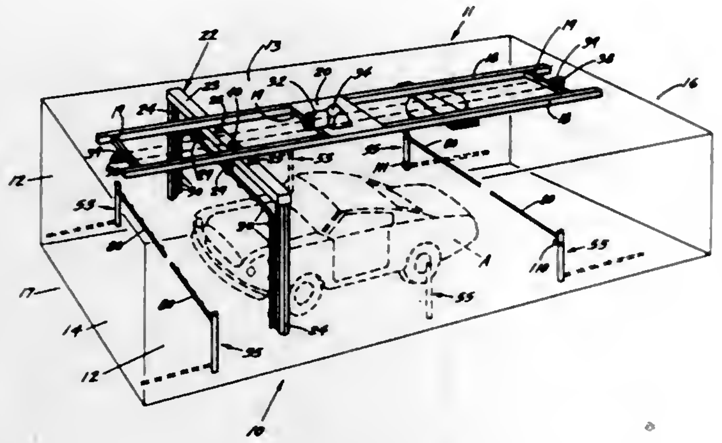
### 3,759,275
### CAR WASH INSTALLATION

**John C. Walters, R.D. 1, Ashville, N.Y.**
**Filed Feb. 3, 1972, Ser. No. 223,126**
**Int. Cl. B60s** *3/04*
**U.S. Cl. 134—45** **12 Claims**

A car wash installation comprising a housing having a suspended guide track for mounting an inverted U-shaped frame carrying a spray conduit reciprocable relative to a stationary vehicle. Four corner posts extend upwardly above the deck of the housing and are provided with horizontally extending spray wands normally extending parallel to the longitudinal axis of the vehicle in an inoperative position and pivotable approximately 90° to a position of use in front of and behind the vehicle for vertically traversing the front and rear ends of the vehicle. Two of the laterally spaced posts are carried by a carriage mounted beneath the deck of the housing. The carriage is movable lengthwise of the vehicle for positioning such posts in close proximity to one end of the vehicle for accommodating vehicles of various lengths.



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**3,759,276**

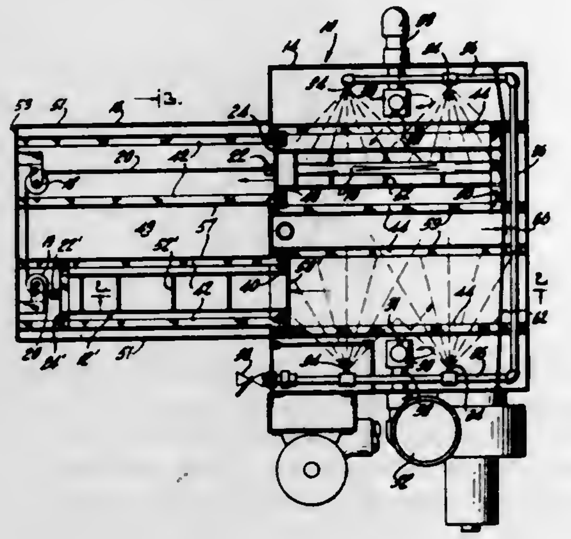
### DRAWER TYPE PAN WASHING MACHINE

**Robert K. Nolte, Chatham, N.J., assignor to Metalwash Machinery Corporation, Elizabeth, N.J.**

**Filed Dec. 30, 1971, Ser. No. 214,102**

**Int. Cl. B08b** *3/02*

**U.S. Cl. 134—57 DL** **16 Claims**



An automatic washing machine for food handling pans having drawers that are interconnected whereby when one drawer is extended out of the housing the other is retracted into the housing. The housing is sealed by the fully extended drawer and by the fully retracted drawer. The drawers are mounted in the housing in a side-by-side relationship facing an assembly of washing and rinsing nozzles. The machine also has a hinged cover permitting insertion of a rack therein for washing other objects.

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**3,759,277**

### PORTABLE SHELTER

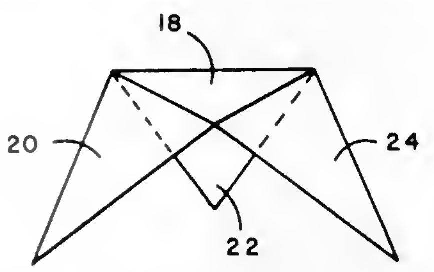
**Calvin P. Glade, 903 N. Waterview, Richardson, Tex.**

**Filed Apr. 16, 1971, Ser. No. 134,707**

**Int. Cl. E04b** *1/344*

**U.S. Cl. 135—4 R** **6 Claims**

A portable shelter comprises a central triangular section and three exterior triangular sections with each of the exterior sections being flexibly attached to respective sides of the central section whereby a variety of shelter configurations may be achieved.



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**3,759,278**

### HANDLE FOR UMBRELLA

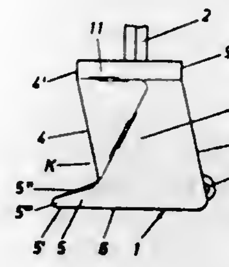
**Hans Hoffmann, Essen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada**

**Filed Sept. 7, 1972, Ser. No. 286,917**

**Claims priority, application Germany, Sept. 18, 1971, P 21 46 721.0**

**Int. Cl. A45b** *9/02*

**U.S. Cl. 135—46 M** **1 Claim**



A handle for an umbrella and particularly a flat umbrella, wherein the handle has a shape of a rhomboid with the greatest dimension of the rhomboid parallel to the axis of the umbrella stick and a projection is provided extending from the bottom wall portion of the handle beyond the bottom corner of the handle subtending the obtuse angle.

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**3,759,279**

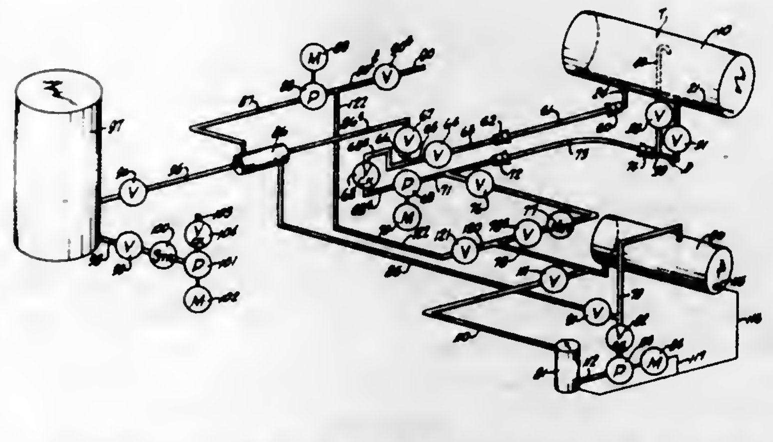
### METHOD, APPARATUS AND SYSTEM FOR TRANSPORTING, CONVERTING AND UNLOADING DRY SUGAR

**William C. Smith, Jr., 1016 Rhodes, Tyler, Tex.**

**Filed June 30, 1972, Ser. No. 267,964**

**Int. Cl. C13d** *1/02*

**U.S. Cl. 137—1** **18 Claims**



A method, system and apparatus for transporting dry granulated sugar by motor vehicle to a point of use and converting the dry sugar into liquid sugar or sugar solution of the desired Brix scale at such point of use. A semi-trailer transport tank having an improved sparger circulating system for converting dry sugar to liquid form at a desired Brix value while in the transport tank. A system for adding water at a temperature and in a quantity desired, to the dry granulated sugar in a transport tank for recirculating the same in the transport tank to produce liquid sugar of a desired Brix value, and including means for removing and conducting the liquid sugar from the transport tank to a storage tank or processing system.

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**3,759,280**

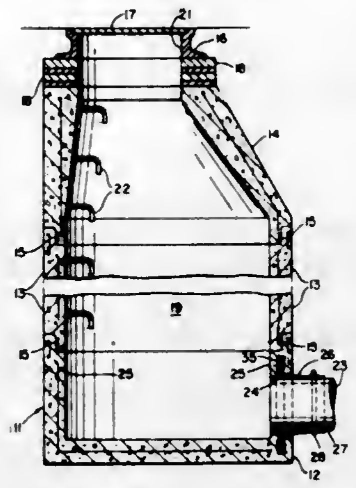
### PIPE TO MANHOLE SEAL

**Harold V. Swanson, Morris Plains, N.J., assignor to Interpace Corporation, Parsippany, N.J.**

**Filed May 24, 1971, Ser. No. 146,180**

**Int. Cl. F16l** *5/00*

**U.S. Cl. 137—363** **5 Claims**



A seal is here taught for use between a concrete side wall of a manhole installation and a pipe which penetrates through the side wall. Pipes for use in this service generally have rough cylindrical outer surfaces which are not truly round. The seal includes an elastomeric sleeve which is positioned about the outer surface of the pipe and which is clamped at one of its ends thereto. The sleeve is provided at its other end with an outwardly-flared flange. The flange may be attached to the wall by means of a firm annulus and bolts or the like. In a preferred embodiment the flange is cast into the wall and has corrugations to insure good bond therewith. The sleeve can be positioned within the hole, out of harms way, while the concrete wall is being poured.

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**3,759,281**

### CEMENTING FLOAT SHOE

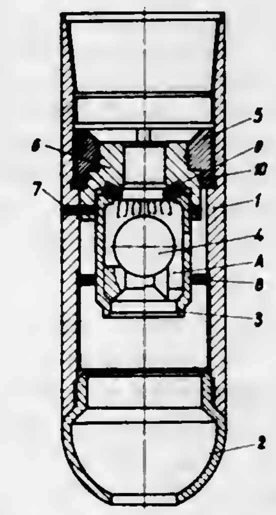
**Persiu Falcuta, Burcuresti, Romania, assignor to Grupul Industrial Pentru Foraj si Extractia Titeiilului Bucuresti, Ilfor, Romania**

**Filed Nov. 19, 1971, Ser. No. 200,348**

**Claims priority, application Romania, Nov. 20, 1971, 65045**

**Int. Cl. F16k** *17/40*

**U.S. Cl. 137—68** **1 Claim**



A float valve for a well casing comprises a fixed ring or seat threaded onto the wall of a generally cylindrical shell and receiving a tubular boss to which the ball cage is threaded. The cylindrical boss and the cage are anchored on the shoe casing by a plurality of shear pins so that they may be dislodged by the application of downward over-pressure in the event the valve becomes plugged. A fluted ring is provided beyond the aforementioned fixed ring to intercept the boss and thereby retain the valve while permitting fluid circulation through the flutes.

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**3,759,282**

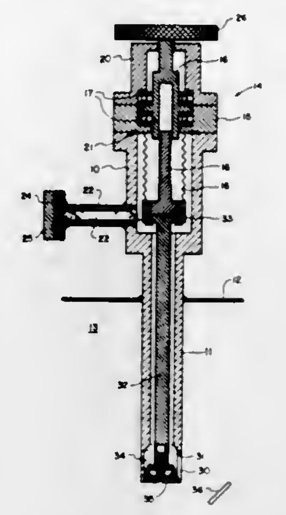
### ULTRA-HIGH VACUUM ISOLATION VALVE FOR VOLATILE MATERIALS

**Kenneth H. Kaldenback; John Kovals, and John H. Pollard, all of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 30, 1972, Ser. No. 302,165**

**Int. Cl. F16k** *17/40*

**U.S. Cl. 137—68** **1 Claim**



An ultrahigh vacuum isolation valve comprising a housing having a side tube containing a frangible vial of volatile material and a linear motion feedthrough mechanism in the housing with an enlarged flange portion for rupturing the vial as the valve is opened. A deformable copper seal is held by a retaining screw at a distal end of the linear feedthrough whereat a valve orifice having inclined valve seating surfaces is located.

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**3,759,283**

### VIBRATION PRODUCING APPARATUS

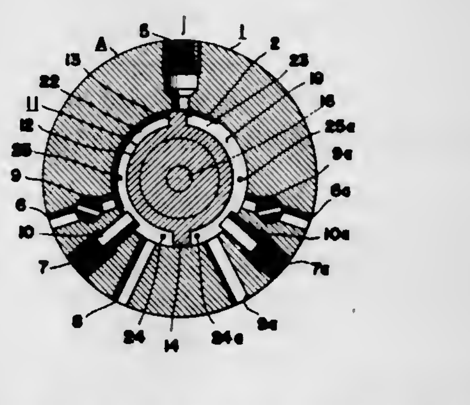
**Teruyuki Maeda, 6-5, Kita-machi, 3-chome, Kichijoji, Musashino City, Tokyo, Japan**

**Filed Nov. 29, 1971, Ser. No. 202,861**

**Claims priority, application Japan, Sept. 10, 1971, 46/69764; Dec. 10, 1970, 45/109891**

**Int. Cl. F01l** *21/02;* **F01c** *9/00;* **F01l** *25/06*

**U.S. Cl. 137—106** **4 Claims**



A vibration producing apparatus comprising a frame, a cylindrical space formed in said frame, a fluid supply port communicating with said cylindrical space, a vibratory member mounted in said cylindrical space for angular rotation, and two shield projections disposed at positions diametrically opposed to each other on an outer peripheral surface of said vibratory member and extending in opposite directions into sliding engagement with an inner peripheral surface of said cylindrical space. A vibration producing apparatus further comprises means for causing one of said shield projections to be disposed on the fluid supply port side and precluding angular rotation of said vibratory member over and above a predetermined angle, and ports adapted to maintain communication with said cylindrical space outside the range of movement of the other shield projection of said vibratory member.

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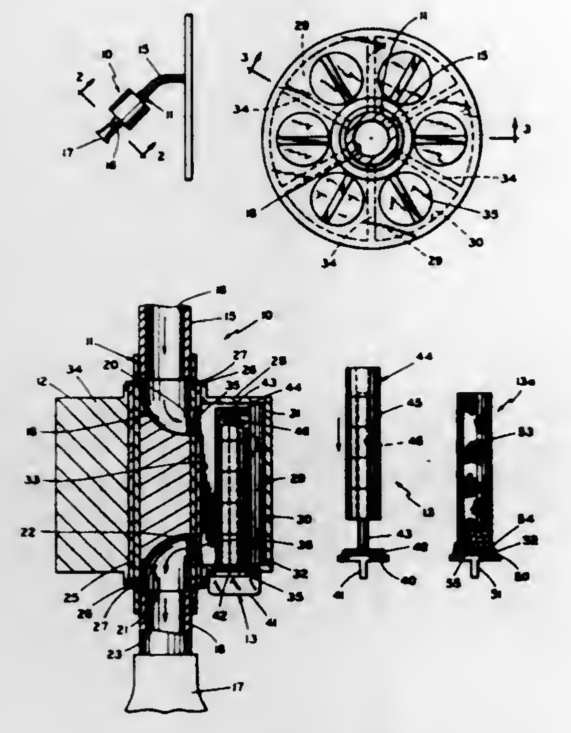
### 3,759,284
### FLUID TREATING DEVICE

**Duane E. Crowley, 3649 Elin Ct., Flossmoor; Roy M. Hoffmann, 60 Judith Ln., Chicago Heights, both of Ill., and Evan D. Roberts, 818 Elm, Flossmoor, Ill.**

**Filed Nov. 19, 1971, Ser. No. 200,442**

**Int. Cl. B01f** *1/00;* **E03c** *1/046;* **B01d** *11/02*

**U.S. Cl. 137—268** **5 Claims**



Disclosed herein is a device for treating fluids and is illustrated by structures including a barrel connectable in series in the fluid supply, a body rotatable on the barrel, selectively alignable passages in the barrel and the body for serially passing fluid therethrough, serially water treating means externally insertable in selected passsages or chambers in the body.

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### 3,759,285
### PRE-CAST BASE AND METHOD FOR MANHOLES AND THE LIKE

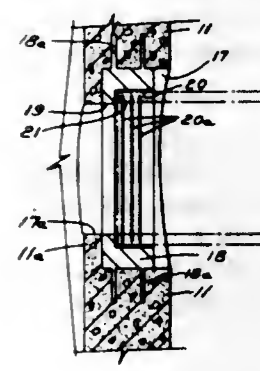
**Ronald E. Yoakum, R.R. 1, Union, Ohio**

**Continuation-in-part of Ser. No. 202,529, Nov. 26, 1971, abandoned, which is a continuation of Ser. No. 7,812, Feb. 2, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 314,025**

**Int. Cl. F16l** *5/02;* **F16j** *15/50*

**U.S. Cl. 137—363** **8 Claims**

Pre-cast base for access pits such as manholes and the like includes resilient rubber-like sealing means and method of positioning same at desired locations. The sealing means is anchored in monolithically cast wall and bottom portions of the base and enables precise positioning of the base at a desired location while maintaining sealed joints at the juncture between the base and inlet and/or outlet pipes, and permits universal independent movement of either said pipes or of the base to maintain the seal and yet accommodate changing job conditions.



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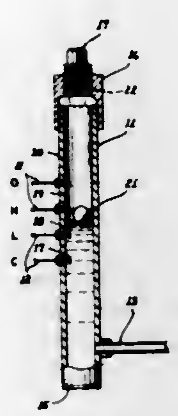
### 3,759,286
### APPARATUS FOR MAINTAINING THE WATER LEVEL WITHIN A SWIMMING POOL TO PREDETERMINED LIMITS

**Littleton Dennis Page, Rt. 2, Box 798, Tucson, Ariz.**

**Filed Jan. 26, 1972, Ser. No. 220,976**

**Int. Cl. G05d** *9/12*

**U.S. Cl. 137—392** **2 Claims**



In order to maintain the water level of a swimming pool within predetermined limits, an electrically operated valve connected between a source of make up water and the pool is opened whenever the water falls below a first predetermined level and is closed whenever the water reaches a second, higher predetermined level. Water level detection is carried out in a vertically disposed sensing tube in liquid communication with a point in the return line of the filtering circuit. A plurality of vertically separated conductive probes extend into the sensing tube to provide water level information according to conduction paths set up between a lowermost, common probe and those of the other probes which are below the water level. When the recirculating pump is not in operation, the water level reflects the water level in the pool. When the pump is energized, the pressure in the return line rises such that the sensing tube fills completely and thus automatically prevents operation of the valve inasmuch as an artificial high level condition is detected by the circuit coupled to the level sensing probes.

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### 3,759,287
### TWO-WAY PRESSURE RELIEF ASSEMBLY

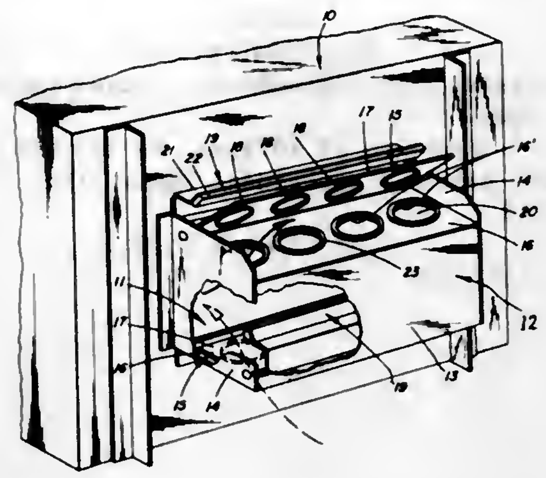
**Jimmie D. York, Jr., Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**

**Filed Mar. 6, 1972, Ser. No. 231,904**

**Int. Cl. F16k** *45/00*

**U.S. Cl. 137—493.9** **3 Claims**

A two-way pressure relief assembly for a plenum chamber including, at least two ported valve seats communicating with an outlet of the plenum chamber, and a plurality of relief valves adapted to respond to fluid pressure surges of a preselected magnitude, one valve cooperating with each ported valve seat, with at least one of the valves being responsive to fluid pressure surges of a preselected magnitude in a direction counter to the direction of fluid pressure surges to which the remainder are responsive.



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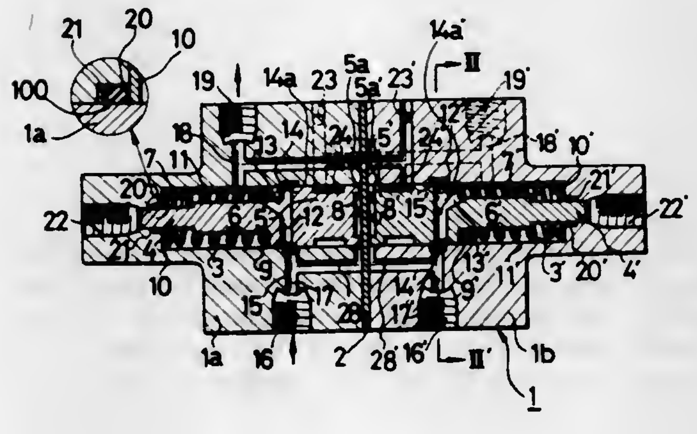
### 3,759,288
### SAFETY VALVE ASSEMBLY

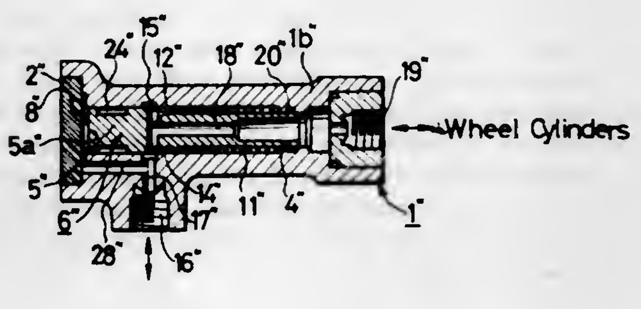
**Uichiro Kobashi, Kariya City, Aichi pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi pref., Japan**

**Filed Apr. 8, 1971, Ser. No. 132,460**

**Int. Cl. B60t** *8/26;* **F16k** *31/363*

**U.S. Cl. 137—498** **6 Claims**





This invention relates to improvements in and relating to a safety valve assembly, especially to be fitted in the hydraulic brake system for wheels of an automotive vehicle, although the invention may find its application in other uses in a hydraulic pressure piping system.

The safety valve assembly is adapted for operation to close the hydraulic pressure piping system when the outlet liquid quantity exceeds the inlet liquid quantity over a certain predetermined degree. This feature is especially valuable to interrupt oil outlet, when, as an example, a burst or the like cause should take place in the brake piping system.

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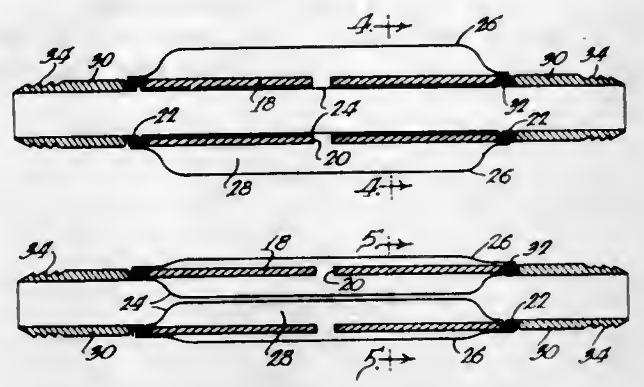
### 3,759,289
### PERFUSION SAFETY VALVE

**Richard A. DeWall, 247 Northview Rd., Dayton, Ohio**

**Division of Ser. No. 168,642, Aug. 3, 1971, Pat. No. 3,717,174. This application Sept. 27, 1972, Ser. No. 292,671**

**Int. Cl. A61m** *5/16;* **F16k** *17/00, 21/04*

**U.S. Cl. 137—525** **3 Claims**



A perfusion safety valve for use in blood oxygenating systems. The valve includes an elongated, rigid, perforated tube and interiorly disposed therein is a collapsible membrane-like wall which may collapse to cut off the flow of blood through the tube. Exteriorly of the tube is a second membrane-like wall and the space between the two membrane walls is filled with a liquid. When a slight vacuum is pulled against the inner membrane wall, the liquid will pass through the perforations of the tube into the interior of the tube to cause collapse of the interior wall to shut off the flow through the valve to preclude the pumping of air into the arterial system of a patient using the oxygenating system.

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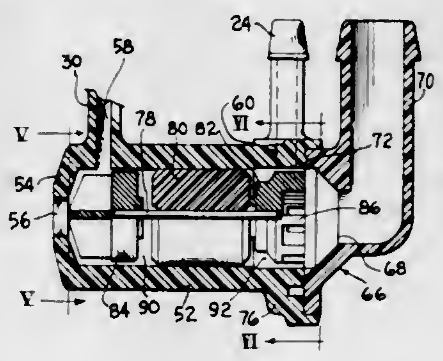
### 3,759,290
### WINDSHIELD WASHER SYSTEM HAVING SUBMERGED AIR DRIVEN PUMP

**Anthony R. D'Alba, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.**

**Filed Feb. 28, 1972, Ser. No. 229,644**

**Int. Cl. B60s** *1/48;* **A47l** *1/02*

**U.S. Cl. 137—565** **5 Claims**



A windshield washer pump includes a rotor assembly comprising a pump impeller and a turbine wheel secured at opposite ends of a shaft; the shaft is journalled in a bearing disposed between the impeller and the turbine wheel. The assembly is disposed within a cylindrical housing; the bearing is press fitted therein. A source of compressed air is applied to opposite sides of the turbine wheel through an inlet port which communicates with a pair of grooved passages, each of the passages terminates at the turbine wheel chamber on opposite sides thereof. An exhaust port is provided in the turbine wheel chamber. An opening in the end wall of the cylindrical housing adjacent to the impeller serves as a washer solvent inlet port. An outlet port is formed in the housing side wall communicating with the impeller. The pump assembly is disposed within a solvent reservoir and is submersed in the solvent. Hoses connect the compressed air inlet port, the compressed air exhaust port and solvent discharge port with corresponding ports in the lid of the solvent reservoir. The discharge port in the lid is in turn connected to a pair of washer nozzles adjacent to the lower edge of the windshield. A manual control is provided to control communication between the compressed air inlet port at the pump and the source of compressed air.

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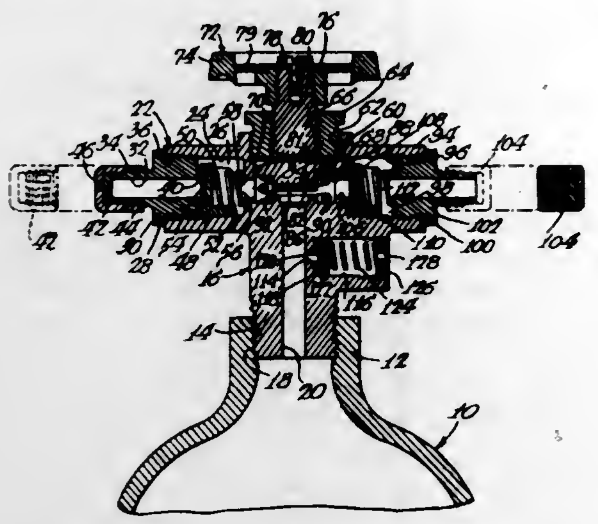
### 3,759,291
### VALVE FITTING FOR BOTTLES

**Cecil L. Moore, and Roger L. McCarthy, both of Dubuque, Iowa, assignors to A. Y. McDonald Mfg. Co., Dubuque, Iowa**

**Filed June 29, 1972, Ser. No. 267,591**
**Int. Cl. F16k** *45/02*
**U.S. Cl. 137—588** **6 Claims**



A valve fitting for bottles adapted to contain pressurized liquids or gases such as refrigerants. The valve fitting includes a main, manually operated valve, an inlet check valve, a pressure release valve and a pressure retention valve. The latter is employed so as to maintain a slight pressure in the bottle when the same has been emptied to preclude entry of foreign material or non-wanted gases therein prior to refilling of the bottle. This permits the bottle to be regularly refilled without extended cleaning operation.

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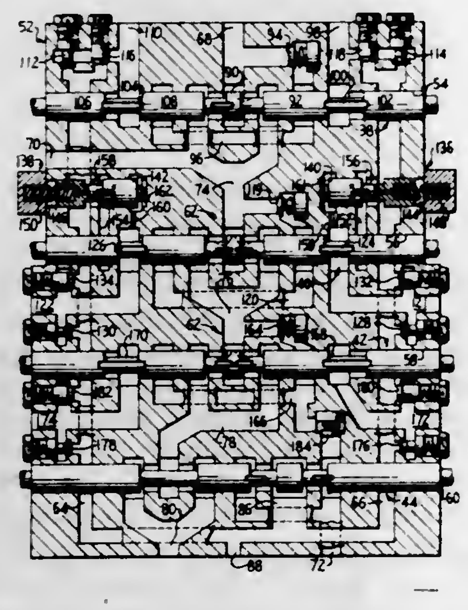
### 3,759,292
### HYDRAULIC CONTROL VALVE ASSEMBLY

**Donald L. Bianchetta, Coal City, and Kenneth R. Lohbauer, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Dec. 13, 1971, Ser. No. 207,028**
**Int. Cl. F15b** *13/06;* **F16k** *11/07;* **F15b** *11/00*
**U.S. Cl. 137—596** **9 Claims**



A valve assembly comprising a plurality of distributor valves for operation of a plurality of hydraulic motors is provided with a plurality of inlets for a plurality of supply sources. The distributors are interconnected so that the implements may be operated by separate sources or the sources combined for selective operation of certain implements.

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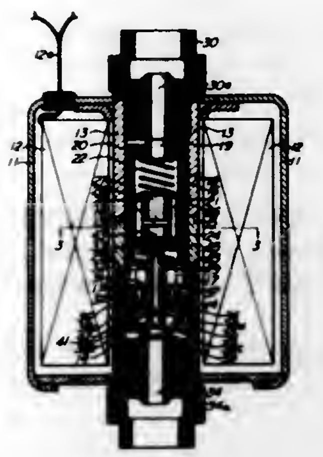
### 3,759,293
### SOLENOID VALVE

**Saburo Tanaka, 132 Chigusashinden, Oosawa-machi, Kimitsu-gun, Japan**

**Filed Sept. 24, 1971, Ser. No. 183,450**
**Claims priority, application Japan, Oct. 27, 1970, 45/106114**
**Int. Cl. F16k** *31/02*
**U.S. Cl. 137—598** **2 Claims**



A solenoid valve installed between the master cylinder and the wheel cylinder of a motor vehicle and used for controlling the fluid flowing therebetween is characterized in that the valve chest formed in the center of the valve body has a cylinder therein movable in the axial direction by the force of coil excitation. A shock absorber made of a non-magnetic material is incorporated both into the top part of the movable cylinder having the function of adjusting the secondary liquid pressure and into the part with which the bottom surface of said movable cylinder is brought into contact so that said shock absorber may not interfere with the fluid flowing through its passage. The movable cylinder is driven to have its bottom come in contact with said counterpart by way of said shock absorbing members whereby the shock produced at the contact surface is effectively absorbed, the shock or impact sound is minimized, the valve action is smoothed, and the life of the valve is extended.

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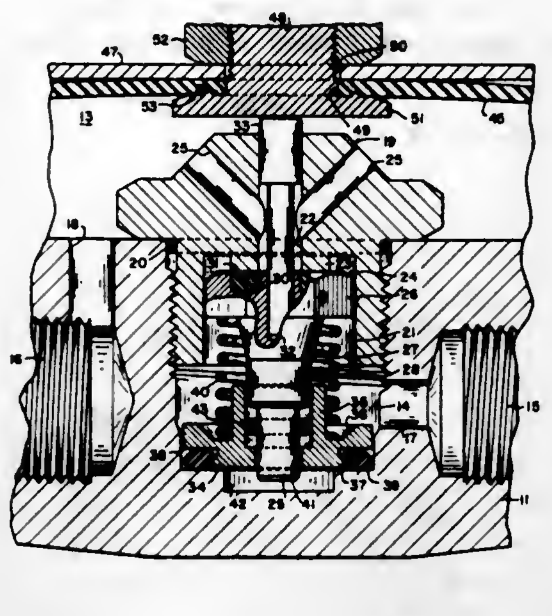
### 3,759,294
### PRESSURE REGULATOR

**Robert M. Kongelka, Washington, Pa., assignor to Superior Valve Company, Washington, Pa.**

**Filed June 7, 1972, Ser. No. 260,546**
**Int. Cl. F16k** *17/04*
**U.S. Cl. 137—612.1** **3 Claims**

The specification discloses a pressure regulating valve device for regulating to a relatively low uniform delivery pressure a high-pressure supply of fluid, such as a gas. The valve device includes a release valve arrangement which effects the release of high-pressure fluid that is undesirably trapped in the valve device due to leakage past a seal, such as O-ring seals, associated with a valve stem. The release valve arrangement operates responsively to shut-off of the supply of pressure to vent the trapped fluid via the normal delivery passages of the valve device.



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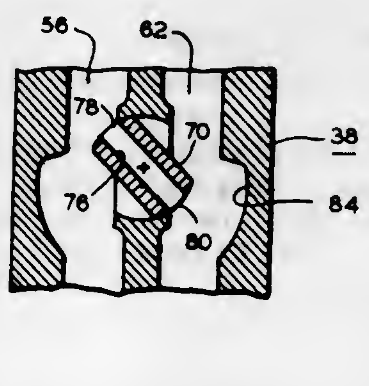
### 3,759,295
### CONTROL VALVE FOR HYDROSTATIC DRIVE

**Donald S. Dence, Brooklyn, Mich., assignor to Clark Equipment Company, Buchanan, Mich.**

**Filed Apr. 19, 1971, Ser. No. 135,283**
**Int. Cl. F16k** *11/00*
**U.S. Cl. 137—625.47** **7 Claims**



A control valve having two parallel fluid passages through the body portion thereof and a valve element pivotally located between the parallel passages. The valve element has a connecting channel therethrough and may be pivoted in either direction to present the channel's inlet to one fluid passage and its outlet to the other so that fluid may be selectively diverted through the channel from passage to passage by pivoting the valve element. The passage into which the channel's inlet is pivoted is reduced in flow area when the valve element is pivoted into that passage, but enlargements are provided in both passages so that the flow area of the passage into which the channel outlet is pivoted is not substantially reduced, thereby encouraging fluid to flow through the channel in the desired direction. This control valve may be used in a hydrostatically driven vehicle having a fixed ratio flow divider which directs equivalent flows to the individual driving motors of the vehicle, the control valve being located in the fluid circuit between the flow divider and the driving motors to selectively divert a portion of the working fluid intended for one motor to the other and thereby provide a "differential" action between driving wheels.

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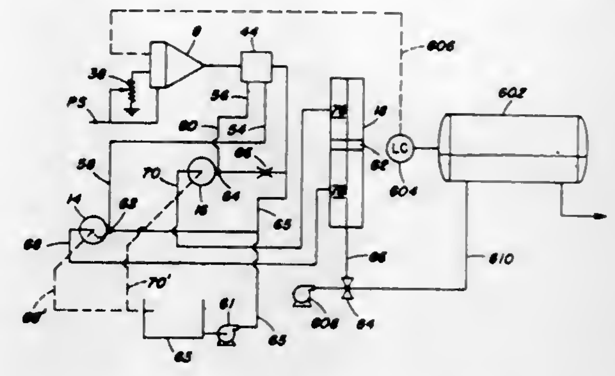
### 3,759,296
### CONTROL DEVICE

**Ward F. O'Connor, Deanville, N.J., assignor to The Lummus Company, Bloomfield, N.J.**

**Continuation-in-part of Ser. No. 82,749, Oct. 21, 1970, and a continuation-inlpart of Ser. No. 837,673, June 30, 1969. This application Apr. 14, 1971, Ser. No. 133,915**
**Int. Cl. F15c** *1/16*
**U.S. Cl. 137—805** **8 Claims**



This invention relates to control apparatus for equipment, and more particularly to highly reliable fluid control apparatus for governing the various functions of equipment.

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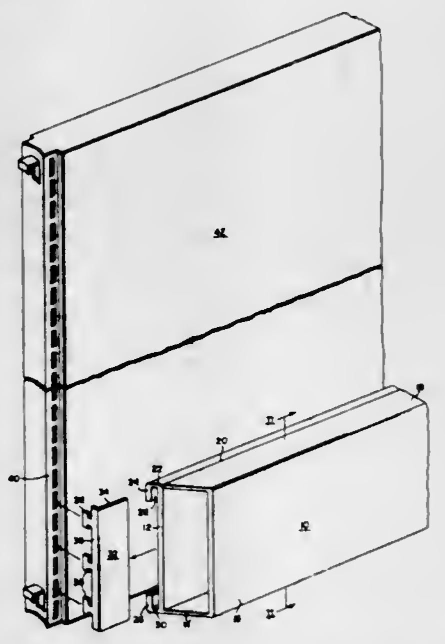
### 3,759,297
### UTILITY LINE HOLDER

**William C. Anderson, and Raymond A. Bleeker, both of Grand Rapids, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Jan. 10, 1972, Ser. No. 216,416**
**Int. Cl. F16l** *9/00*
**U.S. Cl. 138—156** **2 Claims**



A utility line holder for containing and concealing interior office utility lines for office electrical equipment and the like which comprises a wall mounted, normally closed, flexibly openable elongated tubular channel for use particularly in modular space dividing office wall systems.

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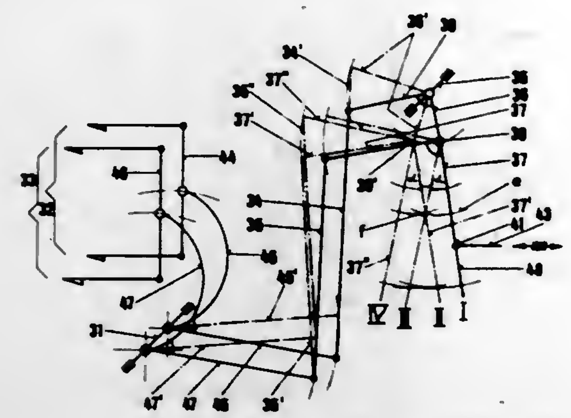
### 3,759,298
### HEDDLE FRAME LIFT MECHANISM

**Werner Kaufmann, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland**

**Filed Aug. 26, 1971, Ser. No. 175,117**
**Claims priority, application Switzerland, Aug. 27, 1970, 12803/70**
**Int. Cl. D03c** *13/00*
**U.S. Cl. 139—82** **8 Claims**

Lift mechanism for a heddle frame, particularly applicable to a heddle frame in a machine for making pile fabric. For controlling the heddle or harness frames of the loom adapted particularly for weaving pile fabric there is provided a dobby having two pairs of conventional draw knives each pair mounted on a crosshead. Said crossheads are operated by a pair of bellcrank levers pivoted on a common axis with a first arm of each of said bellcranks pivoted to the middle of each crosshead. A first further bellcrank is pivoted to a fixed axis and a first arm thereof connected by a linkage to the second arm of one of the first pair of bellcranks. A second further bellcrank is pivoted to the second arm of said first further bellcrank and has its first arm connected by a linkage to the second arm of the other of said first pair of bellcranks. The output for said dobby is applied to suitable means by the second arm of said second further bellcrank and is preferably adjustable toward and away from the pivot point thereof to provide adjustment for both its own operation and that of the first further bellcrank and the parts connected thereto.



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### 3,759,299

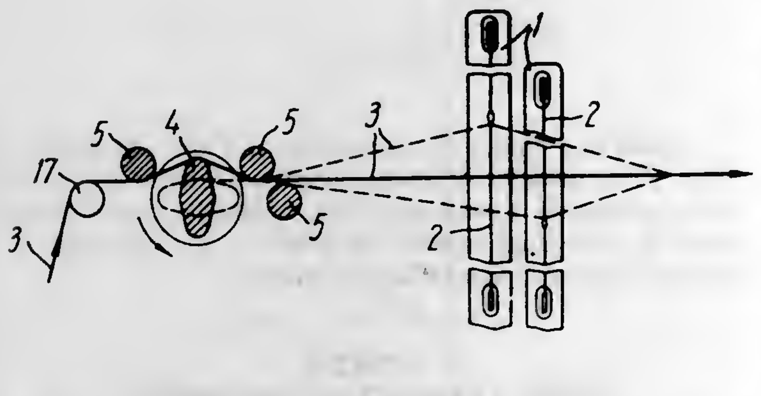
## WARP TENSION DEVICE FOR LOOMS

**Anatoly Grigorievich Selivanov, ulitsa Lobachecskogo, 44, kv. 59; Nikolai Ivanovich Makachev, ulitsa Tatischeva, 17, kv. 33, and Maria Kuzminichna Parshina, ulitsa Tsjurupy, 12, korpus 1, kv. 27, all of Moscow, U.S.S.R.**

**Filed Jan. 6, 1972, Ser. No. 215,738**

**Int. Cl. D03d** *49/04, 47/26*

**U.S. Cl. 139—97** **4 Claims**



The device comprises a compensating roller made in the form of a feed worm which in its cross section has the shape of a rhomb with rounded vertices. On either side of the roller there are mounted warp guide rods oriented relative to said roller so, that when the shed is crossed, formed between them is a compensation loop which is drawn out when the shed is fully open.

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### 3,759,300

## INTERMEDIATE WEFT THREAD SUPPLY APPARATUS FOR LOOMS

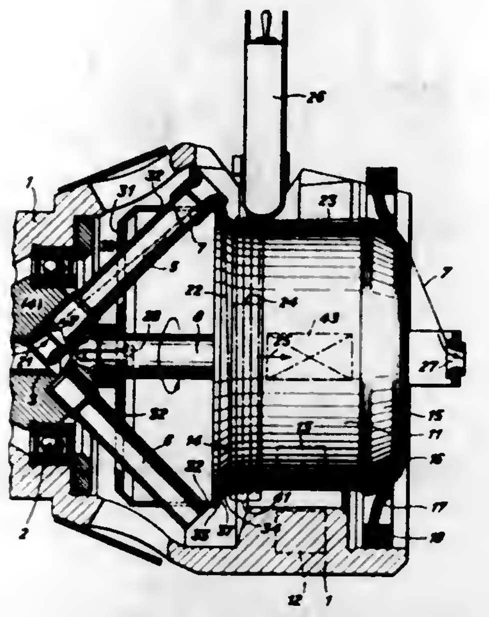
**Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland**

**Filed Feb. 28, 1972, Ser. No. 230,023**

**Claims priority, application Switzerland, Mar. 4, 1971, 3174/71**

**Int. Cl. D03d** *47/36*

**U.S. Cl. 139—122 R** **7 Claims**



In a thread storage and supply device including a drum supported at one end from a shaft and including means to wind a thread onto the drum for subsequent pull-off over the free end of the drum, an annular member surrounds the drum with close clearance therefrom at the end from which the drum is supported, thereby preventing the thread from becoming entangled or wound up upon the shaft.

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### 3,759,301

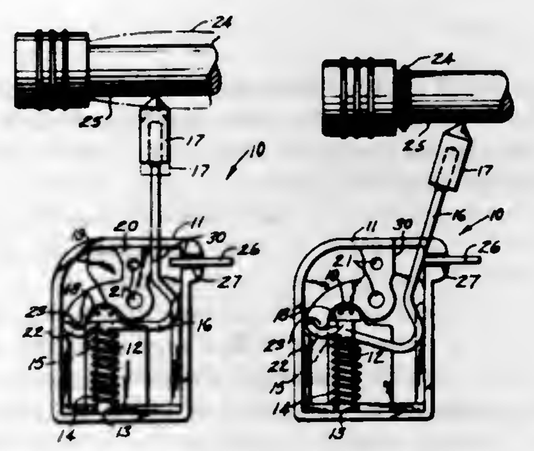
## FILLING FEELER DEVICE FOR LOOMS

**Herman L. Phillips, 231 Brashier St., Griffin, Ga.**

**Filed July 21, 1972, Ser. No. 273,832**

**Int. Cl. D03d** *45/08*

**U.S. Cl. 139—281** **4 Claims**



This device is a filling feeler mechanism for textile looms and consists primarily of a housing with guide means for a spring-loaded finger which when a bobbin is emptied, will move a trip wire which will trip other mechanisms of the loom so as to cause the loom to proceed to eject the empty bobbin and replace it with a bobbin full of filling.

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### 3,759,302

## WIRE FIXING DEVICE

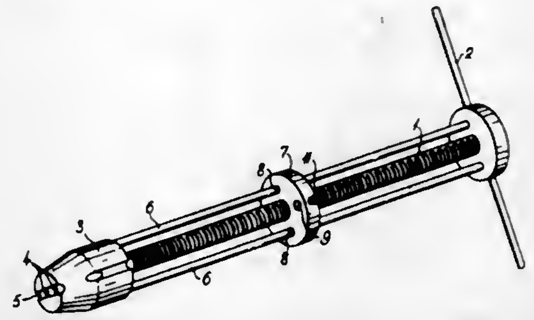
**Christopher George Attenborough, Winchelsea, England, assignor to National Research Development Corporation, London, England**

**Filed Aug. 3, 1972, Ser. No. 277,567**

**Claims priority, application Great Britain, Aug. 19, 1971, 38,988/71**

**Int. Cl. B21f** *15/04*

**U.S. Cl. 140—119** **7 Claims**



A wire fixing device, for fixing wire in orthopedic surgery or other circumstances by controlled twisting together of the free end portions of the wire, comprises an elongate screw, a nut for engagement with the screw and having means for securing the free end portions of a wire to be fixed, a guide member with two passageways for the wire free end portions, and at least one slide member which extends from the guide member for longitudinal slidable engagement relative to and rotation with the nut. In use of the device the wire free ends are passed through the guide member passageways and secured with the nut, and the screw is screwed through the nut to draw this from the guide member and tense the wire. Then, the nut is screwed towards the guide member to twist the wire while feeding wire into the twist in a controlled manner to avoid breakage through excess tension build-up.

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### 3,759,303

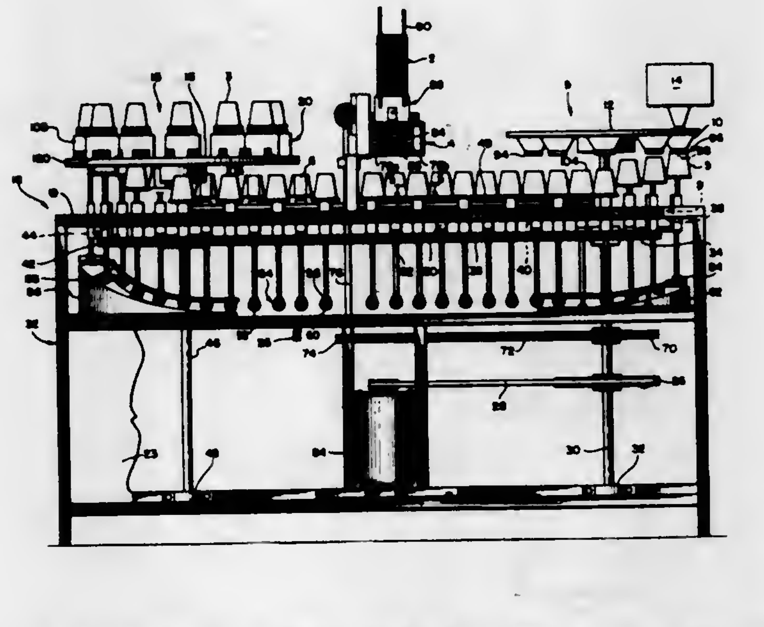
## CUP HANDLING APPARATUS

**Benjamin D. Henrichs, Lake Mills, and Gordon A. Djuren, Kensett, both of Iowa, assignors to Compact Industries, Inc., Northbrook, Ill.**

**Filed June 9, 1971, Ser. No. 151,271**

**Int. Cl. B65b** *43/44*

**U.S. Cl. 141—1** **13 Claims**



An apparatus for individually feeding, filling, and stacking a supply of cups includes a conveyor adapted to receive and support the cups individually and carry them from a cup feeding station to a filling station, where the cups individually are moved toward and away from the filling mechanism, and then carry the cups to a stacking station.

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### 3,759,304

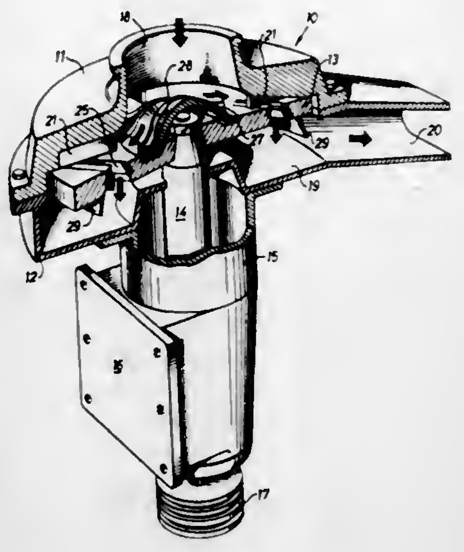
## MACHINE FOR CONVERTING WOODEN PIECES INTO CHIPS

**Lars-Erik Lundmark, Taby, and Evald Larsson, Nassjo, both of Sweden, assignors to AB Krima Maskinfabrik, Nassjo, Sweden**

**Filed Mar. 17, 1972, Ser. No. 235,648**

**Int. Cl. B27c** *1/00*

**U.S. Cl. 144—180** **10 Claims**



A machine for converting wooden pieces, such as those formed by a chopping procedure, into chips to be used in chip and particle boards, comprises cutting tools disposed in annular spaces through which the wooden pieces are fed radially outwards and which taper in that direction.

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### 3,759,305

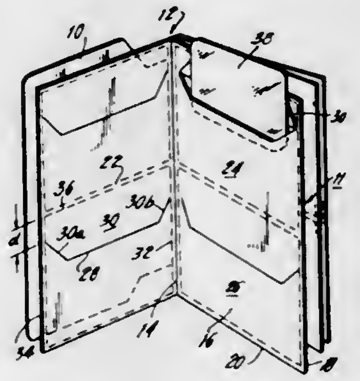
## CREDIT CARD CARRYING CASE

**Donald E. McIntyre, Scottsdale, Ariz., assignor to Ambassador International, Inc., Tempe, Ariz.**

**Filed Oct. 18, 1971, Ser. No. 190,079**

**Int. Cl. A45c** *11/18*; **G09f** *1/10*

**U.S. Cl. 150—39** **9 Claims**

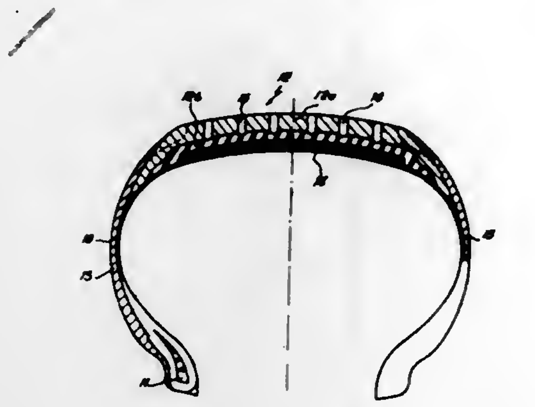


One or more pocket sections of flexible transparent or translucent plastic may be provided with one or more card-holding sections. Each card-holding section is provided with a protective flap or closure scored in the facing-ply of the closure and a credit card inserted into the pocket is retained therein irrespective of the handling to which the pocket is subjected. The protective flap or closure is normally integral with the facing-ply and is formed between the vertically extending edges defining the width of the pocket at some intermediate point between the horizontal edges defining the height of the pocket.

### 3,759,306
## TIRE HAVING REINFORCING WITH HIGH MODULES OF ELASTICITY

**Henri Greiner, Conflans Sainte Honorine; Yves Masson, Paris, and Jean Olagnier, Levallois-Perret, all of France, assignors to Pneumatiques, Caoutchouc Manufacture Et Plastiques, Kleber-Colombes, Colombes, France**

**Filed Oct. 26, 1971, Ser. No. 192,201**
**Claims priority, application France, Oct. 27, 1970, 7038760**
**Int. Cl. B60c** *1/00, 19/00*
**U.S. Cl. 152—374** **6 Claims**



A tire suitable for use with a fast vehicle, a vehicle carring a heavy load, or a vehicle exerting a high torque having a tread, an outer portion of the tread being sculptured and having hollows, a carcass and a reinforcing member having an outer face spaced radially from the level of the bottoms of the hollows of the sculptured portion, wherein there is a second portion of the tread between the level of the bottom of the sculptured portion and the outer face of the reinforcing member which second portion is made of a rubbery mixture having a high modulus of elasticity at least equal to 40 kg/cm² at 100 percent elongation, whilst the sculptured outer portion of the tread is made of a rubbery mixture having a less high modulus of elasticity.

This tire displays high resistance to any tendency of the sculptured portion to be worn away or stripped off whilst retaining its other essential qualities.

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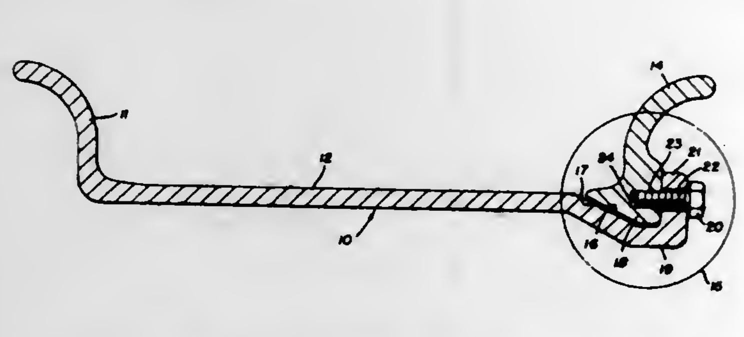
### 3,759,307
## RIMS

**William D. Walther, Dayton, and Robert A. Deregnaucourt, Centerville, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio**

**Filed Jan. 3, 1972, Ser. No. 214,994**
**Int. Cl. B60c 7/24**
**U.S. Cl. 152—396** **7 Claims**



A demountable rim having fixed and removable bead flanges for mounting tires on a wheel and having safety features in compliance with Federal Motor Vehicle Safety Standard No. 120. The removable bead flange is carried on and mounted within an edge of the rim base portion and a series of circumferentially located capped bolts loosely connect the removable flange to the rim edge to maintain said flange on the rim in the event a tire mounted on the rim is unintentionally deflated. Various forms of rim edges and removable flanges are provided.

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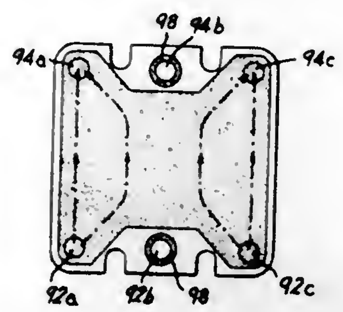
### 3,759,308
## PLATE EVAPORATOR FOR REMOVING VOLATILES FROM LIQUIDS

**Adam George Gebauer, Lighthouse Point, Fla., assignor to Parkson Corporation, Fort Lauderdale, Fla.**

**Filed June 15, 1970, Ser. No. 46,283**
**Int. Cl. B01d** *1/22, 1/00;* **F28f** *3/08*
**U.S. Cl. 159—13 R** **10 Claims**



A plate assembly for improved removal of volatiles from a flowable material. The assembly includes one or more sets of port-type heat exchanger plates arranged in succession to provide a confined tortuous path of increased capacity for a high velocity flow of the volatiles-containing material. Variation of the gasketing of the plates, so as to include in the tortuous path the optimum number and combination of plate ports, provides increased capacity, while affording control of flow conditions within the assembly in correspondence with the sensitivities of the flowable material. One form of the assembly may constitute a plate contactor for effecting two-phase stripping of volatiles from the flowable material. Another possible form may be a plate evaporator for enhancing evaporative removal of the volatiles.

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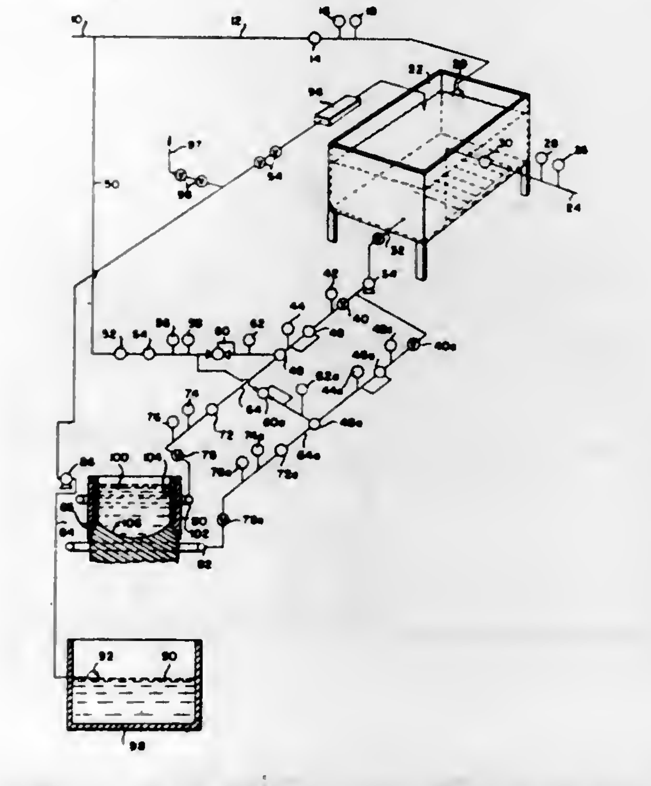
### 3,759,309
## METHOD OF AND APPARATUS FOR COOLING CONTINUOUSLY CAST METAL

**William Nighman, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.**

**Filed May 27, 1971, Ser. No. 147,495**
**Int. Cl. B22d** *11/12*
**U.S. Cl. 164—4** **17 Claims**



A method of and apparatus for cooling continuously cast metal wherein the temperature of the coolant may be varied substantially instantaneously. A hot water coolant is applied either to the mold or the metal being continuously cast, or both. Suitably located sensor means at the locus of the mold sense a condition incident to the continuous casting operation. In a preferred form of the invention, separate means are employed to retard the cooling of the metal as it emerges from the bottom of the mold in order to prevent cracking of the metal.

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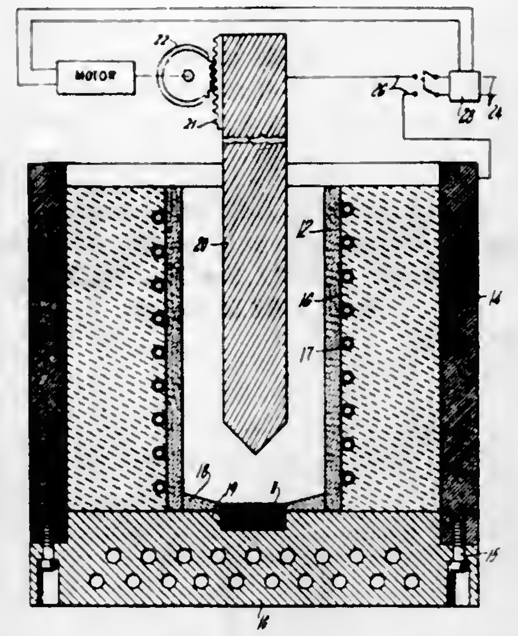
### 3,759,310
## METHOD AND APPARATUS FOR PROVIDING SINGLE CRYSTAL CASTINGS USING A CONSUMABLE ELECTRODE

**Robert B. Barrow, Cheshire; Matthew F. Smith, Shelton, both of Conn., and Larry W. Sink, Milwaukie, Oreg., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Continuation-in-part of Ser. No. 803,539, March 3, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,215**
**Int. Cl. B22d** *27/02, 25/06*
**U.S. Cl. 164—52** **7 Claims**



Apparatus and method by which to produce single crystal articles using a ceramic mold and consumable arc melting technique with cooling from a chill plate at the base of the apparatus and with the ceramic mold limiting the heat loss laterally from the molten metal.

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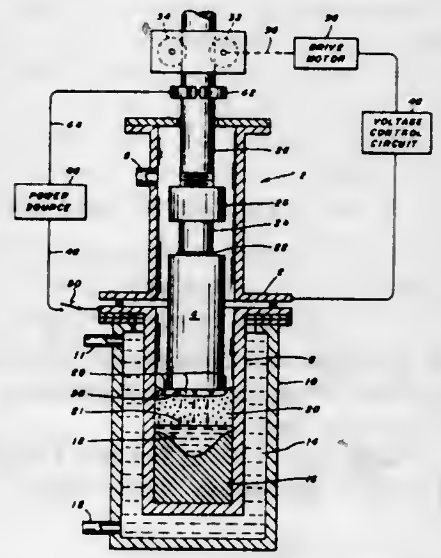
### 3,759,311
## ARC SLAG MELTING

**Harold S. Jackson, Troy, N.Y., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 854,144, Aug. 29, 1969, abandoned. This application Apr. 4, 1972, Ser. No. 241,082**
**Int. Cl. B22d** *27/02;* **H05b** *7/18;* **C22b** *9/10;* **C22d** *7/00*
**U.S. Cl. 164—52** **6 Claims**



The method of consumable electrode casting an alloyed metal ingot by electro-slag refining to produce a high quality homogenous ingot wherein a layer of molten slag in the furnace separates the electrode from the molten pool formed thereunder. The electrode is lowered into the slag layer and electrical current is flowed substantially through the electrode and the slag and subsequently, is withdrawn from the slag sufficiently to establish an electric arc between the electrode and the top of the slag whereby the electrode is melted by the heat of the arc and the slag thereunder, to form droplets of electrode metal which migrate from the electrode through the slag layer and accumulate in a pool of molten metal thereunder. The molten pool is continually solidified at a predetermined rate to form the high quality homogenous ingot.

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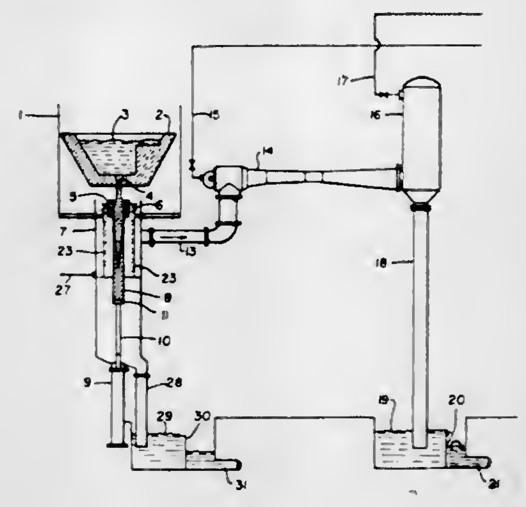
### 3,759,312
## PROCESS FOR COOLING VACUUM-CAST INGOTS

**Eugene A. Mizikar, Clairton, and Frederick H. Rehmus, Baldwin Borough, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 869,816, Oct. 27, 1969, abandoned. This application June 24, 1971, Ser. No. 156,554**
**Int. Cl. B22d** *11/10, 11/12*
**U.S. Cl. 164—64** **5 Claims**



An ingot of metal continuously cast under vacuum is withdrawn into a cooling chamber maintained at a pressure intermediate casting pressure and atmospheric pressure and cooled therein by sprays of cooling liquid. The seal between the chamber is that effected between the molten metal in the ingot mold and the mold.

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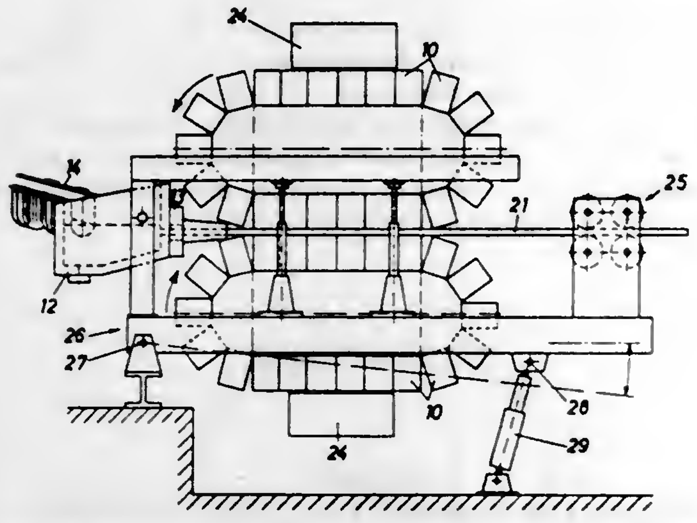
### 3,759,313
## METHOD OF STARTING A CASTING MACHINE HAVING CATERPILLAR-TYPE MOLDS FOR CASTING NONFERROUS METAL STRIPS

**Ivan Gyongyos, Montana, Switzerland, assignor to Prolizenz AG, Chur, Switzerland**

**Filed Apr. 12, 1971, Ser. No. 133,007**
**Int. Cl. B22d** *11/06, 11/08*
**U.S. Cl. 164—87** **4 Claims**

Disclosed is a method of pouring molten metal on caterpillar-type molds of a still-standing and a low angle inclined machine, until a leading end of the strip is formed. Thereupon, the mold tracks are set into motion and simultaneously the inclination of the entire machine is increased for an optimum continuous casting operation. The casting machine is mounted on a tiltable frame controlled by a hydraulic jack.



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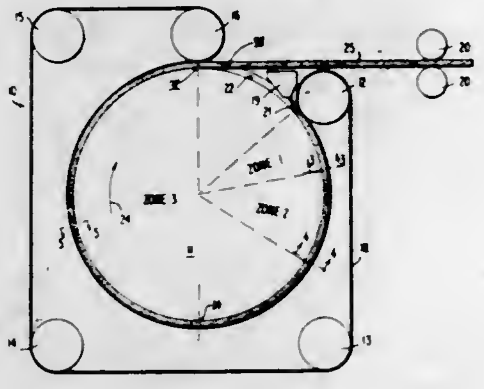
### 3,759,314
### HIGH CAPACITY CONTINUOUS CASTING METHOD
**John H. Murphy, Atlanta, Ga., assignor to Southwire Company, Carrollton, Ga.**

**Filed Aug. 26, 1971, Ser. No. 175,156**

**Int. Cl. B22d** *11/06*

**U.S. Cl. 164—87** **4 Claims**



A high capacity casting method and apparatus wherein metal in a molten condition is fed into a mold formed by the peripheral groove in a rotatable casting wheel and a flexible band, the metal is cooled in the mold until the metal has substantially solidified, and the solidified metal is removed from the peripheral groove of the casting wheel at a position substantially above the casting wheel. The cast metal is removed from the peripheral groove of the casting wheel. The cast metal is removed from the peripheral groove of the casting wheel as the cast metal approaches a horizontal direction of movement about the casting wheel, at an elevation above the elevation where the metal is fed in a molten condition into the peripheral groove.

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### 3,759,315
### INJECTION MOLDING APPARATUS
**Horace Stanley Smart, Malvern, Australia, assignor to Reginald Richard Mills, Burwood, Victoria, Australia, a part interest**

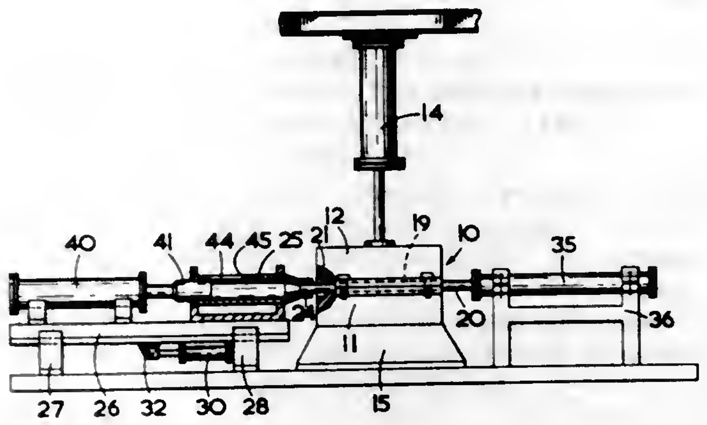
**Filed Mar. 1, 1971, Ser. No. 119,578**

**Claims priority, application Australia, Mar. 9, 1970, 565/70**

**Int. Cl. B22d** *17/00*

**U.S. Cl. 164—120** **4 Claims**

A method of pressure die-casting a member by providing a mandrel in the die cavity of a mould to exclude air therefrom, and withdrawing the mandrel at a controlled rate as molten metal is delivered to the mould so that the incoming metal occupies the die cavity as it is vacated by the mandrel and thus air is not trapped in the mould or entrained in the incoming molten metal.



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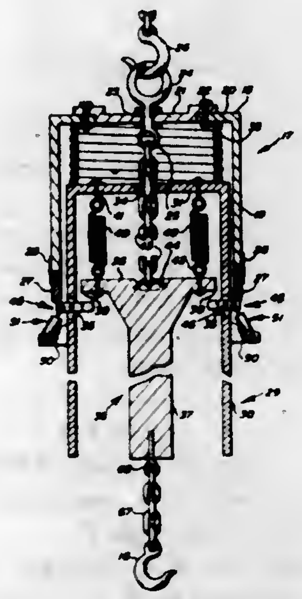
### 3,759,316
### INGOT MOLD SEPARATOR
**Gary C. Saarup, 2950 N. 46th St., Apt. 201, Phoenix, Ariz.**

**Filed Apr. 3, 1972, Ser. No. 240,717**

**Int. Cl. B22d** *29/04*

**U.S. Cl. 164—405** **9 Claims**



This specification discloses a device for separating an ingot from a mold in which it is stuck and which operates on the principle of raising the ingot and mold as a unit from a supporting surface a predetermined distance and then letting the unit fall. The drop of the ingot is interrupted before the unit reaches the supporting surface, while the downward movement of the mold is continued under the momentum generated by the fall, to separate the ingot from the mold.

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### 3,759,317
### A HEAT EXCHANGER
**Alfred Erich Wibrandt van Diepenbroek, Ermelo, Netherlands, assignor to N.V. Bronswerk Apparatenbouw v/h Moring & Steenaart, Nijkerk, Netherlands**

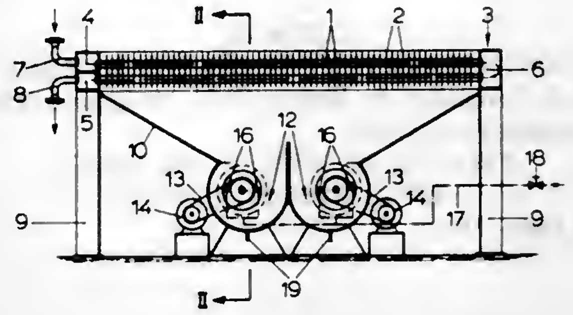
**Filed Aug. 5, 1971, Ser. No. 169,268**

**Claims priority, application Netherlands, Aug. 10, 1970, 7011801**

**Int. Cl. F24f** *3/14*

**U.S. Cl. 165—19** **3 Claims**

A heat exchanger in which wherein a first fluid flows through heat-exchanging tubes and a second fluid flows around the heat-exchanging tubes, one of these fluids being a cooling fluid which withdraws heat from the other fluid, the cooling fluid being a gas supersaturated with water. The cooling fluid is supplied by a device for supersaturating a gas, in particular air, with water.



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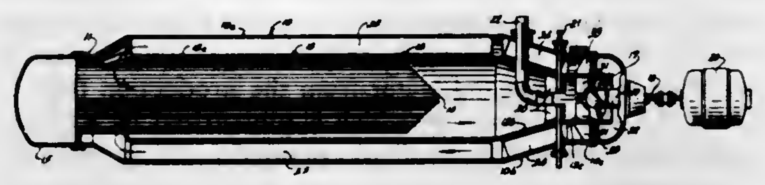
### 3,759,318
### CONTACTOR IMPROVEMENTS
**David H. Putney; John H. Lindau, and Charles L. West, all of Shawnee Mission, Kans., assignors to Stratford Engineering Corporation, Kansas City, Mo.**

**Filed Mar. 15, 1972, Ser. No. 234,827**

**Int. Cl. F28f** *13/12;* **B01f** *5/10*

**U.S. Cl. 165—108** **14 Claims**



An improved, horizontal, continuous contacting-mixing device utilizing internal circulation and having therewith an impeller, a circulation tube and (usually) an indirect heat exchanging tube bundle; an improved type of horizontal circulating, mixing, reaction vessel or contactor; in a horizontal contactor vessel where the impeller is received in lesser internal diameter shell and circulating tube zones, offsetting the cones of the outer shell and circulation tube downwardly at the impeller end of the vessel, thereby to cure fluid flow deficiencies by removing tee necessity of lifting upwardly into the impeller circulating liquids or fluids; reshaping both the circulation tube and outer shell of a horizontal contactor-type reaction vessel in the transition zone between the lesser internal diameter portions thereof conventionally housing the mixing and driving impeller and the greater internal diameter portions thereof conventionally (usually) including a large indirect heat exchanging tube bundle into an offset cone shaped, or offset frusto-conical configuration.

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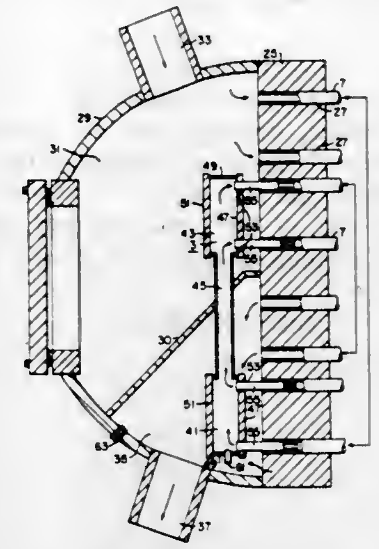
### 3,759,319
### METHOD FOR INCREASING EFFECTIVE SCAVENGING VENT STEAM WITHIN HEAT EXCHANGERS WHICH CONDENSE VAPOR INSIDE LONG TUBES
**Paul D. Ritland, Clifton Heights, Pa., and Charles C. Peake, Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 1, 1972, Ser. No. 248,913**

**Int. Cl. F01k** *17/00;* **F28f** *9/02;* **F28b** *1/00*

**U.S. Cl. 165—111** **10 Claims**

A device for scavenging condensate from long heat exchange tubes by recirculating the steam which is passed through one portion of a U-shaped tube bundle through another portion of the tube bundle and thus reducing the build-up of slugs of liquid in the tubes by increasing the velocity therethrough without reducing the heat transfer surface and also protecting the welds which seal the tubes to the tube sheet from thermal shocks and stresses by incorporating a thermal sleeve in the device which cooperates with the scavenging of condensate from the tube to provide optimum protection.



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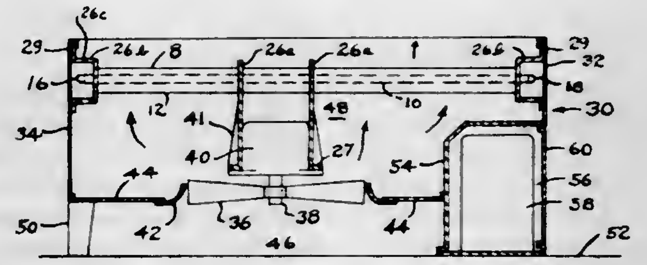
### 3,759,320
### COIL AS MOUNT FOR ASSOCIATED EQUIPMENT
**Russell H. Bullard, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.**

**Filed Feb. 3, 1971, Ser. No. 112,329**

**Int. Cl. F24h** *3/06*

**U.S. Cl. 165—122** **5 Claims**



A fin-tube heat exchange coil having heavy gauge plates connected to selected core tubes of a coil so that the plates act as rigid extensions within the centrodial area of a coil. The plates, different than tube sheets, may be used either to orient and mount equipment, for example a motor, in a fixed relation to the coil or to mount and support the coil from its center or ends in a fixed relation to its associated equipment. The fixed mounting relation to the coil can be at all four mounting quadrants, i.e.: top, bottom, front and rear or angled therein.

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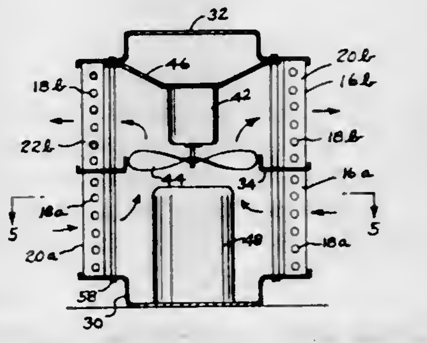
### 3,759,321
### CONDENSER COIL APPARATUS
**Roland A. Ares, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.**

**Filed Oct. 22, 1971, Ser. No. 191,873**

**Int. Cl. F28f** *13/12*

**U.S. Cl. 165—125** **9 Claims**



A refrigerant condenser coil having a fan arranged to draw fresh air through one section of the coil and blow the air through another section of the coil. Preferably the coil is annular in plan outline, and the fan is arranged in the space circumscribed by the annular coil. The circumscribed space can also contain a refrigerant compressor.

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### 3,759,322
### HEAT EXCHANGER

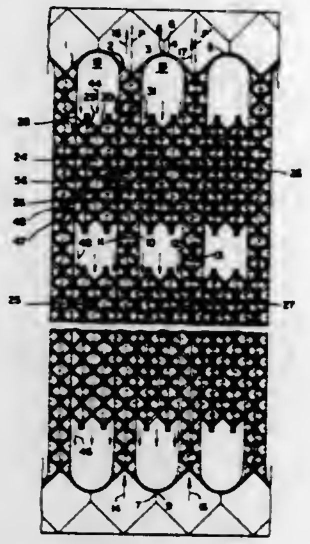
**Gamal El Din Nasser, Planegg, and Hans Waldmann, Olfratshausen, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany**

**Filed Sept. 17, 1971, Ser. No. 181,518**

**Claims priority, application Germany, Oct. 1, 1971, P 20 48 386.7**

**Int. Cl. F28f** *3/00*

**U.S. Cl. 165—166** **7 Claims**



A heat exchanger consists of a stack of rectangular corrugated plates whose corrugations run at angles of 45° to the longitudinal sides of the plates with bent edges of pairs of adjoining plates sealed together to define respective flow compartments for the heat exchange fluids. Each pair of contacting plates is rotated through 180° with respect to the adjoining plate so that the corrugations cross one another. Between the plates whose bent edges are turned toward one another, stacks of similarly corrugated plates are provided to constitute a regenerative heat exchange packing or heat-storage reservoir.

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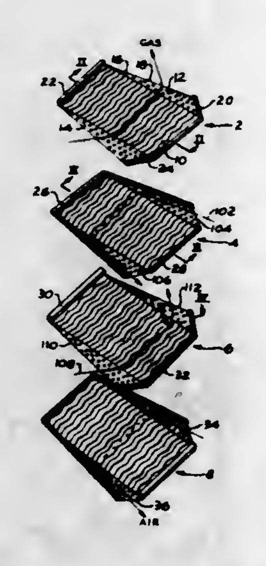
### 3,759,323
### C-FLOW STACKED PLATE HEAT EXCHANGER

**Harry J. Dawson, Dunlap; Wallace A. Hoftiezer, Peoria; David E. Keedy, Pekin; Ervin E. Mangus, Brimfield; Eugene K. Patton, and Joseph P. Grandfield, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Nov. 18, 1971, Ser. No. 199,928**

**Int. Cl. F28b** *3/04*

**U.S. Cl. 165—166** **8 Claims**



A primary surface plate-type heat exchanger has sheets with triangular zones on opposite sides of a central rectangular area stacked alternately to provide a C-shaped flow path for two fluids. Corrugations in the sheet surface serve to direct fluid flow and to support adjacent sheets.

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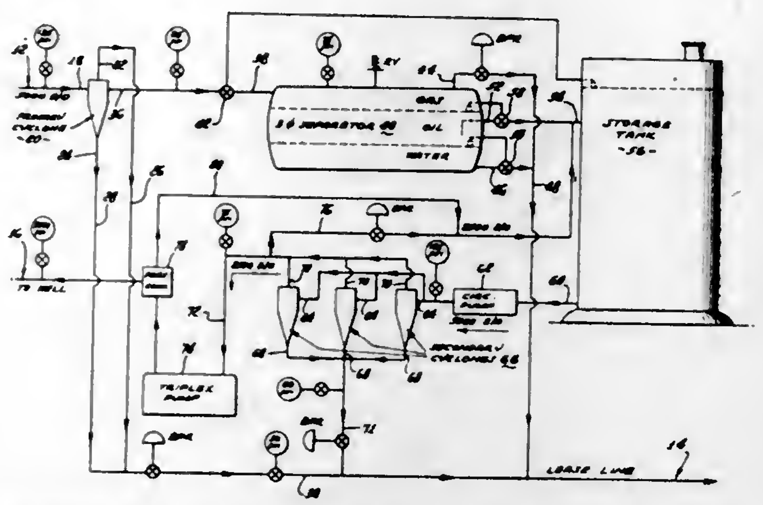
### 3,759,324
### CLEANING APPARATUS FOR OIL WELL PRODUCTION

**Mathew R. Mecusker, La Habra, Calif., assignor to Kobe, Inc., Huntington Park, Calif.**

**Filed May 25, 1972, Ser. No. 256,871**

**Int. Cl. E21b** *33/03, 43/00*

**U.S. Cl. 166—75** **4 Claims**



An apparatus for processing production fluid from an oil well in the field to obtain clean power oil for a fluid operated pump in the well. The apparatus is intended to service a single well, or at most a few wells, and includes components for removing solids, gas and water from the production fluid to obtain the clean power oil, which is pressurized by a triplex pump and delivered to the fluid operated pump in the well. The apparatus also includes a storage tank containing a sufficient reserve of clean power oil for circulating the fluid operated pump into and out of the well. A circulating pump having a capacity about twice that of the triplex pump continuously circulates the clean oil in the storage tank through parallel cyclones which remove any residual solids.

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### 3,759,325
### FOAM FOR SECONDARY AND TERTIARY RECOVERY

**William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio**

**Filed June 24, 1971, Ser. No. 156,553**

**Int. Cl. E21b** *43/22*

**U.S. Cl. 166—273** **26 Claims**

Oil is moved in a subterranean oil-bearing formation by displacing the oil with a foamed oil-external micellar dispersion. The micellar dispersion, before foaming, contains 2 – 90 percent by volume hydrocarbon, at least about 4 percent by volume surfactant, about 5 – 90 percent by volume aqueous medium, and optionally 0.01 – 20 percent by volume cosurfactant and/or 0.0001 – 5 percent by weight electrolyte. Useful gases for foaming the dispersion include air, natural gas, nitrogen, flue gases, etc. The dispersion can be foamed before it is injected into the formation or it can be foamed in situ of the formation. A mobility buffer fluid and/or drive fluid may be used to displace the foam toward a production well to recover crude oil therethrough.

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### 3,759,326
### SECONDARY OIL RECOVERY METHOD

**Charles A. Christopher, Houston; Joseph C. Allen, Bellaire, both of Tex., and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.**

**Filed Mar. 29, 1972, Ser. No. 239,387**

**Int. Cl. E21b** *43/22*

**U.S. Cl. 166—275** **8 Claims**

A method for the production of hydrocarbons from subterranean reservoirs which comprises having at least one production well and one injection well penetrating the reservoir and injecting a fluid into the injection well to drive the hydrocarbons to the production well. The fluid comprises an intimate mixture of colloidal silica and a material which is miscible with the hydrocarbons in the reservoir.

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### 3,759,327
### INTERNALLY CATALYZED WELL CONSOLIDATION METHOD

**James D. Carnes, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.**

**Division of Ser. No. 72,889, Sept. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 840,521, July 9, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,223**

**Int. Cl. E21b** *33/138*

**U.S. Cl. 166—295** **5 Claims**

A method is disclosed for permeably consolidating sands in a well wherein a consolidating fluid comprising a hydrocarbon carrier, an acid catalyzed resin or resin-forming material, sand and an acid-producing material are introduced into an incompetent earth formation where acid is produced by the acid-producing material, causing the resin to harden. Specific acid-producing materials are disclosed as catalysts which comprise surfactants which release acid upon heating and ammonium salts which hydrolyze to produce an acid.

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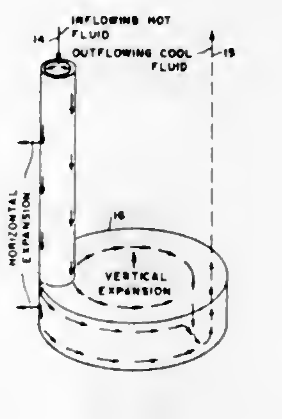
### 3,759,328
### LATERALLY EXPANDING OIL SHALE PERMEABILIZATION

**Russell C. Ueber; Peter Van Meurs, and Jerke R. Brew, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.**

**Continuation-in-part of Ser. No. 57,209, July 22, 1970, abandoned. This application May 11, 1972, Ser. No. 252,448**

**Int. Cl. E21b** *43/24*

**U.S. Cl. 166—303** **6 Claims**



An improved process of permeabilizing and recovering water soluble and/or heat sensitive minerals and hydrocarbons from an oil shale formation containing said minerals by forming a cavern and vertically expanding it by contacting the cavern roof with a hot aqueous fluid while also causing horizontal expansion of the cavern by contacting the oil shale therein with the same or different hot aqueous fluid at a relatively shallow depth and flowing down along a vertical section while dissolving said minerals and rubbling the oil shale and producing from a relatively deep location in the cavern an aqueous liquid containing dissolved minerals therein and subsequently or simultaneously injecting a pyrolyzing fluid into the rubbled oil shale cavern to effect pyrolysis of the oil shale and recovery of hydrocarbons therefrom.

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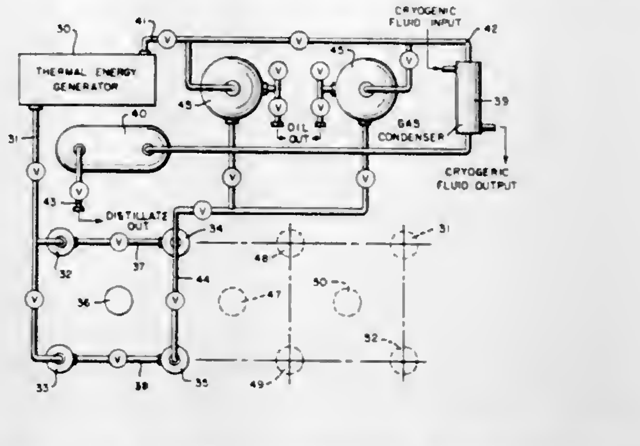
### 3,759,329
### CRYO-THERMAL PROCESS FOR FRACTURING ROCK FORMATIONS

**Sigmund L. Ross, Bronx, N.Y., assignor to Oscar Shuffman, Scarsdale, N.Y.**

**Continuation-in-part of Ser. No. 823,306, May 9, 1969, Pat. No. 3,581,821. This application May 28, 1971, Ser. No. 148,048**

**Int. Cl. E21b** *43/26*

**U.S. Cl. 166—308** **10 Claims**



A process for fracturing rock formations is disclosed using cryogenic fluids and exemplified in a process for the secondary recovery of oil wherein the major steps include: establishing a complex of elongated holes arranged in a predetermined geometric pattern which penetrate the oil production formation; injecting pressurized, superheated steam into the holes; fracturing the oil production formation using cryogenic techniques; and recovering the mobilized oil.

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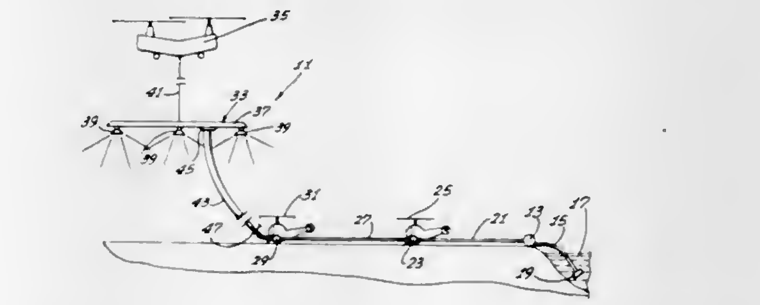
### 3,759,330
### FIRE EXTINGUISHING METHOD

**Thomas Milton Rainey, 18122 Bluebird Dr., Santa Ana, Calif., and Martin Schwartz, 4555 Sylmar Ave., Sherman Oaks, Calif.**

**Filed Aug. 7, 1969, Ser. No. 848,248**

**Int. Cl. A62c** *3/00*

**U.S. Cl. 169—2 R** **8 Claims**



A method of extinguishing fires comprising providing a source of fire retardant flowable material near ground level and in substantial quantities, and conveying the fire retardant material to an airborne distributor for distributing the flowable material. The distributor is supported by an airborne vehicle and the conduit between the source and the distributor is rapidly set up utilizing aerial conveyance of the conduits.

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### 3,759,331
### FIRE PROTECTION SYSTEM UTILIZING DRY PIPES NORMALLY MAINTAINED IN A VACUUM

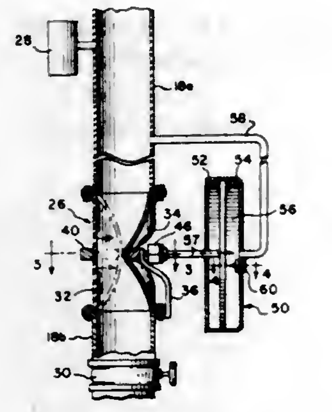
**William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.**

**Filed Apr. 27, 1972, Ser. No. 248,090**

**Int. Cl. A62c** *35/00*

**U.S. Cl. 169—17** **9 Claims**

A fire protection system in which a plurality of extinguishant discharge heads are disposed in elevated position in a space to be protected from fire and are connected by a piping system for supplying extinguishant to the heads. Flow of extinguishant to the heads is normally prevented until a predetermined increase in fluid pressure is affected in the piping system in response to a fire condition in the space.



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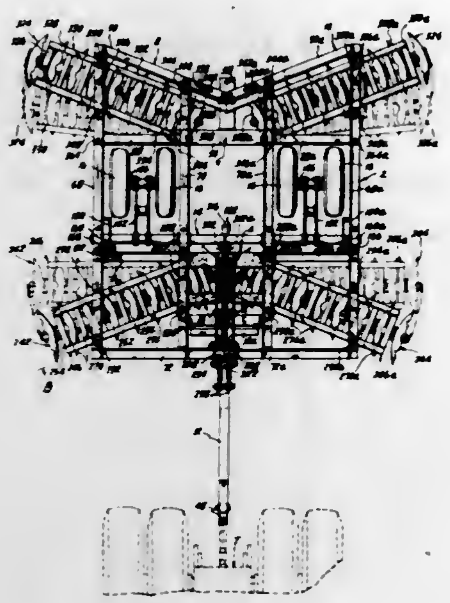
### 3,759,332
### EXTRA HEAVY DUTY MULTI-DISC HARROW WITH AUTOMATIC LEVEL CONTROL

**Jackson P. Robertson, Sr., Rt. 1, Box 218, Steens, Miss.**
**Filed Dec. 9, 1970, Ser. No. 96,562**
**Int. Cl. A01b** *63/11*
**U.S. Cl. 172—239** **7 Claims**



Agricultural machine adaptable for use as a multi-disc harrow having a longitudinally rigid, but transversely and diagonally flexible main frame assembled from prefabricated front, rear, left and right frame sections, each of which sections includes longitudinal and transverse components welded together. The front and rear sections are disposed between the left and right sections at the forward and rear ends thereof. The sections are joined together by bolts, instead of being welded to each other, to provide the aforesaid flexibility, while eliminating failure in materials and welded joints which would occur if the frame sections were welded together.

The main frame assembly is supported by a retractable wheel carriage assembly wherein the wheels are adjustable to raise the frame for transport, or to control the depth of operation of the implements carried by the frame. A leveling mechanism is interposed between the carriage assembly and a draw bar connected to the front frame section and automatically functions to maintain the main frame level with the ground at all times.

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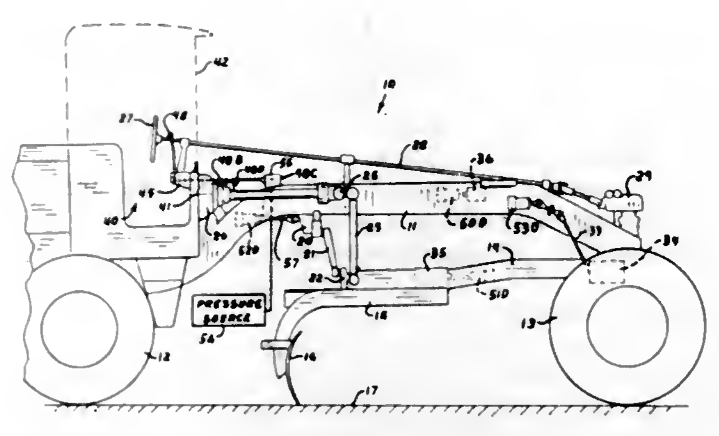
### 3,759,333
### HYDRAULIC CONTROL SYSTEM FOR ROAD GRADERS

**Theodore Rivinius, 1322 N. 4th St., Bismarck, N. Dak.**
**Filed Apr. 12, 1971, Ser. No. 133,291**
**Int. Cl. E02f** *3/12*
**U.S. Cl. 172—781** **4 Claims**



A hydraulic control system for road graders wherein normal mechanical control clutches are replaced with control levers which operate hydraulic valves located outside of the operators compartment for the grader, and which in turn control hydraulic motors connected to existing gear boxes and rotary drives for the various grader operation.

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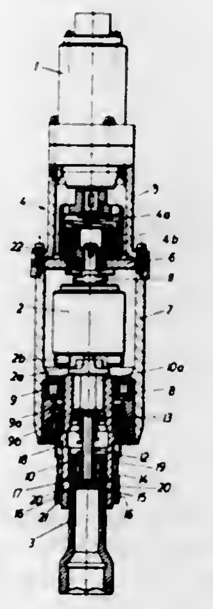
### 3,759,334
### IMPACT SOCKET WRENCH TOOL

**Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria**
**Filed Nov. 3, 1971, Ser. No. 195,278**
**Claims priority, application Austria, Dec. 17, 1970, A 11350/70**
**Int. Cl. B25d** *15/00*
**U.S. Cl. 173—22** **12 Claims**



A socket wrench capable of reciprocatory sliding motion in the direction of its axis is rotatable thereabout by a preferably hydraulic driving motor. A vibratory impact device is mounted between the motor and the wrench to impart reciprocatory impacts to the rotating wrench, and a slip clutch between the motor and the impact device prevents vibrations from reaching the motor.

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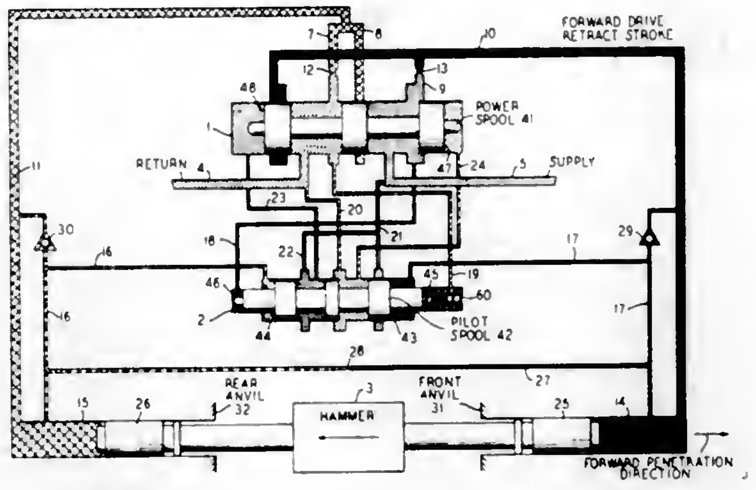
### 3,759,335
### MOLE HAMMER-CYCLE CONTROL

**James Christopher Coyne, New Providence, N.J., assignor to Bell Laboratories Incorporated, Murray Hill, N.J.**
**Filed Dec. 30, 1971, Ser. No. 214,342**
**Int. Cl. E21b** *3/12*
**U.S. Cl. 173—91** **5 Claims**



This disclosure describes a scheme for switching the propelling fluid forces alternately to opposite sides of a Mole impacting hammer. The scheme is grounded on valving structures for sensing fluid pressure differences (1) between supply and return pressure and (2) on opposite sides of the hammer; and on orifice means for generating a controlled difference between (1) and (2). By selecting operating parameters in this system, the fluid force switching is always actuated at a point in the retract portion of the cycle so as to assure maximum hammer stroke.

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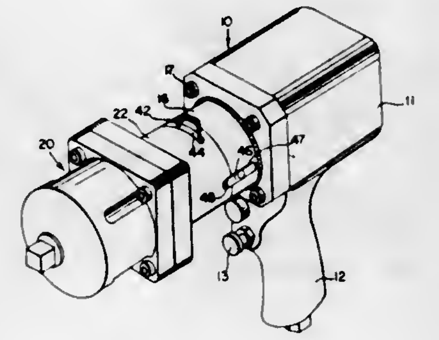
### 3,759,336
### INTERCHANGEABLE POWER OPERATED TOOLS

**David Louis Marcovitz, 2022 Valencia St., and Harold Ray Vocker, 109 Kentucky St., both of Monroe, La.**
**Filed Jan. 21, 1972, Ser. No. 219,682**
**Int. Cl. B23b** *45/14*
**U.S. Cl. 173—163** **2 Claims**



Power operated tools of several types may be detachably connected to a portable power unit by means of complementary coupling members on each tool and a power unit. The coupling members in the form of collars on the power unit and a tool telescope together and the driving shaft of the power unit moves axially into driving engagement with a driven shaft of the tool. A detachable, spring biased fastener provides for quickly changing from one tool mounted on the power unit to a tool of another type.

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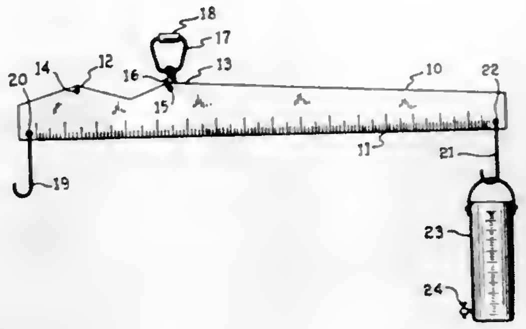
### 3,759,337
### FISH SCALE

**Donald M. Luedke, 2605 Maple Hill Ln., Brookfield, Wis., and Robert J. Tongas, 420 Ravenswood Cir., Waukesha, Wis.**
**Filed Dec. 4, 1972, Ser. No. 311,753**
**Int. Cl. G01g** *23/14, 1/18*
**U.S. Cl. 177—172** **4 Claims**



A fish scale having handle means for suspending the beam of the scale with a hook adapted for insertion into either one of two apertures in said beam; a hook depending from one end of the beam for holding a fish to be weighed, a transparent fluid receptacle dependent from the opposite end of the beam, a filling aperture at the top of the receptacle, weight indicia for showing weight at various levels of fluid within the receptacle, and means at the lower end of the receptacle for retaining or releasing portions of said fluid from the receptacle.

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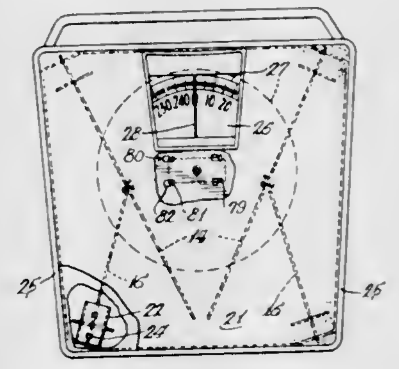
### 3,759,338
### DIAL MOUNTING FOR WEIGHING SCALE

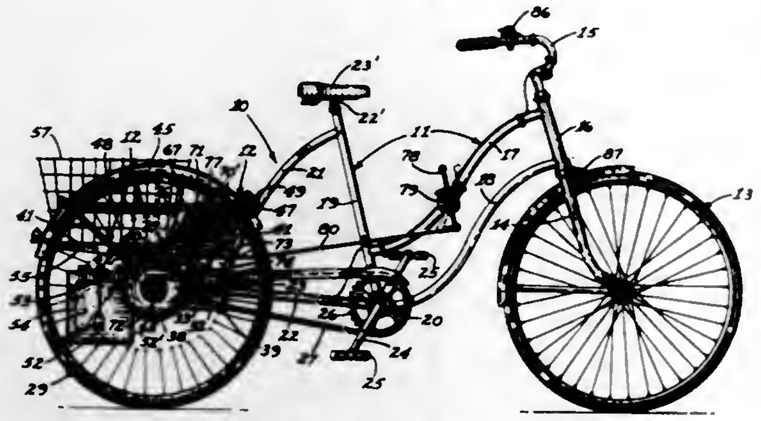
**Svend A. H. Petersen, and Padraic E. Neary, both of Co. Sligo, Ireland, assignors to Hanson Limited, Sligo, Ireland**
**Filed June 1, 1972, Ser. No. 258,839**
**Int. Cl. G01g** *21/18*
**U.S. Cl. 177—173** **7 Claims**



An indicating device for a platform weighing scale including a rotatable shaft having a pinion fixed thereon adapted to engage a reciprocable rack, a dial support plate mounted on the shaft for rotation therewith, a dial mounted on the support plate including weight indicating indicia, interlocking bayonet slots and locking lugs on the dial and support plate for holding the dial on the plate, and a central aperture in the dial for receiving an end portion of the shaft when the dial is locked on the support plate.

### 3,759,339
### DUAL PROPULSION TRICYCLE

**Vernon J. Farrow, 143 N. Spencer, Mesa, Ariz.**
**Filed July 18, 1972, Ser. No. 272,957**
**Int. Cl. B62k** *11/00*
**U.S. Cl. 180—27** **6 Claims**



A three-wheeled tricycle which may be manually propelled by the operator or quickly converted to electrical power propulsion by the simple manipulation of suitable controls by the operator.

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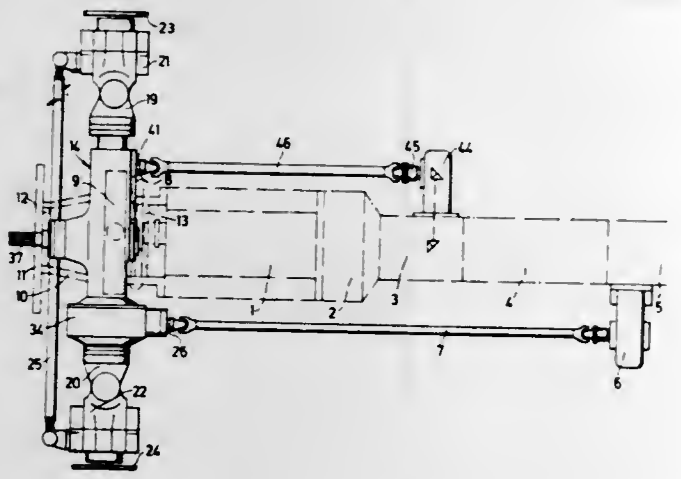
### 3,759,340
### AUTOMOTIVE VEHICLE WITH FRONT POWER TAKE-OFF FOR POWER-DRIVEN IMPLEMENTS

**Thomas Schilter, Stans, Switzerland, assignor to Maschinenfabrik Schilter & Co., Stans, Switzerland**
**Filed Nov. 30, 1971, Ser. No. 203,333**
**Claims priority, application Switzerland, Dec. 2, 1970, 17806/70**
**Int. Cl. B60k** *17/28*
**U.S. Cl. 180—53 FE** **16 Claims**



An automotive vehicle wherein the engine block supports a plate for removable power-driven implements and a pivotable front axle whose housing serves as a means for journalling therein the rotary output element of a front power take-off for such implements. The input element of the power take-off receives torque from the output shaft of the engine in response to engagement of a clutch which connects the output shaft with the wheel transmission. The output element can be mounted in two coaxial trunnions of the front axle housing on in parallelism with the trunnions. Such mounting of the output element insures that the latter is invariably located at a predetermined distance from the torque-receiving input member of the implement which is mounted in front of the engine block.

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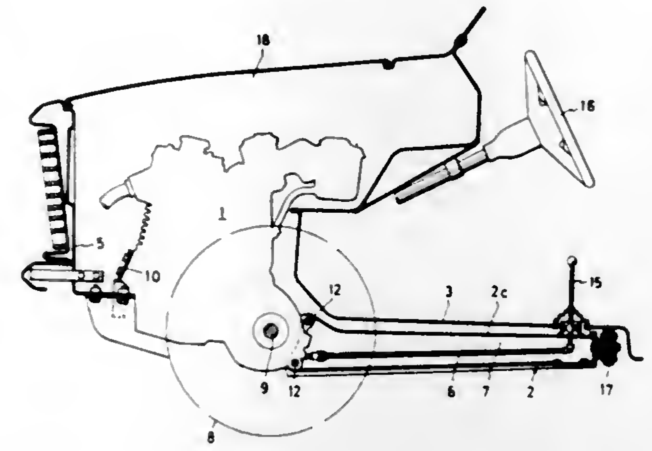
### 3,759,341
### SUPPORT APPARATUS FOR A POWER UNIT IN A MOTOR VEHICLE

**Hideo Takeda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**
**Continuation of Ser. No. 860,670, Sept. 24, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,840**
**Claims priority, application Japan, Sept. 24, 1968, 43/68870**
**Int. Cl. B60k** *5/12*
**U.S. Cl. 180—64 R** **7 Claims**



A vehicle power unit constituted by an internal combustion engine and a transmission is supported at one end from the wall of the engine compartment of the vehicle and from the other end by a T-shaped support having a hollow longitudinal arm and transverse arms supported at their free ends from the vehicle floor in the region of side sill members. The hollow longitudinal arm can receive a speed control lever which connects to the power unit.

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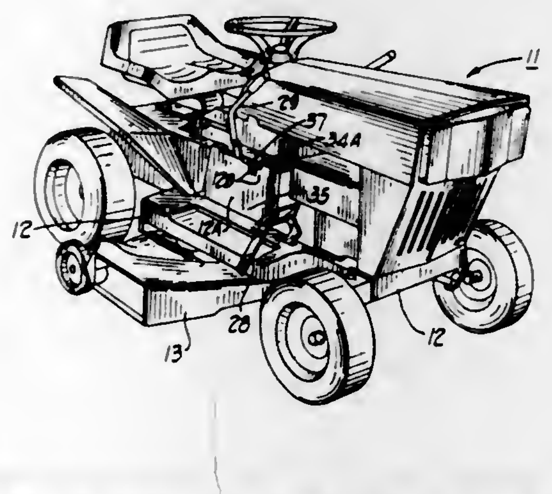
### 3,759,342
### VARIABLE SPEED DRIVE HAVING SPEED LIMITING MEANS

**Gunter F. Plamper, Lakewood, Ohio, assignor to MTD Products Inc., Cleveland, Ohio**
**Filed Feb. 18, 1971, Ser. No. 116,443**
**Int. Cl. B60k** *17/02*
**U.S. Cl. 180—70 R** **2 Claims**



A variable speed drive for a tractor or the like having a pulley-and-belt driving arrangement between engine and driving wheel providing adjustable variation in the speed and adjustable means for limiting the degree of variation in the speed. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.

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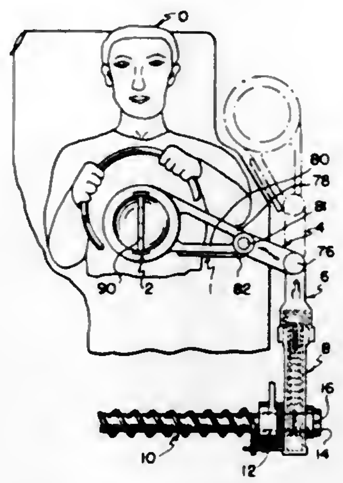
### 3,759,343
### VEHICLE SAFETY DEVICE

**James Monaghan, 11849 Clifton Blvd., Apt. 204-A, Lakewood Gardens, Lakewood, Ohio**
**Continuation-in-part of Ser. No. 163,379, July 16, 1971. This application May 4, 1972, Ser. No. 250,413**
**Int. Cl. B60n** *21/10*
**U.S. Cl. 180—91** **9 Claims**



The disclosure relates to a vehicle occupant restraint device. The device comprises a resilient pad for restraining the occupant, a transversely extending rigid support crossmember for disposing the pad in spaced proximity to the occupant's torso and a horizontal adjustment mechanism which permits adjustment of the horizontal spacing between the occupant's torso and the pad while preserving the disposition of the pad in an attitude parallel to the transverse general plane of the occupant's torso.

The device also may include an automatic operation system for positively restraining an occupant on accident impact. This automatic operation system may include means for facilitating disengagement of the adjustment mechanism during its operation.

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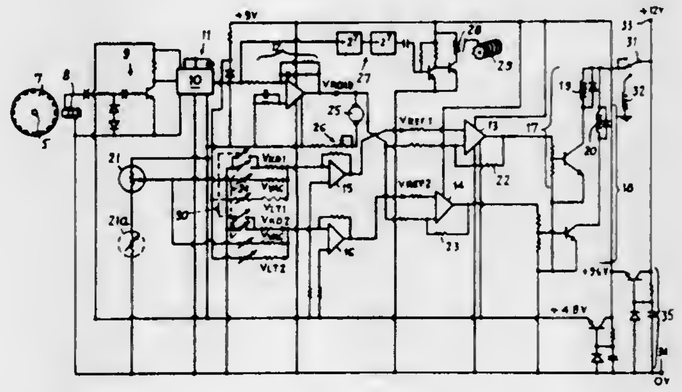
### 3,759,344
### SYSTEMS FOR LAND VEHICLES

**Timothy John Blee; Lawrence Edward Hyde, and John Noddings, all of Warwickshire, England, assignors to Associated Engineering Limited, Warwickshire, England**
**Filed Feb. 25, 1971, Ser. No. 118,609**
**Int. Cl. G05d** *13/62*
**U.S. Cl. 180—105 E** **3 Claims**



The invention relates to a land vehicle, and in particular to an automatic transmission for an automobile or other road vehicle. An electronic system is provided which senses the vehicle road speed and the torque of the vehicle engine, compares electrical signals corresponding to these variables, and controls changes in gear ratios of the transmission in dependence upon this comparison.

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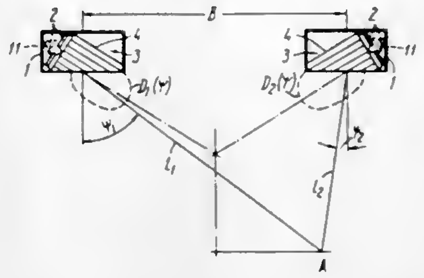
### 3,759,345
### STEREOPHONIC SOUND-REPRODUCING SYSTEM

**Andrei Vladimirovich Borisenko, prospekt Metallistov 80, Korpus 3, kv. 384, Leningrad, U.S.S.R.**
**Filed Dec. 22, 1971, Ser. No. 210,892**
**Int. Cl. G10k** *13/00;* **H04r** *1/28*
**U.S. Cl. 181—31 B** **3 Claims**



A stereophonic sound-reproducing system comprising two sound-reproducing sets separated by a base distance and each having a high-frequency section and a mid frequency section. The mid frequency section is provided with an acoustic focuser, the acoustic axis of which is so oriented towards the base line as to make the perception of the spatial sound panorama practically independent of the listener's position on a line parallel to the base line.

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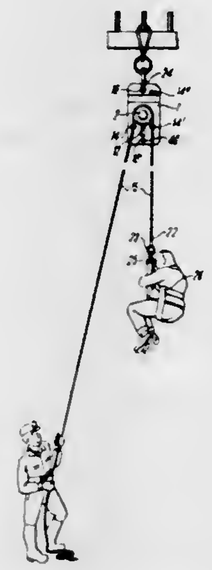
### 3,759,346
### MULTIPURPOSE DEVICE FOR MOVING PERSONS OR LOADS OVER A HEIGHT DIFFERENCE

**Otto Brda, 10 Breitenau, Bad Kohlgrub, Germany**
**Filed June 28, 1971, Ser. No. 157,591**
**Claims priority, application Germany, Dec. 31, 1970, P 20 64 761.4**
**Int. Cl. A62b** *1/08*
**U.S. Cl. 182—7** **12 Claims**

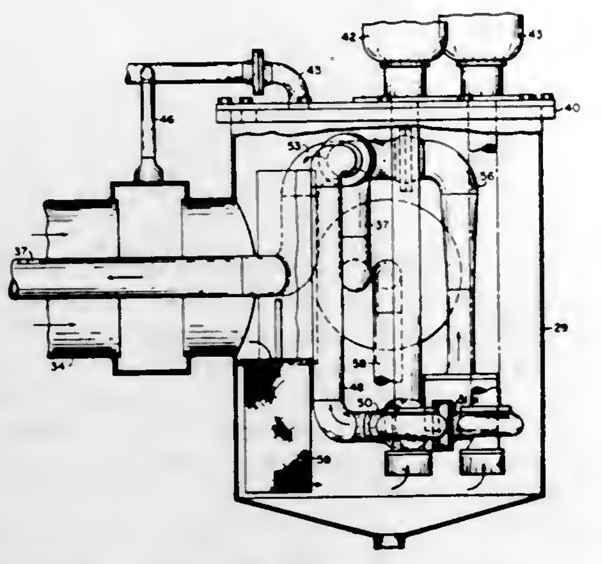


A device for roping down persons and/or loads from a certain height above the ground, comprising a supporting member, on which a cylinder is supported by a free-wheeling bearing such that the cylinder can be rotated in one direction only and its rotation is blocked in the other direction of rotation. A rope is wound around the periphery of said cylinder at least one and a half times and on one end thereof there are provided means for connecting a load or person, this one end acting on the cylinder in the direction, in which the rotation of the cylinder is blocked. Thus, by gradually releasing the other end of the rope a load or person can be lowered down to the ground and a braking action is effected by friction generated between the rope and the periphery of the cylinder. In a second embodiment, the person to be roped down is connected to the supporting member, one end of the rope is connected to the place, from which the person or load is to be roped down, and the rope is wound around the cylinder at least once.

### 3,759,347
## LUBRICATION SYSTEM

**Michael Csanady, Jr., Ridley Park; Joseph Sloan, Media, and Cornelius S. Goldsborough, Jr., Glen-Riddle, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Jan. 18, 1972, Ser. No. 218,673**
**Int. Cl. F01m** *5/00*
**U.S. Cl. 184—6 R** **8 Claims**



A lubrication system for a machine having bearings rotatably supporting a journal such as a turbo-generator unit. The system comprises an oversized cylindrical pipe, hereinafter defined as the guard pipe, in which the pressurized lubricant conduits are housed. The guard pipe is of sufficient size to contain the needed lubricant for the bearings of the turbo-generator unit and thereby eliminate the reservoir.

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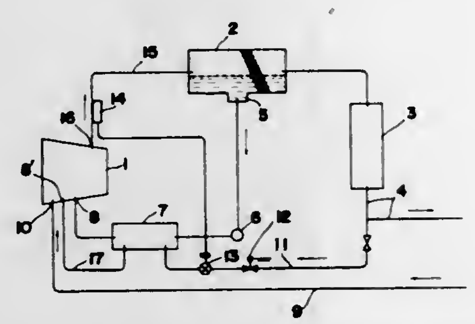
### 3,759,348
## METHOD OF COMPRESSING CHLORINE GAS

**Keisuke Kasahara, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan**

**Filed Nov. 8, 1971, Ser. No. 196,503**
**Claims priority, application Japan, Nov. 10, 1971, 46/98905**
**Int. Cl. F16n** *7/32*
**U.S. Cl. 184—6.23** **3 Claims**



A method of compressing chlorine gas characterized by comprising the step of blowing cooled fluon oil or concentrated sulfuric acid into a screw compressor for lubricating and seal said compressor when chlorine gas is compressed by the screw compressor.

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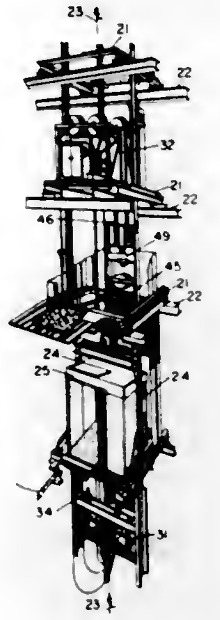
### 3,759,349
## ELEVATOR SYSTEM WITH TEMPORARY HOISTWAY STRUCTURE AND METHOD FOR USE THEREOF

**Joseph Edward Sieffert, New Hyde Park, N.Y., assignor to Otis Elevator Company, New York, N.Y.**

**Filed Mar. 13, 1972, Ser. No. 234,058**
**Int. Cl. B66b** *9/00*
**U.S. Cl. 187—2** **9 Claims**

An elevator system in which a temporary hoistway is formed in an open air shaft of a building under construction. The hoistway members, which in turn support the guide rails, are connected to the building members in a manner that, upon forces being exerted on the guide rails, these forces are distributed to several levels of the building. The buffer assembly for protection against downward overtravel is connected to the rails and is movable upward as construction progresses. A method of using this arrangement to provide passenger elevator service into unaligned steelwork of a building under construction is also described.



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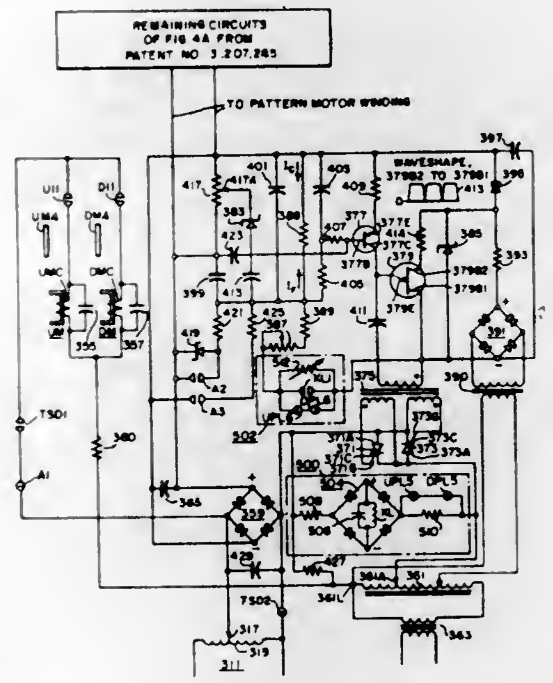
### 3,759,350
## ELEVATOR SYSTEM

**William R. Caputo, Wyckoff, and William M. Ostrander, Hackensack, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 30, 1972, Ser. No. 258,114**
**Int. Cl. B66b** *1/30*
**U.S. Cl. 187—29 R** **11 Claims**


REMAINING CIRCUITS OF FIG 4A FROM PATENT NO 3 207,265
TO PATTERN MOTOR WINDING
WAVESHAPE, 37982 TO 37981

An elevator system which automatically reduces the rate of change of acceleration when an elevator car is requested to decelerate before the car reaches the end of its normal acceleration mode. When a stop request is initiated while the car is still accelerating, a modification circuit changes the normal acceleration schedule to reduce the rate of rise of the speed pattern signal. A delay circuit delays the operation of the modification circuit to insure that the modification circuit does not substantially lengthen the time required for the car to reach the landing at which it is to stop.

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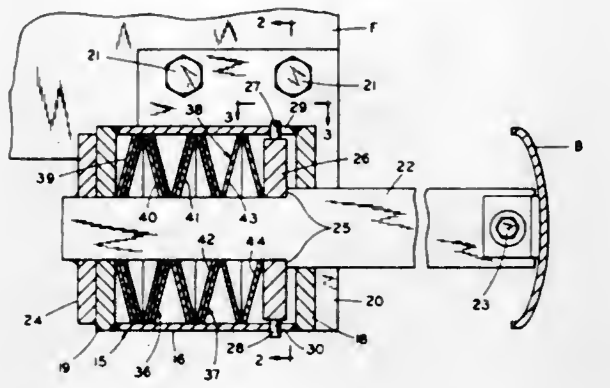
### 3,759,351
## FRANGIBLE ENERGY ABSORBING BUMPER MOUNTING DEVICE

**Edward B. Purple, Joliet, Ill., assignor to Nash Bros. Co., Joliet, Ill.**

**Filed July 12, 1971, Ser. No. 161,636**
**Int. Cl. B60r** *19/02;* **B61g** *11/16;* **F16f** *7/12*
**U.S. Cl. 188—1 C** **4 Claims**



A frangible energy absorbing device particularly suitable for use with automobile bumpers, towing hitches, and the like includes an outer casing having a perimetric side wall and a pair of end plates. An elongated shaft extends slidably through the end plates and carries a thrust plate within the casing which extends generally transversely to the shaft. A plurality of energy absorbing plates such as Belleville washers or longitudinally extending spaced-apart plates are interposed between the thrust plate and the other end plate of the casing. The thrust plate includes a shear pin which extends through an opening in the side wall of the casing and which can withstand forces of normal magnitude applied to the shaft but which shears in the event of impact. When the pin shears, the shaft moves toward the other end plate of the casing to deform the plates, thereby absorbing the energy of impact.

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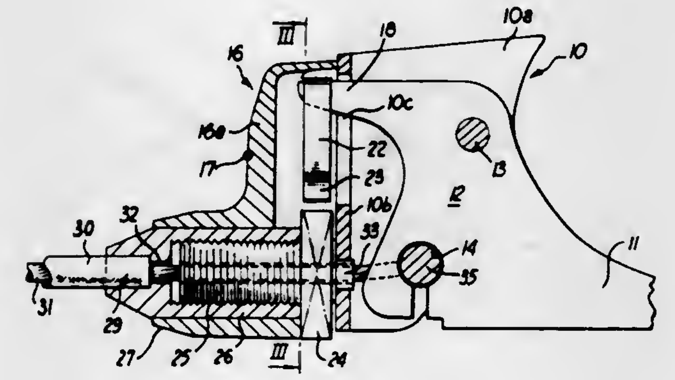
### 3,759,352
## CYCLE BRAKE HAVING BRAKE ADJUSTING MECHANISM

**John Geoffrey Toplis, Beeston, Nottinghamshire, England, assignor to Raleigh Industries Limited, Nottingham, England**

**Filed May 12, 1971, Ser. No. 142,543**
**Int. Cl. B62l** *3/02*
**U.S. Cl. 188—24** **9 Claims**

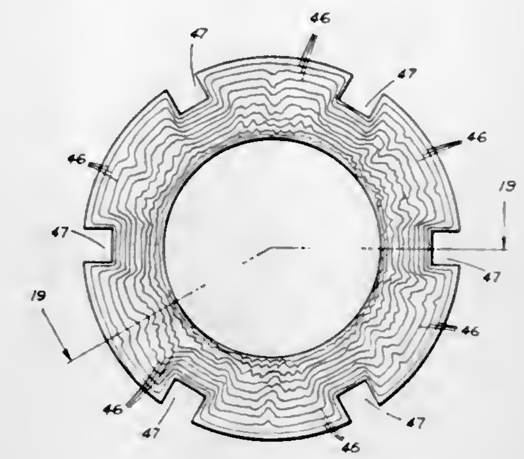


A cycle brake for applying a braking action to the wheel of a cycle through a flexible cable and having an adjustable support for the cable sheath that is automatically movable to compensate for wear of the cycle brake elements upon pivotal movement of a brake lever beyond a predetermined point during a braking action.

### 3,759,353
## DISC BRAKE CONTAINING REINFORCED CARBON BODIES

**Glenn R. Marin, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.**

**Division of Ser. No. 48,063, June 22, 1970, Pat. No. 3,712,428. This application Sept. 7, 1971, Ser. No. 178,393**
**Int. Cl. F16d** *55/36*
**U.S. Cl. 188—71.5** **4 Claims**



The strength of circumferentially wound carbon-fiber reinforced carbon bodies is vastly improved if the reinforcing fibers are wound loosely, to a width greater than the axial thickness of the desired carbon body, and then axially compressed to cause radial overlapping of the carbon fibers. This technique is particularly useful for carbon bodies having an irregular perimeter, such as brake discs containing keyways or other indentations for bearing circumferential stress, since the reinforcing fibers adjacent to the stress-bearing perimeter can be made to conform substantially to the shape of the perimeter and the indentations therein.

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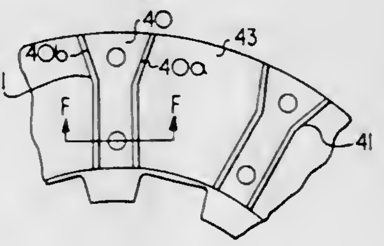
### 3,759,354
## BRAKE DISC STRUCTURE

**Frederick S. Dowell, and Benedict P. Healy, both of Coventry, Warwickshire, England, assignors to Dunlop Limited, London and Birmingham, England**

**Filed Mar. 1, 1972, Ser. No. 230,632**
**Claims priority, application Great Britain, Mar. 2, 1971, 5,738/71**
**Int. Cl. F16d** *65/12*
**U.S. Cl. 188—218 XL** **10 Claims**



An annular brake disc having an annular braking member on which at least one radially-extending face is furnished with a friction facing which is provided by a series of segmental-shaped friction pads that are secured to the braking member. Each friction pad is constructed of a soft or brittle material such as carbon and has at least one substantially straight edge. In order to transmit braking loads, this edge is chamfered so as to fit into a corresponding inclined undercut abutment face in the member, of which the following is a specification.

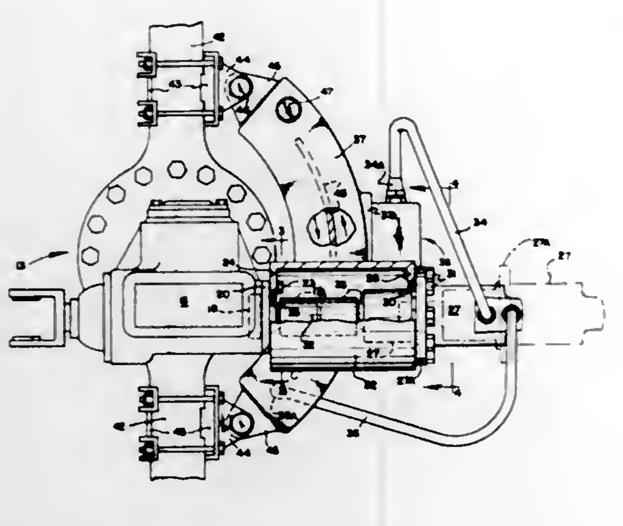
### 3,759,355
### MOTION RETARDING SYSTEM FOR TRUCKS

**John D. Hale; Frank L. Hale, both of P.O. Box 11, Swisshome, and Samuel J. Hale, Jr., Star Rt. Box 33, Chesire, all of Oreg.**

**Filed Feb. 7, 1972, Ser. No. 223,891**

**Int. Cl. F16d** *57/00*

U.S. Cl. 188—290 **2 Claims**



A supplementary braking system for trucks for operation in direct coupled engagement with the vehicles drive shaft. A base, in attachment with a differential of the truck, mounts a hydraulic pump coupled in an axial manner with a truck drive shaft component. The discharge flow from said pump enters a valve housing wherein valve components may selectively regulate fluid flow to load or unload the pump. A reservoir is located adjacent an axle assembly of the truck and receives an airstream flow for cooling purposes.

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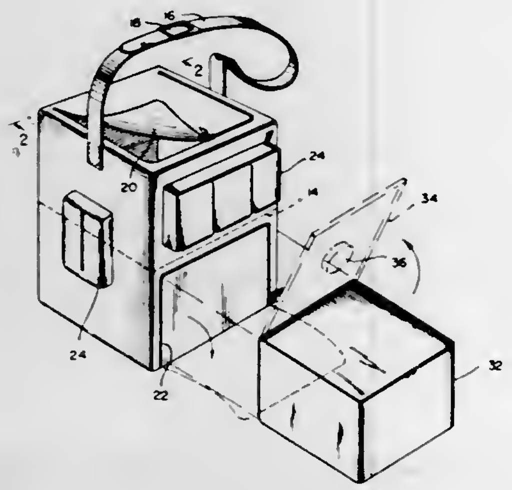
### 3,759,356
### CARRIER FOR SOILED DIAPERS

**John H. Bostick, and Ivory S. Bostick, both of San Francisco, Calif., assignors to The Raymond Lee Organization, Inc., New York, N.Y.**

**Filed Dec. 16, 1971, Ser. No. 208,574**

**Int. Cl. A45c** *11/00*

U.S. Cl. 190—42 **3 Claims**



A bag adapted to be carried by a strap and having two main compartments. The first compartment carries food, diapers and the like. The second compartment carries a pail for receiving soiled diapers with a lid carrying a deodorant. The bag can also have a plurality of exteriorly disposed zippered pockets.

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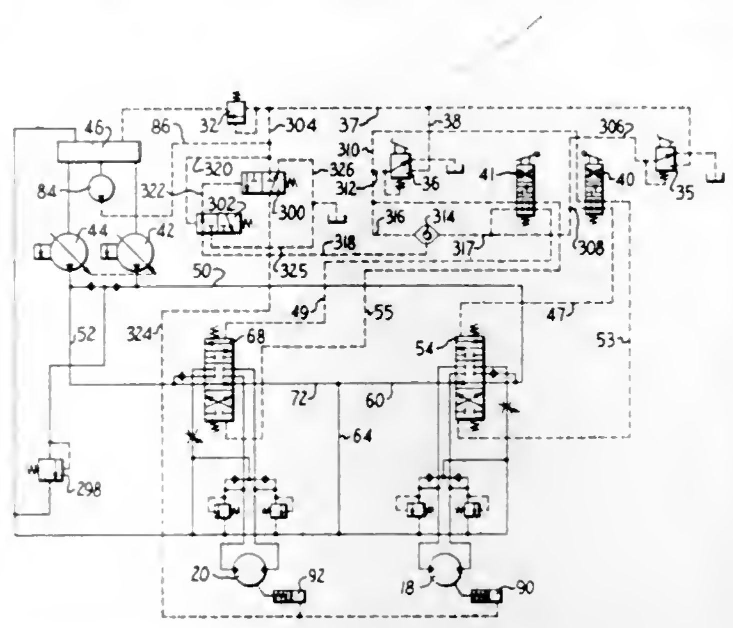
### 3,759,357
### BRAKE SAVER CIRCUIT

**Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Mar. 23, 1972, Ser. No. 237,349**

**Int. Cl. B60k** *29/02*

U.S. Cl. 192—3 R **4 Claims**



There is disclosed a brake control system in conjunction with drive control system of a vehicle wherein said systems are interconnected for simultaneous release of spring applied brakes upon activation of the drive control circuit, providing control pressure is adequate for full release of the brakes.

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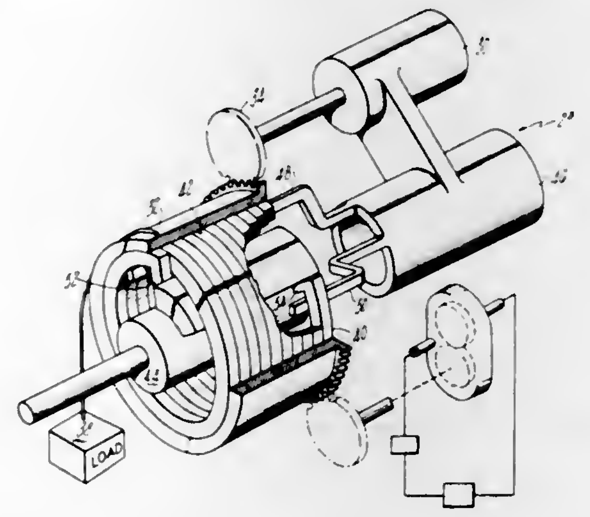
### 3,759,358
### BIDIRECTIONAL LOCKING DEVICE

**Raymond N. Queneville, Suffield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Division of Ser. No. 58, Jan. 2, 1970, Pat. No. 3,631,951. This application Oct. 4, 1971, Ser. No. 186,380**

**Int. Cl. B60t** *7/12*

U.S. Cl. 192—8 C **5 Claims**



A bidirectional locking device for an output shaft which has a load impressed thereon is provided by a single spring means placed between the output shaft and a fixed member for normally locking the output shaft and preventing its rotation in either direction; drive means are operatively connected to the single spring means for unlocking the spring means and for driving the output shaft.

### 3,759,359
### WIRE MATRIX PRINTER HEADS

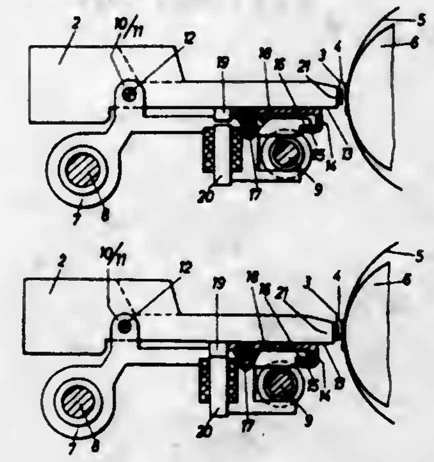
**Dieter Stellmach, Niederstotzingen, Germany, assignor to Walther Buromaschinen, GmbH, Gerstetten, Germany**

**Filed Feb. 1, 1972, Ser. No. 222,469**

**Claims priority, application Germany, Feb. 19, 1971, P 21 08 006.8**

**Int. Cl. B41j** *3/02*

**U.S. Cl. 197—1 R** **4 Claims**



A wire matrix printer head has the recording ends of wires positioned to form a matrix of five vertical columns of seven points each. The head is pivotally mounted on a carriage moveable in the direction of printing and an electromagnet on the carriage attracts an armature plate on the printer head to tilt the printer head downwardly to print certain characters so that the vertical range of printing of the recording ends is extended beyond the seven points of the vertical columns of the matrix.

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### 3,759,360
### APPARATUS FOR THE CONTROL OF TYPE PRINTING SEQUENCES

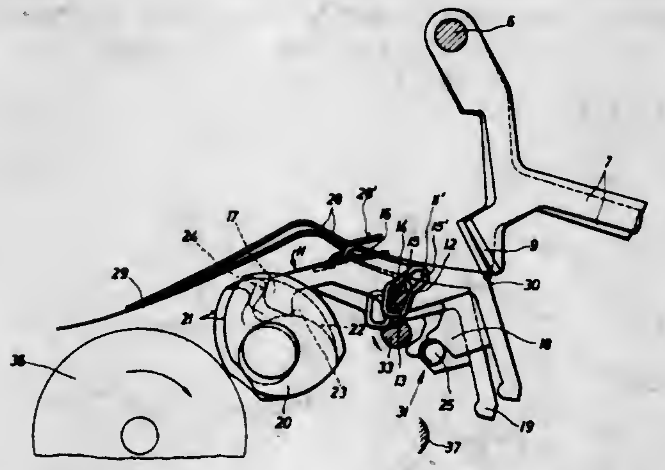
**Albert Rix, Wilhelmshaven; Georg Werner, Heidmuhle, and Hans Euchs, Wilhelmshaven, all of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany**

**Filed May 26, 1970, Ser. No. 40,514. The portion of the term of this patent subsequent to Feb. 6, 1990, has been disclaimed.**

**Claims priority, application Germany, May 31, 1969, P 19 27 963.1**

**Int. Cl. B41j** *23/08*

**U.S. Cl. 197—17** **7 Claims**



Apparatus for controlling type printing sequences of manually actuatable, power-driven typwriters and similar machines having type printing mechanisms and key levers, including a plurality of releasably mounted intermediate members, each of which is movable between a rest mode and a release mode and arranged to actuate an associated type printing mechanism when its respective key lever is depressed. Each intermediate member has a spring member biasing it toward a ball block, into which one released member at a time may drop. When an intermediate member is released while another intermediate member is in the ball block, the biasing force of the released intermediate member supplied by its spring member holds it in storage until the ball block is cleared.

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### 3,759,361
### CARRIAGE RETURN AND LINE SPACE MECHANISM

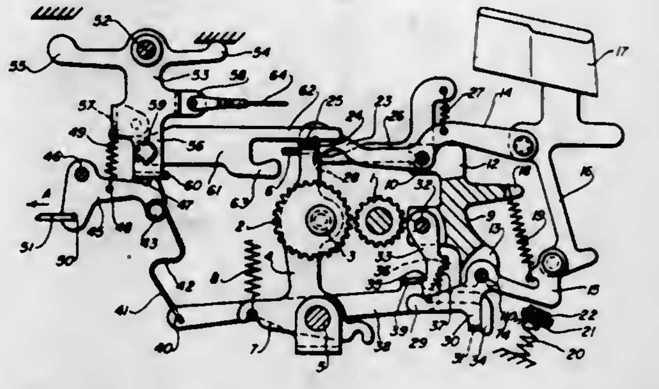
**Manfred Link, Nuernberg, Germany, assignor to Triumph Werke, Nuernberg, Germany**

**Filed Nov. 2, 1970, Ser. No. 86,235**

**Claims priority, application Germany, Nov. 3, 1969, P 19 55 198.5**

**Int. Cl. B41j** *19/68*

**U.S. Cl. 197—65** **2 Claims**



Mechanism to effect line spacing followed by carriage return movement via clutch and drawband in response to carriage return key depression is made conditionable upon carriage return key depression to a second limit to allow line spacing operation only and at any carriage position within set margins.

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### 3,759,362
### APPARATUS FOR TRANSPORTING A TYPE SUPPORT CARRIAGE IN TYPEWRITERS OR SIMILAR OFFICE MACHINES

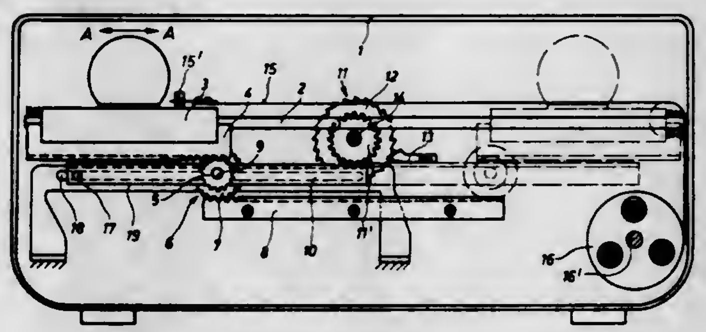
**Paul Koch, Wilhelmshaven, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany**

**Filed Feb. 2, 1972, Ser. No. 222,811**

**Claims priority, application Germany, Feb. 26, 1971, P 21 09 208.0**

**Int. Cl. B41j** *19/00*

**U.S. Cl. 197—82** **6 Claims**



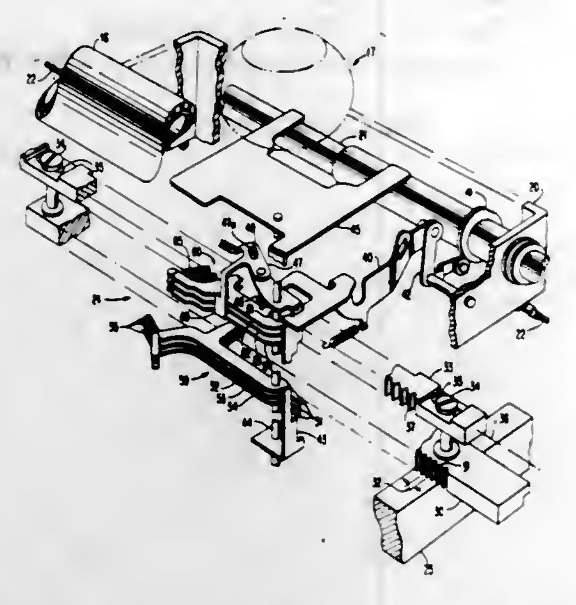
A device for transporting a type support carriage in typewriters or similar office machines including a stepping mechanism which advances the support carriage in steps in the typing direction. The stepping mechanism includes a first toothed rail mounted on the machine frame and displaceable relative thereto. A second toothed rail is provided which is also fastened to the machine frame along with a third toothed rail which is fastened to the support carriage. A sprocket wheel assembly is also provided with the first toothed rail engageable through the sprocket assembly with the third toothed rail in a path translating manner while the sprocket assembly is in engagement with the second toothed rail.

## 3,759,363

## LETTER SPACE CONTROL MECHANISM

**William Harold Castle, Winchester; Harry Michael Jacobs, and Lowell Thomas Sloan, both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 22, 1971, Ser. No. 210,874**
**Int. Cl. B41j** *19/58*
**U.S. Cl. 197—84 R** **10 Claims**



A set of selectively active stop pins cooperate with measured openings in a control plate to limit letter feed motion in either the forward or reverse direction. The measuring plate opening includes two effective portions that are alternately selectable to provide two different measuring calibrations. A preferred alternate calibration is known in the art as "EXPAND" where all measurements are increased by a fixed amount. Fixed increment spacing is obtained by suppressing the measuring pin selection through an override device, thereby allowing control to be accomplished by a normally active measuring pin in cooperation with the measuring plate. By providing all measuring mode control at the measuring plate, it becomes unnecessary to modify the space control information generated in the typewriter keyboard.

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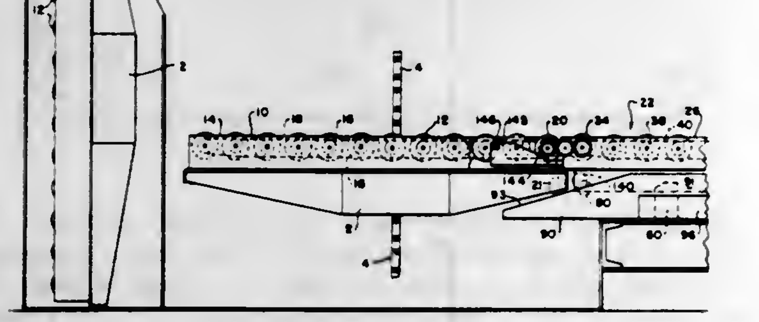
## 3,759,364

## LOADING CONVEYOR FOR ELEVATOR

**Andrew T. Kornylak, 400 Heaton St., Hamilton, Ohio**

**Filed Aug. 15, 1968, Ser. No. 752,912**
**Int. Cl. B65g** *17/34*
**U.S. Cl. 198—20** **5 Claims**



A device for transferring a pallet load between a horizontal and vertical conveyor or elevator which can compensate for large differences in alignment between the load supporting surfaces of the conveyors and which supports the trays of the vertical conveyor during the transfer of the load. A pair of wedges associated with the horizontal conveyor are shifted under the tray after the vertical conveyor is stopped at a transfer station to support the tray during transfer of the load. The horizontal conveyor is supported by the wedges as it is moved into transfer contact with the trays.

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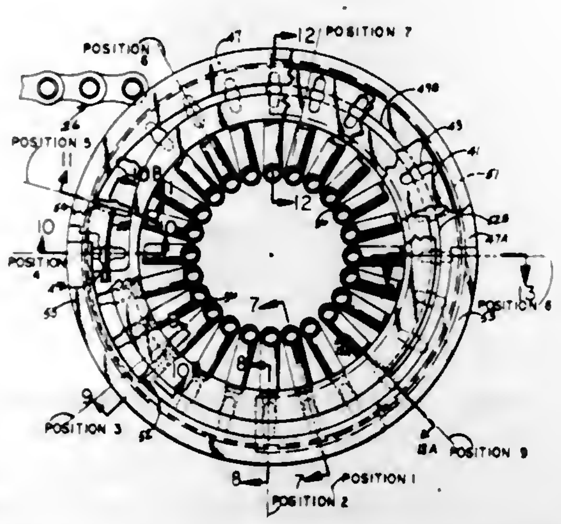
## 3,759,365

## FEEDING AND RECTIFYING APPARATUS AND METHOD

**Theodore F. Aronson, Glen Cove, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Filed June 26, 1969, Ser. No. 836,872**
**Int. Cl. B65g** *47/24*
**U.S. Cl. 198—33 AD** **22 Claims**



This disclosure is directed to a feeding and rectifying method and apparatus for orienting articles of manufacture in a predetermined manner onto a moving conveyor means. The feeding and rectifying apparatus comprises essentially a system of maintaining a supply of articles in a hopper through which the articles are ramdomly discharged. The dispensing of the articles from the hopper is attained by effecting relative rotation between the discharge means and the hopper, and orientation or rectification of the articles thus removed is effected by cooperating camming means and gauging means mounted for relative rotation with respect to one another operating on the article.

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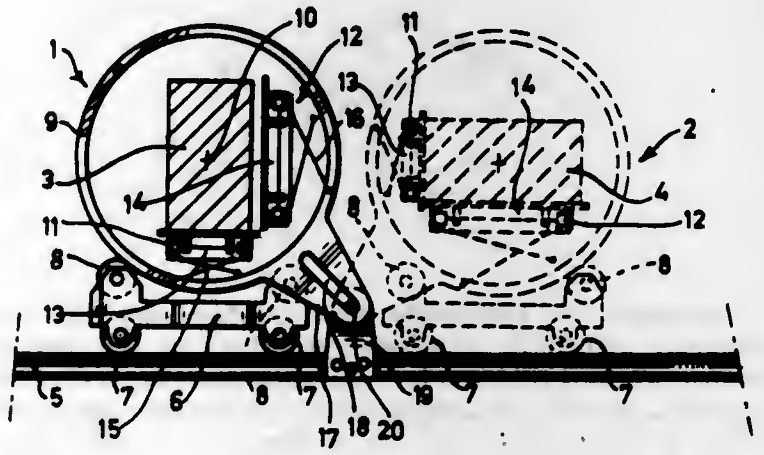
## 3,759,366

## DEVICE FOR CUTTING INTO SLABS A BLOCK OF NOT YET ENTIRELY SOLIDIFIED CELLULAR CONCRETE OR ANOTHER PLASTIC MATERIAL

**Johannes Antonius Marie Adank, Vinkeveen, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands**

**Filed Feb. 24, 1972, Ser. No. 229,026**
**Int. Cl. B65g** *47/22*
**U.S. Cl. 198—33 AD** **2 Claims**



A device for cutting slabs from a block of a weak material, such as not yet entirely solidified cellular concrete, comprising a revolvable cage into which the block lying upon a trolley is introduced; the cage is than rolled sidewardly and turned over 90° such that the block is resting upon a second trolley locked in the cage after which one or more cutting wires are passed through the block; finally the second trolley with the slabs is discharged and the cage is turned back 90°, so as to repeat the cycle.

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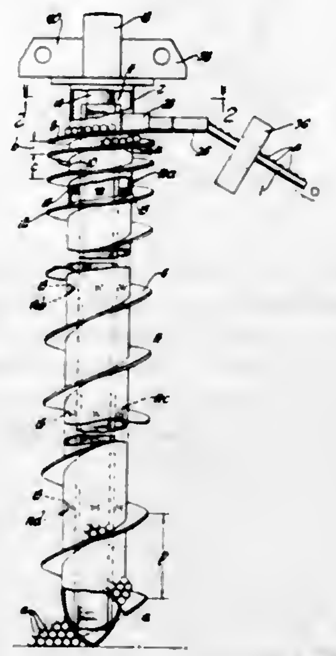
## 3,759,367

## MAGNETIC ARTICLE SORTING APPARATUS

**Eldon G. Elliott, 32428 Maryland, Livonia, Mich.**

**Filed May 13, 1971, Ser. No. 142,954**
**Int. Cl. B65g** *17/46*
**U.S. Cl. 198—41** **18 Claims**



Apparatus for handling articles by magnetic attraction including an elongated hollow casing of nonmagnetic material, an elongated magnetic core assembly rotatably received in said casing, and a ramp of nonmagnetic material wound spirally around the casing for causing articles attracted by the magnetic core assembly to advance along the length of the casing and upon rotation of the core assembly relative to the casing.

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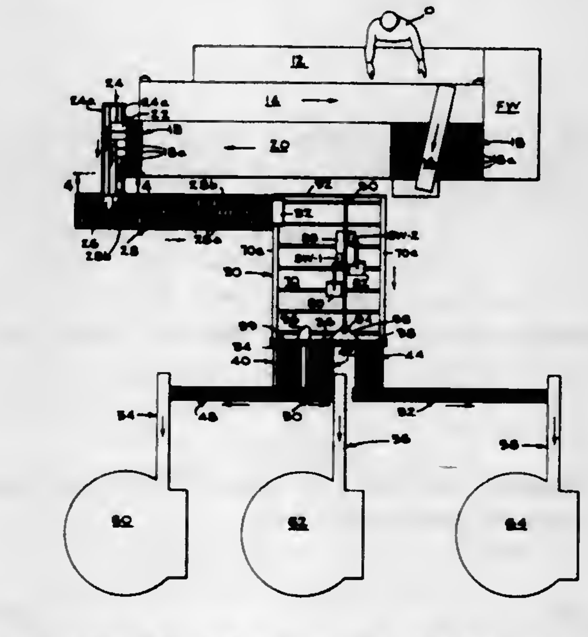
## 3,759,368

## EGG PROCESSING APPARATUS

**Boyd W. Rose, and George W. Thornton, both of Riverside, Calif., assignors to FMC Corporation, San Jose, Calif.**

**Filed Mar. 13, 1972, Ser. No. 234,001**
**Int. Cl. B65g** *37/00*
**U.S. Cl. 198—76** **8 Claims**



Egg processing apparatus wherein eggs are conveyed from an egg loading station through a washer apparatus to and through an egg accumulation device to a plurality of egg processing machines, such as egg breaking machines, which are each subject to temporary interruption of their operation from time to time. The apparatus includes means for regulating the accumulation of eggs by the accumulation device and means for controlling the movement of the conveyor that conveys the eggs to the accumulation device so that eggs may be delivered to any operative egg processing machine during such times one or more of the other egg processing machines is inoperative.

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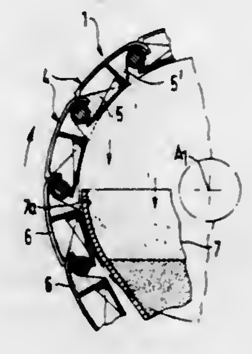
## 3,759,369

## TRAVELING GRATE

**Antonius Vering, Vorhelm; Alois Kluger, Neubeckum, and Karl Elring, Oelde, all of Germany, assignors to Polysius AG, Neubeckum, Germany**

**Filed Feb. 11, 1972, Ser. No. 225,587**
**Claims priority, application Germany, Mar. 2, 1971, P 21 09 948.9**
**Int. Cl. B65g** *17/16*
**U.S. Cl. 198—140** **4 Claims**



A plurality of hingedly connected members, each including a support plate for providing a substantially continuous transport surface in the upper section of the grate to support material conveyed by the grate, have pocket-like recesses on their inner sides. Each support plate in the vicinity of its front and rear ends is hingedly connected with the adjacent support plates so that the support plates form a substantially continuous peripheral surface throughout the extent of the grate.

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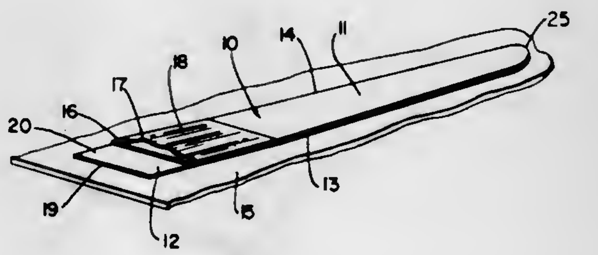
## 3,759,370

## DISPOSABLE PROBE COVER AND METHOD FOR MAKING SAME

**Robert A. Blatz, Clayton, Calif., assignor to Handgards, Inc., Pittsburg, Calif.**

**Filed Apr. 7, 1971, Ser. No. 131,949**
**Int. Cl. B65d** *85/20*
**U.S. Cl. 206—16.5** **2 Claims**



A disposable probe cover, comprising a flat bottom plastic sheet shaped generally like a probe and a flat upper plastic sheet overlying the bottom sheet and welded to it at its edges, except for an entrance opening at one end through which the probe is to be inserted. The upper plastic sheet stops short of the bottom plastic sheet at the entrance opening, and it is knurled at the entrance opening to help to provide an entrance guideway. A probe can make its initial contact along the guideway provided by the lower sheet beyond the entrance opening and when moved into the opening, the knurls provide gaps where the two sheets cannot stick together. Each probe cover may have its bottom sheet removably adhered to a paper backing, from which it is separated when the probe is inserted in the cover and is pulled away from the paper backing. In the method of making the probe cover, knurled rolls are used on one or two side edges of a continuous sheet which is to form many upper sheets of probe covers, and an entire knurled strip is provided before the two sheets and the paper backing are brought together. Then, after cutting, the probe covers result with the knurled portion of the upper sheet adjacent to the entrance opening.

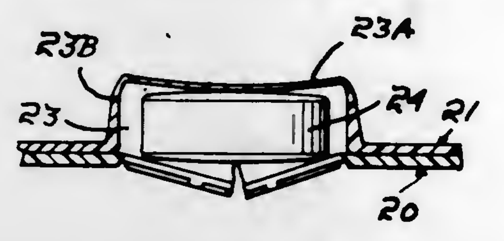
### 3,759,371
### CONTAINERS FOR SMALL ARTICLES SUCH AS PILLS

**Robert G. Marks, 256 East St., Walpole, Mass.**

**Filed July 12, 1972, Ser. No. 271,191**

**Int. Cl. B65d** *83/04*

**U.S. Cl. 206—42** **12 Claims**



Containers are disclosed for such small articles as pills that are to be removed and used one at a time. Each container has a bottom section provided with a plurality of article-receiving collapsible pockets and a cover section to overlie and close the pockets with its pocket-closing portion provided with score lines rupturable when an article is forced against it when a pocket is collapsed by digital pressure applied to the bottom thereof. The sections have portions that are interengageable to provide locks to hold them together so that the pockets and pocket-closing portion become pods and also prevent adjacent pockets from opening when a pod is ruptured.

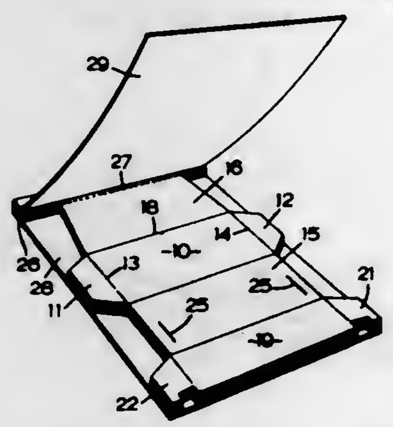
### 3,759,372
### GLUELESS ENVELOPE BLANK AND PAD THEREOF

**Frank Venema, 479 Graycourt Drive, Ancaster, Ontario, Canada**

**Filed Apr. 6, 1971, Ser. No. 131,751**

**Int. Cl. B65d** *82/08, 27/22*

**U.S. Cl. 206—57 R** **5 Claims**



A glueless envelope blank comprises a main body panel with side flaps along two opposite edges and two subsidiary panels along two other opposite edges; one of the subsidiary panels has slits therein for co-operation with mechanical interlocking means on another panel joined to one of the subsidiary panels. A pad of such envelope blanks can be formed by providing each blank with a readily separable attachment panel, the attachment panels of a pad of the blanks being fastened to one another and to a backing and facing sheet.

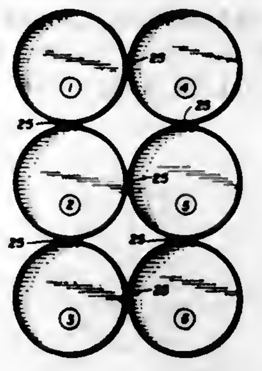
### 3,759,373
### MULTI-CONTAINER PACKAGE

**Elmer D. Werth, Arvada; Nelson E. Sipe, Denver, and Clarence J. Carlson, Lakewood, all of Colo., assignors to Adolph Coors Company, Golden City, Colo.**

**Filed Nov. 12, 1971, Ser. No. 198,148**

**Int. Cl. B65d** *21/02, 85/62*

**U.S. Cl. 206—65 C** **4 Claims**



A multi-container package of cans or bottles containing beer, other beverages or contents, detachably connected together in side by side arrangement into a self-contained package free of any holder, tray, strap or wrapping. Adhesive material is applied to narrow areas on side surfaces of a container for contact with an adjacent container whereby they adhere detachably to each other.

### 3,759,374
### CUVETTE

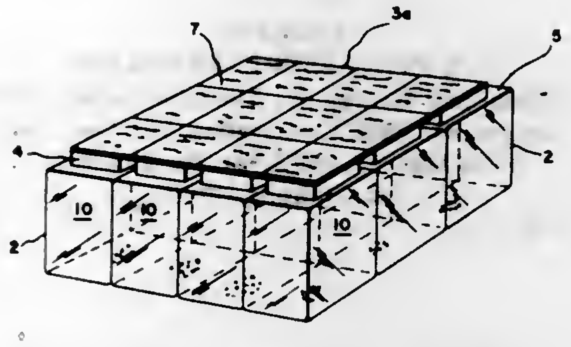
**Roland Helger; Arnold Hartel; Alfred Stein, and Wilhelm Baumer, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschankter Haftung, Darmstadt, Germany**

**Filed June 30, 1970, Ser. No. 51,048**

**Claims priority, application Germany, July 3, 1969, P 19 33 689.1**

**Int. Cl. B65d** *85/62*

**U.S. Cl. 206—65 R** **9 Claims**



Disposable cuvettes with square apertures which serve both as a container for reagents used in analytical determinations and for conducting photometric determinations therein are economically sealed by bonding a film or foil to the upper edges of the cuvettes which define their aperture and thereafter separating the sealed cuvettes thus joined together by severing the film or foil along lines defined by their side walls.

### 3,759,375
### DISPOSABLE SWAB-TYPE APPLICATOR PACKAGE

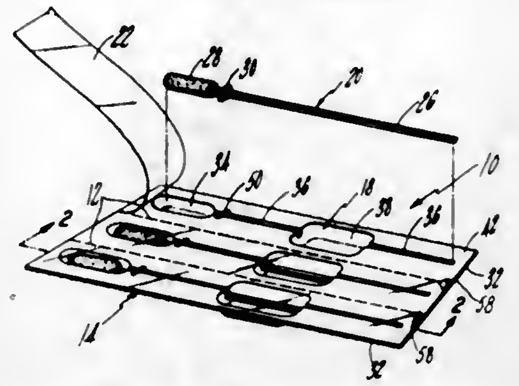
**John J. Nappi, 80 Beckley Rd., Berlin, Conn.**

**Filed May 21, 1971, Ser. No. 145,741**

**Int. Cl. B65d** *75/42, 85/20*

**U.S. Cl. 206—63.2 R** **8 Claims**

A disposable swab-type applicator package comprises a strip of one or more packaging units each having an applicator, a tray with a generally flat top surface and a shallow applicator-receiving recess extending downwardly from the top surface in a contoured configuration for accommodating the applicator and a stripable cover for the tray secured to the top surface for enclosably sealing the recess and preventing contamination of the applicator stored therein. The applicator is provided with an absorbent wad and a spaced sealing ring and the recess includes a liquid storing bulb portion accommodating the applicator's absorbent wad. The recess also provides a sealing surface adapted to cooperate with the applicator's sealing ring to isolate the bulb portion of the recess from the remainder thereof and restrict the flow of liquid into the remainder of the packaging unit.



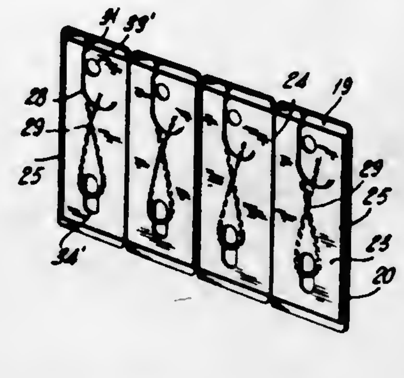
### 3,759,376
### SUTURE PACKAGE

**Borys Lisowski, Union, N.J., assignor to Ethicon, Inc., Somerville, N.J.**

**Filed Feb. 14, 1972, Ser. No. 225,814**

**Int. Cl. A61l** *17/02*

**U.S. Cl. 206—63.3** **4 Claims**



A surgical suture package, primarily for double armed multi-strand sutures, retains each individual suture in a predetermined sinusoidal configuration within adjacent but separate compartments. Notches along one edge of the package secure the armed ends of each suture which are held in place within the package when the compartments are folded together. As the package is unfolded, the armed ends are exposed sequentially, facilitating removal by the surgeon of each suture from its compartment one at a time without tangling and kinking.

### 3,759,377
### STORAGE DEVICE FOR RUBBER O-RINGS

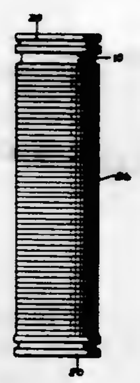
**Robert R. Weimer, Fort Wayne, Ind., assignor to Paramount Industries, Inc., Ft. Wayne, Ind.**

**Filed Mar. 22, 1972, Ser. No. 237,155**

**Int. Cl. B65d** *85/02, 85/62*

**U.S. Cl. 206—65 R** **6 Claims**

A device for storing rubber O-rings including a cylindrical tube of chipboard having two annular ribs coaxially disposed adjacent to but spaced from the opposite ends thereof, respectively, each rib being defined by an annular embossment on the interior of the tube and an annular indentation in concentric relation thereto on the exterior. Two ring-like chipboard retainers are removably affixed coaxially to the opposite ends, respectively, of the tube, the retainers being frictionally engaged with the ribs and having radially outwardly extending shoulders which define planes normal to the axis of the tube,



whereby rubber O-rings may engage such shoulders and thereby be retained on the tube. In the event such O-rings have flat radial sides, the endmost O-rings on the tube will have a flush engagement with the respective shoulders thereby mimimizing the possibility of deformation of the O-rings.

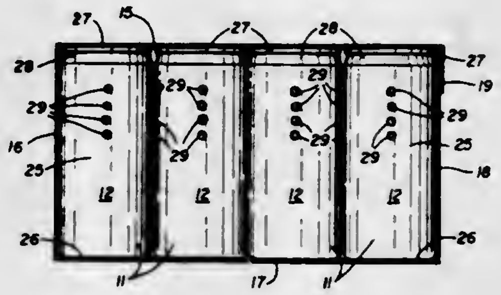
### 3,759,378
### MULTI-UNIT CONTAINER PACKAGE

**Elmer D. Werth, Arvada, Colo., assignor to Adolph Coors Company, Golden, Colo.**

**Filed May 5, 1972, Ser. No. 250,528**

**Int. Cl. B65d** *5/02, 5/54, 71/00, 85/62*

**U.S. Cl. 206—65 C** **6 Claims**



A multi-unit container package comprising in combination an outer one piece sleeve-form open end wrapper and a plurality of container units therein each consisting of a plurality of containers detachably bonded together by adhesive means applied to each container on a side wall contacting a side wall of another container, each unit being free of any holder, strap, tray or space consuming means, said outer wrapper having a flat top overlying in direct contact the tops of the containers, a flat bottom supporting in direct contact the bottoms of the containers, opposite side walls directly contacting the side walls of a plurality of containers in a plurality of units, and a tear strip located midway between and parallel to the open ends of the outer wrapper extending around the outer wrapper said tear strip having a pull tab cut out of the outer wrapper material at one end of the strip, whereby the outer wrapper and contents may be divided into two parts each consisting of an outer wrapper and a plurality of units each consisting of a plurality of adhering containers.

### 3,759,379
### FLEXIBLE HALOGEN PACKAGE

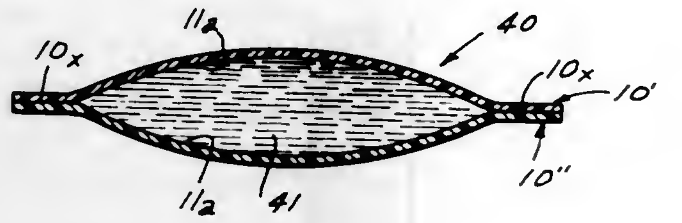
**Leroy E. Wrede, Lombard, Ill., assignor to Packaging Laminators, Inc., Bensenville, Ill.**

**Continuation-in-part of Ser. No. 36,142, May 11, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,010**

**Int. Cl. B65d** *81/00*

**U.S. Cl. 206—84** **10 Claims**

A flexible package of halogen solutions, such as alcohol or water based tinctures of iodine. In certain embodiments, the package is formed of a laminate comprising an inner layer of cast polyvinylchloride, a layer of adhesive, a layer of vinylidene chloride copolymer on the adhesive and an outer layer



of polyethylene terephthalate. In other embodiments, a thin aluminum foil coated with paper or cellophane is adhered on to the terephthalate film so as to form the outer layer of such a laminate.

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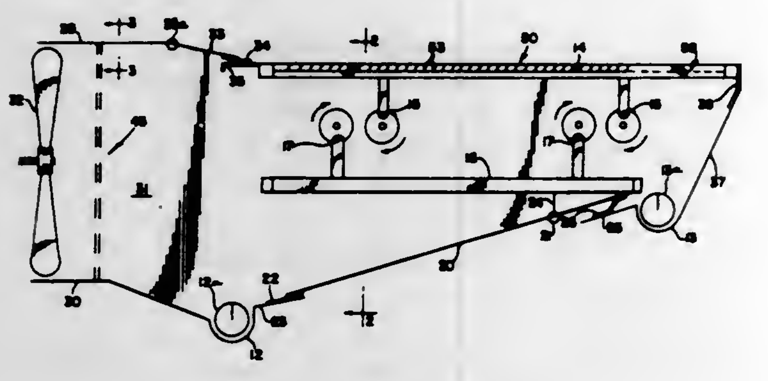
### 3,759,380
### GRAIN SEPARATING MECHANISM FOR COMBINES OR THE LIKE

**Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.**
**Continuation-in-part of Ser. No. 818,295, April 22, 1969, Pat. No. 3,606,026. This application Apr. 9, 1971, Ser. No. 132,727**
**Claims priority, application Canada, Apr. 15, 1970, 80207**
**Int. Cl. B07b** *9/00*
**U.S. Cl. 209—22** **10 Claims**



The separating mechanism comprises an upper sieve and a lower sieve located one above the other and supported by cranks journaled in the side walls of the casing of a combine. The cranks for the upper and lower sieves are offset from each other 180°. The cranks are driven at speed which is substantially synchronous with the gravitational movement of the threshing mix as it is being tossed. A fan located in front of the two sieves causes an air blast to blow upwardly through the upper sieve. Threshing mix deposited on the upper sieve will be tossed by the circular vibratory motion and the air blast separates the chaff from the grains during the tossing action and the grains drop through the upper sieve. A shutter regulates the air blast. Several sieve types are shown, two of which have transverse ribs.

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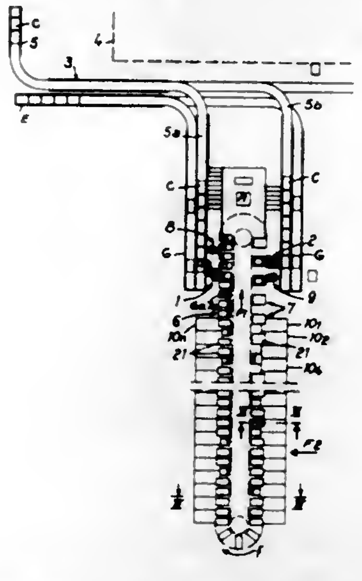
### 3,759,381
### SORTING APPARATUS

**Clarke Mercadie, Eragny, and Pierre Taussac, La Celle St. Cloud, both of France, assignors to Societe Anonyme dite: Systems et Procedes Industriels Modernes, St.-Germain-en-Laye, France**
**Filed Apr. 26, 1972, Ser. No. 247,663**
**Int. Cl. B07c** *7/00*
**U.S. Cl. 209—73** **16 Claims**



A sorting apparatus having two superposed conveyors with each of which are associated a loading station, an indexing station and a plurality of receiving stations, each conveyor having a plurality of receptacles and a control memory being provided to initiate unloading of a carrier at the receiving station with which the carrier has been associated at the moment of indexing.

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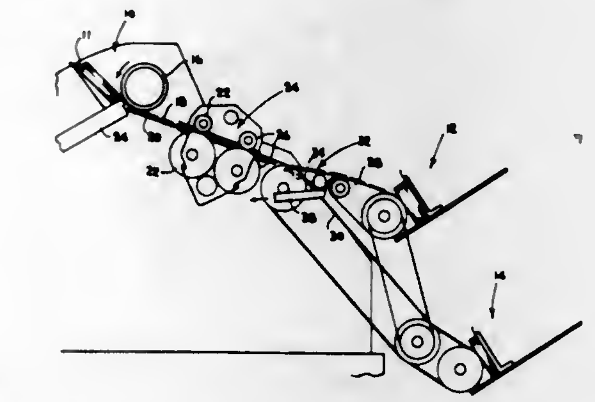
### 3,759,382
### METHOD, APPARATUS AND SYSTEM FOR FITNESS SORTING AND COUNT VERIFYING STRAPS OF CURRENCY

**James A. Walkley, Bridgeport; Peter N. Piotroski, Stamford, and George W. O'Gara, Danbury, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.**
**Filed Sept. 16, 1971, Ser. No. 181,164**
**Int. Cl. B07c** *5/342*
**U.S. Cl. 209—111.7** **12 Claims**



Currency is sorted according to fitness by monitoring the transparency of a predetermined, limited area of each bill to blue light while in transit through a monitoring station. A photosensor, responsive to the transmittance of blue light through each bill, controls the position of a gate to route fit and unfit bills into separate hoppers. Counters are provided to maintain counts of the fit and unfit bills, as well as to verify the strap count of straps of currency being sorted.

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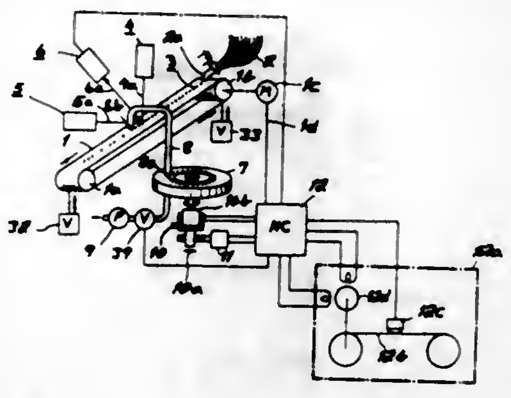
### 3,759,383
### APPARATUS FOR MAKING ABRASIVE ARTICLES

**Kiyoshi Inoue, No. 16-8, 3-chome, Kamiyoga, Setagayaku, Tokyo, Japan**
**Filed Aug. 2, 1971, Ser. No. 168,092**
**Int. Cl. B07c** *5/342*
**U.S. Cl. 209—111.5** **9 Claims**



An apparatus for making abrasive articles, e.g., wheels, disks and the like abrasive particles wherein a train of the particles is displaced along a transport path and means is provided for automatically detecting the crystallographic orientation of the individual particles. Particles of appropriate orientation are withdrawn from the transport path and carried with fixed orientation to the wheel, disk or other substrate into which it is implanted. The individual particles are set in predetermined locations of the disk whose motion is governed by numerical control means.

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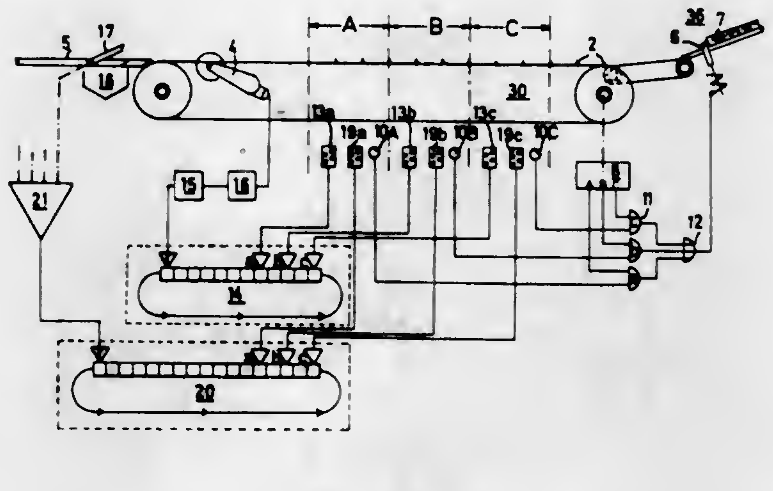
### 3,759,384
### APPARATUS FOR GRADING LUMBER

**Bo F. Holmberg, Box 20, Hammar; Nils E. Hellstrom, Strandvager 21, and Sigurd K. J. Modin, Sveavagen 7, all of Nyland, Sweden**
**Filed Sept. 1, 1971, Ser. No. 177,016**
**Int. Cl. B07c** *1/18*
**U.S. Cl. 209—122** **5 Claims**



A high capacity lumber grading apparatus in which transverse conveyor means transport lumber pieces to be graded one by one past a grader and in which means lift each lumber piece to be graded in an arcuate path in front of the grader and simultaneously turn the piece to present the longitudinal sides and edges thereof to the grader.

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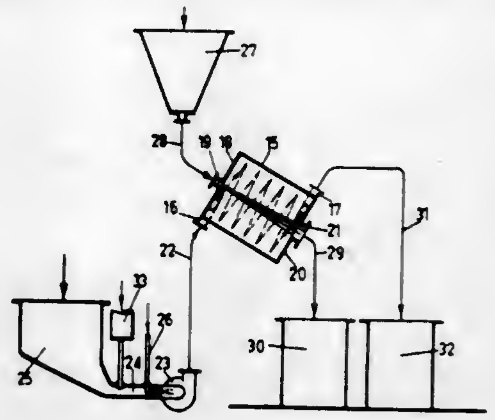
### 3,759,385
### METHOD AND APPARATUS FOR SEPARATING MIXTURES OF FINE GRAIN MATERIALS

**Emile R. J. Pouillon, Bruxelles, Belgium, assignor to Societe Anonyme Cribla, Brussel, Belgium**
**No Drawing. Filed June 17, 1970, Ser. No. 46,931**
**Claims priority, application Netherlands, June 18, 1969, 6909273**
**Int. Cl. B03d** *1/14*
**U.S. Cl. 209—165** **1 Claim**



Installation for separating a mixture of particles of two different materials, one of which materials has an affinity for a gas into fractions in which with a cylindrical tank in one wall having a centrally positioned inlet stub for a mixture of the materials for separation, in the other end wall of the tank a centrally disposed outlet for part of the liquid together with one fraction of the mixture, a tangential liquid inlet stub near the central inlet stub and a tangential outlet stub near the other end wall thereof, said outlet stub adapted for discharging the part of the liquid together with the other fraction of the mixture and there being means for commingling the gas with the liquid introduced.

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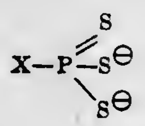
### 3,759,386
### METHODS FOR FLOTATION OF ORES

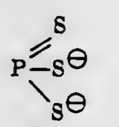
**Vyacheslav Alexandrovich Konev, Gavanskaya ulitsa, 16, kv. 6, and Vladimir Ilich Ryabol, Kostromskoi prospekt, 39, kv. 2, both of Leningrad, U.S.S.R.**
**Filed Oct. 23, 1970, Ser. No. 83,647**
**Claims priority, application U.S.S.R., Oct. 23, 1969, 1370210**
**Int. Cl. B03d** *1/02*
**U.S. Cl. 209—167** **2 Claims**

A method for flotation of non-ferrous ores which includes flotation of said ore with separation of a bulk concentrate and tailings. The bulk concentrate produced is then conditioned with a desorbate agent containing a substance with the general chemical formula



$$\mathrm{X{-}P({=}S)(S^{\ominus})S^{\ominus}}$$

wherein X is the second radical



$$\mathrm{P({=}S)(S^{\ominus})S^{\ominus}}$$

or sulphur. After this the bulk concentrate conditioned with said agent is subjected to selective flotation. Prior to selective flotation it is expedient to add a reagent reducing the pH of the pulp.

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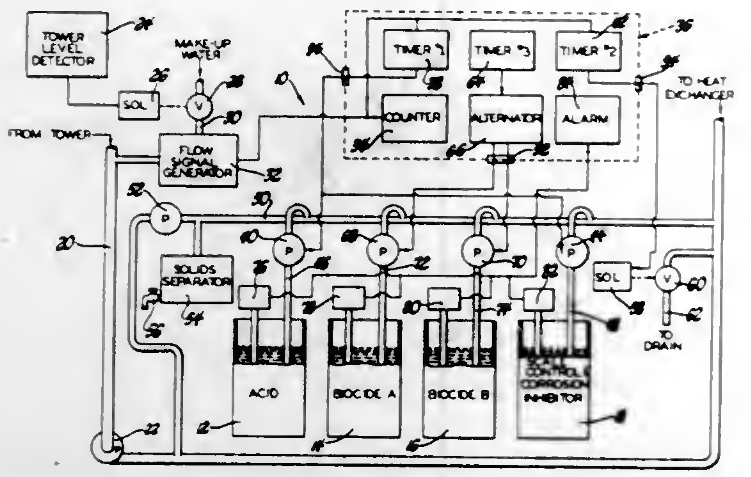
### 3,759,387
### WATER CONDITIONING SYSTEM

**Frank J. Drayton, Jr., Farmington, Mich., assignor to Vulcan Laboratories Inc., Pontiac, Mich.**
**Filed Feb. 23, 1971, Ser. No. 118,002**
**Int. Cl. B01d** *21/00*
**U.S. Cl. 210—98** **8 Claims**

A control system for regulating the introduction of various additives into a recirculating water system including a main control cabinet carrying a flow counter for makeup water and timers for controlling additive pumps to add corrosion inhibitor, alkalinity control agents, or other additives after a predetermined quantity of makeup water has been added to the system. The main control unit further includes a clock and a bistable control device for alternately introducing distinct biocides from first and second supplies to the recirculating water. Level detectors and alarm devices are provided for the additive supply containers. The control system further provides a timer for controlling the operation of a bleed-off solenoid valve to control the dissolved solids level in the recirculating water system.



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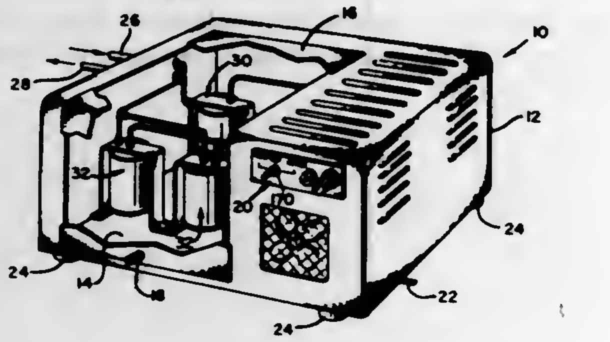
### 3,759,388

### FILTERING SYSTEM FOR DEEP FAT COOKING VESSEL

**Gary Thomason, 13530 S.W. Aragon St., Beaverton, Oreg.**

**Filed Sept. 8, 1971, Ser. No. 178,736**
**Int. Cl. B01d** *29/24*
**U.S. Cl. 210—167** **10 Claims**



A filtering system for deep fat fryers includes first and second stage filters and a low pressure pump having a bypass device for restricting the pressure to a given maximum value. Hot cooking oil is continuously passed through a first stage filter, wherein particles above 100 microns in size are removed, after which the cooking oil is passed through a second stage filter wherein particles above seven one-hundredths of a micron in size are removed. The media in the second stage filter comprises thin, fibrous paper material presenting interlocking fibers between layers in a multilayer roll, with the hot cooking oil being pumped axially through such roll.

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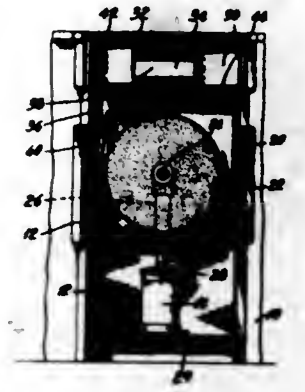
### 3,759,389

### FILTER ASSEMBLY FOR SWIMMING POOLS

**Marcel Valois, and Kenneth Valois, both of Laval Sur Le Lac, Quebec, Canada, assignors to Valmar Swimming Pools Ltd., Quebec, Canada**

**Filed Apr. 13, 1971, Ser. No. 133,630**
**Claims priority, application Canada, Apr. 8, 1971, 110,047**
**Int. Cl. E04h** *3/20*
**U.S. Cl. 210—169** **6 Claims**

A filter assembly for swimming pool made of wall segments assembled edge to edge to form the wall of the pool. The filter assembly comprises a casing integral with one of the wall segments and located on the outside wall of the segment, a filter chamber in the casing and communicating with the pool interior adjacent the surface of the water in the pool, a filter located in the filter chamber, and a pump located in the casing outside the filter chamber and communicating with the filter and with the pool interior adjacent the bottom thereof for recirculating the water in the pool from the top of the pool through the filter and towards the bottom of the pool.



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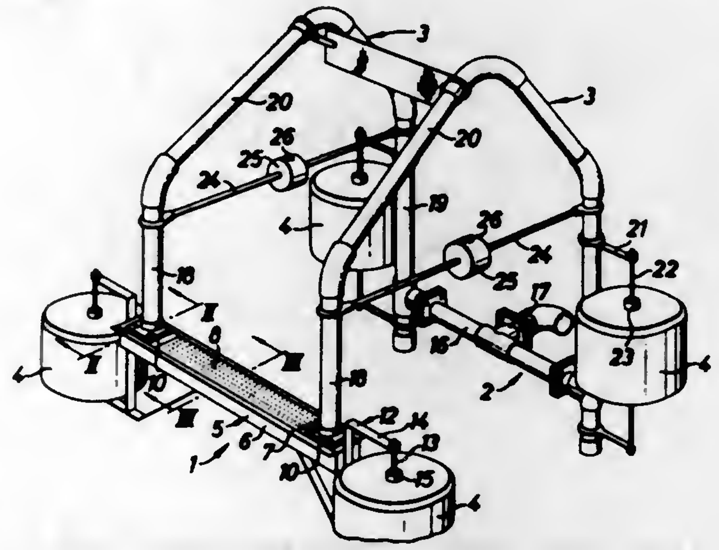
### 3,759,390

### THE REMOVAL OF SURFACE LAYERS FROM LIQUIDS

**Frederick Walter McCombie, London, England, assignor to Megator Pumps and Compressors Limited, London, England**

**Filed Feb. 10, 1971, Ser. No. 114,157**
**Claims priority, application Great Britain, Mar. 5, 1970, 10,540/70; Aug. 26, 1970, 41,089/70**
**Int. Cl. E02b** *15/04*
**U.S. Cl. 210—242** **3 Claims**



A device for pumping away floating oil slicks comprises a floating inlet chamber. Oil is drawn through an upper wall of the chamber and is pumped upwardly from the lower part of the chamber. Two embodiments are described one of which includes an outlet part connected to the chamber by parts which can straddle a boom confining the oil and the other of which includes a circular chamber supported by a long dependent pipe.

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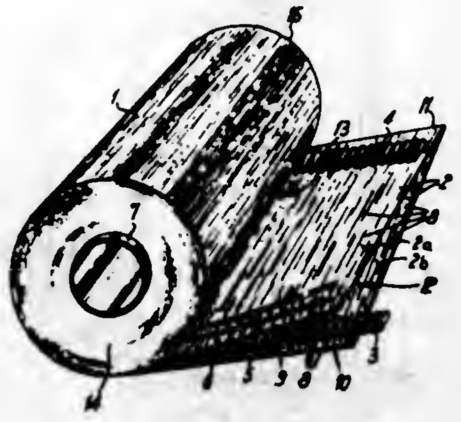
### 3,759,391

### COILED FILTER ELEMENT AND METHOD OF MANUFACTURING THE SAME

**Adolf Dreher, Unterhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Continuation of Ser. No. 74,605, Sept. 23, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,997**
**Claims priority, application Germany, Sept. 26, 1969, P 19 48 704.8**
**Int. Cl. B01d** *27/06*
**U.S. Cl. 210—494** **10 Claims**

An elongated strip of filter material is wound into a coil and consists of two superimposed strip portions connected to each other at their one side and spaced from each other at their opposite side. The strip portions, in consecutive windings of the strip, are spaced from each other at their connected sides and connected at their spaced sides to respectively form first and second parallel adjoining filter pockets of substantially V-shaped cross section, open at the opposite end faces of the coil. Transverse corrugations are provided in the strip portions and afford adjustments in the length of the respective strip portions to the extent such adjustments are necessary during the convoluting of the strip portions into coil shape.



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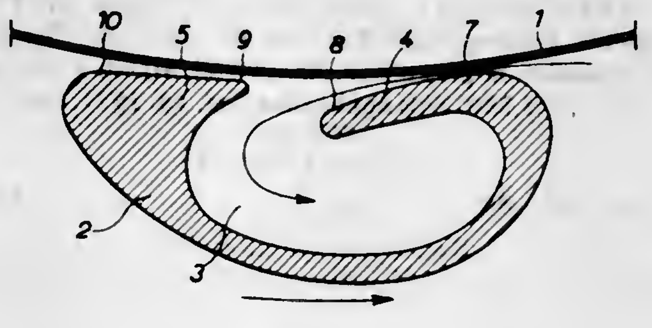
### 3,759,392

### PRESSURE STRAINING DEVICE

**Ahti Syrjanen, Valkeakoski, Finland, assignor to Yhtyneet Paperitehtaat Osakeyhtio Jylhavaara, Valkeakoski, Finland**

**Filed June 29, 1972, Ser. No. 267,495**
**Claims priority, application Finland, Feb. 3, 1972, 295/72**
**Int. Cl. B01d** *29/38*; **B07b** *1/20*
**U.S. Cl. 210—415** **2 Claims**



The object of the present invention is a pressure straining device for cellulose, paper or equivalent pulp suspension, comprising at least one straining cyliner through which the acceptable pulp is strained and in connection with which there has been provided at least one blade rotating about the axis of the straining cylinder, extending over the straining surface and moving at a small distance from this surface, which blade cleans the surface of the straining cylinder facing the pulp to be strained, and which blade has a substantially drop-shaped crossed section and contains a hollow space, extending from one end to the other, for collecting pulp to be rejected, this hollow space opening through a slit towards the straining cylinder so that on either side of the slit flanges substantially pointing towards each other are produced, and said hollow space communicating at one end with a venting space, located at one end of the pressure straining device, for the pulp to be rejected. The blade has been shaped so that on its side toward the straining cylinder it substantially follows the shape of the straining cylinder, that the leading flange of the blade has been given such a direction that its forward edge is closer to the straining surface than its free rear edge and that the free forward edge of the trailing flange is located closer to the straining surface than the free rear edge of the leading flange.

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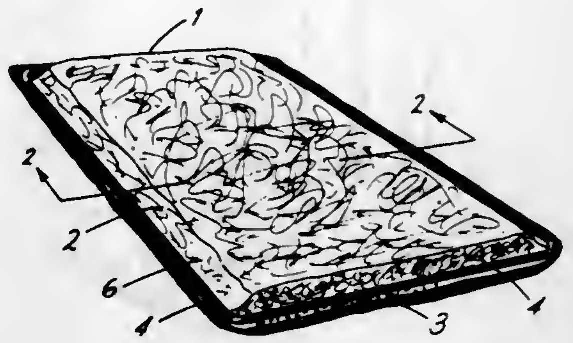
### 3,759,393

### FLUID TREATING FILTER

**John E. Tate, and Howard O. Scholl, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.**

**Filed Aug. 5, 1971, Ser. No. 169,318**
**Int. Cl. B01d** *46/10*
**U.S. Cl. 210—491** **4 Claims**



An improved air filter including an expanded filamentous mat and a support frame in communication therewith extending along the perimeter of the mat, the expanded filamentous mat including a plurality of thickness wherein the filament density varies from thickness to thickness.

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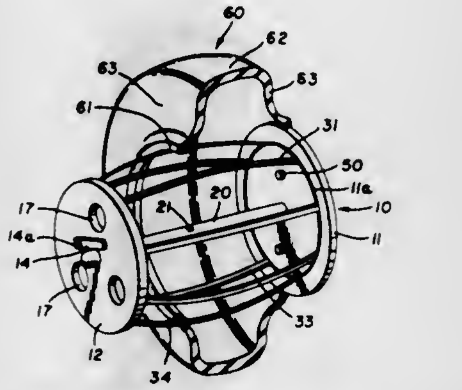
### 3,759,394

### TIRE SUPPORTING DEVICE

**Dwight E. Hottle, 2866 Lakeland Pky., Stow, Ohio**

**Filed Jan. 31, 1972, Ser. No. 222,092**
**Int. Cl. A47f** *7/04*
**U.S. Cl. 211—23** **5 Claims**



A collapsible tire supporting device to be used for the transportation and/or storage of pneumatic tires principally of the radial ply type. The device includes a pair of opposed end pieces and a cross bar, one end which is secured to one end piece with the other end piece being slidably received thereon. The end pieces are interconnected by a plurality of deformable resilient support members so that upon moving the slidable end piece toward the fixed end piece, the support members will be deformed so as to provide a support for the uncured or "green" tire in the area of the tread and sidewall. Means are provided for limiting the movement of the slidable end piece and also for locking it in its collapsed and deformed position.

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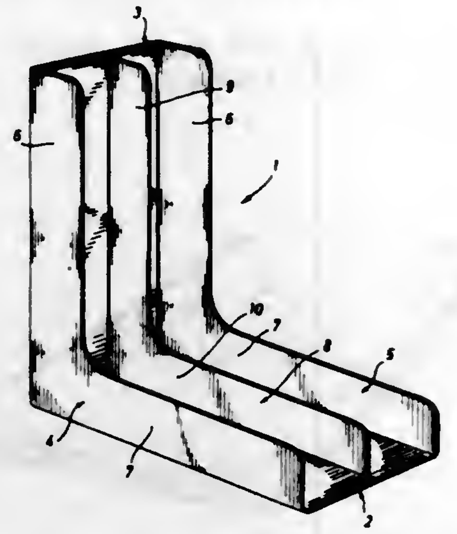
### 3,759,395

### STAND FOR SUPPORTING PHONOGRAPH RECORDS

**Sven-Erik Juhlin, Gustavsberg, Sweden, assignor to Aktiebolaget Gustavsbergs Fabriker, Gustavsberg, Sweden**

**Filed Sept. 1, 1971, Ser. No. 177,035**
**Claims priority, application Germany, Feb. 3, 1971, G 71 03 919.5**
**Int. Cl. A47b** *81/06*
**U.S. Cl. 211—40** **1 Claim**

A stand for supporting photograph records in their jackets in a vertical or near vertical orientation, said stand comprising a one piece body made of a synthetic plastics material and having a rectangular base, a back wall, and two L-shaped side walls projecting from the base and the back wall. Preferably, at least one L-shaped separation wall projects from the base and the back wall between the two side walls.



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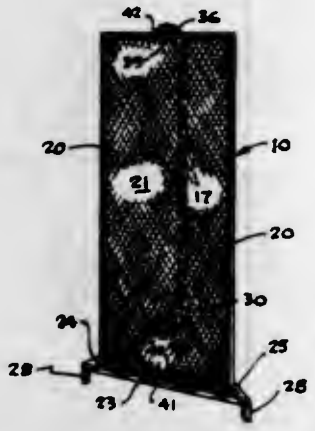
### 3,759,396
### DISPLAY STAND

**Leon H. Best, Galva, and Robert D. Davis, Kewanee, both of Ill., assignors to John H. Best & Sons, Inc., Galva, Ill.**
**Filed Jan. 19, 1972, Ser. No. 218,960**
**Int. Cl. A47f** *5/12, 7/16*
**U.S. Cl. 211—47** **3 Claims**



A display stand for rug samples or the like comprises a rotating wing having the lower end pivotally mounted on a base and the upper end pivotally mounted in one end of a horizontal arm. The arm is supported by an upright post, and the lower end of the post is somewhat loosely mounted in a tubular socket member which itself is part of a three-sided base support.

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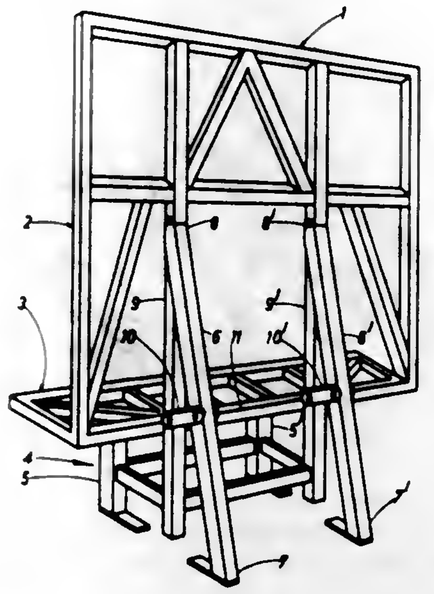
### 3,759,397
### DEVICE FOR SUPPORTING SHEET MATERIALS

**Raymond De Voghel, Marcinelle, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium**
**Filed Feb. 19, 1971, Ser. No. 116,827**
**Claims priority, application Great Britain, Feb. 19, 1970, 8,074/70**
**Int. Cl. A47f** *5/10, 7/00*
**U.S. Cl. 211—50** **10 Claims**

A supporting device for a load of sheets comprises an L-shaped structure having a wall upstanding from the rear portion of a supporting surface and supported by front and rear leg means. The rear leg means comprises a rear leg member pivotally mounted on the device to pivot between a position in which the rear wall is vertical and another position in which the rear wall is inclined. A catch member is pivotally mounted on the device and locks the movable rear leg member in a position to incline the supporting device. When the device is in a vertical position the catch member is pivoted to an inoperative position and the movable rear leg member is pivoted back to its position wherein the supporting device is vertical.



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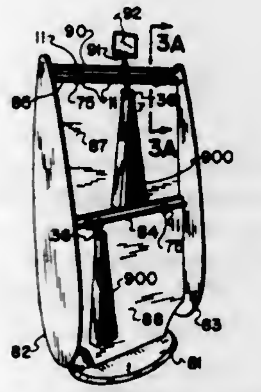
### 3,759,398
### FABRIC DISPLAY AND MERCHANDISING SYSTEM

**Russell H. Romney, 3259 Bon View Dr., Salt Lake City, Utah**
**Continuation-in-part of Ser. No. 15,785, March 2, 1970, Pat. No. 3,633,250. This application Oct. 14, 1971, Ser. No. 189,166**
**Int. Cl. A47f** *7/16*
**U.S. Cl. 211—46** **9 Claims**



A system is disclosed for holding and displaying samples of fabrics so they can be conveniently examined by prospective customers. Identifying means for each sample are provided so that the customer may order, e.g., by number from rack storage in another part of the mercantile establishment. Pivoted connecting elements mounted for universal rotation are employed to support the fabric holding means in such a way that numbers of large and different fabric samples are displayed clearly, but stored compactly, being supported on elongated, circular or cabinet type racks.

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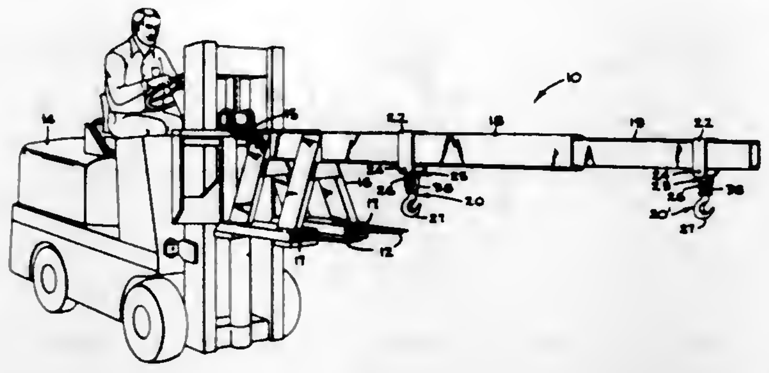
### 3,759,399
### ADJUSTABLE, SELF-LOCKING LOAD SUPPORTING MECHANISM FOR BOOMS

**Clifford A. Glass, Chicago; Robert E. Kraft, Naperville, and Edward W. Schmidt, Chicago, all of Ill., assignors to FMC Corporation, San Jose, Calif.**
**Filed Jan. 14, 1972, Ser. No. 217,900**
**Int. Cl. B66c** *23/06*
**U.S. Cl. 212—55** **9 Claims**



An infinitely adjustable self-locking stirrup for mounting intermediate load hooks on an extensible boom attachment for fork lift trucks is disclosed. The mounting includes a U-shaped yoke supported on the top of one of the horizontal extensible boom sections and a pivoted clevis. The clevis is supported in the legs of the yoke closely adjacent the underside of the boom section and provides a mounting for the load hook. When the vertical axis of the clevis is maintained normal to the bottom of the boom section, a top surface on the clevis is parallel to, and has a slight clearance with, the bottom of the boom section so the stirrup mounting is free to slide along the boom section. However, when the clevis is tilted slightly, the top surface wedges against the bottom of the boom section and locks the stirrup mounting in a given position.

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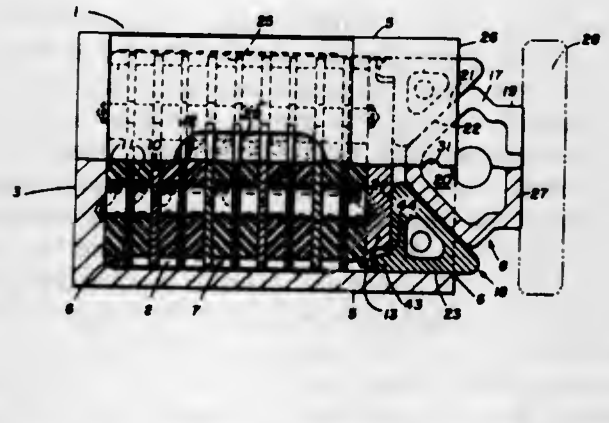
### 3,759,400
### HOUSED DRAFT GEAR

**Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.**
**Filed Mar. 24, 1972, Ser. No. 237,819**
**Int. Cl. B61g** *11/08, 9/06*
**U.S. Cl. 213—22** **9 Claims**



A housed draft gear for railway vehicles having friction and rubber cushioning units arranged in tandem in an open-fronted cavity of uniform cross section in a housing and held in assembled relation in the cavity, the friction and rubber cushioning units being of improved construction.

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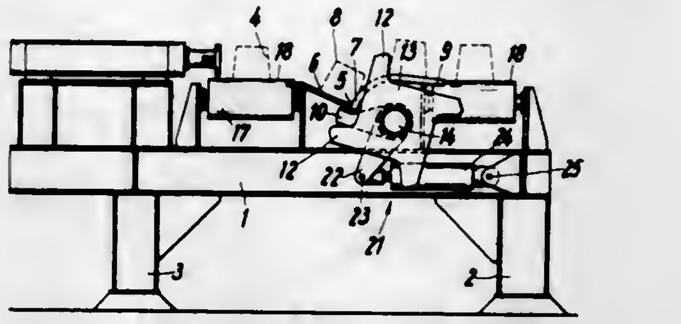
### 3,759,401
### MANIPULATOR FOR POLYGONAL CROSS-SECTION BILLETS, PARTICULARLY CAST COPPER BARS

**Otto Kreuz, Duisburg, and Stefan Raab, Essen, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany**
**Filed June 14, 1971, Ser. No. 152,867**
**Claims priority, application Germany, June 18, 1970, P 20 29 999.4**
**Int. Cl. B65g** *7/00*
**U.S. Cl. 214—1 OG** **9 Claims**



The manipulator includes a stationary tipping trough including a pair of longitudinally spaced substantially angular supporting surfaces each having a downwardly and inwardly sloping inlet side and an upwardly and outwardly sloping steeper outlet side. A apir of tipping levers are oscillatable by an associated fluid pressure actuator to engage a longitudinal corner edge of a billet in the tipping trough to tilt the billet so that it rests on a different side. A pair of lifters, having projecting fingers, are oscillatable about the same axis as the tilting levers by a different fluid pressure actuator so that the fingers engage the then lower side of a billet in the tipping trough and move the billet over the outlet sides of the supporting surfaces. The tipping trough preferably is arranged between a billet feeding roller conveyor and a billet discharge roller conveyor, and switch means are provided for engagement with a billet moving along the feeding conveyor. The billets have sloping ends providing respective projecting noses and the switch means are so arranged that, depending upon which switch is engaged by a sloping nose, an appropriate billet tipping operation is initiated. Alternatively, the switch means may be arranged beneath a billet support surface, again for cooperation with the nose of a billet, or may be arranged to project into the tilling trough for engagement by the nose of a billet.

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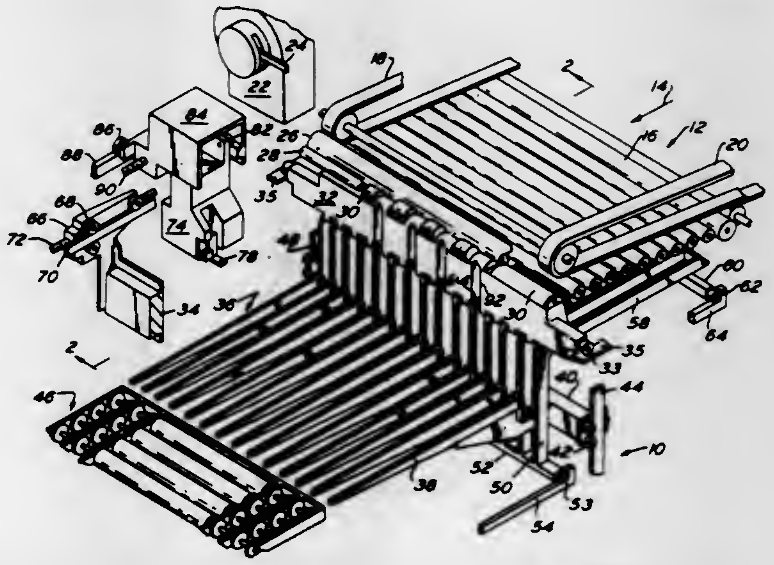
### 3,759,402
### COUNTER EJECTOR

**Thomas R. Hitch, Aldan, and William J. Wilson, Philadelphia, both of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio**
**Filed Apr. 10, 1972, Ser. No. 242,319**
**Int. Cl. B68g** *57/00*
**U.S. Cl. 214—6 H** **13 Claims**



In apparatus which counts the number of sheets accumulated on an elevator and then transfers the pile to a conveyor, some of the members which push the pile off the elevator onto the conveyor have an angled camming surface at their upper end.

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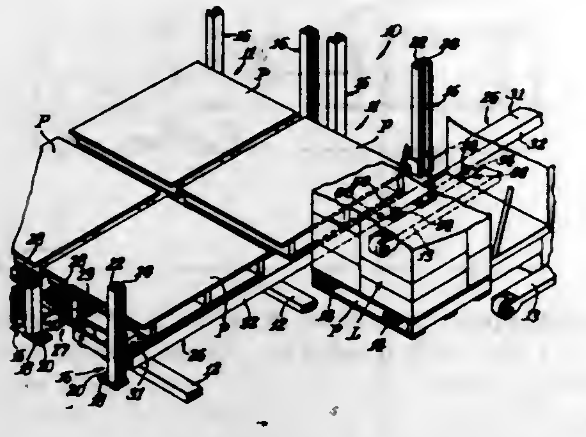
### 3,759,403
### STORAGE SYSTEM

**Henry C. Fernstrom, Northbrook, Ill., assignor to Barrett Electronics Corporation, Northbrook, Ill.**
**Filed Aug. 23, 1971, Ser. No. 173,851**
**Int. Cl. B65g** *1/06*
**U.S. Cl. 214—16.4 A** **3 Claims**



A storage system for pallets for access by straddle type fork lift trucks and stock selector trucks from the same aisles, wherein guide rails are disposed adjacent each aisle for cooperation with guide means on the stock selector trucks to guide the stock selector trucks through the aisles when selecting cartoned items from the pallets, the guide rails being positioned to allow passage thereunder of forwardly extending base legs on the straddle type fork lift trucks when loading pallets into the storage racks.

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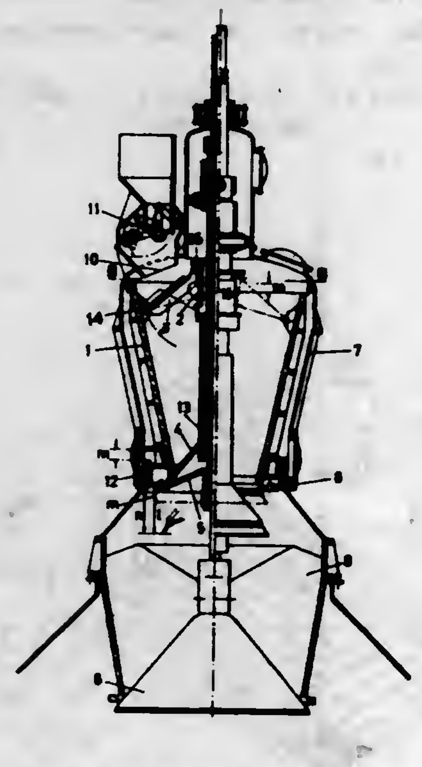
### 3,759,404
### CHARGING DEVICE FOR A SHAFT FURNACE

**Rene Mahr, Luxembourg, Luxembourg, assignor to Societe Anonyme des Anciens Establissements Paul Wurth, Luxembourg, Luxembourg**
**Filed May 27, 1971, Ser. No. 147,592**
**Claims priority, application Luxembourg, May 27, 1970, 60996**
**Int. Cl. F27b** *11/12*
**U.S. Cl. 214—37** **1 Claim**



A charging device for a shaft furnace in which a lower chamber is defined between two charging bells suspended on longitudinally movable shafts. An upper chamber contains a rotatable hopper. The hopper is supported by three arms connected between the inner surface of the hopper and a sleeve enclosing the shafts on which the bells are suspended.

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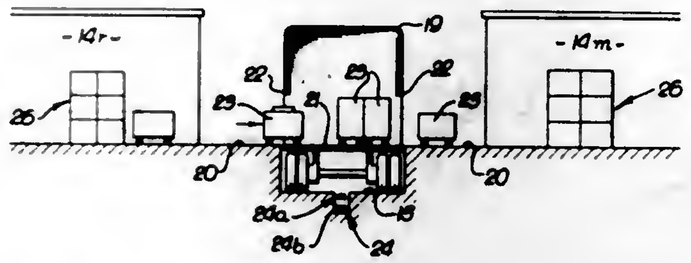
### 3,759,405
### METHOD AND APPARATUS FOR LOADING TRUCKS

**Robert J. Barry, 462 Arlington Dr., Pasadena, Calif.**
**Filed July 7, 1971, Ser. No. 160,275**
**Int. Cl. B65g** *67/02*
**U.S. Cl. 214—38 D** **7 Claims**



The processing of various goods for distribution to multiple stores includes the steps:

a. supplying the various goods at different stations spaced along a loading way at a distribution location;

b. advancing a series of side-loading carriers in sequence along said way, each such carrier associated with at least one of said stores;

c. selectively side loading onto each carrier, as it advances past said stations, the particular goods required by the carrier associated store; and

d. advancing each such carrier to its associated store after completion of said side loading at said distribution station.

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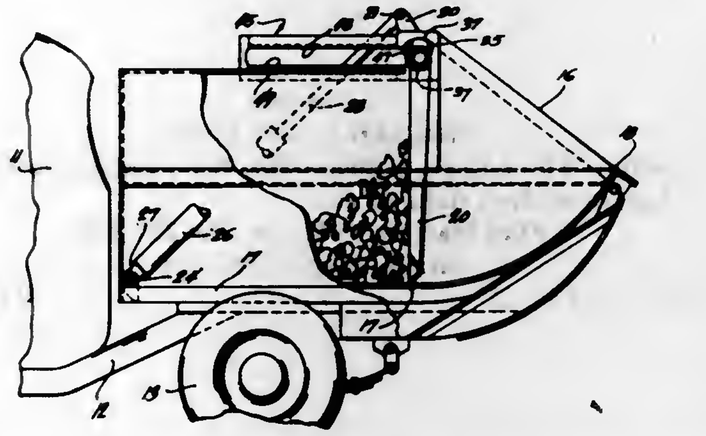
### 3,759,406
### PACKING DOOR FOR REFUSE TRUCK

**Ronald W. Nickel, 604 Glenview Ave., Waukesha, Wis.**
**Filed Nov. 30, 1971, Ser. No. 203,262**
**Int. Cl. B60p** *1/48*
**U.S. Cl. 214—83.3** **5 Claims**



A packing door for a refuse truck which in its fully open position is located along the roof of the truck body remote from the refuse compartment opening so that the opening is unobstructed. The door is provided with a bearing on each side which are identical, being elongated and having arcuately shaped ends. A piston and cylinder mechanism is mounted on each side of the truck body with a piston rod coupled to each bearing by a link. When the door is actuated from its fully open position, the piston and cylinder mechanisms move the bearings in a straight path along a rectilinear guide surface to move the door in a corresponding straight path rearwardly of the body until it extends above the opening of the refuse compartment. At the end of the rectilinear guideway the bearings enter a rotary guideway which prevents further rectilinear movement but guides the bearings in a rotary movement. Because of their overcenter connections to the bearings, further actuation of the piston rods causes rotation of the bearings in their associated rotary guideways to produce a corresponding rotation of the door through the opening into the refuse compartment for packing the refuse contained therein. Opposite actuation of the piston and cylinder mechanisms produces a reverse movement of the door for opening the compartment.

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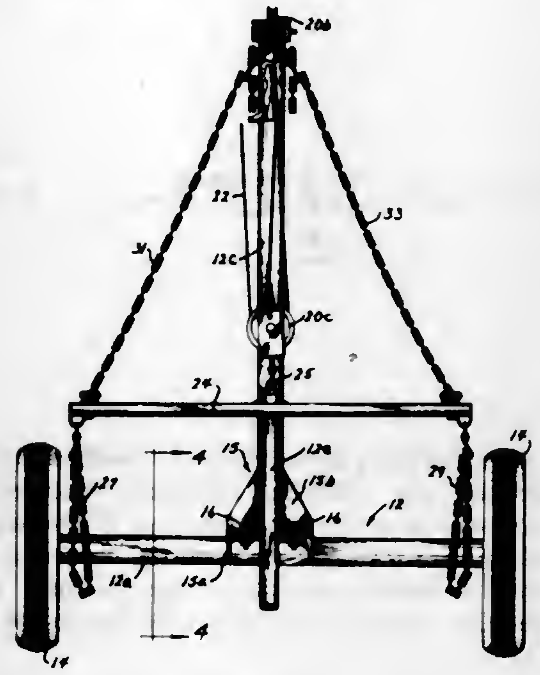
### 3,759,407
### TOWING VEHICLE

**Everett Boster, W. Star Rt., McLeansboro, and James E. Willis, R.R. No. 1, Ewing, both of Ill.**
**Filed Mar. 22, 1971, Ser. No. 126,842**
**Int. Cl. B60p** *3/12*
**U.S. Cl. 214—86 A** **3 Claims**



A towing vehicle characterized by a wheel mounted framework having a downwardly disposed vehicle receiving member, where winch means move a crossmember to which the towed vehicle is secured, and where support chains extending between a portion of the framework and the crossmember assume the load of the towed vehicle upon release of the winch means.

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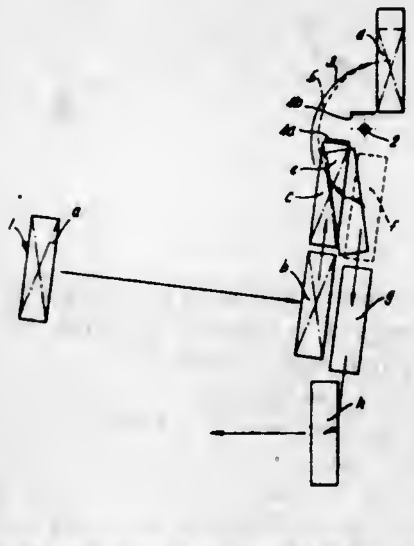
### 3,759,408
### APPARATUS FOR HANDLING ROD-LIKE ARTICLES

**Tom Rowlands, and James George Edward Hillman, both of London, England, assignors to Molins Machine Company Limited, London, England**
**Filed Nov. 23, 1970, Ser. No. 91,769**
**Claims priority, application Great Britain, Nov. 26, 1969, 57,743/69**
**Int. Cl. B65g** *65/34*
**U.S. Cl. 214—302** **16 Claims**



This invention concerns a tray unloader for cigarettes in which each tray in turn is inverted to discharge the cigarettes downwards onto a conveyor system. The conveyor system carries the cigarettes to a reservoir and stops while the trays are being changed, but cigarettes can be withdrawn continuously from the reservoir. A control plate rests on the surface of the cigarettes to keep the surface level while the cigarettes move downwards through the tray as it is unloaded.

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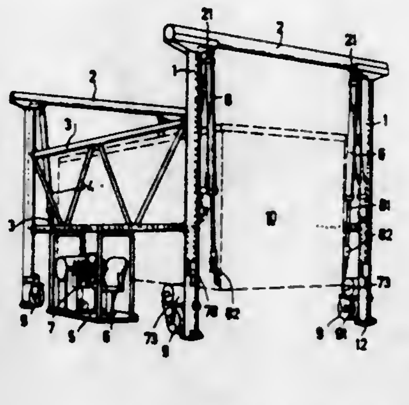
### 3,759,409
### CRANE

**Jorg Wenzel, Freudenberg/Main, and Hans Rieschel, Miltenberg/Main, both of Germany, assignors to Joseph Haamann Freudenberger Winden-und Hebezeugfabrik, Freudenberg/M.-Kirschfurt, Germany**
**Filed Mar. 4, 1971, Ser. No. 121,050**
**Claims priority, application Germany, Mar. 7, 1970, P 20 10 945.9**
**Int. Cl. B60p** *1/64*
**U.S. Cl. 214—394** **9 Claims**



A gantry or portal crane has two longitudinally spaced portals which are connected by longitudinally extending structural members to form therewith a self-supporting structure. The lower ends of the uprights of the portals are provided with wheels which can be swung to a lower position engaging the ground and an upper position removed from the ground in which the lower ends of the portals rest directly on the ground. The upper ends of the portals are provided with traverse members each carrying two transversely spaced hydraulic and cylinder piston units which are connected for universal pivoting movement to them, and which are provided at their free ends with engaging portions for engaging a load. A hydraulic system is provided utilizing four separate hydraulic circuits each connected with one of the cylinder and piston units, a central control by means of which all of the cylinder and piston units can be operated in unison, and individual control valves located on the uprights of the portals by means of which each of these cylinder and piston units can be individually operated.

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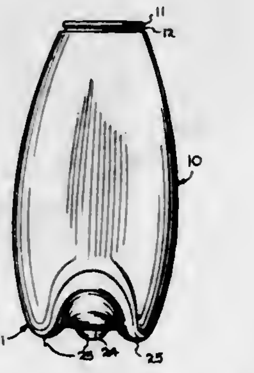
### 3,759,410
### PRESSURE RESISTANT PLASTIC CONTAINER

**Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**
**Filed Dec. 15, 1971, Ser. No. 208,244**
**Int. Cl. B65d** *1/02*
**U.S. Cl. 215—1 C** **2 Claims**



A plastic container having a configuration designed to package goods capable of generating internal pressure is provided. The container has a circular cross-sectional configuration with side walls following a generally outwardly convex arcuate path from the upper mouth portion toward the base at the lower end. The base is provided with three bulbous feet extending downwardly from a generally rounded bottom portion for supporting the container in an upright position.

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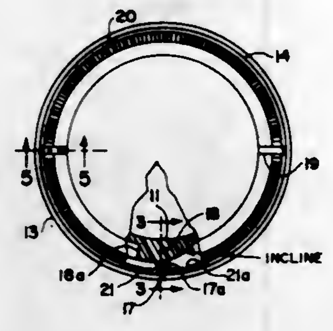
### 3,759,411
### SAFETY CLOSURE CAP AND CONTAINER FOR DRY AND LIQUID CONTENTS

**William Horvath, 420 River Rd., Chatham, N.J.**
**Filed Oct. 29, 1971, Ser. No. 193,834**
**Int. Cl. B65d** *55/02*
**U.S. Cl. 215—9** **2 Claims**



A snap-on safety closure or cap is provided for containers of pills, liquids and the like which container cannot readily be opened by small children uninstructed in its use but can be easily opened by an adult. The cap snaps in place on the container and thereafter cannot be lifted off the container except by rotating the cap with respect to the container until a cam on the inside of the cap engages a cam on the rim of the container upon which action the rim of the cap becomes distorted, lifts up and allows the fingernail and part of the finger tip to be inserted under the cap's edge to lift the cap and snap it off.

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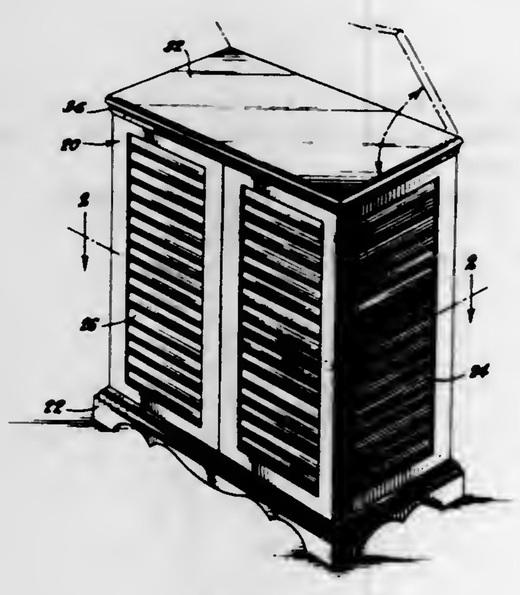
### 3,759,412
### CONTAINERS AND THEIR CONSTRUCTION

**Paul S. Bush, Salamanca Rd., Little Valley, N.Y.**
**Filed Nov. 13, 1970, Ser. No. 89,200**
**Int. Cl. B65d** *7/28, 11/18*
**U.S. Cl. 220—7** **6 Claims**



Plastic containers, such as clothes hampers, constructed of plastic sidewalls and top and bottom walls, the walls being separately molded for permanent resilient interlocking assembly by the consumer to form a rigid, stable structure, thus being shippable in knock-down form for saving of shipping space.

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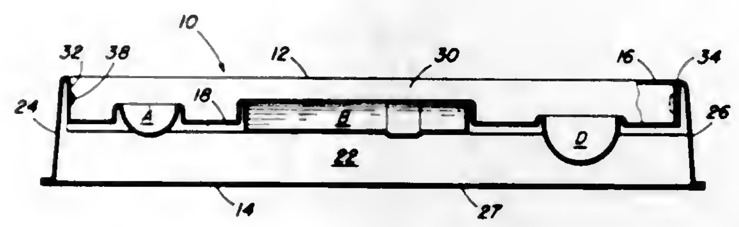
### 3,759,413
### CONTAINER

**Gerald J. Ardito, 29 Meadow Rd., Old Westbury, N.Y.**
**Filed Mar. 1, 1971, Ser. No. 119,797**
**Int. Cl. B65d** *25/00*
**U.S. Cl. 220—16** **2 Claims**



A container including a main body or platform base having a product-receiving platform including recesses formed therein is bonded to a bottom or backing. Outwardly extending projections are formed within said platform base. A top having slots is positioned within the platform base and cooperates with projections to hinge the top to the platform base.

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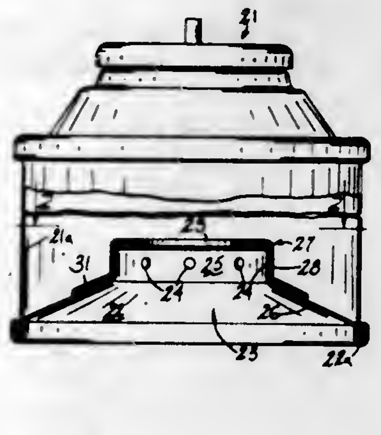
### 3,759,414
### SELF-VENTING VESSEL

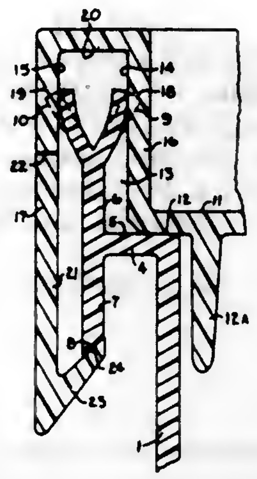
**Walter C. Beard, South St., Middlebury, Conn.**
**Filed Mar. 1, 1971, Ser. No. 122,590**
**Int. Cl. B65d** *51/16*
**U.S. Cl. 220—44 R** **7 Claims**



A self-venting vessel such as an aerosol container, having at least one wall subject to outward distortion by internal pressure buildup, which wall is modified to provide an annular protuberance having an aperture therein, and a generally cup-shaped closure member which is affixed to cap and seal the aperture in the protuberance under normal internal pressures. When the internal pressure becomes excessive, the closure member is forced by the resulting distortion of the wall to slip from its original position, thus uncapping the aperture and venting the vessel.

### 3,759,415
### PAIL

**Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Incorporated, Erie, Pa.**
**Filed June 13, 1972, Ser. No. 262,934**
**Int. Cl. B65d** *43/10*
**U.S. Cl. 220—60** **7 Claims**



A plastic pail having a rim with integral, upwardly diverging peripheral lips received in and compressed by a downwardly presented peripheral groove in a cover to make a fluid tight seal.

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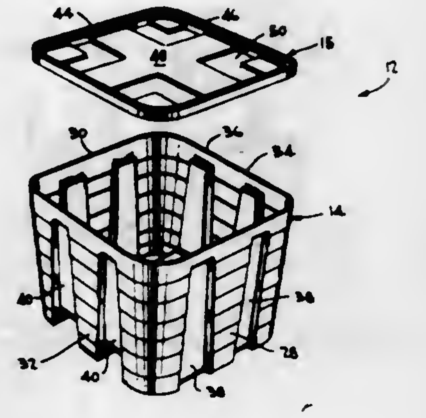
### 3,759,416
### CONTAINER

**Neil V. Constantine, Atlanta, Ga., assignor to International Bakerage, Inc., Atlanta, Ga.**
**Filed Aug. 25, 1970, Ser. No. 66,769**
**Int. Cl. B65d** *21/02, 1/44*
**U.S. Cl. 220—97 F** **3 Claims**



A container having four side walls extending upwardly and outwardly from a base, the side walls having upper edges defining a peripheral rim and each side wall having longitudinal and lateral strengthening ribs formed therein, the base having a pair of channels formed in the exterior thereof to define a pair of support legs, and a lid having a peripheral lip adapted to engage the peripheral rim and having a depressed exterior surface defined by a peripheral ledge adjacent the peripheral lip and L-shaped recesses at the corner of the lid, the peripheral ledge being dimensioned to capture the support legs of a similar container when the containers are stacked one upon the other.

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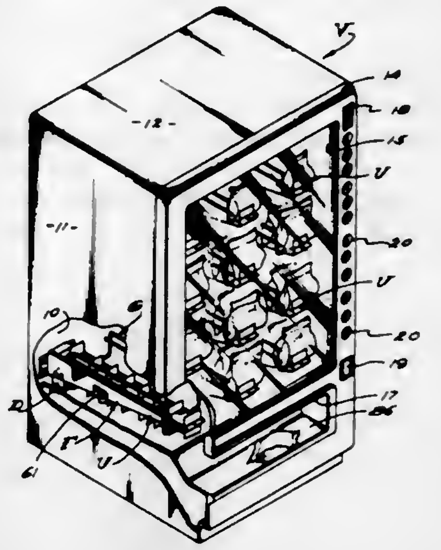
### 3,759,417
### VENDING MACHINE

**Currie Armstrong, and Clarence E. Christophersen, both of Los Angeles, Calif., assignors to said Armstrong, by said Christopherson, Los Angeles, Calif.**
**Filed June 3, 1971, Ser. No. 149,549**
**Int. Cl. G07f** *11/00;* **B65g** *15/42*
**U.S. Cl. 221—85** **7 Claims**



A vending machine including a plurality of product supporting and dispensing units, each unit comprising a cantilever supported frame with front and rear rollers, an elongate endless, conveyor belt engaged about and between the rollers and having longitudinally spaced normally vertical transversely extending product separating fences with forwardly and rearwardly, projecting stabilizing pads slidably engaged on the belt for longitudinal adjustment and laterally spaced, elongate, laterally adjustable longitudinally extending and vertically projecting guide members at opposite sides of the belt.

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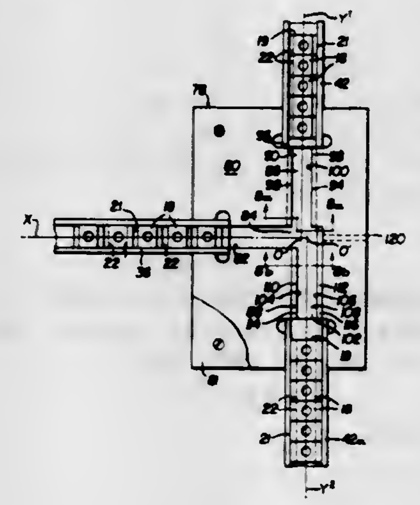
### 3,759,418
### PART ORIENTING DEVICE

**Elmer E. Willson, Clawson, and Thomas M. Pouch, Farmington, both of Mich., assignors to Multifastener Corporation, Livonia, Mich.**
**Filed June 11, 1971, Ser. No. 152,284**
**Int. Cl. B23q** *7/00*
**U.S. Cl. 221—157** **4 Claims**



In an article handling and transfer system, a parts orienting device is provided in which parts are fed in random orientation from a parts source for travel along a first path and subsequent transfer for travel along a second and third path, normal to said first path; at the intersection of the first path with the second and third path, fluid power actuated sensing and direction changing means are provided which automatically are responsive upon the presence of a part in the intersection to change the direction of travel of the part from the first path into the second or third path; in a further embodiment, the fluid power actuated sensing and direction changing means are effective to orient randomly fed parts for transfer of parts disposed in one position along the second path and for transfer of parts disposed in another position along the third path.

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### 3,759,419
### APPARATUS FOR SEPARATING AND INDIVIDUALLY DISPENSING SMALL ELONGATE PARTS

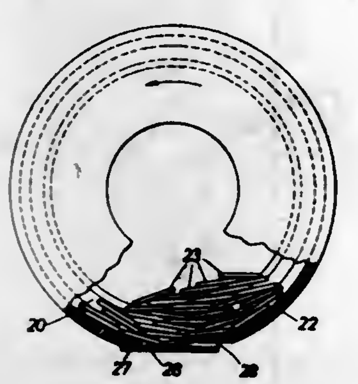
**Hans Iseli, Ligerz, Switzerland, assignor to Vereinigte Drahtwerke A.G., Biel, Switzerland**

**Filed Mar. 25, 1971, Ser. No. 127,991**

**Claims priority, application Switzerland, Apr. 7, 1970, 5097/70**

**Int. Cl. B65h** *9/00*; **B65g** *47/24*

**U.S. Cl. 221—168** **10 Claims**



An apparatus for aligning, separating and individually dispensing small substantially elongate objects which comprises an object dispensing drum member for receiving therein a stack supply of small objects, said drum member being rotatable about a horizontal axis at such rotational speed that a small object entrained by the drum member is subjected to centrifugal forces greater than its force of gravity. Means located within the drum member extend over at least a portion of the inner peripheral surface thereof for aligning the small objects within the drum member such that the primary lengthwise direction of such small objects is substantially aligned with the peripheral direction of the drum member. There are also provided means defining at least one recess, serving as an object dispensing element, at the bottom of the aforesaid aligning means, such recess when passing beneath the pile of small objects removing one such small object from said pile. A channel communicates with the recess, this channel opening approximately tangentially through the wall of the drum member and by means of which the small object disposed in the recess can slide out through the channel after the small object has been carried past the zenith of said drum member under the action of the centrifugal forces, but before said recess again immerses into the pile of small objects for engaging a further small object.

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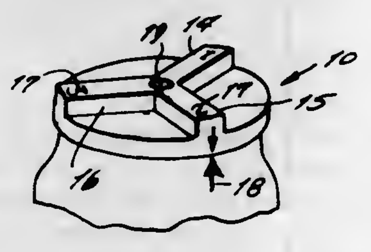
### 3,759,420
### FOOLPROOF DISPENSER OF MEDICAL PILLS

**Uno O. Karkanen, 6950 Center Rd., Saginaw, Mich.**

**Filed July 31, 1972, Ser. No. 277,278**

**Int. Cl. B65d** *83/00*

**U.S. Cl. 221—288** **1 Claim**



A container for dispensing pills that might be harmful if taken by children or simple-minded persons; the device consisting of a novel closure that must be adjusted and positioned in several precise subsequent attitudes so to make a pill to travel a tortuous path between the container interior and a dispensing opening, the closure consisting of a rotatable cap on a stationary base, and wherein the precise subsequent steps are almost impossible by chance to be made by a child or simple adult, but which can be quickly and easy done by a knowledgeable adult.

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### 3,759,421
### TURNING KEY FOR ROLLING-UP THE EMPTY END OF A TUBE, POSSIBLY IN COMBINATION WITH A SQUEEZING DEVICE

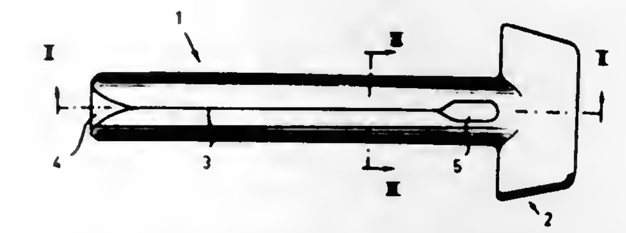
**Heinrich Hausmann, Jestetten, Germany**

**Filed Oct. 6, 1971, Ser. No. 187,026**

**Claims priority, application Austria, Oct. 6, 1970, A 9000/70**

**Int. Cl. B67d** *35/32*

**U.S. Cl. 222—99** **4 Claims**



A turning key for rolling up the empty end of a tube includes a handle and an integrally formed shaft. The shaft has a slit defined by its thin radially elastic walls. There is an opening at the end of the slit nearest the handle to accommodate the edge of the tube. The slit readily grasps an empty tube because it is normally closed.

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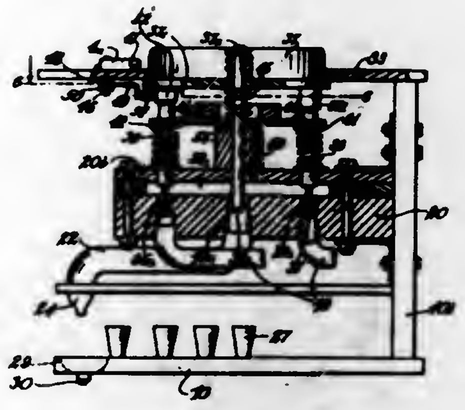
### 3,759,422
### BEVERAGE MIXING AND DISPENSING APPARATUS

**Richard H. Matheney, 233 W. 64th St., Los Angeles, Calif.**

**Filed Nov. 8, 1971, Ser. No. 196,487**

**Int. Cl. B67d** *5/56*

**U.S. Cl. 222—129.4** **6 Claims**



A mixing and dispensing apparatus for alcoholic and soft beverages. A stand has receptacles receiving inverted bottles of the beverages. The rate of discharge from the receptacles is controlled by primary valves to lead the beverages into a mixing chamber having a dispensing outlet. The inlets to the mixing chamber are controlled by secondary valves. A table extends from the stand and has a control knob depressible to operate the secondary valves selectively for alcoholic beverages; and independent dials are operable alternately with the alcoholic beverage controls to open secondary valves pertaining to the soft beverages. The knob and dials are rotatable to clear the controls and afford direct opening of all the secondary valves by the added depression of the knob.

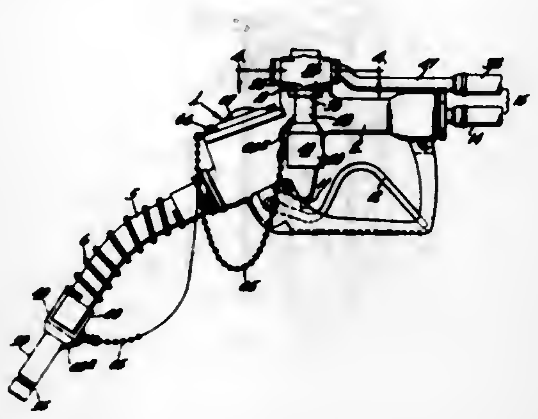
### 3,759,423
### CONTAMINATION-PREVENTING NOZZLE

**William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**

**Filed May 18, 1971, Ser. No. 144,495**

**Int. Cl. B67d** *5/32*

**U.S. Cl. 222—153** **5 Claims**



In a dispensing nozzle used for dispensing solely one or the other of two liquid fuel components, and also for dispensing various blends of the two components, contamination of one component by the other, when dispensing solely said one component, is prevented by utilizing a manually-controllable shut-off valve for the other component, in the nozzle body. A detachable nozzle reducing extension, which must be used in order to dispense solely said one component into specially-equipped automobiles requiring this fuel, is held captive on the nozzle body, and cannot be removed for application to the nozzle spout unless the shut-off valve is first operated to its off position. Two separate fuel inlet passageways leading to the nozzle main shut-off valve are employed, one for each respective one of the two fuel components, and a separate spring-loaded check valve is utilized in each passageway, in close juxtaposition to the main nozzle valve.

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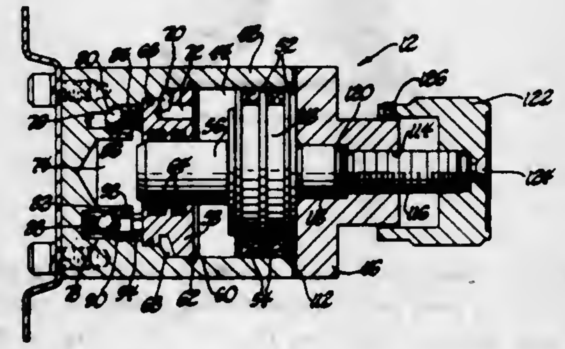
### 3,759,424
### LUBRICANT DISPENSING MEANS AND SYSTEM

**Edwin A. Maddock, 1510 Cherokee, Royal Oak, Mich.**

**Filed Dec. 28, 1970, Ser. No. 101,880**

**Int. Cl. G01f** *11/06*

**U.S. Cl. 222—309** **6 Claims**



A means and method for dispensing a viscous fluid in metered amounts to provide lubricity for metal drawing in a forming press and which includes a positive displacement pump having an integral piston head and plunger construction, one-way ball check valves in inlet and outlet flow passages, spray nozzles connected to the pumps outlet ports by flexible conduit lines and swival mounted on magnetic mounting blocks for positioning ease, adjustment means on the pump for metering control by positioning an abutment stop within the piston chamber area, and a manually operated air valve for cyclic operation of the fluid pump in the normal operating use of the forming press.

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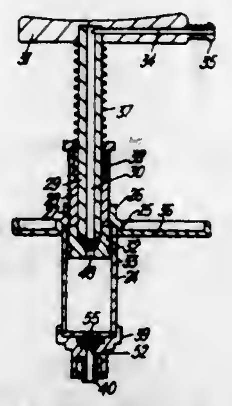
### 3,759,425
### PISTON VALVE SYRINGE GUN

**Ronald Harvey David Frank Lee, Berkhamsted, England, assignor to Cooper, McDougall & Robertson Limited, Hertfordshire, England**

**Filed June 23, 1970, Ser. No. 49,008**

**Int. Cl. G01f** *11/06*

**U.S. Cl. 222—309** **13 Claims**



A syringe gun suitable for dispensing liquid or semi-liquid comprises, in combination, a barrel, a piston rod, a piston attached to the piston rod and located within the barrel for discharging the contents of the barrel therefrom, an inlet valve enabling the passage of liquid or semi-liquid into the barrel, and a discharge valve enabling the passage of liquid or semi-liquid out of the barrel. At least one of said valves is the combination of a chamber, an inlet orifice to the chamber, a plate within the chamber of substantially greater cross-sectional area than that of the inlet orifice, the plate having an inlet side and an outlet side, a passage for liquid or semi-liquid from the inlet side of the plate to the outlet side of the plate, and an outlet orifice for enabling the passage of liquid or semi-liquid from the chamber. In this valve arrangement the plate seals the inlet orifice under pressure upon the outlet side of the plate and, in the alternative, permits the passage of liquid or semi-liquid through the inlet orifice, by the flexing or moving of the plate away from the inlet orifice and through said passage to the outlet orifice by flexing of the resilient plate or the moving of a floating plate from the inlet orifice, and through said passage to the outlet orifice.

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### 3,759,426
### MANUALLY-OPERATED LIQUID DISPENSER

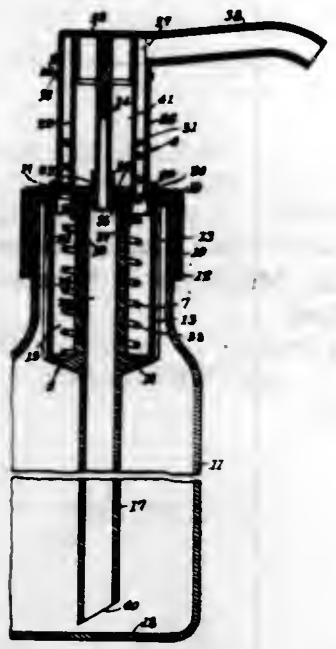
**Neil G. Kane, deceased, late of Hacienda Heights, Calif., and by Virginia L. Kane, special administratrix, 15411 Rojas St., Hacienda Heights, Calif.**

**Filed Sept. 8, 1972, Ser. No. 287,564**

**Int. Cl. B67d** *5/40*

**U.S. Cl. 222—385** **8 Claims**

A liquid dispenser for manual operation comprising a body for connection to the top of a liquid container, and a contractible head having a discharge portion and fitted into said body, both the body and the head being of elastomeric plastic material, spring means for retaining the head extended in non-dispensing position, and the body and the head being provided with integral sealing portions that cooperate to control flow from said container. The usual ball valves common to the present type of device are dispensed with said sealing portions



serving as pressure-operated valve-like means that control flow of liquid from the container to said discharge portion of the head.

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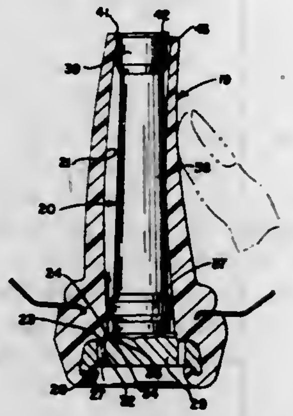
3,759,427

### DISPENSING VALVE ASSEMBLY FOR PRESSURIZED CONTAINER

**Thomas R. Stanley, Brookfield, and Carmen T. Mascia, Westchester, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**

**Filed Nov. 22, 1968, Ser. No. 778,077**
**Int. Cl. B65d** *83/00*
**U.S. Cl. 222—402.23** **7 Claims**



A dispensing valve assembly for dispensing a product from a pressurized container. The dispensing valve assembly includes a nozzle and a valve stem which are mounted to permit misalignment of the valve stem axis and the nozzle axis. The nozzle and valve stem include a first valve means at the terminal end of the nozzle and a second valve means spaced from the other end. The valve means are seated to prevent product flow through the nozzle when the stem and nozzle are in alignment. Upon the application of a lateral force to the nozzle, the axes are out of alignment and the valve means unseated so that the product is dispensed through the nozzle.

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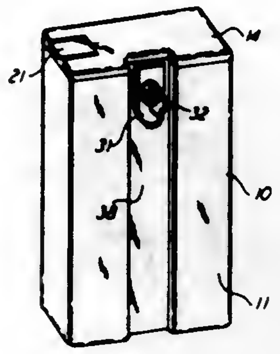
3,759,428

### DISPENSER TYPE BOX

**Elmo W. Heter, Jr., Lewiston, Idaho, assignor to Sheridan Products Inc., Racine, Wis.**

**Filed June 14, 1971, Ser. No. 152,823**
**Int. Cl. B67d** *3/00*
**U.S. Cl. 222—480** **2 Claims**

A dispenser type box of the type useful in containing comminutive goods, including gun pellets which can be poured from the box. The box has a body portion with a rectilinear open top having a narrow side and with a first cover hinged along the longer side to cover the box opening. The first cover has its own opening at its narrower side, and a second cover is hinged at the first cover's opening, all such that the goods can be poured from the box at the narrower side of the box and through the second opening. Both covers are finger-press operated so that they can be secured and released. Also, the entire unit is made of one plastic material, including the two hinges for the two covers.



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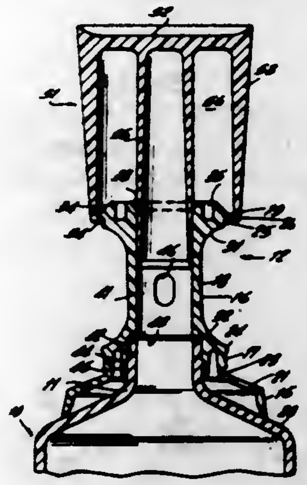
3,759,429

### PUSH-PULL CAP AND NECK ASSEMBLY

**Gerald J. Ardito, Old Westbury; Jerome S. Newman, Floral Park, and Samuel E. Sarris, Jamaica, all of N.Y., assignors to Inventions Unlimited Incorporated, Fresh Meadows, N.Y.**

**Filed Dec. 16, 1970, Ser. No. 98,827The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.**
**Int. Cl. B65d** *47/12*
**U.S. Cl. 222—546** **23 Claims**



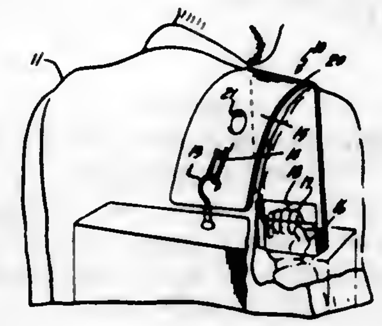
A material dispensing neck having a dispensing orifice in the side thereof and provided with engaging recesses on the exterior and interior surfaces thereof. The cap of the container has a plunger which extends into the neck and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the engaging recesses on the outer surface of the neck in open and closed positions. The plunger may also be provided with a resilient skirt which is compressed within the neck and outwardly biased to provide for sealing engagement, notwithstanding tolerance discrepancies. The neck is secured to an existing container neck by the engaging means on the interior surface thereof, thereby providing an existing container with a push-pull cap and neck assembly.

3,759,430

### CLOTHES CARRIER

**Bobby L. Ward, 8402 Lewis Pl., Orlando, Fla.**

**Continuation of Ser. No. 11,369, Feb. 16, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,538**
**Int. Cl. A45f** *3/00*
**U.S. Cl. 224—45 T** **1 Claim**



A clothes carrier apparatus made of a flexible elongated piece of material and having a handle at one end for gripping the carrier and connecting means on the other end thereof for connecting coat hangers, or the like, thereto. The clothes carrier is adapted to set across the shoulder for support of the clothes which clothes may be enclosed in a garment bag, dress or coat carrier container. The coat carrier may also have an attachment for attaching the loaded clothes carrier to a car hanger, door hook, or the like, and is flexible so as to be easily rolled or folded for storage.

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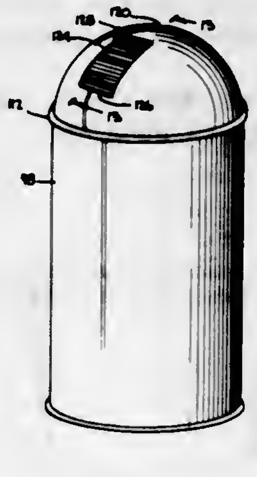
3,759,431

### PRESSURIZED CONTAINERS

**Kenneth D. Vos, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.**

**Division of Ser. No. 158,194, June 30, 1971. This application July 31, 1972, Ser. No. 276,802**
**Int. Cl. B65d** *83/14*
**U.S. Cl. 222—402.21** **7 Claims**



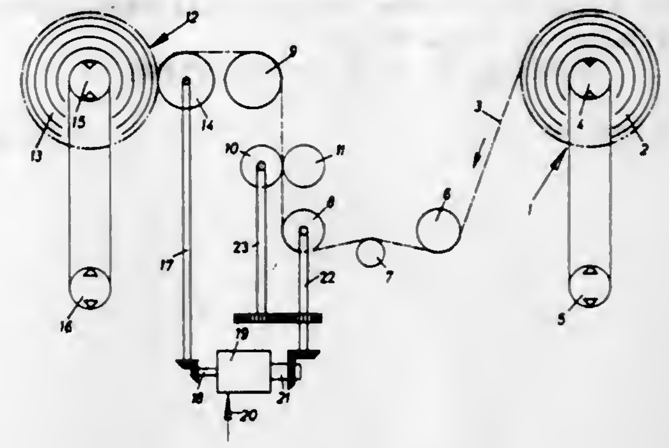
This invention relates to a pressurized package of the class which includes a container for receiving a product, propellant means in the container for discharging the product from the container, and a dispensing assembly mounted on the container which is characterized by an actuating lever that shifts to displace a flexible resilient valve body member from a position in which its discharge orifice-containing surface is in sealed engagement, at least partially effected by the internal container pressure, with a valve cap, to a position in which it is aligned with an exit opening of the overcap.

3,759,432

### WEB DRIVE AND WEB PROCESSING CONTROLS FOR WEB PROCESSING MACHINES

**Armin S. P. Hutzenlaub, Wiehl, Germany, assignor to Erwin Kampf Maschinenfabrik, Wiehl, Germany**

**Filed June 23, 1972, Ser. No. 265,425**
**Claims priority, application Germany, June 24, 1971, P 21 31 446.5**
**Int. Cl. B65h** *17/20*
**U.S. Cl. 226—42** **4 Claims**



A web drive and web processing controls for web processing machines which include a synchronous torque booster whose input rotation is derived from the web spaced near the storage roll via a web-driven idler roller and whose output rotation positively drives web advancing rollers and the web processing rollers or other processing means, thereby maintaining a constant controlled tension on the web in the processing region.

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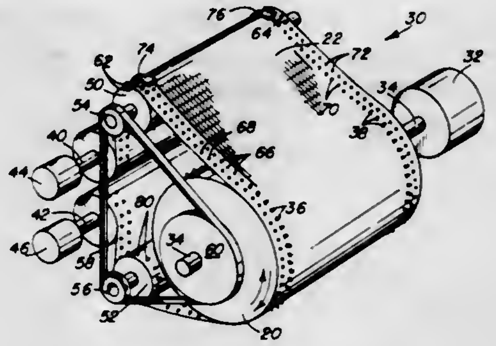
3,759,433

### METHOD AND APPARATUS FOR TRANSPORTING A STRIP OF RECORDING MATERIAL

**Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.**

**Filed Nov. 10, 1970, Ser. No. 88,259**
**Int. Cl. G03b** *1/20*
**U.S. Cl. 226—54** **23 Claims**



A feed arrangement for transporting a strip of recording material past a recording pen includes a feed roller and a positioning roller both drivingly engageable with the strip and driven in synchronism. The feed roller is located in advance of the positioning roller and feeds the strip material from a storage roll to the positioning roller. Slack in the strip of recording material is maintained between the feed roller and the positioning roller to remove from the portion of the strip engaged by the positioning roller all forces required to advance the strip of recording material from storage. The feed roller has sprocket pins which engage a first set of apertures along the edge of the recording strip, and the positioning roller also has sprocket pins which engage a second set of apertures along the edge of the recording strip. Since the pins of the positioning roller need exert only small forces on the engaged portion of the strip the possibility of such pins tearing or deforming the strip, with resulting inaccurate positioning of the strip, is eliminated or at least greatly reduced. The positioning roller may be a drum which also supports the recording strip for coaction with the recording pen.

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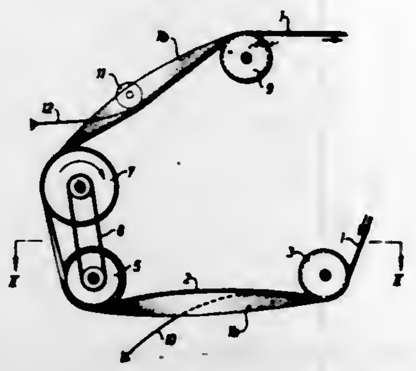
### 3,759,434
### THREADING MECHANISM

**Bengt Lindstrum, Gustavsberg; Bengt Citron, Handen; Erik Nelenius, Vaxjo; Ingemar Karlsson, Morners, and Sven Olof Rosby, Vaxjo, all of Sweden, assignors to Aktiebolaget Svenska Faltfabriken, Nacka, Sweden**

**Filed Sept. 27, 1972, Ser. No. 292,608**

**Int. Cl. B65h** *17/34*

**U.S. Cl. 226—91** **9 Claims**



Threading mechanism for a treatment plant which includes a band of flexible material folded upon itself to grip the leading end of the web material, the fold being closed on the web material adjacent the entrance end of the plant and separated from the web material at the discharge end of the plant. The mechanism includes a guiding surface or roller positioned adjacent the discharge end having a profile to open the folded band more than 180°, along with a drive roller for pulling the band around the profiled surface. The mechanism also includes jet elements for positively engaging the web material being treated into the fold of the band prior to its re-entry into the chamber. In one embodiment of the invention the profiled surface and the guide roller are mounted a substantial distance below the exit and entrance rollers for the folded band.

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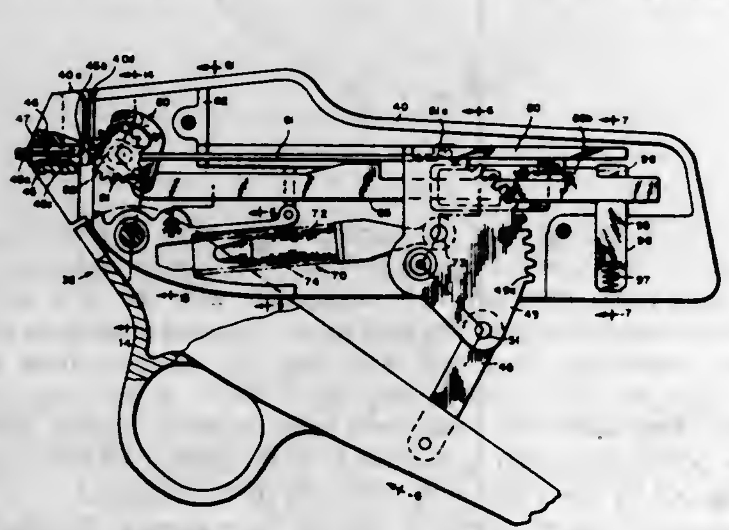
### 3,759,435
### APPARATUS FOR DISPENSING FASTENERS

**Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.**

**Filed Aug. 5, 1971, Ser. No. 169,413**

**Int. Cl. B25c** *1/00*

**U.S. Cl. 227—67** **30 Claims**



Apparatus for dispensing fastener attachment members of the type having a filament with heads on both ends, the device including a casing, a needle projecting from the casing, the needle having a bore through which the fastener attachment member is adapted to be dispensed, a plunger or ejector adapted to force one head of the attachment member through the needle bore, the plunger advanced by the combination of a gear and sliding rack, the sliding rack in the form of a thin plate and in which the attachment members are fed before the needle and in front of the ejector by an indexing wheel advanced by a feed pawl with a slotted hole which allows it to rock in and out of engagement with the indexing wheel as it is moved back and forth.

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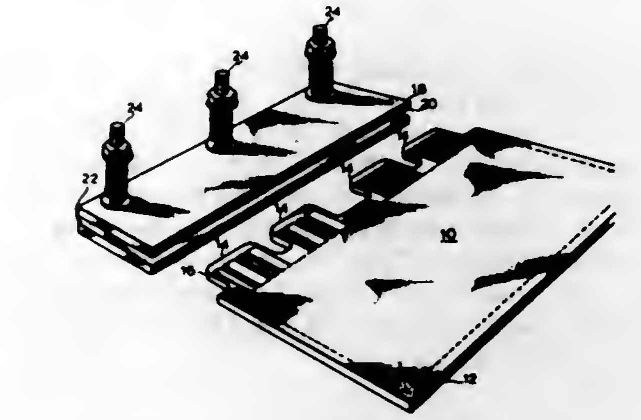
### 3,759,436
### SOLDER SHIELD FOR CONTACTS ON PRINTED CIRCUIT BOARDS

**Paul E. Foster, and Rollie H. Little, both of Phoenix, Ariz., assignors to General Electric Company, Lynn, Mass.**

**Filed Mar. 2, 1970, Ser. No. 15,395**

**Int. Cl. B23k** *1/00*

**U.S. Cl. 228—57** **5 Claims**



A shield for masking electrical contacts on printed circuit boards during flow soldering. The shield is made of three elongated pieces of printed circuit board material assembled to have a generally U-shaped cross section. The edge of the board carrying the contacts to be masked is inserted into the bight of the U. The shield pieces are forced together by spring-loaded bolts to seal the inserted edge.

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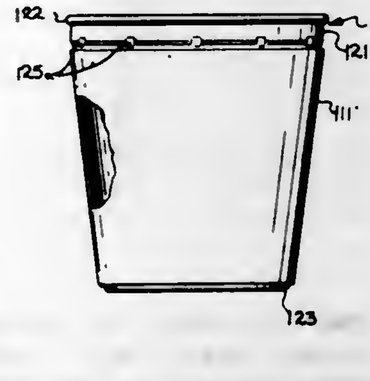
### 3,759,437
### COMPOSITE CONTAINER

**Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed July 14, 1971, Ser. No. 162,400**

**Int. Cl. B65d** *3/00*

**U.S. Cl. 229—1.5 B** **7 Claims**



A container of composite construction which comprises a wide-mouthed inner shell formed of seamless thermoplastic material in a generally frusto-conical configuration so that like shells are nestable in a compact stack, the sidewall portion of the shell being of relatively thin and fragile construction, and which further comprises an externally decorated, relatively stiff paperboard sleeve which is wound around the side wall portion of the shell and which is adhesively secured in face to face reinforcing contact therewith, the opposed ends of the blank from which the sleeve is formed each comprising a series of alternating recesses and protrusions which are interengageable with corresponding protrusions and recesses in the other end to accurately register the ends of the sleeve with respect to one another in a serpentine-shaped butt seam. In the preferred embodiment, the side wall of the inner shell is provided with a stacking shoulder immediately below the rim portion of the shell to facilitate denesting of nested shells and/or denesting of nested finished containers and, when the outer sleeve is joined to the inner shell by a water based or solvent-based adhesive, the stacking shoulder may advantageously be provided with a circumferentially spaced series of vent indentations to permit the escape of adhesive vapors from a stack of nested finished containers.

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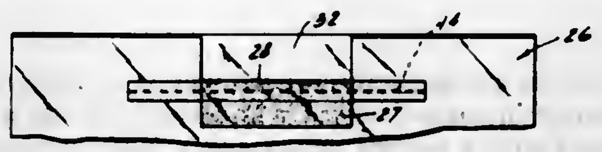
### 3,759,438
### PLASTIC BAG HAVING RECLOSING MEANS

**Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.**

**Filed Aug. 14, 1970, Ser. No. 63,695**

**Int. Cl. B65d** *33/16*

**U.S. Cl. 229—65** **3 Claims**



A plastic bag of heat-sealable material is provided with a length of wire covered with a flat strip of paper adjacent to the mouth end of the bag, there being a heat-seal connection holding the paper strip against the bag material.

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### 3,759,439
### BAG WITH TEAR STRIP

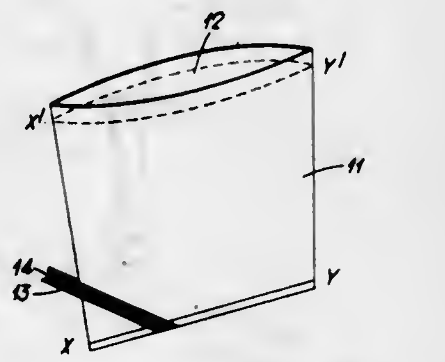
**William Telford Cross, Cuddington; Margaret Lilian Steel, Runcorn, and Stephen Edward Trueman, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Apr. 9, 1971, Ser. No. 132,674**

**Claims priority, application Great Britain, Apr. 14, 1970, 17,687/70**

**Int. Cl. B65d** *33/00*

**U.S. Cl. 229—66** **5 Claims**



Plastic film having extending wholly or partly across it a flexible reinforcement having a highly localised line of weakness, the reinforcement being bonded to the surface of the film or incorporated partly or wholly within its thickness. The reinforcement may be, for example, a woven textile web material or plastic sheet. The resulting film may be used to make containers which can be easily opened by tearing along the line or lines of weakness in the reinforcement.

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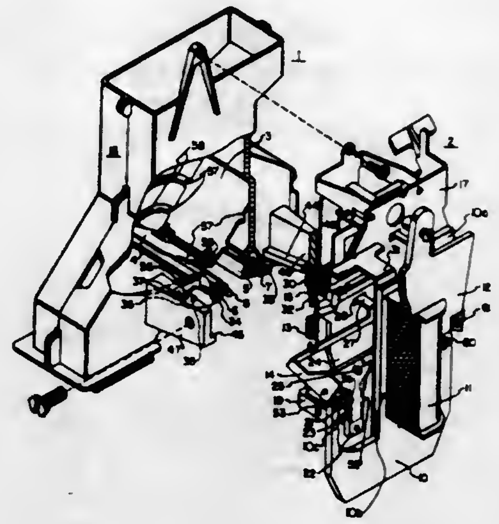
### 3,759,440
### COIN DISPOSAL APPARATUS

**Richard J. Hamilton, West Chicago, Ill., and Gerald B. McGough, Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed May 5, 1972, Ser. No. 250,709**

**Int. Cl. B65g** *11/04*

**U.S. Cl. 232—57.5** **9 Claims**



A coin collection and disposal mechanism is disclosed which includes a pair of doors which are positioned within a hopper, each door being pivotally supported about an axis common to both. Each door has a latch individual thereto and means are provided for opening one or the other of the doors to channel deposited coins into either a first or second passageway.

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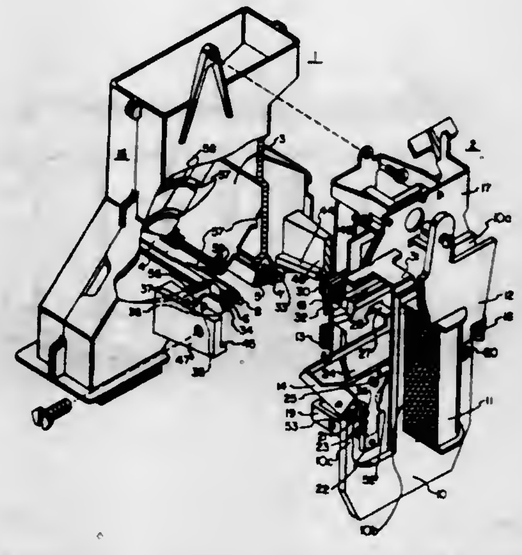
### 3,759,441
### COIN DISPOSAL APPARATUS

**Richard J. Hamilton, West Chicago, and Frank J. Petkewicz, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed May 5, 1972, Ser. No. 250,558**

**Int. Cl. B65g** *11/04*

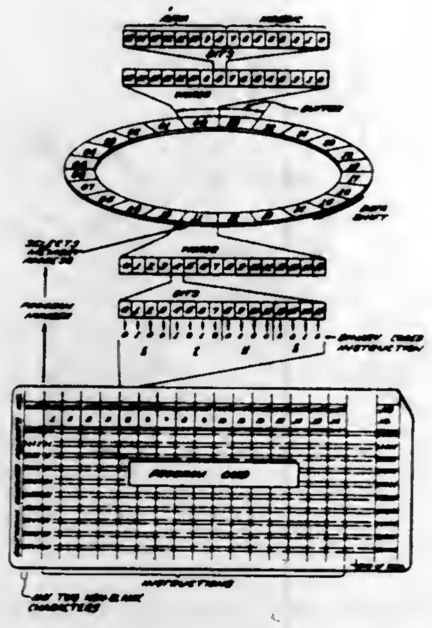
**U.S. Cl. 232—57.5** **8 Claims**



A coin collection and disposal mechanism is disclosed which includes a pair of doors which are positioned within a hopper, each door being pivotally supported about an axis common to both. Each door has a latch individual thereto and means are provided for opening one or the other of the doors to channel deposited coins into either a first or second passageway.

### 3,759,442
### CARD PUNCH SYSTEM AND PROCESS

**Clarence G. McCune, Balboa; John C. Vincer, Anaheim, and Kenneth E. Graves, San Jose, all of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.**
**Division of Ser. No. 47,215, June 18, 1970, Pat. No. 3,667,668.**
**This application Feb. 11, 1972, Ser. No. 225,685**
**Int. Cl. G06k** *1/18*
U.S. Cl. 234—1 3 Claims



The time required to punch IBM cards can be reduced by using a memory for storing a large number of programs. The card reading capability of a conventional keypunch machine can be used to load the program information. The memory can also be used to store keystroke data while the system is executing automatic operations.

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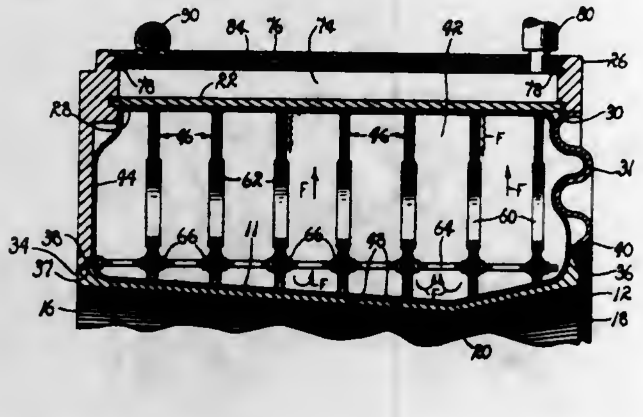
### 3,759,443
### THERMAL FLUX TRANSFER SYSTEM

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Robert Alfred Freggens, Lancaster, Pa.**
**Filed June 16, 1971, Ser. No. 153,542**
**Int. Cl. F02k** *11/02*
U.S. Cl. 239—127.1 7 Claims



A thermal flux transfer system for use in maintaining the thrust chamber of an operative reaction motor at given temperatures. The system is characterized by an hermetically sealed chamber surrounding a thrust chamber to be cooled, having seated therewithin a plurality of parallel, longitudinally spaced, disk-shaped wick members formed of a metallic mesh and employed in delivering a working fluid, in its liquid state, radially toward the thrust chamber and subsequently delivering the working fluid, in its vapor state, away from the nozzle for thereby effecting a cooling of the nozzle, in accordance with known principles of an operating heat pipe.

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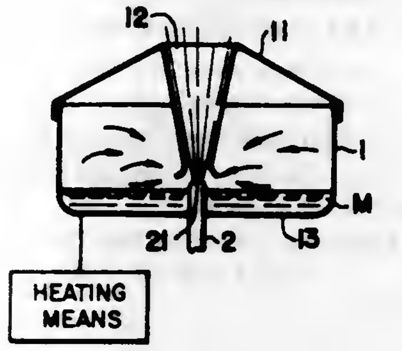
### 3,759,444
### PROCESS AND APPARATUS FOR THE PRODUCTION OF AEROSOLS

**Seizo Tanaka, Kanagawa, Japan, assignor to Showa Denko Kabushiki Kaisha, Shiba-Tokyo and Sanko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**
**Continuation of Ser. No. 802,457, Feb. 26, 1969 abandoned.**
**This application June 21, 1971, Ser. No. 158,671**
**Claims priority, application Japan, Feb. 28, 1968, 43/13121**
**Int. Cl. B05b** *1/24*
U.S. Cl. 239—138 9 Claims



A process and apparatus for production of aerosols which comprise charging a chemical in an aerosol forming apparatus equipped with a heating means and a fluid jet nozzle, and ejecting a fluid from the fluid jet nozzle, whereby a chemical vapor is drawn in the reduced pressure area formed by jetting of the fluid, as well as rapidly ejected into the atmosphere.

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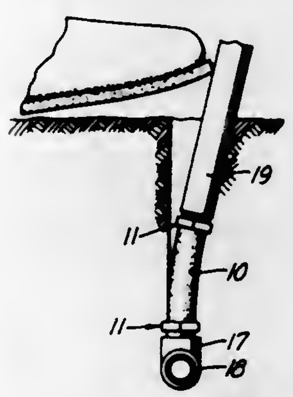
### 3,759,445
### FLEXIBLE FITTING FOR LAWN SPRINKLER SYSTEMS

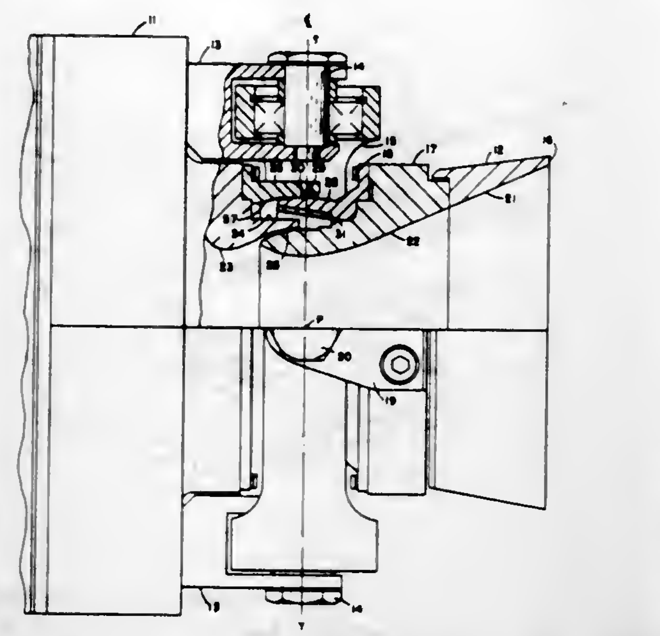
**Robert W. King, 9245 Noble Ave., Sepulveda, Calif.**
**Continuation of Ser. No. 104,019, Jan. 5, 1971, abandoned.**
**This application Jan. 2, 1973, Ser. No. 320,288**
**Int. Cl. A01g** *25/00*
U.S. Cl. 239—201 7 Claims



A flexible fitting for lawn sprinklers. The fitting includes an elongated flexible tube. A pair of end members are secured to opposite ends of the tube. Each of the end members has external screw threading and an integral hexagonal nut for threadably connecting the fitting. One of the end members is connected to the pipeline and the other is connected to the sprinkler or sprinkler riser. The fitting provides a flexible connection between the sprinkler and the pipeline which is capable of yielding to prevent damage and injury in the event the sprinkler or sprinkler riser is accidentally struck.

### 3,759,446
### ROCKET MOTORS HAVING ANGULARLY MOVABLE EXHAUST NOZZLES

**Jack Bligh, Innisfree, Aylesbury, Buckinghamshire, and Kenneth Edward Silman, Wendover, Buckinghamshire, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**
**Filed Jan. 21, 1972, Ser. No. 219,772**
**Claims priority, application Great Britain, Jan. 21, 1971, 2,845/71**
**Int. Cl. B64d** *33/04*
U.S. Cl. 239—265.35 8 Claims



An angularly movable exhaust nozzle for a rocket motor having two concentric pairs of spherical mating surfaces provided between a forward portion attached to the motor and the exhaust nozzle, the proximity of the surfaces being such that an annular labyrinth passage is provided between them. There may be sealing means in the passage remote from the inner surface of the nozzle or a shroud surrounding the nozzle and ducting rearward gases escaping from the passage.

The exhaust nozzle may be pivoted to the forward portion by means of a gimbal ring assembly.

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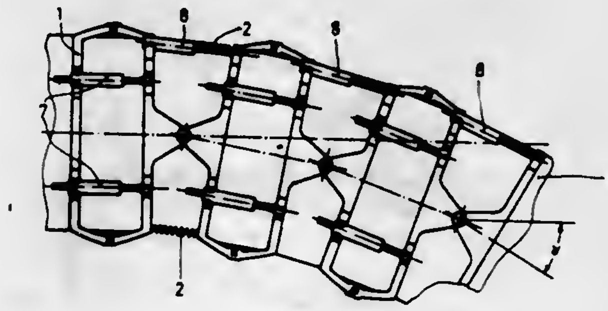
### 3,759,447
### FLEXIBLE TUBING FOR THE CONDUCTING OF HOT JET ENGINE GASES

**Erich W. Weigmann, Munchen, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany**
**Filed May 28, 1971, Ser. No. 148,010**
**Claims priority, application Germany, June 8, 1970, P 20 28 067.5**
**Int. Cl. B64c** *15/04*
U.S. Cl. 239—265.35 13 Claims



Flexible conduit for guiding exhaust gases from a jet engine, particularly for aircraft use. Said conduit is intended for attachment to the discharge end of a jet engine for redirecting the flow of propellant gases, as for either braking or attitude control purposes. The conduit in the preferred embodiment comprises a plurality of base rings pivoted to each other on alternately perpendicular axes with a flexible hose of heat-resistant material provided internally of said rings and a protective skin applied externally of said ring. Preferably serially connected hydraulic means are provided between alternately pivoted pairs of rings to provide hydraulic control for pivoting or flexing said conduit as desired.

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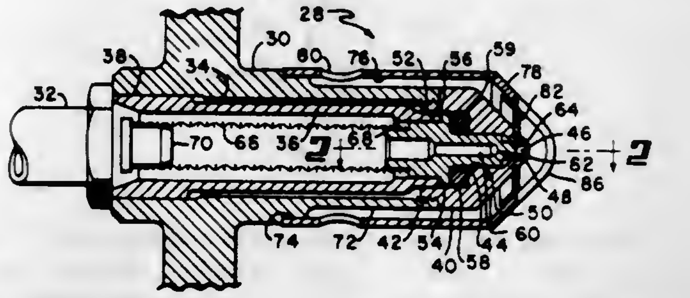
### 3,759,448
### SIMPLIFIED FLAT SPRAY FUEL NOZZLE

**Sidney C. Watkins, Bridgeport, Conn., assignor to AVCO Corporation, Stratford, Conn.**
**Filed Sept. 15, 1972, Ser. No. 289,419**
**Int. Cl. B05b** *1/04*
U.S. Cl. 239—419.5 8 Claims



A flat spray fuel nozzle comprising a generally spherical tip with an elongated fuel discharge slot extending from a spherical chamber. A fuel splitter is adjustably positioned in the chamber, by means of a sleeve-like shim, to divert and reunite fuel at the slot to increase turbulence. An air shroud surrounds the exterior of the tip and has a discharge slot in line with the slot in the tip. A splitter element is positioned in the shroud so that air passing through the shroud is divided into separate streams which impinge on either side of the liquid film adjacent the fuel slot to further increase atomization of the fuel.

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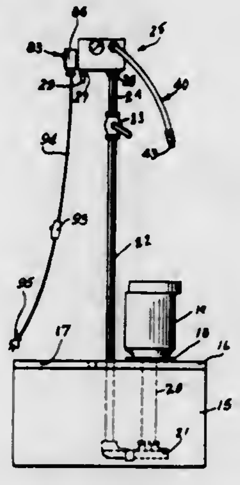
### 3,759,449
### DEVICE FOR PRODUCING COOLANT MIST

**Jerome E. Ruthman, Cincinnati, Ohio; William L. Smith, Cold Spring, and Robert A. Forte, Dayton, both of Ky., assignors to The Ruthman Machinery Company, Cincinnati, Ohio**
**Filed Mar. 4, 1971, Ser. No. 121,023**
**Int. Cl. B05b** *7/24*
U.S. Cl. 239—416.2 12 Claims



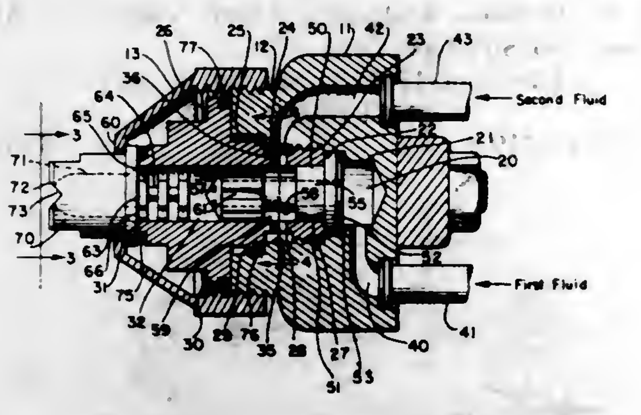
The mechanism herein disclosed provides a coolant mist for machine tools and the like and the intensity of which mist may be changed at the will of the user or operator. The machine tool with which the coolant mist is employed may be performing a drilling, reaming, tapping, grinding and the like operation and the nozzle for delivering coolant to said point of operation is controlled in the form of a stream of coolant, a coolant mist, or a continuous air stream operation. The mist producing mechanism may be readily adjusted for increasing or varying the amount and intensity of the coolant stream, the coolant mist, and the stream of air.

### 3,759,450
### FLUID MIXING AND SPRAYING APPARATUS

**Morris Fram, Dunland; Robert D. Hetherington, Sunland, and Craig Freeman, Van Nuys, all of Calif., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.**

**Filed Mar. 16, 1972, Ser. No. 235,356**
**Int. Cl. B05b** *7/04*

**U.S. Cl. 239—427** **4 Claims**



A fluid mixing and spraying apparatus and method. The apparatus includes a body having an elongated chamber with a diffuser positioned therein having a central passageway with an entrance end and an exit end. The diffuser has an end wall at the exit end of the central passageway. The end wall of the diffuser has a plurality of spaced openings to permit a first fluid supplied to the entrance end of the passageway under pressure to exit through the openings into the elongated chamber as a plurality of streams. An intermediate portion of the diffuser has a peripheral recessed portion which defines a distributing chamber for receiving a second fluid under pressure. A plurality of channels formed in the diffuser extend from the recessed portion to the end wall to permit the second fluid in the distributing chamber to exit from the chamber through the channels into the elongated chamber as a plurality of streams to mix with the first fluid. Baffle means also may be provided in the elongated chamber beyond the point where the two fluids first meet and mix to further facilitate mixing of the two fluids prior to their discharge through a fluid spray tip.

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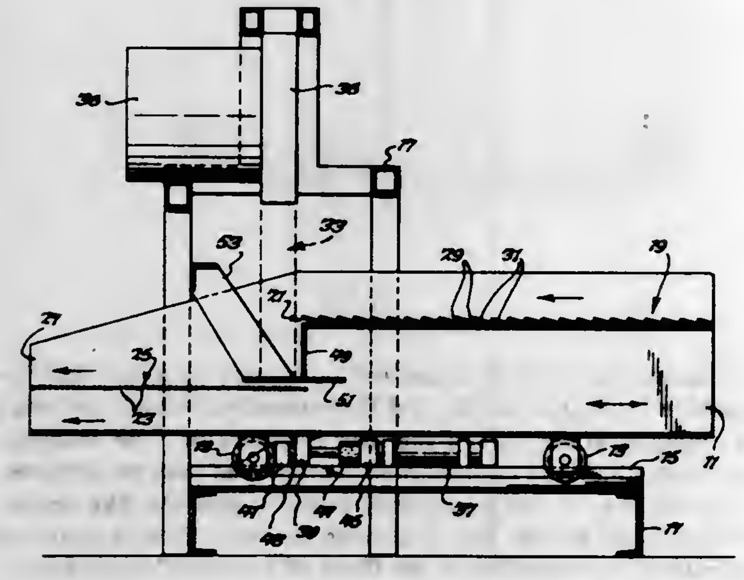
### 3,759,451
### APPARATUS FOR GRANULATING MOLDED SAND

**Harper W. Good, Waynesboro, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.**

**Filed Jan. 3, 1972, Ser. No. 214,611**
**Int. Cl. B02c** *19/00*

**U.S. Cl. 241—77** **12 Claims**



In an apparatus for granulating molded sand, a first conveying surface discharges lumps of molded sand onto a lower conveying surface and into the path of a stream of projected abrasive particles which granulate the lumps of sand.

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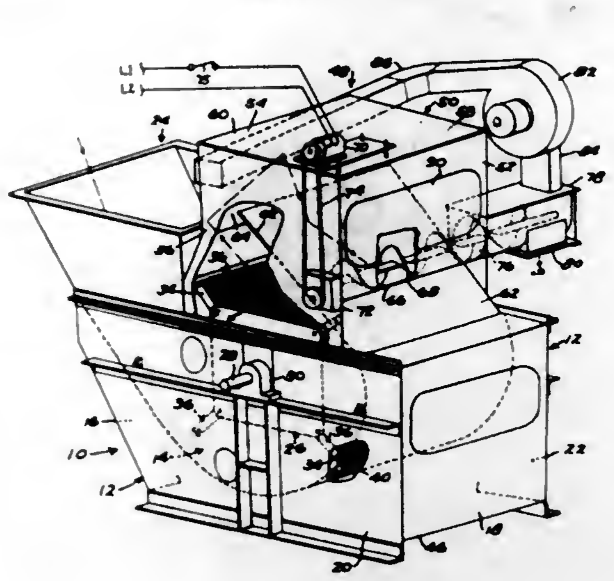
### 3,759,452
### SELF-CLEANING METAL TRAP FOR RUBBISH SHREDDING MACHINES

**James G. Bryant, Greencastle, Ind., assignor to Bryant-Poff, Inc., Coatesville, Ind.**

**Filed Dec. 22, 1971, Ser. No. 210,667**
**Int. Cl. B02c** *19/00*

**U.S. Cl. 241—82** **6 Claims**



A self-cleaning metal trap is positioned on the shredding machine to remove foreign material from the shredding chamber thereby preventing damage to the shredder. The metal trap is provided with a trough which collects the material ejected from the shredding chamber. A motor-driven conveyor at the bottom of the trough removes the accumulated contents of the trap so that the shredder may be continuously operated for as long as desired.

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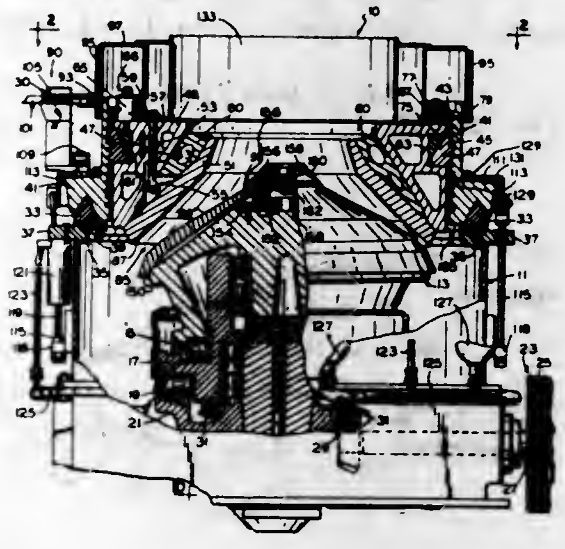
### 3,759,453
### ROCK CRUSHER

**Louis W. Johnson, 3440 Franklin Blvd., Eugene, Oreg.**

**Filed Dec. 27, 1971, Ser. No. 211,888**
**Int. Cl. B02c** *2/04*

**U.S. Cl. 241—207** **22 Claims**



A wedging ring carried in a groove in a bowl jams thread segments against a threaded portion of a bowl carrier which is pressed against a hardened ring by a frictional overload clamp. In turning the bowl relative to the bowl carrier, a manual, automatic or partially automatic drive actuates a pawl and ratchet drive. The crusher head supports an annular mantle held by a wedging ring and a self-tightening nut.

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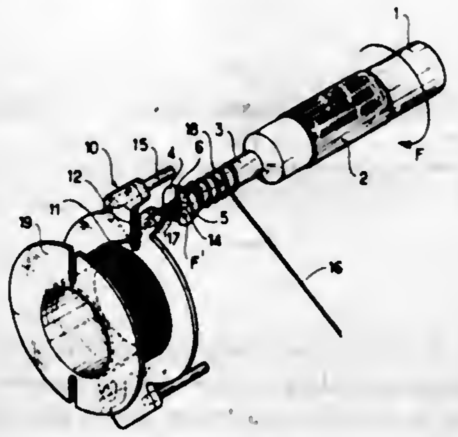
### 3,759,454
### DEVICE FOR WINDING CONDUCTOR WIRE ON A PIN

**Jean-Pierre Bernard, Phalempin, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France**

**Filed July 21, 1971, Ser. No. 165,244**
**Claims priority, application France, July 21, 1970, 7026898**
**Int. Cl. H01f** *41/10*

**U.S. Cl. 242—7.06** **2 Claims**



Device for winding a conductor wire on a spindle comprising a cylindrical part whose end has an edge chamfered at 45° and comprises, on the one hand, an axial bore in which the spindle is fitted and, on the other hand, a diametral guide groove so that by rotating the device, the wire is wound simultaneously around the spindle and the cylindrical part.

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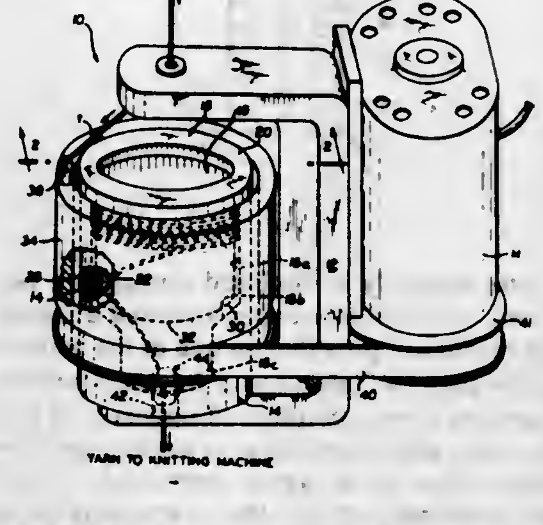
### 3,759,455
### FILAMENT FEEDING AND STORAGE DEVICE

**Robert W. Clemens, Malverne, N.Y., assignor to Wesco Industries Corp., Plainview, N.Y.**

**Filed Sept. 28, 1972, Ser. No. 293,147**
**Int. Cl. B65h** *51/20*

**U.S. Cl. 242—47.12** **15 Claims**



A filament feeding device in which filament from a supply thereof is tangentially wound about a storage drum from which said filament is axially withdrawn. A housing which is fixed has a cavity within which the storage drum is removably seated. The outer contour of the drum and the confronting inner contour of the cavity are matingly shaped so as to define a radial gap therebetween and also so as to prevent significant relative rotation between the drum and the housing whereby the drum is in effect floating within the housing, being unsecured thereto. The filament tangentially wound about the drum forms a plurality of windings which advance axially within the radial gap and is thereafter withdrawn axially through an aperture at the opposite end of the housing. The mating confronting contours of drum and housing may be oval shaped, polygonically shaped, or be shaped in any other noncircular contour which results in preventing relative rotation between the drum and the housing.

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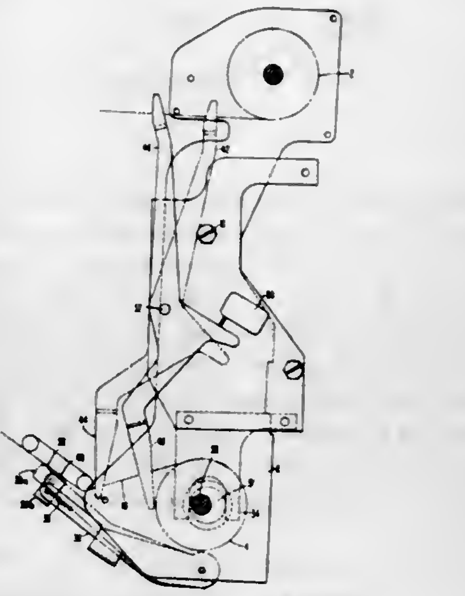
### 3,759,456
### RIBBON FEED AND CORRECTION DEVICE FOR A HIGH SPEED PRINTER

**Otto F. Moneagle, and Karl Svatek, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 23, 1971, Ser. No. 155,925**
**Int. Cl. B65h** *25/26*

**U.S. Cl. 242—57.1** **9 Claims**



A ribbon correction device aligns a web by deliberately skewing a pair of pivoted winding spools to steer the ribbon continuously toward a given median point along the axis of a spool. The device automatically compensates for the effect of a change in the direction of rotation of the winding spool, by means of a single sensing device.

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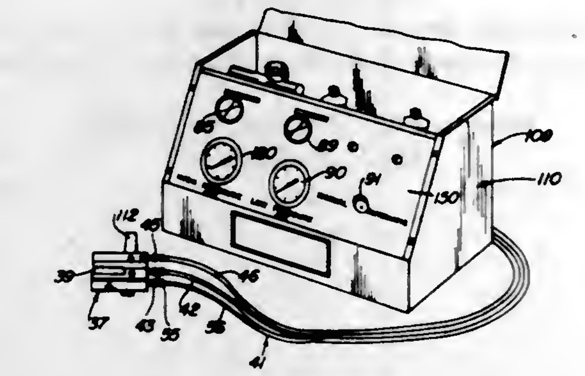
### 3,759,457
### WEB-GUIDING APPARATUS AND POSITION-SENSING AND CONTROL UNIT THEREFOR

**Ferenc Edes, Bolingbrook, and Henry L. Gianatasio, River Forest, both of Ill., assignors to Air-Trol Systems, Inc., Addison, Ill.**

**Filed Dec. 1, 1971, Ser. No. 203,594**
**Int. Cl. G65h** *25/26*

**U.S. Cl. 242—57.1** **16 Claims**

A web-guiding apparatus and position-sensing and control unit therefor for use in sensing and maintaining the proper position and alignment of a web of paper or like flexible sheet material unwound from a roll thereof mounted on a web-supporting roll or cylinder which, in turn, is mounted on a movable supporting frame or carriage for use with web-laminating or sheet-laminating apparatus for laminating a first sheet or web of flexible sheet material, such as paper, plastic resinous film, or the like, to a second sheet or web of the same or comparable flexible sheet material, and for similar purposes, such as sensing and maintaining the proper position of an endless belt conveyor. The supporting frame or carriage is movable transversely of the web of sheet material by hydraulically actuated power means which is under the control of pneumatic pressure-applying means so as to maintain proper alignment of the web and its lateral or side marginal edges during movement of the web during the operation of laminating the first web of flexible sheet material to a second web of flexible sheet material, or when the web is moved for other purposes. The pneumatic pressure-applying means is under the control of air flow control valve means which, in turn, is under the control of pneumatically controlled web-misalignment and position sensing means which senses and is responsive to the normal proper operating position of a marginal or lateral edge portion of the web of flexible sheet material, and to lateral movement thereof during lengthwise movement of the web. The position-sensing means or unit controls the operation of the air flow control valve means for the pneumatic pressure-applying means and actuates the pneumatic pressure-applying means and the hydraulically-actuated power means so as to move the movable roll-supporting frame or carriage and the roll of flexible sheet material mouted thereon transversely of the long axis or direction of travel of the web to correct lateral misalignment or movement of the web and thus maintain the web of flexible sheet material in its normal and proper operating position. The position sensing means or unit maintains the air flow control means in normally-closed position and the pneumatic pressure-applying means inactive when the web of flexible sheet material is in its normal and proper operating position.



The invention embodies manually operable control means for the air flow control valve means to enable the pneumatic pressure-applying means and the power means to be controlled manually. The position-sensing and control unit may also be used with a web of flexible sheet material having a scalloped, notched or like serrated marginal edge portion and for sensing and maintaining proper alignment of an endless belt conveyor.

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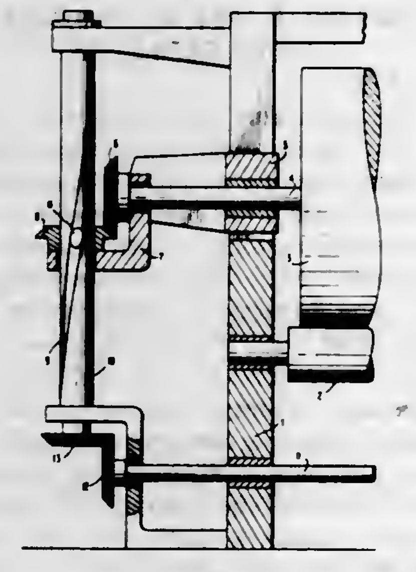
### 3,759,458
### WINDING MACHINE

**Hermann Thomas, Darmstadt, Germany, assignor to Maschinenfabrik GOEBEL G.m.b.H., Darmstadt, Germany**

**Filed Mar. 31, 1972, Ser. No. 240,049**
**Int. Cl. B65h** *17/02*
**U.S. Cl. 242—67.1 R** **1 Claim**



A winding machine for the winding-up of strip band material about a roll, including a grooved shaft disposed perpendicularly with respect to the roll winding axle, and a drive transmitting gear member shiftable along the groove in accordance with the winding axis shift during change in roll diameter, the course of said groove being governed by the angle of the frictional force between the grooved shaft and the gear member occurring during the winding-up of the roll.

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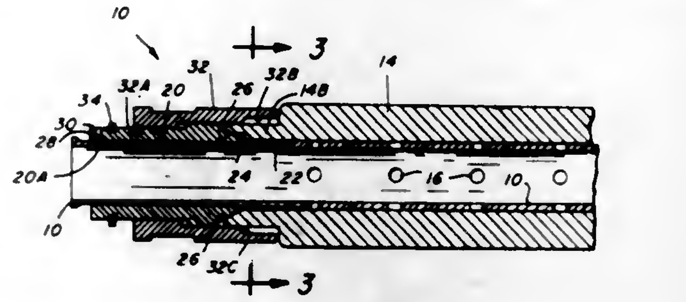
### 3,759,459
### MANDREL FOR WINDING MATERIAL THEREON

**Howard T. De Graffenreid, Box 261, Inola, and Clifford H. May, 702 S. Muskogee St., Sapulpa, both of Okla.**

**Filed Jan. 10, 1972, Ser. No. 216,350**
**Int. Cl. B65h** *75/24*
**U.S. Cl. 242—72.1** **3 Claims**



A mandrel for use in winding filter material thereon to form a filter cartridge including a tube of rigid material of a length at least equal to the filter cartridge and a plurality of evenly spaced radially extending ribs.

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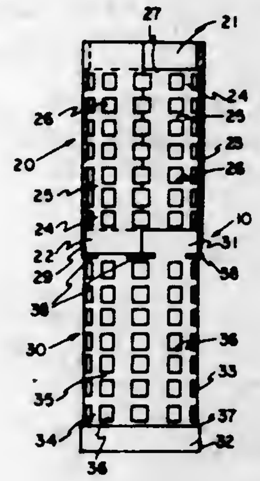
### 3,759,460
### COLLAPSIBLE YARN DYE TUBE

**Frank Fyans, Greenville, S.C., assignor to Fyans' Associates, Inc., Greenville, S.C.**

**Filed July 1, 1971, Ser. No. 158,729**
**Int. Cl. B65h** *75/10*
**U.S. Cl. 242—118.1** **11 Claims**

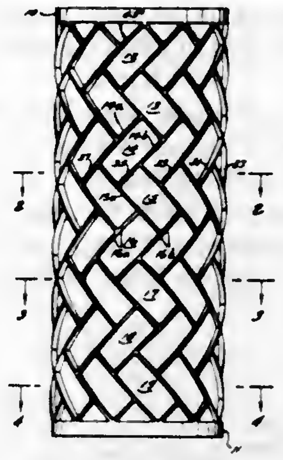


A dye tube assembly is disclosed comprising two tubular members, one of which telescopes a limited distance into the other. Stop means are provided on one of the members to initially limit the degree of telescoping therebetween. Both of the tubular members have a plurality of openings or perforations around the side walls thereof so as to permit dye liquor to pass therethrough. The tubes when assembled, such that one telescopes a small amount into the other, comprise a yarn dye tube around which a package of yarn may be produced. Once the package is produced on a texturing machine or the like, the tube may be placed on a spindle in a dye kettle where the yarn is to be dyed. A tapered spacer is provided between each yarn package on the dye spindle such that upon receiving a force thereon, each dye tube will experience further telescoping to a collapsed condition within the yarn package so as to permit a larger number of packages to be dyed in a single dye kettle.

### 3,759,461
### COLLAPSIBLE DYE TUBE

**Ralph M. Draper, Elnora, N.Y., assignor to Albany International Corp., Albany, N.Y.**

**Filed June 18, 1971, Ser. No. 154,560**
**Int. Cl. B65h** *75/10, 75/18*
**U.S. Cl. 242—118.11** **8 Claims**



A tube for the treatment of yarn formed on a moldable material in a holding process such as by injection molding and which is resiliently compressible in both the axial and radial directions although it may take a permanent set under certain bath conditions, and which provides a suitable cylindrical surface for yarn wound thereon.

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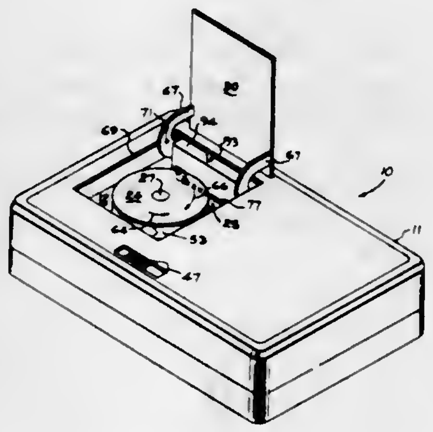
### 3,759,462
### TAPE TRANSPORT APPARATUS WITH END OF TAPE SENSING CONTROL

**Mervin L. Falk, Sunnyvale, and Joseph P. Denk, Newark, both of Calif., assignors to Newell Industries Inc., Sunnyvale, Calif.**

**Filed Aug. 21, 1972, Ser. No. 282,404**
**Int. Cl. B65h** *59/38;* **G03b** *1/04;* **G11b** *15/32*
**U.S. Cl. 242—186** **6 Claims**



An end of tape sensing interlock control system for a tape transport of a type employing a length of tape wrapped to form supply and take-up rolls and having a rotating, annular, resilient body disposed to ride against and drive the take-up roll includes a rotatable take-up hub, a capstan supported adjacent the hub. An elongate pliable tendon is secured at one end to the capstan and its opposite end to an interlock control part movable between advanced and retracted positions to operate an interlock device. Means for guiding the tendon between the capstan and control part are further provided as well as means responsive to the absence of tape upon the hub acting to couple the capstan to the hub and cause the capstan to wind up the tendon thereon so as to move the control part to operate the interlock device after a predetermined degree of rotation of the capstan. The degree of rotation of the capstan is sufficient to permit withdrawal of tape onto the supply roll before operating the interlock device under movement of the control part so as to insure that the tape has been entirely rewound upon the supply roll before releasing the interlock.

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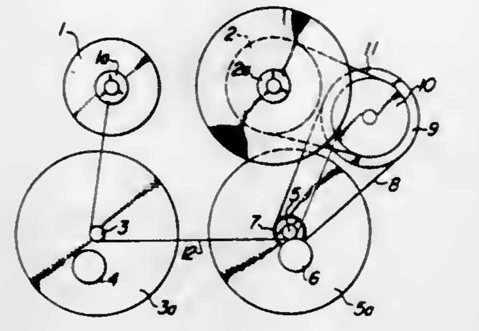
### 3,759,463
### DEVICE FOR DETECTING STOPPAGE OF ROTATION

**Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Dec. 14, 1970, Ser. No. 97,538**
**Int. Cl. G11b** *15/18, 15/44*
**U.S. Cl. 242—186** **5 Claims**



Two rotary elements, one of which is driven at a higher rate than the other, are mounted on a common shaft and a sliding member is interposed therebetween, so that when one of the rotary elements stops rotating, the sliding member is operated to change the operational direction of an associated equipment.

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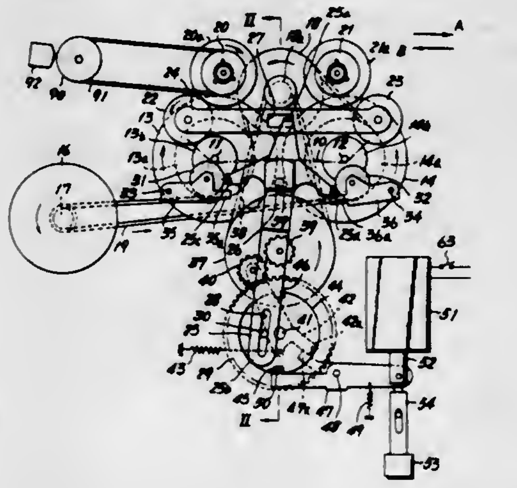
### 3,759,464
### AUTOMATIC TAPE RUNNING REVERSING APPARATUS FOR USE IN A TAPE RECORDER

**Manabu Sato, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan**

**Filed Aug. 23, 1971, Ser. No. 174,103**
**Claims priority, application Japan, Aug. 21, 1970, 45/73283**
**Int. Cl. B65h** *59/39;* **G03b** *1/04;* **G11b** *1/52*
**U.S. Cl. 242—188** **4 Claims**



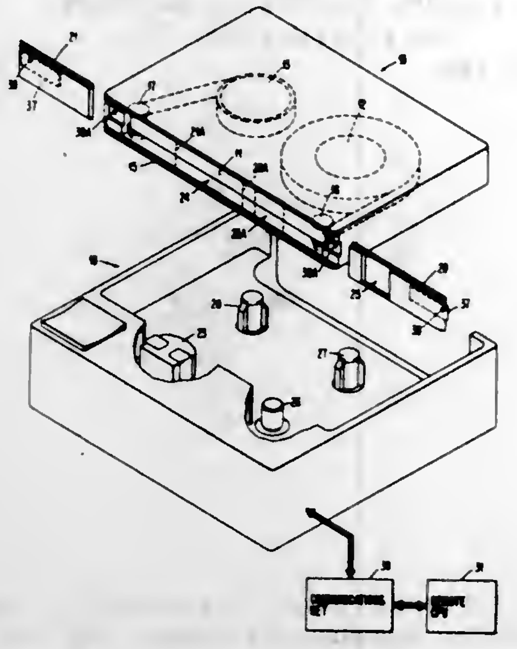
An automatic tape running reversing apparatus for use in a tape recorder comprises means for detecting running of a tape to its terminal end and a mechanism in which one pinch roller is spaced away from one capstan which has been rotated and rotation of one reel disk is stopped responsive to detecting operation of the detecting means, whereas another pinch roller is caused to make pressing contact with another capstan and another reel disk starts its rotation. This mechanism enables the tape to reverse its running direction automatically.

### 3,759,465

### TAPE CONTAINING CASSETTES, EACH WITH A REMOVABLE WALL

**Donovan M. Janssen, Boulder; Ernest P. Kollar, Broomfield; Eugene G. Stahlberg, Westminster, and Hui-li Tiao, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Apr. 23, 1971, Ser. No. 136,675**
**Int. Cl. G11b** *23/10*
**U.S. Cl. 242—199** **4 Claims**



A tape-containing cassette facilitates interchange between low-speed recording systems and high-speed or high-performance recording systems. In a low-performance system, the tape is transported wholly within the cassette. The cassette may be removed from a low-performance player and placed in a high-performance player. Then, the tape is partially removed from the cassette for higher speed transport. A front wall opening of the cassette includes a pair of movable front wall end plates. The end plates partially covering the front wall opening facilitate in-the-cassette tape processing. Moving the two end plates to a nonclosure position clears the entire front wall opening to facilitate removing the tape from the cassette for out-of-the-cassette tape processing.

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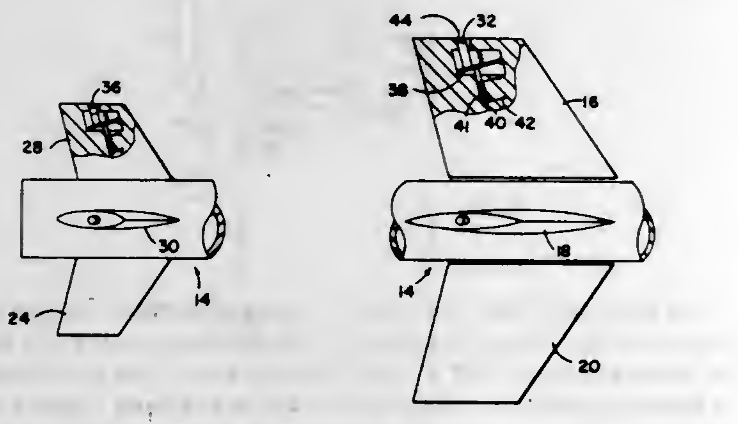
### 3,759,466

### CRUISE CONTROL FOR NON-BALLISTIC MISSILES BY A SPECIAL ARRANGEMENT OF SPOILERS

**Ernst T. Evers-Euterneck, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Jan. 10, 1972, Ser. No. 216,555**
**Int. Cl. F42b** *13/32, 15/02*
**U.S. Cl. 244—3.21** **1 Claim**



A missile control system for a guided missile wherein spoilers are used for making small corrections in the trajectory of the guided missile during the launch and cruise phase and conventional control surfaces are employed to make large trajectory corrections in the final homing phase of its trajectory. The spoilers are mounted in the extremities of a missile's wing members and tail fins; those mounted in the wing members accomplishing pitch and yaw corrections and those in the tail fins roll corrections. The spoilers are extended and retracted by solenoid devices.

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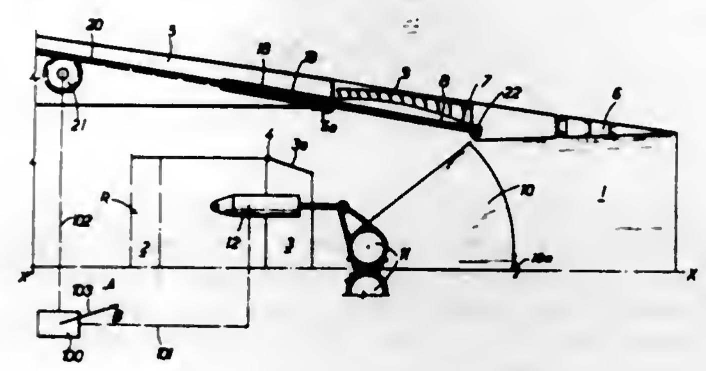
### 3,759,467

### METHOD AND MEANS FOR OPPOSING THE ROTATION OF A WINDMILLING TURBOJET ROTOR DURING FLIGHT

**Maurice Jean Clement Roudil, Saint-Maur-des-Fosses, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France**

**Filed July 9, 1970, Ser. No. 53,599**
**Claims priority, application France, July 10, 1969, 6923492**
**Int. Cl. B64d** *33/04*
**U.S. Cl. 244—53 R** **27 Claims**



A method and means for opposing the windmilling of the rotor of a turbojet engine on board an aircraft as produced by the incoming stream of air impinging on a disabled turbojet. The windmilling is stopped, in the case of a turbojet engine having a thrust reverser device and a jet-diverting passageway, by moving said thrust reverser device to its thrust reversing position, whereby the flow of air is diverted into said jet-diverting passageway, and throttling said jet-diverting passageway. The jet-diverting passageway may be throttled for this purpose by a mechanical or pneumatic resistance to free flow through such passageway.

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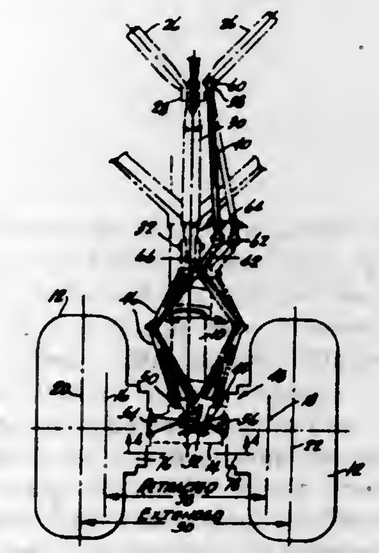
### 3,759,468

### EXTENDIBLE GEAR AXLE

**Wilfred E. Boehringer, and Donald C. Callas, both of Fullerton, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.**

**Filed Mar. 1, 1971, Ser. No. 119,746**
**Int. Cl. B64c** *25/14*
**U.S. Cl. 244—102 R** **8 Claims**



An extendible axle to provide for increase aircraft gross weight without increasing gear stowage area or runway concrete stresses. Spacing between tires increases when the gear is down and decreases when stowed within the aircraft wheel well.

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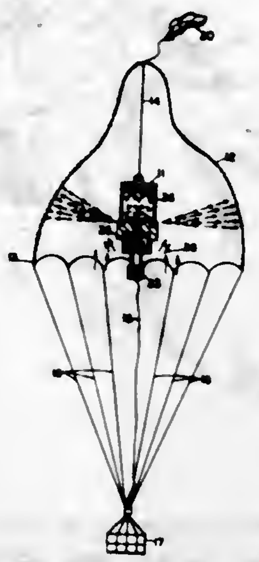
### 3,759,469

### PARACHUTE ARRANGEMENT

**Osyp Nimylowycz, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Nov. 6, 1972, Ser. No. 303,897**
**Int. Cl. B64d** *17/00*
**U.S. Cl. 244—149** **4 Claims**



A parachute arrangement having a hydraulic parachute spreader positioned internally of the canopy skirt and connected at one end by a lanyard to the canopy apex. An initiator firing pin mounted in the lower end of the spreader is connected by a firing lanyard to a load when deployed, such that upon operation of the drogue chute the initiator will ignite a propellant charge in the spreader to eject liquid coolant through peripherally spaced lateral orifices in the spreader sidewall against the skirt to facilitate a quick opening thereof.

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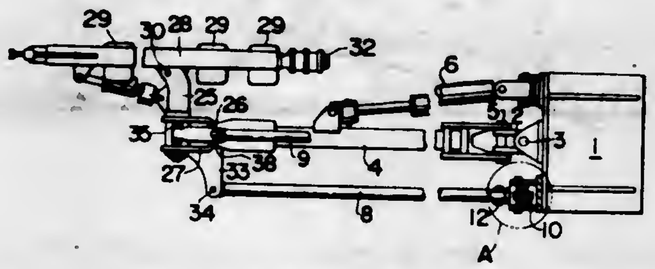
### 3,759,470

### ROCK DRILL SUPPORTING DEVICE FOR CONTROLLING THE DRILLING DIRECTION

**Toru Kawano, Hiroshima-shi, Japan, assignor to Toyo Kogyo Company, Ltd., Hiroshima, Japan**

**Filed Aug. 5, 1971, Ser. No. 169,446**
**Claims priority, application Japan, Aug. 5, 1970, 45/78381; Mar. 31, 1971, 46/23953**
**Int. Cl. E21c** *9/00*
**U.S. Cl. 248—2** **12 Claims**



A supporting device for a rock drill where the rock drill is mounted slidably on a guide cell supported rotatably at the top of a boom mounted swingably on a base. The boom forms a parallel link mechanism with a link disposed in parallel with the boom, whereby the guide cell moves in response to swinging of the boom while being maintained in parallel with the boom. At least one of two opposing latera interconnecting the boom and the link of the parallel link mechanism is variable in length. The guide cell inclines in response to swinging of the boom when the length of the latus on the top side of the boom is made longer than that of the other latus on the base side.

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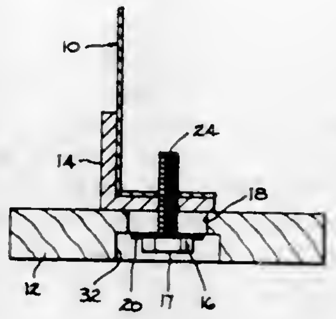
### 3,759,471

### QUICK-RELEASE SUPPORT MEMBER ATTACHMENT MEANS

**George T. Sholtes, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Nov. 15, 1971, Ser. No. 198,608**
**Int. Cl. F16b** *41/00*
**U.S. Cl. 248—119 R** **6 Claims**



A support member such as a skid is attached to a frame of a machine or similar apparatus by means of a bolt extending through an aperture in the support member. The head of the bolt is engaged by a bifurcated retention means, the outer dimension of which is greater than the corresponding aperture dimension. The skid is readily released from the supported machine with minimum time and effort by manually applying sufficient force to the support member in a direction generally away from the frame, thereby deforming and reducing the outer dimension of the retention means and allowing it and the bolt head to pass through the aperture in the support member.

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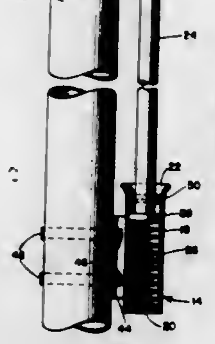
### 3,759,472

### TOOL HOLDER ASSEMBLY

**Peter J. Fratta, 9127 Alcona St., Lanham, Md.**

**Filed Mar. 22, 1972, Ser. No. 237,183**
**Int. Cl. F16m** *13/02*
**U.S. Cl. 248—201** **5 Claims**

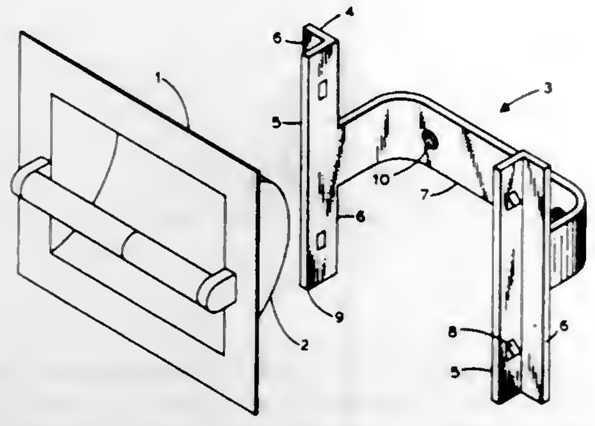


A tool holder assembly comprising a base holder and upper receiving member adapted to be releasably mounted in spaced relation on the boom of a truck or crane body, with a bucket or personnel carrier being attached to the free end of the boom for carrying out necessary repairs to utility lines and the like. The base holder has mounted therein a spring which can be depressed by a "hot stick" or the like used in making the necessary repairs. The upper receiving member or holder is formed to receive the upper end of the stick when the same has been properly oriented with the upper receiver. When released, the spring biases the stick into the upper holder to releasably retain the stick in the tool holder assembly.

### 3,759,473

### CLAMP FOR WALL MOUNTING OF BATHROOM ACCESSORIES

**Frank F. Sosaya, deceased, late of 2820 La Junta St., P.O. Box 1811, Santa Fe, N. Mex. (Dolores P. Sosaya, executrix)**
**Filed May 3, 1971, Ser. No. 139,755**
**Int. Cl. H02g** *3/08*
**U.S. Cl. 248—205 R** **5 Claims**



A clamp for fastening in the bathroom wall accessories such as a toilet paper holder, a soap holder, a soap-and-grab, or a toothbrush holder. An H-frame of rigid material including a crossbeam is fitted into the bathroom construction wall or wallboard panel from the back side of the wall. A crossbeam with threaded studs is anchored by cement or mortar in a masonry wall. The crossbeam in either case is removably fastened to a single type of accessory receptacle and is secured to the bathroom wall.

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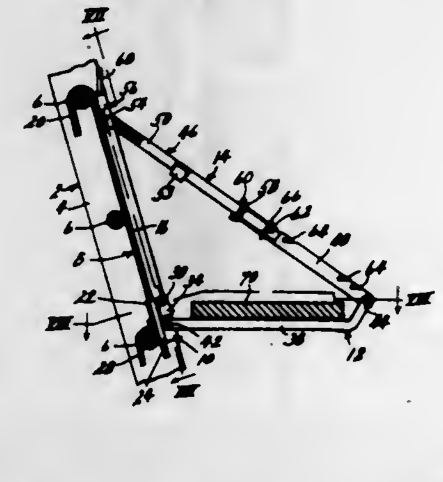
### 3,759,474

### LADDER JACK

**Walter E. Narkie, 126 W. 5th St., Kansas City, Mo.**
**Filed July 21, 1971, Ser. No. 164,563**
**Int. Cl. F16m** *13/00*
**U.S. Cl. 248—238** **7 Claims**



A ladder jack consisting of a beam having a hook at one end engageable over a ladder rung and adapted to support a scaffold plank thereon, a link pivoted at one end to the opposite end of the beam, a hook at the opposite end of said link engageable over a relatively higher rung of the ladder, the link being adjustable in length to level the beam in various positions of use, and a connection joining the hook ends of the beam and link to permit limited free relative movement therebetween.

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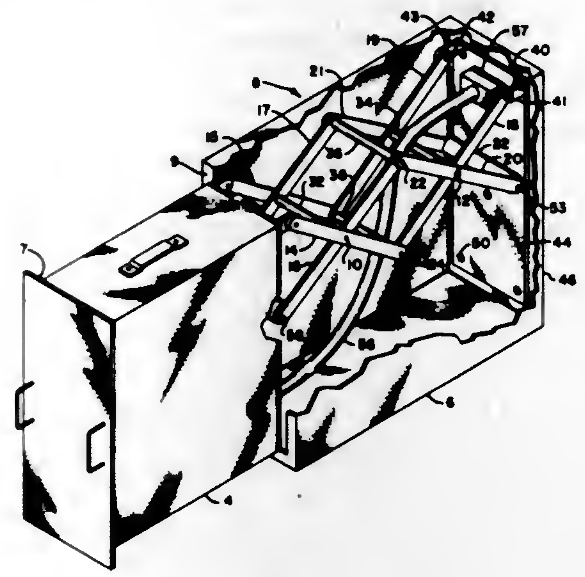
### 3,759,475

### RACK MOUNTED ELECTRONIC MODULE SUPPORT MECHANISM

**Ralph A. Brown, Bountiful, Utah, assignor to Sperry Rand Corporation, New York, N.Y.**
**Filed Mar. 29, 1972, Ser. No. 239,083**
**Int. Cl. F16m** *13/00*
**U.S. Cl. 248—277** **4 Claims**



A mechanism for supporting a rack mounted electronic module during both storage and access is disclosed. The mechanism includes side-by-side pais of scissor-like two-bar linkages. Each of the front and rear ends of the mechanism includes four pivot points: on the rear end of the mechanism the two top pivot points are pivotally coupled to the rear of the rack while the two bottom pivot points support a rolling member that rolls vertically along the rack rear wall; on the front end of the mechanism the two top pivot points are pivotally coupled to the rear of the module while the two bottom pivot points support a rolling member that rolls vertically along the module rear wall.

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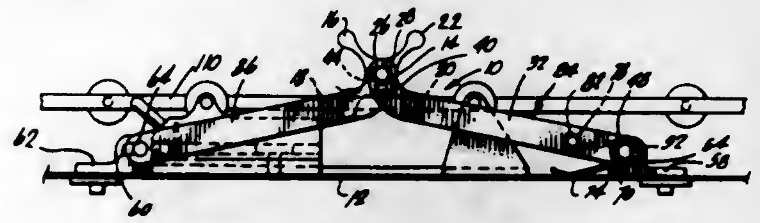
### 3,759,476

### LATCHING SYSTEM

**Walter H. Goodwin, Sierra Madre, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**
**Filed Feb. 18, 1972, Ser. No. 227,416**
**Int. Cl. B65d** *19/38*
**U.S. Cl. 248—361 R** **8 Claims**



An automatic latching system for pallets and the like including latching devices, each arranged so a pallet can move thereover to depress an upwardly biased star wheel until a pallet is positioned on one or both sides of the latching device, at which time the spokes of the upwardly extended star wheel hold and restrain the pallets from vertical and horizontal movement.

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### ERRATUM

For Class 248—449 see:
Patent No. 3,759,482

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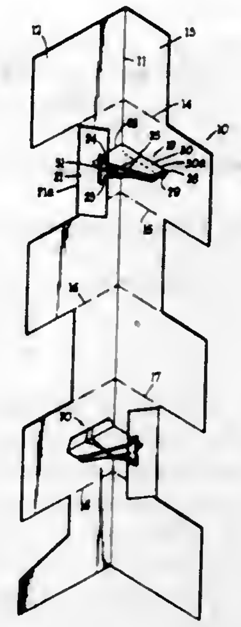
### 3,759,477

### DISPLAY STANDS

**John Hird, London, England, assignor to Graphic Trend Associates Ltd., London, England**
**Filed Aug. 3, 1970, Ser. No. 60,513**
**Int. Cl. A47g** *1/16*
**U.S. Cl. 248—459** **11 Claims**



A display stand comprising a sheet of self supporting material, such as cardboard, folded about a vertical fold line into two panels, which can be hinged from the flat towards one another, and about at least two transverse fold lines so that the sheet can be packed flat in concertina fashion. At least one spring loaded link is provided between two of the transverse fold lines and comprises a leaf hinged to the rear face of one of the panels about a line parallel to the vertical fold line, a flap hinged to the rear face of the other panel and resilient means connecting the leaf and the flap so as to permanently urge the two panels together. The two panels can be opened into the flat, the leaf and the flap laid flat against the rear faces of the one panel and the other panel respectively and the stand then folded concertina fashion about the transverse lines. When released the resilient means causes the two panels to snap open into a rigid self supporting structure by drawing the flap away from the rear face of the other panel and simultaneously drawing the two panels together.

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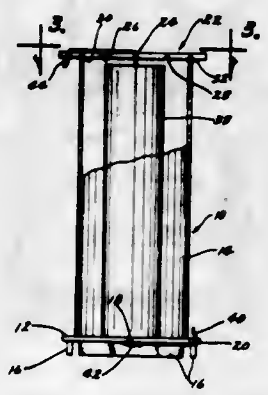
### 3,759,478

### CANDLE MOLD

**Hugh A. Schmitt, and Maxine F. Schmitt, both of 8707 N. 36th, Omaha, Nebr.**
**Filed Apr. 5, 1972, Ser. No. 241,371**
**Int. Cl. C11c** *5/00*
**U.S. Cl. 249—93** **8 Claims**



A candle mold comprising a flat base having a transparent cylinder extending upwardly therefrom. The transparent cylinder is adapted to receive a previously molded inner candle core therein which has a smaller diameter than the cylinder. The flat base has a central opening formed therein to permit the wick of the inner candle core to be extended downwardly therethrough. The flat base also has means thereon for securing the wick thereto. A wick holder bar is detachably secured to and extends across the upper end of the cylinder. The bar has a central opening formed therein which receives the upper end of the wick of the inner candle core. The bar also has means thereon for permitting the wick to be secured thereto.

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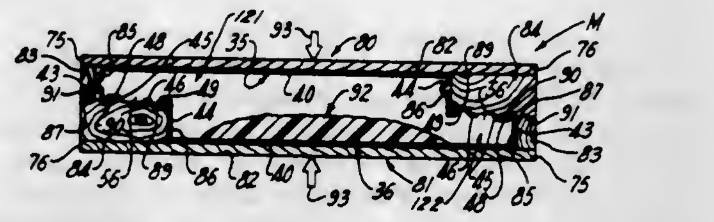
### 3,759,479

### MOLD APPARATUS FOR MAKING FOAMED-IN-PLACE DOUBLE-SKIN BUILDING PANEL

**Norbert C. Howell, Connersville; Walter Tischuk, Richmond, and Thomas M. Welsh, Connersville, all of Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.**
**Continuation-in-part of Ser. No. 71,493, Sept. 11, 1970, abandoned, which is a division of Ser. No. 732,689, May 28, 1968. This application Mar. 24, 1971, Ser. No. 127,615**
**Int. Cl. B22d** *19/04*
**U.S. Cl. 249—95** **20 Claims**



Mold apparatus for making a double-skin construction panel of the type having spaced-apart inner and outer facing sheets and a foamed-in-place core filling the space between the facing sheets. The mold apparatus includes upper and lower mold platens which when assembled, present confronting, laterally offset, upper and lower U-shaped cavities. The cavities are adapted to receive the complementary facing sheets and to position them in fixed, juxtaposed, laterally offset relation.

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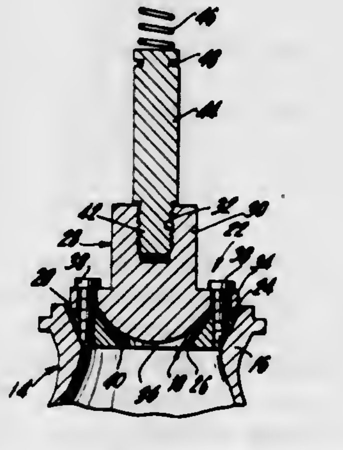
### 3,759,480

### TWO-PIECE PLUG FOR ROTATIONAL CASTING PROCESS FOR FORMING SUCTION CUP INTEGRAL WITH THE MOLDED ARTICLE

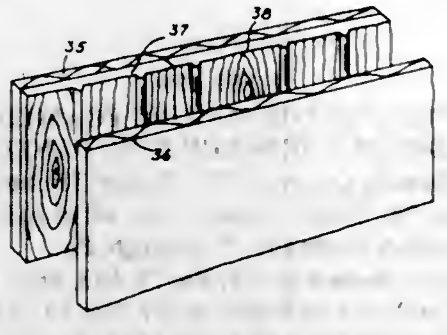
**Barrie J. Stier, Brooklyn; Peter J. Ferrara, Rego Park, and Ivan Klobas, New York, all of N.Y., assignors to said Antoinette Catalano, by said Ferrara, Middle Village, N.Y.**
**Filed Apr. 26, 1971, Ser. No. 137,449**
**Int. Cl. B29c** *1/14*
**U.S. Cl. 249—142** **2 Claims**



A method of casting an article such as a toy in which a suction cup is integrally formed with the cast article. Also disclosed is a novel mold closure for use in a rotational casting operation to form the integral suction cup on the article.

### 3,759,481
### MULTIPLE USE CONCRETE FORM LINER

**Sam C. Scott, 2519 Walnut St., Denver, Colo.**
**Continuation-in-part of Ser. No. 17,423, March 9, 1970, abandoned. This application Jan. 4, 1972, Ser. No. 215,370**
**Int. Cl. E04g** *9/10*
**U.S. Cl. 249—189** **9 Claims**



A multiple use, flexible, elastomeric liner for forms for concrete faced walls prepared by having a series of rigid panels in side by side relation, includes panels of liners for rigid panels having a concrete contacting face of a flexible, elastomeric synthetic polymer used throughout as a negative mold of a desired design in the finished concrete and having an opposed planar surface for face engagement with the form panels. The liner panels will not support the concrete for the wall without the backing panels. The elastomeric liner is a soft, flexible, resilient, elastomeric synthetic polymeric material which permits sharp relief designs having undercuts, and in edge engagement with similar panels squeeze together for a seamless surface in the completed concrete while leaving the impression of itself in exact detail in the hardened concrete.

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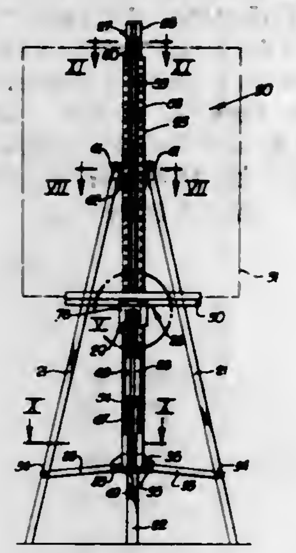
### 3,759,482
### ADJUSTABLE EASEL CONSTRUCTION

**Earl R. Wright, 8124 Victoria Ave., South Gate, Calif.**
**Filed Dec. 6, 1971, Ser. No. 204,982**
**Int. Cl. A47b** *97/08*
**U.S. Cl. 248—449** **8 Claims**



A tripod easel construction including a central upstanding support and guide means providing a plurality of way means for a work holder slide bar and associated securement means whereby workpieces of different height may be readily secured and retained on said slide bar and said workpiece so retained may be readily adjusted to a selected working or display height. An easel construction having an arrangement of easel legs and upstanding support and guide means and associated slide work holder bar and securement means therefor which is readily adjusted as to height, working angle, and which may be readily collapsed and erected.

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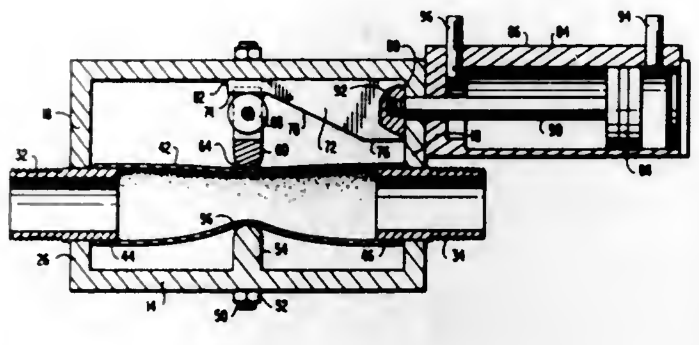
### 3,759,483
### FLUID ACTUATED CONTROL VALVE

**Thomas D. Baxter, 946 Salisbury Ct., Lancaster, Pa.**
**Filed May 14, 1971, Ser. No. 143,468**
**Int. Cl. F16k** *7/06*
**U.S. Cl. 251—5** **1 Claim**



The valve includes a housing carrying a flexible fluid conduit forming a part of a fluid line. Valve closure members lie on opposite sides of the flexible conduit. One closure member is fixed and normally engages the conduit flexing it inwardly short of its central axis. The other closure member is mounted for sliding movement toward and away from the fixed member. A cam is carried by the housing for reciprocating movement, a roller being carried by the movable valve closure member in engagement with the cam. A fluid control cylinder selectively reciprocates the cam. In one cam position, the flexible fluid conduit is open. In moving from the one to a second cam position under control of the fluid cylinder, the movable closure member slides toward the fixed closure member to pinch the walls of the flexible conduit together and against the fixed closure member thereby closing the valve. The cam includes a flat which engages the roller on the movable closure member to maintain the valve closed notwithstanding failure of the pressure fluid in the fluid control cylinder. In one form, the flexible conduit includes diametrically opposed inwardly projecting seats having arcuate surfaces. The movable closure member has like surfaces. The surfaces are configured to preclude fatigue or failure of the conduit.

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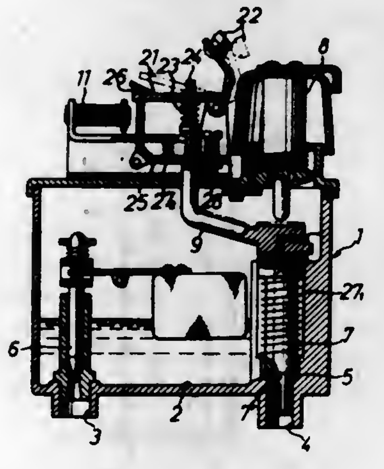
### 3,759,484
### FLUID CONTROL DEVICE

**Takehisa Hirano, Tokyo, Japan, assignor to Kabushiki Kaisha Keihinseiki Seisa, Kanagawa-ken, Japan**
**Filed Mar. 16, 1972, Ser. No. 235,364**
**Int. Cl. F16k** *31/44*
**U.S. Cl. 251—67** **7 Claims**



A fluid control device is comprised of a control valve interposed on a fluid way to control the amount of fluid to be supplied or to be discharged which is being able to take three positions of itself respectively for full open condition, partial open condition and shut up condition, a reset member for keeping the control valve at its shut up position, an electric operation means for making the reset member unoperative whereby the control valve is set at its full open position, and means for keeping the control valve at its partial open position when both the reset member and the electric operation means are unoperative features, and said electric operation means preferably contains at least an electric source, an electromagnet which mediately restrict movement of the reset member and an electric circuit between the electric source and the electromagnet having a control switch which operates according to predetermined condition.

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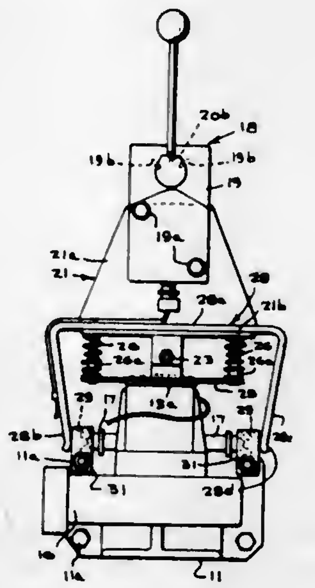
### 3,759,485
### MANUAL OVERRIDE APPARATUS FOR ELECTROHYDRAULIC VALVE CONTROL STATION

**Francis Duncan Mills, Henrico County, Va., assignor to Baker Equipment Engineering Co. Inc., Richmond, Va.**
**Filed July 18, 1972, Ser. No. 273,028**
**Int. Cl. F16k** *31/05*
**U.S. Cl. 251—130** **12 Claims**



Manual override apparatus for a proportional electrohydraulic control valve having mechanical override pushbuttons and an electric control unit therefor having a pivoted operating handle or lever, the apparatus including a bracket pivotally mounted on the body of the central valve and supporting the control unit for resiliently opposed movement about a pivot axis from a normal position. The control unit is fixed to the bracket, and a U-shaped plunger bar also fixed to the bracket has depending legs terminating outwardly adjacent the pushbuttons to actuate one of the pushbuttons when the control unit handle is tilted through such a range of movement as to cause tilting of the bracket.

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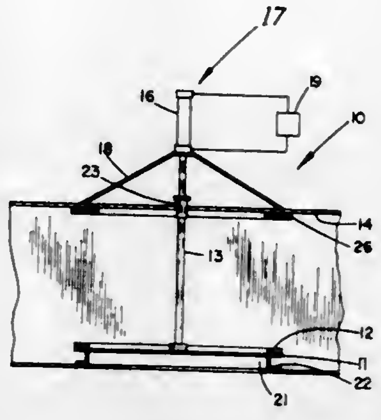
### 3,759,486
### DAMPER SEAL SYSTEM

**John Thomas, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**
**Filed May 26, 1972, Ser. No. 257,085**
**Int. Cl. F16k** *1/44*
**U.S. Cl. 251—330** **5 Claims**

A damper arrangement including a damper blade within a flow-through conduit which opens and closes a port therein, the damper blade being attached to a shaft which extends outside of the conduit, where the shaft is connected to a drive system for imparting motion thereto, the shaft being sealed at its point of exit through the conduit wall by a packing gland, the packing gland being isolated from fluid pressure within the conduit by a compressible gasket wall means disposed intermediate the inner face of the conduit and the face of the damper blade opposite the port to surround the packing gland and form a sealed chamber therearound with the damper blade when the damper is fully opened.



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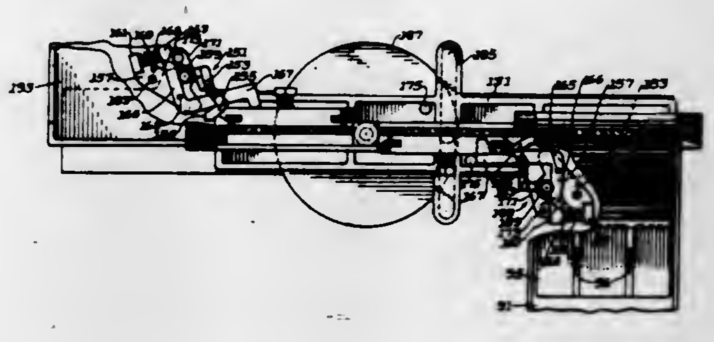
### 3,759,487
### STACKED MIXED SLIDE GATE MECHANISM

**Frank C. Badalich, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.**
**Filed May 10, 1971, Ser. No. 141,619**
**Int. Cl. Go3b** *23/00*
**U.S. Cl. 353—104** **12 Claims**



A stacked mixed slide gate mechanism for use in a slide projector to allow the projector to move slides of varying thicknesses through the projection axis is described. The slides are stacked in a slide supply tray and received by a slide storage tray. The slides are "pressed" against the front of each tray by a spring-pressure pad arrangement. Located adjacent to the front of each tray is a moveable gate. In normal operation, the gate is spaced from the slide movement path by a predetermined amount sufficient to allow a "thin" slide to pass while preventing the next slide from passing. When a "thick" slide is to be moved, the moveable gate opens to a detent position. The gate becomes locked in this position and allows the thick slide to pass without the gate rubbing on the photographic surface of the slide. When the slide movement mechanism returns to pick up the next slide, it returns the gate to the "normal" or thin slide position.

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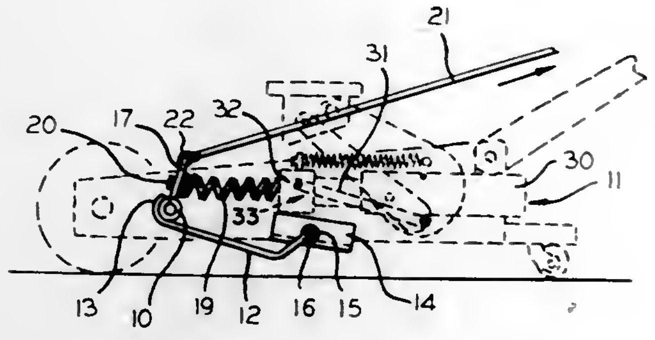
### 3,759,488
### SAFETY CATCH FOR HYDRAULIC JACKS FOR AUTOMOBILES

**Paul Lukas, 3815 E. Layton Ave., Cudahy, Wis.**
**Filed Dec. 16, 1971, Ser. No. 208,595**
**Int. Cl. B60p** *1/48*
**U.S. Cl. 254—8 R** **5 Claims**

A rolling hydraulic auto jack has a shaft which telescopes to raise and lower an auto. The invention provides a metal channel or block which fits around the shaft to preclude a telescoping retraction thereof. This channel or block is a safety stop which keeps the jack from inadvertently lowering the auto, even if the hydraulic system fails.



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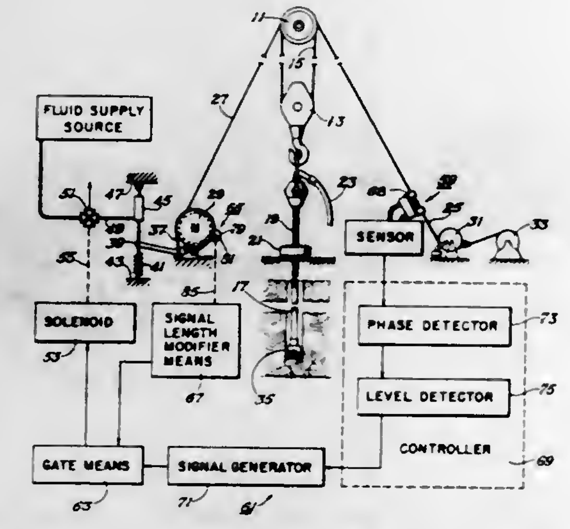
### 3,759,489
### APPARATUS FOR AUTOMATICALLY CONTROLLING WEIGHT-ON-BIT

**Harry C. Jones, Dallas, Tex., assignor to Pat & Chuck Oil Well Equipment, Inc., Fort Worth, Tex.**
**Filed May 7, 1971, Ser. No. 141,157**
**Int. Cl. B66d** *1/48*
**U.S. Cl. 254—173 R 6 Claims**



Apparatus for automatically controlling the weight on a rotary drilling bit, including cable drum, drum rotation monitor, deadline sensor, brake for the drum, brake actuator, and brake release, and characterized by the improvement of a gate for passing and stopping a brake release signal; a brake release signal generator for generating a brake release signal responsive to excessive tensional force in the cable deadline; and signal length modifier connected with the drum rotation monitor and the gate for stopping passage of the brake release signal responsive to rotation of the cable drum. Two specific embodiments are also described.

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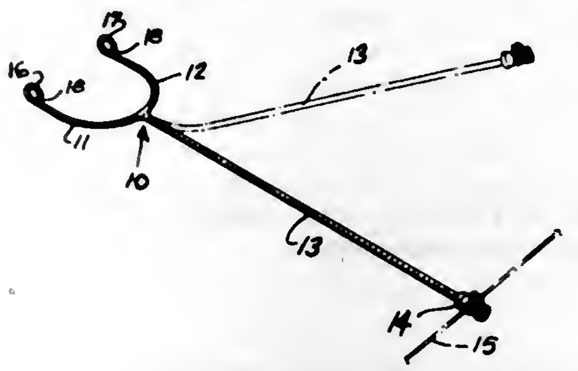
### 3,759,490
### ELECTRIC FENCE EXTENDER

**Clarence A. Heuberger, Sheffield, Iowa**
**Filed Apr. 25, 1972, Ser. No. 247,309**
**Int. Cl. E04h** *17/06*
**U.S. Cl. 256—10 6 Claims**

The present disclosure is directed to a stand-off device which may be coupled to an already existing fence with out requiring tools for installation or removal for purposes of running an electrically charged wire at a spaced point inside the fence perimeter to keep livestock from approaching and laying against the fence to break it down. The extender is a substantially Y shaped member having fence attaching eyes at the free ends of the arms and an insulator at the free end of the elongated leg member of the Y-shape.



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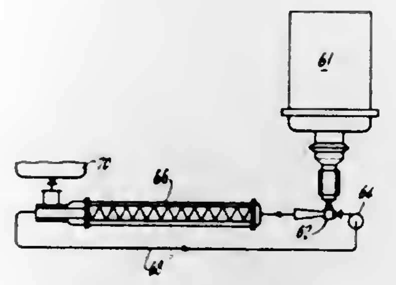
### 3,759,491
### DISSOLVER FOR SOLID AND LIQUID MATERIALS

**Anton Pfeuffer, New York, N.Y.**
**Filed Sept. 29, 1971, Ser. No. 184,744**
**Int. Cl. B01f** *1/00, 5/06;* **C13f** *3/00*
**U.S. Cl. 259—4 2 Claims**



An apparatus for mixing and dissolving a solid in a solvent comprises an injector device for initially mixing the two materials together, and a centrifugal dissolver comprising an helical dflector and a cylindrical screen, for receiving the initial mixture and thoroughly dissolving the solid in the solvent.

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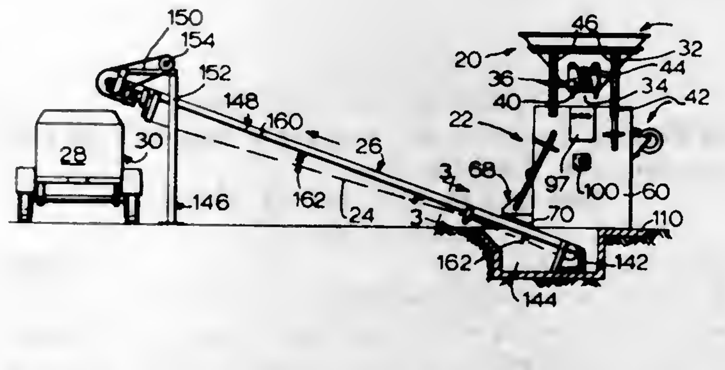
### 3,759,492
### CONCRETE MIXING SYSTEM

**Jack F. Hall, Vancouver, Wash., assignor to U-Cart Concrete Systems Inc., Vancouver, Wash.**
**Filed Oct. 28, 1971, Ser. No. 193,478**
**Int. Cl. B28c** *7/16*
**U.S. Cl. 259—169 9 Claims**



A mixer receives dry mix from a detachable hopper, and has adjustable, wiping paddles which push the mix through an opening to a spout having a U-shaped sealing strip engaging a conveyor belt driven by a takeup pulley biased by gravity and compression springs.

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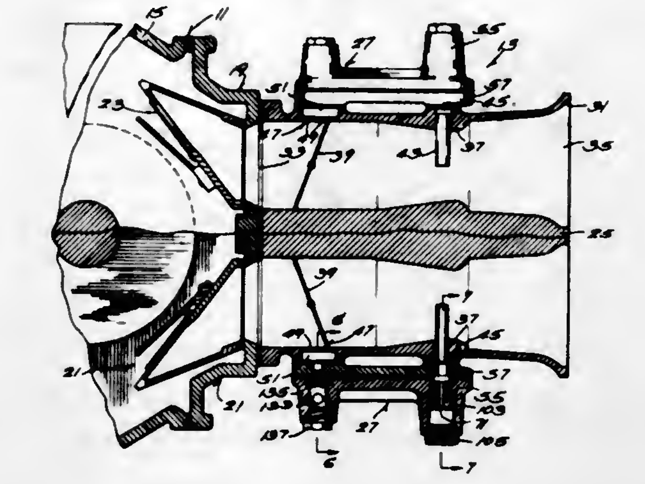
### 3,759,493
### FUEL FEED SYSTEM

**Clarence E. Blanchard, Kenosha, Wis.; Robert K. Turner, Waukegan, and Chester DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.**
**Filed July 20, 1972, Ser. No. 273,377**
**Int. Cl. F02m** *9/06*
**U.S. Cl. 261—23 A 12 Claims**



Disclosed herein is a carburetor comprising an air induction housing adapted to be connected to the crankcase of an engine and including a pair of air induction passages, a separate high speed fuel nozzle communicating with each of the induction passages and with at least one of the high speed nozzles communicating with a high speed fuel inlet port at the exterior surface of the air induction housing, a low speed fuel nozzle communicating with one of the induction passages and with a low speed fuel inlet port at the exterior surface of the air induction housing, and a fuel feed housing adapted to be mounted on the air induction housing in overlying relation to the high and low speed inlet ports and including a first diaphragm controlled, fuel flow regulating valve communicating with the high speed inlet port in the air induction housing and adapted to be connected to a source of fuel, and a second diaphragm controlled, fuel flow regulating valve communicating with the low speed port in the air induction housing and adapted to be connected to a source of fuel.

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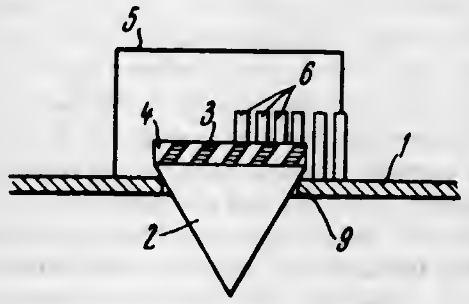
### 3,759,494
### VALVE PLATE OF COLUMN STILL

**Lev Samuilovich Axelrod, Michurinsky prospekt, 18, korpus 2, kv. 51; Alexandr Vasilievich Akatov, ulitsa Scherbakovskya, 5, kv. 13; Valery Mikhailovich Rudenko, Kutuzovsky prospekt, 18, kv. 4; Viktor Viktorovich Fedorov, Banny pereulok, 4, kv. 89; Ruslan Yakovlevich Barashkov, Bezbozhny pereulok, 13, korpus 17, kv. 4, all of Moscow, and Boleslav Iosifovich Garbuzovsky, ulitsa Maluntseva, 17a, kv. 6, Omsk, all of U.S.S.R.**
**Filed July 21, 1971, Ser. No. 164,579**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—79 A 2 Claims**



A valve plate of a column still for mass transfer between gas and liquid wherein the valves are shaped like cones with their apices pointing down and the side surfaces of said valves have grooves for rotating the valves by the force of the gas flowing through said valves. Installed above the valves are the valve lift checks.

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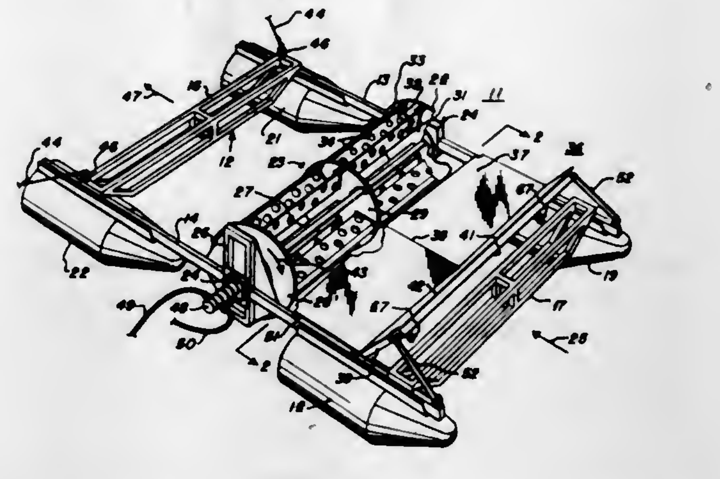
### 3,759,495
### LIQUID AERATING ROTOR ASSEMBLY

**Leonard J. Boler, Minneapolis; Nels S. Hanssen, Mound; Bryan J. Beaulieu, Hopkins; Lloyd G. Cherne, Edina, and Halvor O. Halvorson, Minneapolis, all of Minn., assignors to Cherne Industrial, Inc., Edina, Minn.**
**Filed May 3, 1971, Ser. No. 139,557**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—92 26 Claims**



A liquid aerating and mixing rotor assembly suitable for sewage treatment in an aerobic bacterial activated sludge process includes a supporting frame mounted on floats or rigid supports. A rotor member is supported on the frame for rotation around a horizontal axis. It includes rotor surfaces for engaging the liquid, urging the liquid in a downstream direction along a path extending perpendicularly away from the rotor axis, and lifting and projecting substantial portions of the liquid upwardly in both upstream and downstream directions from the rotor, for aeration and mixing of the liquid. The assembly includes a deflecting member supported on the frame close to and upstream from the rotor member in a position to intercept the upstream projected portions of the liquid and guide them laterally to at least one side of the desired path, thereby preventing the projected liquid portions from passing under the rotor a second time for further aeration.

Preferably, the deflecting member is selectively movable from its lateral-deflecting position to a second position in which the liquid portions projected in an upstream direction can be passed beneath or into the rotor a second time for selective additional aeration. In a third position of the deflecting member, it may provide a lifting frame for engagement by a suitable lifting device to move the assembly from one position to another.

The rotor member for the assembly preferably includes a plurality of paddle-like surfaces extending radially from the rotor axis, with the outer edges of the surfaces inclined forwardly in the direction of rotation of the rotor to assist in retaining liquid on the rotor surface for projection of substantial quantities of liquid both upwardly and in an upstream direction for better aeration. Suitable openings in the paddle surfaces, with the locations of such openings in staggered relation in successive rotor surfaces, provide increased turbulence and greater aeration.

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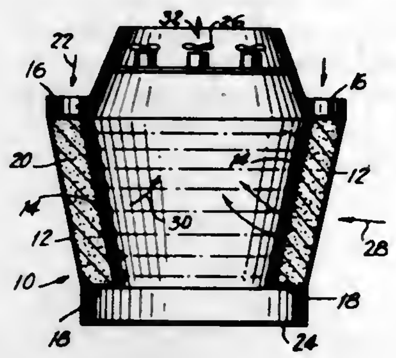
### 3,759,496
### PROCESS FOR COOLING LIQUIDS BY CROSS CURRENT CONTACT WITH GASES

**Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., New York, N.Y.**
**Filed Dec. 29, 1970, Ser. No. 102,366**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—94 5 Claims**

A process for cooling water by cross-current contact with air is shown. The contact operation takes place in an inverted, frusto-conical, annular enclosure packed with a packing such as Tellerettes. The water loading is preferably from 3 to 30 gallons per minute per square foot of packing area in the plane normal to the flow of water and the air loading is from 200 to 800 standard cubic feet per minute per square foot of packing area normal to the flow of air. Substantial savings in the ground area required for the cooling tower and in the height of the cooling tower are achieved through use of the process of this invention.



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### 3,759,497
### IMPINGEMENT BAFFLE PLATE ASSEMBLIES

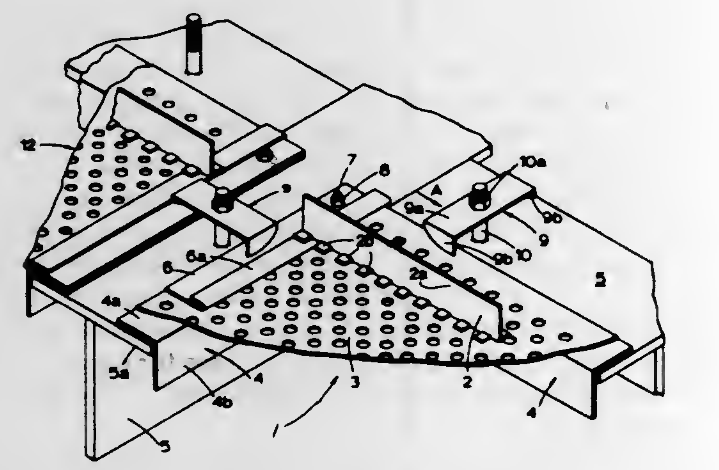
**Bernard Black, Stanmore, England, assignor to Swemco Limited, London, England**

**Filed June 15, 1971, Ser. No. 153,202**

**Claims priority, application Great Britain, June 15, 1970, 28,785/70**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—113** **2 Claims**



An impingement baffle plate assembly in a scrubber tower comprises a plurality of impingement baffles mounted above a perforated plate. A peripheral frame lies beneath the perforated plate and forms part of the assembly, which is releasably mounted in the scrubber tower. The peripheral frame ensures flatness of the assembly so that the means fixing the assembly in the tower may be simplified and adapted for quick release of the assembly for repair or replacement.

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### 3,759,498
### LIQUID-GAS CONTACT TRAY

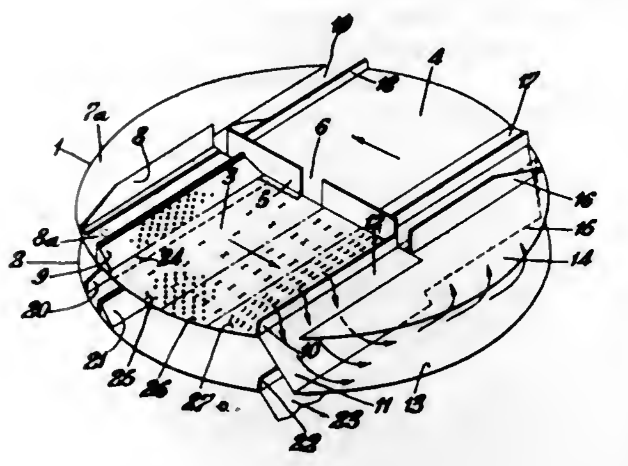
**Ladislas C. Matsch, Amherst, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed Mar. 16, 1970, Ser. No. 19,676**

**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—114 JP** **10 Claims**

A slotted sieve tray in which the slot density varies across the active surface and the slots are oriented with respect to the tray diametral streamline so as to overcome fluid maldistribution problems which occur on large diameter trays.



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### 3,759,499
### DECONTAMINATION OF INTERNAL COMBUSTION ENGINE EXHAUST GASES AND DEVICES FOR THE IMPLEMENTATION OF THE PROCEDURES

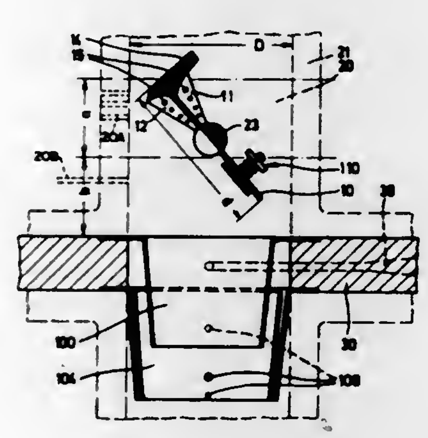
**Ludwig G. Lang, Darmstadt, Germany, assignor to Ingenieuburo Fur Angewandte Physik und Chemie, Darmstadt, Germany**

**Filed June 30, 1970, Ser. No. 51,163**

**Claims priority, application Austria, July 3, 1969, 6390/69; Aug. 6, 1969, 7589/69; Nov. 10, 1969, 10547/69**

**Int. Cl. F02m** *23/02*

**U.S. Cl. 261—41 D** **24 Claims**



Apparatus for decontamination of internal combustion engine exhaust gases by the preparation of a flammable and ignitable air-fuel mixture with a variable air ratio figure λ by means of a throttle flap adjustment for regulating the fuel jet flow resistance, and which is adjustable such that fuel atomization is performed. This is accomplished by the fact that the airstream flowing from the air filter to the carburetor, particularly in the lower engine r.p.m. range i.e. if the throttle flap swivel range is small, is accelerated in the crescent-shaped gap between throttle flap (10) and carburetor duct wall (20), on the whole throttle flap semi-circumference facing the fuel jets, to nearly sonic or supersonic speed. Furthermore, at the throttle flap swivel range in the medium engine operating range at subsonic speed, the air stream flowing from the air filter to the carburetor is additionally accelerated by further jet effect, whereas the airstream from the air filter to the carburetor in the operating range up to full engine load is homogenized by very intensive elimination of the turbulence.

### 3,759,500
### PLANT FOR THE TREATMENT AND THE OXIDATION OF ANTIMONY MINERALS

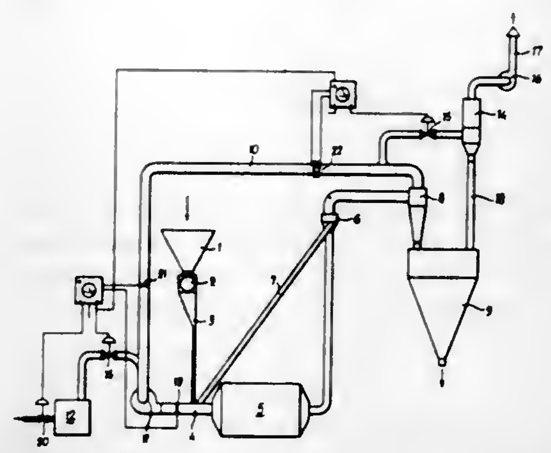
**Nerio Nerozzi, Rome, Italy, assignor to AMMI S.p.A., Rome, Italy**

**Division of Ser. No. 144,179, May 17, 1971. This application Sept. 13, 1972, Ser. No. 288,538**

**Claims priority, application Italy, May 29, 1970, 51024 A/70; Jan. 23, 1971, 47925 A/71**

**Int. Cl. C22b** *1/12*

**U.S. Cl. 266—9** **6 Claims**



Plant for the treatment and the oxidation of antimony minerals, wherein an antimony mineral with any granulometry and humidity, eventually crushed, is carried by a hot gaseous stream, subjected to milling, drying, subsequent separations and then introduced in a rotary kiln in a state of extreme subdivision and oxidized dispersed in a gaseous compressed oxidizing stream.

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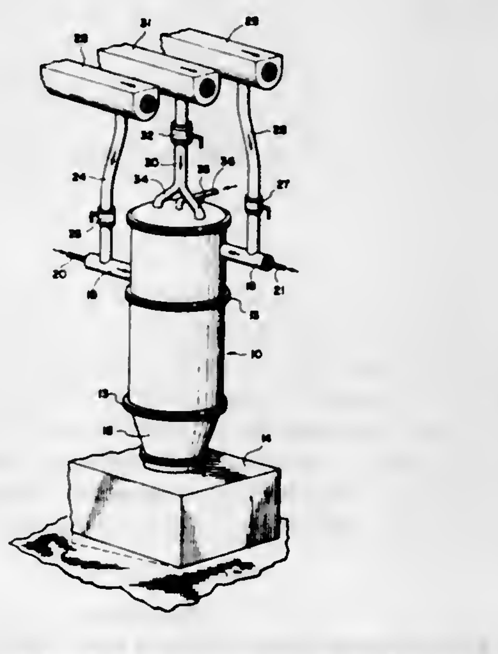
### 3,759,501
### CYCLONIC SMELTING APPARATUS

**James E. Foard, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.**

**Filed Dec. 13, 1971, Ser. No. 207,042**

**Int. Cl. F27b** *15/00*

**U.S. Cl. 266—10** **11 Claims**



A cyclonic smelting apparatus developed especially for carrying out both smelting and converting operations on copper-bearing materials to produce blister copper. A closed cylindrical vessel is disposed with its longitudinal axis substantially vertical and has a discharge orifice at its lower end. At least one means is provided for injecting tangentially into the vessel a pressurized stream of particulate copper-bearing material and an oxygen-containing gas, so that a vortical flow of such stream takes place within the vessel toward the discharge orifice. At least one means is also provided for introducing a stream of copper-bearing material and an oxygen-containing gas downwardly into the vessel along the axis thereof, so there is comingling of the tangentially injected and the axially introduced materials. Heating means are provided for raising the temperature within the vessel sufficiently to induce autogeneous or partially autogeneous smelting reactions.

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### 3,759,502
### METHOD AND APPARATUS FOR PREVENTING RELATIVE MOTIONS

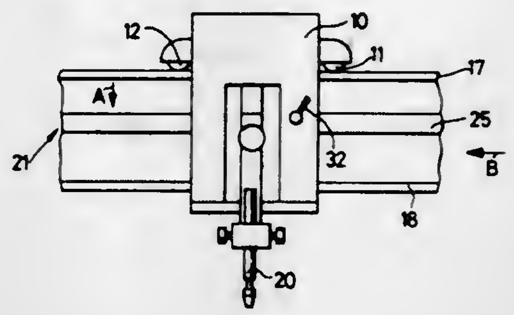
**George Roeder, Frankfurt/Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany**

**Filed June 19, 1972, Ser. No. 264,042**

**Claims priority, application Germany, June 18, 1971, P 21 30 144.0**

**Int. Cl. B23k** *7/10*

**U.S. Cl. 266—23 E** **9 Claims**



A method for preventing the relative movement beyond a predetermined magnitude between a driving band set in motion by a driving motor and between a device, such as a torch, clamped on the band and adapted to carry operating instruments thereon, wherein the relative movement arising between the band and the operating device clamped thereon, is secured and signals are fed for stopping the driving motor of the band upon said relative movement exceeding a predetermined magnitude. The invention also discloses a torch cutting apparatus comprising a driving motor, a metal band coupled to the driving motor and adapted to move in a predetermined path, an upper carriage carrying a torch cutting device, an arrangement for clamping the upper carriage onto the band at a predetermined point according to the pattern to be cut, means for sensing a relative movement between the band and the upper carriage and developing a signal when the relative movement exceeds a predetermined magnitude, and an arrangement responsive to the signal and causing a turning off of the driving motor.

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### 3,759,503
### RESILIENT MOUNTING ARRANGEMENT

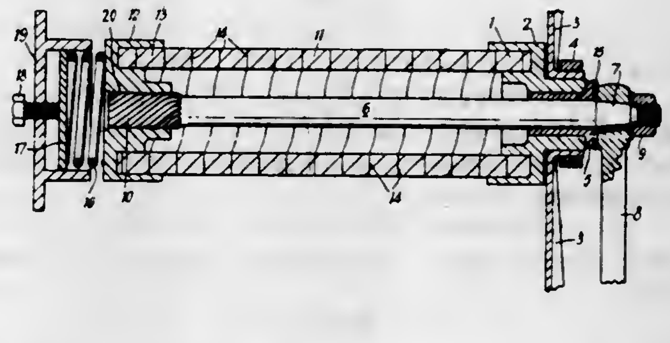
**John Russell Crompton Moore, Little Melton, Norwich, England**

**Filed May 27, 1971, Ser. No. 147,385**

**Claims priority, application Great Britain, May 28, 1970, 25,853/70**

**Int. Cl. B60g** *11/18*

**U.S. Cl. 267—58** **14 Claims**



A resilient mounting arrangement has differential damping and comprises a helical spring under axial compression so that turns of the spring are frictionally coupled. The ends of the spring are coupled to respective relatively rotatable members. Preferably, one of the members is coupled to the associated end of the spring through inclined splines which allow relative rotation between that one member and the associated end of the spring.

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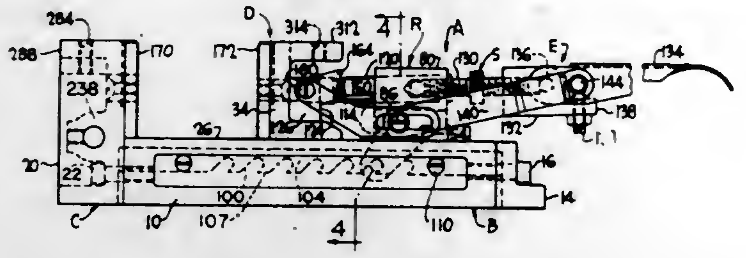
### 3,759,504
### QUICKLY ADJUSTABLE VISE JAW WITH TOOL COUPLE ELEMENTS

**Otto G. Hildebrand, 1907 Yucca, Rio Rancho, N. Mex.**
**Filed June 16, 1971, Ser. No. 153,529**
**Int. Cl. B25b *1/14***
**U.S. Cl. 269—87** **10 Claims**



A multiple purpose workholder of the relatively movable jaw-type, especially adapted for die and tool work, having adjustable toggle mechanism for moving one jaw relative to the other and including detachable accessories, such as, work gauge, punch and die, tool attaching and/or guiding means, etc.

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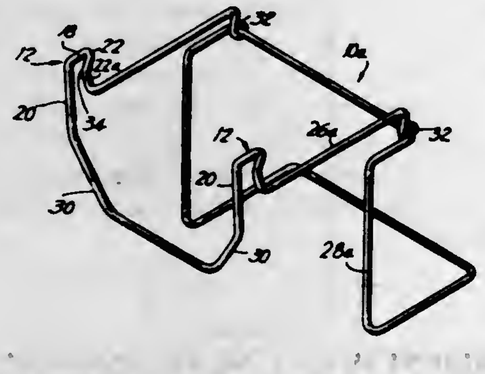
### 3,759,505
### MOUNTING JIG FOR ELECTRICAL OUTLET BOXES

**Joseph R. Callanan, 382 Homeland Dr., Whitman, Mass.**
**Division of Ser. No. 772,566, Nov. 1, 1968, Pat. No. 3,588,084. This application Nov. 25, 1970, Ser. No. 92,871**
**Int. Cl. B25b *5/14***
**U.S. Cl. 269—98** **9 Claims**



A jig for mounting electrical outlet boxes to building wall and ceiling members having a three sided open loop section adapted to grasp a wall of an outlet box, an alignment arm section extending from the loop section to align the box and jig on a building member, and a leg member section extending from adjacent the arm section to hold the jig and box on a building member.

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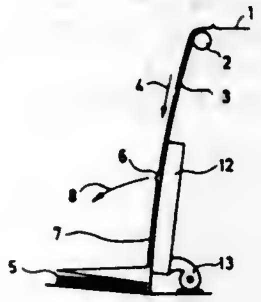
### 3,759,506
### DEVICE AND METHOD FOR FORMING AN ACCORDIAN PILE FROM A CONTINUOUS WEB, USING AN AIR CURRENT PARALLEL TO THE WEB

**Robert Eckl, Goggingen, and Klaus Walter Janson, Diedorf, both of Germany, assignors to Firma Bowe Bohler & Weber KG, Augsburg, Germany**
**Filed Apr. 23, 1971, Ser. No. 136,767**
**Claims priority, application Germany, May 20, 1970, P 20 24 624.6**
**Int. Cl. B65h *45/20***
**U.S. Cl. 270—69** **8 Claims**

A device for forming an accordion pile from a continuous web has an upright guide plate along which a web formed with equispaced and oppositely directed creases is passed. A support surface is provided below the plate to intercept the web and support the pile. A current of air is caused to flow at high speed parallel to the plate surface between the plate and the web in at least the lower region of the plate to hold very thin webs against the plate as they slide downwardly even at very low speeds. This current of air can be directed in the direction of or transverse to the direction of feed of the web.



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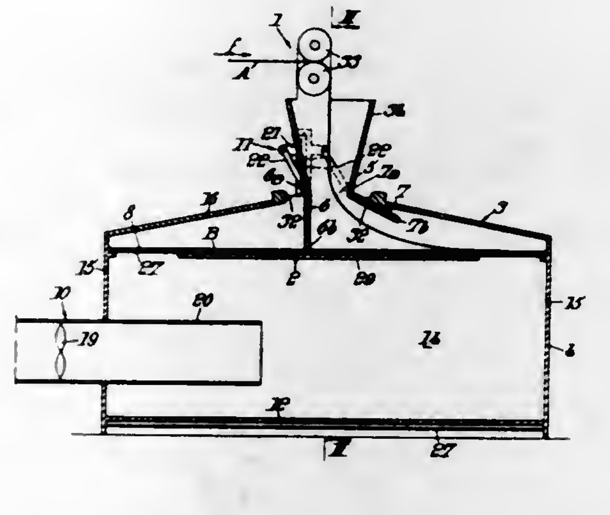
### 3,759,507
### MACHINES FOR THE CONTINUOUS MANUFACTURE OF CLOTH BY SUPERPOSING SEVERAL LAYERS OF A TEXTILE WEB

**Jules Imbrecht, Hem, France, assignor to Intissel, Roubaix, France**
**Filed Apr. 23, 1971, Ser. No. 136,879**
**Int. Cl. B65h *45/00***
**U.S. Cl. 270—69** **6 Claims**



The web is fed onto a horizontal surface moving parallel to the width of the web leaving the feed device. It is laid by alternate sweeping movements of the feed device in a relatively impervious enclosure having a slot for the incoming web lined therein and two flaps inside the slot oscillating to deflect the web and preserve a reduced pressure created inside the enclosure. The receiving surface is air-permeable at its longitudinal edges but impermeable at its central region.

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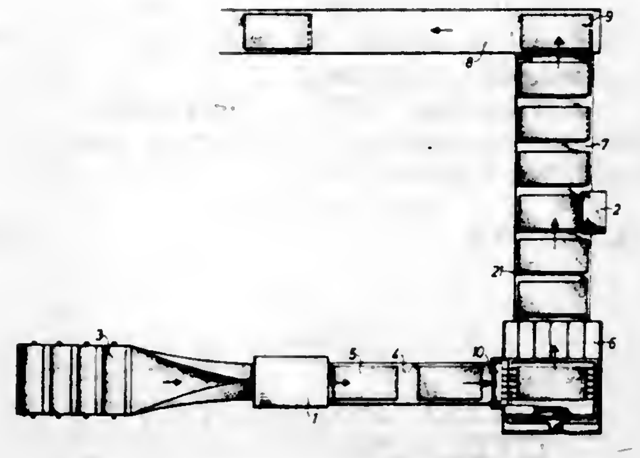
### 3,759,508
### APPARATUS AND METHOD FOR FEEDING BLANKS

**Sven Torsten Jeppsson, Drottninggatan 49, Orebro, Sweden**
**Filed Dec. 6, 1971, Ser. No. 205,212**
**Claims priority, application Sweden, Dec. 14, 1970, 16911/70**
**Int. Cl. B65h *29/68***
**U.S. Cl. 271—69** **18 Claims**

The lateral edges of a continuous web of paper are folded into superimposed relationship and glued together to form a continuous tube. The tube is cut into sack blanks which are fed by a first conveyor belt to a delivery station comprising a pair of nip rolls and a platen mounted to reciprocate transversely relative to the first conveyor belt. The platen has an opening formed therethrough for permitting each sack blank to fall onto a second conveyor for subsequent formation of an end closure on each sack blank.



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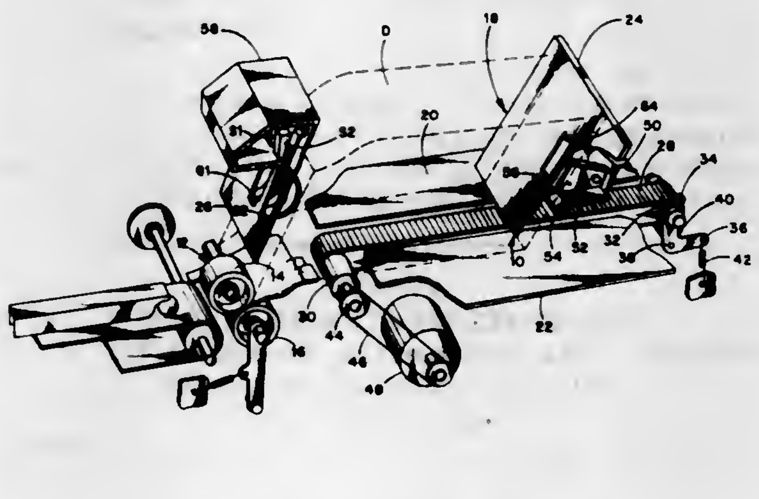
### 3,759,509
### DOCUMENT LOADER

**John Allan Peterson, New Brighton, Minn., assignor to Honeywell Information Systems Inc., Waltham, Mass.**
**Filed Dec. 20, 1971, Ser. No. 209,808**
**Int. Cl. B65h *1/02*, *1/14***
**U.S. Cl. 271—150** **8 Claims**



A document hopper, loader and follower assembly is provided wherein documents are automatically loaded into a feed device from a hopper by a movable follower assembly. The follower assembly is so mounted as to allow documents to be added to the hopper while the loading operation is in progress.

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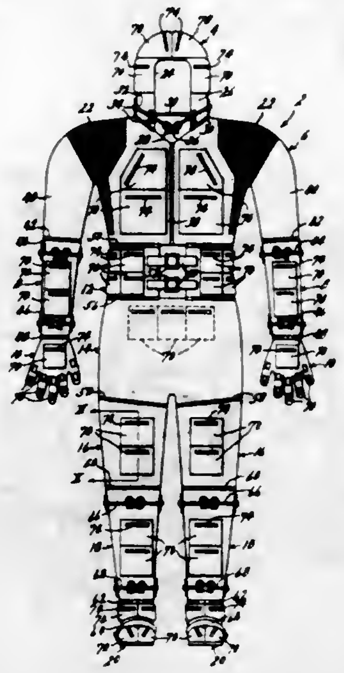
### 3,759,510
### EXERCISE GARMENT

**James W. Jackson, Jr., 9246 Newton, Overland Park, Kans.**
**Filed July 5, 1972, Ser. No. 269,260**
**Int. Cl. A63b *21/18***
**U.S. Cl. 272—57 R** **9 Claims**

A composite exercise garment including helmet, jacket, armlets, gloves, belt, shorts, thigh leggings, calf leggings and boots, these components being detachably connected together for use either as a total composite garment, or for use separately or in various combinations, each component of the total garment having exterior pockets which may be either filled or partially filled with particulate weight materials of various densities, with the object that by using the proper components of the garment, properly weighted, and performing specified movements, exercises of any desired degree of difficulty are provided for any desired muscles or sets of muscles.



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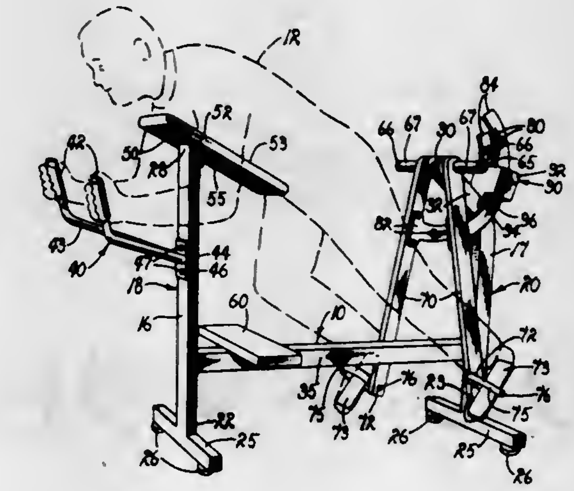
### 3,759,511
### ADJUSTABLE FRICTION TYPE EXERCISING DEVICE

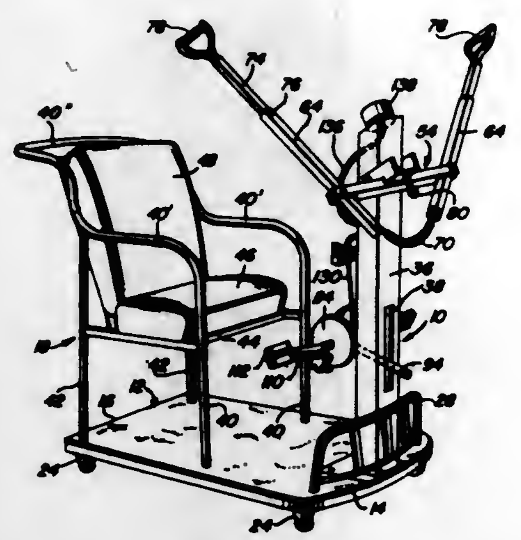
**De Wayne Zinkin, 2751 Lerwick Rd., Sacramento; Cliff J. Coker, 16727 Bolera Ln., Huntington Beach, and Kenneth A. Gustafson, 9981 Platanel Dr., Villa Park, all of Calif.**
**Filed Mar. 29, 1971, Ser. No. 128,982**
**Int. Cl. A63b *23/04***
**U.S. Cl. 272—58** **9 Claims**



A device for exercising the muscles of the legs, which simulates the striding movement which occurs during actual running. A body support frame is provided having a pair of foot engaging pendulum arms mounted thereon for movement through predetermined arcuate paths of travel with an adjustable friction developing mechanism being operatively associated with an arcuate sector to offer resistance to movements of the arms. The device offers substantially a constant resistive force throughout the entire range of thrust movement during extension of a user's leg and provides substantially unrestricted leg movement in the opposite direction during retraction of a user's leg.

### 3,759,512
### EXERCISE MACHINE

**Amos W. Yount, 827 Catalpa St., and Shellie D. Wells, 823 Catalpa St., both of Clarksdale, Miss.**
**Filed May 24, 1972, Ser. No. 256,562**
**Int. Cl. A63b** *21/22, 21/32, 23/04*
U.S. Cl. 272—58 **11 Claims**



A wheeled base is provided having front and rear ends with an occupant seat disposed on the rear end and an upright having its lower end supported from the front end of the base. A mount is supported from an upper portion of the upright for oscillation about a horizontal transverse axis and the mount extends laterally outwardly on opposite sides of the upright. A pair of spring biased levers are pivotally supported, intermediate their opposite ends from the opposite side portions of the mount for angular displacement about generally parallel axes normal to the axis of oscillation of the mount and an expansion spring is connected between the forward ends of the levers yieldingly biasing the forward ends together and the rear ends of the levers, which are disposed adjacent the seat, apart. Further, a pedal crank assembly is journaled for rotation about a horizontal axis beneath the mount from which the forced levers are supported and the pedal crank assembly is adjustable vertically as well as toward and away from the occupant's seat.

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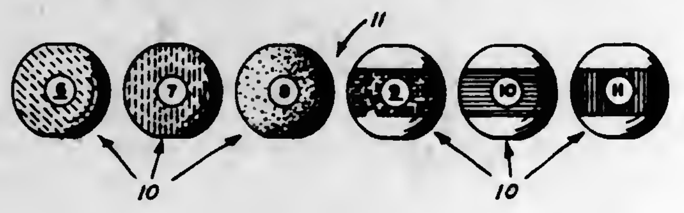
### 3,759,513
### SET OF HOLLOW CORE SHOTS

**Orval B. Gillett, P.O. Box 702, Porterville, Calif.**
**Filed Feb. 10, 1972, Ser. No. 225,114**
**Int. Cl. A63b** *69/00*
U.S. Cl. 272—59 B **6 Claims**



A plurality of differently weighted hollow balls, or shots form a set for use in training shot putters. All the hollow balls of a set have the same diameter at their outer wall surface, and each ball in the set has an inner diameter different from each other ball in the set. The weight of a ball is determined by the inner diameter thereof. This set of hollow balls, or shots permits a shot putter to progress through a scientific weight training program in the art of shot putting by using increasingly heavier balls. Each ball is provided with a pair of diametrically opposed holes communicating with the hollow core thereof for permitting access thereto and for selectively arranging material in the hollow core for increasing the weight of the ball for overweight training. Further, each ball may be provided with a coloring and indicia that is different than the coloring and indicia of each other ball.

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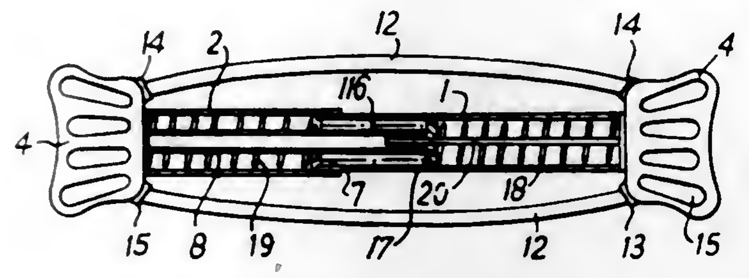
### 3,759,514
### RESILIENT PUSH-PULL EXERCISER

**John William Cox, London, England, assignor to Compret N.V., Amsterdam, Netherlands**
**Filed June 7, 1971, Ser. No. 150,648**
**Claims priority, application Great Britain, June 11, 1970, 28,426/70; Oct. 7, 1970, 47,693/70**
**Int. Cl. A63b** *21/00*
U.S. Cl. 272—83 R **8 Claims**



A physical exerciser having two elongated members positioned within the first and second tubular members so as to permit the elongated and tubular members to telescope one within the other. A handle is are carried by each of the tubular and elongated members on the ends thereof remote from one another. One or more resilient members may be disposed within the tubular members to resist movement of the handles towards one another enabling physical exercises to be performed. Two lengths of rope are positioned between the handles to provide for another exercise. Pulling exercises are performed by pulling the rope lengths apart to cause the handles to move towards one another. Each resilient member is compressible. The various constructions of one or more exerciser disclosed embody particularly advantageous arrangements of the resilient members relative to the tubular members. Resilient members may be connected between a bush on one elongated member and a flange on the other member. Other resilient members may be positioned between the flange and one handle and between the bush and the other handle.

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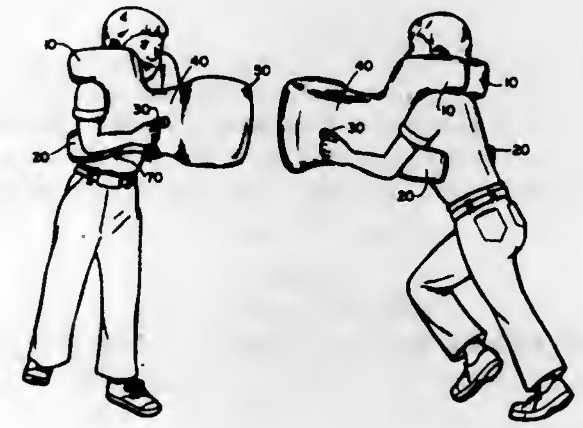
### 3,759,515
### YIELDABLE BODY JOUSTING BAGS

**Thomas E. Crooks, 5464 Juarez St., Baton Rouge, La.**
**Filed Feb. 4, 1971, Ser. No. 112,700**
**Int. Cl. A63b** *71/08*
U.S. Cl. 273—1 R **7 Claims**



An amusement device involving physical activity and competitive play is described. It comprises an elongate yieldable body having a blunt, impact receiving, vertical frontal face and a rearward portion shaped and sized to fit against the chest of the user. Support members extending upwardly and rearwardly from the body fit over the shoulders of the user and preferably serve as protective shields. Bracing members passing rearwardly under the armpits of the user or handle members on the body of the device (and preferably both) are also provided.

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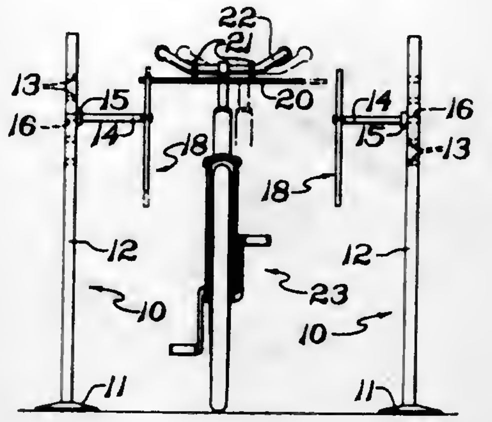
### 3,759,516
### GAME DEVICE

**Richard K. Miller, 1004 Stump Rd., Akron, Ohio**
**Filed June 22, 1971, Ser. No. 155,576**
**Int. Cl. A63b** *71/02*
U.S. Cl. 273—1 R **4 Claims**



A game utilizing a pair of game poles which support horizontally extending bars. The outboard end of each bar journals for rotation a member that is vertically oriented such that a bicycle with a horizontally extending bar clipped to the handlebars is adapted to clear the spacing between the rotatable members. The cyclist attempts to pass between the poles without having the bar engaging the rotatable members. The horizontally extending bars are horizontally adjustable to vary the space between the rotatable members and carry indicia to allow precise adjustment.

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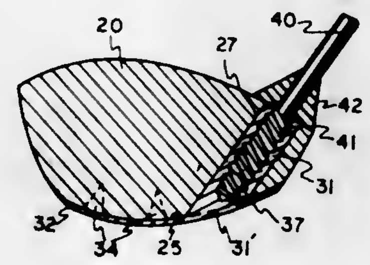
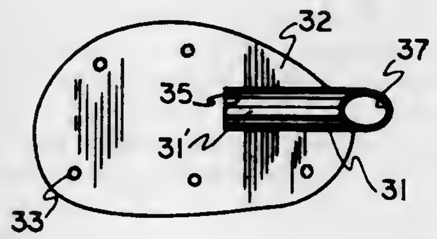
### 3,759,517
### HOSEL-LESS WOOD TYPE GOLF CLUB

**Truett P. Mills, 1700 Second Ave., Tuscaloosa, Ala.**
**Continuation-in-part of Ser. No. 832,994, June 13, 1969, Pat. No. 3,640,534. This application Sept. 23, 1970, Ser. No. 74,656**
**Int. Cl. A63b** *53/02*
U.S. Cl. 273—80.7 **10 Claims**





A wood type golf club having a club head with a frontal striking surface, toe and heel portions, a bottom surface, and a top surface, the club head having a shaft receiving opening in the top surface at said heel portion and said top surface being a continuation of the general contour of the club head from the toe to the heel portions. The club head is provided on its bottom surface with a sole plate which is associated with a shaft retainer that is received in the shaft receiving opening in the club head. A shaft is received in the shaft retainer and secured therein.

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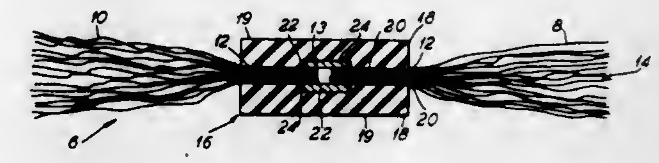
### 3,759,518
### FOOT IMPELLENT TOY

**John M. Mroz, 623 N.E. 2nd St., Hallandale, Fla.**
**Filed Oct. 13, 1971, Ser. No. 188,902**
**Int. Cl. A63b** *65/10*
U.S. Cl. 273—106 B **6 Claims**



A unitary toy to be repeatedly kicked to keep the toy in play and away from play-ending ground contact, said toy having a plurality of flexible strands disposed in a circular pattern with their outer ends substantially coterminous, and their inner ends tightly bunched between two parts of an elastomer kicking center. The kicking center is weighted to provide desired flight of the toy during repeated kicking, and the strands have inherent strength sufficient to maintain a pattern of circular plane without collapsing due to gravity.

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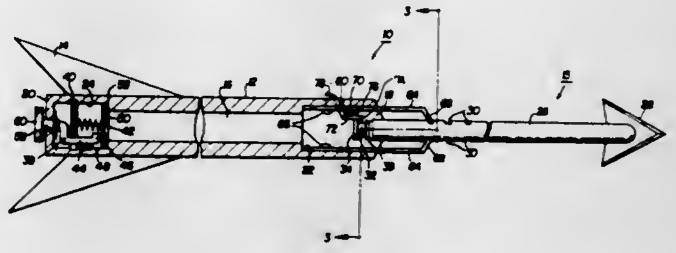
### 3,759,519
### TELESCOPING ARROW

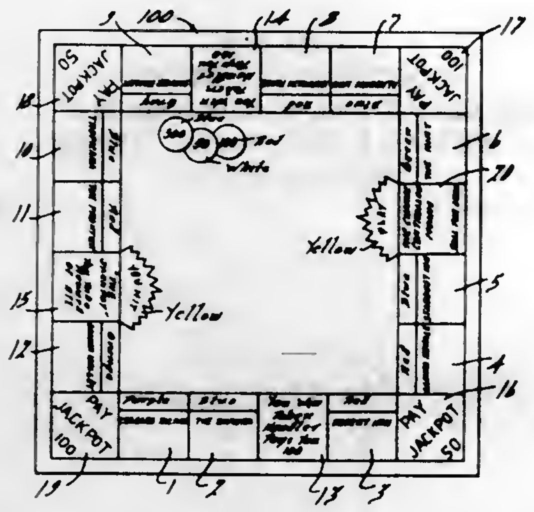
**James R. Palma, 1502 Curry Rd., Schenectady, N.Y.**
**Continuation of Ser. No. 39,298, May 21, 1970, abandoned. This application Mar. 22, 1972, Ser. No. 236,824**
**Int. Cl. F41b** *5/02*
U.S. Cl. 273—106.5 R **10 Claims**



A telescoping arrow assembly comprised of a longitudinal body portion, which is provided with an axial cavity into which extends an arrow tip portion normally retained in a retracted position in the cavity by a resiliently biased manually releasable detent; an energy storing spring is provided at the bottom of the axial cavity and is held in a compressed state when the detent engages a shoulder on the rear end of the arrow tip portion in its retracted position. Upon release of the detent the spring will propel the arrow tip portion outwardly of the cavity into an extended ready position at the front of the body portion is a second detent which engages the shoulder on the rear end of the arrow tip portion to limit forward movement of the tip. A pair of resilient catch fingers are cantilevered outwardly from the front end of the body portion. They engage rearwardly facing notches along the rear part of the tip portion to keep the tip from retracting into the body portion. A resilient washer is located towards the rear end of the body portion cavity and engages a tapered groove on the tip portion to position the tip portion within the cavity.

## 3,759,520
## BOARD GAME APPARATUS

**Harold L. Straitwell, Jr., 9484 Church Rd., Grosse Ile, Mich.**
**Filed Dec. 8, 1971, Ser. No. 206,106**
**Int. Cl. A63f** *3/00*
**U.S. Cl. 273—134 AD** **4 Claims**



A novel chance controlled game apparatus means comprised of a game board with a multiplicity of positions thereon, a multiplicity of chance controlled means for determining the conditions of the various players in the game, a plurality of tangible reward means for determining a particular player's status in the game, a plurality of game piece marker means, and a plurality of position identification means.

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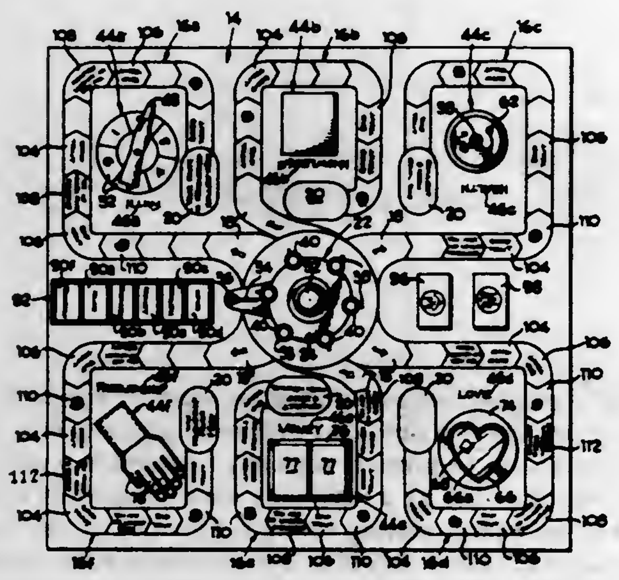
## 3,759,521
## BOARD GAME APPARATUS

**Jeffrey D. Breslow, Highland Park; Marvin I. Glass, and Joseph M. Burck, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill., a part interest**
**Filed Mar. 1, 1972, Ser. No. 230,584**
**Int. Cl. A63f** *3/00*
**U.S. Cl. 273—134 B** **15 Claims**



A game which includes a game board having a plurality of individual tracks each defining a plurality of stations from an individual starting point to an individual finishing goal for movement thereover of playing pieces in accordance with numbers selected by individual random number selection devices disposed adjacent each track. A spinner-type random selection device is disposed on the playing board generally centrally thereof, with the tracks disposed thereabout. The spinner determines along which of the tracks a player is to move his respective playing piece in an attempt to achieve a given result for each of the tracks. The game is centered around a theme involving distinguishing qualities or traits of a player and "good trait" and "bad trait" cards are acquired and/or lost by players of the game as the game progresses, the card indicia being related to indicia at the respective tracks.

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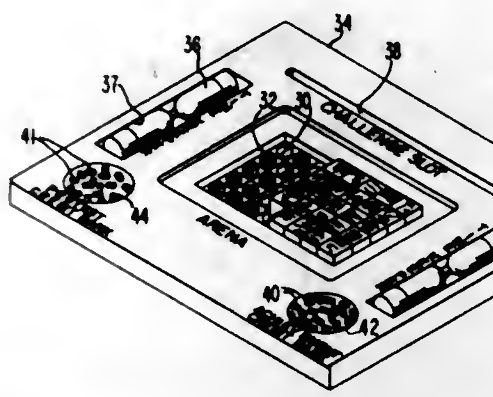
## 3,759,522
## BOARD GAME APPARATUS

**Joseph Hodan, III, 1590 Ebener St. Apt. No. 5, Redwood City, Calif.**
**Filed Aug. 25, 1971, Ser. No. 174,681**
**Int. Cl. A63f** *3/00*
**U.S. Cl. 273—135 AA** **2 Claims**



A dice game comprises a plurality of dice with each side of each die having a segment of a pictorial puzzle, an arena and picture cards, both having matching grids with spaces of such size and number as to receive said dice, and score cards with numbered grids thereon to record points scored, errors made, disputes between players, and track puzzle segments. The game provides amusement and teaches and measures one's visual perception of small internal features of structures, such as historical monuments or buildings.

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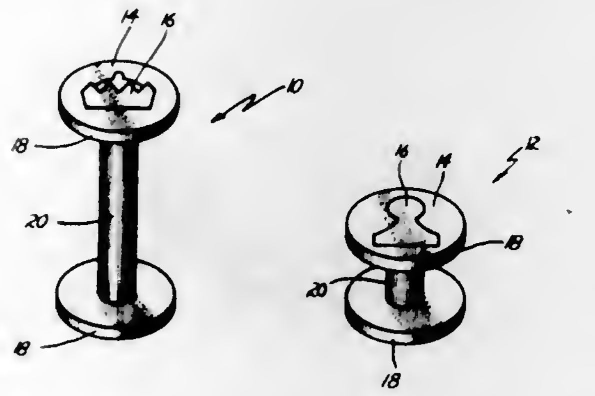
## 3,759,523
## CHESS GAME PIECES

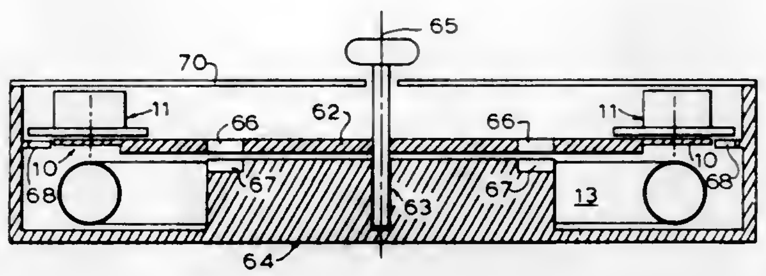
**Alexander Randolph, Naka Ochiai, 1-chome 10-9, Shinaku-ku, Tokyo, Japan**
**Filed Dec. 29, 1970, Ser. No. 102,424**
**Int. Cl. A63f** *3/02*
**U.S. Cl. 273—137 R** **7 Claims**



A game set is provided for playing chess or variations thereof in which each game piece has a longitudinal dimension and opposite ends defining a planar base to enable each piece to stand on either of its ends. The pieces in the game are separable into two identical groups, one for each player. Each piece has a symbolic representation at each end thereof corresponding to the strength or rank of the piece so that the rank of the piece is apparent at the upper exposed end. The pieces in one player's group are apparent from those in the other group by providing visually distinguishable means, such as different color markings, at the opposite ends of each piece, one type of marking being associated with one player's group and the other being associated with the other player's group.

## 3,759,524
## GAME OF CHANCE APPARATUS

**Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif.**
**Filed Jan. 24, 1972, Ser. No. 220,318**
**Int. Cl. A63f** *5/04*
**U.S. Cl. 273—142 A** **6 Claims**



The apparatus of this invention is designed for use in games of chance and particularly in such games which require a display of a player's score, such as a showing of one or more spots on the upturned face of a die, for example. In the present invention an array of spots indicating a player's score is made visible by the emission of light therefrom and the composition of each array will be a function of an angular relationship between a stationary and a rotatable member of the apparatus.

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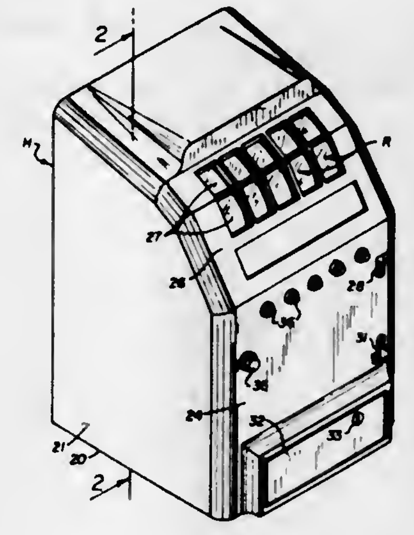
## 3,759,525
## ELECTRICAL ACTUATED CHANCE DEVICE HAVING CHAIN-DRIVEN ROTATABLE DRUMS

**Carl B. Davis, 3300 S. Oak Ct., Morrison, Colo.**
**Filed Oct. 6, 1971, Ser. No. 186,906**
**Int. Cl. A63f** *5/04*
**U.S. Cl. 273—143 R** **4 Claims**

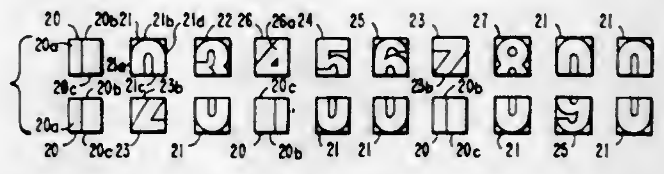


The present invention is a game apparatus which effects a play by a set of reels mounted upon a shaft, with each reel rotating freely, to stop or be stopped, at a random position with respect to the other reels. Card faces or like symbols extend about the periphery of the reel and the game play will be by correlation of the card faces on the different reels which fall into alignment when the reels stop rotating.

The apparatus uses an electrical pull mechanism to give the reels their initial rotation. Individual reel stops are provided which are actuated by pressing buttons. Sprockets on the reels receive reel-stop detents so the reels stop at indexed positions. Thus, the card faces on the several reels will then lie in alignment and be conveniently exposed through windows in the housing of the unit.

## 3,759,526
## GAME PIECES SELECTIVELY JOINABLE ALONG EDGES THEREOF TO FORM LETTERS OR NUMERALS

**Charles Estvan, Jr., 5615 Valley Oak Dr., Los Angeles, Calif.**
**Filed Aug. 30, 1971, Ser. No. 176,148**
**Int. Cl. A63f** *9/10*
**U.S. Cl. 273—157 R** **6 Claims**



Game apparatus is disclosed including game pieces each having at least one face with at least one pattern thereon, the pattern extending to an edge of the piece. Complete, conventional numerical and/or alphabetical characters are formed by joining pairs of game pieces along the mentioned edges in various combinations, a given pattern representing, in a particular combination of pieces, either the upper or lower portion of the completed character.

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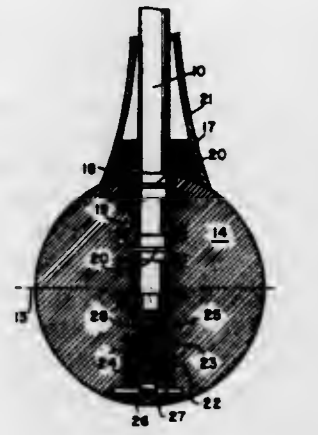
## 3,759,527
## GOLF CLUB

**William Herbert Witherspoon, 8433 Glendale Rd., Greenbelt, Md.**
**Filed Apr. 19, 1971, Ser. No. 135,236**
**Int. Cl. A63b** *53/02, 53/04*
**U.S. Cl. 273—171** **2 Claims**



The invention involves a substitute club head in the approximate form of an annulus or a sphere or section of a sphere having an endless succession of striking faces all around the club head. The shaft is positioned through the top surface of the club head and is received within a sleeve being coaxial and in alignment with the radius of the sphere. The sleeve cooperates with a weight means in a weight receptacle which is secured within said receptacle within the club head and wherein the weight means and weight securement means are coaxial and aligned with the shaft and shaft receiving sleeve.

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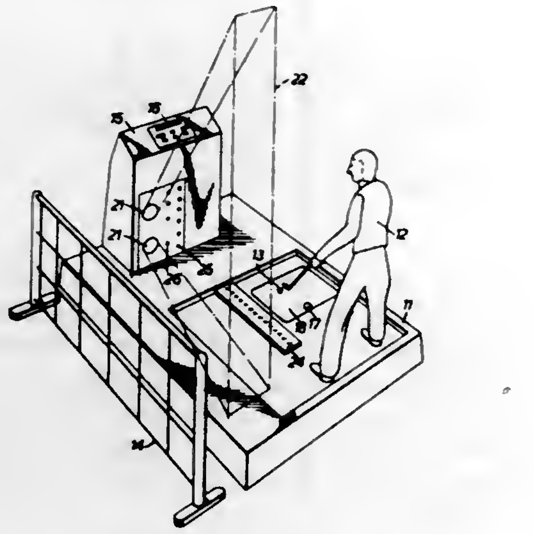
## 3,759,528
## APPARATUS FOR SIMULATING THE PLAYING OF GOLF STROKES

**John Roland Christophers, Kings Mill, Painswick, Gloucestershire, and Derek James, Forest Green, both of England, assignors to said Christophers, by said James**
**Filed Aug. 30, 1971, Ser. No. 175,957**
**Int. Cl. A63b** *69/36, 67/02*
**U.S. Cl. 273—176 FA** **14 Claims**

This invention is a machine enabling a golfer to practice golf strokes, striking a real golf ball against a net. Light reflected from the ball during flights is detected by directional detectors arranged in vertically and horizontally arranged banks, and a computer displays range achieved, lateral deviation, height deviation, lateral deviation due to spin, new distance to hole, and so on. The first bank of detectors gives information about the left-right position of the ball. The second bank of detectors gives information about the start-height of the ball and initiates a timing cycle for determining ball velocity. The third bank of detectors terminates the timing cycle. For detecting



spin, the golf ball may be provided with a super-reflective semi-circular strip which is arranged to extend from top to bottom facing away from the club face. The energization of the detectors is controlled by a sensor which normally receives light radiation but is cut off from the radiation when the ball is on the tee prior to being struck. The machine also includes a club selector unit and a distance of hole selector.

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3,759,529

### MAGNETIC RECORDING AND REPRODUCING APPARATUS

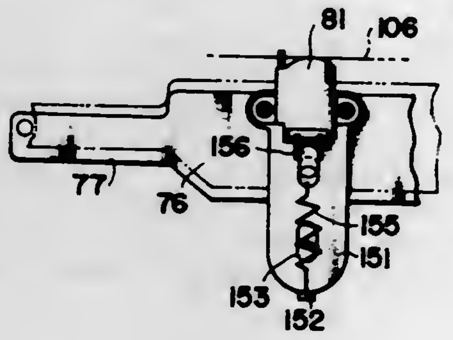
**Tetsuji Yoshii, Neyagawa-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Feb. 26, 1969, Ser. No. 802,455**

**Claims priority, application Japan, Mar. 6, 1968, 43/14881; July 31, 1968, 43/66446; July 31, 1968, 43/66471; July 30, 1968, 43/66179; Aug. 7, 1968, 43/56605; July 31, 1968, 43/66445; Apr. 3, 1968, 43/22477; July 11, 1968, 43/49451; Aug. 21, 1968, 43/60298; Mar. 14, 1968, 43/16991; Mar. 27, 1968, 43/19923; July 30, 1968, 43/66178**

**Int. Cl. G11b** *23/04*

**U.S. Cl. 274—4 C** **17 Claims**



A magnetic recording and reproducing apparatus having a cassette tape comprises head base controlling mechanism, and holding case and provides the following three functions: keeping a tape in contact with a recording and reproducing head and an erasing head to such a degree as not to cause trouble for detecting or erasing the recorded content during fast forwarding or rewinding speed of a tape by the reproducing or erasing head, making it possible to record and reproduce at a constant fowarding speed by advancing the head within the cassette, and also making it possible to mount or demount the cassette by completely withdrawing the head advanced within the cassette therefrom.

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3,759,530

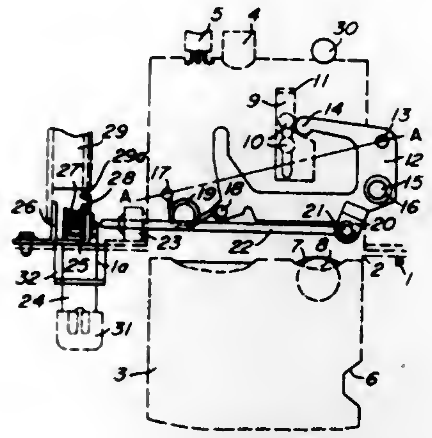
### RECORD MECHANISM FOR CARTRIDGE TAPE PLAYER-RECORDER

**Kazue Sampei, Fukushima-ken, Iwaki-shi, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan**

**Filed Jan. 20, 1972, Ser. No. 219,457**

**Int. Cl. G11b** *27/24*

**U.S. Cl. 274—4 B** **9 Claims**



A locking mechanism for the selector used in determining the mode of operation of a cartridge type tape player-recorder comprising a cartridge locking arrangement having an arm member movable in response to the insertion of a cartridge into the player-recorder to secure the cartridge therein includes a rod coupled at one end to the arm member of the cartridge locking arrangement for movement therewith. The opposite end of the rod is positioned for engagement with a lever arm coupled to the selector to maintain the latter in a preselected position upon insertion of the cartridge into the player-recorder. The selector is freed upon return of the cartridge locking arrangement to its original position in response to the removal of the cartridge from the player-recorder.

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3,759,531

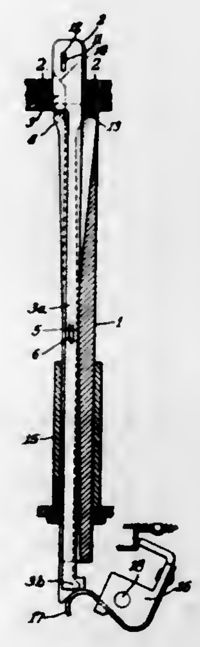
### RECORD CHANGER SPINDLE

**Michael H. Estkowski, St. Joseph, Mich., assignor to V-M Corporation, Benton Harbor, Mich.**

**Filed July 23, 1971, Ser. No. 165,681**

**Int. Cl. G11b** *17/04*

**U.S. Cl. 274—10 S** **10 Claims**



Record changer spindles designed for feeding phonograph records of a thickness heretofore regarded as standard do not always operate satisfactorily on records of other than standard thickness such as are now coming on the market. The record changer spindle of the present invention is capable of automatically feeding onto the turntable successive phonograph records, one at a time, from a stack which may include interspersed records of different thicknesses or a stack of records all of the same thickness, either thick or thin.

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3,759,532

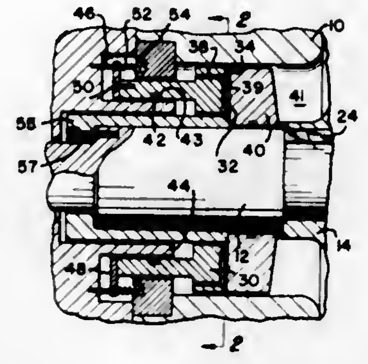
### FLUID SEAL

**Herman Lindeboom, Pennington, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.**

**Continuation of Ser. No. 21,163, March 19, 1970, abandoned. This application June 9, 1972, Ser. No. 261,343**

**Int. Cl. F16j** *15/40, 15/54*

**U.S. Cl. 277—27** **5 Claims**



An improved fluid seal is disclosed which may be used equally effectively for either a straight leakoff seal or an injection seal. A differential pressure is maintained in the space between a first sealing member such as a collar on a rotatable shaft and an axially movable second seal member. A plurality of passageways which are equally spaced radially from the axis of the second seal member and equally spaced circumferentially interconnect the space between the two seal members and an external fluid pressure. The new seal may be used for sealing gas or liquid.

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3,759,533

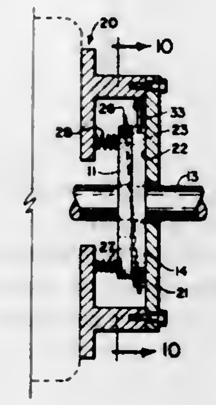
### SEALING MEANS FOR ROTATING SHAFT

**Willis A. Neely, 121 Levee View Dr., New Orleans, La.**

**Filed Apr. 12, 1971, Ser. No. 133,087**

**Int. Cl. F16j** *15/00;* **B65d** *53/00*

**U.S. Cl. 277—130** **6 Claims**



The present invention pertains to novel means for minimizing fluid leakage along the rotating shaft and the stationary members in conventional machinery such as pumps, compressors, and the like. Such machinery is generally provided with a sealing box positioned circumferentially around the rotating shaft wherein some form of sealing means is positioned. The present invention provides mechanical sealing means for positioning within the sealing box or housing of such machinery and comprises U-shaped members adapted to fit on the rotating shaft in such a manner so as to provide, in combination with the packing gland plate, means for minimizing fluid leakage along the shaft and between the plate and U-shaped members. Additional members are provided in combination with the U shaped members such that the forces involved will be unbalanced and the seal effected.

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3,759,534

### APEX SEAL FOR ROTARY PISTON ENGINE

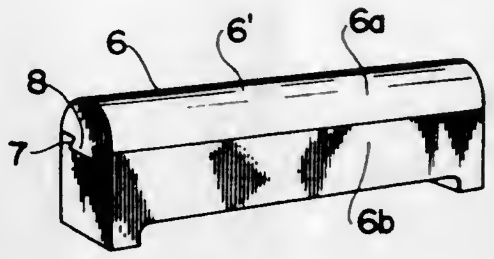
**Hiroshi Sakamaki, Utsunomiya-shi, Tochigi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

**Filed Oct. 21, 1971, Ser. No. 191,286**

**Claims priority, application Japan, Oct. 24, 1970, 45/105981**

**Int. Cl. F16j** *15/65*

**U.S. Cl. 277—235 R** **1 Claim**



An apex seal for a rotary piston engine is so constructed as to have a head portion with a circular sliding surface. It is made of a metal preferably cast iron, and has a base portion for supporting the head portion, which is made of a heat resistant light metal alloy, synthetic resin, or non-metallic material.

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3,759,535

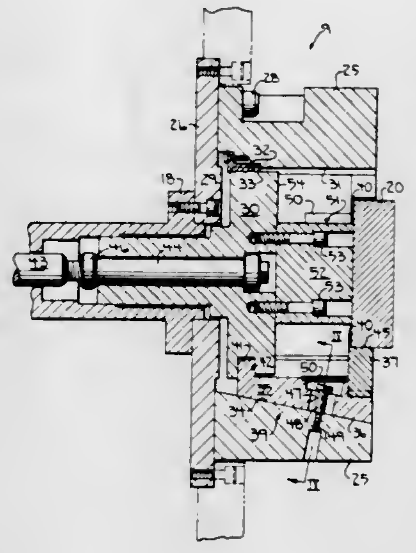
### CHUCK WITH INDIVIDUAL JAW COMPENSATION

**Howard M. Hilgers, Morton, (Fazewell County), Ill., assignor to Production Technology Inc., Peoria, Ill.**

**Filed Dec. 27, 1971, Ser. No. 212,547**

**Int. Cl. B23b** *31/12*

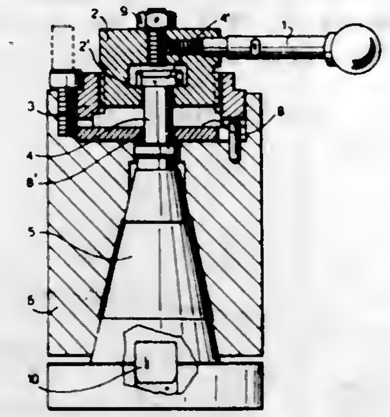
**U.S. Cl. 279—1 J** **3 Claims**



A machine tool chuck includes a chuck body which supports a plurality of jaws having semi-cylindrical mounting portions and correspondingly formed jaw seating ramps within the chuck body to allow the chuck jaws to swivel within their seating ramps about their respective longitudinal axes. The ability to swivel compensates for roughness or irregularities on the workpiece clamping surfaces. A jaw actuating member interconnects the jaws for selective radial contraction and expansion; and upon the imposition of an external inwardly directed force upon the workpiece, the jaws are automatically drawn into more tightly clamping relation to the workpiece.

### 3,759,536
### DEVICE FOR THE QUICK CHANGE OF TOOLHOLDERS

**Bruno Bronzini, 18/4 Strada Alberoni, Turin, Italy**
**Filed June 17, 1971, Ser. No. 154,034**
**Int. Cl. B23b** *31/02, 31/10*
**U.S. Cl. 279—89** **3 Claims**



A device for the quick change of toolholders comprises a support having a conical recess receiving a conical member that has a neck having a T-shaped head. The support has a washer with a slot disposed at right angles to the head and through which the head can pass only upon rotation through 90°. A nut is screw-threadedly received in the support and receives the T-shaped head through a slot through which the head falls upon rotation of the nut followed by pressure of the nut against the head in a disengaging direction. The T-shaped head falls on the washer, and the conical portion is rotated 90° to withdraw the head through the washer slot.

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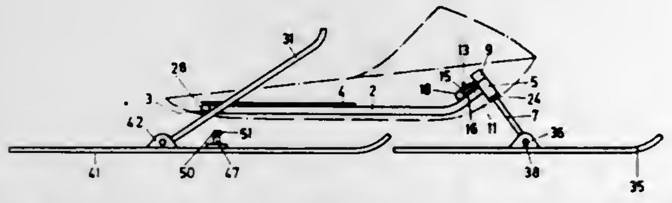
### 3,759,537
### VEHICLE, IN PARTICULAR FOR TRAINING IN THE COORDINATION OF SEVERAL CONTROLS

**Hermann Schreiber, Wangi, Switzerland**
**Filed Mar. 29, 1971, Ser. No. 128,714**
**Claims priority, application Switzerland, Mar. 31, 1970, 4714/70**
**Int. Cl. B62b** *13/04*
**U.S. Cl. 280—16** **17 Claims**



A vehicle for training in the coordination of various controls provided with at least travelling units containing skids, wheels or floats, having at least one seat, each of the travelling units being capable of being lifted or lowered for tilting about its longitudinal and/or transverse axis and at least one travelling unit being adapted to swivel about a vertical axis.

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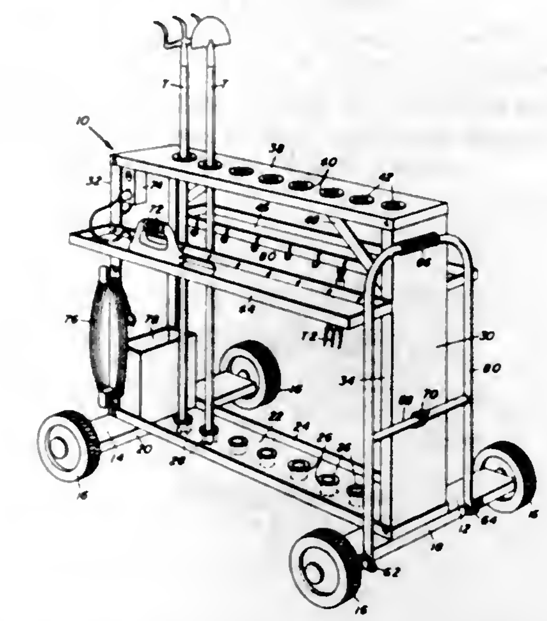
### 3,759,538
### GARDEN KADDY

**Anthony J. Fabiano, Bridgehampton Tnpk., Sag Harbor, N.Y.**
**Filed Dec. 10, 1971, Ser. No. 208,048**
**Int. Cl. B62b** *3/10*
**U.S. Cl. 280—47.35** **4 Claims**



A mobile storage facility having means for safely and conveniently supporting a wide range of garden implements, accessories and supplies.

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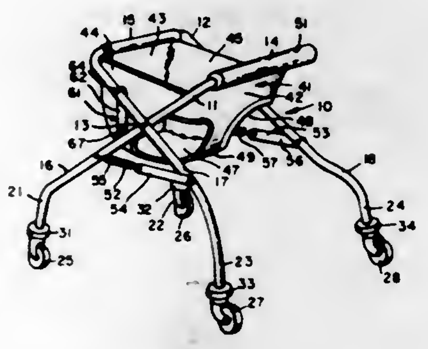
### 3,759,539
### BOUNCE-RESTRICTING BRACE FOR CHILD'S BOUNCER-WALKER

**Morris I. Goldberg, 39 Locke Rd., Newton, Mass.**
**Filed Mar. 16, 1972, Ser. No. 235,235**
**Int. Cl. B62b** *9/22*
**U.S. Cl. 280—87.03** **2 Claims**



A bounce restricting brace for a child's bouncer-walker of the type comprising two generally U-shaped frame members pivotally connected at an intermediate position and provided with a pair of spring members mounted between the frame members below the pivot. The restrictive brace which limits the amount of bounce and prevents collapse of the bouncer-walker comprises a strap member having an internal slot which is pivotally mounted to the side of one frame member and slidably mounted to the side of the other frame member.

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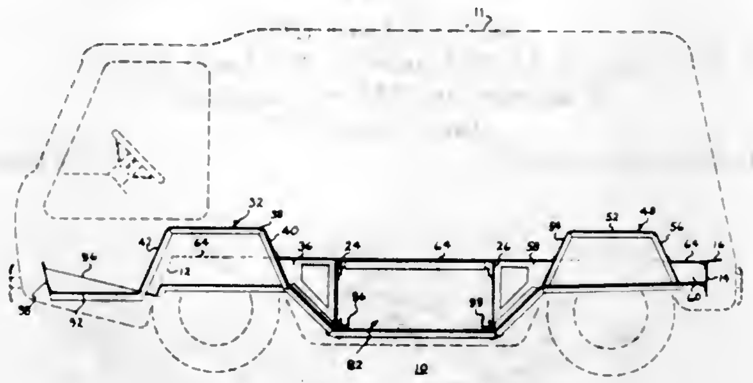
### 3,759,540
### VEHICLE CHASSIS

**Hjalmar A. Olson, North East, Pa., assignor to General Electric Company, Erie, Pa.**
**Filed Dec. 13, 1971, Ser. No. 207,403**
**Int. Cl. B62d** *21/00*
**U.S. Cl. 280—106 R** **8 Claims**

A lightweight vehicle chassis withstands torsional loads and becomes structurally rigid through the use of a plurality of closed supporting compartments which extend over a substantial portion of the chassis. The closed supporting compartments are formed out of a top layer and a bottom layer of sheet material which are interconnected by vertical webs of the same sheet material. The closed compartments at the front end of the chassis form a dog-leg configuration including plastic hinge areas of predictable failure which absorb energy upon impact of the front end of the motor vehicle with a solid object.



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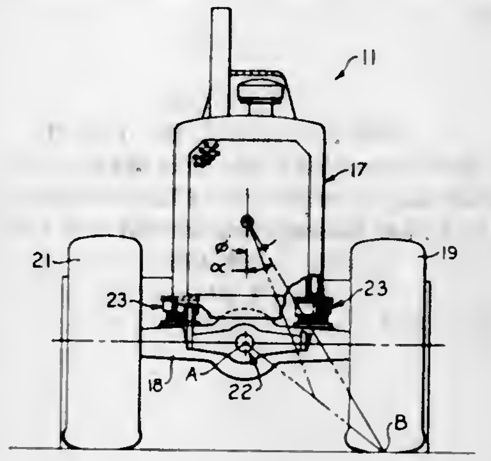
### 3,759,541
### STABILIZER FOR ARTICULATED WHEEL LOADERS

**Robert A. Peterson, San Leandro, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Dec. 22, 1971, Ser. No. 210,773**
**Int. Cl. B60g** *11/22*
**U.S. Cl. 280—112 R** **9 Claims**



A stabilizer for improving the lateral stability of an articulated wheel loader of the type having a rigid front axle and an oscillating rear axle or frame. The stabilizer comprises rubber-like resilient members mounted between the rear axle and frame having an exponentially increasing restraining force versus compressive deflection characteristic to prevent free and unrestrained oscillation of the axle in relation to the frame at excessive angles of axle oscillation, thereby increasing the lateral tipping angle of the loader.

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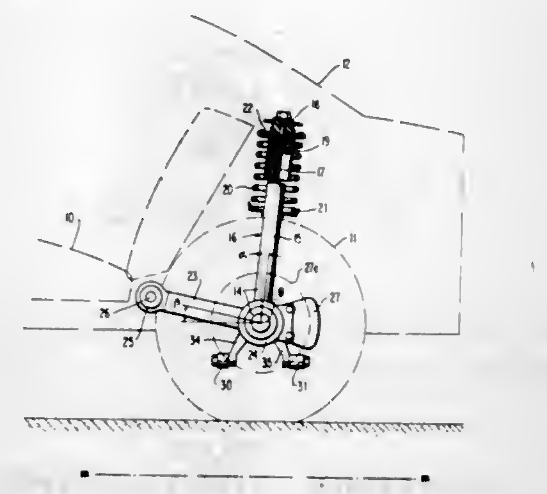
### 3,759,542
### AXLE SUSPENSION ON ESPECIALLY REAR AXLE SUSPENSION FOR MOTOR VEHICLES

**Erwin Loffler, Friedrichshofen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**
**Filed June 4, 1971, Ser. No. 150,097**
**Claims priority, application Germany, June 6, 1970, P 20 27 885.7**
**Int. Cl. B60g** *11/32*
**U.S. Cl. 280—124 A** **30 Claims**

An axle suspension, especially a rear axle suspension of motor vehicles in which the wheel carrier is guided by cross and longitudinal guide elements whereby the wheel carrier which carries the wheel journal forms one part of a telescopic spring leg adapted to be lengthened and shortened under spring action which is pivotally connected with at least one longitudinal and cross guide element each.



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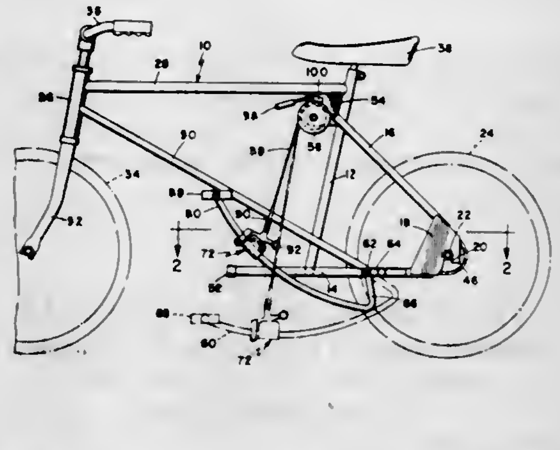
### 3,759,543
### VARIABLE SPEED LEVER ACTION BICYCLE DRIVE

**Marion A. Clark, 546 W. Pleasant, Tulare, Calif.**
**Filed May 22, 1972, Ser. No. 255,642**
**Int. Cl. B62m** *1/04, 23/00*
**U.S. Cl. 280—236** **12 Claims**



A bicycle drive comprising a pair of levers pivotally mounted on opposite sides of the bicycle frame, with foot pedals at their extremities. The rear wheel has dual sprockets with one way clutches, each sprocket being connected to one lever by a chain and cable, so that a downward stroke of the lever drives the wheel. The chain is concealed in the frame members and the cable connection to the lever is by means of a bracket which is movable along the lever by foot action, to vary the effective lever arm without changing the pedal stroke. Both pedals can be operated independently, alternately, or together to drive the bicycle, and speed can be shifted on each side independently without interrupting the driving effort.

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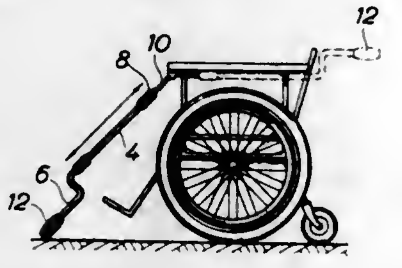
### 3,759,544
### WHEEL CHAIR WITH PIVOTED HAND BAR

**Viljo Gunnar Korpela, Helsinki, Finland, assignor to Oy Suomen Vanutehdas Finnwad Ltd., Helsinki, Finland**
**Filed Apr. 27, 1971, Ser. No. 137,938**
**Claims priority, application Finland, Apr. 29, 1970, 1218; Nov. 27, 1970, 3206**
**Int. Cl. B60n** *3/00;* **B62k** *3/00*
**U.S. Cl. 280—289** **12 Claims**

A wheel chair for handicapped persons. The wheel chair includes a pair of hand bars pivotally mounted to the sides of the chair to assist the disabled person to enter or leave the chair. When not in use, the hand bars may be stored away under the wheel chair's arm-rest, or they may be folded back to act as pushing handles for the chair.



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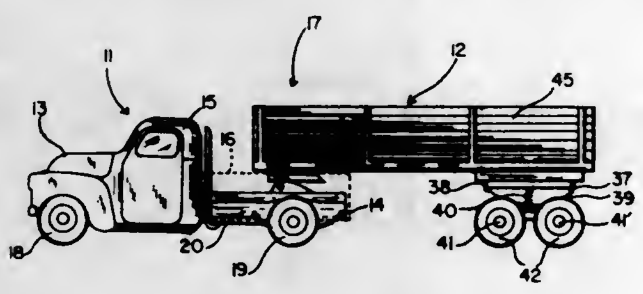
### 3,759,545
### CONVERTIBLE, ARTICULATED VEHICLE

**Eddie B. McKethan, Rt. 1, Box 162, Wade, N.C.**
**Filed June 25, 1971, Ser. No. 156,826**
**Int. Cl. B62d** *53/08*
**U.S. Cl. 280—423 R** **5 Claims**



In abstract, a preferred embodiment of this invention is a pick-up type truck which is convertible into an articulated, tractor-trailer type vehicle. This is accomplished by a bed mounted fifth wheel with a locking mechanism and brake and light connection.

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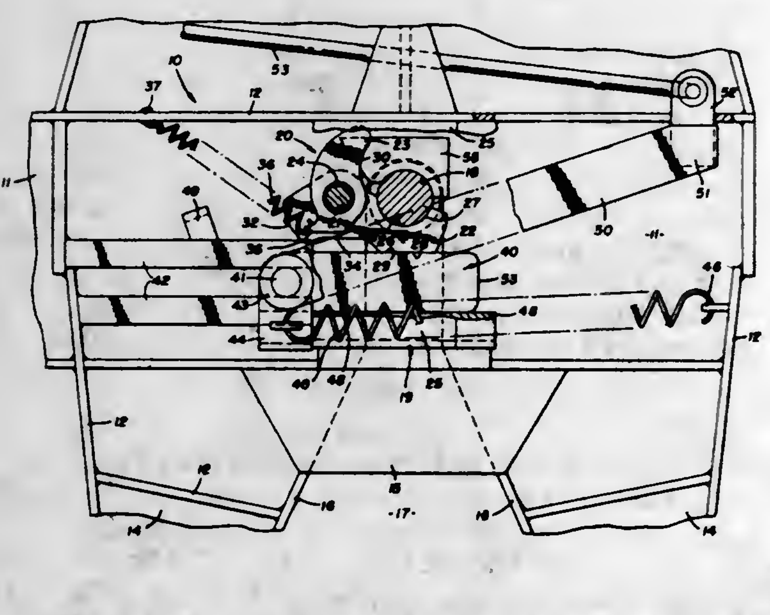
### 3,759,546
### FIFTH WHEEL COUPLER ASSEMBLY

**John Greenwood Slaven, 17 Highbank Rd., Kingsley, England**
**Filed Oct. 18, 1971, Ser. No. 190,072**
**Int. Cl. B62d** *53/08*
**U.S. Cl. 280—434** **6 Claims**



A fifth wheel coupler assembly having a coupler jaw pivotally mounted beneath the top plate at one side of the king pin slot. A gate arm of the jaw swings across the rear of the slot to engage a king pin. A locking bar having a sliding pivot maintains the king pin in coupled condition. A sensor arm also projects into the slot when the assembly is in open or king pin receiving condition and has an orientation such that the jaw will not close if the king pin is in a position so as to not correctly engage with the gate arm.

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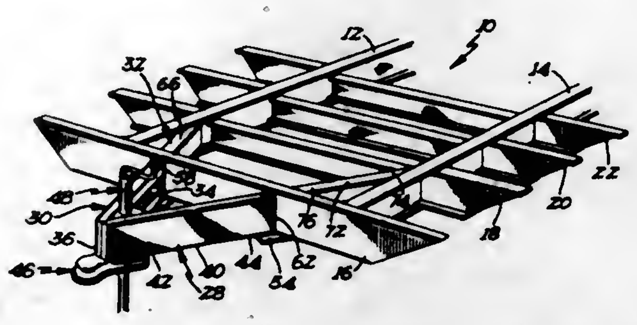
### 3,759,547
### DETACHABLE HITCH

**V. Scott Ankeny, 216 N. Circle Dr., Blue Earth, Minn.**
**Filed June 20, 1972, Ser. No. 264,538**
**Int. Cl. B60d** *1/14*
**U.S. Cl. 280—491 E** **5 Claims**



A detachable hitch for use on an elongated frame including a front portion formed of an angled interconnection of two load bearing members and a rear portion formed of two additional load bearing members in angled relation, the front and rear portions interconnected by overlapping plates attached to the respective portions, with the front portion supporting a towing device and the rear portion interconnected with longitudinal load bearing members of the frame to thus form a structurally sound hitch yet allow detachability of the front portion from the rear portion by the separation of the connection plates.

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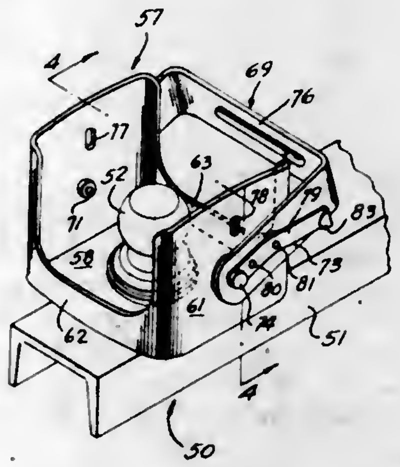
### 3,759,548
### SAFETY TRAILER HITCH

**Gilbert C. Kothmann, P.O. Box 680, Mason, Tex.**
**Continuation-in-part of Ser. No. 23,373, March 27, 1970, Pat. No. 3,677,564. This application Nov. 19, 1971, Ser. No. 200,476**
**Int. Cl. B60d** *1/12*
**U.S. Cl. 280—511** **3 Claims**



A safety trailer hitch in which a ball is mounted on the towing vehicle and a ball clamping coupling is mounted on the trailing vehicle. A member carrying a finger is arranged on the towing vehicle to be positioned with the finger overlying the coupling to prevent the coupling from detaching from the ball even if unlocked. The finger is mounted to be swung out of the way as required to permit the coupling to be disconnected from the ball.

In a modified form of the invention a yoke is mounted on the towing vehicle for swinging to a position overlying the coupling to prevent the coupling from being detached from the ball.

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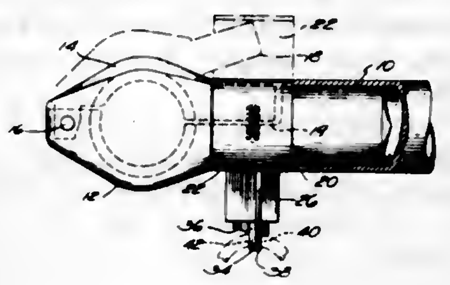
### 3,759,549
### COUPLER FOR TRAILER HITCH OR THE LIKE

**Francis Edwin Morris, 1706 Cherry St., P.O. Box 1002, Wausau, Wis.**
**Filed Jan. 24, 1972, Ser. No. 220,127**
**Int. Cl. B60d** *1/06*
**U.S. Cl. 280—512** **6 Claims**



A heavy duty coupler for a trailer hitch including a standard ball head has semi-spherical socket members hinged together by a vertical pin. One of these socket members has a shank by which the coupler is secured to the tongue of the trailer. The other of the socket members has an extension which in the closed position seats in a recess in the shank. A rotatable locking sleeve has a radially or laterally offset recess which permits the extension to swing outward enough to put the coupler to be placed on or removed from the ball. The walls of the locking sleeve and its radial recess provide a camming surface which as the sleeve is rotated toward locked position helps to force the extension into the recess to easily close the sockets in ball retaining position. A biased locking pin engages with selected notch to keep the sleeve in the locked position. The locking pin has a lever arm by which it can be moved to unlocked position. This lever arm cooperates with a tab-like stop to form a means for locking the coupler against theft.

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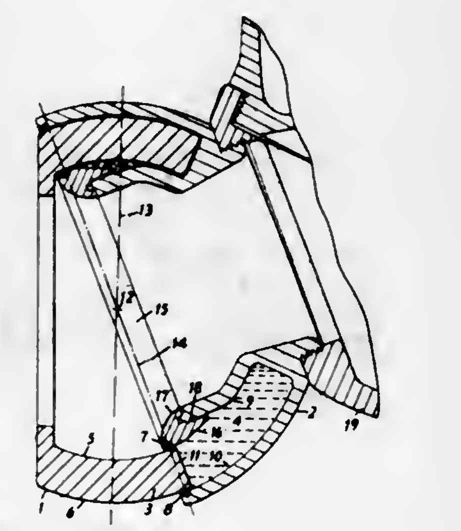
### 3,759,550
### FLEXIBLE JOINTS

**Joseph S. Peress, Moorcraft, Lammas Ln., Esher, England**
**Filed Aug. 30, 1971, Ser. No. 176,191**
**Claims priority, application Great Britain, Sept. 4, 1970, 42,620/70**
**Int. Cl. F16l** *27/00*
**U.S. Cl. 285—11** **5 Claims**



A flexible joint for use with apparatus subjected to an internal/external pressure differential such as used in submersible diving apparatus. The joint comprises an annular male member movably housed within an annular female member. The male member has an annular piston which moves in a closed annular cylinder carrying a sealing liquid in the female member and sealing means are carried on the cylinder walls which engage and seal the walls of the annular piston.

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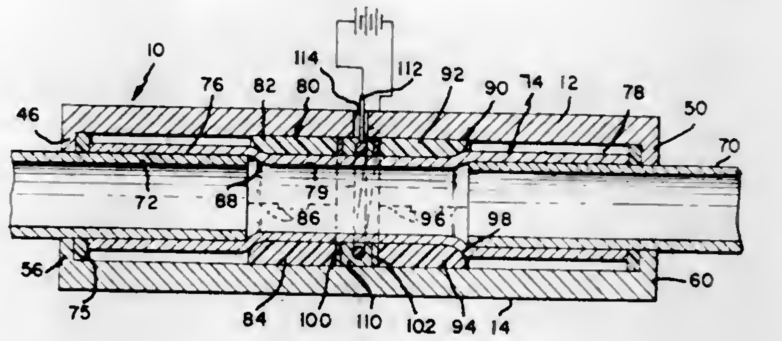
### 3,759,551
### EXPLOSIVELY-FORMED TUBULAR CONNECTION

**William F. Broske, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Continuation of Ser. No. 887,020, Dec. 22, 1969, abandoned, which is a continuation of Ser. No. 691,307, Dec. 18, 1967, abandoned. This application July 10, 1972, Ser. No. 270,371**
**Int. Cl. F16l** *13/14*
**U.S. Cl. 285—18** **6 Claims**



An end portion of a first tubular member is inserted within the end portion of a second tubular member and a die means is disposed in surrounding relation to said second tubular member. Explosive means is disposed adjacent to said die means, and the components are confined within a closed chamber. Detonation of explosive means moves the die means along the second tubular member to cold-forge the second tubular member to the first tubular member.

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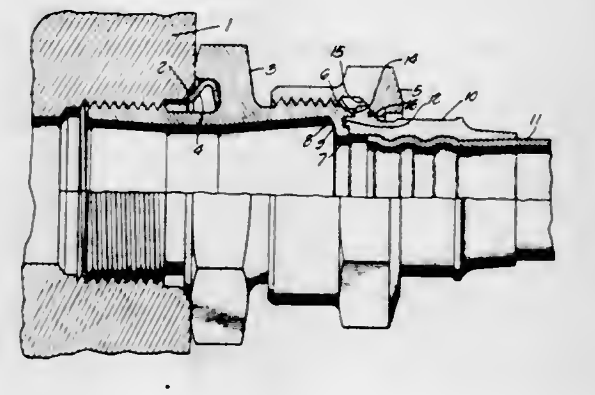
### 3,759,552
### HYDRAULIC COUPLING WITH METALLIC SEALING MEMBER

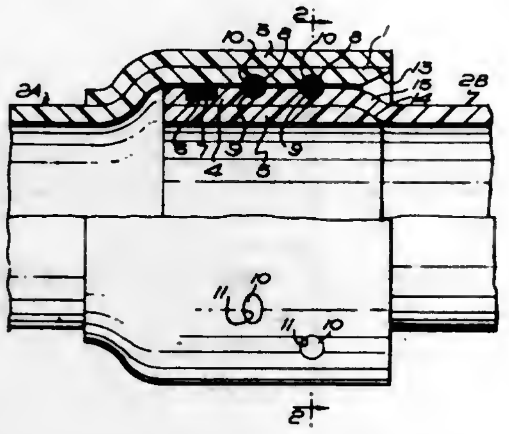
**Richard Levinsohn, and James E. Jervis, both of Menlo Park, Calif., assignors to Raychem Corporation, Menlo Park, Calif.**
**Filed Sept. 8, 1970, Ser. No. 70,321**
**Int. Cl. F16l** *33/24*
**U.S. Cl. 285—175** **13 Claims**



A hydraulic coupling is disclosed for connecting a hydraulic line to a hydraulic component such as a pump, compressor, cylinder or the like. The coupling consists of an adapter which fits into an opening in the hydraulic component. In order to form a leak-free joint between the adapter and the hydraulic component, a heat recoverable metallic sealing ring is placed between the surfaces. A heat recoverable sleeve is affixed to the hydraulic line and this sleeve mates with the adapter to form a seal. This seal results from the contact of a mating surface on the adapter and a corresponding mating surface on the sleeve. One of these mating surfaces projects inwardly toward the axis to permit a small amount of movement of this mating surface in the direction of the axis. A process is also disclosed whereby the metallic sealing ring is cooled below its transition temperature to convert it to a martensitic state only during installation.

### 3,759,553
### PIPE COUPLINGS

**Raymond Charles Carter, Sheffield, England, assignor to Hepworth Plastics Limited, Sheffield, England**
**Filed Mar. 23, 1972, Ser. No. 237,358**
**Claims priority, application Great Britain, Apr. 21, 1971, 10,591/71**
**Int. Cl. F16l** *31/00*
**U.S. Cl. 285—260** **5 Claims**



A socket and spigot pipe coupling for plastics pipes is especially adapted to withstand a pull such as is experienced in the mole-ploughing of pipe-lines into the ground by providing additional plastics material to increase the wall thicknesses to accommodate mating circumferential grooves for at least one flexible thrust rod to lock the pipes together and which rod is inserted through a hole in the socket tangential to the groove, the additional plastics material being provided by a collar secured on the outside of the socket and a sleeve secured inside the spigot which has been expanded so as to be a close sliding fit in the socket, the hole for insertion of the flexible thrust rod being provided through the collar as well as the socket.

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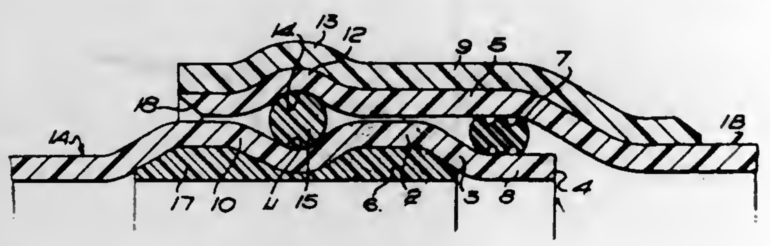
### 3,759,554
### PIPE COUPLINGS

**Raymond Charles Carter, Sheffield, England, assignor to Hepworth Plastics Limited, Sheffield, Calif.**
**Filed Mar. 23, 1972, Ser. No. 237,359**
**Claims priority, application Great Britain, Apr. 21, 1971, 10,592/71**
**Int. Cl. F16l** *31/00*
**U.S. Cl. 285—260** **4 Claims**



A pipe coupling for socketed and spigoted plastics pipes with a sealing ring between the socket and the inserted spigot does not have any groove cut for locating the sealing ring, instead a portion of the spigot spaced from its ultimate end is expanded so as to be a close sliding fit in the socket, and a plastics sleeve is secured within the expanded portion of the spigot, the sealing ring being located on the portion of the spigot between the expanded portion and the ultimate end of the spigot. The principle of the invention is extended to the formation of grooves for a locking rod by expanding a second portion of the spigot still further from the ultimate end of the spigot, with its own internal plastics sleeve or an extension of the sleeve in the first expanded portion, the two expanded portions forming between them a circumferential groove round the outside of the spigot, and by expanding a portion of the socket to form a mating circumferential groove round the inside of the socket, the locking rod being inserted through a hole in the socket tangential to the grooves.

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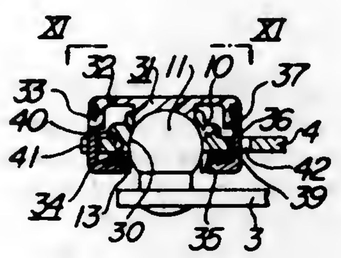
### 3,759,555
### STRUCTURE OF BALL-AND-SOCKET JOINT USED FOR COUPLING LINK MEMBERS FOR DRIVING A WINDSHIELD WIPER FOR VEHICLES

**Isao Ito, Handa, Japan, assignor to Nilkondenso Kabushiki Kaisha, Aichi-Ken, Japan**
**Filed Apr. 2, 1971, Ser. No. 130,577**
**Claims priority, application Japan, Apr. 10, 1970, 45/35083; Apr. 11, 1970, 45/34930; Apr. 11, 1970, 45/34931**
**Int. Cl. F16c** *11/06*
**U.S. Cl. 287—90 D** **2 Claims**



An improved structure of the ball-and-socket joint used for coupling link members for driving a windshield wiper for vehicles, comprising a combination of a ball fixedly mounted on one of the link members, and a socket mounted in the other link member to be pivotably connected to said one link member and having a recess for slidably receiving said ball therein. The improved ball-and-socket joint is provided with means for restraining the outward expansion of a collar-like section of the socket by pressing said section over the entire outer peripheral surface thereof, which collar-like section is formed integrally with the socket extending from the peripheral edge of the recess and has a plurality of slits formed therein.

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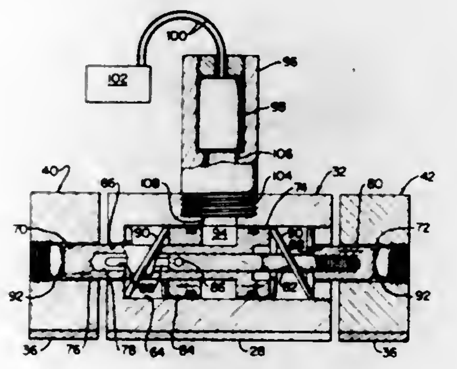
### 3,759,556
### EMERGENCY RELEASING SAFETY APPARATUS

**Arthur G. Wright, 7585 Raleigh St., Westminster, Colo.**
**Filed Apr. 5, 1971, Ser. No. 131,177**
**Int. Cl. E05c** *17/02*
**U.S. Cl. 292—33** **12 Claims**



A safety closure such as a fire door is usually attached to one side of normally open passage and extendable across passage to block it in emergency. Retainer members at each side and a link means extending across the path of extension surround the door to restrain it in retracted position. The link means comprises a main body member and a second body member separable therefrom each body member being connected to one retainer member. Slidable latch pins extend between the body members to hold them assembled. In one form, cylinder in main body contains two pistons with attached latch pins slidable into secondary body member. Charge of high pressure gas in cylinder moves pistons to retract pins for release. In another form, cylinder contains one piston with attached pin slidable into secondary body member, and secondary body member carries second latch pin slidable into main body member. Gas moves piston to retract first pin, and boss on piston drives second pin to release position. A sensor-operated squib or the like provides the gas charge. Body members include fasteners anchored in low melting point material to allow separation when subjected to predetermined elevated temperatures, as a back-up safety measure.

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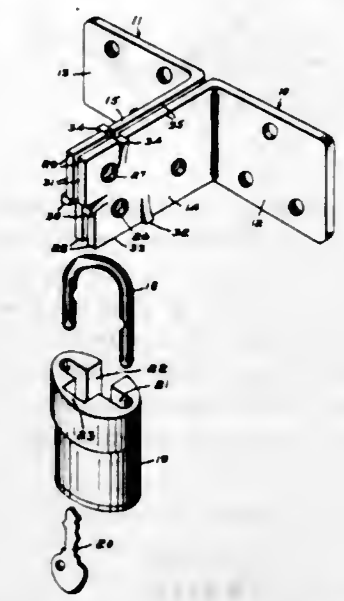
### 3,759,557
### LOCKING BARS FOR HIGH SECURITY PADLOCKS

**Stanley T. Athas, Lowell, Middlesex, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed May 25, 1971, Ser. No. 146,711**
**Int. Cl. E05c** *19/08*
**U.S. Cl. 292—281** **6 Claims**



The invention relates to locking bars for use with a type of high security which includes a recess therein to accommodate the shackle and a transverse recess adapted to accommodate part of the locking bars when the shackle is in locking position on the locking bars. The invention comprises providing the locking bars with one or more abutments which serve to prevent improper mounting of the padlock on the locking bars, to prevent swinging of the padlock in relation to the locking bars and to provide support for the padlock during attempts to defeat the padlock by force.

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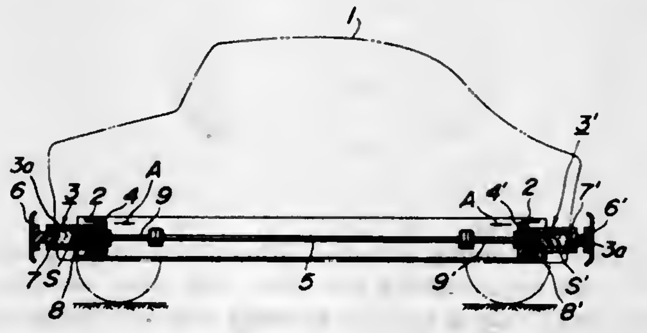
### 3,759,558
### FLUID SHOCK ABSORBING BUMPER

**Koichi Komatsu, Tokyo, Japan, assignor to Atsugi Motor Parts Co., Ltd., Atsugi City, Japan**
**Filed Dec. 27, 1971, Ser. No. 212,494**
**Claims priority, application Japan, Dec. 29, 1970, 45/120672**
**Int. Cl. B60r** *19/02;* **B61f** *19/04;* **B61g** *11/12*
**U.S. Cl. 293—30** **2 Claims**



A shock absorbing device for vehicles which includes a front bumper, a rear bumper, a link rod means connecting said front and rear bumpers, and a pair of hydraulic damper means inserted between each end of the link rod means and the corresponding bumper, respectively. Upon application of a shock to one of the bumpers, both the shocked bumper and the link rod means move toward the other bumper, so as to simultaneously actuate said pair of hydraulic damper means. As a result, the apparent bumper stroke is doubled, as compared with that of single damper shock absorber, without increasing the distance between the two bumpers.

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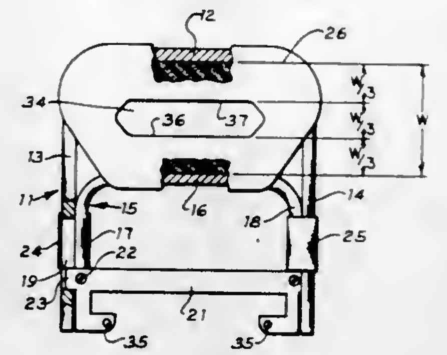
### 3,759,559
### UNIVERSAL EXTRACTOR TOOL

**Leonard J. Yuska, Greenwood, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed July 10, 1972, Ser. No. 270,380**
**Int. Cl. B65g** *7/12*
**U.S. Cl. 294—15** **3 Claims**



A universal extractor tool having first and second U-shaped members attached together for relatively slidable movement in one direction and having a resilient cushion of non-metallic material positioned between said U-shaped members for providing first and second resistive forces when said U-shaped members are moved together. A puller plate is removably attached to one of said U-shaped members and means are provided on said puller plate for engaging a module board to be extracted from a mounting frame.

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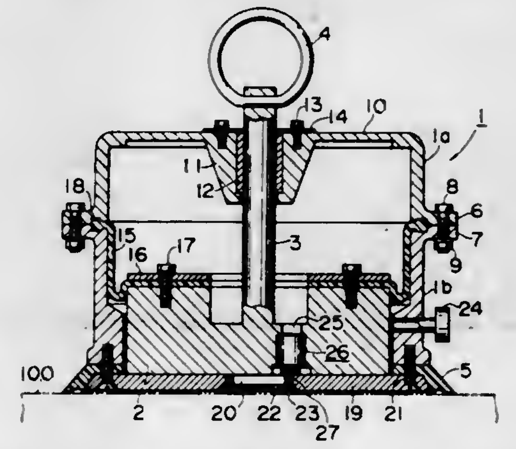
### 3,759,560
### CONVEYING APPARATUS HAVING VACUUM TYPE HOLDING MEANS

**Mikio Yoda; Shinnosuke Ishida, and Haluo Ashizawa, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**
**Filed Aug. 10, 1971, Ser. No. 170,593**
**Claims priority, application Japan, Aug. 12, 1970, 45/70071**
**Int. Cl. B66c** *1/02*
**U.S. Cl. 294—64 R** **4 Claims**



A lifting apparatus including a cylinder having at its lower end a flexible holding pad adapted to be placed on the surface of a body to be conveyed, a piston air-tightly received in the cylinder, and a piston rod secured to the piston and extending through the upper end of the cylinder, the projecting end portion of the piston rod being adapted to be used for the purpose of hanging the apparatus, characterized by a bottom plate arranged at a position displaced inwardly toward the cylinder from a plane including the peripheral edge of the holding pad, a valve provided in the piston for controlling the communication between said cylinder and the holding pad, and depressing means confronting to said bottom plate and adapted to control said valve, whereby said valve is automatically controlled each time when the apparatus is placed on the body to be conveyed so that the vacuum is alternately established in and released from the cylinder.

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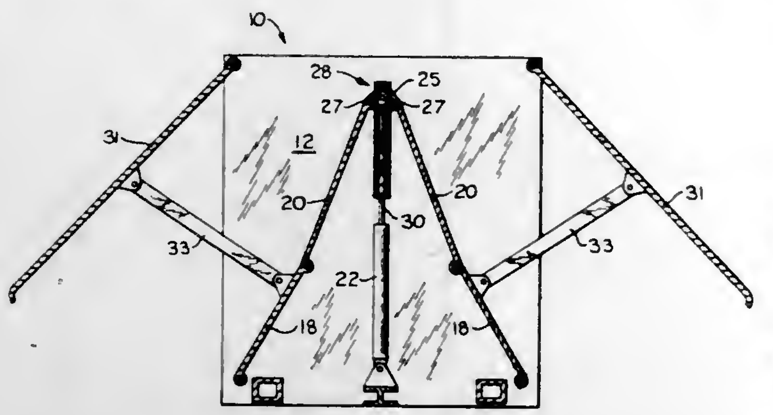
### 3,759,561
### EJECTOR-TYPE REFUSE CONTAINER

**Roy J. Barnes, Pleasonton, and Donald W. Stroot, Castro Valley, both of Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Nov. 1, 1971, Ser. No. 194,702**
**Int. Cl. B65f** *1/12*
**U.S. Cl. 294—69 R** **9 Claims**



A transportable body defines a compartment therein containing back-to-back ejector means, each comprising a vertically disposed inner wall section pivotally connected to a horizontally disposed floor section. A normally closed outer wall section is pivotally mounted on each open side of the body and each is connected to a floor section to open upon actuation of a vertically disposed double-acting hydraulic cylinder. The cylinder is interconnected between the body and the inner wall sections to move them upwardly during the ejecting phase of refuse disposal.

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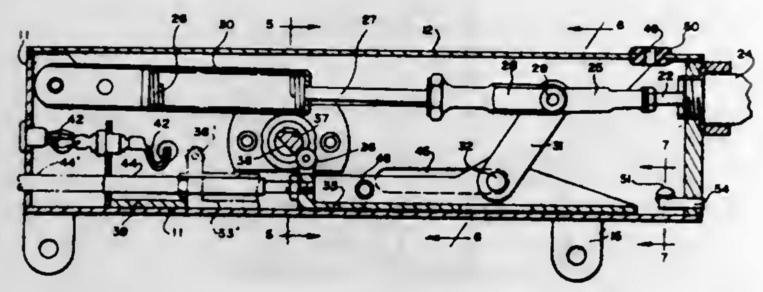
### 3,759,562
### CABLE ACTUATOR

**John D. Keich, Mountain View, Calif., and George A. Laliberte, Hudson, Mass., assignors to the United States of America as represented by the Secretary of the Army**

**Filed Sept. 12, 1972, Ser. No. 288,454**
**Int. Cl. B64d** *17/38*
**U.S. Cl. 294—83 A** **10 Claims**



A cable actuator for releasing the latch element of a releasable coupling comprising a latch and a link assembly in a parachute extraction system for airdropping heavy loads from aircraft. The cable actuator is normally triggered mechanically as the load exits from the aircraft. The cable actuator of the invention is provided with an electrical solenoid triggering means for use in an emergency situation, such as when the load becomes jammed in the aircraft after deployment of the extraction parachute. The cable actuator is also provided with a manual backup for use in actuating the cable in case of malfunction of the electrical triggering means.

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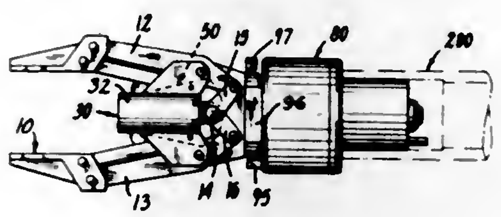
### 3,759,563
### MANIPULATOR DEVICE FOR USE WITH INDUSTRIAL ROBOTS

**Yoshiaki Kitamura, Kamagaya-machi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan**

**Filed Dec. 27, 1971, Ser. No. 212,552**
**Claims priority, application Japan, Dec. 26, 1970, 45/118894**
**Int. Cl. B25b** *1/18;* **B63c** *11/00*
**U.S. Cl. 294—88** **12 Claims**



A manipulator device for an industrial robot comprises a gripper mechanism, a reciprocatory motor for actuating the gripper mechanism and a pair of oscillatory motors for effecting angular displacement of the gripper mechanism about two mutually perpendicular axes. The reciprocatory motor and the pair of oscillatory motors are fluid-actuated and a fluid circuit is provided internally of the fluid motors for effecting actuation of each of the fluid motors independently of the operation of the others.

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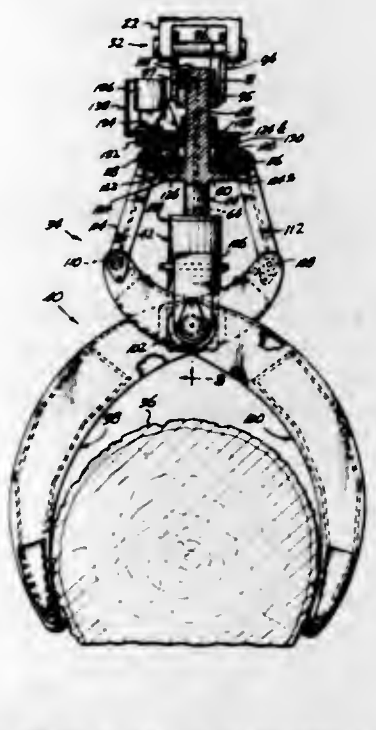
### 3,759,564
### GRAPPLE

**Richard D. Seaberg, Vancouver, Wash., assignor to Pierce-Pacific Manufacturing, Inc., Portland, Oreg.**

**Filed Mar. 8, 1971, Ser. No. 121,847**
**Int. Cl. B66c** *1/44*
**U.S. Cl. 294—88** **6 Claims**



A grapple including a pair of arms and a single generally upright ram for actuating the arms. The ram, wherein the cylinder and piston in addition to being relatively reciprocable are also relatively rotatable, accommodates unlimited rotation of the arms as a unit about the ram's longitudinal axis. A rotator for producing such rotation is drivingly interposed between the piston and cylinder. Pressure fluid is supplied to and exhausted from opposite ends of the ram's cylinder through fluid passages formed in the ram's piston. The piston thus performs as a sort of revolving connector in the ram. The ram and arms are interconnected in such a manner that the weight of any load gripped by the arms tends to tighten the grip on the load.

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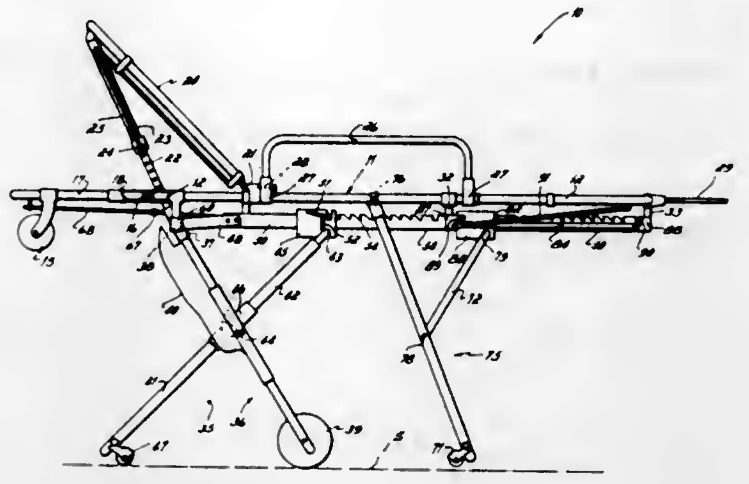
### 3,759,565
### MULTI-LEVEL ONE-MAN CART

**Richard H. Ferneau, Washington Court House, Ohio, assignor to Burt Wiel, Cincinnati, Ohio**

**Filed Apr. 12, 1972, Ser. No. 243,376**
**Int. Cl. B62h** *3/02;* **A61g** *1/02*
**U.S. Cl. 296—20** **21 Claims**



A cart for transporting articles of merchandise or human bodies comprises a bed supported principally on four legs having an X-frame configuration. The legs are capable of being angulated with respect to each other to change the level of the bed. One pair of legs is formed in two sections, the lowermost section being pivotable with respect to the upper section to permit it to swing into substantial alignment with the fixed legs. This enables a single operator to thrust the cart into a vehicle while standing at one end of the cart. In addition, the legs may be adjusted to vary the level of a cart by a single operator.

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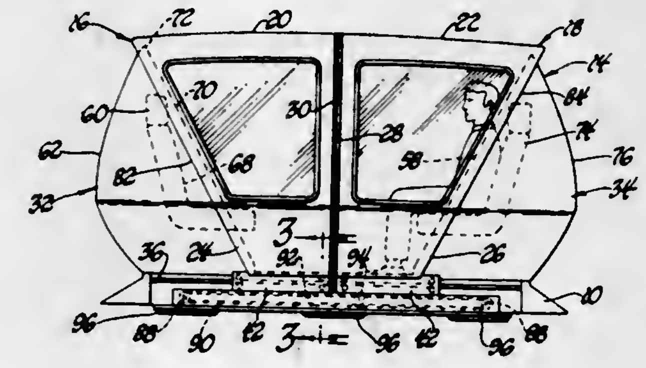
### 3,759,566
### VEHICLE BODY CONSTRUCTION

**Albert J. Sobey; Norman McQueen, and Robert R. Larsen, all of Bloomfield Hills, Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.**

**Continuation of Ser. No. 835,403, May 9, 1969, abandoned. This application July 28, 1971, Ser. No. 167,016**
**Int. Cl. B60v** *1/18;* **B60n** *1/00*
**U.S. Cl. 296—28 R** **8 Claims**



A low-profile vehicle body for passenger carrying vehicles particularly suitable for use in transportation systems in major activity centers. The vehicle body includes a base portion with enclosure means cooperating therewith to define a passenger compartment of low-profile for comfortably seating passengers, and in which the passengers can quickly and easily enter and leave the passenger compartment in an upright or standing position. The access opening to the passenger compartment is closed during transit by a movable section having a top portion forming a portion of the roof of the passenger compartment and a pair of side portions depending from the top portion forming at least a portion of the side walls of the passenger compartment.

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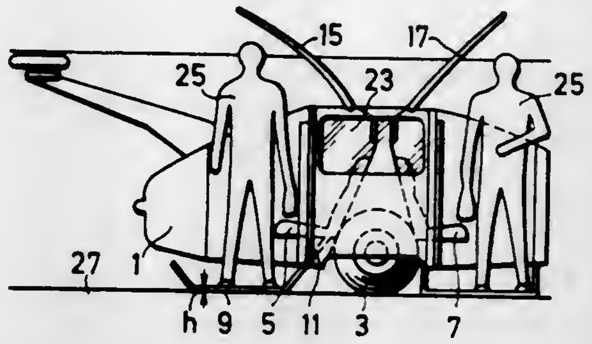
### 3,759,567
### VEHICLE WITH PASSENGER SEATS

**Daniel Steiner, Schaffhausen, and Ernst Blochlinger, Neuhausen, both of Switzerland, assignors to Schweizerische Industrie Gesellschaft, Neuhausen, Switzerland**

**Filed Sept. 17, 1971, Ser. No. 181,505**
**Claims priority, application Austria, Sept. 24, 1970, A 8632/70; Aug. 27, 1971, A 7522/71**
**Int. Cl. B60n** *1/04*
**U.S. Cl. 296—63** **10 Claims**



A passenger vehicle having an enclosed passenger compartment containing a passenger seat. The floor of the vehicle is the floor of the compartment and is attached to the passenger seat. To facilitate passenger entrance and exit from the compartment, the floor and attached seat pivot to lower the floor. The canopy cover over the compartment elevates and the side door of the compartment opens to permit passenger entrance and exit.

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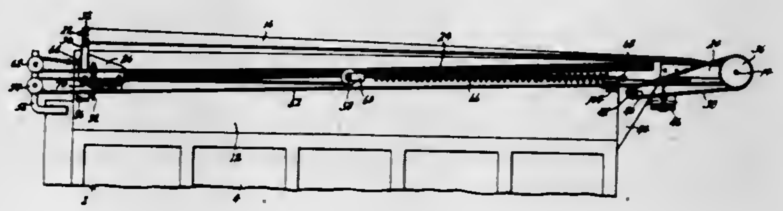
### 3,759,568
### COVER FOR TRUCK BEDS

**Cecil Unruh, 8603 Floyd, Overland Park, Kans.**

**Filed Sept. 28, 1971, Ser. No. 184,568**
**Int. Cl. B60j** *7/08*
**U.S. Cl. 296—98** **5 Claims**



A cover for truck beds consisting of a flexible cover sheet wound on a reel mounted at the forward end of the truck bed and extendable rearwardly from said reel to cover said truck bed, a reversible power mechanism for turning said reel to selectively pay out or reel in the cover sheet, a tension mechanism operable to apply an increasing tension to said cover sheet as it is paid out from the reel, and a latch mechanism operable to secure the cover sheet in its extended position independently of the tension mechanism.

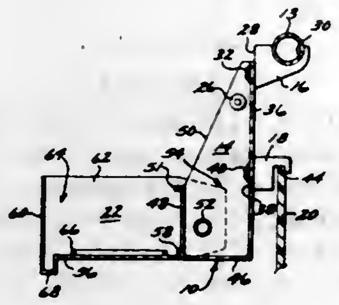
### 3,759,569
### RECEPTACLE ATTACHMENT FOR WHEELCHAIR ARM

**Lester H. Bennet, 11482 Foster Rd., Rossmoor, Calif.**

**Filed Dec. 8, 1971, Ser. No. 206,014**

**Int. Cl. A47c** *7/62*

**U.S. Cl. 297—194** **1 Claim**



A receptacle attachment comprising a case adapted for fixed mounting to a wheelchair arm and defining a main compartment for receiving sundry articles. A cover pivotally mounted to the case includes a front wall having a lower edge portion engageable upon the case front wall to orient the cover in a horizontal or open position in which its walls define an auxiliary compartment adjacent the main compartment. Resilient snubbers releasably hold the cover in its closed position.

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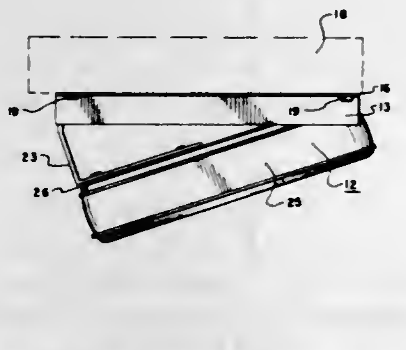
### 3,759,570
### STADIUM SEAT OR SIMILAR ARTICLE

**Larry D. McKean, P.O. Box 435, Emmett, Idaho**

**Filed Dec. 15, 1971, Ser. No. 208,141**

**Int. Cl. A47c** *15/00, 27/00*

**U.S. Cl. 297—236** **1 Claim**



The stadium seat of this invention comprises a frame including a pair of distally disposed channel members operable to be fastened transversely beneath a suitable structural member of a stadium and a hinge means having a transversely disposed hinge rod operable to slide within slots disposed rectilinearly in the interior sides of rectilinearly disposed depending plate portion of each of the channel members, and a cushion assembly including a suitable resilient cushion operable to travel between the channel members and to be positioned over the frame when the hinge rod is at the forwardmost terminal end of the channel members.

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### 3,759,571
### SEAT CONSTRUCTION

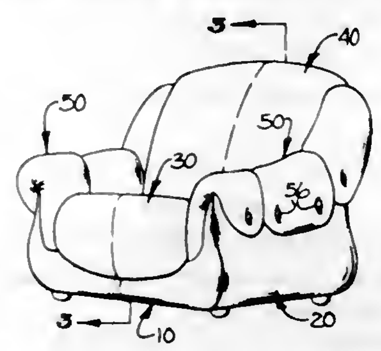
**Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.**

**Filed June 6, 1972, Ser. No. 260,137**

**Int. Cl. A47c** *7/20, 7/14*

**U.S. Cl. 297—445** **11 Claims**

A seat in the form of an upholstered chair or sofa of modular construction having a skeletal frame to which molded side arms formed of reinforced rigid foam are secured, with a cushioned seat and a cushioned back rest carried by the skeletal frame and formed as modular pre-upholstered units, and wherein pre-upholstered side arm cushions overlie the rigid foam side arms and are secured thereto.



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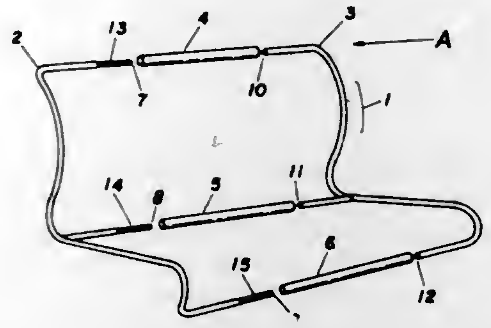
### 3,759,572
### SEGMENTED SLING SEAT FRAME WITH STABILIZING CONNECTION MEANS HAVING CONCEALED ADJUSTMENT FOR FACILITATING COVERAGE THEREOF

**Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.**

**Filed June 20, 1972, Ser. No. 264,498**

**Int. Cl. A47c** *7/20, 7/14*

**U.S. Cl. 297—452** **11 Claims**



Segmented sling-seat frame comprising a plurality of frame segments adapted to be connected by elongated tubular connection means including adjustment means for adjustment of an external dimension of said seat frame concealed therein, said connection means being of sufficient length to support the extremities of both frame members therein and to stabilize the coupling by sliding engagement with said frame members. Especially significant where said frame is a "free-standing" frame. Permits convenient adjustment of an external dimension of said frame, thereby facilitating coverage with a tubular seat cover or the like.

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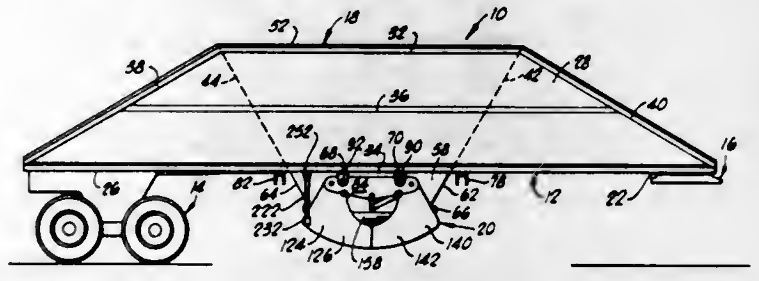
### 3,759,573
### BOTTOM-DUMPING TRAILER WITH SHIFTABLE CLOSURE ASSEMBLY

**Glenn F. Rosenbaum, Elk Point, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.**

**Filed Apr. 12, 1972, Ser. No. 243,233**

**Int. Cl. B60p** *1/56*

**U.S. Cl. 298—29** **8 Claims**



A bottom-dumping semi-trailer including a closure assembly mounted beneath a hopper having an opening in the lower end portion thereof. The closure assembly is adapted to automatically open and close along a line either parallel to or transverse to the longitudinal axis of the trailer depending upon the positioning of the closure assembly relative to the trailer. Means are disclosed for controlling the movement of the two closure members of the closure assembly relative to each other. Also disclosed is a bottom-dumping semi-trailer including a second hopper with a second closure assembly mounted therebeneath.

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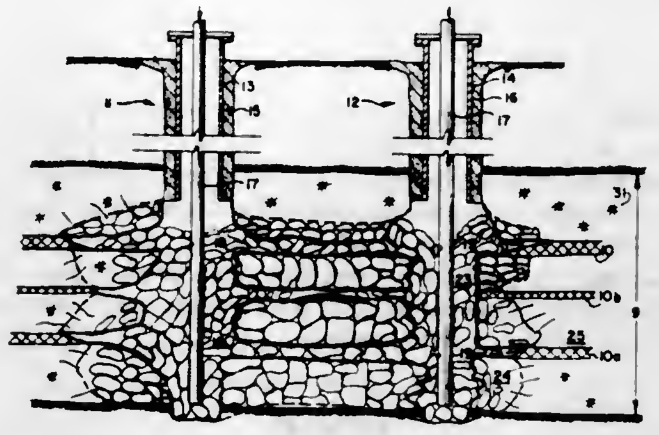
### 3,759,574
### METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION

**Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 779,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,009**

**Int. Cl. E21b** *43/28*

**U.S. Cl. 299—4** **22 Claims**



A method of producing hydrocarbons and optionally water-soluble minerals from a subterranean oil shale formation containing zone(s) of water-soluble minerals, by penetrating said formation with at least one borehole and leaching or dissolving the water-soluble minerals from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubblization of the oil shale surrounding the caverns or cavities, and thereafter injecting into fracturized and/or rubblized zones, a pyrolyzing fluid to effect in-situ hydrocarbon recovery therefrom.

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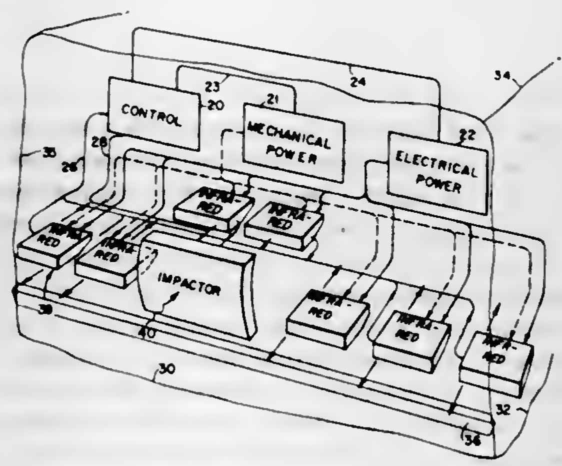
### 3,759,575
### MINING AND TUNNELING APPARATUS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY AND PROCESS THEREOF

**James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugen Maki, White Pine, Mich., assignors to Copper Range Company, New York, N.Y.**

**Filed Dec. 21, 1970, Ser. No. 100,213**

**Int. Cl. E21c** *27/34, 37/18*

**U.S. Cl. 299—14** **7 Claims**



A mining or tunneling apparatus is provided for continuous underground excavation through rock of relatively high to relatively low hardness. The apparatus comprises impactors and heaters having alternately operative and inoperative modes which are selected in reference to the condition of the excavation face. Functional relationships between the applied thermal and mechanical energy are given. Optional separation of ore and gangue at the mining face is outlined.

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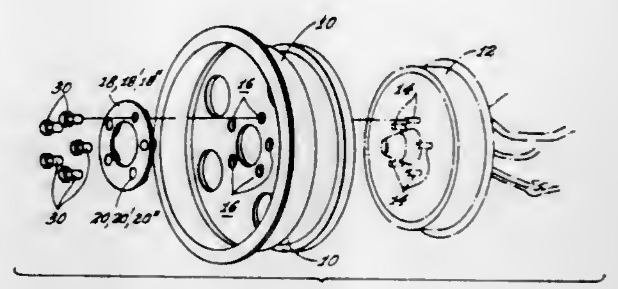
### 3,759,576
### CUSTOM WHEEL ASSEMBLY

**Roy E. Richter, Downey, Calif., assignor to Crager Industries, Inc., Compton, Calif.**

**Continuation-in-part of Ser. No. 107,220, July 18, 1971, which is a continuation-in-part of Ser. No. 83,049, Oct. 22, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 189,971**

**Int. Cl. B60b** *3/16*

**U.S. Cl. 301—9 DN** **8 Claims**



A custom wheel assembly is provided which is adapted for universal mounting on automobiles having, within a given range, different lug bolt circle radii. The weeel assembly of the invention includes a wheel with holes of sufficiently large diameter to fit over the lug bolts of most present day automobiles, and it also includes an adapter member with integral bushings adapted to fit into the holes in the wheel and with the bores of the bushings aligned with the lug bolts of the particular automobile drive drum on which the wheel is mounted, a different adapter member being required for each of the various lug bolt radii used in the different makes of present day automobiles.

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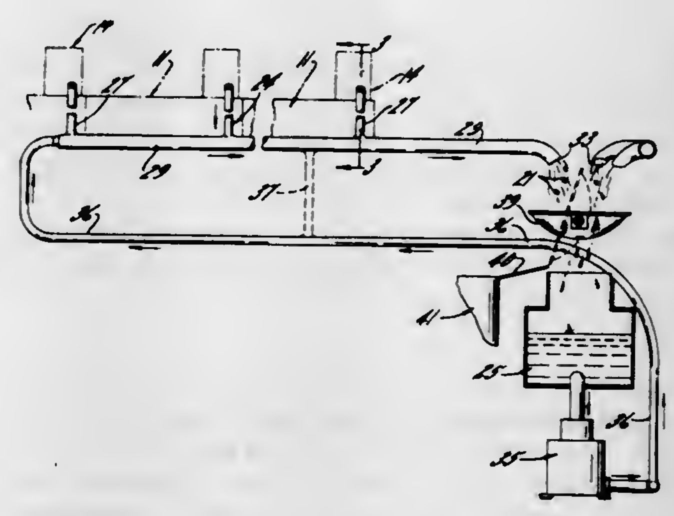
### 3,759,577
### COIN COLLECTING SYSTEM

**Marvin R. Manzer, Rockford, Ill., assignor to Reed Industries, Inc., Rockford, Ill.**

**Filed Feb. 14, 1972, Ser. No. 226,026**

**Int. Cl. B65g** *53/00*

**U.S. Cl. 302—2 R** **3 Claims**



Coins deposited in the coin-receiving units of coin-operated machines drop into manifolds communicating with the receiving units and a remote collection area. Liquid is continuously or periodically flushed through the manifold and carries the coins through the manifold and into the collection area where the coins are separated from the liquid.

### 3,759,578

### APPARATUS FOR CONVEYING BULK MATERIAL

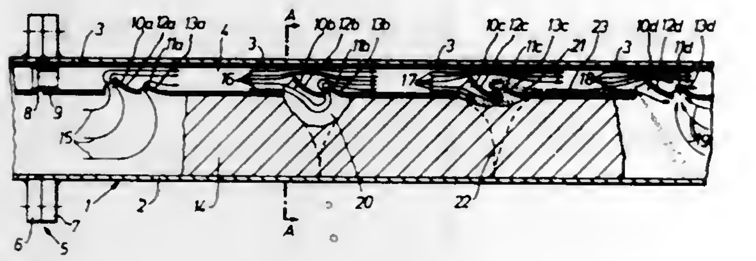
**Edgar Muschelknautz, Leverkusen-Bayerwerk, and Wolfgang Krambrock, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Dec. 23, 1971, Ser. No. 211,507**

**Claims priority, application Germany, Jan. 19, 1971, P 21 02 301.8**

**Int. Cl. B65g** *53/04*

**U.S. Cl. 302—29** **7 Claims**



A pneumatic conveying system for bulk materials comprises a conveyor pipe and a bypass pipe which communicates with the conveyor pipe at several points through inlet and outlet openings, the free cross-section of the by-pass pipe being equal to between 10 and 20 percent of the free conveying cross-section of the conveyor pipe. The inlet and outlet openings are formed by radial cut-outs in the wall of the bypass pipe, the ducts of the pipe wall immediately following these cut-outs being in the form of tongues which block from 10 to 90 percent of the free cross-section of the bypass pipe.

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### 3,759,579

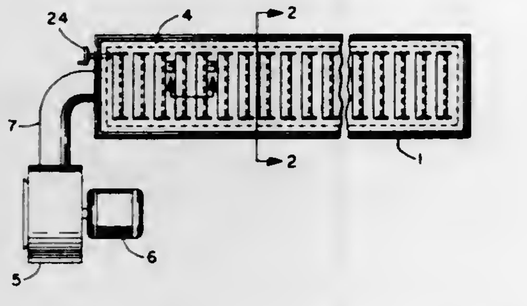
### AIR CONVEYOR DECK

**William F. Johnston, Louisville, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.**

**Filed Nov. 26, 1971, Ser. No. 202,406**

**Int. Cl. B65g** *51/02*

**U.S. Cl. 302—31** **5 Claims**



An air lift conveyor is provided with adjustable air flow defining nozzles that may be located in the bottom of the conveyor channel, in the side walls or in the top as may be desired according to the effect to be achieved. The air flow directing nozzles are formed by cooperating tongues, on each of two parallelly adjacent members, each of which extends into a slot in the adjacent member. The members are slidable relative to each other to adjust the spacing between the tongues and thus the flow characteristics of the nozzles.

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### 3,759,580

### STRUCTURE FOR TRANSPORTING FLUID-ENTRAINABLE MATERIAL

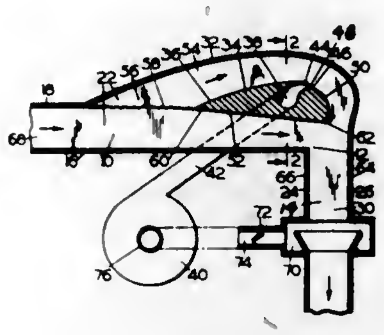
**Dale M. Ott, Camas, and Imants Reba, Vancouver, both of Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.**

**Filed May 22, 1972, Ser. No. 255,700**

**Int. Cl. B65g** *53/34*

**U.S. Cl. 302—64** **12 Claims**

Fluid-entrainable material is transported along a first flow path and then around a bend or corner to a second flow path. In order to minimize impingement of the particles against a surface defining the outer radius of the corner, means, in the form of a Coanda nozzle which is further described in the specification, is arranged in the corner to increase the downstream flow velocity along a downstream surface in the second flow path leading from the inner radius of the corner as compared to downstream flow velocity along the surface defining the outer radius of the corner. Further, means are provided cooperating with the Coanda nozzle in the corner to remove some entraining fluid from the first flow path before the particles reach the corner to slow them down, and then reintroduce the removed entraining fluid into the second flow path. Because auxiliary fluid is added at the corner, vent means are provided to remove this fluid downstream of the corner and structure is disclosed which permits reintroduction of the vented fluid into the corner.



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### 3,759,581

### BRAKING SYSTEMS

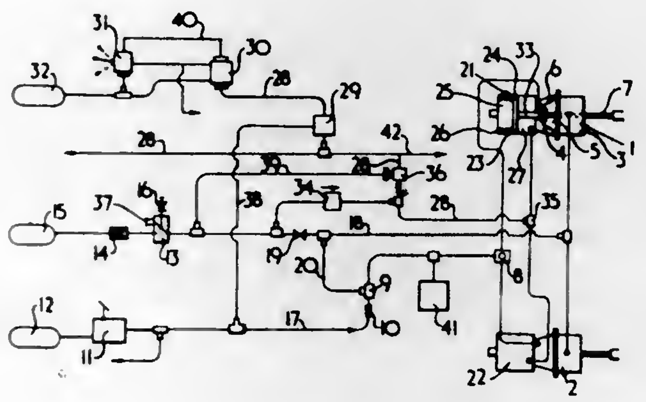
**John Walter Davis, Warwickshire, England, assignor to Dunlop Holdings Limited, Fort Erdingham, Birmingham, England**

**Filed Aug. 3, 1971, Ser. No. 168,617**

**Claims priority, application Great Britain, Aug. 6, 1970, 37,909/70**

**Int. Cl. B60t** *8/12*

**U.S. Cl. 303—13** **20 Claims**



A vehicle dual braking system in which a service braking function brake-applying line including a service braking function brake actuator and a secondary braking function brake-applying line including a secondary braking function brake actuator are both controlled by a skid-control valve operated by a skid-detecting device associated with a wheel of the vehicle. The skid detecting device is arranged to detect any tendency of the wheel to lock under braking and to operate the skid control valve to release the operative brake actuator whenever any such tendency is detected and to re-apply the previously operative actuator when the tendency for the wheel to lock has been overcome, of which the following is a specification.

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### 3,759,582

### FAULT DETECTING SYSTEM FOR VEHICLE ANTI-SKID CONTROL SYSTEMS

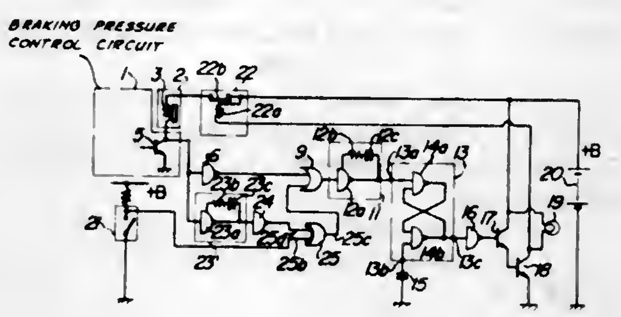
**Jun Ohta, Toyota; Atsutoshi Okamoto, Toyohashi, and Akio Sugiura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of Japan**

**Filed Aug. 17, 1971, Ser. No. 172,418**

**Claims priority, application Japan, Aug. 18, 1970, 45/72269; Sept. 11, 1970, 45/80267; Sept. 29, 1970, 45/85442**

**Int. Cl. B60t** *8/00*

**U.S. Cl. 303—21 AF** **13 Claims**



A fault detecting system for detecting faults in an anti-skid control system for vehicles which system prevents the loss of steering capacity, the abnormal spinning of the vehicle body and the like due to the locking of the wheel which occurs when an excessively large braking pressure is applied rapidly to a vehicle such as an automobile.

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### 3,759,583

### ANTI-SKID BRAKING SYSTEM WITH TWO MODES OF OPERATION

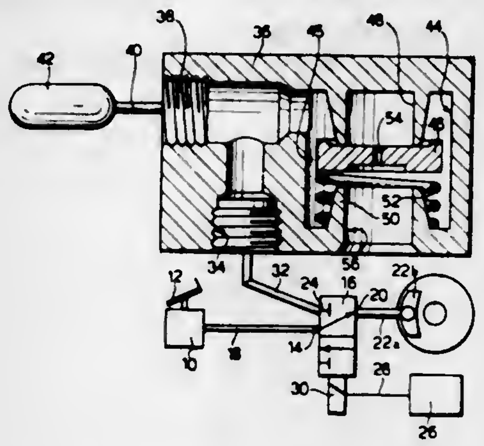
**Marco Peruglia, and Virginio Maggioni, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy**

**Filed July 18, 1972, Ser. No. 273,011**

**Claims priority, application Italy, July 28, 1971, 69531 A/71**

**Int. Cl. B60t** *8/06*

**U.S. Cl. 303—21 F** **3 Claims**



A pneumatic anti-skid braking system in which there is a very simple valve arrangement by means of which the braking system can operate in two different modes in dependence on the type of ground over which the vehicle is travelling at the time when the anti-skid control device works to release the braking pressure to avert an incipient skid, the type of ground being detected by the braking pressure required to produce the state of incipient skid. If the braking pressure is below a predetermined threshold when the anti-skid control device operates the braking pressure is immediately and completely exhausted to the atmosphere via a normally open discharge outlet; if, on the other hand, the braking pressure is above the threshold value it urges a piston to shut the normally open discharge outlet against the action of a calibrated threshold spring, the piston has a restrictor throttle opening so that the pressure can discharge gradually, and an absorber cylinder is arranged to communicate with the chamber formed by the closure of the piston, to absorb the pressure so that there is an initial sharp drop followed by a gradual drop as the pressure leaks through the restrictor throttle in the piston.

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### 3,759,584

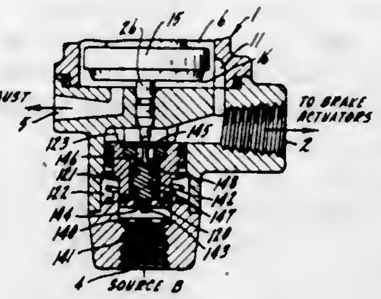
### PARKING BRAKE CONTROL VALVE

**Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 161,176, July 9, 1971, abandoned. This application Oct. 4, 1971, Ser. No. 186,290**

**Int. Cl. B60t** *13/22*

**U.S. Cl. 303—71** **9 Claims**



A parking brake hand control valve assembly wherein an operating shaft is movable in one direction to transmit fluid pressure through said valve from a first source and movable further in the same direction to transmit fluid pressure through said valve from a second source and a shuttle valve assembly precludes loss of pressure from said first source and the brake system to said second source.

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### 3,759,585

### ANTI-LOCK BRAKE SYSTEMS

**Derek R. Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.**

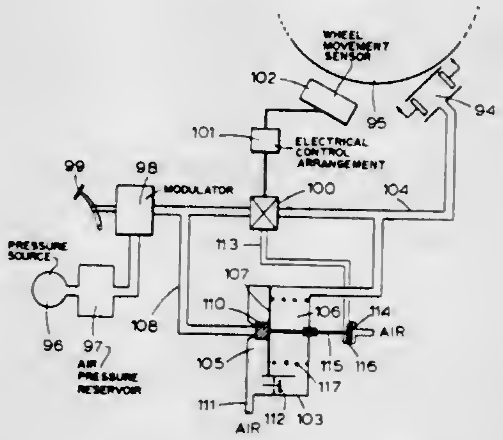
**Division of Ser. No. 43,157, June 3, 1970, Pat. No. 3,708,213**

**Filed July 31, 1972, Ser. No. 276,703**

**Claims priority, application Great Britain, June 27, 1969, 32,612/69; Aug. 6, 1969, 39,417/69**

**Int. Cl. B60t** *8/00*

**U.S. Cl. 303—21 AF** **1 Claim**



An anti-lock vehicle brake system having a fluid pressure source for producing brake fluid under pressure at the wheel brake so as to apply braking pressure to the wheel in response to manual braking action by the operator. Also provided is a wheel movement sensing device for producing an output function in response to a related wheel rotational movement, and an anti-lock control valve actuatable in response to said output function and effective to divert brake fluid from the wheel brake so as to relieve braking pressure and thereby avoid wheel locking. A fail-safe arrangement is connected in the system for by-passing the anti-lock system in the event of malfunction of said anti-lock control valve so as to reapply full brake pressure to the wheel brake. The fail-safe arrangement includes a differential pressure member displaceable between a normal position and an operative position in response to a difference in fluid pressure acting on opposite ends thereof. Two different reference pressures act on different surface areas of the pressure member so than when the brake pressure falls to a critical low value the pressure member will be displaced from its normal position to its operative position in which a by-pass connection is established and fluid pressure is permitted to increase at the brake to restore braking pressure as a result of fluid being passed through the actuated control valve.

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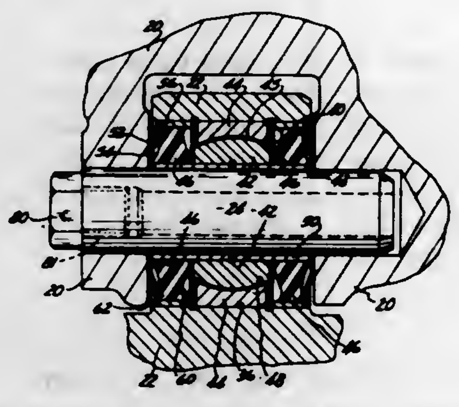
### 3,759,586
### ENDLESS TRACK PIN ASSEMBLY

**Robert J. Otto, Grosse Pointe Woods; Alex H. Sinclair, Southfield, both of Mich.; Ralph K. Reynolds, Saratoga, and Robert F. Neargarder, San Jose, both of Calif., assignors to the United States of America as represented by the Secretary of the Army**

**Division of Ser. No. 17,276, March 6, 1970, Pat. No. 3,680,924. This application May 9, 1972, Ser. No. 251,845**
**Int. Cl. B62** ***55/20***
**U.S. Cl. 305—11** **3 Claims**



A track pin assembly for an endless track including a plurality of track shoes pivotably connected by hinges including tapered seals protecting a spherical bearing which is mounted on an adjustable diameter track pin. The track pin is rigidly connected to a portion of one track shoe and a portion of the bearing which is secured to the adjacent track shoe.

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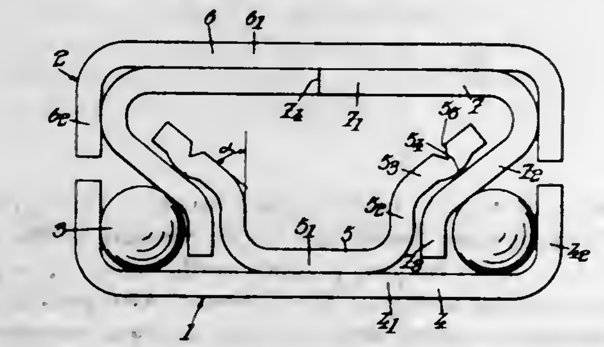
### 3,759,587
### SLIDES ESPECIALLY FOR VEHICLE SEATS

**Georges Etienne Christin, 92 Marnes-la-Coquette, France, assignor to Establissements Bertrand Faure, Puteaux, France**

**Filed Dec. 13, 1971, Ser. No. 207,168**
**Int. Cl. F16c** ***29/04***
**U.S. Cl. 308—6 R** **12 Claims**



The slide comprises a lower sectional element rigidly fixed to a floor and an upper sectional element supporting a seat. The two sectional elements are mutually slidable lengthwise on interposed ball bearings. The lower sectional element is composed of an inner U-element with a narrow base and two upwardly divergent wings, inclined to the vertical from about 30° to about 100° and of an outer U-element. The upper sectional element has an inverted U-element with two convergent wings enveloping said divergent wings. The upper surface of the bottom and the inner surface of the wings of the outer U-element of the lower sectional element, and the outer surface of the convergent wings of the upper sectional element form the ball race. The slide can be made of thinner sheet metal and is more resistant to dislocation by vertical tilting than previous slides.

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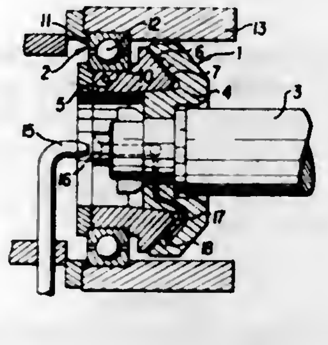
### 3,759,588
### HIGH SPEED HYBRID BEARING COMPRISING A FLUID BEARING & A ROLLING BEARING CONNECTED IN SERIES

**William J. Anderson, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Nov. 12, 1971, Ser. No. 198,379**
**Int. Cl. F16c** ***21/00, 39/04***
**U.S. Cl. 308—35** **7 Claims**



A rotating shaft is supported by a fluid bearing and a rolling element bearing coupled in series. Each bearing turns at a fraction of the rotational speed of the shaft. The fluid bearing is preferably conical, thereby providing thrust and radial load support in a single bearing structure.

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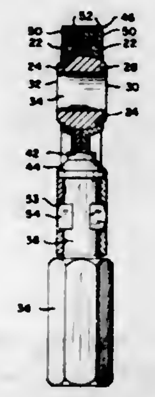
### 3,759,589
### ROD END BEARING ASSEMBLY

**Alfreds Rozentals, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.**

**Filed June 30, 1972, Ser. No. 268,006**
**Int. Cl. F16c** ***23/04***
**U.S. Cl. 308—72** **7 Claims**



A self-aligning, spherical rod end bearing assembly comprising a first and second housing member, each of said housing members having circular openings therethrough with each opening being defined by a spherical seating portion, a spherical ball rotatably enclosed within said housing member and in alignment with said openings and seated on said seating portions, fastening means fixedly attached to said housing member for threadably supporting said spherical rod end bearing assembly in an operational position, a separate interlocking channel member having integral lip portions adapted to mechanically grasp holding means formed on both of said housing members to mechanically interlock said housing members together.

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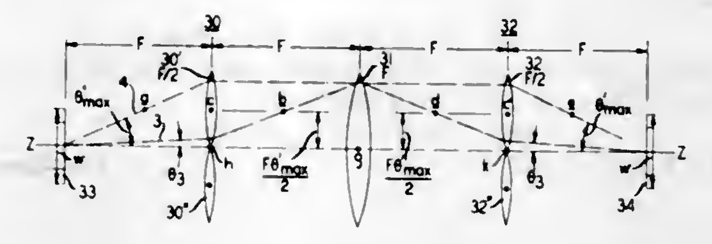
### 3,759,590
### RAY INVERTERS FOR MINIMIZING DELAY DISTORTION IN MULTIMODE OPTICAL FIBERS

**Jacques Alexis Arnaud, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed Sept. 11, 1972, Ser. No. 288,032**
**Int. Cl. G02b** ***5/14, 27/00***
**U.S. Cl. 350—96 WG** **3 Claims**



Delay distortion, due to differences in the group velocities of the various modes propagating along a multimode optical fiber, is minimized by the inclusion, along the fiber, or an array of three, equally spaced, converging lenses for inverting the order of the rays representing the various modes. The first and the third of said lenses, whose focal lengths are F/2, have their optical centers located a distance F from the ends of the adjacent fibers, and a distance $F(\theta'_{max}/2)$ from the fiber axis, where $\theta'_{max}$ is the maximum angle at which energy is radiated by the fiber. The center lens, whose focal length is F, is equally spaced a distance F from each of the other two lenses, and has its optical center on the guide axis. The physical configuration of the lenses depends upon the radiation pattern at the end of the particular fiber used.

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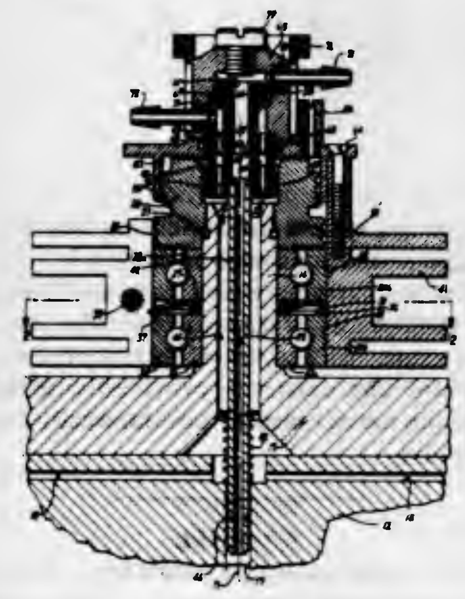
### 3,759,591
### CENTRIFUGE SEAL ASSEMBLY AND METHOD

**Herschel E. Wright, Santa Clara, and William J. Cassingham, Campbell, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.**

**Filed Aug. 30, 1971, Ser. No. 176,028**
**Int. Cl. F16c** ***33/72***
**U.S. Cl. 308—189 R** **5 Claims**



Face type centrifuge sealing assembly having a pair of preloaded anti-friction bearings between the rotating and stationary portions thereof. The inner races of the bearings are secured to the centrifuge rotor, and the outer races are urged apart, or preloaded, by a resilient member disposed between them. In the preferred method of assembly, the outer races are secured to the stationary portion of the centrifuge after they are preloaded.

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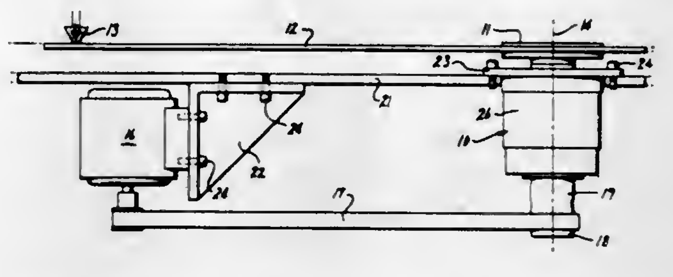
### 3,759,592
### MEMORY DISC DRIVE SPINDLE

**Jerome Albert Carlson, Woodside, Calif., assignor to Bearings, Seals & Gears, Inc., Redwood City, Calif.**

**Filed Mar. 24, 1972, Ser. No. 237,773**
**Int. Cl. F16c** ***33/66***
**U.S. Cl. 308—187** **6 Claims**



A spindle assembly for memory disc drives has a vertical shaft with an integral pulley at one end for belt drive. The other shaft end provides a memory disc mounting surface having a minimum of face wobble and radial run-out. Within a housing the shaft is supported by a pair of ball bearing assemblies pre-loaded back-to-back, the outer ring of one of the bearings engages a locational surface of a retainer ring seated in the housing. Bearings seals contacting the shaft provide a reservoir for lubricant and minimize air leakage through the spindle assembly.

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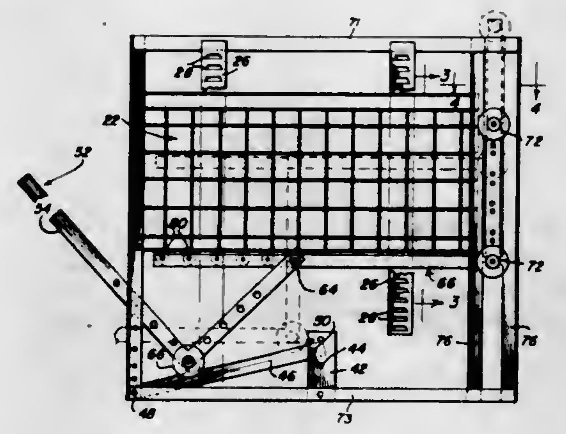
### 3,759,593
### RACK FOR BOTTLES AND CANS

**Glennon P. Walter, R.F.D. 1, Perryville, Mo.**

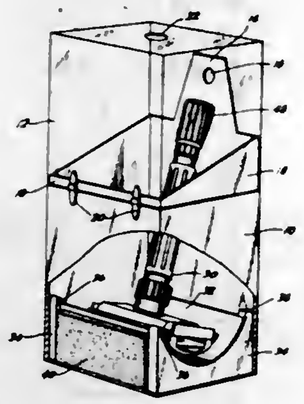
**Filed Sept. 29, 1971, Ser. No. 184,779**
**Int. Cl. A47b** ***51/00, 81/00***
**U.S. Cl. 312—312** **5 Claims**



An open top rack for receiving bottles and/or cans to be maintained under refrigeration within an upwardly opening refrigeration compartment such as that conventionally found behind a bar or counter area, together with a specifically designed refrigeration cabinet in which one or more racks may be positioned and supported for vertical shifting therein. The cabinet includes an upper door which may be opened for access to the bottles or cans supported within the associated rack from the above and also a side door through which a rack to be supported in elevated position within the refrigeration cabinet may be placed within the latter. A hand truck may also be provided for transporting a rack, when full, from a storage area to the associated refrigeration cabinet. The cabinet includes rack supporting and elevating structure whereby after placement of an associated rack within the cabinet in a lower position therein the rack may be elevated upwardly in the cabinet into position for ease in dispensing bottles or cans from the rack through the top door opening of the cabinet.

### 3,759,594
### METHOD AND APPARATUS FOR STORING CUTTING IMPLEMENTS

**Jack M. Cobb, Box 422, San Juan Capistrano, Calif.**
**Filed Dec. 2, 1971, Ser. No. 203,956**
**Int. Cl. A24f** *25/00*
**U.S. Cl. 312—31** **23 Claims**



A method and apparatus for storing cutting implements that substantially eliminates deterioration of the cutting edge and metal surfaces adjacent to the cutting edge caused by corrosion of the metal between intermittent uses of the cutting implement. The apparatus comprises a container adapted to receive the cutting implement and support it so that the cutting edges are in close proximity to a body of volatile corosion inhibitor, which can be a wicking material impregnated with a liquid agent or a body of solid agent. One embodiment of the device is especially adapted for storage of a safety razor between intermittent shaving operations.

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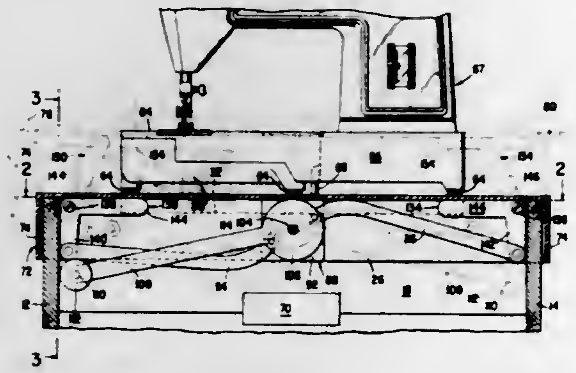
### 3,759,595
### SEWING MACHINE CABINET

**Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.**
**Filed Aug. 23, 1972, Ser. No. 283,027**
**Int. Cl. A47b** *57/20*
**U.S. Cl. 312—27** **10 Claims**



A sewing machine cabinet for providing single level sewing on a machine having the capability of conversion from a flatbed to a cylinder bed mode is disclosed. The sewing machine fits on a support platform pivotably mounted within the frame of the cabinet. In the operable position of the sewing machine the platform is locked in the horizontal position. The cabinet includes a top which is telescopically received about the frame of the cabinet and includes an aperture through which the entire sewing machine may pass. Means are provided for raising or lowering the top relative to the sewing machine bed. When the top is in the uppermost position it is at the same elevation as the work support surface of the machine so as to provide a flatbed mode of operation of the machine and when the top is positioned in its lowermost elevation the machine may be utilized in the cylinder bed mode. The mechanism disclosed for elevating the top is a crank which is manually turned by means of a operator engageable handle and a pair of levers which are connected to one arm each of a pair of bell crank levers pivotally mounted in the frame. Each of the bell crank levers as disclosed includes a rod movable therewith and connected to each of another pair of bell crank levers on the opposite side of the cabinet. One arm of each of the bell crank levers engages the lower surface of the top.

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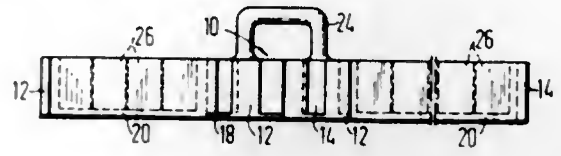
### 3,759,596
### ARRANGEMENT FOR STORING CONTAINERS

**Hans Ulrich Bergmeyer; Klaus Beaucamp, both of Bahnhofstrasse 5a; Dieter Jaworek, Beringerweg 6, and Michael Nelboeck-Hochstetter, Bahnhofstrasse 5a, all of 8132 Tutzing/Obb., Germany**
**Filed Mar. 18, 1971, Ser. No. 125,663**
**Claims priority, application Germany, Mar. 23, 1970, P 20 13 895.8; Nov. 18, 1970, P 20 56 776.4**
**Int. Cl. A47b** *87/00, 81/00*
**U.S. Cl. 312—108** **11 Claims**



Small containers, in particular containers for receiving pharmaceutical and laboratory chemicals are frequently packed and shipped in container blocks which have receiving bores for receiving the containers. The container blocks are often used in medical and chemical laboratories also for storing the containers.

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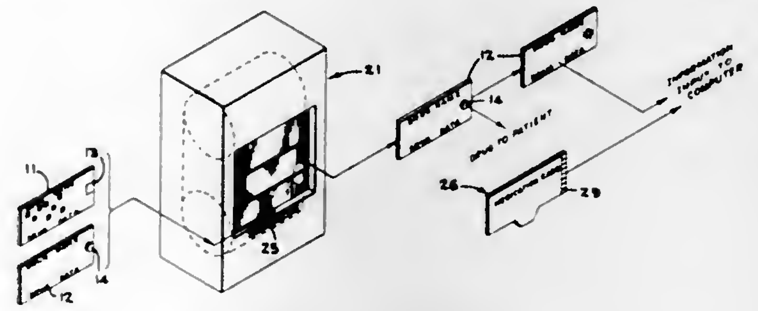
### 3,759,597
### METHOD AND APPARATUS FOR DISPENSING PHARMACEUTICAL DOSES

**Ronald R. Johnston, 255 Union Ave., Campbell, Calif.**
**Filed Sept. 20, 1971, Ser. No. 181,744**
**Int. Cl. A47b** *6/00, 67/02*
**U.S. Cl. 312—234.5** **8 Claims**



The invention is a system for dispensing pharmaceuticals to patients in large institutions such as hospitals. The system includes a carrier for carrying a unit dose and a storage device for housing a multiplicity of such carriers. The carrier is a card with a small quantity of a pharmaceutical product adhesively attached thereto. The carrier is provided with identification indicia so that the carrier may be automatically accessed from the storage device.

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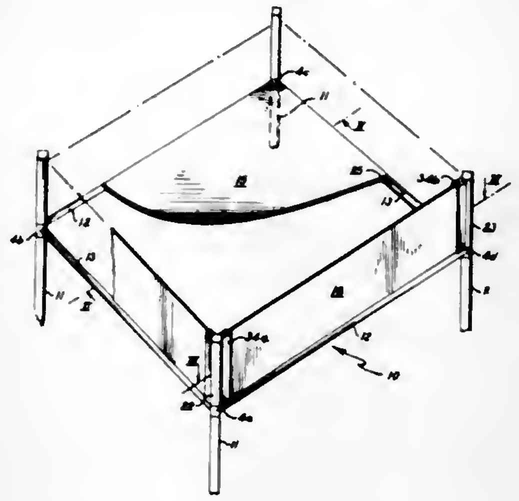
### 3,759,598
### SUPPORTING FRAME

**Bruno Limberger, Kalchbuhlstrasse 61, Zurich, Switzerland**
**Filed June 20, 1972, Ser. No. 264,658**
**Int. Cl. A47b** *43/00*
**U.S. Cl. 312—257 A** **9 Claims**

A supporting frame includes vertical support elements and transverse support elements with polygonal cross-sections.

The elements and members have longitudinal edges disposed within the interior of the supporting frame to provide a supporting surface along at least a portion of the surfaces of said elements or members facing the interior of the frame. Enclosing wall elements include bearing surfaces which conform to the shape of the supporting surfaces so that the wall elements may be located in a predetermined position on the supporting frame. Positioning means may be provided to hold the enclosing wall elements against the supporting surfaces. Specific types of holding mechanisms are provided in various embodiments.



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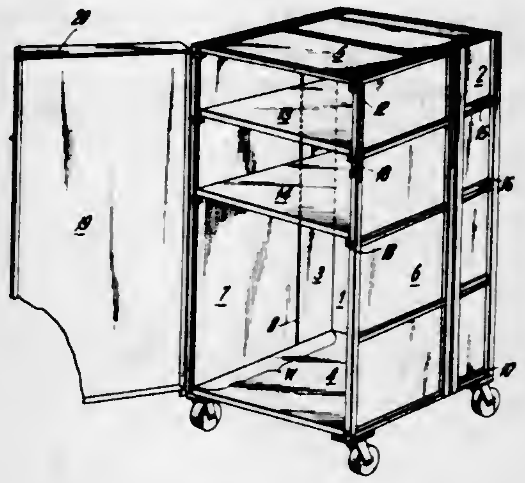
### 3,759,599
### COLLAPSIBLE STORAGE ASSEMBLY

**George E. Swick, Jr., Edina, Minn., assignor to The Cornelius Company, Minneapolis, Minn.**
**Filed Sept. 27, 1971, Ser. No. 183,913**
**Int. Cl. A47b** *43/00, 47/00*
**U.S. Cl. 312—262** **5 Claims**



A fully-enclosed collapsible storage assembly is disclosed. The storage device is constructed so that upon complete collapse all the elements fall into neat alignment with one another without the necessity of physically removing any member. The instant storage assembly has particular utility in that it is completely collapsible into a compact and easily transportable unit. In addition, the device can be rendered secure for the storage or transportation of expensive items.

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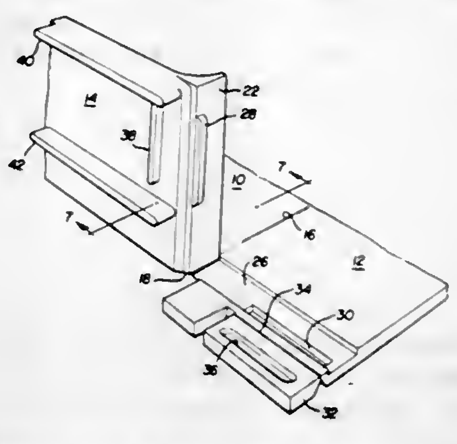
### 3,759,600
### DRAWER

**Robert D. MacDonald, Metamora, Mich., assignor to Champion Home Builders Company, Dryden, Mich.**
**Filed Apr. 27, 1972, Ser. No. 248,262**
**Int. Cl. A47p** *88/00*
**U.S. Cl. 312—330** **8 Claims**

A cabinet drawer, complete except for the drawer front is fabricated as a single flat plastic molding, with the drawer sides and rear being initially flat and coplanar with the bottom to permit shipping in a minimum volume condition. A material such as polypropylene permits the various panels to pivot about thin-walled hinge line from their flat molded position to their mutually perpendicular functional configuration. Molded-in tongue and groove formations interlock to maintain the drawer in its final configuration.



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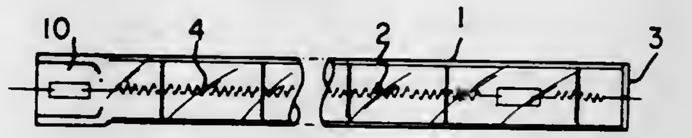
### 3,759,601
### LAMP ASSEMBLY AND METHOD OF MAKING HIGH SILICA LAMPS

**Robert P. Bonazoli, and James P. Keenan, both of Hamilton, Mass., assignors to Sylvania Electric Products Inc.**
**Continuation of Ser. No. 741,066, June 28, 1968, abandoned. This application Mar. 5, 1971, Ser. No. 121,525**
**Int. Cl. H01j** *9/18*
**U.S. Cl. 316—19** **1 Claim**



A tubular tip-less lamp is manufactured by exhausting and filling the lamp through an open end of an extra long tubular envelope, the other end being sealed. The envelope is then press-sealed at a section thereof located a short distance from the open end and the extra length of the envelope is then removed.

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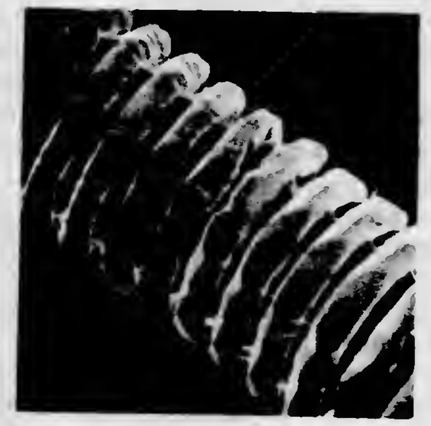
### 3,759,602
### INHIBITING D-C NOTCHING EFFECT IN INCANDESCENT LAMP FILAMENTS

**John L. Walter, Scotia, and Michael F. X. Gigliotti, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.**
**Filed Aug. 30, 1971, Ser. No. 176,022**
**Int. Cl. H01j** *9/38*
**U.S. Cl. 316—20** **2 Claims**



Process and product produced thereby wherein the problem of "d-c notching" and resulting premature failure of tungsten, tantalum or molybdenum metal filaments for miniature lamps operating below 2400°C is avoided by steps which include: removal of reactive gases including residual chemically available oxygen and nitrogen by high vacuum, heating the filament to help drive off the reactive gases, flushing out at least once and back-filling the bulb envelope with a heavy inert gas from Group VIIIA of the periodic table.

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### 3,759,603
### ACOUSTO-OPTICAL LIGHT DEFLECTOR HAVING INCREASED BAND WIDTH AND SHORT ACCESS TIME

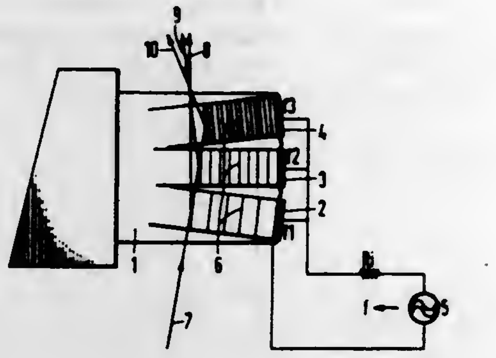
**Hans Eschler, Muenchen, Germany, assignor to Siemens Aktiengesellschaft**

**Filed Nov. 24, 1971, Ser. No. 201,652**

**Claims priority, application Germany, Dec. 15, 1970, P 20 61 694.8**

**Int. Cl. G02f** *1/32*

**U.S. Cl. 350—161** **10 Claims**



An acousto-optical light deflector employs a crystal as a sound medium which is energized by way of a piezo-electric trandsducer with ultrasonic waves to deflect a light beam incident approximately parallel with the sound wave fronts as a function of the ultrasonic frequency. The deflector also comprises a control apparatus for supplying the piezo-electric transducer with a controllable variable frequency and is charactrized by the provision of several piezo-electric transducers which are designed for consecutive frequency ranges and which are juxtaposed on the sound medium.

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### 3,759,604
### INTERFERENCE FILTER REFLECTING A CERTAIN WAVE LENGTH BAND WITHIN A GIVEN WAVE LENGTH RANGE WHILE LETTING PASS OTHER WAVE LENGTH BANDS OF THE RANGE

**Alfred Thelen, Triesen, Furstentum, Liechtenstein, assignor to Balzers Patent-und Beteiligungs AG, Balzers, Furstentum, Liechtenstein**

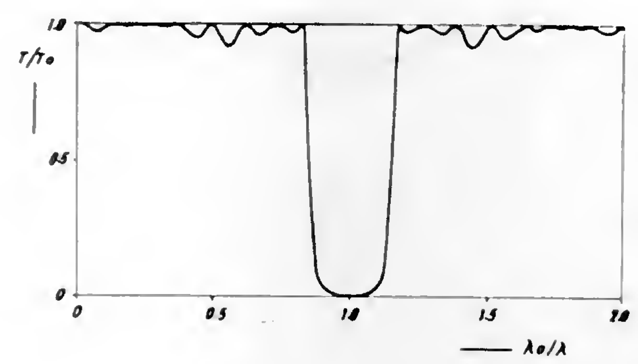
**Filed Sept. 17, 1971, Ser. No. 181,433**

**Claims priority, application Switzerland, Sept. 18, 1970, 13919/70**

**Int. Cl. G02b** *5/28*

**U.S. Cl. 350—166** **5 Claims**

The filter comprises a plurality of alternately high and low refracting light transmitting layers, applied on a light transmitting support, and reflecting a certain wave length band within a given wave length range while letting pass the other wave length bands of the range. The filter includes a periodically symmetrically constructed inner system between two reflection-reducing outer systems each constructed from a group of alternating high and low reflecting layers for the attenuation of undesired secondary reflection bands. The layers of one outer systm group have the same constant index of refraction $n_{const}$ as a first layer group of the inner system. For any other layer of the outer system, having a variable index of refraction $n_i$ differing from $n_{const}$ there is fulfilled the condition that the absolute value of the product $n_{const} - n_i \times d_i$ is less than this product for those inner system layers having an index of refraction differing from $n_{const}$ and wherein $d_i$ is the layer thickness. The constant index of refraction of one group of layers of an outer system may be equal to the index of refraction of the low refracting layers of the inner system or to the index of refraction of the high refracting layers of the inner system.



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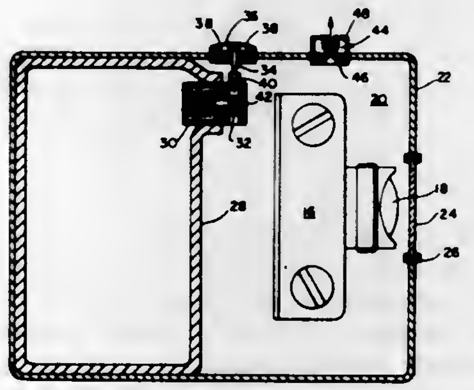
### 3,759,605
### METHOD AND APPARATUS FOR HOUSING UNDERWATER OPTICAL INSTRUMENTS

**Quentin S. Johnson, 703 W. Mettletree Rd., Sterling, Va.**

**Filed Oct. 29, 1971, Ser. No. 193,903**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—179** **6 Claims**



An underwater optical method and apparatus in which the pressure within a sealed optical chamber is balanced with external hydrostatic pressure by filling the optical compartment with a pressurized gas having a minimum index of refraction. The focal length of a lens within the optical compartment remains nearly constant throughout a range of changing internal pressure because of the low index of refraction of the gas (typically helium) as compared with other gases. The low-index gas is supplied from a pressurized gas bottle carried by the device.

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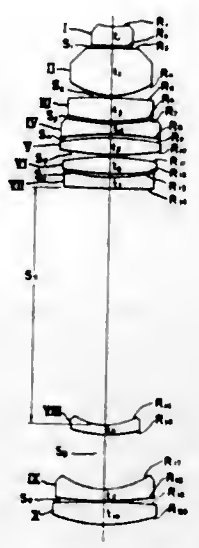
### 3,759,606
### HIGH MAGNIFICATION PROJECTION LENS

**Lynn L. Van Orden, Holley, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.**

**Filed Sept. 5, 1972, Ser. No. 285,978**

**Int. Cl. G02b** *9/64*

**U.S. Cl. 350—214** **5 Claims**



An inverse telephoto lens having ten elements, none in contact, is useful as a microfilm projection or camera lens, having a magnification ratio of 180:1 and numerical aperture of 0.42.

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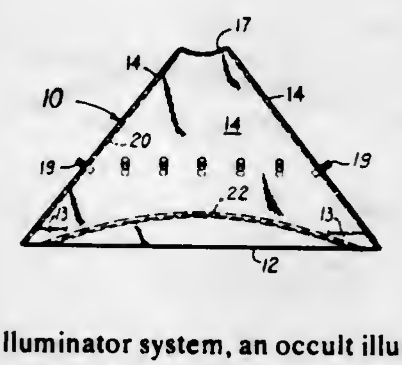
### 3,759,607
### OCCULT ILLUMINATOR SYSTEM

**John P. Boyle, 5281 Newport, Detroit, Mich.**

**Filed Oct. 1, 1971, Ser. No. 185,674**

**Int. Cl. G02b** *5/10*

**U.S. Cl. 350—293** **4 Claims**



In an occult illuminator system, an occult illuminator device and method are disclosed comprising, inter alia, providing a hollow chamber having window means therein so that the interior thereof can be seen by a person as a viewer looking into said chamber through said window means, said chamber having light reflective material lining the interior thereof, at least one half of which is crinkled metal foil, illuminating the interior of said chamber and reflecting the light therein off said lining and through said window means to the eye of said viewer, whereby to form images which appear in said chamber in the mind of said viewer.

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### 3,759,608
### EYEGLASS FRAME ADJUSTER

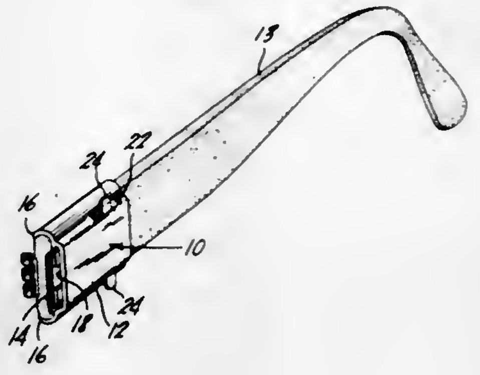
**William B. McVeigh, Teaneck, N.J., assignor to Yvonne C. McVeigh and William B. McVeigh, Teaneck, N.J.**

**Filed Mar. 2, 1972, Ser. No. 231,188**

**Int. Cl. G02c** *5/14*

**U.S. Cl. 351—113** **8 Claims**

As described herein, an eyeglass frame adjuster comprises a slidable adjustment spring mounted within a stationary casing which is either clamped on the eyeglass frame arm or formed as an integral part of the arm. The adjustment spring includes calibrated teeth for releasably engaging serrations impressed in the casing. Angular adjustments in the arms of the eyeglass frame are made by varying the distance between the ends of the frame arms and the end portions of the frontal lens carrying frame by moving the spring lengthwise within the casing toward and away from the end portion of the frontal lens carrying frame.



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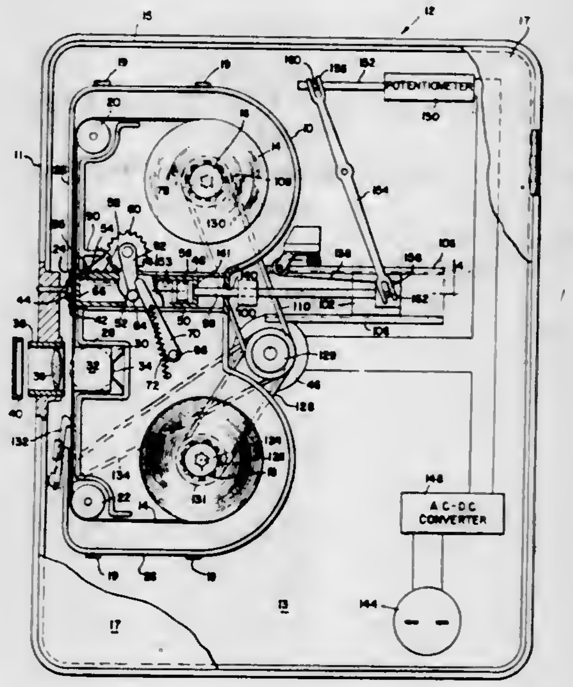
### 3,759,609
### SYSTEM FOR UNIFORMLY COATING EXPOSED MOTION PICTURE FILM WITH PROCESSING FLUID

**Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Division of Ser. No. 772,789, Nov. 1, 1968, Pat. No. 3,623,417. This application Aug. 23, 1971, Ser. No. 173,839**

**Int. Cl. G03b** *23/02*

**U.S. Cl. 352—72** **14 Claims**



A projector, and system employing same, for receiving a motion picture film handling cassette having a processing station and a reel to which one end of the film strip is connected. The projector has an arrangement for driving the reel so as to effect the progressive advancement of the film strip through the processing station at a constant speed. Method practiced is also covered.

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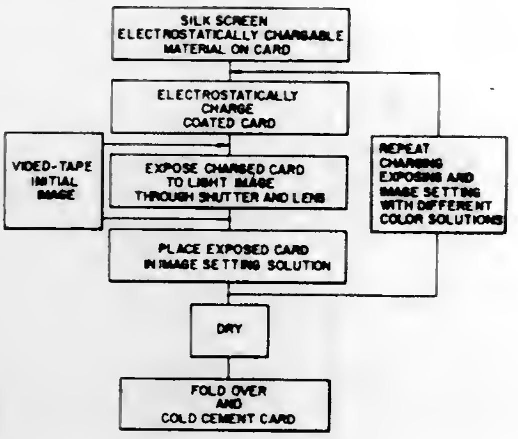
### ERRATUM

For Class 353—104 see:
Patent No. 3,759,482

## 3,759,610
## IDENTIFICATION STRUCTURE AND METHOD OF PRODUCTION

**Thomas J. McVittie, Bloomfield Hills, Mich., assignor to Marlin & Company Systems Engineers Inc., Royal Oak, Mich.**
**Filed June 7, 1971, Ser. No. 150,381**
**Int. Cl. G03g** *13/22*
**U.S. Cl. 355—17** **11 Claims**


SILK SCREEN ELECTROSTATICALLY CHARGABLE MATERIAL ON CARD
ELECTROSTATICALLY CHARGE COATED CARD
VIDEO-TAPE INITIAL IMAGE
EXPOSE CHARGED CARD TO LIGHT IMAGE THROUGH SHUTTER AND LENS
REPEAT CHARGING EXPOSING AND IMAGE SETTING WITH DIFFERENT COLOR SOLUTIONS
PLACE EXPOSED CARD IN IMAGE SETTING SOLUTION
DRY
FOLD OVER AND COLD CEMENT CARD

A method of producing an identification card having identification data sandwiched between two halves of a fold-over plastic card. The method consists of coating one half of the card with a substance capable of taking an electrostatic charge and coating the second half with a cold solvent cement; charging and exposing the first half; fixing the image and drying the card; and folding the card to cohere the cement coated surface of the second half to the data-carrying first half. To produce multicolored cards the steps of charging, exposing, and fixing are repeated, the fixing step with solutions having different colored particles; for the re-exposing steps the image may be stored electronically. The card is self-destructing in that separating the halves of the card destroys the image.

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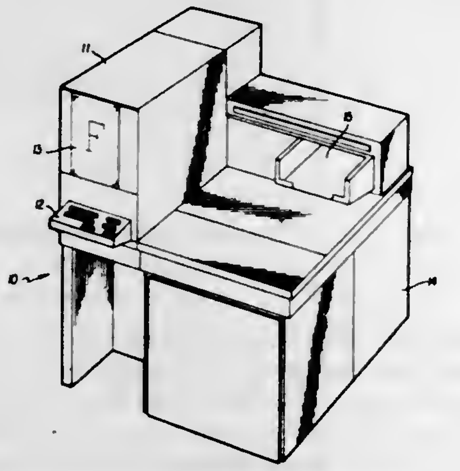
## 3,759,611
## MICROIMAGE RANSOM ACCESS AND RETRIEVAL PRINTER

**Richard P. O'Connell; William Kingsley, and Edwin Zucker, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.**
**Filed May 1, 1972, Ser. No. 249,281**
**Int. Cl. G03b** *27/46, 27/70*
**U.S. Cl. 355—43** **4 Claims**



A microfiche viewer and copier provides for automatic random access to a desired microfiche card from a library, and automatic selection of a frame thereof for viewing. Copies of the selected frame or of a following sequence of frames may be made. Identification of each microfiche card and frame copied, the number of copies made, and the user is obtained and stored for billing and copyright royalty computation.

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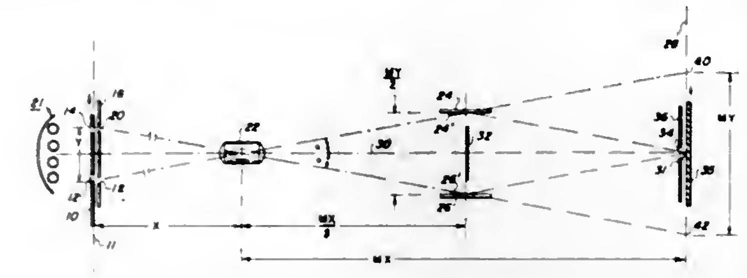
## 3,759,612
## OPTICAL SYSTEM

**Armistead Wharton, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.**
**Filed Dec. 13, 1971, Ser. No. 207,090**
**Int. Cl. G03b** *27/44*
**U.S. Cl. 355—46** **7 Claims**



An optical system for simultaneously superimposing optical images from two separated object means on a single common line at the imaging point is disclosed. The system includes a fixed object lens and two plane reflecting means located equidistant from the lens center and the imaging plane, the reflecting means being mounted geometrically parallel to each other, optically parallel to the optic axis and equally spaced therefrom. The object means may be transparencies or opaque documents. The system may be utilized in a slit-scanning mode of operation or can be used to project and superimpose full frame images or areas in the imaging plane. The system may also be utilized to generate two identical images from a single original.

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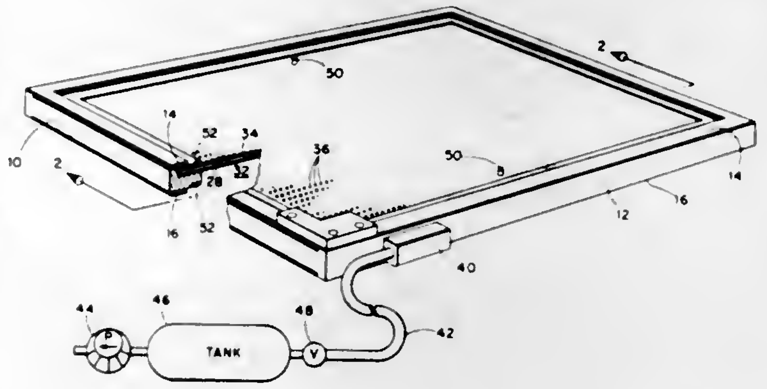
## 3,759,613
## PHOTOPLOTTER CASSETTE

**Richard E. Denis, Beverly, Mass., assignor to Computervision Corporation, Burlington, Mass.**
**Filed May 5, 1971, Ser. No. 140,465**
**Int. Cl. G03b** *27/60*
**U.S. Cl. 355—73** **8 Claims**



A cassette adapted to be loaded with either or both photographic film or a glass plate for use in a light-tight photoplotter. The cassette has vacuum drawing means for holding the film on one side of the cassette and conventional means for holding the glass plate on the other side of the cassette. The cassette can be mounted in the photoplotter with either side facing the lens.

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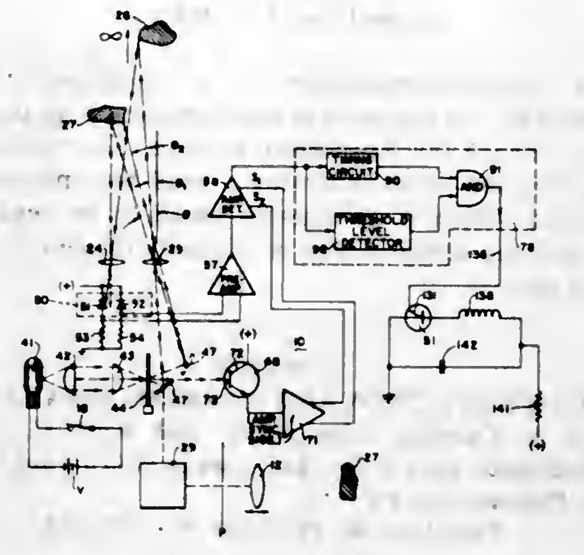
## 3,759,614
## DUAL PHOTOCELL RANGE FINDER APPARATUS

**Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Feb. 10, 1971, Ser. No. 114,279**
**Int. Cl. G01c** *3/08*
**U.S. Cl. 356—4** **5 Claims**

An automatic range finder apparatus is disclosed which includes two spaced photosensitive devices, having electrical parameters which vary respectively as a function of the brightness of light incident thereon, and circuitry coupled to the devices for producing a signal which varies in accordance with changes in the magnitude of the parameters of the first and second photosensitive devices, the signal having a first predetermined magnitude when the magnitudes of the parameters of the devices are substantially equal and a second predetermined magnitude when the parameters are at predetermined relative magnitudes. The apparatus further includes means responsive to the signal when it varies from the first predetermined magnitude to the second predetermined magnitude for determining the distance of an object relative to a reference plane.



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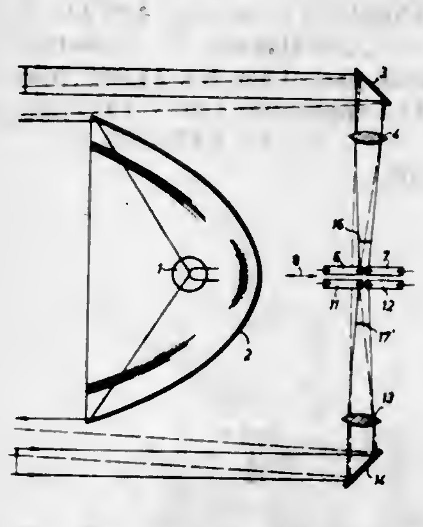
## 3,759,615
## METHOD AND APPARATUS FOR ELECTROOPTICAL MEASUREMENT OF THE DISTANCE FROM LIGHT-REFLECTING OBJECTS

**Richard Loewe, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany**
**Filed July 6, 1970, Ser. No. 52,648**
**Claims priority, application Germany, July 5, 1969, P 19 34 186.7**
**Int. Cl. G01c** *3/08*
**U.S. Cl. 356—4** **10 Claims**



A photoelectric range finder wherein the differential circuit contains four photoelectric receivers connected in twos in two branches of the circuit. Each receiver of one branch is paired with a receiver of the other branch and the two pairs of receivers are mirror symmetrical to each other. Each of two mirror symmetrical beams of light which is reflected by the selected portion of an object is directed against one of the two pairs of receivers. The circuit is balanced when exactly one-half of each beam impinges upon each of the respective pair of receivers regardless of eventual lack of uniformity of light intensity in various parts of the light beams. The circuit can be used to adjust the position of an objective in a camera or projector.

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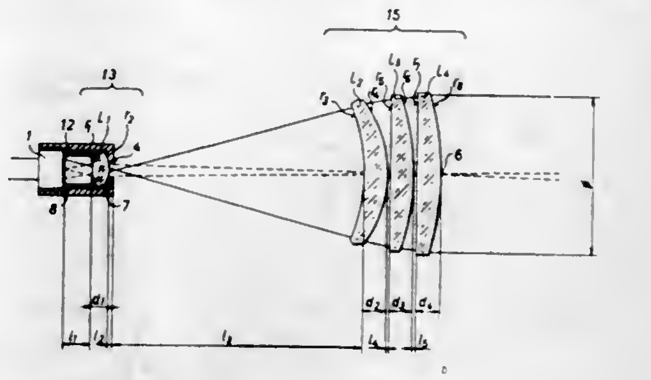
## 3,759,616
## ELECTRO-OPTICAL DISTANCE MEASURING INSTRUMENT

**Klaus Hildebrand, Heerbrugg, Switzerland, assignor to Wild Heerbrugg Aktiengesellschaft, Heerbrugg, Switzerland**
**Continuation-in-part of Ser. No. 827,791, May 26, 1969, abandoned. This application July 14, 1971, Ser. No. 162,355**
**Claims priority, application Switzerland, May 28, 1968, 7870/68; Oct. 15, 1968, 15412/68**
**Int. Cl. G01c** *3/08*
**U.S. Cl. 356—5** **7 Claims**



An electro-optical distance measuring instrument embodying a non-coherent light emitting diode, the light beam of which is directly amplitude-modulated by an oscillator and delivered to a receiver through the agency of means for mixing the modulation phases, a transmitting objective, and a reflector arranged at the remote end of the measuring path. The aforementioned means for mixing the modulation phases is arranged with respect to the transmitting objective such that the transmitting objective is fully illuminated and the transmitting objective produces an image of the aforementioned means at an infinite distance.

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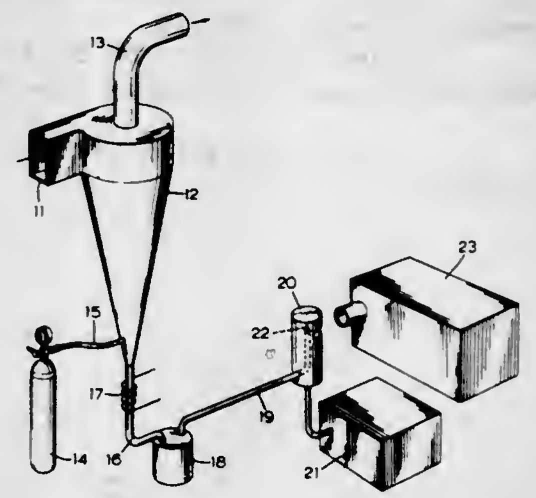
## 3,759,617
## METHOD AND APPARATUS FOR GEOCHEMICAL SURVEYING

**Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Rexdale, Ontario, Canada**
**Filed May 3, 1972, Ser. No. 250,016**
**Claims priority, application Canada, May 7, 1971, 112413**
**Int. Cl. G01n** *1/00;* **G01j** *3/00, 3/30*
**U.S. Cl. 356—36** **26 Claims**



A method and apparatus for performing a rapid geochemical survey over an area of the earth consisting of collecting and concentrating atmospheric particulates, preferably transferring the particulates into a stream of an inert carrier gas, heating the particulates to break down organic particles into particles of smaller size and vapours, removing from the stream inorganic particles which generally are of relatively high mass, and then analyzing the remaining organic particles and vapours to detect the presence of elements or compounds indicative of underlying geological conditions.

### 3,759,618
### METHODS OF AND APPARATUS FOR EFFECTING OPTICAL MEASUREMENT AND ANALYSIS

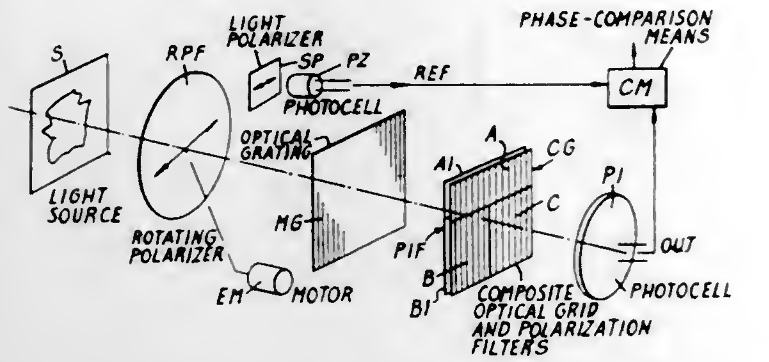
**Gordon Leonard Rogers, and Noel William Frank Stephens, both of Birmingham, England, assignors to National Research Development Corporation, London, England**

**Filed July 29, 1971, Ser. No. 167,280**

**Claims priority, application Great Britain, July 31, 1970, 37,145/70**

**Int. Cl. G01b** *11/00*

**U.S. Cl. 356—156** **18 Claims**



Optical analysis method and apparatus comprising a single photoelectric sensing means upon which the shadow of an optical grating is continuously cast through a composite grid having a plurality, preferably three, of different discrete sub-sections each having the same line repeat dimension and orientation but whose lines are progressively shifted relatively to those of the other sub-sections by chosen fractions of the line repeat dimension, and means for simultaneously casting the shadow of the optical grating on each of the sub-sections. There is also provided means for varying sinusoidally the intensity of the grating shadow incident upon each of the grid sub-sections so that the respective maxima and minima of the variations at such grid sub-sections are equally phase-displaced over the variation cycle, while means compares the resultant signal output from said photocell with a reference signal synchronised with the scanning cycle.

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### 3,759,619
### MEASUREMENT OF COLOUR OF SPHERICAL OS QUASI-SPHERICAL SURFACES

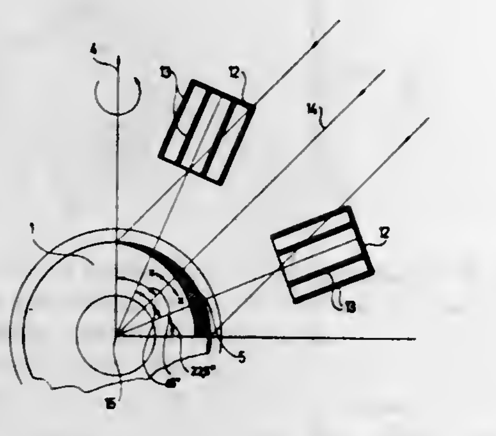
**Andras Podmaniczky, and Barnabas Kiss, both of Budapest, Hungary, assignors to Merestechnikai Kozponti Kutato Laboratorium, Budapest, Hungary**

**Filed June 13, 1972, Ser. No. 262,172**

**Claims priority, application Hungary, June 18, 1971, ME 1382**

**Int. Cl. G01j** *1/06, 3/48*

**U.S. Cl. 356—173** **5 Claims**



The color of a substantially spherical surface, such as that of a fruit, is measured by rotating the object about a vertical axis and projecting on the surface of the object, downwardly at 45°, an area of light that extends from the zenith to the equator of the object and is generally spherical triangular in shape, but differs from a spherical triangle in that the arc length's of the circles of latitude falling between the boundaries of the illuminated area is related as follows to the arc length $s_0$ of the 45° circle of latitude:

$$s(x) = s_0(1 + \tan x)$$

where $x$, with the appropriate sign, is the difference in angle between 45° and the central angle of the circle of latitude passing through the illuminated surface. To measure color distribution, the same apparatus is used but only an area is illuminated which is sufficiently small to be regarded as planar and the selected area is manually rotated to underlie the light spot.

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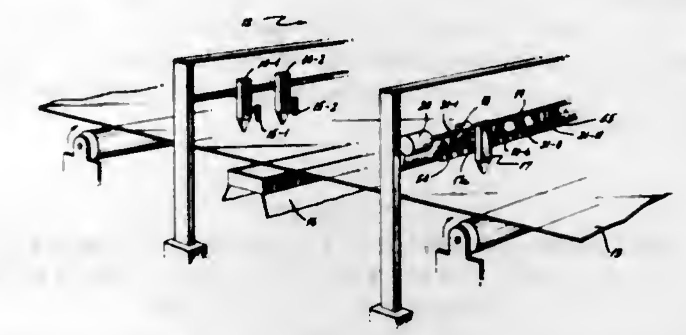
### 3,759,620
### FLAW DETECTION AND MARKING APPARATUS

**Charles J. Cushing, Churchville, and Kurt C. Schwind, Philadelphia, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.**

**Filed May 30, 1972, Ser. No. 257,845**

**Int. Cl. G01n** *21/16*

**U.S. Cl. 356—200** **14 Claims**



A flaw detection and marking apparatus for glass including an automatically actuated backup marking device operable to replace any one of a group of primary marking devices in the event of malfunction thereof.

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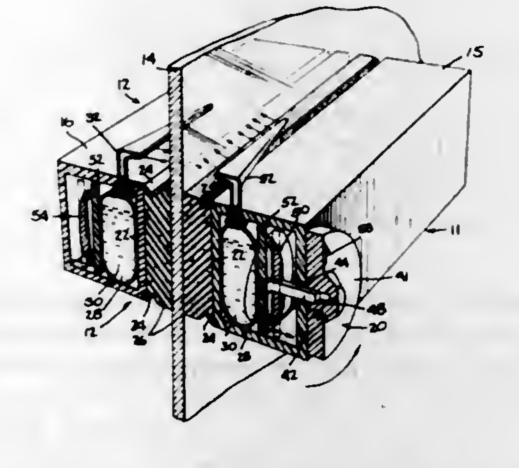
### 3,759,621
### WINDOW CLEANING APPARATUS

**Joseph P. De Carlo, 200 Harding Ct., Centerport, N.Y.**

**Continuation-in-part of Ser. No. 21,050, March 19, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,369**

**Int. Cl. A47l** *1/08*

**U.S. Cl. 401—10** **4 Claims**



Apparatus for simultaneously cleaning both sides of a window comprises master and slave magnetic cleaning units. When the cleaning units are aligned on opposite sides of the window, magnetic attraction causes the slave cleaning unit to press against and to slide on the outside of the window in response to corresponding movement of the master cleaning unit on the inside of the window. Self-contained cleaning fluid reservoirs in alternative embodiments of the cleaning units controllably dispense cleaning fluid onto the window surfaces in response either to gravity forces, controlled by orientation of the master unit with respect to the vertical, or to magnetic biasing means actuated by a control means on the master unit.

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### 3,759,622
### WRITING INSTRUMENT

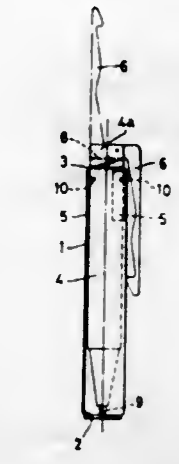
**Naokichi Miyamoto, 12-23, 3-chome, Isobe, Annaka-shi, Japan**

**Filed Aug. 10, 1971, Ser. No. 170,508**

**Claims priority, application Japan, Aug. 15, 1970, 45/80972**

**Int. Cl. B43k** *24/04*

**U.S. Cl. 401—104** **9 Claims**



A writing instrument comprises a writing barrel carrying a projecting portion slidably inserted in a sheath tube. The barrel is movable between a retracted, inoperative position and an extended operative position. The tube is crimped at its ends to retain the projecting portion and a clip is pivotally attached to an end of the barrel which projects from the tube in the inoperative position, the clip being retracted in the sheath tube when the barrel is brought to its extended operative position.

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### 3,759,623
### STAND

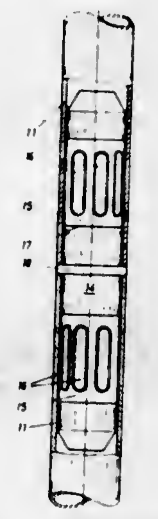
**Kurt Hesse, 38 Waterfohr, Lemgo-Lippe, Germany**

**Filed Mar. 10, 1971, Ser. No. 123,101**

**Claims priority, application Germany, Mar. 11, 1970, G 70 08 903.1**

**Int. Cl. F16b** *7/00*

**U.S. Cl. 403—375** **6 Claims**



A stand comprising several sections connected together, the sections being tubular at least at their ends, a connecting bolt engaging with a clamping action in the ends of adjacent sections, said bolt having at least one naturally resilient clamping member located therearound, which enlarges the cross-section of said bolt, the clamping member being adapted to press against the inner wall of a section, and having several outwardly projecting clamping surfaces.

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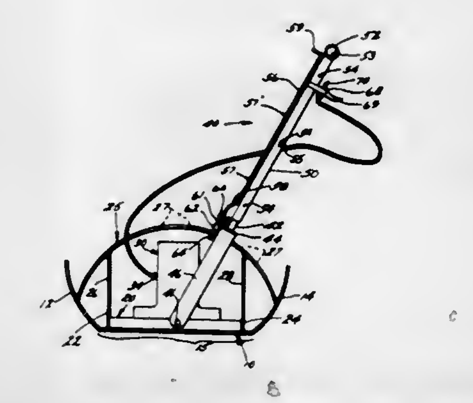
### 3,759,624
### TRENCH COMPACTOR

**Doran J. Hundey, Riverdale, and Robert B. Naru, Edmore, both of Mich., assignors to Edmore Tool and Grinding, Inc., Edmore, Mich.**

**Filed Apr. 19, 1971, Ser. No. 135,306**

**Int. Cl. E01c** *19/35*

**U.S. Cl. 404—133** **4 Claims**



A compactor is provided for use in tamping earth or the like in a relatively narrow and deep trench such as used for burying telephone cables. The compactor includes a shoe portion having upwardly curved ends and a handle which is pivotably mounted to the compactor such that it can swing to either side of the vertical axis of the compactor to facilitate its operation in either direction along the trench. The handle is additionally collapsible and extendable such that it can be employed in trenches of varying depths. A vibrator mounted to the compactor to provide tamping forces can be of the pneumatic type which is controlled by the operator to vary the tamping action by means of a control valve mounted on the handle of the compactor.

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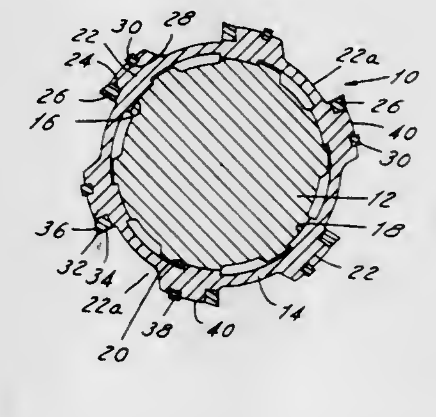
### 3,759,625
### CUTTING TOOL

**Norman H. Iversen, P. O. Box 178, Lathrup Village, Mich.**

**Filed Sept. 15, 1970, Ser. No. 72,379**

**Int. Cl. B23d** *1/28, 77/02, 77/06*

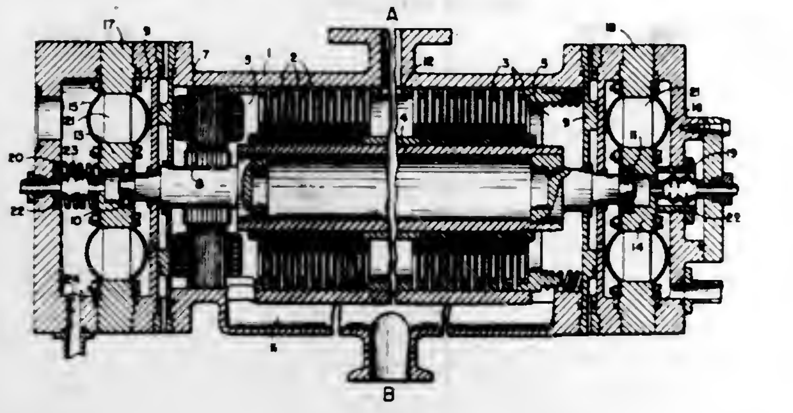
**U.S. Cl. 408—188** **9 Claims**



A cutting tool such as a reamer or a boring tool having a plurality of cutting edges for machining the inner cylindrical surface of a hole and also having a plurality of guide edges or surfaces trailing and spaced circumferentially from the cutting edges and adapted to engage the cylindrical surface machined by the cutting edges to stabilize the tool radially without interfering with the cutting action of the cutting edges.

### 3,759,626
### BEARING ARRANGEMENT FOR MOLECULAR AND TURBO MOLECULAR PUMPS

**Willi Becker, Braunfels/L, Germany, assignor to Arthur Pfeiffer Vakuumtechnik GmbH, Wetzler, Germany**
**Filed Oct. 22, 1971, Ser. No. 191,759**
**Claims priority, application Germany, Oct. 22, 1970, P 20 52 120.4**
**Int. Cl. F01d** *1/36*
**U.S. Cl. 415—90** **11 Claims**



In molecular and turbo molecular pumps a bearing arrangement is provided for the member which rotates the rotor discs of the pump and includes a pair of axially spaced bearing heads each supporting a bearing for the rotating member. The bearing heads are supported from the pump casing by radially extending disc-like spring members which have a spring stiffness in the radial direction which is greater than the spring stiffness in the axial direction. Further, one of the bearing heads is biased toward the other by an axially arranged spring so that the play of the bearings is made zero. Oil is supplied to the bearings and is prevented from entering the space containing the stator and rotor discs. Damping elements are provided in association with the radially extending spring members or, alternatively, damping material is coated on the spring members.

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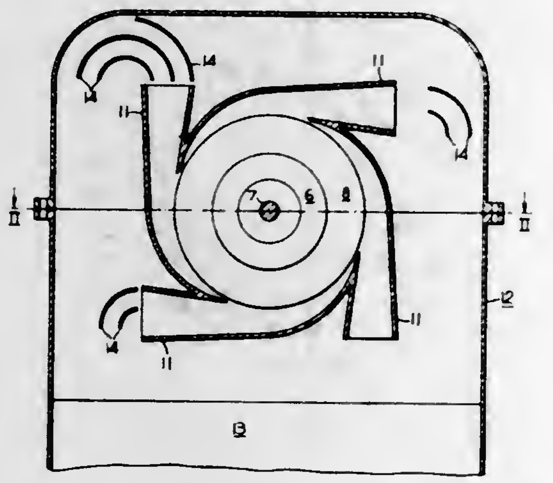
### 3,759,627
### COMPRESSOR ASSEMBLY

**Arnold H. Ehlinger, Hales Corners, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**
**Filed Feb. 14, 1972, Ser. No. 226,160**
**Int. Cl. F04d** *29/44, 29/58, 29/56*
**U.S. Cl. 415—178** **2 Claims**



An air compressor assembly including a centrifugal impeller discharging air through a vaneless diffuser and a plurality of conical diffusers into an air collecting plenum. An air cooler is connected to the open end of the plenum to receive the air therefrom.

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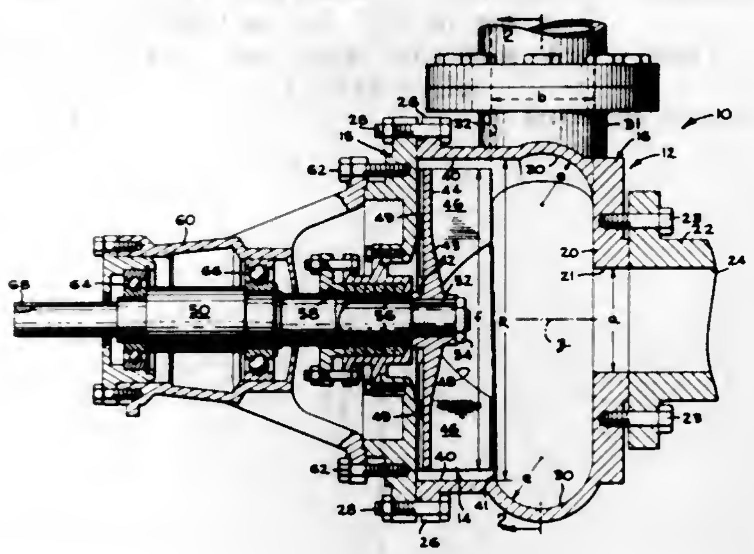
### 3,759,628
### VORTEX PUMPS

**Dennis D. Kempf, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.**
**Continuation-in-part of Ser. No. 104,315, Jan. 6, 1971. This application June 14, 1972, Ser. No. 262,913**
**Int. Cl. F04d** *29/44, 7/00*
**U.S. Cl. 415—213 A** **15 Claims**



A vortex pump casing has a generally toroidal inner wall of constant cross-sectional radius with a cylindrical axially offset impeller recess intersecting the toroidal wall. The toroidal wall is actually a volute and the impeller recess intersects the volute at an obtuse angle that increases progressively from the maximum major radius of the volute to the minimum (cutwater) major radius of the volute. Formulae for various design features, including the impeller vane depth, the radius to the volute cutwater, the impeller diameter, and the optimum number of impeller blades are presented, based on the diameter of the inlet port of the volute.

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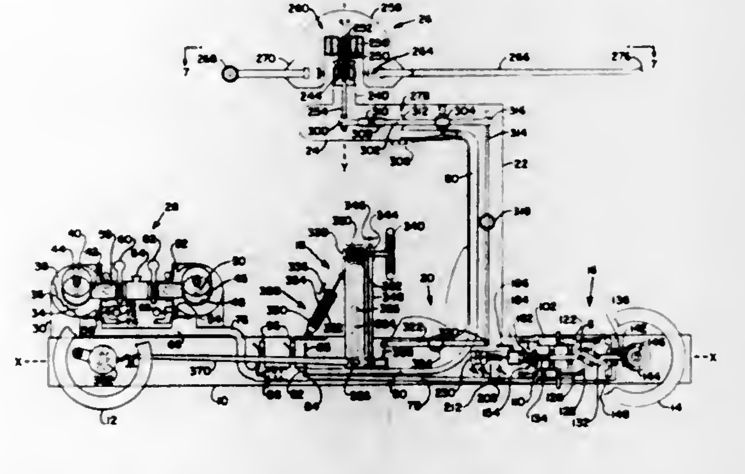
### 3,759,629
### COMBINED LAND AND AIR VEHICLE

**John Abramopaulos, 24-29 42nd St., Long Island City, N.Y.**
**Division of Ser. No. 823,639, May 12, 1960, Pat. No. 3,612,441. This application Apr. 14, 1971, Ser. No. 134,081**
**Int. Cl. B64c** *27/18*
**U.S. Cl. 416—20** **4 Claims**



A land air vehicle comprising a chassis in which is journalled a pair of front steerable wheels and rear driven wheels, a superstructure mounted to said chassis journalling a helicopter rotor assembly, a compressor for creating a supply of pressurized air, a pneumatic motor coupled to the rear wheels, which motor is driven by the compressed air, and a jet propulsion system coupled to the rotor assembly also driven by said compressed air. The vehicle includes control means for selectively operating one or the other of the pneumatic motor or jet propulsion system in manual or automatic operation.

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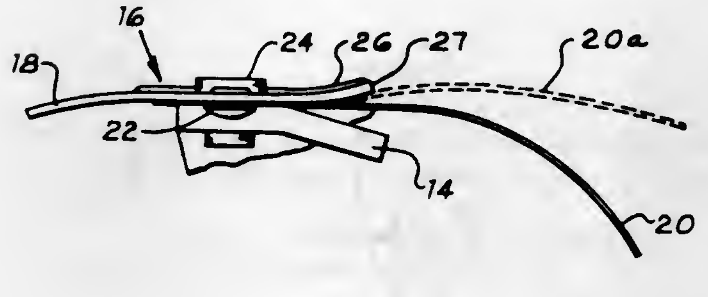
### 3,759,630
### FLEXIBLE BLADED FAN WITH IMPROVED REINFORCING

**Willard Anton Freeman, and Donald Jean Hartley, both of Indianapolis, Ind., assignors to Wallace Murray Corporation, New York, N.Y.**
**Filed Apr. 24, 1972, Ser. No. 246,540**
**Int. Cl. F04d** *29/38*
**U.S. Cl. 416—132** **3 Claims**



A fan having curved flexible resilient blades which decamber with an increase in rotational speed and aerodynamic forces. Each of the blades has an overlying reinforcing strip in partial contact with a trailing sheet, which decambers as the rotational speed increases. The reinforcing strip and trailing sheet, which is of significantly thinner cross-section, are joined to each other and to a supporting arm extending from a central hub. The reinforcing strip preferably has a curved trailing decamber limiting portion and a curved bending limiting portion disposed along the inner side edge of the reinforcing strip and its decamber limiting portion. As the trailing sheet decambers it also makes progressive contact with the reinforcing strip in a direction toward the inner side edge of the sheet, thus reducing stress concentration at the intersection of the inner side edge of the sheet and the decamber limiting portion of the reinforcing strip.

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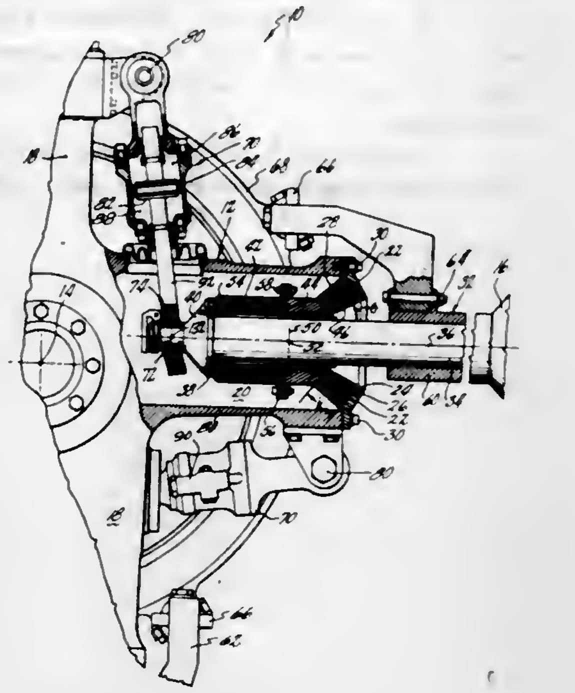
### 3,759,631
### COMPOUND BEARING FOR CONNECTING A HELICOPTER BLADE TO A HELICOPTER ROTOR

**Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**
**Filed July 5, 1972, Ser. No. 268,965**
**Int. Cl. B64c** *27/38*
**U.S. Cl. 416—134** **14 Claims**

A compound bearing for connecting a helicopter blade to a helicopter rotor, such as connecting the blade end-shaft to the rotor connected lead-lag damper so as to accommodate a large degree of blade pitch change motion and part misalignment due to other blade motions, which bearing is maintained within a minimum space envelope. The compound bearing includes a slip-type journal bearing enveloping the blade end-shaft and a spherical, laminated elastomeric bearing enveloping the journal bearing and connected to the rotor connected part, such as the lead-lag damper.



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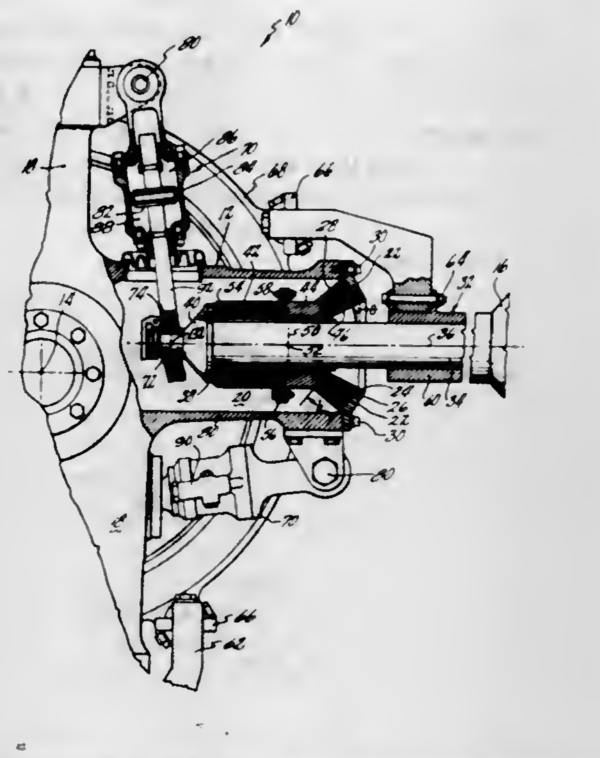
### 3,759,632
### ARTICULATED HELICOPTER ROTOR

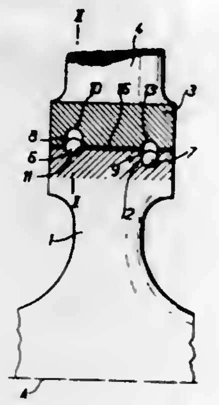
**Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**
**Filed July 5, 1972, Ser. No. 268,964**
**Int. Cl. B64c** *27/38*
**U.S. Cl. 416—134** **23 Claims**



One or more helicopter blades are supported from a helicopter rotor in articulated fashion by a spherical elastomeric bearing which permits blade motion about the blade lead-lag axis and which includes a piston-cylinder type lead-lag damper. Lead and lag stops positioned selected distances from the blade shaft so that during rotor start-up operation, the uncentered blade will increase in lead angle to eventually be supported by the lag stop and the bottomed-out damper piston and so that, during rotor braking operation, the uncentered blade will increase in lead angle and eventually be supported by the lead stop and the bottomed-out lead-lag damper. This construction does not include a centering bearing.

### 3,759,633
### DEVICE FOR LOCKING BLADES OR OTHER SLIDINGLY MOUNTED PARTS IN POSITION ON A ROTOR OR OTHER ROTATING SUPPORT MEANS

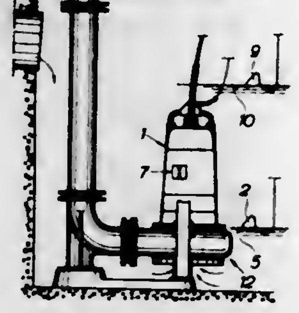
**Marcel Joseph Tournere, Paris, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France**
**Filed Jan. 5, 1972, Ser. No. 215,561**
**Claims priority, application France, Jan. 6, 1971, 7100227**
**Int. Cl. B63h** *1/20*
**U.S. Cl. 416—220** **5 Claims**



A device for the axial locking of a blade in position in a slot made in a rotor in an engine with a horizontal axis, the device comprising two balls each retractable within and movable under the influence of gravitational and centrifugal forces along one of two recesses extending radially, one of which is made in the rotor facing a blade root cavity and the other of which is made in the blade root facing a cavity in the rotor, the cavities having a depth which is less than the diameter of the balls.

### 3,759,634
### METHOD AND DEVICE FOR PROTECTING A PUMP MOTOR INTENDED TO BE IMMERSED IN LIQUID

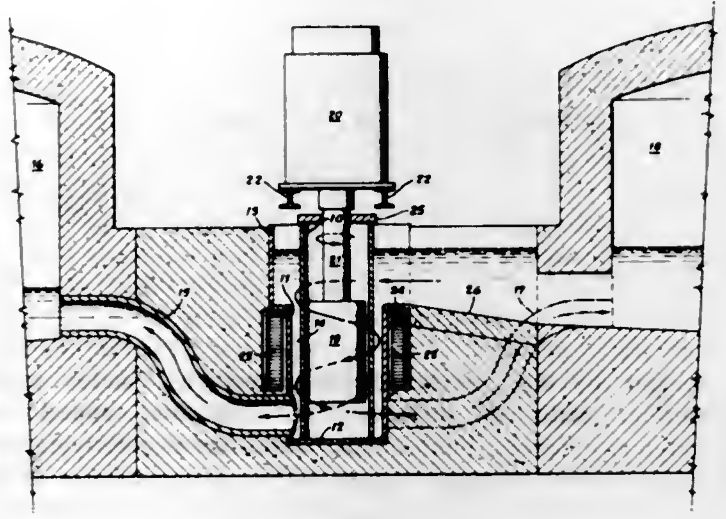
**Kai Eskola, Friisala, and Yrjo Tyllinen, Helsinki, both of Finland, assignors to Oy E. Sarlin AB, Kaivoksela, Finland**
**Filed Dec. 21, 1971, Ser. No. 210,522**
**Claims priority, application Finland, Nov. 5, 1971, 3168**
**Int. Cl. F04b** *49/10*
**U.S. Cl. 417—32** **7 Claims**



The object of the present invention is a method for protecting a pump motor which is submersible in a liquid against excessive heating, in which method at least one means measuring the liquid level height, such as a float, is placed in the liquid to be pumped, in the motor circuit a switch is inserted which is acted upon by the means measuring the liquid level in such manner that the motor circuit is broken when the liquid level descends to a predetermined lower limit height, in the motor circuit an excess current protection means is placed, which breaks the motor circuit if the motor is overloaded, and in connection with the motor a heat sensitive means is provided, which breaks the circuit of the motor if the motor temperature rises to a predetermined value. According to this invention the heat sensitive means completes the motor circuit for its own part when the motor temperature falls below a predetermined value and that in the motor circuit a switch is placed on which a means measuring the liquid level acts so that the motor starts when the liquid level rises to a predetermined upper limit level, if the motor temperature is below a predetermined value.

### 3,759,635
### PROCESS AND SYSTEM FOR PUMPING MOLTEN METAL

**Melvin A. Carter, Livermore, and Theodore D. Steinke; Donald C. Kush, both of Pleasanton, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**
**Filed Mar. 16, 1972, Ser. No. 235,441**
**Int. Cl. H02n** *4/20*
**U.S. Cl. 417—50** **18 Claims**

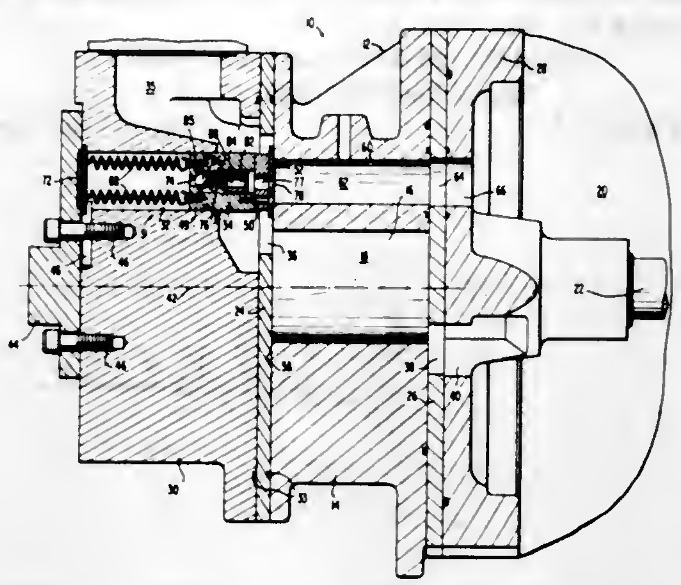


This invention relates to an electromagnetic pumping system for molten metal which comprises a device for generating a rotating, helically shaped electromagnetic field which induces downwardly directed molten metal flow in the annular space defined by two concentric upstanding cylindrical surfaces. A preferred embodiment of the invention relates to a process and system for pumping molten metal, wherein one discharge conduit recycles molten metal to a chamber at a predetermined flow rate and when the recycling is completed, the flow rate is substantially increased, thereby pumping metal to a second chamber without increasing substantially the molten metal flow to said first container.

### 3,759,636
### COMPOSITE VARIABLE OIL PRESSURE RELIEF AND COMPRESSOR UNLOAD VALVE ASSEMBLY

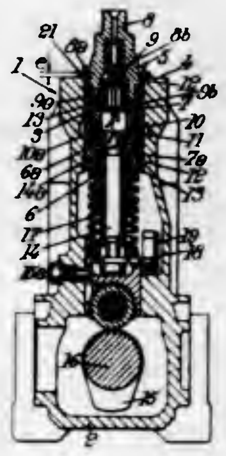
**Donald D. Schaefer, Farmington, Conn., and James R. Morin, Sr., Springfield, Mass., assignors to Dunham-Bush, Inc., West Hartford, Conn.**
**Filed Mar. 13, 1972, Ser. No. 234,123**
**Int. Cl. F04b** *49/02, 49/08*
**U.S. Cl. 417—281** **13 Claims**

An axially shiftable piston is pressure biased by screw compressor oil pressure to a position closing off communication between the intake and the discharge sides of an axial screw compressor but is biased to the unload position by the compressor discharge and a biasing spring acting on the same. The piston carries a fixed or variable oil pressure relief valve to vary the compressor oil pressure with change in compressor thrust load which, in turn, varies with the compressor discharge pressure.



### 3,759,637
### INJECTION PUMPS

**Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale De Mechanique Appliquee S.I.G.M.A., Venissieux, France**
**Filed Dec. 16, 1971, Ser. No. 208,831**
**Int. Cl. F04b** *7/04*
**U.S. Cl. 417—499** **7 Claims**

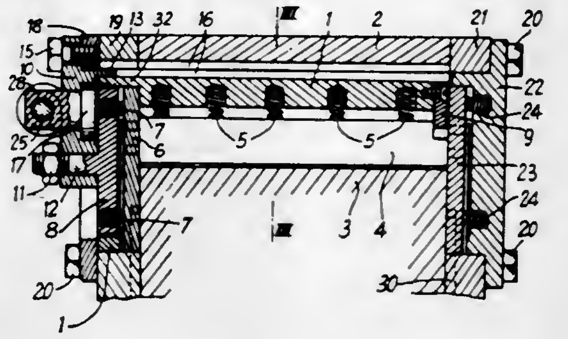


A multicylinder fuel injection pump comprising a casing, hydraulic heads arranged in the housings of the casing and pistons adapted to slide in cylinders borne by the hydraulic heads. The hydraulic head comprises a delivery connector screwed into a bush and blocking the cylinder. The delivery connector comprises a collar adapted to serve as an axially stop for the hydraulic head against the casing. The invention is useful for automobile in-line fuel injection pumps.

### 3,759,638
### SEALING DEVICES FOR ROTARY PISTON MACHINES

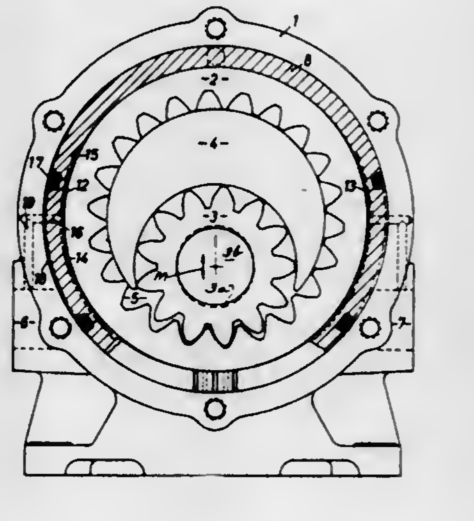
**Maurice G. Brille, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France**
**Filed Dec. 27, 1971, Ser. No. 212,176**
**Claims priority, application France, Jan. 5, 1971, 7100086**
**Int. Cl. F01c** *19/02;* **F04c** *15/00*
**U.S. Cl. 418—128** **10 Claims**

A sealing device for rotary piston machines of the type having radial segments fitted into cavities in the stator, characterized in that this device is comprised of a detachable assembly formed by a segment holder support, a lateral shim, a radial segment and their resilient bearing means, said assembly being fitted into a corresponding cylindrically-walled cavity provided in the stator and a lateral cheek, said assembly coming into resilient bearing contact against a lateral sealing shim situated in the opposite cheek, an exterior thrust washer ensuring that this assembly is maintained in resilient juxtaposition with the radial segment and of the lateral sealing shims.



### 3,759,639
### HALF-MOON SHAPED MACHINE

**Hans Molly, Dr. Eugen-Essig-Strasse 48, Malsch, Germany**
**Filed Nov. 22, 1971, Ser. No. 201,048**
**Int. Cl. F01c** *1/10;* **F04c** *1/06*
**U.S. Cl. 418—170** **9 Claims**

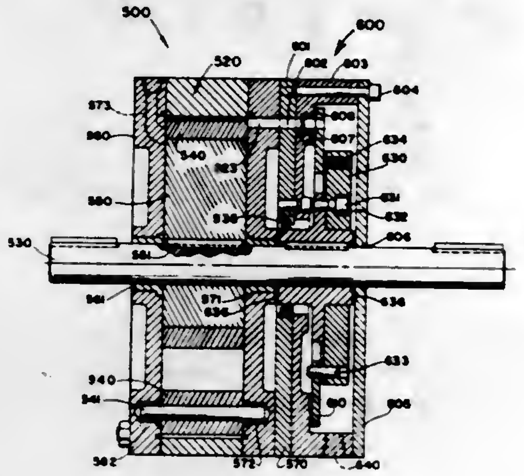


A crescent type gear machine comprises a spur gear in mesh with an internal gear in a housing and a stationary crescent shaped body between spur gear and the ring gear. The space between ring gear and the housing communicates with the high pressure area of the machine, a limited low pressure area being formed between crescent shaped body spur gear and ring gear. A ring having a meander shaped section to make it radially resilient encircles said ring gear. A depression area is provided on the inner surface of said resilient ring and engages part of the periphery of the gear ring to counteract the hydraulic forces thereon. Said depression area communicates with a depression area of smaller size between said resilient ring and the housing wall, the latter depression area being defined by resilient sealing means and communicates with the low pressure connection of the machine.

### 3,759,640
### ROTARY ENGINE VALVE MEANS

**John N. Hinckley, Beloit, and Van Tassel Stonehocker, Brookfield, both of Wis., assignors to Beloit College, Beloit, Wis.**
**Filed Apr. 1, 1971, Ser. No. 130,182**
**Int. Cl. F01c** *1/00;* **F03c** *3/00*
**U.S. Cl. 418—249** **7 Claims**

This invention provides a valve system for directing charges of pressurized working fluid into the expandable chambers of a rotary engine, for operation against a pivoted power arm associated with each chamber. The valve system includes a manifold for containing a supply of pressurized working fluid, and fluid intake ports associated with each expandable engine chamber. Fluid conduit means associated with each intake port communicate with the manifold, and valve means associated with each port are adapted to open or close the conduit means in a timed sequence. Cut-off means also are provided to stop the flow of working fluid to the engine chambers after the power arm associated with each port has moved through a selected portion of its power stroke. Switching means also may be included to selectively switch the rotary engine between simple and compound modes of operation.



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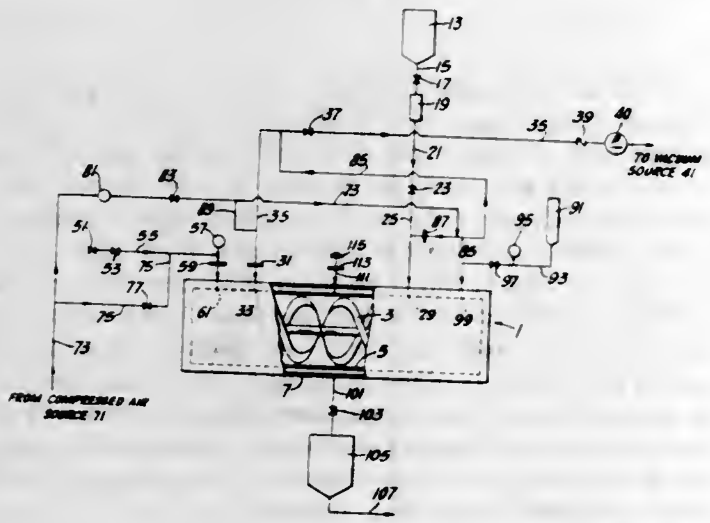
### 3,759,641
### PROCESS AND APPARATUS FOR PRE-EXPANDING POLYMER PARTICLES

**Richard H. Immel, Sewicky, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.**

**Division of Ser. No. 765,342, Oct. 7, 1968, Pat. No. 3,577,360. This application Jan. 12, 1971, Ser. No. 105,981**

**Int. Cl. F27b** *3/22*

**U.S. Cl. 425—4** **3 Claims**



An apparatus and process are provided for expanding polymeric particles to a predetermined density, which particles are subject to further expansion. Agitated particulate expandable polymer is heated in a dry atmosphere in a closed vessel, under vacuum, to a predetermined density. To achieve ultra-low density expandable prepuff, a coolant such as water is introduced into the closed vessel after the predetermined density is reached, but prior to the release of the vacuum. Following release of the vacuum, the beads are removed from the closed vessel and may be molded directly, without any aging period such as that necessary following steam pre-expansion.

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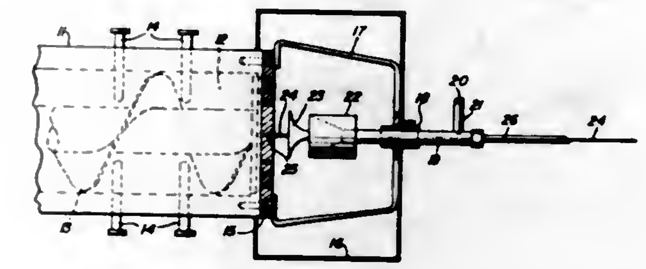
### 3,759,642
### EXTRUSION CUTTING DEVICE

**Charles S. Poteet, III, Cockeysville, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**Filed Oct. 26, 1971, Ser. No. 192,167**

**Int. Cl. B26f** *3/00;* **B29c** *17/14*

**U.S. Cl. 425—72** **10 Claims**



The device of this invention cuts multiple extrudates to a constant length while at the same time preventing any bending and resulting weakening of the extrudates. These extrusions are cut by a gaseous pressure source by directing this gaseous pressure in the area of the extruder die face. When the extrusion is of a preprogrammed length, the gaseous force on the extrudate will be sufficient to shear the material at the die face. An essentially opposing gaseous pressure force may be used in conjunction with the basic gaseous shearing structure. Inorganic extrudates are very effectively sheared using this device

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### 3,759,643
### APPARATUS FOR APPLYING LABELS ONTO HOLLOW BODIES

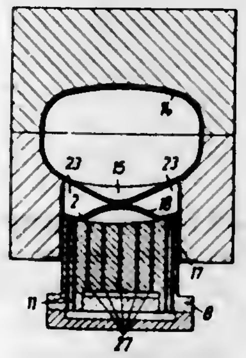
**Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen/Westphalia, Germany**

**Division of Ser. No. 41,194, May 28, 1970, Pat. No. 3,657,415. This application Feb. 17, 1972, Ser. No. 227,111**

**Claims priority, application Germany, Aug. 22, 1968, P 17 86 133.5; June 5, 1969, P 19 28 596.2**

**Int. Cl. B29c** *27/14;* **B29d** *9/00*

**U.S. Cl. 425—109** **6 Claims**



Apparatus for applying labels onto hollow bodies, including a blow mold having a cavity for containing a hollow body, and a member movable toward and away from the mold cavity, the member having an end conforming to the curvature of the cavity and forming a section thereof for carrying a label to be applied to the hollow body during movement of the member toward the cavity. Ventilation openings are provided in the mold for venting any air which may be present between the hollow body and the label during application. Suction openings are provided in the member for securely maintaining the label in place on the member, and pressure openings are also provided in the central portion member to cause the label to bow outwardly, thereby presenting a convex surface to the hollow body.

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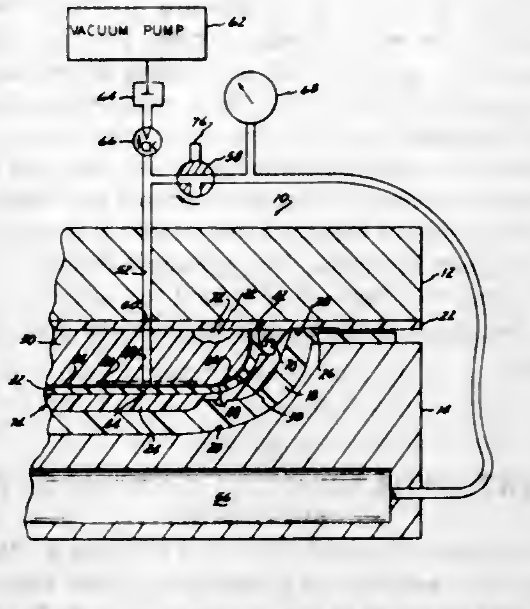
### 3,759,644
### MOLD FOR FORMING PLASTIC FOAM PARTS

**Michael Ladney, Jr., 18125 E. Ten Mile Rd., East Detroit, Mich.**

**Filed Dec. 29, 1971, Ser. No. 213,298**

**Int. Cl. B29f** *1/10*

**U.S. Cl. 425—129** **7 Claims**



A mold for forming plastic foam parts which has an improved arrangement for retaining within the molding cavity an insert onto which foam plastic is molded. A vacuum source communicates with the molding chamber through an inlet in the chamber wall. An insert is positioned over the vacuum inlet so that a continuous peripheral edge of the insert is sealingly interengaged on the wall, to thereby enseal vacuum between the insert and the chamber wall onto which the insert is positioned. The greater pressure outside of the ensealed vacuum acts on the insert to maintain the sealing interengagement of the insert edge with the chamber wall to thereby hold the insert in fixed position within the molding chamber.

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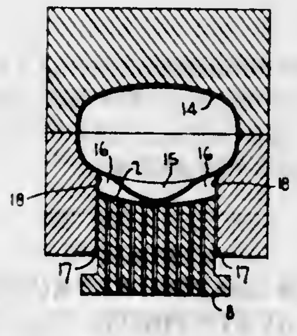
### 3,759,645
### APPARATUS FOR APPLYING LABELS ONTO HOLLOW BODIES

**Erhard Langecker, Hohbuschner Weg, Meinezhagen, Germany**

**Division of Ser. No. 767,719, Oct. 15, 1968, Pat. No. 3,608,020. This application Apr. 8, 1971, Ser. No. 132,574**

**Int. Cl. B29d** *23/03*

**U.S. Cl. 425—109** **2 Claims**



Apparatus for applying labels onto hollow bodies including a blow mold having a cavity for containing a hollow body, and a member movable toward and away from the mold cavity, the member having an end conforming to the curvature of the cavity and forming a section thereof for carrying a label to be applied to the hollow body during movement of the member toward the cavity. Ventilation openings are provided in the mold for venting any air which may be present between the hollow body and the label during application, and suction openings are provided in the member for securely maintaining the label in place on the member.

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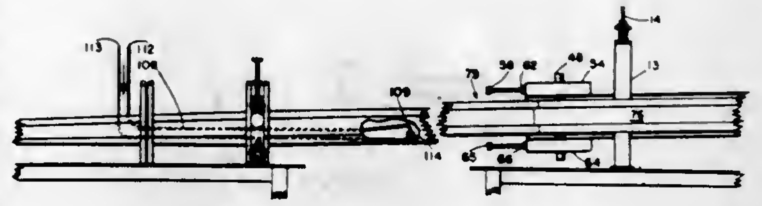
### 3,759,646
### MACHINE FOR PRODUCING SANDWICHED PLASTIC FOAM SHEET METAL PANELS

**Daniel Massagli, Covina, and Marino Ralph Massagli, Claremont, both of Calif., assignors to True-Lok Metal Fabricating Company, Inc., Los Angeles, Calif.**

**Division of Ser. No. 955, Jan. 6, 1970, Pat. No. 3,643,306. This application Nov. 8, 1971, Ser. No. 196,600**

**Int. Cl. B29c** *27/14*

**U.S. Cl. 425—110** **11 Claims**



A machine and process to continuously produce sandwiched sheet metal-rigid plastic foam panels provided with a metal forming unit, an injector for the plastic reactants, and an expansion confining apparatus, the foam forming reactants being introduced into that portion of the metal panel that is ahead of the location where the metal panel enters the expansion confining apparatus to allow the foam formed to start expanding prior to entry of the panel into the expansion confining apparatus, the expansion confining apparatus being provided with a cavity conforming to the cross sectional outline of the panel, that portion of the panel remaining in the cavity until full expansion has taken place before it is discharged from the confining apparatus.

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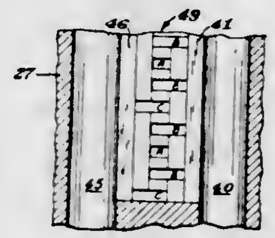
### 3,759,647
### APPARATUS FOR THE PREPARATION OF MULTILAYER PLASTIC ARTICLES

**Walter J. Schrenk, Bay City; Douglas S. Chisholm; Kenneth J. Cleereman, and Turner Alfrey, Jr., all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation of Ser. No. 88,385, Nov. 10, 1970, abandoned, which is a division of Ser. No. 835,839, April 10, 1969, Pat. No. 3,565,985, which is a division of Ser. No. 445,851, March 29, 1965, abandoned, which is a continuation-in-part of Ser. No. 431,336, Feb. 9, 1965, abandoned. This application Mar. 15, 1972, Ser. No. 234,978**

**Int. Cl. B29d** *9/00*

**U.S. Cl. 425—131** **8 Claims**



Multiple layer films are made by arranging a minimum of two streams into one stream having a plurality of generally parallel layers. By mechanically manipulating the layered stream, an increased number of layers are obtained and the manipulating stream is shaped into a desired configuration having a plurality of layers generally adjacent to a major surface thereof. Under certain conditions, iridescent products are obtained without the use of pigment.

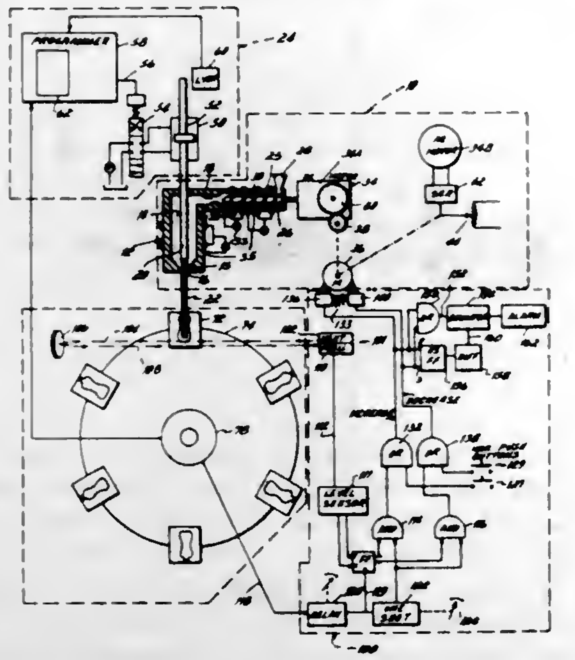
### 3,759,648
### EXTRUDER CONTROL SYSTEM

**Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunker Instrument Development Laboratories, Inc., Cincinnati, Ohio**

**Filed Sept. 15, 1971, Ser. No. 180,548**

**Int. Cl. B29d** *23/03*

**U.S. Cl. 425—140** **8 Claims**



An extruder control system for providing extruded products of equal lengths particularly for parison extruders in blow molding machines. A continuous feed extruder, when used with a plural mold apparatus, must extrude at a precise rate to provide a proper length parison to each mold. The control system measures errors in the length of the product delivered to each mold and makes a compensating adjustment in the extrusion rate of the extruder. The extrusion rate and product length are dependent on material viscosity which is varied by changing the rotational speed of the plasticizing screw. The control system compensates for material viscosity fluctuations and allows the extruder speed to follow that of the mold apparatus.

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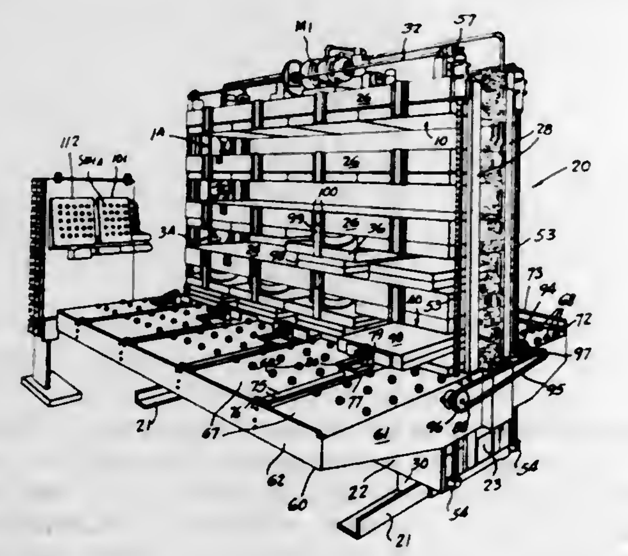
### 3,759,649
### MULTIPLE-SECTION MOLDING PRESS

**Claude T. Tyler, Warsaw, Ind., assignor to Tyler Machinery Co., Inc., Warsaw, Ind.**

**Filed Feb. 4, 1972, Ser. No. 223,506**

**Int. Cl. B30b** *7/02, 15/16;* **B29g** *7/02*

**U.S. Cl. 425—145** **26 Claims**



A multiple-section molding press having molding press sections arranged in aligned vertical and horizontal rows. Each section has a fluid pressure-operated platen. A vertically movable horizontal elevator platform member is adapted to receive box molds from a conveyor, and the box molds can be moved along the platform member so as to be manually positioned adjacent any of the vertical rows of press sections. A bank of illuminated control switches is provided for the sections. The elevator platform is provided with pushers and ejection devices aligned with the respective vertical rows. Automatic vertical positioning circuits are provided for the platform member, as well as press cycling circuits, operating in response to the actuation of a selected illuminated control switch to place a mold box at the level corresponding to the selected illuminated switch. The associated pusher automatically moves the mold box into press position and simultaneously ejects a previously compressed mold box therefrom onto the discharge side of the platform so that it is engaged by the associated ejection device. The platform returns to conveyor level. A respective timer is provided to control the action of each of the press sections and to indicate completion of a press cycle.

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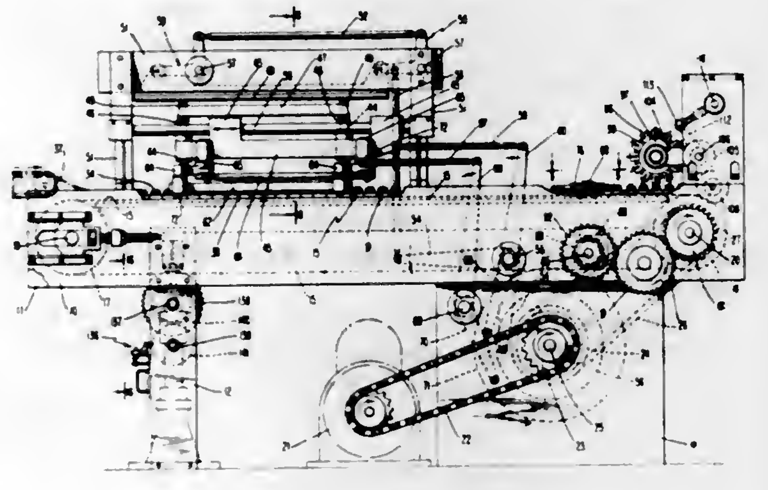
### 3,759,650
### APPARATUS FOR PROCESSING A STRIP OF PLIABLE MATERIAL

**Arthur J. Griner, Wyckoff, N.J., and William A. Blain, Spring Valley, N.Y., assignors to Nabisco, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 65,727, Aug. 20, 1970, Pat. No. 3,653,335, which is a continuation of Ser. No. 754,415, Aug. 21, 1968, abandoned. This application Apr. 7, 1971, Ser. No. 132,124**

**Int. Cl. A22** *11/10*

**U.S. Cl. 425—302** **27 Claims**



Apparatus for continuously conveying a ribbon-like strip of pliable dough-like material or the like while automatically repetitively shaping adjacent sections thereof and severing the same into shaped scoop-like products.

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### 3,759,651
### APPARATUS FOR SHAPING EXTRUSION-MOULDED ARTICLES MADE OF SYNTHETIC PLASTICS MATERIAL

**Siegfried Beyer, Saalburgstrasse 22, 6 Nider Eschbach, Germany**

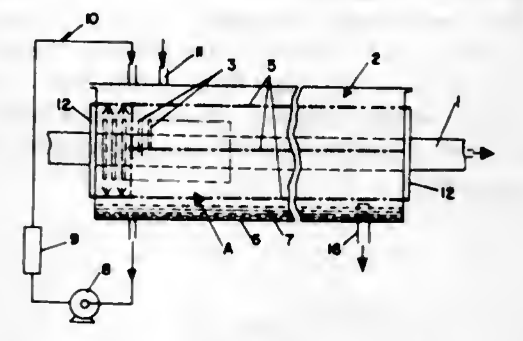
**Division of Ser. No. 28,633, April 15, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,106**

**Int. Cl. B29d** *23/04;* **B29f** *3/00*

**U.S. Cl. 425—343** **8 Claims**

Method for shaping extrusion-moulded articles made of synthetic plastics material, whrein the shaping is carried out with simultaneous cooling, characterised in that a sprayed-on cooling liquid and a gaseous medium are simultaneously caused to act upon the articles, and in that, in this process the gaseous medium is under low pressure.

The apparatus for carrying-out the above-mentioned method comprises a cooling-chamber and several shaping discs or plates which are arranged in the cooling-chamber spaced apart from one another and one behind the other and whose apertures are adapted to correspond to the desired dimensions of the extrusion-moulded articles, whereas between the shaping discs or plates and the inner wall of the cooling-chamber, a free space is left remaining, in which spraying devices are arranged, for the cooling liquid; and for the gaseous medium the suction tube or nozzle of a low pressure source is connected to the wall of the cooling-chamber.



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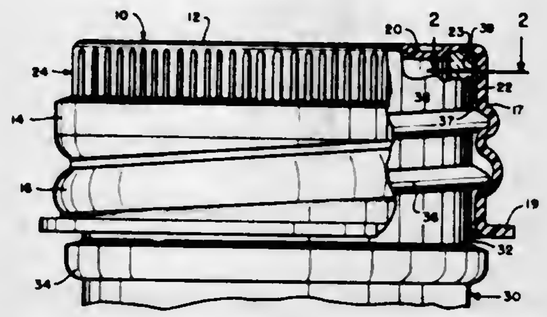
### 3,759,652
### MOLDING APPARATUS FOR MAKING THERMOFORMED ARTICLES

**Edmund Childs, Long Meadow, Mass., and Raymond Ostrowski, Florence, S.C., assignors to The KLM Company, Stratford, Conn.**

**Division of Ser. No. 826,973, May 22, 1969, Pat. No. 3,606,063. This application Apr. 5, 1971, Ser. No. 131,480**

**Int. Cl. B29c** *17/04*

**U.S. Cl. 425—388** **6 Claims**



A thermoformed screw type closure of semi-rigid material having a plurality of projections located between the uppermost point of the thread and the top of the closure which is recessed to lie inwardly of the root of the thread to engage the neck of a container onto which the closure is to be applied. The projections deform upon screwing down of the closure onto the container producing a good seal and fit and preventing the closure from backing off. A die is also disclosed for making closures of the foregoing type which utilizes the recessed portions of the closure as an aid in removing the closure from the die.

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### 3,759,653
### EXTRUSION DIE WITH ARCHED CHOKE BAR

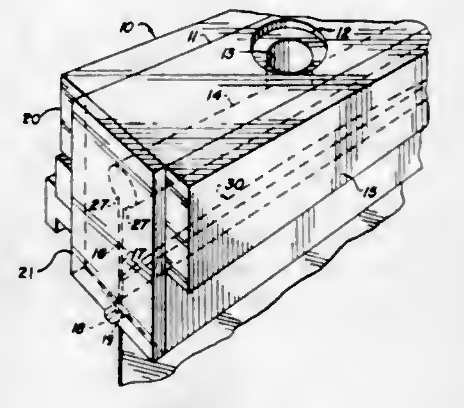
**Anthony J. Schreiber, Philadelphia, Pa., assignor to Standard Oil Company, Chicago, Ill.**

**Filed June 30, 1971, Ser. No. 158,405**

**Int. Cl. B29f** *3/04*

**U.S. Cl. 425—461** **3 Claims**

A film extrusion die comprising: a body having (1) means defining an inlet recess; (2) a longitudinally extending passageway communicating with said recess; (3) an extrusion manifold in flow communication with said inlet passageway extending substantially the entire width of the die; and (4) opposed wall portions in flow communication with said manifold which form an extrusion passageway leading from said manifold, one of said opposed wall portions being provided with a transversely disposed channel, and (5) a transversely disposed arched metering bar received in said channel, said bar including an extending portion which projects into said extrusion passageway leading from said manifold; a set of lips forming an elongated extrusion orifice extending substantially the entire width of the die with said set of lips attached to said body in flow communication with said extrusion passageway; and two die endplates, one attached to each end of said body respectively encapsulating each end of said manifold, extrusion passageway and lips.



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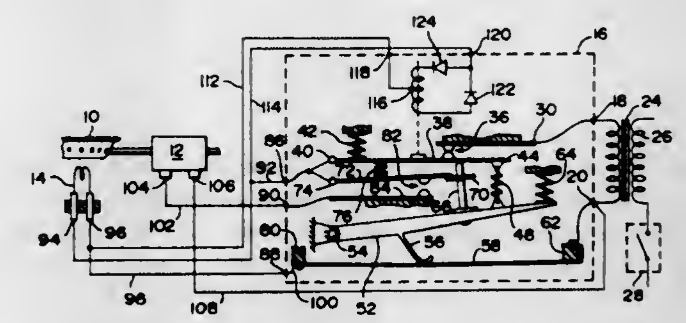
### 3,759,654
### THERMAL OPERATOR FOR IGNITION PROVING SYSTEM

**Joseph Clifford, Corona, Calif., assignor to Robertshaw Controls Company, Richmond, Va.**

**Filed Nov. 12, 1971, Ser. No. 198,142**

**Int. Cl. F23n** *5/00*

**U.S. Cl. 431—66** **5 Claims**



An improved operator is disclosed which greatly amplifies the relatively small expansion and contraction movements of a heat expansible wire connected in series with an electric igniter having a positive coefficient of resistance. As the igniter changes temperature its electrical resistance also changes causing a difference in current flow through the wire and accordingly an expansion or contraction thereof. Lever means attached to the wire amplify this movement and utilize it to selectively actuate switches controlling energization of both the electric igniter and an electrically actuated fuel valve providing fuel to a burner.

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### 3,759,655
### GAS OUTLET CONTROL DEVICE FOR A GAS LIGHTER

**Jean Gaston Malamoud, Annecy, France, assignor to S. T. Dupont, Paris, France**

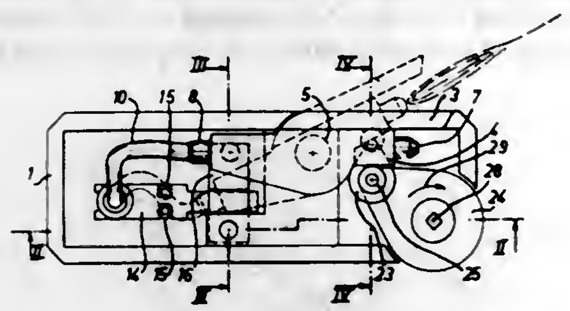
**Filed Sept. 15, 1971, Ser. No. 180,759**

**Claims priority, application France, Sept. 15, 1970, 7033322**

**Int. Cl. F23q** *25/00*

**U.S. Cl. 431—150** **7 Claims**

A gas lighter comprising a flue or gas escape channel for carrying to the outside of the lighter the gas liberated by a gas outlet control device. At least the downstream portion of the gas escape channel is mounted so that it can be oscillated between two end positions, one for operation of the lighter and the other for resting position thereof. The motion of the movable portion of said channel to the position for operation opens a normally closed aperture in the lighter, opposite the outlet of said channel, when the latter is in the position for operation.



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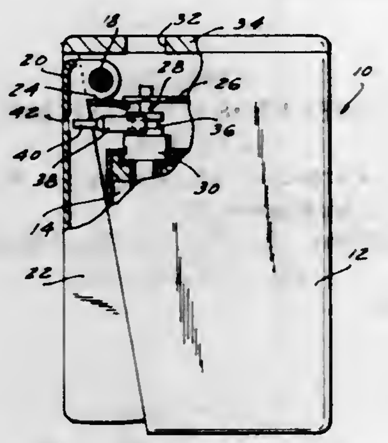
### 3,759,656
### LIGHTER

**Peter Steer Sampson, Wimbledon, London SW 19, England, assignor to Ronson Corporation, Woodbridge, N.J.**

**Filed Sept. 6, 1972, Ser. No. 286,735**

**Int. Cl. F23q** *2/00*

**U.S. Cl. 431—142** **6 Claims**



A flame adjustment mechanism for a lighter utilizing liquefied gas as a fuel wherein a resiliently biased actuating member for the lighter is provided with an aperture therein. In a first inoperative position the actuating member shields the flame adjustment mechanism to preclude access to the flame adjustment mechanism and in a second operative position the flame adjustment mechanism is accessible through the aperture.

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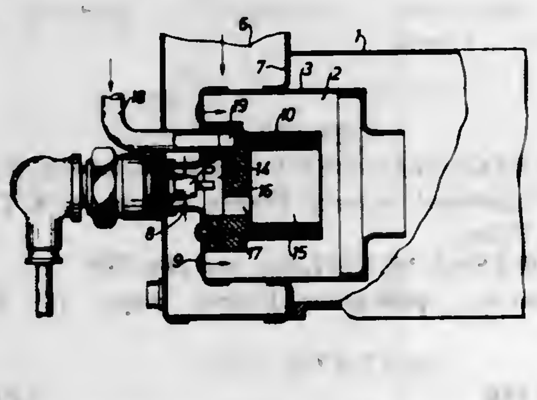
### 3,759,657
### ATOMIZATION BURNERS

**Hilding Ake Gerry Carlsson, Enkoping, Sweden, assignor to Aktiebolaget Babco Ventilation, Enkoping, Sweden**

**Filed June 25, 1971, Ser. No. 156,622**

**Int. Cl. F23d** *21/00*

**U.S. Cl. 431—170** **5 Claims**



A burner of the type having a combustion chamber, a porous, fuel atomizing member, combustion chamber fuel supply means, electric fuel igniting means, and with which the atomizing member has an auxiliary chamber and a main chamber, which are interconnected by a constricted connecting passage. Means are also provided for applying a first part flow of combustion air to the combustion chamber via the passage and means for supplying a second part flow of combustion air to said chamber. The improvement resides in the fact that the constricted connecting passage and the first part flow supply means are constructed relative to the second part flow means so that the first part flow is sufficient to sustain initial combustion in the auxiliary chamber but not sufficient to sustain any form of combustion therein upon continued operation of the burner.

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### 3,759,658
### LIQUID FUEL IGNITION APPARATUS

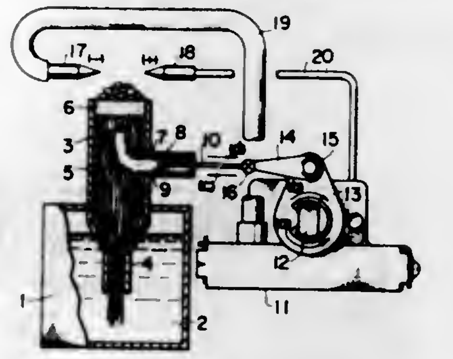
**Hideo Mifune, Hirakata; Akira Ishii; Masanori Yokoyama, both of Kita-Kawachi-gun, and Toshihiro Yamazoe, Nada-ku, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed May 24, 1971, Ser. No. 146,417**

**Claims priority, application Japan, May 27, 1970, 45/45935; May 27, 1970, 45/45936; May 27, 1970, 45/45937; May 27, 1970, 45/45938; May 29, 1970, 45/45934; May 29, 1970, 45/46735; May 29, 1970, 45/46736; May 29, 1970, 45/46737**

**Int. Cl. F23q** *3/00*

**U.S. Cl. 431—255** **6 Claims**



A liquid fuel ignition apparatus having a liquid fuel reservoir, means including a wick, an air pump and a porous filter for turning a portion of liquid fuel into bubbles, and a high voltage generator for applying a high voltage across a pair of discharge electrodes disposed in close proximity to the bubbling portion of the liquid fuel so as to ignite the liquid fuel bubbles by spark discharge occurring across the discharge electrodes.

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### 3,759,659
### METHOD AND APPARATUS FOR CEMENT KILN CONTROL

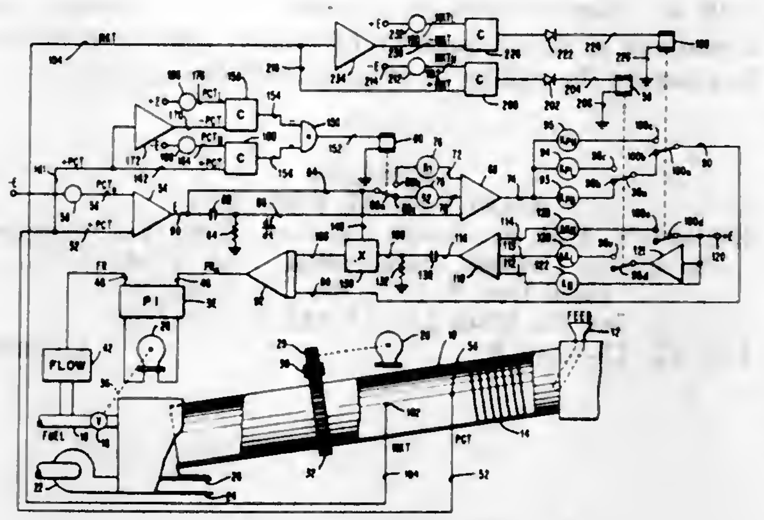
**Theodosios Bay, Lansdale, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.**

**Filed June 8, 1972, Ser. No. 260,923**

**Int. Cl. F27b** *7/00*

**U.S. Cl. 432—24** **8 Claims**

A control system for controlling the firing rate in a rotary cement kiln so as to maintain the temperature just ahead of the chain section at a predetermined set point. The control system includes both proportional and integral control and is adaptive in that the reset rate of the controller is increased when the temperature deviation exceeds a predetermined amount. In addition the overall gain of the control system is modified so that the gain is changed to a lower value when a temperature measurement in the mid-kiln region exceeds a certain high value with the gain being changed to a higher value when that mid-kiln temperature is below a predetermined minimum value. Means are provided to compensate for the discontinuity in the proportional control action when the mid-kiln temperature causes a change in the controller gain.



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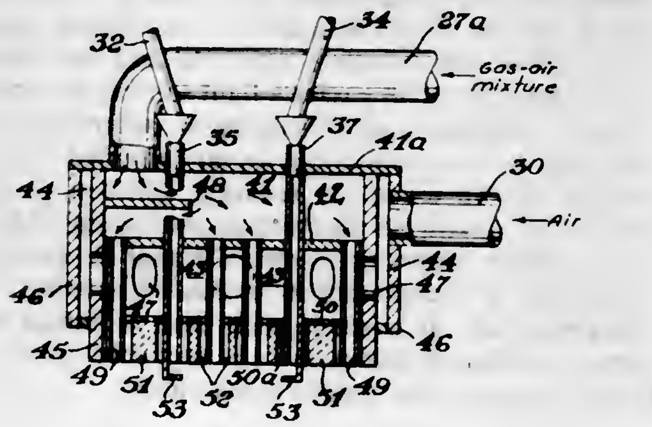
### 3,759,660
### LOW VELOCITY BURNER FOR THERMAL EXPANSION OF PARTICULATE SOLIDS

**Charles K. Bon, and David R. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Oct. 18, 1971, Ser. No. 190,068**

**Int. Cl. F27b** *11/00*

**U.S. Cl. 432—58** **4 Claims**



The burner of this invention is particularly adapted for use with a furnace for thermally expanding a particulate solid, such as clay particles. The burner pot, which comprises basically an upper compartment, lower compartment and a surrounding peripheral compartment, is mounted at the top of the furnace chamber. A mixture of natural gas and air, as a fuel mixture, is directed into the upper compartment from a mixer in communication with the upper compartment. Simultaneously, an auxiliary air supply is directed into the peripheral compartment and on into the lower compartment through several ports which open into the lower compartment. The clay particles to be expanded are fed downwardly through the burner pot and into the furnace through vertical feed nozzles in the burner pot. The fuel mixture is directed into the top of the furnace chamber through flame nozzles in the burner pot which surround the feed nozzles. At the tip of the flame nozzles, which is the underside of the burner pot, the fuel mixture and auxiliary air converge to provide the flame front for expanding the clay particles.

### 3,759,661
### KILN CARS

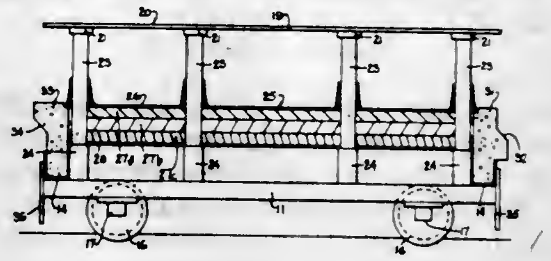
**Noel Barsby, Penn, Wolverhampton, Stafford, England, assignor to Gibbons Brothers Limited, Brierley Hill, Stafford, England**

**Filed Jan. 20, 1972, Ser. No. 219,303**

**Claims priority, application Great Britain, Jan. 28, 1971, 3,412/71**

**Int. Cl. F27b** *9/26*

**U.S. Cl. 432—241** **14 Claims**



A low thermal mass kiln car having a wheeled base on which is superposed a thermal barrier means composed of layers of light-weight non-load-bearing thermally insulating material, and a plurality of posts supported from the base of the kiln car and projecting upwardly through the thermal barrier means, the posts being supported with lateral stability by sockets on the base and carrying an upper deck for supporting the ware.

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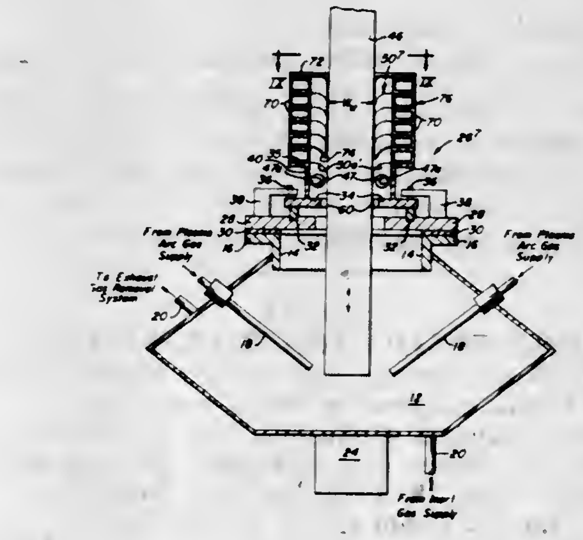
### 3,759,662
### SEAL

**Thomas G. Bengel, Plum Borough, and Thomas E. Nicely, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pitsburgh, Pa.**

**Filed Nov. 9, 1970, Ser. No. 88,029**

**Int. Cl. F27b** *9/28;* **F26b** *25/00*

**U.S. Cl. 432—242** **11 Claims**



A seal for a chamber having an opening therein and adapted to hold a fluid having a fluid pressure differential with respect to atmospheric pressure is disclosed. The seal surrounds the opening. A workpiece is movable relative to the opening and defines with the seal a controlled gap of limited width as the workpiece moves relative to the opening in the work chamber. The controlled gap is operable to retard the differential flow of the fluid through the controlled gap, to create turbulence in the fluid in the controlled gap, and to build up a back pressure of the fluid in the work chamber so that the differential flow of the fluid through the controlled gap is substantially minimized and the fluid pressure within the work chamber remains substantially constant during the movement of the workpiece relative to the opening.

# CHEMICAL

### 3,759,663
## PROCESS FOR DYEING POLYESTER FABRICS WITH DISAZO DYESTUFFS

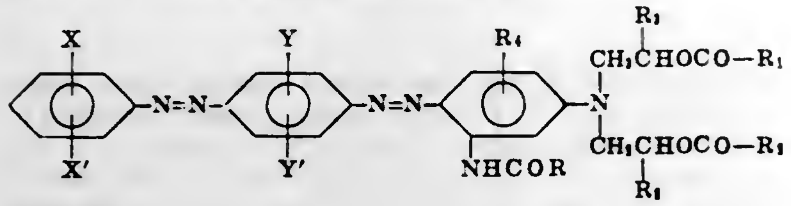
**Edgar E. Renfrew and Dominic A. Zanella, Lock Haven, Pa., assignors to American Aniline Products, Inc., Lock Haven, Pa.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 860,040, Sept. 22, 1969. This application Feb. 28, 1972, Ser. No. 230,143**

**Int. Cl. D06p** *1/02*

**U.S. Cl. 8—41 C** **4 Claims**

Process for dyeing polyester material, particularly polyethylene terephthalate, with a disazo compound made by coupling an appropriate diazotized aminoazobenzene into an esterified 3-bis(2-hydroxyalkyl)aminoacylanilide, such as 3-bis(hydroxyethyl)amino-4-ethoxyacetanilide. The diazo compounds have the formula



wherein

- each of X and X' is independently hydrogen, nitro, chloro, cyano, trifluoromethyl, lower alkoxy, sulfamyl, lower alkyl sulfamyl, di(lower alkyl) sulfamyl, lower alkyl sulfonyl, carbamyl, n-lower alkyl carbamyl, or N,N-di (lower alkyl)carbamyl;
- each of Y and Y' is independently hydrogen, chloro, lower alkyl, lower alkoxy or —NHCO-(lower alkyl);
- R is lower alkyl, phenyl or tolyl;
- $R_1$ is phenyl, lower alkylphenyl, lower alkoxyphenyl, chlorophenyl or bromophenyl;
- $R_2$ is phenyl, lower alkylphenyl, lower alkoxyphenyl, chlorophenyl, bromophenyl, lower alkyl or chloro-lower alkyl;
- $R_3$ is hydrogen or methyl; and
- $R_4$ is hydrogen, chloro, lower alkyl or lower alkoxy.

The disazo compounds, when appropriately dispersed, produce dyeings on polyester fabrics with excellent substantivity and sublimation fastness and good fastness to light. They are applied to polyesters by carrier dyeing, pressure dyeing, and thermofixation techniques.

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### 3,759,664
## DURABLE TEXTILE SOIL RELEASE AGENT

**Richard L. Doerr, Orange, and Stephen Fuzesi, Hamden, Conn., assignors to Olin Corporation**

**No Drawing. Original application May 4, 1970, Ser. No. 34,606, now Patent No. 3,692,880. Divided and this application Apr. 28, 1972, Ser. No. 248,492**

**Int. Cl. D06m** *15/10, 15/58, 15/62*

**U.S. Cl. 8—115.6** **5 Claims**

A novel phosphated polyol is provided which is used in conjunction with aminoplast resins to provide improved soil release properties to cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

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### 3,759,665
## INCREASING THE CATIONIC DYEABILITY OF ACRYLIC SHAPED ARTICLES

**Alex S. Forschirm, Hiawatha, N.J., assignor to Celanese Corporation, New York, N.Y.**

**No Drawing. Filed Oct. 14, 1971, Ser. No. 189,366**

**Int. Cl. D06p** *1/86, 3/76*

**U.S. Cl. 8—172** **8 Claims**

An improved dyebath composition and an improved process for dyeing an acrylic shaped article (e.g., fiber or film) are disclosed. The shaped article is contacted with an aqueous dyebath composition of a cationic dye containing a minor quantity of methyl cyanide sufficient to promote the dyeing of an acrylic fibrous material.

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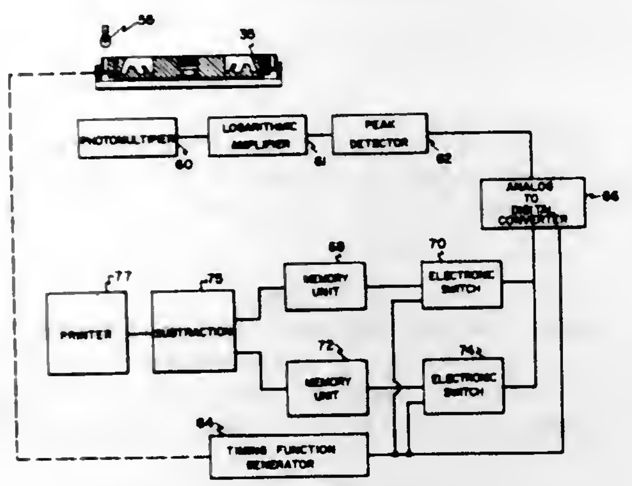
### 3,759,666
## ANALYTICAL PROCESS

**Herbert N. Hill, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed Dec. 9, 1971, Ser. No. 206,379**

**Int. Cl. B04b** *5/12;* **G01n** *1/10, 21/00*

**U.S. Cl. 23—230 B** **1 Claim**



Known rotating spectrophotometers have a series of cuvets arranged concentrically around a horizontally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvets. As each cuvet passes a light source, the absorbance of each individual sample is detected and measured photometrically and an electrical signal provided which is indicative of the extent of reaction between reagent and sample. To obtain an accurate measurement of the extent of reaction a reference electrical signal is required. This is provided in the present invention by rotating the cuvet containing disc at a speed such that an initial electrical signal is obtained before there is any substantial reaction between reagent and sample in the cuvets.

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### 3,759,667
## APPARATUS FOR ASPIRATING PRECISE VOLUMES OF FLUID SAMPLE

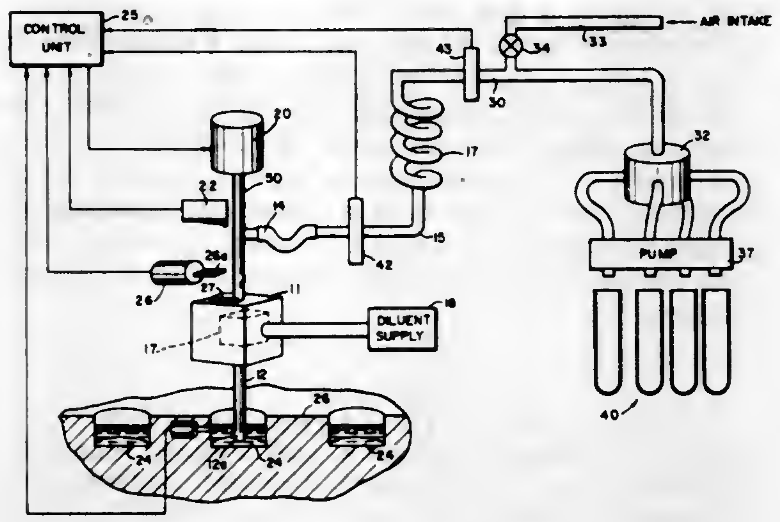
**John D. Bannister, Dover, Mass., Frederick L. Coller, Ann Arbor, Mich., and Italo J. De Santis, Medway, Mass., assignors to Damon Corporation, Needham Heights, Mass.**

**Filed Oct. 22, 1971, Ser. No. 191,722**

**Int. Cl. G01n** *1/14, 1/16*

**U.S. Cl. 23—259** **9 Claims**

Apparatus for aspirating a predetermined volume of liquid sample from a container into an intake conduit, together with a quantity of diluent having predetermined volumetric ratio to the sample volume. A vertically reciprocable sampling probe is programmed to aspirate sample until the leading edge of the sample reaches a sensor in the conduit defining the precise volume. The sampler is then reciprocated into a diluent chamber and aspirates diluent for a preset time. Thereafter the sampler moves into air and aspirates an air volume equal to the sample volume. The probe is then reinserted in the diluent, again for the preset time and thereafter again aspirates the precise volume of air. In the final step the sampler is again inserted into the diluent chamber to aspirate diluent until the leading edge of the sample reaches a second sensor positioned to define a volume between it and the sampler orifice, such that the diluent aspirated has a known ratio to the precise volume of sample. A downstream air intake is actuated each time the sampler is moved into air to insert sufficient air ahead of the fluid column to prevent undue acceleration of the fluids in the conduit.



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### 3,759,668
## AFTER-BURNER FOR RE-COMBUSTION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

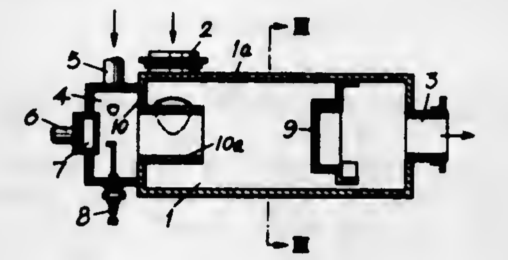
**Mitsumasa Yamada and Hiroshi Sawada, Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan**

**Filed Oct. 14, 1971, Ser. No. 189,172**

**Claims priority, application Japan, June 15, 1971 (utility model), 46/50,905**

**Int. Cl. F01n** *3/14*

**U.S. Cl. 23—277 C** **10 Claims**



An after-burner for re-combustion of unburnt components of exhaust gases of an internal combustion engine, comprising: a burner including a mouth for producing and spouting from said mouth a jet flame swirling about a longitudinal center line of said jet flame; a chamber associated with the burner for receiving said jet flame, a longitudinal center line of said chamber being parallel to said jet flame longitudinal center line, the chamber having an end opposite to the burner; means mounted in the chamber for introducing the exhaust gases into the chamber and inducing the exhaust gases to rotate round the jet flame; a device mounted in the chamber and confronting the mouth for dispersing the jet flame radially with respect to the chamber and thereby mixing the jet flame with the rotating exhaust gases to make a mixture thereof; and an outlet pipe mounted on the opposite end. The unburnt components are burnt within the chamber to clear the exhaust gases of the unburnt components and then the cleared exhaust gases are discharged from the chamber through the outlet pipe.

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### 3,759,669
## APPARATUS FOR CONTACTING LIQUID AND SOLID PARTICLES

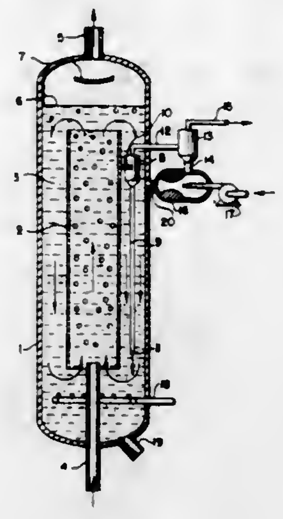
**Stuart W. Aaron and Johannes W. F. M. Lemmers, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.**

**Filed Nov. 16, 1970, Ser. No. 89,967**

**Claims priority, application Netherlands, Nov. 24, 1969, 6917651**

**Int. Cl. B01j** *9/08;* **C10g** *23/06*

**U.S. Cl. 23—288 E** **2 Claims**



An apparatus and a process wherein a solid-liquid slurry is circulated in a vertical reactor by means of gas lift action in a centrally located tube inside the reactor. One or more hydrocyclones are used to clarify liquid product leaving the reactor and to return slurry solids to the reactor. The process is particularly desirable for catalytically desulfuizing residual oils in the presence of hydrogen.

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### 3,759,670
## INITIATING THE PULLING OF A CRYSTALLINE BODY FROM A MOLTEN STOCK

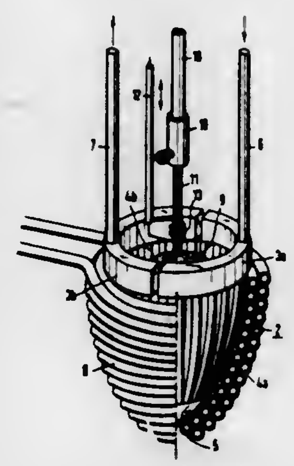
**Theodor Rummel, Hannover-Kirchrode, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Sept. 18, 1970, Ser. No. 73,304**

**Claims priority, application Germany, Sept. 24, 1969, P 19 48 194.8**

**Int. Cl. B01j** *17/18*

**U.S. Cl. 23—301 SP** **5 Claims**



A method and apparatus for pulling a crystalline body by a seed crystal fastened in a holder from a melting stock heated, in a cold coil crucible, at least to melting temperature. The method comprises heating the holder and one end of the seed crystal, moving the preheated zone to the other end of the seed crystal, approaching the heated end to the stock to be molten, whereby the latter is heated to a temperature at which it is conductive, and thereafter, heating the stock by the field issuing from the cold coil crucible.

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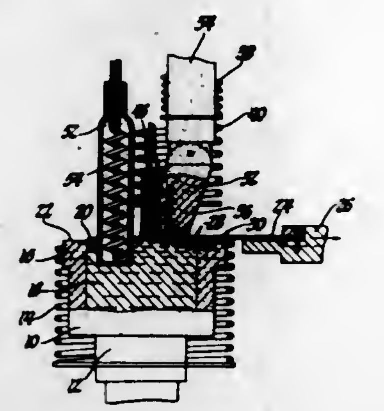
### 3,759,671
### HORIZONTAL GROWTH OF CRYSTAL RIBBONS

**Carl E. Bleil, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Original application Jan. 31, 1969, Ser. No. 795,561. Divided and this application Oct. 15, 1971, Ser. No. 189,699**
**Int. Cl. B01j** *17/18*
**U.S. Cl. 23—301 SP** **5 Claims**



A method and apparatus is described for horizontally pulling crystal ribbons from a melt parallel to the melt surface. The heat of crystallization is selectively removed from one end of a seed crystal by a heat absorbing means perpendicular to the melt surface. Means are provided to appropriately suppress net loss of the heat of fusion from the balance of the seed in contact with the melt to control the thickness of the resultant ribbon.

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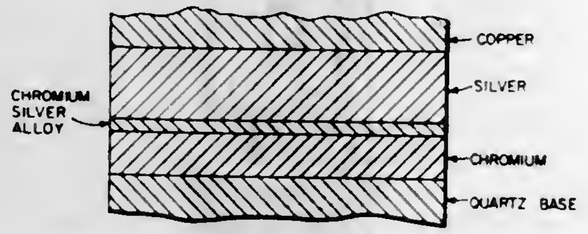
### 3,759,672
### STAR TRACKING RETICLES

**Wade O. Smith, Bowie, and Albert R. Toft, Edgewater, Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Original application Oct. 12, 1970, Ser. No. 80,029, now Patent No. 3,702,808, dated Nov. 14, 1972. Divided and this application Apr. 17, 1972, Ser. No. 244,440**
**Int. Cl. B32b** *15/04*
**U.S. Cl. 29—195 Y** **6 Claims**



A method for the production of reticles, particularly those for use in outer space, wherein the product is a quartz base coated with highly adherent layers of chromium, chromium-silver, and silver vacuum deposited through a mask, and then coated with an electrodeposit of copper from a copper sulfate solution followed by an electrodeposit of black chromium. The masks are produced by coating a beryllium-copper alloy substrate with a positive working photoresist, developing the photoresist according to a pattern to leave a positive mask, plating uncoated areas with gold, removing the photoresist, coating the substrate with a negative working photoresist, developing the negative working photoresist to expose the base metal of the pattern, and chemically etching the unplated side of the pattern to produce the mask. The mask produced is then used in the vacuum deposition of: (1) chromium metal on the surface of a quartz base to obtain a highly adherent quartz-chromium interface; (2) silver on the chromium deposit, during the final stage of chromium deposit, to produce a silver-chromium alloy layer; and (3) silver onto the surface of the alloy layer. The coated quartz base is then coated by electroplating utilizing an acid copper deposit followed by a black chromium electrodeposit to produce the product of the present invention.

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### 3,759,673
### COAL DESULFURIZATION PROCESS

**Charles M. Whitten, Columbia, and Vaughn Mansfield, Gallatin, Tenn., and Louis J. Petrovic, Sudbury, and Jagdish C. Agarwal, Concord, Mass., assignors to Peabody Coal Company**
**Filed Nov. 5, 1971, Ser. No. 196,098**
**Int. Cl. C10l** *9/02, 9/08*
**U.S. Cl. 44—1 R** **6 Claims**

Coal is treated in a reducing atmosphere in a fluid bed reactor to partially devolatilize it, remove all moisture, and remove some $H_2S$ and $SO_2$. The then charred coal is treated in a multi-stage contactor with hot gas composed of hydrogen and methane to remove most of the remaining sulfur.

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### 3,759,674
### GELLED ALCOHOLS

**Stanley J. Gregg, North Plainfield, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**
**No Drawing. Filed Mar. 8, 1972, Ser. No. 232,898**
**Int. Cl. C10l** *7/04*
**U.S. Cl. 44—7 C** **9 Claims**

Dispersions of certain ethylene-acrylic acid copolymers and amine emulsifiers in water form stable gels when admixed with alcohols.

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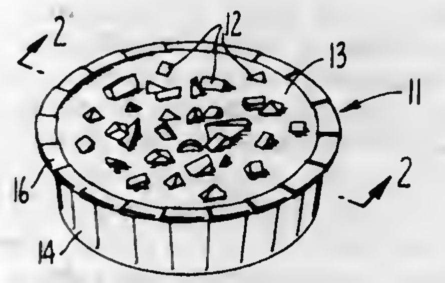
### 3,759,675
### FIRE-KINDLING DEVICE AND METHOD OF USING SAME

**Milton Lazarus, 2156 Carlmont Drive, Belmont, Calif. 94002, and Nels B. Larsen, 401 Pine Knoll Drive, Mannor #3, Walnut Creek, Calif. 94529**
**Filed Aug. 2, 1971, Ser. No. 168,171**
**Int. Cl. C10l** *11/00*
**U.S. Cl. 44—38** **10 Claims**



A fire-kindling device comprising an open-top waxed paper container filled with particles of plastic material embedded in a wax binder, with the lip of the container serving as wick means for easy ignition of the wax. A method is also provided in which a fire is kindled by assembling the fuel to be ignited in juxtaposition to a starter composition containing wax and a plastic material such as polymethylmethacrylate, and igniting the wax, whereby the wax will burn and cause ignition of the plastic material which will burn hotter and ignite the fuel with a minimum of smoke and odor.

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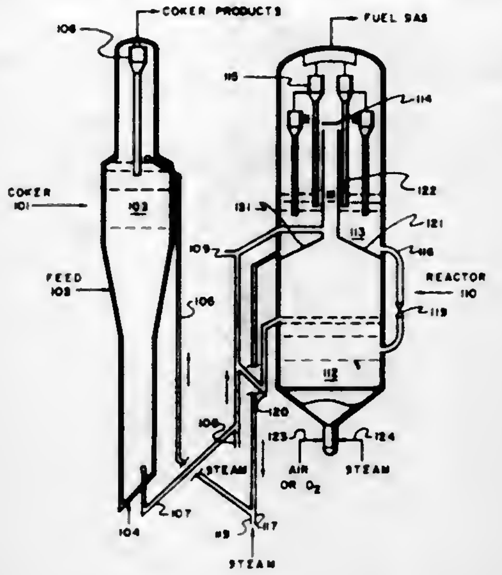
### 3,759,676
### INTEGRATED FLUID COKING/GASIFICATION PROCESS

**Gerard C. Lahn, Parsippany, N.J., assignor to Esso Research and Engineering Company**
**Filed Jan. 22, 1971, Ser. No. 108,709**
**Int. Cl. C10g** *9/28;* **C10j** *3/00, 3/20*
**U.S. Cl. 48—206** **7 Claims**



A heavy carbonaceous material such as petroleum residuum is converted to distillate and gaseous products by an integrated process consisting of coking said heavy carbonaceous material in a conventional fluid coking reactor, and gasifying the coke produced in an improved three zone gasifying reactor.

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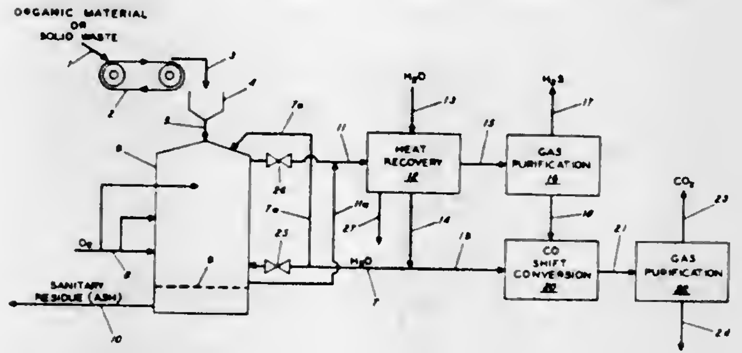
### 3,759,677
### CATALYTIC SYNTHESIS GAS MANUFACTURE

**Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.**
**Filed May 5, 1970, Ser. No. 34,834**
**Int. Cl. C10j** *3/00*
***U.S. Cl. 48—209*** **13 Claims**



A process for producing synthesis gas which comprises contacting an organic feed material, containing hydrogen and at least 10 weight percent oxygen and containing less than five weight percent sulfur, with steam in the presence of an alkali metal carbonate catalyst at an elevated temperature. Preferably the feed material is solid waste material, most preferably solid municipal waste.

### 3,759,678
### REFORMER CATALYST

**Bertrand L. Chamberland, Storrs, Conn., and Eric J. Hoag, Charleston, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Apr. 8, 1971, Ser. No. 132,608**
**Int. Cl. C01b** *2/14*
**U.S. Cl. 48—214** **1 Claim**

Nickel catalysts, often supported on alumina, are used in primary and secondary reformers for the steam reforming of hydrocarbons. If such catalysts contain less than 30 p.p.m. maximum sodium or potassium or both, the problem of the fouling of waste heat boilers is alleviated.

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### 3,759,679
### PRODUCTION OF METHANE-RICH FUEL GAS

**William F. Franz, Gardiner, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Filed July 23, 1971, Ser. No. 165,713**
**Int. Cl. C01b** *2/16;* **C07c** *9/04*
**U.S. Cl. 48—213** **9 Claims**

A liquid hydrocarbon fuel is reacted with hydrogen and $H_2O$ over a nickel oxide-chromium oxide catalyst at high pressure to produce a methane-rich fuel gas. Preferably, hydrogen in the product gas is recovered and totally recycled to the reaction zone. Optionally, $CO_2$ may be removed from the product gas producing substantially pure methane.

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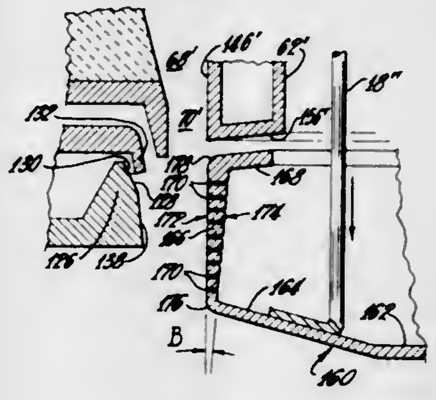
### 3,759,680
### METHOD AND APPARATUS FOR PRODUCING FIBERS FROM GLASS

**Dale Kleist, St. Louisville, and Carl S. Buchanan, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation**
**Filed Sept. 14, 1970, Ser. No. 71,707**
**Int. Cl. C03b** *37/04, 37/06*
**U.S. Cl. 65—6** **12 Claims**



The disclosure embraces a method of and apparatus for producing fibers from heat-softenable materials, particularly glass, by centrifuging streams of heat-softened glass delivered through passages of equal diameters, differing lengths and differing flow resistances in the peripheral wall of a rotating spinner into a gaseous attenuating blast and establishing high temperature and other environmental conditions achieving relationship between glass flow of the streams and heat and attenuating energy at different regions with respect to the spinner wall to control the range of size or diameters of the fibers attenuated by the blast and for producing fibers of substantially uniform diameters within a comparatively narrow size range.

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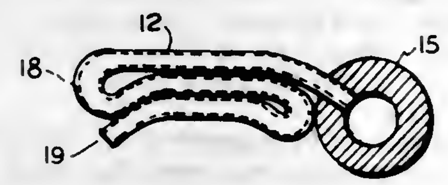
### 3,759,681
### COOLING MEANS FOR FORMING GLASS FIBERS

**Stanley K. Russell, Hermitage, Tenn., assignor to Ferro Corporation, Cleveland, Ohio**
**Filed July 11, 1972, Ser. No. 270,842**
**Int. Cl. C03b** *37/02*
**U.S. Cl. 65—12** **4 Claims**

In an apparatus for the manufacture of glass monofilaments from a feeder of molten glass, a series of open ended, fluid-conductive fins, with a source of fluid connected thereto, whereby a liquid coolant, preferably water, continuously fed to said fins under pressure, passes through them and is discharged from said open ends as vapor, due to the heat of the monofilaments being drawn from between said fins, to thereby provide a cooling effect in the area of said monofilaments.



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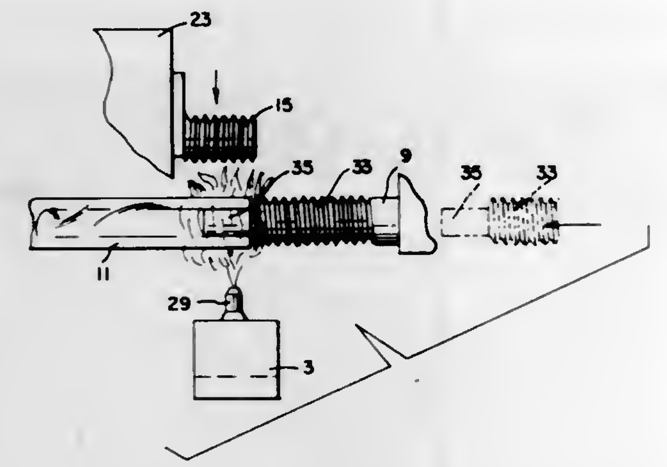
### 3,759,682
## METHOD OF AND SYSTEM FOR THREADING GLASS CONNECTORS AND CONNECTOR

**John Wayne Tiley, Hatboro, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Filed Dec. 13, 1971, Ser. No. 207,146**
**Int. Cl. C03b** *23/04*
**U.S. Cl. 65—109** **3 Claims**



The disclosure relates to a method of and system for threading glass connectors wherein the glass to be threaded is placed in a glass lathe and rotated, a mandrel supporting the end of the glass member to be threaded. The mandrel includes a threaded portion thereon for mating with a threading member which forms the threads on the glass. The threading member forms grooves in the glass between threads having a small radius, the threads also having a small radius, thereby minimizing the tensile strength loss of the glass relative to prior art methods of threading glass.

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### 3,759,683
## PROCESS FOR THE MANUFACTURE OF MULTI-COMPONENT SUBSTANCES

**Helmut Dislich, Mainz-Gonsenheim, Paul Hinz, Mainz-Mombach, and Reinhard Kaufmann, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany**
**No Drawing. Filed July 30, 1970, Ser. No. 59,669**
**Claims priority, application Germany, Aug. 13, 1969, P 19 41 191.1**
**Int. Cl. C03b** *5/16;* **C03c** *13/00;* **C03g** *3/22*
**U.S. Cl. 65—134** **25 Claims**

Glassy, crystalline, or glassy crystalline oxidic multicomponent substances, which are transparent, are produced without going through a molten phase. An alkali or alkaline earth metal compound and at least one other metal compound, both dissolved in an organic solvent, are reacted in the solvent, the solvent is evaporated to form a precipitate, and the precipitate is heated to form the multi-component substance.

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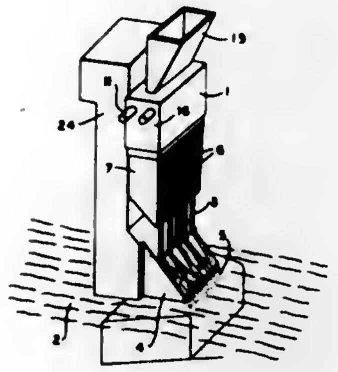
### 3,759,684
## APPARATUS FOR MODIFYING MOLTEN GLASS BY AN ADDITIVE

**German Artigas Gimenez, Aviles, Spain, assignor to Saint-Gobain, Neuilly-sur-Seine, France**
**Original application Feb. 24, 1970, Ser. No. 13,386. Divided and this application Oct. 12, 1971, Ser. No. 188,336**
**Claims priority, application France, Feb. 21, 1969, 4,440**
**Int. Cl. C03b** *13/10, 3/00*
**U.S. Cl. 65—145** **18 Claims**



Apparatus for introducing an additive to a width of glass moving through an enclosure at a temperature at which the glass is molten comprising chamber means within the enclosure, means to supply solid, particulate additive to the chamber means, support means for additive to heat and atmosphere of the enclosure beneath the chamber means and above the glass, and means to combine melt from the support means into a thin ribbon and to put the ribbon into the width of moving glass.

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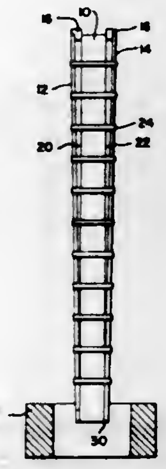
### 3,759,685
## APPARATUS FOR CLADDING POLYGONAL CROSS-SECTION LASER RODS

**Amadee D. Marino and Clifford W. Ask, Sr., Woodstock, Mass., assignors to American Optical Corporation, Southbridge, Mass.**
**Original application Feb. 16, 1971, Ser. No. 115,495. Divided and this application Sept. 15, 1972, Ser. No. 289,493**
**Int. Cl. C03b** *23/20*
**U.S. Cl. 65—156** **5 Claims**



A side of a polygonal cross-sectioned glass laser rod core may be clad by applying a slab of a suitable cladding glass material thereto. The fusing of the slab to the core without the formation of entrapped gas bubbles therebetween is accomplished by allowing the slab to rest in essentially line contact with the side of the core at the end adjacent a suitable drawing furnace. The other end of the slab is spaced away from the core material. Means is provided for urging the slab of cladding material toward the side of the core such that as the core and cladding material are drawn within the drawing furnace, the line of contact between the core and cladding gradually traverses the length of the core and cladding thereby forcing any gas out of the space which exists between the core and cladding to provide a bubble-free interface in the resulting clad glass laser rod.

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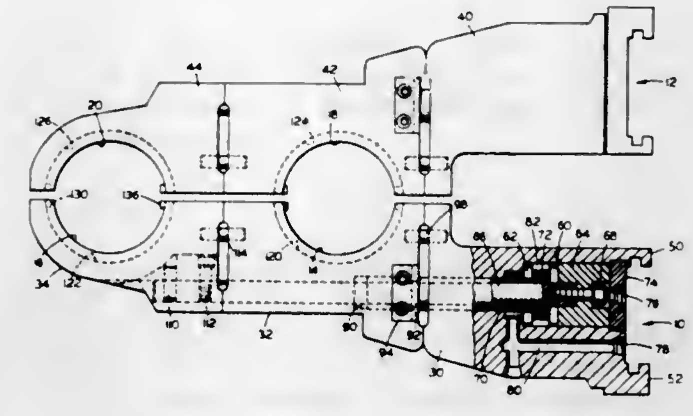
### 3,759,686
## NECK RING ARMS FOR GLASSWARE FORMING MACHINE

**Albert J. Trahan, Vernon, Conn., assignor to Emhart Corporation, Bloomfield, Conn.**
**Filed Aug. 13, 1971, Ser. No. 171,599**
**Int. Cl. C03b** *9/00*
**U.S. Cl. 65—167** **18 Claims**



A pair of complementary neck ring arms are disclosed for use in a glassware forming machine having a blank mold in which a parison is formed and a blow mold to which the parison is transferred while being held in a pair of neck ring segments supported respectively in the arms. The arms have recesses for accommodating one or more pairs of neck ring segments so that single, double, triple, or other multiple-gob individual section (IS) glassware forming machines may utilize the arms. The arms are comprised of several extendible sections that permit the spacing between the blank molds which form the parisons on one side of the machine to be different from the spacing between blow molds which receive the parisons at the other side of the machine and also allow the pivot point about which the support arms rotate during transfer between the two sides of the machine to be offset from a point midway between the two sides.

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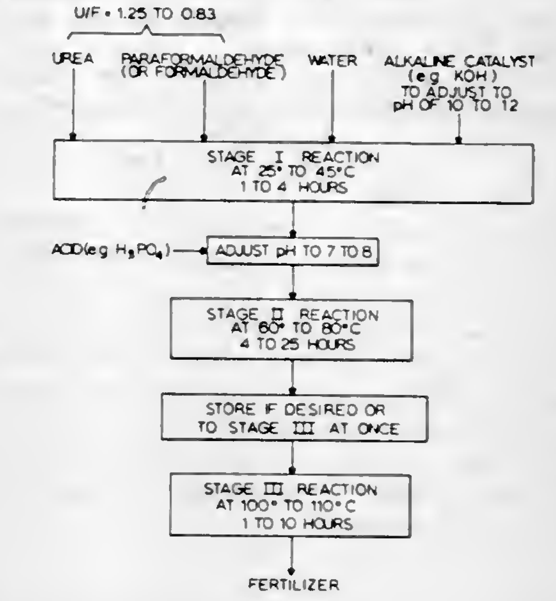
### 3,759,687
## METHOD FOR MANUFACTURE OF UREA-FORMALDEHYDE FERTILIZER

**Albert Nobell, P.O. Box 155, Coloma, Calif. 95613**
**Filed Apr. 30, 1971, Ser. No. 138,941**
**Int. Cl. C05c** *9/00*
**U.S. Cl. 71—28** **9 Claims**

An improved urea-formaldehyde fertilizer is made by reacting at 25° to 45° C. for one to four hours an alkaline aqueous mixture at pH 10 to 12 of urea and paraformaldehyde or formaldehyde in a urea-to-formaldehyde mol ratio of about 1.25 to about 0.83. Then the pH is adjusted to between 7 and 8, and the product is heated to between 60° and 80° C. for from 4 to 25 hours. Finally, in the third stage of treatment the product is heated at 100° to 110° C. for from 1 to 10 hours. The resulting fertilizer is exceptionally high in cold-water-insoluble nitrogen and has a high Availability Index.


U/F = 1.25 TO 0.83
UREA
PARAFORMALDEHYDE (OR FORMALDEHYDE)
WATER
ALKALINE CATALYST (e.g. KOH) TO ADJUST TO pH OF 10 TO 12
STAGE I REACTION AT 25° TO 45°C 1 TO 4 HOURS
ACID (e.g. H3PO4)
ADJUST pH TO 7 TO 8
STAGE II REACTION AT 60° TO 80°C 4 TO 25 HOURS
STORE IF DESIRED OR TO STAGE III AT ONCE
STAGE III REACTION AT 100° TO 110°C 1 TO 10 HOURS
FERTILIZER

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### 3,759,688
## METHOD FOR DEFOLIATING COTTON PLANTS USING PHOSPHATE ESTERS OF 3-HYDROXY-1,2,5 - THIADIAZOLES AND DERIVATIVES THEREOF

**Charles Downing, Metuchen, N.J., assignor to Mobil Oil Corporation**
**No Drawing. Filed Sept. 27, 1971, Ser. No. 184,186**
**Int. Cl. A01n** *9/22*
**U.S. Cl. 71—71** **2 Claims**

Phosphate, phosphorothionate, phosphonate and phosphonothionate esters of 3-hydroxy-1,2,5-thiadiazoles and its substituted derivatives are desiccant defoliants for cotton when applied thereto.

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### 3,759,689
## METHOD FOR REGULATING PLANT GROWTH

**Howard A. Hageman, Southbury, Arthur H. Gevirtz, New Haven, and Bogislav von Schmeling, Hamden, Conn., assignors to Uniroyal, Inc., New York, N.Y.**
**No Drawing. Original application May 25, 1967, Ser. No. 641,161, now Patent No. 3,632,646. Divided and this application May 21, 1971, Ser. No. 145,970**
**Int. Cl. A01n** *5/00*
**U.S. Cl. 71—76** **7 Claims**

Substituted succinamic amides and anilides are used to regulate the growth of plants.

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### 3,759,690
## HERBICIDAL COMPOSITIONS CONTAINING 2-CHLORO - 4 - TERT.BUTYLAMINO-6-CYCLOPROPYLAMINO-s-TRIAZINE AND METHOD OF USE THEREFOR

**Dagmar Berrer, Riehen, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**
**No Drawing. Original application Mar. 17, 1969, Ser. No. 807,915, now Patent No. 3,629,257, dated Dec. 21, 1971. Divided and this application Oct. 28, 1970, Ser. No. 84,878**
**Claims priority, application Switzerland, Mar. 20, 1968, 4,147/68; Feb. 27, 1969, 2,946/69**
**Int. Cl. A01n** *9/22*
**U.S. Cl. 71—93** **2 Claims**

2 - chloro - 4 - tert.butylamino-6-cyclopropylamino-s-triazine is disclosed as a novel compound useful for controlling aquatic weeds and also weeds and wild grasses in cotton plantations. Compositions containing the same as active ingredient and processes for the control of aquatic weeds and also weeds and wild grasses in cotton plantations are also described.

### 3,759,691
## METHOD FOR PRODUCING INTERMETALLIC CONNECTIONS

**Rozica Loitzl, Wettingen, and Claus Schueler, Widen, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland**

**No Drawing. Filed Sept. 15, 1971, Ser. No. 180,862**
**Claims priority, application Switzerland, Sept. 23, 1970, 14,056/70**
**Int. Cl. H01f** *1/06, 1/08*
**U.S. Cl. 75—.5 BA** **5 Claims**

Metal compounds are produced by reacting the initially solid phase metal components, preferably in the form of relatively coarse, intermixed granules, in the presence of a transport substance, such as a halogen, in a sealed system, whereby the reaction temperature and/or the reaction pressure as well as the stoichiometric ratios of the components participating in the reaction are selected so that the resulting compound assumes its most stable thermodynamic state at said reaction temperature and/or reaction pressure.

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### 3,759,692
## NICKEL BASE BONDING POWDER

**John W. Zelahy, Cincinnati, Ohio, assignor to General Electric Company**

**No Drawing. Filed Oct. 4, 1971, Ser. No. 186,490**
**Int. Cl. B22f** *9/00;* **C22c** *19/00*
**U.S. Cl. 75—.5 BA** **4 Claims**

A nickel base, boron including bonding powder for use in bonding alloy members is provided with improved toughness and ductility through the elimination of the boride former and precipitation strengthener titanium and the boride formers and solution strengtheners molybdenum and tungsten, which for some applications have been included in age hardenable bonding powders. Further melting point reduction can be obtained through the addition of elements selected from tantalum and hafnium in the sum of 2–4 weight percent. A unique joint produced in an article between alloy members using such bonding powder is characterized by a recrystallized, nonplanar microstructure including predominantly discrete, dispersed borides rather than a continuous planar boride phase.

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### 3,759,693
## METHOD OF PRODUCING REDUCED IRON ORE PELLETS

**Kazuo Kunii, Kobe, Reijiro Nishida, Amagasaki, Thoru Tanimura, Kobe, Masaji Kitamura, Nishinomiya, and Shinya Okamoto, Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan**

**Filed Aug. 5, 1970, Ser. No. 61,324**
**Claims priority, application Japan, Aug. 18, 1969, 44/65,227**
**Int. Cl. C21b** *1/08, 13/00, 13/08*
**U.S. Cl. 75—3** **4 Claims**

Reduced iron ore pellets have been produced by a method which combines the use of internal and external solid reductants, and is carried out in conjunction with a grate kiln process. Green pellets which are globules of fine ground ore, binders, and internally applied solid reductants, are pelletized. These pellets are preheated and hardened on a travelling grate using waste gases from a rotary kiln. The preheated and hardened pellets are discharged into the rotary kiln and external solid reductants are simultaneously charged, so that the pellets may be subjected to the combined action of the internally and externally applied solid reductants. The pellets have good physical properties and sufficiently high crushing strength to permit them to withstand destructive and abrasive actions to which they are subjected during operation. The present method is economically effective to produce highly metallized pellets on a mass production basis.

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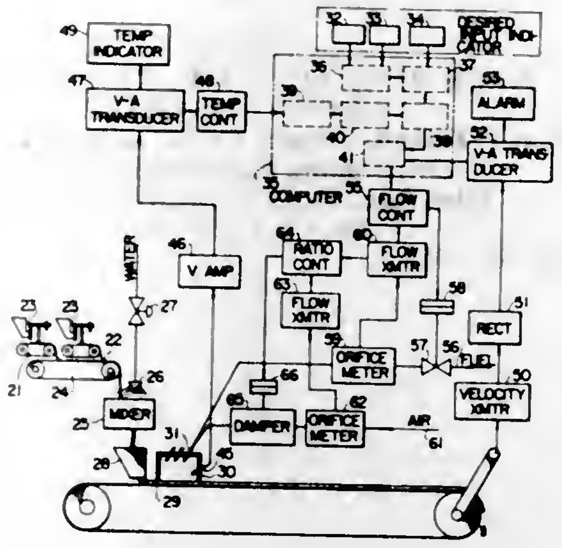
### 3,759,694
## METHOD FOR SINTERING TO-BE-SINTERED MATERIAL

**Ikumi Koga, Akira Kobayashi, and Tsuneo Ikeda, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan**

**Continuation-in-part of abandoned application Ser. No. 846,090, July 30, 1969. This application Jan. 6, 1972, Ser. No. 215,731**
**Claims priority, application Japan, Aug. 1, 1968, 43/54,862**
**Int. Cl. C21b** *1/00*
**U.S. Cl. 75—5** **4 Claims**



A method for sintering the to-be-sintered material carried on the moving fire grate while a forced draught is given downward thereto, so as to obtain a durable surface of the sinter bed, by measuring the surface temperature of the sinter bed after it has passed through the igniting furnace and adjusting the heat source of the igniting furnace and other factors, to control the surface temperature of said sinter bed in the igniting furnace.

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### 3,759,695
## PROCESS FOR MAKING FERROSILICON

**James H. Downing, Clarence, N.Y., assignor to Union Carbide Corporation**

**No Drawing. Filed Sept. 25, 1967, Ser. No. 670,401**
**Int. Cl. C22d** *7/00;* **C21c** *5/52;* **C21b** *1/08*
**U.S. Cl. 75—10** **2 Claims**

An electric furnace submerged arc process for making ferrosilicon by reacting agglomerates of finely divided carbon, iron ore and silica.

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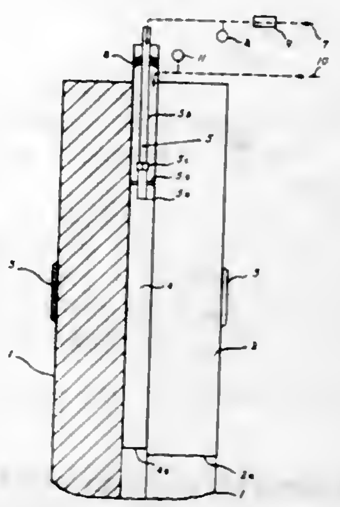
### 3,759,696
## METHOD FOR THE INTRODUCTION OF HYDROCARBON OILS INTO AN ELECTRIC SUBMERGED ARC FURNACE

**Einar Falkum, Porsgrunn, and Ivar Brunborg, Oslo, Norway, assignors to Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway**

**Filed Aug. 11, 1969, Ser. No. 849,045**
**Int. Cl. C21c** *5/52;* **C22d** *7/00;* **H05b** *7/06*
**U.S. Cl. 75—11** **6 Claims**

A method for the introduction of hydrocarbon oils to the hot zones of a submerged arc reduction furnace through a substantially vertical canal in the electrode. The oil is mixed with disintegrated solid reactants to be used in the metallurgical process of the furnace. The mixture obtained is fed through a conduit which at least with its lower end projects into the vertical canal. The lower end opening of the conduit is substantially smaller than the cross section of the canal. The mixture is allowed to fall from the lower end of the conduit to reach

the interior of the furnace after a free fall through the canal, and a gas blows downward through the canal. A hollow electrode is used having a feed spout provided centrally within the vertical canal and above the high temperature region of the electrode, the outlet opening of the spout being substantially smaller than the cross section of the canal of the electrode, and a conduit connects the spout with a source of the material to be fed through the spout.



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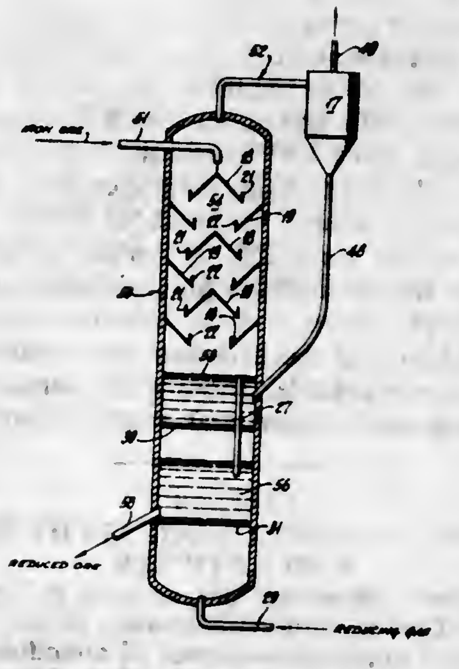
### 3,759,697
## IRON ORE REDUCTION PROCESS

**William J. Metrailler and Robert C. W. Welch, Baton Rouge, La., assignors to Esso Research and Engineering Company**

**Filed Sept. 30, 1970, Ser. No. 76,808**
**Int. Cl. C21b** *13/14*
**U.S. Cl. 75—26** **8 Claims**



The direct reduction of iron ore is improved by passing the ore downwardly through an initial non-fluidized or hindered-fall reduction zone in countercurrent contact with reducing gas to partially reduce the ore to wustite. The wustite produced is immediately added to a ferrous reduction zone in which the ore is fluidized and reduced to a highly metallized material. The process eliminates the need for an ore preheater.

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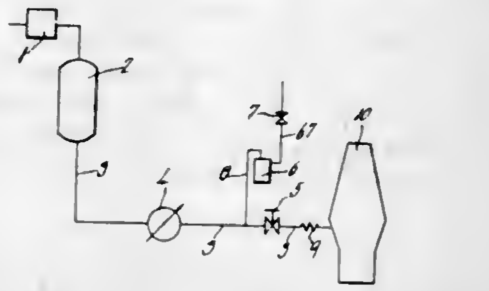
### 3,759,698
## METHOD OF BLOWING REDUCING GAS INTO A BLAST FURNACE

**Kazuo Omori, Yoshiaki Hara, and Masaaki Iguchi, Himeji-shi, Japan, assignors to Fuji Iron & Steel Co., Ltd., Tokyo, Japan**

**Filed Nov. 13, 1969, Ser. No. 876,535**
**Claims priority, application Japan, Nov. 20, 1968, 43/85,013, 43/85,014; Feb. 20, 1969, 44/12,867, 44/12,868, 44/8,845**
**Int. Cl. C22b** *5/00*
**U.S. Cl. 75—42** **6 Claims**



Method for blowing a reducing gas into a blast furnace in which the reducing gas is produced in a reducing gas generator, supplying gaseous materials into the reducing gas generator under specific conditions with the temperature of the produced gas controlled and the temperature-controlled gas being blown in the blast furnace.

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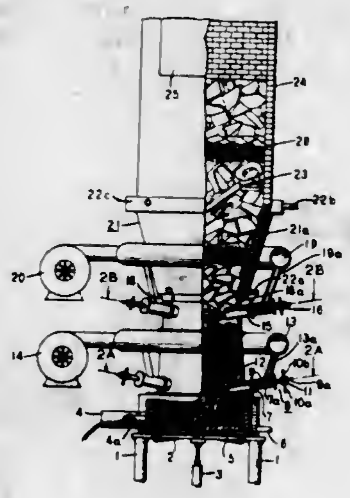
### 3,759,699
## PROCESS FOR MELTING SCRAP WITH A PLURALITY OF OPPOSITELY DIRECTED HEATING MEANS

**Lewis J. Geiger, Jr., Edison, and James W. Estes, Piscataway, N.J., assignors to Airco, Inc., New York, N.Y.**

**Original application Aug. 11, 1967, Ser. No. 659,946, now Patent No. 3,603,571, dated Sept. 7, 1971. Divided and this application Apr. 21, 1971, Ser. No. 136,184**
**Int. Cl. C21c** *1/02*
**U.S. Cl. 75—43** **6 Claims**



In a shaft furnace, method for melting low density metallic scrap. Burners and/or tuyeres are located at two different levels in the body portion of the furnace. The charge is preheated by hot gases rising in the furnace stack, and melted at the upper burner level. As the molten metal trickles down over a support bed, which may either be coke, other type of carbon, or a refractory material, it is superheated to the desired spout temperature, and to provide a product of the desired analysis. A feature is the configuration of burners which imposes a swirling motion on gases entering the furnace.

### 3,759,700
### PROCESS OF REFINING METAL MELTS BY SUPERSONIC OXYGEN BLOW

**Arnulf Diener, Dortmund, and Horst Kutscher, Dortmund-Berghofen, Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany**
**Filed Jan. 22, 1970, Ser. No. 4,917**
**Claims priority, application Germany, Jan. 20, 1969, P 19 04 442.9**
**Int. Cl. C21c** *7/00*
**U.S. Cl. 75—60** **2 Claims**

In a process of refining metal melts, particularly iron melts and steel melts, oxygen is blown at supersonic velocity from an oxygen lance, preferably fitted with a Laval nozzle, onto the surface of the melt which is contained in a vacuum chamber under greatly reduced pressure. The oxygen jet must be in the form of a cohesive stream of oxygen which substantially wholly impinges on the surface of the melt in the vacuum chamber without first breaking up and being dispersed in the chamber.

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### 3,759,701
### METHOD AND A DEVICE FOR SLAG-REMOVAL

**Masashi Kawana, Makoto Saegusa, Kenzo Ohsugi, and Naohiro Nohara, Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan**
**Filed June 22, 1970, Ser. No. 48,110**
**Claims priority, application Japan, June 22, 1970, 45/53,076**
**Int. Cl. C21c** *7/00*
**U.S. Cl. 75—61** **5 Claims**

A device, as well as a method, for easy and complete removal of slag from a molten metal, which device consists of a plate member fitting in the top of a vessel containing the molten metal and a hole bored through the plate member. The shape of the bottom surface and the apparent specific gravity of the plate member are such that the slag is collected to the hole as the plate member is placed on the molten metal, for ensuring separation thereof.

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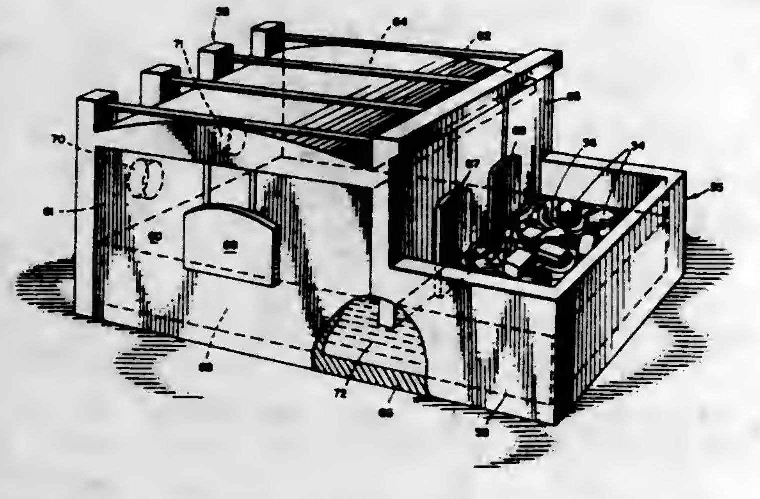
### 3,759,702
### METHOD OF MELTING ALUMINUM

**Edwin M. Horak, Skokie, Ill., assignor to Chemetron Corporation, Chicago, Ill.**
**Continuation-in-part of application Ser. No. 17,340, Mar. 6, 1970, which is a continuation of application Ser. No. 545,946, Apr. 28, 1966, both now abandoned. This application Apr. 7, 1971, Ser. No. 132,142**
**Int. Cl. C22b** *7/00, 21/00*
**U.S. Cl. 75—63** **5 Claims**



Method of producing aluminum alloy from scrap aluminum which comprises melting aluminum scrap in a forehearth in an unconfined atmosphere with a nonoxidizing oxy-fuel flame, retaining the melt in a furnace, adjusting the composition of the metal in the furnace to produce an aluminum alloy, and withdrawing substantially all of the aluminum alloy from the furnace.

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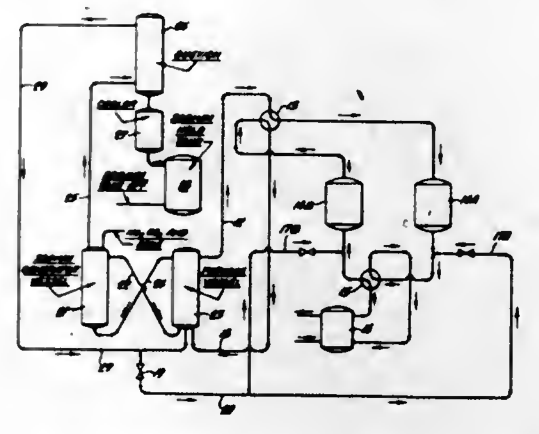
### 3,759,703
### USE OF THERMAL REGENERATOR PAIR IN SODIUM RECOVERY PROCESS

**Victor Manuel Chong, Media, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.**
**Filed Nov. 15, 1971, Ser. No. 198,819**
**Int. Cl. C22b** *27/00*
**U.S. Cl. 75—66** **3 Claims**



In a sodium generation system where sodium carbonate and coke are reacted to generate sodium, the improvement comprising the cyclic operation of a pair of thermal regenerators whereby in one half-cycle the $CO_2$ off gas from the sodium generator is passed through one of said regenerators having an internal temperature below the fusion point of sodium carbonate thereby trapping any volatilized carbonate in said regenerator, and in a second half-cycle, carbon monoxide is burned in said regenerator whereby the sodium compounds trapped in said regenerator are vaporized and returned with the exiting gases to said sodium generation system.

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### 3,759,704
### CORROSION-RESISTANT ALLOYS

**John H. Culling, Kirkwood, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.**
**No Drawing. Filed June 14, 1971, Ser. No. 153,026**
**Int. Cl. C22c** *37/00*
**U.S. Cl. 75—122** **10 Claims**

An alloy which is resistant to corrosion by both oxidizing and reducing sulfuric acid solutions over a wide range of acid strengths. The alloy consists of between about 36% and about 46% by weight nickel, between about 33% and about 42.06% by weight chromium, between about 2.94% and about 7.84% by weight molybdenum, between about 1.95% and about 5.18% by weight copper, up to about 0.12% by weight carbon, up to about 1.50% by weight silicon, up to about 2.50% by weight manganese, up to about 2% by weight titanium, up to about 4% by weight niobium plus tantalum, up to about 0.01% by weight boron, and the balance essentially iron. Most of the alloys of the invention are readily weldable, machinable, and workable. Those which cannot be readily worked are generally hard and wear-resistant.

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### 3,759,705
### CHROMIUM-CONTAINING ALLOY STEEL AND ARTICLES

**David L. Chalk, Monroe, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 748,971, July 31, 1968. This application June 10, 1971, Ser. No. 151,892**
**Int. Cl. C22c** *37/10, 39/02*
**U.S. Cl. 75—124** **9 Claims**

Alloy steel suited to elevated-temperature applications and sheet, strip, and the like fashioned of the same of ready formability and comparatively low cost containing about 16% to 19% chromium, silicon about .5% to about 1.6% to about 2.7% with the sum of the silicon and aluminum contents not exceeding 3.9%, carbon not over .1% and preferably less than .07%, manganese up to about 1% but preferably less than .50%, nitrogen up to about .05%, about .15% to about .8% titanium and/or about .15% to about 1.25% columbium, and remainder substantially all iron.

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### 3,759,706
### HIGH-TOUGHNESS ALLOY STEEL WITH IMPROVED WELDABILITY

**Brian Mravic and Lew F. Porter, Monroeville, Pa., assignors to the United States of America as represented by the Secretary of the Navy**
**No Drawing. Filed Feb. 23, 1972, Ser. No. 228,738**
**Int. Cl. C22c** *37/10, 39/20*
**U.S. Cl. 75—124** **2 Claims**

An alloy steel having 0.2% offset yield strengths greater than 100K s.i. in plates up to 6 inches thick, high toughness at temperatures down to —120° F., and a very low tendency toward HAZ cracking. The principal constituents of the steel come essentially within the following ranges:

| Elements: | Percentage by weight |
|---|---|
| C | 0.09–.013 |
| Mn | 0.60–0.85 |
| P (max.) | 0.015 |
| S (max.) | 0.020 |
| Si | 0.20–0.35 |
| Ni | 2.5–4.5 |
| Cr | 0.40–1.20 |
| Mo | 0.25–0.60 |
| V | 0.05–0.10 |
| Al | 0.015–0.035 |

Balance essentially iron.

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### 3,759,707
### TUNGSTEN CONTAINING ALLOY

**John Hockin and Carl H. Lund, Arlington Heights, and Wilbert P. Danesi, Deerfield, Ill., assignors to Martin Marietta Corporation, New York, N.Y.**
**Filed Jan. 14, 1971, Ser. No. 106,444**
**Int. Cl. C22c** *19/00*
**U.S. Cl. 75—171** **6 Claims**

A high temperature alloy containing nickel and, in percent by weight, about 5.5% aluminum, about 0.02% boron, about 0.18% carbon, about 10% cobalt, about 9.5% chromium, about 1.5% hafnium, about 2.5% molybdenum, about 4.0% titanium, about 1% vanadium, about 3.7% tungsten and about 0.06% zirconium.

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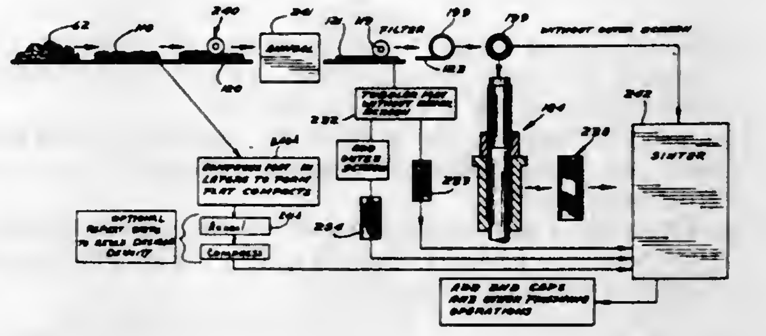
### 3,759,708
### METHOD OF MAKING METAL FIBRIL MATS AND REINFORCED METAL FIBRIL MATS

**Bertil J. Sundberg, Minneapolis, and Andreas Luksch, Deephaven, Minn., assignors to Brunswick Corporation**
**Continuation of application Ser. No. 853,548, Aug. 27, 1969, now Patent No. 3,705,021, which is a division of application Ser. No. 391,708, Aug. 24, 1964, now Patent No. 3,505,038. This application July 3, 1972, Ser. No. 268,537**
**Int. Cl. B22f** *3/12, 7/04*
**U.S. Cl. 75—208 R** **18 Claims**

A randomly oriented metal fibril mass is air laid and bound on at least one surface by a metal reinforcement. The porosity or density of the fibril mass may be preselected as desired. The fibrils in the mass and the fibrils adjacent the reinforcement can be attached at their contact points to strengthen the composite. A flat or tubular filter can be fashioned from the reinforcement.



The general method for making the reinforced fibril mass utilizes techniques which provide for, among other things, graded densities.

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### 3,759,709
### METHOD FOR PRODUCING POROUS METAL PRODUCTS

**Joseph J. Asbury, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission**
**No Drawing. Filed Apr. 28, 1970, Ser. No. 32,766**
**Int. Cl. B22f** *1/00*
**U.S. Cl. 75—211** **3 Claims**

Porous metal products having wall thicknesses of about 1.0 to about 6.0 inches and porosities in the range of about 20 to 70 percent with interconnecting pores are prepared by filling a receptacle with fine metal powder, heating the metal to a temperature slightly below the sintering temperature of the metal, maintaining the lower temperature for a duration sufficient to provide a temperature equilibrium throughout the powder, increasing the temperature of the metal to the sintering temperature thereof, and immediately thereafter decreasing the temperature to inhibit further sintering.

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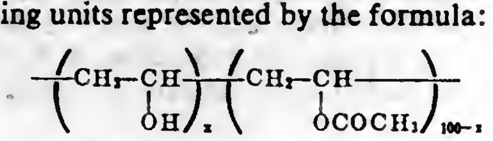
### 3,759,710
### PROCESS FOR IMPROVING COLOR DEVELOPABILITY OF REVERSAL PHOTOGRAPHIC FILMS

**Tadashi Nagae, Nobuo Tsuji, and Takushi Miyazako, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-shi, Kanagawa, Japan**
**No Drawing. Filed May 26, 1971, Ser. No. 147,254**
**Claims priority, application Japan, May 26, 1970, 45/45,012**
**Int. Cl. G03c** *1/04, 5/50, 7/16*
**U.S. Cl. 96—22** **7 Claims**

In a photographic reversal color process employing a photographic element containing three photographic silver halide emulsion layers, comprising first exposing said element to light to produce a latent image therein, developing the exposed element in a photographic black and white developer to produce a black and white negative image, exposing the element to a light of a color to which the first exposed silver halide emulsion layer is sensitive, and developing the resulting element in a color developer for producing a colored image, said color developer containing an aromatic primary amino color developing agent and a photographic color coupler selected from the group consisting of a magenta-forming pyrazolone color coupler, a cyan-forming phenolic color coupler and a yellow-forming open chain ketomethylene color coupler, the improvement which comprises utilizing a binder for said silver halide comprising gelatin and a water-soluble copolymer having a number average molecular weight of from about 5,000 to about 200,000 having repeating units represented by the formula:



$$-\left(CH_2-\underset{OH}{\underset{|}{C}H}\right)_x\left(CH_2-\underset{OCOCH_3}{\underset{|}{C}H}\right)_{100-x}$$

wherein $50 \leq x < 100$ is disclosed.

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### 3,759,711
### NITROGEN LINKED APPENDING QUINONE DIAZIDE LIGHT SENSITIVE VINYL POLYMER COMPOSITIONS AND ELEMENTS

**Frederick J. Rauner and Ronald H. Engebrecht, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 684,636, Nov. 21, 1967. This application Sept. 16, 1970, Ser. No. 72,896**
**Int. Cl. C07c** *113/00;* **G03c** *1/54;* **G03f** *7/08*
**U.S. Cl. 96—36** **23 Claims**

A light sensitive polymer having quinone diazide groups linked through nitrogen atoms to the polymer chain is particularly useful in photoresist compositions and for lithographic purposes.

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### 3,759,712
### PHOTOGRAPHIC PROCESSING METHOD

**William J. Kammerer, Towsend, and Robert L. MacNeil, Wareham, Mass., assignors to the United States of America as represented by the Secretary of the Army**
**No Drawing. Filed July 26, 1971, Ser. No. 166,241**
**Int. Cl. G03c** *5/26*
**U.S. Cl. 96—50 R** **2 Claims**

A black and white silver halide photographic film is processed by first forming a transparent, acid inactive developer overcoating layer on the surface of the film. An image exposure is then made through the layer onto the film, and the overcoated film then immersed in alkaline water.

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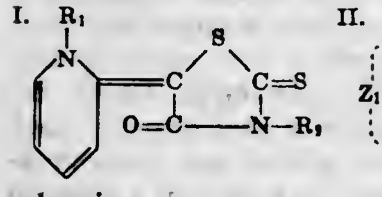
### 3,759,713
### FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION SUPERSENSITIZED WITH A MEROCYANINE DYE AND A CARBOCYANINE DYE

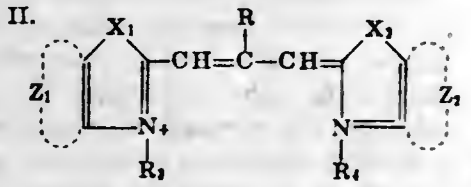
**Raymond Leopold Florens, Edegem, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium**
**No Drawing. Filed July 14, 1971, Ser. No. 162,612**
**Claims priority, application Great Britain, Aug. 14, 1970, 39,353/70**
**Int. Cl. G03c** *1/08*
**U.S. Cl. 96—126** **21 Claims**

A photographic direct-positive silver halide emulsion is described wherein the silver halide grains have a central core of silver halide containing centers promoting the deposition of photolytic silver and over said core an outer shell of fogged silver halide and wherein said outer shell comprises absorbed thereto a 2-pyridine-rhodanine merocyanine dye of Formula I and a carbocyanine dye of Formula II

I.



II.



wherein:

$R_1$, $R_2$, $R_3$ and $R_4$ represent a saturated or unsaturated aliphatic group, a cycloaliphatic group or an aryl group,
$X_1$ and $X_2$ represent oxygen, sulphur, selenium or $N(R_5)$ wherein $R_5$ has the significance given for $R_1$–$R_4$,
$Z_1$ and $Z_2$ represent the atoms necessary to close a fused-on aromatic nucleus of the benzene series,
R is hydrogen, alkyl, aralkyl, or aryl, and
X is an anion but does not exist when one of $R_3$, $R_4$, and $R_5$ contains an anionic group.

The combination of dyes used has a supersensitizing effect on the emulsion. The total speed is markedly increased as compared with the use of either dye alone and less stain is produced.

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### 3,759,714
### HIGH PROTEIN FOOD PRODUCT

**Morris P. Burkwall, Jr., Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.**
**No Drawing. Filed Mar. 23, 1970, Ser. No. 22,024**
**Int. Cl. A23l** *1/20;* **A23j** *1/00*
U.S. Cl. 99—14 6 Claims

A high protein food product comprising specified amounts of a flavoring agent, pregelatinized starch, a high protein binding agent, water, and either sugar, sugar equivalents, or mixtures thereof.

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### 3,759,715
### PROCESS OF MAKING A TEXTURED, EXPANDED FOOD PRODUCT

**Stephanus F. Loepiktie, St. Louis, and Ronald Jacob Flier, Glendale, Mo., assignors to Ralston Purina Company, St. Louis, Mo.**
**No Drawing. Filed Feb. 8, 1971, Ser. No. 113,634**
**Int. Cl. A23j** *3/00*
**U.S. Cl. 99—17** **18 Claims**

An expanded protein food product having the resiliency, chewiness and mouthfeel characteristics of real meat and further characterized by excellent rehydration characteristics is produced from a vegetable protein source material by forming a dough thereof, confining a major surfacial portion of the dough, and subjecting the dough to an elevated temperature and pressure in the order of 80–120 p.s.i. followed by pressure release, to controllably expand the dough along the axis of the unconfined surfacial portions and produce a food product having textural characteristics very similar to real meat.

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### 3,759,716
### PRODUCTION OF FISH PROTEIN

**Marvin Schulman, Monroe, and Ezra Pitchon, Flushing, N.Y., and Charles D. Anderson, Lebanon, N.J., assignors to General Foods Corporation, White Plains, N.Y.**
**No Drawing. Filed Mar. 4, 1971, Ser. No. 121,129**
**Int. Cl. A23j** *1/04*
**U.S. Cl. 99—18** **7 Claims**

The invention entails an improved process for preparing bland fish protein concentrate by boiling whole frozen or fresh fish to separate the flesh from the bone, and removing the oils from the water surface generated during boiling. The slurry is then acidified to suppress protein solubility and the mixture is ground or comminuted so as to substantially retain the bones at original size, whereupon the slurry is screened to remove water and fine solids. The mixture is then extracted with a bland solvent and dried to a bland protein concentrate. Deboning may occur after boiling, after acidification or after drying.

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### 3,759,717
### CHEMICALLY LEAVENED BAKERY AND CONFECTIONARY PRODUCTS

**Bruce D. Buddemeyer, Overland Park, Kans., and John R. Moneymaker, Kansas City, Mo., assignors to The Paniplus Company, Kansas City, Mo.**
**No Drawing. Filed June 30, 1964, Ser. No. 379,387**
**Int. Cl. A21d** *13/08*
**U.S. Cl. 99—92** **35 Claims**

Chemically leavened cake products and confectionary products having incorporated therein an addition agent containing a non-toxic, mono aliphatic ester of a dicarboxylic acid wherein said dicarboxylic acid contains up to ten carbon atoms and said mono aliphatic group contains 12 to 24 carbon atoms.

### 3,759,718
### PROCESS FOR PREPARATION OF IKURA (SALMON EGG)

**Takashi Sugihara, Kashiwa, Chiyoshi Yashima and Hideo Tamura, Tokyo, Mitsuyasu Kawasaki, Niiza, and Shogo Shimizu, Tokyo, Japan, assignors to Riken Vitamin Oil Co., Ltd., Tokyo, Japan**
**No Drawing. Filed Feb. 8, 1971, Ser. No. 113,683**
**Claims priority, application Japan, Dec. 30, 1970, 46/122,091**
**Int. Cl. A23l** *1/325*
**U.S. Cl. 426—47** **8 Claims**

Process for preparation of "ikura" characterized in separating the granular eggs of salmon and trout through the action of protease to decompose the supporting tissue as well as the ovary membrane of said eggs.

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### 3,759,719
### PRESERVATION OF FRUITS WITH SULFATE AND DIHYDROGEN PHOSPHATE SALTS OF 5-ACETYL-8-HYDROXY-QUINOLINE

**Ernst Hodel and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 704,588, Feb. 12, 1968. This application Dec. 8, 1970, Ser. No. 96,240**
**Claims priority, application Switzerland, Feb. 16, 1967, 2,281/67**
**Int. Cl. A23b** *7/00*
**U.S. Cl. 99—154** **5 Claims**

A method for preserving edible fruits and parts of plants against microbial deterioration by means of microbicidally effective amounts of the sulfate and phosphate salts of 5-acetyl-8-hydroxy-quinoline are described. While 5-acetyl-8-hydroxy-quinoline and its hydrochloride have strong irritant action on the mucous membranes and skin of humans, the new salts are virtually free from these drawbacks when applied in microbicidally effective amounts to the surface of edible plant parts.

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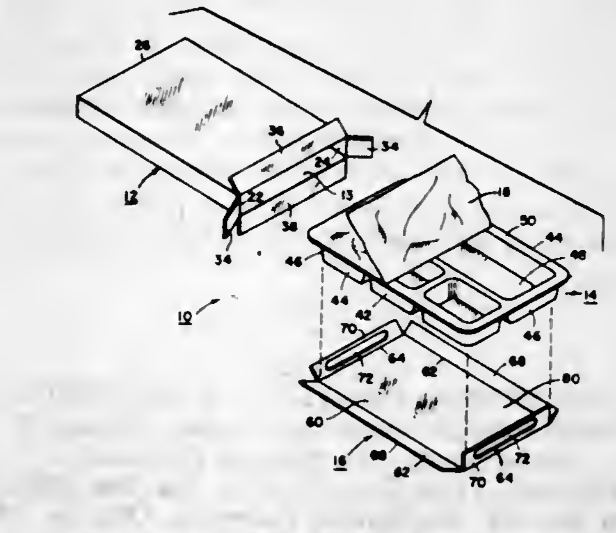
### 3,759,720
### FOOD PACKAGING SYSTEM AND TEMPERATURE-RESISTANT INSERT THEREOF

**Gar Young, 1438 S. Broad St., Philadelphia, Pa. 19146**
**Filed Sept. 27, 1971, Ser. No. 183,816**
**Int. Cl. B65d** *85/00, 5/38, 5/50*
**U.S. Cl. 99—171 H** **2 Claims**



A food packaging system having an outer sleeve defining an inner compartment in which a food tray and a temperature resistant insert is disposed. The food tray has a bottom wall supported on a bottom section of the temperature resistant insert. The temperature resistant insert has upstanding side panels and end panels which are integrally formed with the bottom section and which are disposed adjacent side walls and end walls, respectively, of the food tray. The end panels have die-cut finger gripping openings disposed therein, and the end panels are disposed adjacent end closures of the under sleeve.

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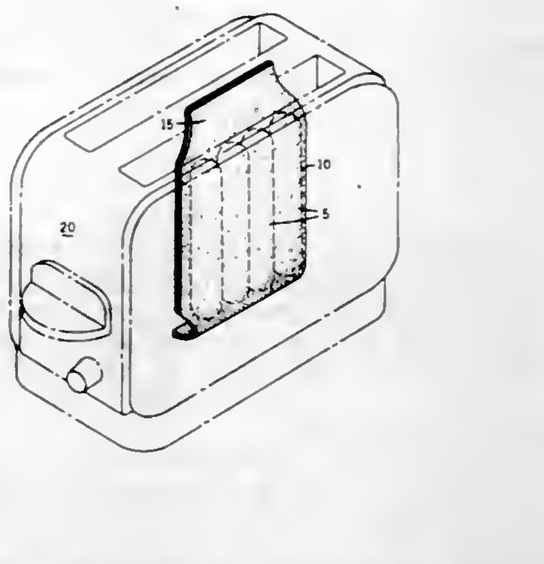
### 3,759,721
### METHOD OF HEATING A PACKAGED FOODSTUFF IN A TOASTER

**Robert Lyle Hawley, Webster Groves, Mo., assignor to Ralston Purina Company, St. Louis, Mo.**
**Continuation-in-part of abandoned application Ser. No. 858,684, Sept. 17, 1969. This application Sept. 30, 1971, Ser. No. 185,129**
**Int. Cl. B65b** *25/22*
**U.S. Cl. 99—171 H** **2 Claims**



Non-metallic, sorbent material is utilized in forming an envelope surrounding a prepared food product which is to be heated before consumption. The package may be moistened with water, and placed in a toaster which will permit heating or reconstitution of the food product without incineration of the sorbent material.

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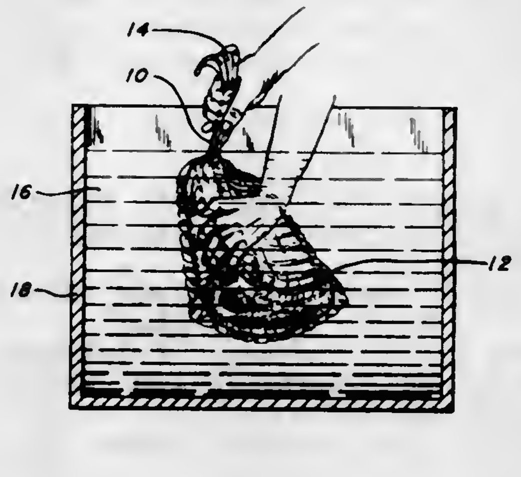
### 3,759,722
### METHOD FOR EVACUATING PACKAGES

**Selwyn Simon, Glencoe, Ill., assignor to Union Carbide Corporation, New York, N.Y.**
**Filed Mar. 31, 1970, Ser. No. 24,187**
**Int. Cl. B65b** *25/06*
**U.S. Cl. 99—174** **13 Claims**



An improved method for vacuum packaging an uncured red meat article is provided, in which a shrinkable plastic film bag containing the meat article and having an open top is progressively subjected to a peripheral pressure exerted by a fluid at a temperature not so cold as to stiffen the film but not warm enough to detrimentally affect the surface of the meat or to shrink the film. The open top of the bag is maintained in communication with the atmosphere. The air in the bag is expelled rapidly through the open top under the pressure of the fluid onto the bag. The bag is then closed and, if desired, heat shrunk.

3,759,723

### PROCESS FOR MAKING A DEHYDRATED MEAT PRODUCT

**Sam Gunson, Pavenham, Alan Heyes, Oakley, and Anthony John Hanson Sale, Sharnbrook, England, assignors to Lever Brothers Company, New York, N.Y.**
**No Drawing. Filed Sept. 4, 1970, Ser. No. 69,952**
**Int. Cl. A23b** *7/02*
**U.S. Cl. 99—208** **3 Claims**

Dried meat products are prepared by forming a mix containing uncooked comminuted meat and a comminuted starchy vegetable or cereal material which retains the cellular structure of the vegetable. This mix is shaped, heat-set and dehydrated by air drying, to form a product in which the vegetable material is bound in a matrix formed by the heat-set meat.

3,759,724

### EXOTHERMIC COMPOSITION FOR HOT TOPS

**Sunao Nishi, Nagasaki, Shojiro Ikeda, Tokyo, and Takayoshi Torii, Ichikawa, Japan, assignors to Shinto Kogyo Kabushiki Kaisha, Nagasaki-shi, Nagasaki-ken, Japan**
**No Drawing. Filed Sept. 14, 1971, Ser. No. 180,468**
**Int. Cl. B28b** *7/36*
**U.S. Cl. 106—38.22** **4 Claims**

In an exothermic composition for a hot top on a foundry mold, there are provided from about 5 to 30% by weight of fibers each having a length of about 0.5 to 30 mm., the fibers being evenly dispersed in the exothermic composition to seize the fine particles of the composition and to permit the escape of combustion gas bubbles through numerous cavities formed therein.

3,759,725

### REFRACTORY ARTICLES FOR USE WITH MOLTEN FERROUS METALS

**William John Steen, Wirral, England, assignor to Morgan Refractories Limited, Neston, Wirral, England**
**No Drawing. Filed Aug. 2, 1971, Ser. No. 168,041**
**Claims priority, application Great Britain, Aug. 7, 1970, 38,234/70**
**Int. Cl. C04b** *35/52, 35/56, 35/70*
**U.S. Cl. 106—44** **6 Claims**

Articles, or parts of articles, which in use are in contact with molten ferrous metals, are made from a mix of silicon carbide particles and more finely-divided alumina, with or without silica additions provided by for example adding clay, the shaped article being fired so that the alumina coats and bonds the silicon carbide particles.

3,759,726

### KAOLIN BASED CERAMIC TILE CONTAINING GRANITE, FELDSPAR, AND HARD ALUMINA PARTICLES

**William Wittels, 128 Swan Court, Chelsea, London SW. 3, England**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 865,515, Oct. 10, 1969. This application Aug. 2, 1971, Ser. No. 168,494**
**Claims priority, application Great Britain, Oct. 11, 1968, 48,438/68**
**Int. Cl. C04b** *33/00, 33/16, 35/16*
**U.S. Cl. 106—45** **7 Claims**

Artificial stone tiles are produced by firing a compacted mass of granite and kaolin, containing a substantial proportion of coarse fused alumina particles to provide slip resistance. In addition the mass preferably contains fine particle size alumina and/or quartz to provide wear resistance. The compacted mass is fired for a sufficient time to effect surface melting, but not complete vitrification, of the feldspar present in the granite, which is incorporated in the mass in the form of relatively fine particles. The mass is formulated so as to include not less than 10% feldspar and not more than about 1.2% iron (calculated as iron oxide) in order to provide tiles of low water absorption and high acid resistance.

3,759,727

### COATINGS

**Raymond Louis Dietz, Toledo, Ohio, and Allan L. McFadden, Monroe, Conn., assignors to Owens-Illinois, Inc.**
**No Drawing. Filed Oct. 27, 1970, Ser. No. 84,541**
**Int. Cl. C03c** *3/12, 3/22, 3/30*
**U.S. Cl. 106—49** **9 Claims**

Provided is an overglaze composition particularly useful for protecting a microelectronic circuit from environmental shock and contamination. Such an overglaze comprises by weight about 15–60 percent PbO, 12–40 percent $B_2O_3$, 5–45 percent ZnO and produces, upon being fired from a printed paste at a firing temperature below about 650° C., a vitreous glass coating which is substantially hermetic in its sealing characteristics. The overglaze composition may optionally accommodate up to 12 percent by weight of other various oxides such as, for example, $SiO_2$, CuO, $V_2O_5$, BaO, $Bi_2O_3$, $TiO_2$, $ZrO_2$ and/or may optionally accommodate up to 25 percent by weight of dispersed particulate ceramic materials. In addition, the coating so formed, when fired upon a ceramic substrate having a coefficient of thermal expansion of less than about $100\times10^{-7}$ in./in./° C., exhibits a tenacious bond and a structural stress at the bond interface of between about 2000 p.s.i. in compression to about 1200 p.s.i. in tension. Printing pastes are formed from these compositions by admixing the glass produced, in particulate form, with a conventional liquid organic vehicle in amounts sufficient to render the pastes printable.

3,759,728

### HIGH-CHROME FUSED CAST REFRACTORIES

**William A. Miller, Jamestown, and Henry R. Weller, Jr., Lakewood, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.**
**No Drawing. Filed Oct. 1, 1971, Ser. No. 185,857**
**Int. Cl. C04b** *35/42*
**U.S. Cl. 106—59** **7 Claims**

Fused cast refractories having an approximate composition within the range $Cr_2O_3$ 75%–85%, MgO 5%–10%, FeO 5%–8%, $SiO_2$ 1%–4%, and $Al_2O_3$ less than 6% and characterized by a structure consisting mainly of grains of spinel having lath- or needle-like inclusions of an $R_2O_3$ phase, the spinel phase being predominantly MgO and $Cr_2O_3$ and the $R_2O_3$ phase being predominantly $Cr_2O_3$, together with a quite small amount of glass occurring intergranularly are found to have excellent resistance to corrosion by alkaline-earth borosilicate glasses such as "E" glass.

3,759,729

### CLAY-MINERAL-BEARING SUSPENSIONS

**Rudolf Fahn, Moosburg, Germany, assignor to Sud-Chemie AG, Munich, Germany**
**No Drawing. Filed Oct. 18, 1971, Ser. No. 190,326**
**Claims priority, application Germany, Oct. 26, 1970, P 20 52 506.8**
**Int. Cl. C04b** *7/02*
**U.S. Cl. 106—90** **10 Claims**

Clay-mineral-bearing suspensions, e.g., of bentonite, of highly increased viscosity are provided by adding thereto, as binding viscous clay-mineral-bearing suspensions containing, as a binding agent, a water-soluble polyethylene oxide with a molecular weight of from about 300,000 to more than about 5,000,000, in amounts of from 0.02 to 0.5 percent by weight, based on the weight of the dry clay mineral.

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3,759,730

### PROCESS FOR UTILIZING COAL RESIDUES

**Leon-Jules Trief, 220 Rue des Bannes, Roclenge-sur-Geer, Belgium**
**Filed Apr. 30, 1971, Ser. No. 138,873**
**Claims priority, application Luxembourg, May 4, 1970, 60,850**
**Int. Cl. C04b** *7/14, 7/24*
**U.S. Cl. 106—103** **15 Claims**

Coal residues such as power station ash or mining waste products, are mixed with calcium carbonate and fired at about 1300° C. The fired mixture is then heated to at least about 1500° C. to transform it to a molten slag. The molten slag is quenched from about 1500° C. to form granules which are comminuted to get a pure hydraulic binder into which is incorporated a setting and hardening agent.

3,759,731

### PIGMENT MIXTURE OF POLAR AND NONPOLAR SYMMETRICAL/ASYMMETRICAL DISAZO DYESTUFFS

**Rudolf Kühne, Frankfurt am Main, Heinrich Hamal, Schwalbach, Taunus, Georg Geissler, Frankfurt am Main, Willy Herbst, Hofheim, Taunus, and Joachim Ribka, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**
**No Drawing. Filed Mar. 12, 1971, Ser. No. 123,817**
**Claims priority, application Germany, Mar. 14, 1970, P 20 12 152.2**
**Int. Cl. C08h** *17/14*
**U.S. Cl. 106—288 Q** **4 Claims**

Mixtures of disazo dyestuffs obtained by coupling diazotized 3,3'-dichloro-4,4'-diamino-diphenyl with a mixture consisting of one or two polar coupling components of the acetoacetylamino-benzene and 1 - aryl-pyrazolone - (5) series containing carboxy and/or sulfonic acid groups and another mixture consisting of one or two non polar coupling components of the acetoacetylamino-benzene and 1-aryl-pyrazolone-(5) series without any water-solubilizing groups. These dyestuff mixtures show improved rheological properties and an improved tinctorial strength. Moreover, they yield purer shades and have an increased transparency.

3,759,732

### PROCESS FOR THE MANUFACTURE OF A PIGMENT

**Walter Twist, Fairfield, and Keith Goldsborough and John James Hinley, Teesside, England, assignors to British Titan Limited, Billingham, Teesside, England**
**No Drawing. Filed Mar. 18, 1971, Ser. No. 125,805**
**Claims priority, application Great Britain, Mar. 18, 1970, 13,168/70**
**Int. Cl. C09c** *1/36*
**U.S. Cl. 106—300** **20 Claims**

A process for treating pigmentary titanium dioxide with an alkyd resin in which the titanium dioxide has a coating of at least a hydrous oxide of aluminium and is mixed in the form of an aqueous paste with the alkyd resin dissolved in an organic solvent and subsequently drying the mixture to produce a treated pigmentary titanium dioxide. The treatment with the alkyd resin is effected under such conditions that there is no filtration or other solid separation process between the mixing and drying operations.

3,759,733

### PIGMENT COMPOSITIONS

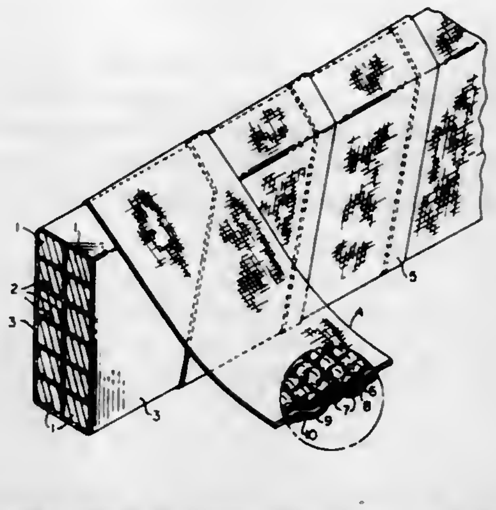
**Gordon Frank Bradley, Paisley, David Price, Beith, and Alexander Hamilton, Giffnock, Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland**
**No Drawing. Filed July 14, 1971, Ser. No. 162,632**
**Claims priority, application Great Britain, July 16, 1970, 34,427/70**
**Int. Cl. C09b** *29/00, 31/00*
**U.S. Cl. 106—309** **17 Claims**

A process in which a monoazo pigment composition is produced which comprises coupling a diazotised pigment aniline or a diazotised substituted pigment aniline with a pigment coupling agent and incorporating in the pigment a water-soluble azo dyestuff.

3,759,734

### BINDING TAPE AND METHOD OF MAKING SAME

**Morris A. Mendelsohn, Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Dec. 22, 1971, Ser. No. 210,878**
**Int. Cl. B44d** *1/098;* **C03c** *25/00*
**U.S. Cl. 117—4** **32 Claims**

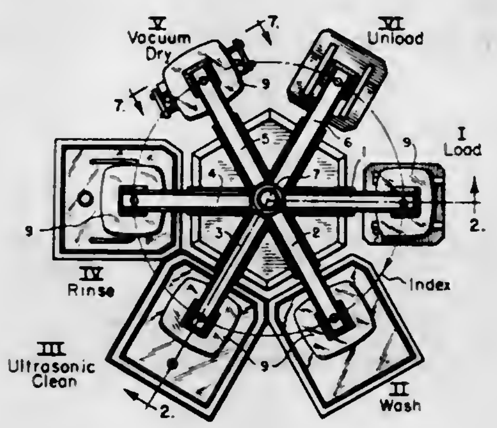


A binding tape is made by coating a ribbon having glass fibers in the fill direction and a flexible, thermally-stable fiber in the warp direction, with a swellable resin composition and removing the excess composition. The tape is lap-wound over an electrical conductor which is then immersed in solventless resin under pressure. The conductor is removed from the solventless resin and the tape prevents the solventless resin from seeping out before it is cured.

3,759,735

### METHOD FOR CLEANING THE SEALING LAND OF A CATHODE RAY TUBE FACEPLATE PANEL

**Raymond J. Pekosh, Niles, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**
**Filed Sept. 11, 1970, Ser. No. 71,538**
**Int. Cl. B44d** *5/02*
**U.S. Cl. 117—33.5 C** **3 Claims**



A method of manufacturing a cathode-ray tube of a type comprising a glass faceplate panel section to be frit sealed to another envelope section containing an electron gun system for energizing a phosphor screen deposited on the faceplate panel section, while substantially preventing localized failure of the frit seal between the sections upon high-voltage operation of the completed tube. After the phosphor screen is formed, the sealing land of the faceplate panel section is dipped in a liquid cleaning bath which is ultrasonically agitated to remove residue from the screen forming process from the sealing land.

The sealing land is then rinsed with deionized water and vacuum dried. The faceplate panel section is then ready to be frit sealed to the other envelope section containing an electron gun system, completing the manufacture of the cathode-ray tube.

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### 3,759,736
## PROCESS FOR THE PRODUCTION OF NONWOVEN FABRICS CONTAINING BINDERS

**Hanns Jenny, Aarau, and Juerg Troesch, Allschwil, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland**
**No Drawing. Filed Mar. 9, 1971, Ser. No. 122,556**
**Claims priority, application Switzerland, Mar. 16, 1970, 3,858/70**
**Int. Cl. C08k** *1/20*
**U.S. Cl. 117—33.5 T** **8 Claims**

This invention relates to a process for the production of nonwoven fabrics containing binders suitable to be dyed by reactive dyes including optical brighteners which comprises impregnation of the nonwoven by means of a binder preparation containing in addition to the binder

(a) a polyvinyl alcohol,
(b) reactive cyclic methylol compounds, aldehydes and/or compounds yielding formaldehyde,
(c) a metal or ammonium salt of a strong mineral acid, and subsequent drying and condensation treatment.

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### 3,759,737
## DEPOSITION OF HIGH REFRACTIVE INDEX COATINGS ON FRESHLY WET GROUND MICA

**Paul W. Wetzold, Yorktown Heights, N.Y., assignor to Paispearl Products, Inc., Hastings-on-Hudson, N.Y.**
**No Drawing. Filed May 20, 1970, Ser. No. 39,151**
**Int. Cl. B44d** *5/06*
**U.S. Cl. 117—54** **7 Claims**

Mica is more uniformly coated, especially with bismuth oxychloride, to form a composite platelet of increased refractive index, by precipitating the coating out of aqueous medium onto undried mica which has been freshly wet ground in deionized water to reduce the particle size of the mica at least 5%.

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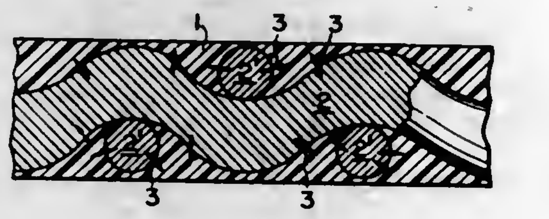
### 3,759,738
## GRAFT POLYMERIC SUBSTRATE

**Teruyuki Misumi, Yokohama, Hirotsugu Miyauchi, Tokyo, Sakae Tsushima, Kawasaki, and Kunihiko Takeda and Toshio Miyaji, Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**
**Filed Apr. 10, 1970, Ser. No. 27,433**
**Claims priority, application Japan, Apr. 26, 1969, 44/31,986**
**Int. Cl. B44d** *1/50*
**U.S. Cl. 117—93.31** **14 Claims**



Graft polymeric substrate especially suitable for basic matrix for an ion-exchange membrane, which is superior in electrochemical as well as mechanical properties. The substrate is composed of resin of three dimensional net work structure and a woven fabric substance which in itself had free spaces of substantially uniform size in an amount of 20%–80% by volume, said resin closely filling the free space portions of the woven fabrics and being firmly bonded to the fabrics by graft polymerization. Water leakage is substantially zero cc./m.² hr. under 0.5 kg./cm.² differential pressure.

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### 3,759,739
## ENVIRONMENTAL PROTECTION SYSTEM

**Mike Varlas, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.**
**Filed Aug. 26, 1971, Ser. No. 175,235**
**Int. Cl. B05b** *7/20;* **B32b** *19/04*
**U.S. Cl. 117—105.2** **5 Claims**

A system for protecting the exposed surfaces of reinforced plastic composite structures which are exposed to the weather is disclosed. A sheet of asbestos paper is flame-sprayed with a conductive material, such as aluminum. The conductive surface is coated with a synthetic resin and then the composite is laminated over the structure surface. The resulting surface is resistant to erosion by rain and dust and protects against lightning strikes and static electricity build-up. This system is especially desirable for use on external aircraft structure, large storage tanks, etc.

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### 3,759,740
## PROCESS FOR BINDING PIGMENTS TO GLASS FABRICS

**James K. Campbell, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.**
**No Drawing. Original application Aug. 6, 1968, Ser. No. 750,472, now Patent No. 3,634,297. Divided and this application May 12, 1971, Ser. No. 143,687**
**Int. Cl. B32b** *17/10, 27/12*
**U.S. Cl. 117—126 GS** **2 Claims**

A process is disclosed for binding pigments to glass fabric, said process comprising (A) applying to the glass fabric an aqueous emulsion of (1) a copolymer prepared by emulsion polymerization which consists essentially of (a) 50 to 90 mol percent $(CH_3)_2SiO$ units and (b) 10 to 50 mol percent of $RSiO_{3/2}$ units wherein R is an alkyl or alkenyl radical containing from 1 to 3 carbon atoms, a phenyl radical or a 3,3,3-trifluoropropyl radical, and (2) a water dispersible pigment, and (B) drying the glass fabric. Conventional silicone or organic post-finishes can be applied over the above compositions.

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### 3,759,741
## NOVEL INTUMESCENT COATED ARTICLES

**Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.**
**No Drawing. Filed Nov. 5, 1971, Ser. No. 196,212**
**Int. Cl. C09d** *5/18;* **C09k** *3/28*
**U.S. Cl. 117—136** **9 Claims**

Articles coated with intumescent compositions which comprise certain polycyclic aromatic polysulfonamides, such as naphthalene, anthracene, phenanthrene, biphenyl, and terphenyl polysulfonamides. The intumescent agents may be prepared by conventional techniques and may be employed in conjunction with conventional additives. Among the preferred intumescent agents are the 1,5-, 2,6- and 2,7-naphthalenedisulfonamides and the o,o′-, m,m′- and p,p′-disulfonamidobiphenyls.

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### 3,759,742
## TEXTILE FLOOR COVERING

**Manfred Salamon, Dormagen, Hans-Jurgen Hagebaum, Nievenheim, Martin Wandel, Dormagen, Cornelius Muhlhausen, Leverkusen, Werner Bau, Opladen, and Gerd-Konrad Reinecke, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**
**No Drawing. Filed Oct. 9, 1970, Ser. No. 79,712**
**Claims priority, application Germany, Oct. 17, 1969, P 19 52 397.8**
**Int. Cl. B44d** *1/09;* **D04h** *1/48, 1/58*
**U.S. Cl. 117—161 KP** **6 Claims**

Textile floor cover coated with an unfoamed polyurethane elastomer based on a polyhydroxyl compound selected from the group consisting of polyesters of ethylene glycol, propylene glycol, butylene glycol and mixtures thereof, said glycols having two or more terminal hydroxy

groups and an average molecular weight of 300–5000 and a polyisocyanate with an OH/NCO ratio of from 1:0.3 to 1:1.3.

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### 3,759,743
## METHOD OF APPLYING COATINGS OF TIN OXIDE UPON TRANSPARENT SUBSTRATES

**Andrew G. Menke, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio**
**No Drawing. Filed Sept. 17, 1971, Ser. No. 181,604**
**Int. Cl. H05b** *33/23;* **H05k** *3/00*
**U.S. Cl. 117—211** **12 Claims**

An improved technique for producing electrically conducting tin oxide films on the surface of a ceramic substrate by applying a solution of an organotin salt of trifluoroacetic acid to the substrate while it is at a temperature above 800° F.

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### 3,759,744
## ELECTROSTATIC RECORDING PAPER AND METHOD OF MAKING

**Leonard J. Schliesman, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.**
**No Drawing. Filed Aug. 26, 1971, Ser. No. 175,323**
**Int. Cl. G03g** *5/00*
**U.S. Cl. 117—218** **21 Claims**

Electrostatic recording paper is made by applying three successive aqueous coats to the machine glazed side of a paper web. The first coat contains titanium dioxide and an electroconductive water dispersible polymer of a vinylbenzyl quaternary ammonium compound. The second coat is oxidized starch and calcium carbonate. The third coat contains calcium carbonate and a carboxylated polyvinyl acetate in ammoniacal solution. The web is dried between successive coatings and may be finally steam treated.

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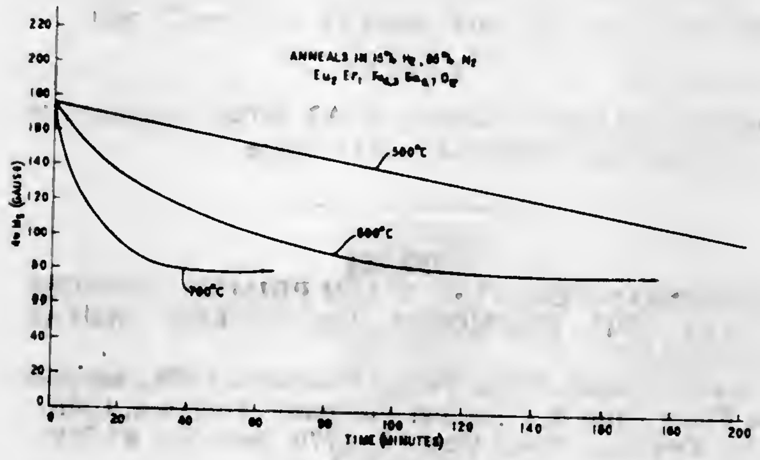
### 3,759,745
## HYDROGEN ANNEALING OF SUBSTITUTED MAGNETIC GARNETS AND MATERIALS SO PRODUCED

**Melvyn Dixon, Allentown, Pa., and Arjeh Jehuda Kurtzig, Short Hills, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed July 14, 1971, Ser. No. 162,517**
**Int. Cl. H01f** *10/02*
**U.S. Cl. 117—237** **7 Claims**



Magnetization values for a variety of magnetic garnets containing partial nonmagnetic substitutional ions replacing iron are altered by annealing in hydrogen-containing atmospheres. Such changes which may be brought about in periods as short as five minutes or less at temperatures of the order of from 500° C. to 800° C. result from the temperature dependence of site preference of such nonmagnetic substitutional ions. Such changes may accomplish a "tailoring" of the garnet material for use in magnetic switches and memories.

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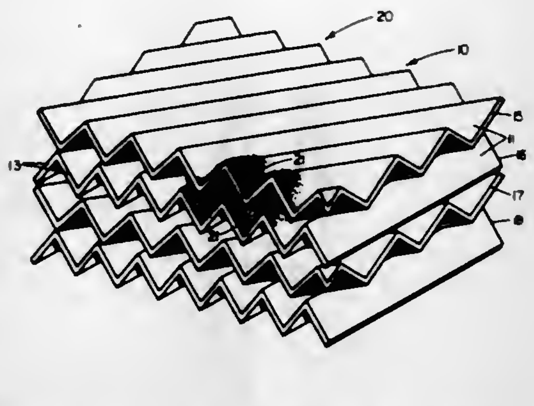
### 3,759,746
## POROUS ELECTRODE COMPRISING A BONDED STACK OF PIECES OF CORRUGATED METAL FOIL

**John McCallum, Worthington, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Filed Mar. 22, 1972, Ser. No. 237,029**
**Int. Cl. H01m** *35/04*
**U.S. Cl. 136—24** **16 Claims**



An electrode suitable for use in an electrochemical cell, comprising a porous conductive support comprising a bonded stack of pieces of thin corrugated nickel foil wherein the corrugations are oriented approximately perpendicular to the sides of the electrode and form an array of passages through the electrode, and active material such as cadmium hydroxide or nickel hydroxide substantially uniformly distributed within the passages. The support may comprise also a piece of thin flat nickel foil between adjacent pieces of the corrugated foil, forming a barrier between the passages formed on each side of it. Typically the corrugations in the odd corrugated layers are oriented at a small angle from the perpendicular in one direction and the corrugations in the even corrugated layers are oriented at a small angle from the perpendicular in the opposite direction.

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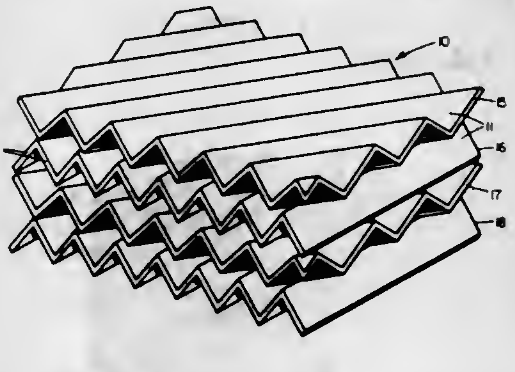
### 3,759,747
## METHOD OF MAKING POROUS CONDUCTIVE SUPPORTS FOR ELECTRODES

**Glenn R. Schaer, Columbus, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Filed Mar. 22, 1972, Ser. No. 236,985**
**Int. Cl. H01m** *35/04*
**U.S. Cl. 136—36** **25 Claims**



Porous conductive supports for electrodes suitable for use in electrochemical cells are made by electroforming thin corrugated nickel foil, stacking pieces of the corrugated foil alternately with pieces of thin flat nickel foil, with the corrugations in successive corrugated pieces oriented at different angles, bonding the adjacent pieces of foil by heating in a hydrogen atmosphere, and cutting the bonded stack in planes substantially perpendicular to the foils.

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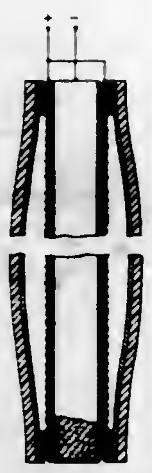
### 3,759,748
### ELECTRICALLY RECHARGED METAL/AIR CELL

**Nigel I. Palmer, Port Washington, N.Y., assignor to Leesona Corporation, Warwick, R.I.**
**Filed Apr. 6, 1970, Ser. No. 25,635**
**Int. Cl. H01m** *27/00, 29/04*
**U.S. Cl. 136—86 A** **17 Claims**



A two-electrode rechargeable metal/air or metal/oxygen depolarized electrochemical cell and method of generating electricity therefrom are described. The electrochemical cell comprises an anode capable of being regenerated, a composite cathode having an oxygen permeable hydrophobic member layered with catalyst, and a current collector in contact with the layered catalyst on said member. The cathode is constructed and arranged in order that the current collector is in removable electrical contact with the catalyst. Thus, for cell discharge, the current collector contacts the catalyst and transports electrons to the external circuit. For cell recharge, the current collector is electrically separated from the catalyst whereby numerous discharge-recharge cycles of the cell may be effected without damage to the cathode.

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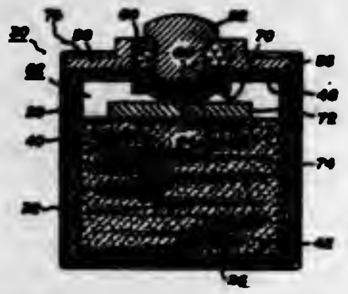
### 3,759,749
### READILY MANUFACTURABLE THERMAL CELL UNIT FOR EXPLOSIVE PROJECTILES

**Peter R. Voyentzie, 1476 NW. 21st Ave., Gainesville, Fla. 32601; Richard T. Ziemba, 99 S. Cove Road, Burlington, Vt. 05401; and Raymond K. Sugalski, 619 NW. 40th Terrace, Gainesville, Fla. 32601**
**Original application Mar. 5, 1968, Ser. No. 710,578. Divided and this application Jan. 22, 1969, Ser. No. 804,731**
**Int. Cl. H01m** *1/00*
**U.S. Cl. 136—175** **4 Claims**



A projectile containing an explosive is provided with a fuse mechanism powered by an acceleration activated thermal cell unit which is constructed to be safely and conveniently manufactured. A terminal assembly is manufactured by positively attaching a terminal pin to a heat cup and then placing an igniting means and thermitic material therein. A separately fabricated assembly includes spaced inner and outer shells which are separated by a thermally fusible electrolyte. During fabrication the electrolyte is fused to decrease internal resistances within the cell. First and second electrode materials lie between the shells in contact with the outer and inner shells respectively.

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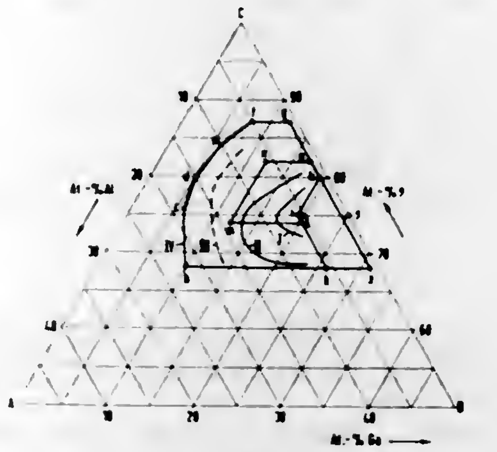
### 3,759,750
### SUPERCONDUCTIVE ALLOY AND METHOD FOR ITS PRODUCTION

**Alfred Müller and Arno Fink, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**
**Original application Nov. 26, 1969, Ser. No. 880,076, now Patent No. 3,679,401, dated July 25, 1972. Divided and this application Feb. 15, 1972, Ser. No. 226,614**
**Claims priority, application Germany, Nov. 30, 1968, P 18 11 926.1**
**Int. Cl. C22f** *1/18*
**U.S. Cl. 148—2** **9 Claims**



Intermetallic superconductor with composition

$$V_xGa_yAl_z$$

where $x+y+z=100$ and $68 \leq x \leq 87$; $5 \leq y \leq 31$ and

$$1 \leq z \leq 22$$

Compositions can be formed in A2 lattice, machined to desired form and converted to A15 lattice.

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### 3,759,751
### CORROSION-RESISTING WASH PRIMER COMPOSITION AND CORROSION-PROTECTED METAL SURFACE

**Howard F. Smith, Palos Verdes Peninsula, Calif., assignor to Finch Paint & Chemical Company, Torrance, Calif.**
**No Drawing. Filed Oct. 30, 1970, Ser. No. 85,789**
**Int. Cl. C23f** *7/26*
**U.S. Cl. 148—6.2** **15 Claims**

Wash primer comprising an epoxy resin, an inorganic chromate and an amino silane for depositing, particularly on aircraft surfaces, a strongly adherent corrosion inhibiting film which is insoluble in jet fuel and resists aircraft hydraulic fluids, but which is lifted by paint stripping compounds, and metal surfaces protected against corrosion by the combination of a film deposited from the wash primer adhering to the metal surface, an intermediate primer coat adhering to the film from the wash primer, and a highly cross linked solvent insoluble top coat.

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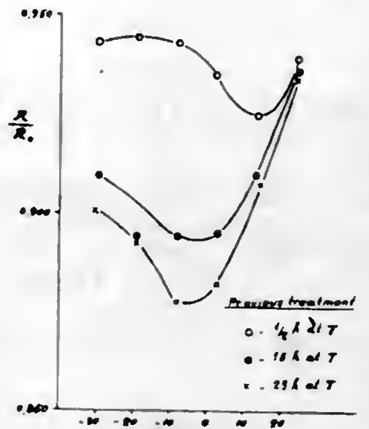
### 3,759,752
### PROCESS FOR INCREASING THE MECHANICAL RESISTANCE OF ELEMENTS MANUFACTURED IN ALLOYS OF LEAD AND ANTIMONY

**José-Maria Sistiaga Aguirre, Marcelino Torralba Diaz, Juan-José Regidor Arribas, and Miguel Aballe Caride, Madrid, Spain, assignors to Patronato de Investigacion Cientifica y Tecnica "Juan de la Cierva" del Consejo Superior de Investigaciones**
**Filed Aug. 23, 1971, Ser. No. 174,010**
**Claims priority, application Spain, June 26, 1971, 392,689**
**Int. Cl. C21d** *1/62;* **C22f** *1/12*
**U.S. Cl. 148—3** **2 Claims**



This invention is concerned with alloys of lead and antimony, and more concretely with a thermal treatment that permits the acceleration of the processes of precipitation of antimony which gives rise to the hardening of these alloys, and which consequently permits the obtaining in these alloys of elements of higher mechanical resistance, which makes them more suitable for handling in short periods of time.

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### 3,759,753
### METHOD FOR OBTAINING IMAGES ON METALS

**Giuseppe Becca, Via Savona 94, and Roberto Origgi, Via Rubens 23, both of Milan, Italy**
**Filed June 22, 1971, Ser. No. 155,520**
**Claims priority, application Italy, July 20, 1970, 27,635/70**
**Int. Cl. C23f** *7/02*
**U.S. Cl. 148—6.3** **6 Claims**

A method for obtaining images on metal surfaces, wherein the reproduction is made on the metal surface for the image to be obtained by silk-screen printing, using a protective ink capable of withstanding a mechanical surface abrasion action and acid resistant; then modifying the condition for the remaining portion of the surface and finally removing the protective ink so that the pattern will appear by contrast between the processed and unprocessed surfaces.

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### 3,759,754
### STEEL WIRE FOR REINFORCING GLASS AND METHOD OF PRODUCTION

**Kentaro Nagano and Yoshihito Saoyama, Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan**
**No Drawing. Original application May 28, 1968, Ser. No. 732,530, now abandoned. Divided and this application July 21, 1971, Ser. No. 164,817**
**Claims priority, application Japan, Mar. 1, 1968, 43/12,887**
**Int. Cl. C23f** *7/10*
**U.S. Cl. 148—6.16** **4 Claims**

Steel wire-reinforced glass free from bubbles and cracks around the wire reinforcement embedded in the glass is produced with steel wire heated in a water vapor-containing reducing atmosphere, the dew point of which is at least 20° C., before it is embedded in the glass. The reducing atmosphere should contain at least 5 percent by volume of hydrogen gas. Preferably, this steaming treatment is combined with phosphating, chromium-treating and wire-stretching operations.

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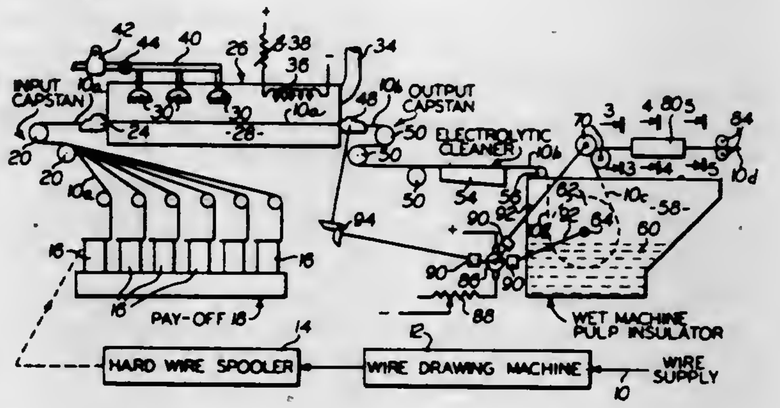
### 3,759,755
### CONTINUOUS ANNEAL OF WIRE ON PULP INSULATING PROCESS

**Edward Michael Kane, Freehold, N.J., assignor to General Cable Corporation, New York, N.Y.**
**Filed Nov. 9, 1970, Ser. No. 87,803**
**Int. Cl. C22f** *1/00*
**U.S. Cl. 148—11.5 R** **10 Claims**



Spooled hard wire from a wire-drawing machine is fed from a payoff to means for applying paper pulp insulation to the wire. Between the payoff and the insulation-applying means there is an annealer through which the wire passes and in which the wire is annealed as a continuous operation with the application of the insulation. In the preferred embodiment the annealer is gas-fired and generates its own inert atmosphere. The cost and scrap of batch and electro annealing are eliminated.

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### 3,759,756
### WELD THRU PRIMER

**Henry Louis Lomasney and William Joseph Lomasney, both of 11119 Prentiss Ave., New Orleans, La. 70127**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 873,602, Nov. 3, 1969. This application Mar. 8, 1972, Ser. No. 232,980**
**Int. Cl. B23b** *15/04;* **C23c** *1/12, 3/00*
**U.S. Cl. 148—22** **12 Claims**

The present invention pertains to a novel coating system for application to carbon steel substrates. The coating provides exceptional arc behavioral properties during the metal joining by fusion or resistance welding of such substrates, via its metallurgical influence on the weld zone. The functional elements of this coating basically comprise a carefully balanced mixture of a sacrificial or anodic metal and a metal alloy such as chromium or nickel which significantly affects the weldability and weld properties of the coating. The powdered metals or pigments are attached to the carbon steel substrates via any of a number of liquid silicate binders, the use of which is well established in the prior art. Preferred embodiments include various additional constituents, e.g. materials such as boron or magnesium to increase Rockwell hardness and susceptibility to high temperature creep. Among the unique features and advantages of the present coating is the realization of an unusual balance of functional properties, the most significant of which are the beneficial contribution to the metallurgical properties of the finished weld, while actually improving the stable electrical arc discharge normally associated with resistance welding. A further advantage of this coating concept is that it allows arrangement of selected metallic constituents within the coating in such a manner as to assure optimum silicate to silicate bonding when overcoating with a conventional inorganic zinc coating after fabrication of the structure is completed.

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### 3,759,757

### ALUMINUM-BEARING PRECIPITATION-HARDENING STAINLESS STEEL OF HIGH RETAINED TOUGHNESS

**D Cameron Perry, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio**

**Filed Sept. 23, 1966, Ser. No. 581,584**

**Int. Cl. C22c** *39/20, 41/02*

**U.S. Cl. 148—38** **14 Claims**

A precipitation-hardenable semi-austenitic stainless steel which by virtue of particular composition balance is essentially free of delta-ferrite and readily lends itself to a variety of working and forming operations, is readily hardened by precipitation heat-treatment, and in hardened condition is strong and tough, maintaining its strength and toughness over long periods of use at elevated temperature. The steel contains the four essential ingredients chromium, nickel, carbon and aluminum in critical amount and proportion, with remainder essentially iron. The chromium content is in the amount of about 12% to 19%, nickel about 7% to 10%, carbon about .03% to .05%, and aluminum about .01% to .48%. The ingredients manganese, silicon, phosphorus, sulphur and nitrogen commonly present in stainless steel are maintained in low and critical amount. Molybdenum may be added where desired.

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### 3,759,758

### HIGH STRENGTH ALUMINUM CASTING ALLOY

**Ikuo Hatano, Kyuya Oida, Tatuo Abe, Seiji Kumagai, Sueo Ojima, and Hiroshi Nagaeda, Aichi, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan**

**No Drawing. Filed May 13, 1970, Ser. No. 37,000**

**Claims priority, application Japan, May 13, 1969, 44/37,157**

**Int. Cl. C22f** *1/04*

**U.S. Cl. 148—159** **4 Claims**

An aluminum casting alloy having good mechanical properties is prepared by adding, to aluminum, copper, magnesium, and cadmium and, additionally, if desired, titanium and boron, and, additionally, if desired, manganese and silver, solution-heat-treating thereof at a temperature higher than 500° C., and then ageing the solution-heat-treated alloy at a temperature between 160° C. and 190° C. for 4 to 48 hours. The alloy is useful in various types of machine members, aircraft, rolling-stock members, architectural members, and other structural appliances.

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### 3,759,759

### PUSH-PULL METHOD FOR SOLUTION EPITAXIAL GROWTH OF III–V COMPOUNDS

**Raymond Solomon, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.**

**Original application Jan. 29, 1970, Ser. No. 6,819, now Patent No. 3,664,294. Divided and this application Mar. 20, 1972, Ser. No. 235,997**

**Int. Cl. H01l** *7/38*

**U.S. Cl. 148—171** **11 Claims**

Epitaxial layers of III–V compounds are grown on the facing surfaces of a pair of parallel, spaced-apart wafers by forcing a small quantity of a solution saturated with a III–V compound between the wafers for a selected time. Lowering the temperature of the solution precipitates the III–V compound epitaxially onto the adjacent surfaces of the wafers.

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### 3,759,760

### PREVENTION OF AUTODOPING DURING THE MANUFACTURING OF A SEMICONDUCTOR DEVICE

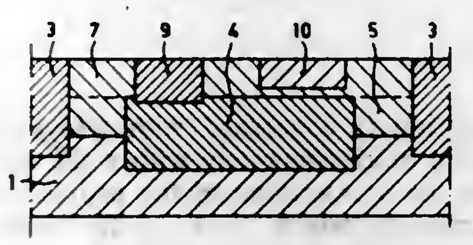
**Juan Encinas, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed May 4, 1970, Ser. No. 34,490**

**Claims priority, application France, May 8, 1969, 6914719**

**Int. Cl. C23c** *11/00;* **H01l** *19/00;* **H02l** *7/36*

**U.S. Cl. 148—175** **6 Claims**



The invention relates to a method of manufacturing a semiconductor device in particular a lateral transistor with a buried layer.

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### 3,759,761

### WASHED EMITTER METHOD FOR IMPROVING PASSIVATION OF A TRANSISTOR

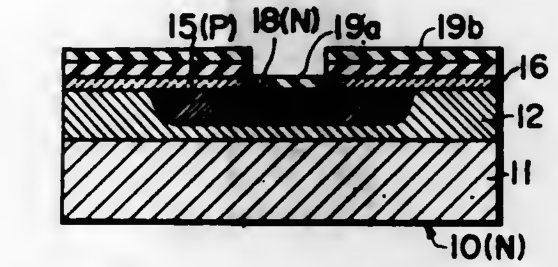
**Takaaki Mori, Hachioji-shi, Hisayuki Higuchi, Kokubunji-shi, and Keijiro Uehara, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Oct. 23, 1969, Ser. No. 868,869**

**Claims priority, application Japan, Oct. 23, 1968, 43/76,767**

**Int. Cl. C23b** *5/50;* **C23c** *13/04;* **H01l** *7/44*

**U.S. Cl. 148—187** **22 Claims**



An improved method for fabricating a transistor based on the "washed emitter method," wherein an original silicon dioxide film, used as a mask for base diffusion, is removed from the surface of the silicon transistor body after a base region is formed by diffusion and a new insulation film which operatively acts to stabilize the surface property of the transistor body is substituted therefor.

Emitter diffusion is then provided to the surface of the base region by utilizing the new insulator film as a mask for the emitter diffusion, and thereafter the surface of the body is washed to remove the oxide layer formed on the emitter region during the emitter diffusion.

An aperture for a base contact is then formed by photoetching a part of the new insulator film. A completed transistor is obtained by providing metal contacts through the respective apertures to the respective emitter and base regions.

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### 3,759,762

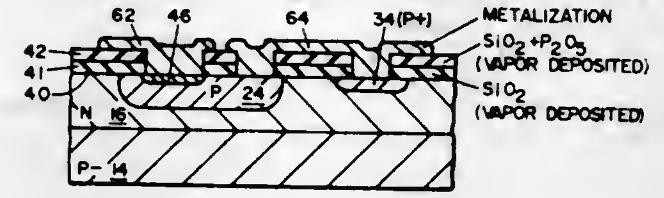
### METHOD OF FORMING INTEGRATED CIRCUITS UTILIZING LOW RESISTANCE VALUES, LOW TEMPERATURE DEPOSITED OXIDES AND SHALLOW JUNCTIONS

**Frank J. Barone, Tempe, and Donald L. Tolliver, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.**

**Filed Oct. 19, 1970, Ser. No. 81,734**

**Int. Cl. H01l** *7/34*

**U.S. Cl. 148—187** **14 Claims**



A semiconductor structure is described wherein integrally formed resistors are employed having a preferred resistance value of approximately 50 ohms per square. Additionally, processing is compatible with this low resistance value and includes low temperature deposition of passivating layers, improved cleaning and annealing cycles.

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### 3,759,763

### METHOD OF PRODUCING LOW THRESHOLD COMPLEMENTARY INSULATED GATE FIELD EFFECT DEVICES

**Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.**

**Filed June 21, 1971, Ser. No. 154,991**

**Int. Cl. H01l** *7/50*

**U.S. Cl. 148—188** **6 Claims**

It is advantageous to have low gate threshold voltage transistors exhibiting high stability. If the surface concentration of P-type impurities of an N-type insulated gate field effect transistor (IGFET) channel between the $N^+$ doped source and drain is in the order of $6\times10^{15}$ atoms per cu. cm. or less, and using a polysilicon gate electrode, the gate threshold voltages will be about one volt. Furthermore, if the complementary transistors are carefully cleaned during production thereof and a gettering step is provided, the resultant C-IGFET's have high stability. A method including the measured etching away of the surface of a P-type diffused area is disclosed for providing a region or tub of $6\times10^{15}$ P-impurity concentration in an N-type substrate. A method is also disclosed for providing a highly stable C-IGFET using the so produced tub including cleaning and gettering.

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### 3,759,764

### COMPOSITE PROPELLANT CONTAINING AZIRIDINYL CURING AGENT

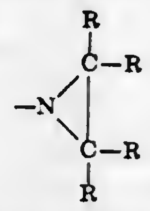
**James N. Short, Bartlesville, Okla., assignor to Phillips Petroleum Company**

**No Drawing. Filed Nov. 20, 1961, Ser. No. 153,759**

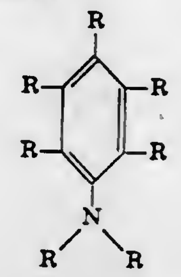
**Int. Cl. C06d** *5/06*

**U.S. Cl. 149—19** **11 Claims**

1. A castable composition curable to form a solid propellant comprising an oxidant of inorganic oxidizing salt, a binder of synthetic polymer of vinylidene-containing monomer selected from the group consisting of conjugated dienes, vinyl-substituted aromatic compounds, acrylic acid esters, alkylacrylic acid esters, nitriles, N,N-disubstituted amides, vinylfuran and N-vinylcarbazole, said polymer containing at least 1 acid group per molecule, a curative containing at least two aziridinyl groups having the formula



wherein each R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl radicals and compositions thereof, the total of said R groups containing up to 20 carbon atoms, said curative being selected from the group consisting of triazines, triphosphatriazines, tri(aziridinyl)phosphine oxides, tri(aziridinyl)phosphine sulfides, and compounds containing two of said aziridinyl groups attached to a bivalent radical selected from the group consisting of carbonyl, phenyl phosphoryl, phenyl thiophosphoryl, sulfoxyl and sulfonyl, and from 0.05 to 1.0 weight percent based on said binder of a pot-life extender having the formula



wherein each R is selected from the group consisting of hydrogen and lower alkyls.

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### 3,759,765

### GAS-PRODUCING COMPOSITIONS

**George Harold Sidney Young, Enfield, England, assignor to Minister of Aviation, in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**No Drawing. Filed May 23, 1961, Ser. No. 112,118**

**Int. Cl. C06d** *5/06*

**U.S. Cl. 149—19.91** **4 Claims**

1. A process for manufacturing a gas-producing composition containing both a cyclic polymethylene-polynitramine high explosive and ammonium perchlorate, and comprising the steps of coating the said high explosive with a visco-elastic binder having a viscosity between 250,000 and 7,000,000 poises at 25° C. selected from the group consisting of polyisobutene and polypropene to form a mixture of the high explosive and binder, forming separately a mixture of ammonium perchlorate and said visco-elastic binder, and finally mixing together the two so formed mixtures in predetermined proportions together with further binder, if necessary, to form a predetermined composition.

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### 3,759,766

### METHOD FOR PRECISION MODIFICATION OF PRELIMINARILY-ETCHED PHOTO-ENGRAVED COLOR PLATES

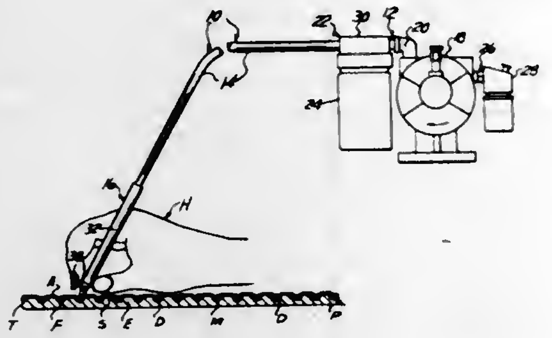
**George Mangus, Miami, Fla., assignor to The Miami-Herald Publishing Company, Miami, Fla.**

**Filed Sept. 28, 1971, Ser. No. 184,549**

**Int. Cl. B41c** *1/00;* **B41m** *3/02*

**U.S. Cl. 156—14** **1 Claim**

A photo-engraved color plate, which has been preliminarily etched to a depth slightly less than the required final depth and with the hard first resist remaining on the raised portions of the plate, is rubbed with a dry filler powder such as powdered magnesium carbonate to fill the depressions in the plate. Powder is then removed from depressions adjacent the raised lines or areas of the portions of the plate to be left unchanged by applying to such depressions the non-abrasive tip of the nozzle of a hand-held "vacuum pencil" connected to a vacuum pump by means of a flexible tube. This filler powder is not removed from depressions adjacent lines or areas of a given color plate where there is an excess of the color contributed from that plate which would cause spurious tones to be otherwise printed therefrom. A special degradable soft resin second resist is then sprayed over the entire plate, including the raised areas still covered with the hard first resist remaining after the first or preliminary etch. In the depressed portions from which the vacuum pencil has completely removed the filler powder, the second resist prevents subsequent re-etching thereof by protecting the side walls of the depressions from any further attack by the etching acid. In each depression containing the filler powder, such powder forms a plug, the top portion of which combines with the second resist to form an acid-penetrable weak crust. The plate is now subjected to the second or fine etch, the acid of which penetrates this crust to enter each depression containing such a filler powder plug. Each plug then acts to neutralize the etching acid adjacent thereto but permits the etching acid outside the plug to react most strongly against the metal of the plate forming the side and bottom walls of the depression, eating away the side wall to reduce the top areas of the raised portions or dots without undercutting these top areas. This action reduces the effect which the particular color plate will have on the color printed from that plate, hence modifies otherwise spurious tones to produce true tones in printing. Following the second or fine etch, the second or soft resist is removed by washing it out with acohol without disturbing the first or hard resist. The filler powder plugs and hard resist coating are then removed by a brushing action with a stiff-bristled brush.



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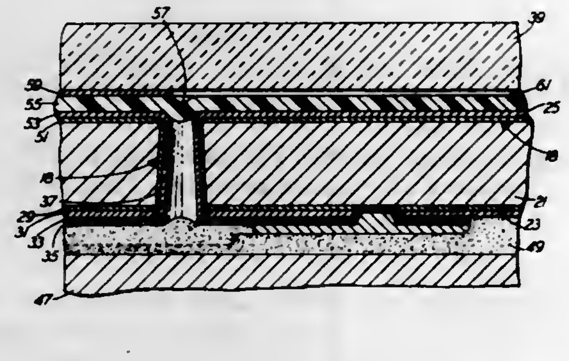
**3,759,767**

### MASK ALIGNMENT METHODS

**Donald C. Walls, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.**
**Filed Oct. 8, 1971, Ser. No. 187,634**
**Int. Cl. H01l** *7/50*
**U.S. Cl. 156—17** **9 Claims**



In making semiconductive devices, it is necessary to separate groups of circuit elements formed on the face of a semiconductive wafer by etching from the backside of the wafer. To do this a layer of photoresist is applied to the backside of the wafer, a separation mask is positioned on the photoresist layer and intersecting grid lines of the mask are aligned with the wafer material lying between the groups of circuit elements. The alignment is accomplished by forming a plurality of holes, preferably with a laser, partially through the wafer at alignment references on the face of the wafer. Then, a portion of the backside of the wafer is removed to join the holes to the backside. Next, the photoresist layer is formed on the backside of the wafer so that the holes remain distinguishable and the mask is positioned on the photoresist layer and aligned with the holes. The invention is particularly useful in fabricating integrated circuits having a magnetic layer formed on the inactive sides thereof.

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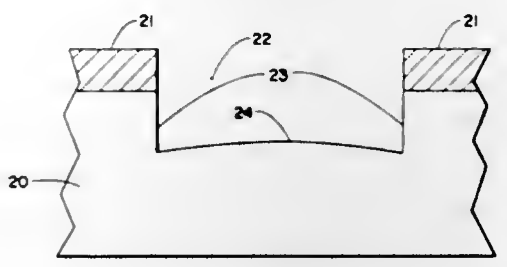
**3,759,768**

### PREFERENTIAL ETCHING OF SILICON

**John Lawrence, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada**
**Filed Oct. 27, 1971, Ser. No. 192,943**
**Int. Cl. H01l** *7/34*
**U.S. Cl. 156—17** **3 Claims**



Preferential etching of silicon—typically etching of an n-type silicon material through an etch resilient material, by etching with orthophosphoric acid to which has been added arsenic trioxide. The effective range of additive is between 0.1 gm. and 20 gms. of arsenic trioxide per quart of acid.

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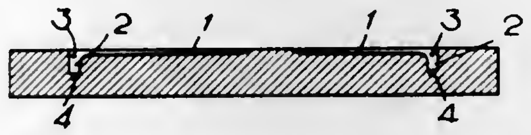
**3,759,769**

### METHOD OF PRODUCING PLASTIC RESIN LAWN-LIKE OBJECTS BY ENGRAVED PLATE MOLDING

**Yasuhiro Oshima, % Meiwa Gravure Chemical Co., Ltd., 860 Kashida, Higashi Osaka, Osaka, Japan**
**Filed Dec. 28, 1970, Ser. No. 101,480**
**Claims priority, application Japan, Oct. 6, 1970, 45/88,006**
**Int. Cl. A41g** *1/00;* **B29c** *3/02*
**U.S. Cl. 156—61** **1 Claim**

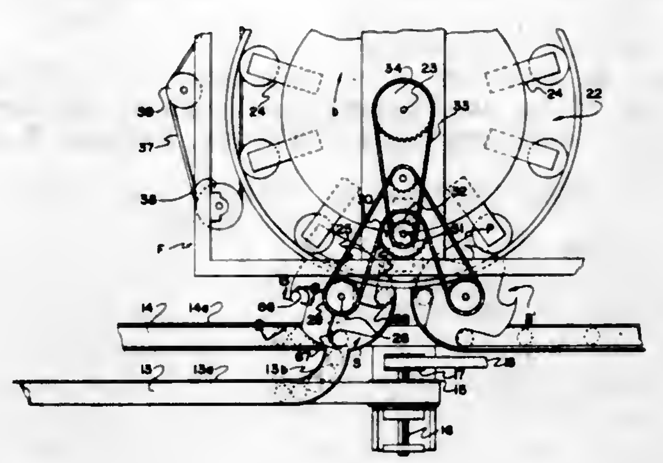


A method of easily and economically mass-producing plastic lawn-like objects exactly like natural lawn, any other grass similar thereto, or the man-created imitations thereof is described. The method involves forming molding plates respectively having a surface continuously engraved with the design of one side of natural lawn or the like. The method further involves filling a plastic resin in this engraved surface, hardening the same to mold lawn-like object constituting elements, and arranging these in a line so as to be stuck inseparably to a ground sheet thereby providing plastic lawn-like objects superior in quality to conventional ones.

**3,759,770**

### FRICTION WELDING MACHINE LOADING AND HOLDING APPARATUS

**Gaylord W. Brown and Gary A. Adams, Beaverton, Mich., assignors to Koehring Company**
**Filed July 6, 1971, Ser. No. 159,883**
**Int. Cl. B29c** *27/08;* **B32b** *31/00*
**U.S. Cl. 156—73** **14 Claims**



Friction welding machinery for joining thermoplastic container top and bottom parts which are moved continuously along a production line. Star wheel loading and unloading members incorporate suction pads for gripping the parts as they move to the holders where flutes, in at least some of the holders, communicate suction chambers in the holders with a vacuum source, and also hold the parts during the friction welding operation.

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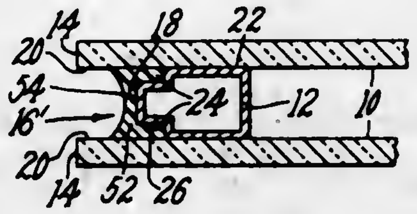
**3,759,771**

### METHOD OF MAKING DOUBLE GLAZING UNIT

**William R. Battersby, 14 Munroe Road, Lexington, Mass. 02173**
**Filed Apr. 26, 1971, Ser. No. 137,274**
**Int. Cl. B32b** *31/30;* **C03c** *27/08*
**U.S. Cl. 156—109** **7 Claims**



Method of making double glazing unit in which a spacer is disposed between two panes of glass leaving a channel between an outer face of the spacer and marginal portions of the panes, resinous material is applied in hot molten condition to seal the joints between the spacer and panes to adhere to the panes and extend from one pane to the other and the resinous material is cooled to solidify it to hold the panes strongly together in spaced, sealed relationship.

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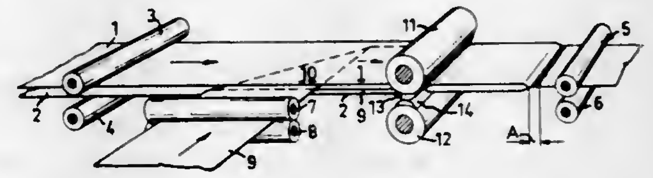
**3,759,772**

### METHOD AND APPARATUS FOR OBTAINING TRANSVERSE MUTUAL JOINING OF SUPERIMPOSED CONTINUOUS WEBS

**Lars Marten Andersson, Molnlycke, Sweden, assignor to Molnlycke AB, Goteborg, Sweden**
**Filed Aug. 20, 1971, Ser. No. 173,377**
**Claims priority, application Sweden, Aug. 21, 1970, 11,422/70**
**Int. Cl. B32b** *31/00*
**U.S. Cl. 156—270** **5 Claims**

The present invention relates to a method and an apparatus for obtaining transverse mutual joining of superimposed continuous webs. The method is mainly characterized in that a thermoplastic web is inserted between two superimposed continuous running webs. All the webs are then subjected to heat and pressure in an area where the actual joining is effected, the additional, thermoplastic web being inserted at a speed lower than the speed of the webs which are to be joined together. The apparatus is basically characterized by feeding means for the webs to be joined together and for the additional thermoplastic web. It is further characterized by means for applying heat and pressure on all the webs in the area where the joining is to be effected. The feeding means for the thermoplastic web have a lower speed than the feeding means for the webs to be united and are arranged, as seen in the direction of movement of the webs, in front of the heat and pressure applying means and at one side edge of the webs in order to feed the additional, thermoplastic web between the superimposed webs and at an angle to said side edge.



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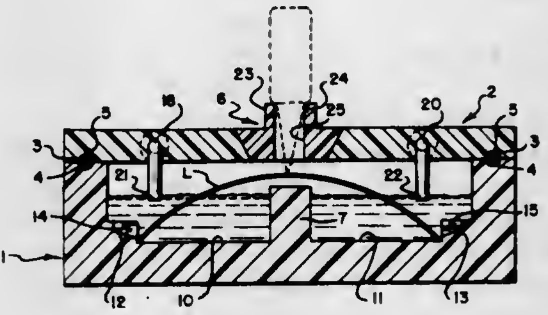
**3,759,773**

### LAMINATED SHEET FOR ELECTROPHORESIS

**James L. Dwyer, South Lincoln, Richard A. Paine, Bedford, and Charles W. Souza, Pinehurst, Mass., assignors to Millipore Corporation, Bedford, Mass.**
**Original application Mar. 27, 1967, Ser. No. 626,323, now Patent No. 3,594,263. Divided and this application Oct. 20, 1970, Ser. No. 82,386**
**Int. Cl. B01d** *13/02;* **B32b** *31/12*
**U.S. Cl. 156—280** **4 Claims**



This invention provides a laminated sheet for electrophoresis consisting of a plastic base sheet to which is bonded a microporous plastic membrane sheet consisting largely of pores which is in bonded contact with the plastic base with the pores on the outer surface open for receiving electrolyte solution and the material to be analyzed by electrophoresis. It is important that the adhesive bonding material does not enter and plug the pores. The invention provides a process for forming the laminated sheet, which comprises adhesively connecting together the base sheet and the porous plastic sheet under such control of pressure and temperature that the porosity of the sheet is not impaired.

**3,759,774**

### PROCESS OF MAKING STRUCTURAL PARTS OF IMPROVED SURFACE PROPERTIES

**Erich Bader, Hanau am Main, and Hubert Koert, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany**

**No Drawing. Continuation-in-part of application Ser. No. 844,670, July 24, 1969, now Patent No. 3,639,191. This application Aug. 9, 1971, Ser. No. 170,271**

**Claims priority, application Germany, July 25, 1968, P 17 03 887.8; Feb. 22, 1969, P 19 09 035.8**

**Int. Cl. B32b** *31/12*

**U.S. Cl. 156—284** **23 Claims**

A structural part is formed of improved surface properties by moistening the part with a liquid polymerizable organic compound and then applying a finely divided thermoplastic polymeric substance in a substantially uniform manner to the faces or one face of the part, the said polymer being at least swellable in said liquid polymerizable composition, and finally subjecting the part to pressure and elevated temperatures sufficient to cause curing of the polymerizable organic composition and forming of a substantially coherent polymer coating on the part.

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**3,759,775**

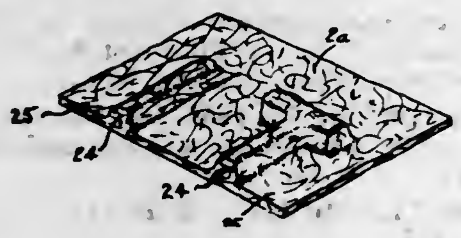
### NONWOVEN FIBROUS PRODUCT AND METHOD OF MAKING THE SAME

**Robert C. Shepherd, Oak Lawn, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.**

**Continuation of application Ser. No. 878,246, Nov. 19, 1969, which is a continuation-in-part of application Ser. No. 570,390, July 26, 1966, both now abandoned. This application May 4, 1971, Ser. No. 140,247**

**Int. Cl. B32b** *5/02, 5/18;* **D04h** *1/68*

**U.S. Cl. 156—78** **21 Claims**



This disclosure includes descriptions of nonwoven fibrous webs including a minor amount of a binder securing the interfiber connections to maintain the fiber superstructure and having web densities less than about 0.02 gm./cm.$^3$ which has heretofore been considered about the lowest density attainable. The disclosure also includes a unique method of manufacturing such webs and contemplates the preferred use of an air laid web of fibers thoroughly impregnated with a fluid which includes a small amount of a permanent binder, preferably less than about 10% by weight of the fabric and a very substantial amount of a volatile liquid in the order of 100% by weight of the fabric. The volatile liquid explosively puffs the fibers into a gossamer web not attainable by conventional techniques and the small amount of binder secures the fiber interconnections together to maintain the superstructure.

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**3,759,776**

### PROCESS OF FORMING UPHOLSTERY

**Donald L. Decker, Newburgh, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.**

**No Drawing. Original application Sept. 11, 1967, Ser. No. 666,941, now Patent No. 3,652,359. Divided and this application July 8, 1971, Ser. No. 160,940**

**Int. Cl. B32b** *7/12;* **C09j** *5/04*

**U.S. Cl. 156—309** **6 Claims**

A process for molding an article of manufacture consisting of forming a laminate composed of a stretch fabric bonded to stretchable plastic film with an adhesive system. The laminate is heated to between 270–295° F. and molded under pressure of 2 to 8 p.s.i.a. and products formed by said process.

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**3,759,777**

### PROCESS FOR PRODUCING REINFORCED PLASTIC LAMINATES FROM POLYDIENE BLOCK POLYMERS

**Hyman R. Lubowitz, Hawthorne, Richard S. Thorpe, Costa Mesa, and Robert W. Vaughan, Manhattan Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.**

**No Drawing. Filed Jan. 20, 1971, Ser. No. 108,174**

**Int. Cl. B32b** *27/32, 27/38*

**U.S. Cl. 156—330** **3 Claims**

Laminated structures comprising a plurality of resin impregnated bonded fabric sheets are made by curing a chain extended polydiene and anhydride adduct impregnant in the presence of a peroxide free radical initiator. Hydroxy, amino, or mercapto terminated 1,2-polybutadiene or 3,4-polyisoprene is reacted with an organic acid anhydride to produce a polydiene carboxylic acid terminated adduct which is chain extended and subsequently cured with a peroxide.

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**3,759,778**

### POLYURETHANE STRUCTURAL ADHESIVE

**Charles E. McClung, Dayton, and David Gerald Glasgow, Centerville, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.**

**No Drawing. Original application Mar. 24, 1969, Ser. No. 810,017, now abandoned. Divided and this application July 22, 1971, Ser. No. 165,373**

**Int. Cl. B32b** *27/40;* **C08g** *22/06;* **C09j** *3/16*

**U.S. Cl. 156—331** **3 Claims**

An adhesive composition comprising (a) an isocyanate-terminated prepolymer obtained by reaction of a polytetramethylene ether glycol and an unsymmetrical hindered aromatic diisocyanate, and (b) 4,4′-methylenebis(2-chloroaniline).

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**3,759,779**

### LAMINATES

**William V. Dumas, Scotia, N.Y., assignor to General Electric Company**

**No Drawing. Filed Sept. 21, 1971, Ser. No. 182,550**

**Int. Cl. C09j** *5/02*

**U.S. Cl. 156—331** **6 Claims**

Laminates having good physical characteristics at room and elevated temperatures are prepared by forming a suspension of the reaction product of unsaturated bisimide and polyamine in a suitable liquid, impregnating the laminae base with the suspension and curing the layup to form a laminate under heat and pressure.

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**3,759,780**

### PROCESS OF SEALING JOINTS WITH SEALANT COMPOSITION

**Alexander J. Rizzer, Akron, Ohio, assignor to Cities Service Company, New York, N.Y.**

**No Drawing. Original application Jan. 21, 1970, Ser. No. 4,784, now abandoned. Divided and this application July 9, 1971, Ser. No. 161,942**

**Int. Cl. C09j** *3/12*

**U.S. Cl. 156—335** **1 Claim**

Tapes for sealing windows in automotive and architectural applications are formulated from butyl rubber, a rubber plasticizer, carbon black and a thermoplastic terpene phenol-formaldehyde Novolak resin. By virtue of the terpene phenolic resin, the sag and heat flow resistance of the formulation is considerably enhanced.

**3,759,781**

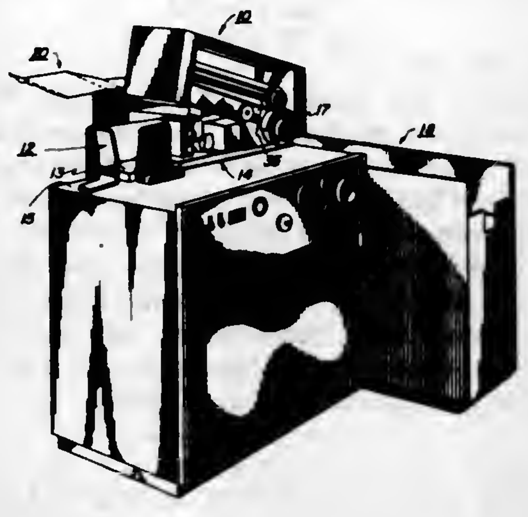
### LABEL ACCUMULATOR FOR ADDRESSING MACHINE

**John V. McGuire, Deerfield, Ill., assignor to Xerox Corporation, Stamford, Conn.**

**Filed May 15, 1970, Ser. No. 37,558**

**Int. Cl. B32b** *31/04, 31/20*

**U.S. Cl. 156—521** **6 Claims**



An addressing machine for articles for use with a continuous strip label supply, said addressing machine having a labeling head, transport means for supplying articles to the labeling head for addressing thereof, the labeling head including a label transfer wheel, means for cutting said supply strip into individual labels, means for transporting said labels from the cutting means to the label transfer wheel including an endless conveyor belt; and a label accumulator for receiving labels from said belt, said accumulator being adapted to hold a minimum supply of labels pending use by the transfer wheel to thereby avoid the need to exactly synchronize the operating speeds of the label transporting means with said transfer wheel as otherwise required to assure timely delivery to and accurate positioning of labels on the transfer wheel prior to transfer to said articles.

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**3,759,782**

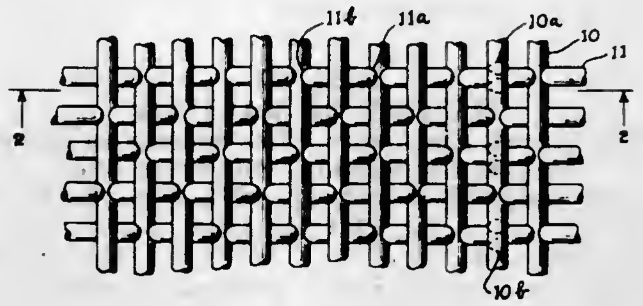
### CROSSLAID FABRIC

**Keith T. Bleuer, 1663 Wilshire Drive, Rochester, Minn. 55901**

**Filed Dec. 18, 1970, Ser. No. 99,586**

**Int. Cl. B32b** *5/12*

**U.S. Cl. 161—57** **12 Claims**



A crosslaid fabric made up of warp and shute filaments in which the warp filaments have portions integrally formed therewith at least partially embracing the shute filaments and in which the shute filaments also have portions integrally formed therewith at least partially embracing the warp filaments or in which only the warp filaments or only the shute filaments have such integral portions.

**3,759,783**

### PROCESS FOR BLEACHING CELLULOSE PULP WITH ALKALI AND OXYGEN GAS UTILIZING WASTE BLEACHING LIQUOR FROM AN ALKALINE OXYGEN GAS BLEACHING STAGE

**Hans Olof Samuelson, Goteborg, and Ingemar Liss-Albin Croon, Alfredshem, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden**

**Filed Aug. 23, 1971, Ser. No. 173,764**

**Claims priority, application Sweden, Aug. 25, 1970, 11,537/70**

**Int. Cl. D21c** *9/10*

**U.S. Cl. 162—40** **24 Claims**

A process is provided for bleaching cellulose pulp with alkali in the presence of oxygen gas and particularly of air, in which the cellulose pulp is impregnated with spent pulping liquor and waste bleaching liquor from an alkaline oxygen gas bleaching stage.

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**3,759,784**

### METHOD OF BLEACHING PULP WITH AN AQUEOUS CHLORINE SOLUTION WHILE SUPPRESSING VAPORIZATION OF LIQUID CHLORINE

**Udell T. Greene, Florham Park, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio**

**Original application June 12, 1969, Ser. No. 832,633. Divided and this application Oct. 29, 1970, Ser. No. 85,260**

**Int. Cl. D21c** *9/12*

**U.S. Cl. 162—87** **2 Claims**

Method for bleaching pulp with a solution of a soluble liquefied gas in a liquid chlorine solvent while permitting at least substantially full pressure on the liquefied gas to the point of incipient solution and thereafter desirable dispersion of the liquefied gas dissolving the solvent as well as providing fast and efficient flow of the resulting solvent into a liquid processing medium. The method provides for suppressed vaporization of gas, even though such suppression occurs during an accompanying pressure drop, when the liquefied gas dissolves in the solvent, and further when the resulting solution disperses in the liquid processing medium.

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**3,759,785**

### HIGH STRENGTH NEWSPRINT

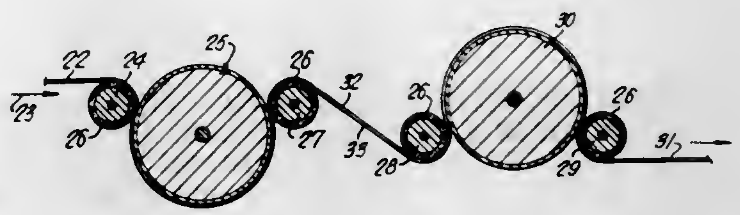
**Walter G. Mihelich, Kenogami, Quebec, Canada, assignor to The Price Company Limited, Kenogami, Quebec, Canada**

**Continuation-in-part of application Ser. No. 860,022, Sept. 22, 1969. This application Oct. 6, 1971, Ser. No. 186,963**

**Claims priority, application Canada, Sept. 22, 1969, 62,706**

**Int. Cl. D21f** *11/00;* **D21h** *5/12*

**U.S. Cl. 162—142** **11 Claims**



High strength newsprint is made by calendering a newsprint paper web between a smooth hard metallic surface and a firm resilient surface so that the thickness of the paper under the applied pressure varies from point-to-point in approximate proportion to the corresponding point-to-point basis weight of the paper. The calendering is effected so that smoothing pressure is applied by passing the web through at least two resilient nips, each nip comprising a hard roll and an opposing resilient roll, so that each side of said web contacts a hard roll at least once. The newsprint paper may have at least 25% of superground wood.

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**3,759,786**

### SINTERED NUCLEAR FUEL CONTAINING MOLYBDENUM COATED GADOLINIUM OXIDE MICROSPHERES

**Giancarlo Abate-Daga and Ignazio Amato, Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy**
**Filed Dec. 16, 1969, Ser. No. 885,524**
**Claims priority, application Italy, Feb. 25, 1969, 50,722/69**
**Int. Cl. C09k** *3/00;* **G21c** *3/20*
**U.S. Cl. 176—69** **2 Claims**

Sintered nuclear fuel, uranium dioxide in particular, containing a consumable poison of rare-earth oxide or metal boride uniformly distributed in the form of coated microspheres of 10 to 20,000 microns diameter.

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**3,759,787**

### NUCLEAR FUEL ELEMENTS

**Glen E. McDonald, Strongsville, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**
**Filed Sept. 30, 1960, Ser. No. 60,276**
**Int. Cl. G21c** *3/02, 3/06, 3/36*
**U.S. Cl. 176—169** **3 Claims**

1. A method of providing a tungsten cladding for tungsten-uranium dioxide nuclear fuel plates comprising covering a tungsten-$UO_2$ powder compact with powdered tungsten, pressing at a pressure within the range from 5000 pounds per square inch and 10,000 pounds per square inch said tungsten covered compact, heating said pressed element to a temperature of approximately 2800° F. and finally subjecting said element to continuous successive steps of heating to a temperature of at least 3500° F. and rolling until the grains of the tungsten in the clad have an average length of 0.010 inch.

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**3,759,788**

### REDUCING BLOOD CLOTTING WITH ANTITHROMBOGENIC MATERIALS CONTAINING QUATERNARY PHOSPHONIUM SALTS

**Henry Martin Gajewski, Winnetka, and Clarence John Gdowski, Buffalo Grove, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.**
**No Drawing. Filed Dec. 8, 1969, Ser. No. 883,295**
**Int. Cl. C12b** *3/00, 9/00*
**U.S. Cl. 195—1.8** **12 Claims**

Reduced blood clotting is found upon the utilization of antithrombogenic materials which comprise an organic plastic having dispersed on its surface, in a pharmacologically acceptable concentration, a quaternary phosphonium salt of a strong acid which is generally insoluble in saline solution.

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**3,759,789**

### PROCESS FOR THE MICROBIAL PRODUCTION OF LYSINE AND ISOLEUCINE

**Kiyoshi Watanabe, Akashi, Tutomu Tanaka, Kobe, Tamotsu Hirakawa, Kakogawa, and Mamoru Sasaki, Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan**
**No Drawing. Filed Mar. 17, 1971, Ser. No. 125,353**
**Claims priority, application Japan, Dec. 28, 1970, 46/128,964**
**Int. Cl. C12b** *1/00*
**U.S. Cl. 195—28 R** **20 Claims**

A process for producing L-lysine and L-isoleucine which comprises cultivating a threonine resistant mutant strain of *Arthrobacter alkanicus* (*Arthobacter alkanicus* No. 109) (ATCC No. 21657), under aerobic conditions in an aqueous nutrient medium containing assimilable carbon sources such as hydrocarbons, fatty acids, organic acids or alcohols, and surface active agents such as polyoxyethylene-sorbitan mono-oleate or polyoxyethylene-sorbitane tri-oleate, and accumulating L-lysine and L-isoleucine in the resultant culture liquor.

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**3,759,790**

### PROCESS FOR PREPARING L-PHENYLALANINE

**Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan**
**No Drawing. Filed July 16, 1971, Ser. No. 163,486**
**Claims priority, application Japan, July 29, 1970, 45/65,755**
**Int. Cl. C12d** *13/06*
**U.S. Cl. 195—29** **7 Claims**

L-phenylalanine is produced in substantial yield by fermentation from an L-phenylalanine-producing strain of coryneform glutamic acid-producing bacteria represented by *Corynebacterium glutamicum*. Specifically mutated strains of the above noted bacteria that exhibit resistance to at least one compound selected from the group consisting of tyrosine, phenylalanine and analogues thereof and exhibit a tyrosine requirement, produce large amounts of L-phenylalanine when cultured in a suitable nutrient medium.

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**3,759,791**

### SELECTIVE MICROBIOLOGICAL PREPARATION OF ANDROST-4-ENE-3,17-DIONE

**William J. Marsheck, Arlington Heights, and Stephen Kraychy, Northbrook, Ill., assignors to G. D. Searle & Co., Chicago, Ill.**
**No Drawing. Filed Dec. 10, 1970, Ser. No. 96,990**
**Int. Cl. C07c** *167/18*
**U.S. Cl. 195—51 G** **11 Claims**

A process is disclosed for preparing androst-4-ene-3,17-dione by fermenting with Mycobacterium sp. N.R.R.L. B–3805 or enzymes thereof a steroid wherein carbon atom number 17 is substituted by alkyl.

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**3,759,792**

### METHOD OF MALTING

**Eric Kneen, Elm Grove, Wis., assignor to Kurth Malting Corporation, Milwaukee, Wis.**
**No Drawing. Filed Sept. 21, 1970, Ser. No. 74,222**
**Int. Cl. C12c** *1/04*
**U.S. Cl. 195—70** **13 Claims**

In malting in which barley is steeped, germinated and dried by kilning, the improvement of adding a sulfite, bisulfite or metabisulfite salt or mixture thereof to the barley after steep-out and before significant kilning of the germinated grain, adding an acidic substance to the grain after at least one day of germination, and thereafter completing any remaining germination period and kilning period. The malt obtained is characterized by decreased wort pH, increased extract and wort soluble protein, and has a brighter color. The malt is equal to or better than that obtained by malt sulfuring according to conventional methods.

**3,759,793**

### PROCESS FOR THE QUANTITATIVE DETERMINATION OF TRI-, DI- AND MONOGLYCERIDES

**Harald Stork, Lampertheim, Hessen, and Felix Helmut Schmidt, Mannheim-Seckenheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany**
**No Drawing. Filed Dec. 21, 1970, Ser. No. 100,498**
**Claims priority, application Germany, Jan. 2, 1970, P 20 00 127.8**
**Int. Cl. C12k** *1/04*
**U.S. Cl. 195—103.5 R** **11 Claims**

Lipoproteins and/or protein free neutral fats present in body fluids, i.e., tri-, di- and monoglycerides, are determined completely enzymatically by using the lipase obtained from *Rhizopus arrhizus* to split the glyceride to be determined, and then in known fashion converting the resulting glyceride to pyruvate, and converting the pyruvate to lactic acid with NADH, the photometrically determined amount of NADH used up being a measure of the initial glyceride content.

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**3,759,794**

### METHOD FOR DETERMINATION OF AMYLASE ACTIVITY

**Sylvan M. Sax, 6490 Monitor St., Pittsburgh, Pa. 15217; John J. Moore, 1807 Park Circle Drive, Glenshaw, Pa. 15116; and Anna B. Bridgwater, 273 S. Winebiddle St., Pittsburgh, Pa. 15224**
**No Drawing. Filed Nov. 1, 1971, Ser. No. 194,667**
**Int. Cl. G01n** *31/14*
**U.S. Cl. 195—103.5 R** **6 Claims**

A method for the determination of amylase activity comprising the preparation of a substrate by treating amylopectin with a dichloro-s-triazine dye, buffering same, then mixing the serum, urine, or other body fluid to be tested with the substrate, providing a predetermined incubation period, then adding ethylene glycol monomethyl ether to the incubated material, followed by the addition of zinc sulfate solution, and then determining the absorbance of the reacted substrate.

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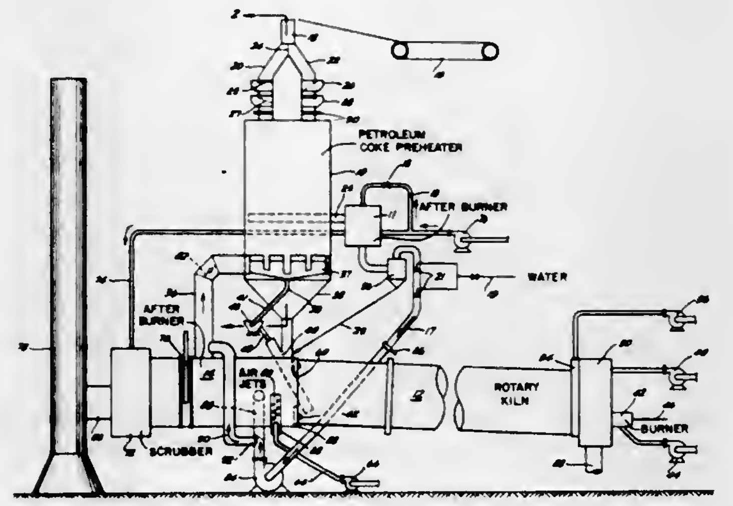
**3,759,795**

### CALCINER-PREHEATER

**Robert K. Oliver, San Luis Obispo, and George L. Ford, Arroyo Grand, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.**
**Filed July 15, 1971, Ser. No. 163,003**
**Int. Cl. C10b** *49/04, 53/00*
**U.S. Cl. 201—25** **8 Claims**



A method is described for preheating coke in a calcining process to a temperature between about 600° to 1000° F., preferably to between 850° and 1000° F. This preheating avoids shattering of the coke into undesirable small particles in the calcining kiln. The hot combustion gases from the kiln are admixed with air to burn all volatile combustible material contained in the gases and a portion of the resultant hot gases is admixed with cooler gas to obtain a heating gas for the preheater having a temperature between about 800° and 1250° F. This heating gas is supplied to the preheater in sufficient volume to preheat the coke to above about 600° F., preferably above 850° F.

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**3,759,796**

### METHOD OF REPRODUCING MAGNETIZATION PATTERN

**Tatsuji Kitamoto, Masashi Aonuma, and Kazuhiro Kawaziri, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**
**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,131**
**Claims priority, application Japan, Mar. 27, 1970, 45/25,712**
**Int. Cl. C04b** *35/00;* **C23b** *7/02;* **G11b** *5/00*
**U.S. Cl. 204—12** **9 Claims**

Reproduction of an original magnetization pattern by forming a magnetic film having a high magnetization resistance on a substrate tape having a magnetization pattern thereby to magnetize said film in the same pattern as that of the substrate, and stripping off said magnetic film from the substrate. The magnetic film is formed by plating or vapor deposition and can be used repeatedly as a master tape to reproduce large quantities of the magnetization pattern by such means as magnetic transfer.

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**3,759,797**

### SURFACE COATING METHOD BY ELECTROLYTIC POLYMERIZATION

**Kunihiko Masunaga and Hiroshi Shinohara, Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan**
**No Drawing. Filed Dec. 8, 1971, Ser. No. 206,122**
**Claims priority, application Japan, Dec. 21, 1970, 45/114,918**
**Int. Cl. C23b** *11/00*
**U.S. Cl. 204—14 N** **7 Claims**

The present invention provides a method of forming an electrolytically polymerized coat of vinyl polymer on the surface of an object, with its polymerization being carried out under control by adding one or more of alcohols, quinones and mercaptans into a monomer mixture solution for electrolytic coating.

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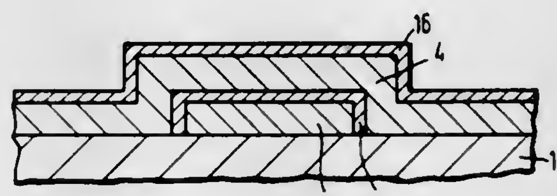
**3,759,798**

### METHOD OF PRODUCING ELECTRICALLY INSULATED ALUMINUM CONTACTS

**Hans Grafe and Hans Ullrich, Munich, Germany, assignors to Siemens Aktiengesellschaft**
**Filed Jan. 28, 1970, Ser. No. 6,357**
**Int. Cl. C23b** *9/02, 5/48;* **C23f** *17/00*
**U.S. Cl. 204—15** **4 Claims**



A method of producing electrically insulated aluminum contacts for planarly produced semiconductor device components comprises directly oxidizing an aluminum contact to form an insulating layer of aluminum oxide thereon.

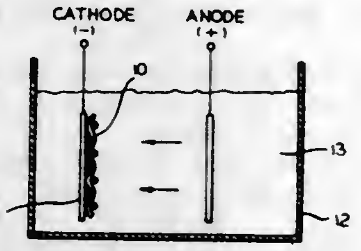
### 3,759,799
### METHOD OF MAKING A METAL PRINTING SCREEN

**George W. Reinke, Crystal Lake, Ill., assignor to Screen Printing Systems, Inc., Cary, Ill.**

**Continuation-in-part of abandoned application Ser. No. 838,601, July 12, 1969. This application Aug. 10, 1971, Ser. No. 170,529**

**Int. Cl. C23b** *7/02, 7/00;* **B41c** *1/14*

**U.S. Cl. 204—16 14 Claims**



An all metal printing screen and a method of making same including the steps of mounting a metal woven wire mesh onto a metal plate, subjecting the wire mesh and plate to an electrolytic action to simultaneouly plate or coat the wire mesh and plate with a metal, and removing the coated wire mesh and plate coating as a unit from the plate to define a continuous smooth surface on one side that may be thereafter etched with a printing pattern to remove the plate coating and open the wire mesh in the printing pattern and define the resist layer. The smoothness of the resist layer and its height above the top threads are closely controlled by the electrolytic plating process.

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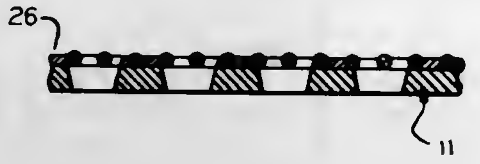
### 3,759,800
### SEAMLESS ROTARY PRINTING SCREEN AND METHOD OF MAKING SAME

**George W. Reinke, Crystal Lake, Ill., assignor to Screen Printing Systems, Inc., Cary, Ill.**

**Filed Sept. 27, 1971, Ser. No. 183,873**

**Int. Cl. B41c** *1/14;* **B41l** *13/00;* **C23b** *7/00*

**U.S. Cl. 204—16 11 Claims**



A printing screen comprised of a metal base and a taffeta woven or knit fabric face in sleeve form where the base is defined by an electro-deposited sleeve having a pattern of holes chemically etched therein, and where the fabric face is stretched or heat-shrunk over the metal base and locked in place by a plating of metal onto the outer surface of the base.

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### 3,759,801
### ELECTROLYSIS BATH AND PROCESS FOR ELECTROLYTICALLY COLORING ANODIZED ALUMINUM

**Jos Patrie, 3 Chemin des Marronniers, Grenoble, France, and Michel Legrand, "Le Villard," Coublevie, France**

**No Drawing. Filed Nov. 18, 1971, Ser. No. 200,225**

**Claims priority, application France, Nov. 26, 1970, 7042544**

**Int. Cl. C23f** *7/00, 9/02*

**U.S. Cl. 204—35 N 7 Claims**

An electrolysis bath for coloring previously anodized aluminum and alloys of aluminum by means of an alternating current electrolysis in an aqueous acid solution containing nickel sulphate in an amount within the range of 50 to 150 g./liter, ammonium sulphate and boric acid in an amount within the range of 45 to 60 g./liter, and at a pH within the range of 3.5 to 5.2.

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### 3,759,802
### CORROSION-RESISTANT ORNAMENTAL CHROMIUM PLATING

**Gaetan de Coye de Castelet, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, Hauts de Seine, France**

**No Drawing. Continuation-in-part of application Ser. No. 153,828, June 16, 1971, which is a continuation of application Ser. No. 482,902, Aug. 26, 1965. This application Sept. 27, 1971, Ser. No. 184,251**

**Claims priority, application France, Mar. 31, 1965, 89,657**

**Int. Cl. C23b** *5/08, 5/50*

**U.S. Cl. 204—41 3 Claims**

Chromium plating with substantially improved resistance to corrosion and flaking is produced by first electroplating the substrate with a highly stressed nickel layer such that upon electroplating the chromium thereon micro-cracks form in the nickel and chromium layers. The micro-cracking nickel layer is deposited from a bath containing nickel chloride, an organic acid and the nickel salt thereof selected from the group consisting of gluconic, tartaric, formic, malic, lactic, citric and succinic acids. In certain applications nickel sulfamate or nickel fluoborate may be substituted for the nickel chloride.

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### 3,759,803
### ALKALINE NICKEL PLATING SOLUTIONS

**Arthur H. DuRose, Richmond Heights, and Robert L. Stern, Cleveland Heights, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.**

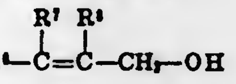
**No Drawing. Continuation of abandoned application Ser. No. 752,168, Aug. 13, 1968. This application July 22, 1971, Ser. No. 165,383**

**Int. Cl. C23b** *5/08, 5/46*

**U.S. Cl. 204—49 6 Claims**

Addition agents for use in alkaline nickel plating baths which produce a brighter more ductile nickel electroplate. The addition agents are of the general formula:

$$R—C\equiv C—R^1$$



$$R^4—\overset{R^2}{\overset{|}{C}}=\overset{R^3}{\overset{|}{C}}—CH_2—OH$$

and

$$R^4—CH=CH—C\equiv C—R^5$$

Typical compounds include 2-chloroallyl alcohol; 1-ethynyl-1-cyclohexanol; 2-butyne-1,4-diol; 2,4-hexadiyne-1,6-diol and 2-methoxy-1-butene-3-yne.

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### 3,759,804
### ELECTROCHEMICAL OXIDATION OF THALLIUM DERIVATIVES

**Louis Le Bris, Daniel Michelet, and Michel Rakoutz, Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France**

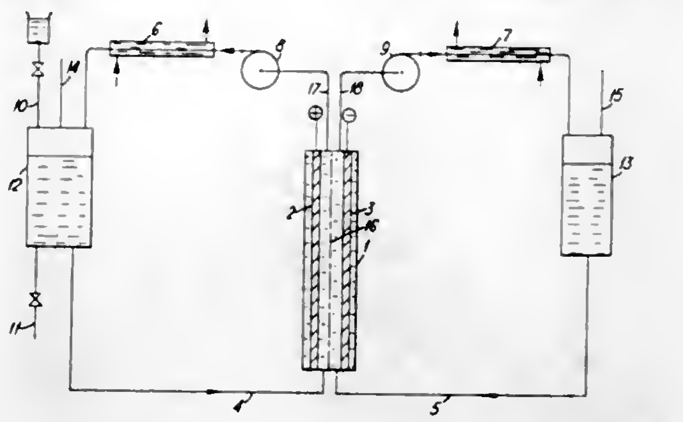
**Filed Feb. 16, 1971, Ser. No. 115,477**

**Claims priority, application France, Feb. 17, 1970, 747,548**

**Int. Cl. C01g** *15/00;* **C23b** *5/30, 5/46*

**U.S. Cl. 204—93 16 Claims**

Thallous ions are oxidised electrochemically to thallic ions in a cell divided into at least two compartments by an anion exchange membrane divider, the anolyte containing thallous and thallic ions and the catholyte containing an alkali metal or ammonium hydroxide or salt of a volatile weak acid. Stainless steel, lead or copper electrodes can be used satisfactorily.



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### 3,759,805
### ELECTROLYTIC TREATMENT OF FILAMENTARY CARBON MATERIAL

**Dennis R. Chapman, Duffield, and William Crawford Paterson, Darley Abbey, England, assignors to Courtaulds Limited, London, England**

**No Drawing. Filed Mar. 18, 1970, Ser. No. 20,822**

**Claims priority, application Great Britain, Mar. 19, 1969, 14,434/69**

**Int. Cl. C01d** *7/34;* **C01b** *13/04;* **B01k** *3/01*

**U.S. Cl. 204—130 5 Claims**

A process for treating the surface of filamentary carbon which comprises making the filamentary carbon the anode of an electrolytic cell, employing as the electrolyte an aqueous solution of a solute, for example an alkali metal hydroxide, adapted to generate oxygen at the anode during electrolysis, and electrolysing the electrolyte. The treatment may be carried out as a batch process or a continuous process.

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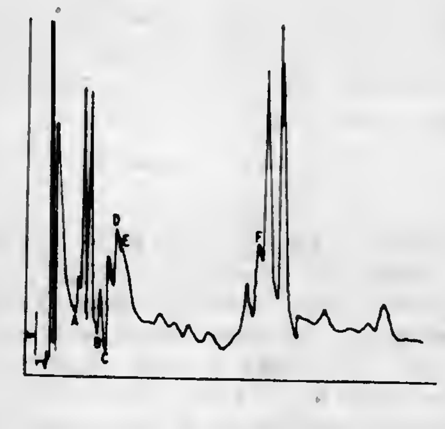
### 3,759,806
### PREPARATION OF PERFUMES AND SIMILAR PRODUCTS

**Hyman Doctor, Staten Island, N.Y., assignor to R.D.T. International Inc., Staten Island, N.Y.**

**Continuation-in-part of abandoned application Ser. No. 854,830, Sept. 3, 1969. This application Sept. 9, 1970, Ser. No. 70,933**

**Int. Cl. B01j** *1/10*

**U.S. Cl. 204—158 R 5 Claims**



A method of improving the lasting and other characteristics of perfumes and similar cosmetic products containing an alcoholic or similar base comprising contacting said products or components thereof with actinic light within the wave length region of 3900 to 4800 A. for a period of time reaching up to about 30 minutes, preferably from about 1 to about 30 seconds. Such contacting of the perfume or its component parts e.g., ethyl alcohol base, with actinic radiation provides for longer staying power, elimination of the flash back and alcohol odor and a general improvement of the characteristics of the perfume or similar cosmetic or toilet articles.

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### 3,759,807
### PHOTOPOLYMERIZATION PROCESS USING COMBINATION OF ORGANIC CARBONYLS AND AMINES

**Claiborn Lee Osborn, Charleston, and David John Trecker, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of applications Ser. No. 794,752, Jan. 28, 1969, Ser. No. 838,460, July 2, 1969, and Ser. No. 69,128, Sept. 2, 1970, all now abandoned. This application Jan. 19, 1972, Ser. No. 219,171**

**Int. Cl. C08d** *1/00;* **C08f** *1/16*

**U.S. Cl. 204—159.23 6 Claims**

Various combinations of certain organic carbonyl photosensitizer compounds and certain organic amine activators exert an unexpected beneficial effect on the photopolymerization of certain polymerizable monomers or oligomers and coating compositions containing the same. The suitable carbonyl compounds contain a ketonic oxygen, for example one can use acetophenone or xanthone, and the amines can be primary, secondary or tertiary amines, for example, one can use butyldiethanolamine, triethanolamine, di-n-butylamine or morpholine.

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### 3,759,808
### UNSATURATED DIACRYLATES POLYMERIZED WITH ULTRAVIOLET LIGHT

**Earl E. Parker, Allison Park, and Marco Wismer, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**No Drawing. Filed Apr. 20, 1971, Ser. No. 135,793**

**Int. Cl. C08f** *1/18, 1/20*

**U.S. Cl. 204—159.23 9 Claims**

A novel method of preparing a strong non-glossy material comprises subjecting a composition comprising an ethylenically unsaturated diacrylate and a peroxide catalyst to actinic light to cure. The materials are useful as films and coatings.

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### 3,759,809
### RADIATION-CURABLE COMPOSITIONS COMPRISING AN ISOCYANATE-MODIFIED POLYFUNCTIONAL ESTER AND A PHOTOINITIATOR

**Daniel J. Carlick, Northbrook, Ill., Frank Marra, Wayne, N.J., and Gerhard E. Sprenger, North Stonington, Conn., assignors to Sun Chemical Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 244,910, Apr. 17, 1972, which is a continuation-in-part of application Ser. No. 850,633, Aug. 15, 1969, both now abandoned. This application Nov. 14, 1972, Ser. No. 306,435**

**Int. Cl. C08d** *1/00;* **C08f** *1/16*

**U.S. Cl. 204—159.23 10 Claims**

A radiation-curable composition comprises at least one isocyanate-modified polyfunctional ester having a hydroxyl value of about 15–70 and at least one photoinitiator.

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### 3,759,810
### ROLL-THROUGH METHOD FOR ELECTROCOATING CAN ENDS

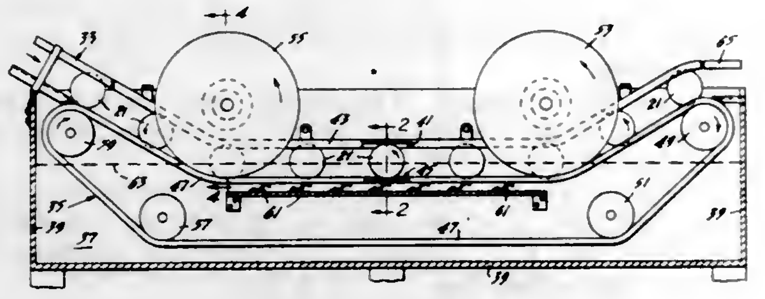
**Le Roy Landauer and Edward Leroy Blakslee, Crystal Lake, Benjamin Ichak Abraham, Chicago, and Henry Gilbert Stieglitz, Trout Valley, Ill., assignors to American Can Company, Greenwich, Conn.**

**Filed Mar. 29, 1971, Ser. No. 128,972**

**Int. Cl. B01k** *5/02;* **C23b** *13/00*

**U.S. Cl. 204—181 6 Claims**

A process and apparatus for conveying round, metal parts having raw edges through an electrocoating bath while maintaining rolling, wiping, electrical contact between the parts and a grooved electrode rail or wheel.



The profile of the grooved electrode is shaped to maintain the continuous rolling, wiping, electrical contact against the raw edge of the metal parts.

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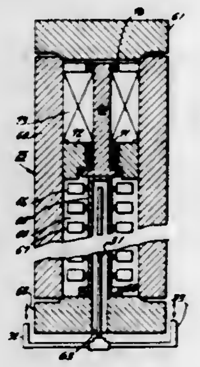
**3,759,811**

### APPARATUS FOR RADIATION POLYMERIZATION

**Gerald M. Platz and Daniel H. Greenberg, Champaign, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.**
**Filed Jan. 16, 1970, Ser. No. 3,410**
**Int. Cl. B01j** *1/10*
**U.S. Cl. 204—193** **10 Claims**



An elongated radioactive source of gamma radiation is used in initiating polymerization in a polymerization reactor. The elongated source rod is axially movable within the reactor so that its end terminates at any desired location within the reactor, thereby adjusting the effective volume within the reactor which will have polymerization processes initiated. This in turn adjusts the production rate of the reactor. A servo system is connected to drive the radioactive source rod to maintain a constant production rate. The radioactive rod may be divided into two or more parallel rods which are independently movable in order to provide any desired profile for the intensity of the radiation source.

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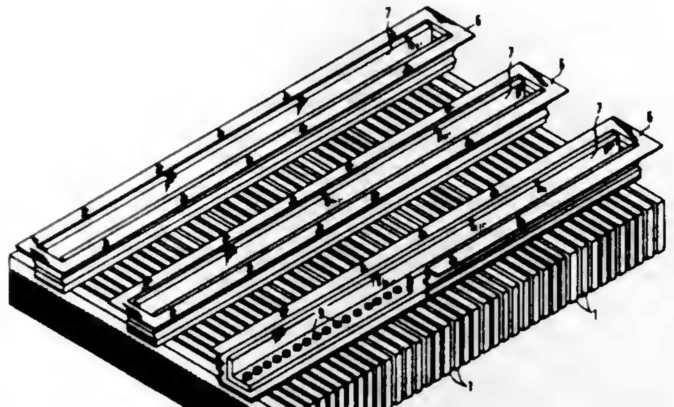
**3,759,812**

### ANODE CONSTRUCTION FOR AMALGAM HIGH LOAD CELLS

**Konrad Koziol and Baptist Zenk, Rothenbach an-der Pegnitz, Germany, assignors to C. Conradty, Nuremberg, Germany**
**Filed June 16, 1971, Ser. No. 153,636**
**Claims priority, application Germany, June 16, 1970, P 20 29 640.6**
**Int. Cl. B01k** *1/00, 3/08*
**U.S. Cl. 204—250** **6 Claims**

An anode structure, particularly for amalgam high load cells, in which the anode is made up of a plurality of graphite plates connected to current conducting rails by current conducting bolts which engage bushings in the upper edges of the graphite plates. The anode structure is receivable in a cell having a confining wall and a cell member engages the wall and extends over the anode and beneath the current conducting rails and engages the tops of the bushings so that only the graphite plates and bushings are exposed to the interior of the cell.



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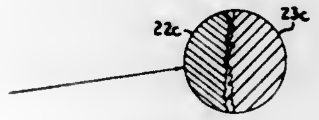
**3,759,813**

### ELECTROLYTIC CELL

**Carl W. Raetzsch, William B. Darlington, and Hugh Cunningham, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.**
**Continuation-in-part of application Ser. No. 55,680, July 17, 1970, now abandoned. This application July 1, 1971, Ser. No. 158,695**
**Int. Cl. B01k** *3/06;* **C01b** *11/26*
**U.S. Cl. 204—256** **14 Claims**



A novel bipolar unit for use in bipolar diaphragm cell electrolyzers is disclosed. Both members of the backplate of the bipolar unit—the anodic surface and the cathodic surface—are metallic. The backplate is particularly resistant to hydrogen-induced structural failure.

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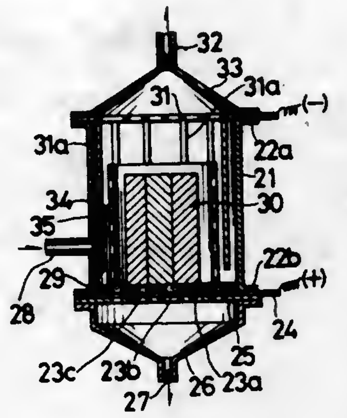
**3,759,814**

### ELECTROLYTIC APPARATUS FOR PRODUCING HYDRATED IRON OXIDE

**Akito Nakagawa, Kenji Ueda, Hironari Tanigawa, and Keiichiro Ishiguro, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan**
**Filed Aug. 4, 1971, Ser. No. 168,858**
**Claims priority, application Japan, Aug. 14, 1970, 45/80,720**
**Int. Cl. B01k** *3/04*
**U.S. Cl. 204—275** **4 Claims**

An electrolytic electrode device, which comprises an insoluble anode plate formed with a plurality of liquid holes and positioned in the lower part of an electrolytic cell, bar iron provided substantially vertically on said anode, cathode members located parallelly and above the top of said bar iron, and means to insulate electrically said bar iron and cathode from each other, whereby an electric current is flown through the electrolytic cell while raw water is being fed thereto.



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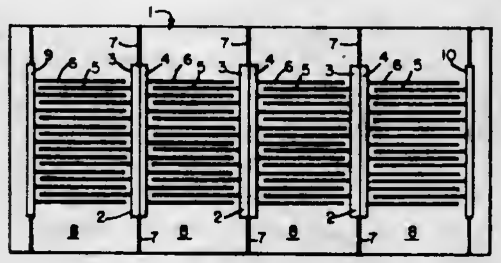
**3,759,815**

### ELECTRODE ASSEMBLY

**Karl-Georg Larsson, Sundsvall, Sweden, assignor to KemaNord AB, Stockholm, Sweden**
**Filed Nov. 23, 1971, Ser. No. 201,531**
**Claims priority, application Sweden, Nov. 26, 1970, 16,005/70**
**Int. Cl. B01k** *3/06;* **C01b** *11/26*
**U.S. Cl. 204—268** **5 Claims**



An electrode assembly for use in an electrolyzing cell comprising a bimetallic base plate from which parallel electrode plates extend. One metal of the bimetallic base plate and the protruding electrode plates serves as the cathode while the other metal and its protruding electrode plates serves as the anode. A number of these electrode assemblies can be arranged in a substantially parallel relationship within a cell box so as to form separate cell units in an electrolyzing cell.

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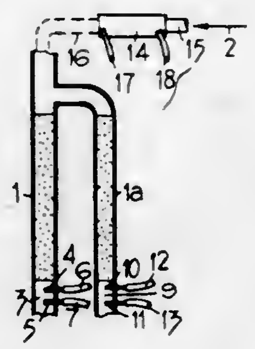
**3,759,816**

### DETECTION IN CHROMATOGRAPHY

**Victor Pretorius, Klein Waterkloof, Club Ave., Waterkloof, Transvaal, Republic of South Africa, and Hans Helmut Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, Transvaal, Republic of South Africa**
**Application Aug. 2, 1967, Ser. No. 657,804, now Patent No. 3,649,498, dated Mar. 14, 1972, which is a continuation-in-part of application Ser. No. 583,788, Oct. 3, 1966, now Patent No. 3,594,294, dated July 20, 1971. Divided and this application Dec. 14, 1971, Ser. No. 207,880**
**Claims priority, application Republic of South Africa, Aug. 2, 1966, 66/4,568**
**Int. Cl. B01k** *5/00*
**U.S. Cl. 204—299** **13 Claims**

The progress of a chromatographic separation is monitored at any desired locality of the chromatographic system by observing at a solid detection electrode with reference to a reference electrode any detectable constitution and concentration dependent electrical quantity, e.g.



conductivity, electrolytic current capacitance, zetaphenomena or a combination of superimposed quantities.

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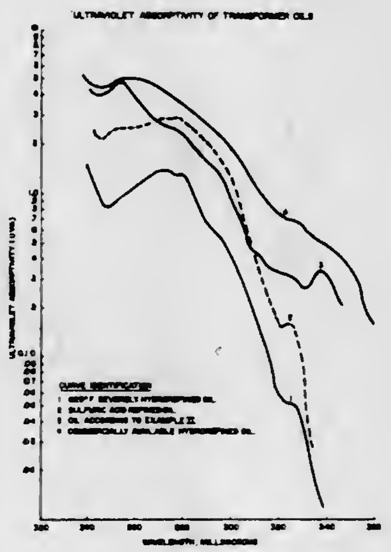
**3,759,817**

### BLEND COMPRISING HYDROREFINED OIL AND UNHYDROREFINED OIL

**Ivor W. Mills, Media, and Glenn R. Dimeler, West Chester, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**
**Continuation-in-part of applications Ser. No. 622,398, Mar. 11, 1967, now Patent No. 3,462,358, Ser. No. 652,026, July 10, 1967, now Patent No. 3,502,567, Ser. No. 730,999, May 22, 1968, Ser. No. 850,716, Aug. 18, 1969, now abandoned, Ser. No. 850,717, Aug. 18, 1969, now abandoned, Ser. No. 873,008, Oct. 31, 1969, and Ser. No. 22,295, Mar. 24, 1970, now Patent No. 3,681,233. This application July 22, 1971, Ser. No. 165,141**
**Int. Cl. H01b** *3/22*
**U.S. Cl. 208—14** **12 Claims**



A hydrocarbon oil, useful as an electrical insulation medium, having an impulse breakdown strength of at least 150 kv., an ASTM D-1313 test value no greater than 0.1 and which will pass at least 50 hours of the ASTM D-943 stability test, can be prepared by a process comprising blending 50–98 parts (preferably 70–95) of a severely hydrorefined naphthenic oil having a VGC from 0.820–0.899, a viscosity from 40 to 200 SUS at 100° C. and an ultraviolet absorptivity (UVA) of less than 0.04 in the 335 millimicron region with from 50–2 parts (preferably 30–5, for good D-1313 typically 10%) by weight of unhydrogenated naphthenic distillate (which preferably is free from naphthenic acids). The unhydrogenated distillate can be a raffinate from extraction with an aromatic selective solvent (e.g. furfural, phenol). Another blended oil, having a sludge-free Doble life of up to 75 hours, can be prepared by the process of blending the unhydrogenated distillate, the hydrogenated distillate, and a cycle oil. In such blends the cycle oil can be from 0.1–10 weight percent of the blend, the concentration preferably being such that the ratio of the ultraviolet absorptivity at 335 millimicrons to the absorptivity at 330 millimicrons in the blended product is no less than 1.0. Preferably, the blended oils contain less than 25 p.p.m. of total nitrogen and less than 5 p.p.m. (typically less than 1 p.p.m.) of basic nitrogen. Blends of unhydrorefined distillate, with a paraffinic lube oil (which can be hydrorefined) are useful as textile oils or as technical white oils. Such blends can also contain a hydrorefined naphthenic oil.

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### 3,759,818

### PROCESS FOR THE PREPARATION OF SOLID UREA ADDUCTS

**Jan Doelman and Hubrecht C. A. van Meurs, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Filed May 9, 1969, Ser. No. 823,485**

**Int. Cl. C07b** *21/00*

**U.S. Cl. 208—25** **2 Claims**

**Avoiding agglomeration of urea adducts by dissolving the adductable organic compounds in a solvent containing a lower boiling adduct-forming compound and a compound that is polar or polarizable; and in a preferred operation; a compound that evaporates at adduct-forming temperatures to cool the mixture.**

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### 3,759,819

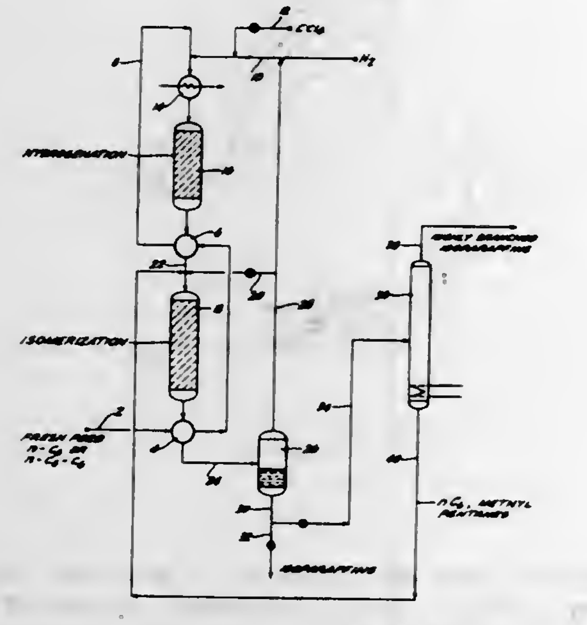
### INTEGRAL HYDROGENATION-ISOMERIZATION PROCESS

**Edward C. Attane, Orange, David E. Mears, Fullerton, and Cloyd P. Reeg, Orange, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.**

**Filed June 30, 1971, Ser. No. 158,447**

**Int. Cl. C07c** *5/24;* **C10g** *39/00*

**U.S. Cl. 208—57** **10 Claims**



**Light gasoline fractions rich in n-hexane and optionally n-pentane, and which also contain small amounts of benzene, are first subjected to hydrogenation in contact with certain zeolite-based platinum-group metal catalysts to effect saturation of the benzene content, and total effluent from the hydrogenation zone is then subjected to isomerization in contact with a platinum group metal supported on an alumina-containing base to effect isomerization of** normal paraffins to iso-paraffins. The isomerization catalyst is maintained in an active state by maintaining a small proportion of hydrogen chloride in the recycle gas.

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### 3,759,820

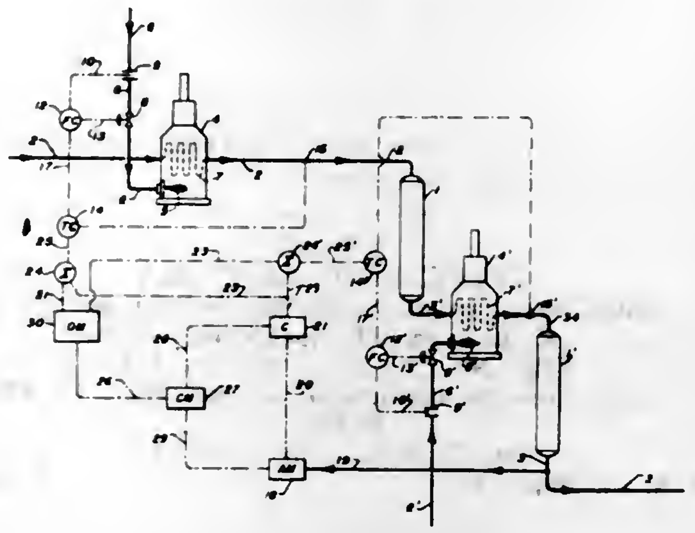
### CONTROL OF MULTI-REACTION ZONES IN RESPONSE TO TWO QUALITIES OF PRODUCT

**David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of application Ser. No. 146,400, May 24, 1971. This application May 11, 1972, Ser. No. 252,379**

**Int. Cl. C07c** *15/10;* **C10g** *39/00*

**U.S. Cl. 208—64** **19 Claims**



The method and means of controlling the output of a multi-zone reaction installation about a desired conversion level and at optimum performance conditions. An input to each reaction zone is regulated to control the severity of reaction in the individiual zones. Such regulation is controlled by means including a regulatable set point for each reaction zone. The discharge effluent from the downstream reaction zone is analyzed and the signal responsive to the character of such effluent is used to determine a first and second quality of the effluent stream. The optimizer receives a second quality signal which has been modified by means which alters the signal sent to the optimizer by the extent that the first measured quality has deviated from a preset value. The optimizer analyzes the signal fed to it and then determines a second output signal necessary for each reaction zone to approach an optimum performance in the reaction zones. A controller utilizes the signal indicative of the first quality of the effluent and determines an output signal representing a first component of the regulatable set points. The first and second outputs signals are combined and are utilized as the regulatable set points for controlling the regulation of the severity of reaction in each reaction zone.

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### 3,759,821

### CATALYTIC PROCESS FOR UPGRADING CRACKED GASOLINES

**James A. Brennan, Cherry Hill, William E. Garwood, Haddonfield, and Harold C. Myers, Woodbury, N.J., assignors to Mobil Oil Corporation**

**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,212**

**Int. Cl. C10g** *35/06*

**U.S. Cl. 208—93** **6 Claims**

A process is disclosed for upgrading catalytically cracked gasoline which involves fractionating a catalytically cracked gasoline into a $C_6^-$ overhead and a $C_7^+$ bottom fraction and contacting the $C_7^+$ bottom fraction with a ZSM–5 type zeolite. The liquid product obtained from contacting the $C_7^+$ bottom fraction with the ZSM–5 type zeolite is thereafter blended with the original $C_6^-$ fraction to give a final gasoline of increased octane number. The reaction can be carried out in the absence of hydrogen and in the absence of a hydrogenation/dehydrogenation component on the zeolites.

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### 3,759,822

### COKING A FEEDSTOCK COMPRISING A PYROLYSIS TAR AND A HEAVY CRACKED OIL

**Hillis O. Folkins, Claremont, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.**

**No Drawing. Filed Oct. 27, 1971, Ser. No. 193,149**

**Int. Cl. C10g** *9/14*

**U.S. Cl. 208—131** **7 Claims**

The process for the production of a high quality petroleum coke which can be graphitized to obtain a graphite having a desirably low coefficient of thermal expansion, commonly referred to as needle graphite, is described. The method comprises the coking of a blend of a thermally or catalytically cracked heavy oil having a high aromatic content as a result of the thermal or catalytic cracking with a quantity of a pyrolysis tar which is obtained as a byproduct from the high temperature, diluent cracking of petroleum distillates to produce olefins. It has been observed that a synergism exists between the pyrolysis tar and cracked heavy oil so that the pyrolysis tars can be used in much greater quantities than would be predicted from the characteristics of the cokes produced by the coking of the individual components. In a typical embodiment, a blend comprising from 20 to 60 percent of pyrolysis tar and 40 to 80 percent of a decant oil from catalytic cracking is thermally coked by heating to a temperature from 850° to about 1000° F. and passing the heated stock to a drum and permitting the stock to crack to form vapors and coke therein at temperatures of from 830° to about 875° F.

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### 3,759,823

### HYDROCARBON CONVERSION WITH PLATINUM-SECOND-METAL CATALYSTS IN PROPORTIONS WHICH FORM ORDERED ALLOYS

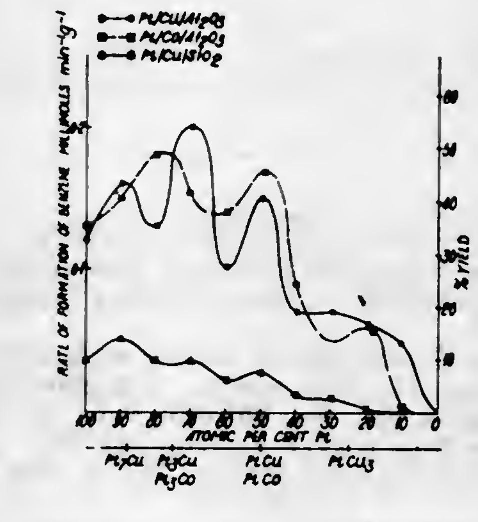
**Evan Ellis Davies, London, John Stanley Elkins, Cheam, and Robert Chalmers Pitkethly, Camberley, England, assignors to The British Petroleum Company Limited, London, England**

**Filed Mar. 30, 1971, Ser. No. 129,439**

**Claims priority, application Great Britain, Apr. 13, 1970, 17,361/70; July 3, 1970, 32,368/70**

**Int. Cl. C10g** *35/08*

**U.S. Cl. 208—138** **5 Claims**



A hydrocarbon conversion catalyst of 0.01–10% wt. metal on a refractory support contains platinum and a second metal which forms a solid solution with Pt, the atomic amounts of each being equivalent to amounts forming ordered alloy structures. The second metal may be Co, Ni, Fe, Cu, Sn, Pd (particularly these six), Ir, Rh, Ag, Au, Bi, Hg, Sb, Pd or Cd and preferably there is at least 45 atomic percent Pt. The catalysts may be prepared by known impregnation or ion-exchange techniques and are preferably reduced before use at 250–600° C.

The preferred use is dehydrocyclisation or dehydrogenation of $C_3$–$C_{25}$ hydrocarbons, particularly the catalytic reforming of 15–204° C. boiling range petroleum fractions.

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### 3,759,824

### METHOD FOR DETERMINING DECREASE IN HYDROGENATION-DEHYDROGENATION ACTIVITY AND ACIDIC ACTIVITY OF REFORMING CATALYST

**Marvin F. L. Johnson, Homewood, Ill., assignor to Atlantic Richfield Company, New York, N.Y.**

**No Drawing. Filed Sept. 20, 1971, Ser. No. 182,152**

**Int. Cl. C10g** *35/06*

**U.S. Cl. 208—139** **20 Claims**

A method for monitoring the hydrogenation-dehydrogenation and/or acidic activities of a catalyst comprising platinum and alumina is disclosed. The catalyst is used to promote the conversion, e.g., reforming, of hydrocarbon feedstock into hydrocarbon effluent. The effluent can then be analyzed for toluene and methylcyclohexane (MCH), and n-hexane, 2,2-dimethylbutane, n-heptane and 3,3-dimethylpentane. Selected ratios of these six components characterize the state of the activity of the catalyst.

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### 3,759,825

### METHOD OF PREPARING A CALCINED COPPER-IRON SUPPORTED CATALYST AND PROCESS UTILIZING THE CATALYST

**Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

**No Drawing. Filed July 15, 1971, Ser. No. 163,055**

**The portion of the term of the patent subsequent to June 26, 1990, has been disclaimed**

**Int. Cl. B01j** *11/24;* **C10g** *27/04*

**U.S. Cl. 208—191** **10 Claims**

A copper-iron group metal catalyst useful for the conversion of thiols to disulfides is prepared by co-impregnating a support with a solution of a copper salt and an iron group metal salt by the method of minimum excess solution.

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### 3,759,826

### FRACTIONATION BY GEL PERMEATION

**Vincent F. Felicetta and Ellis Gray King, Bellingham, Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.**

**No Drawing. Filed Aug. 23, 1971, Ser. No. 174,184**

**Int. Cl. B01d** *15/08*

**U.S. Cl. 210—31 C** **13 Claims**

A process for the fractionation and recovery of water-soluble compounds by gel permeation using a water-insoluble, polymerized lignosulfonate resin.

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### 3,759,827

### LUBRICANT COMPOSITIONS

**Eugene D. Groenhof, Midland, and Terence J. Swihart, Essexville, Mich., assignors to Dow Corning Corporation, Midland, Mich.**

**No Drawing. Filed Sept. 29, 1970, Ser. No. 76,631**

**Int. Cl. C10m** *3/24, 3/46, 7/50*

**U.S. Cl. 252—29** **10 Claims**

Diesters of 1,4,5,6,7,7-hexachlorobicyclo(2.2.1)-hept-5-ene-2,3-dicarboxylic acid are lubricant additives for improving the performance of silicone oil and grease.

### 3,759,828
### SOLUBLE OIL COMPOSITIONS

**Henry R. Harrison, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.**

**Filed July 12, 1971, Ser. No. 161,681**

**Int. Cl. C10m** *1/08, 1/32, 1/40*

**U.S. Cl. 252—33.4** **9 Claims**

Bactericide containing soluble oil compositions are disclosed as well as oil-in-water emulsions of said soluble oil compositions, wherein the emulsions exhibit bacteria inhibiting properties.

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### 3,759,829
### FUNCTIONAL FLUID COMPOSITIONS

**James D. Sullivan, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of application Ser. No. 796,885, Feb. 5, 1969, now Patent No. 3,591,500, which is a continuation-in-part of abandoned application Ser. No. 540,488, Apr. 6, 1966. This application June 23, 1971, Ser. No. 156,133**

**Int. Cl. C10m** *1/32, 1/38*

**U.S. Cl. 252—47.5** **10 Claims**

Functional fluid compositions comprising polyphenyl thioethers, mixed polyphenyl oxy-thioethers and mixtures thereof containing certain pyrimidines as anti-corrosive agents have improved metal compatibility and are particularly useful as aircraft engine lubricants and hydraulic fluids.

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### 3,759,830
### METHOD OF PREPARING REACTION PRODUCTS OF HYDRAZINES, CARBON DISULFIDE AND ACYLATED NITROGEN COMPOSITIONS

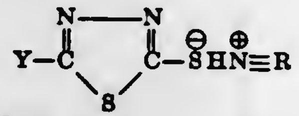
**Paul W. Vogel, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio**

**No Drawing. Continuation of abandoned application Ser. No. 871,071, Aug. 25, 1969, which is a division of application Ser. No. 731,363, May 17, 1968, now Patent No. 3,519,564, which in turn is a continuation-in-part of abandoned application Ser. No. 663,208, Aug. 25, 1967. This application Oct. 26, 1971, Ser. No. 192,319**

**Int. Cl. C10m** *1/20, 1/36, 1/38*

**U.S. Cl. 252—51.5 A** **9 Claims**

Hydrazine (or substituted hydrazines) and carbon disulfide react with acylated polyamines (wherein the acylating agent is a carboxylic compound, preferably a succinic compound, containing at least about 20 carbon atoms) to produce compositions useful as corrosion and rust inhibitors for lubricants. The compositions contain heterocyclic compounds of the formula



wherein Y is —SH or

$$-\overset{\ominus}{S}H\overset{\oplus}{N}{\equiv}R \text{ and } N{\equiv}R$$

and N≡R is the acylated polyamine residue.

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### 3,759,831
### MIXTURES OF SECONDARY $C_6$ TO $C_9$ TRIALKYL PHENOLS AS ANTIOXIDANTS

**Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation**

**No Drawing. Application Oct. 17, 1969, Ser. No. 867,369, now Patent No. 3,609,081, which is a continuation-in-part of application Ser. No. 710,784, Mar. 6, 1968, which is a continuation-in-part of application Ser. No. 556,577, June 19, 1966, which in turn is a continuation-in-part of application Ser. No. 510,395, Nov. 29, 1965, all now abandoned. Divided and this application Sept. 17, 1971, Ser. No. 181,642**

**Int. Cl. C10m** *1/20*

**U.S. Cl. 252—52 R** **1 Claim**

Organic compositions are provided containing secondary $C_6$ to $C_9$ trialkyl phenols, or their mixtures, as antioxidants for preventing oxidative deterioration of metal surfaces.

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### 3,759,832
### FERRITE MATERIAL

**Boris Nikolaevich Ermakov, ulitsa Leni Golikova 10, kv. 39, and Viktor Georgievich Kurilenko, nab. r. Fontanki 18, kv. 6, both of Leningrad, U.S.S.R.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 748,907, July 31, 1968. This application July 16, 1971, Ser. No. 163,478**

**Int. Cl. C04b** *35/28*

**U.S. Cl. 252—62.63** **3 Claims**

Ferrite materials having for their basic components ferric oxide and nickel oxide. The ferrite material (ferrite) also includes cobalt oxide and lead oxide, which makes it possible to extend the operational frequency range of the material up to 400M c.p.s. The ferrite has the following composition, by mol. percent:

| | |
|---|---|
| Ferric oxide | 38–48 |
| Lead oxide | 0.5–3.0 |
| Cobalt oxide | 0.7–2.0 |
| Nickel oxide | 50.0–60.8 |

Articles are made from the herein disclosed nickel ferrite including cobalt oxide and lead oxide additives in accordance with the known ceramic industry technology.

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### 3,759,833
### DETERGENT COMPOSITIONS

**Donald Bannerman James Easton, Oftersheim-Baden-Wurttenburg, Germany, and George Kerr Rennie and Christopher Charles Storer, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.**

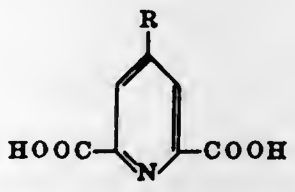
**No Drawing. Filed Dec. 29, 1971, Ser. No. 213,819**

**Claims priority, application Great Britain, Jan. 11, 1971, 422/71; Aug. 11, 1971, 37,639/71**

**Int. Cl. C11d** *7/54*

**U.S. Cl. 252—95** **5 Claims**

A detergent composition incorporates from 1 to 60% by weight of a water-soluble or water-dispersible salt of a heterocyclic dicarboxylic acid having the general formula:



wherein R can be hydrogen or a substituent such as bromine, chlorine, hydroxy, carboxy, $C_{1-4}$ alkyl, amino or alkyl-substituted amino. The salt acts as a detergency builder, and may act also as an inhibitor for the decomposition, caused by heavy-metal catalysis, of any peroxy-compounds such as perborates, in the detergent composition.

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### 3,759,834
### DETERGENT COMPOSITION

**John Pedlow Parke and Raymond John Wilde, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 74,241, Sept. 21, 1970, which is a continuation-in-part of application Ser. No. 705,021, Feb. 13, 1968. This application June 3, 1971, Ser. No. 149,796**

**Claims priority, application Great Britain, Feb. 17, 1967, 7,712/67**

**Int. Cl. C11d** *3/065, 9/30, 17/06*

**U.S. Cl. 252—110** **6 Claims**

A translucent, non-brittle detergent flake having improved properties contains from 70 to 95 percent by weight of an alkali-metal $C_8$–$C_{22}$, preferably $C_{14}$ to $C_{16}$, alpha-olefin sulphonate and from 5 to 11 percent by

weight of water. The flake can optionally contain minor amounts of other non-soap detergent active agents, soaps, and detergency builders, particularly trisodium nitrilotriacetate.

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### 3,759,835
### PROCESS FOR PRODUCING RARE EARTH OXIDE PHOSPHORS

**Emil J. Mehalchick, Towanda, Pa., assignor to GTE Sylvania Incorporated**

**No Drawing. Filed Mar. 22, 1971, Ser. No. 126,957**

**Int. Cl. C09k** *1/10*

**U.S. Cl. 252—301.4 R** **11 Claims**

A process for producing rare-earth oxide phosphors is disclosed wherein specified amounts of yttrium oxide, gadolinium, or mixtures thereof are blended with europium oxide and a heat decomposable borate source and heated to a certain temperature for a predetermined length of time. The material is then reblended with a specified amount of a heat decomposable lithium source and heated to a certain temperature for a predetermined length of time.

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### 3,759,836
### PREPARATION OF SULFUR SLURRIES FOR PIPELINE TRANSPORTATION

**Leland F. Collins, Moraga, Robert C. Quinn, Oakland, and Paul G. Wilhelmsen, Alamo, Calif., assignors to Shell Oil Company, Houston, Tex.**

**No Drawing. Filed Sept. 15, 1971, Ser. No. 180,918**

**Int. Cl. B01f** *17/00*

**U.S. Cl. 252—309** **2 Claims**

An improved method of making concentrated sulfur slurries particularly designed for pipeline transportation.

The present invention relates to a new and novel method of making a highly concentrated sulfur slurry for pipeline transportation in which the sulfur is essentially in particles of 10–1000 microns and is present in a liquid carrier; said slurry being resistant to apglomeration, phase separation, sticking, plating, etc., but is rather stable, readily pumpable even on restart after pipeline shutdown without the necessity of using complicated means of restart due to normal tendencies of such a slurry to plug pipelines particularly on shutdown. This is accomplished in accordance with the present invention by adding to a liquid carrier, into which molten sulfur is injected, a small amount of particular classes of surfactants which are soluble in the liquid carrier and are capable of forming sulfur particles and which inhibit interparticle dendrite formation of the sulfur into highly viscous agglomerate which tend to form clusters and deposit on contacting surfaces thereby causing plugging, clogging, etc.

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### 3,759,837
### SYNTHESIS GAS PRODUCTION BY PARTIAL OXIDATION

**Roger M. Dille, La Habra, and Warren G. Schlinger, Pasadena, Calif., assignors to Texaco Inc., New York, N.Y.**

**No Drawing. Continuation-in-part of applications Ser. No. 664,312, Aug. 30, 1967, Ser. No. 692,306, Dec. 21, 1967, and Ser. No. 649,490, June 28, 1967. This application June 26, 1969, Ser. No. 836,977**

**Int. Cl. C07c** *1/02*

**U.S. Cl. 252—373** **15 Claims**

In a high pressure synthesis gas generating process, continuous control of the pH in the system may be accomplished by determining the nitrogen in the primary hydrocarbon fuel and oxygen-enriched gas fed to the generator, supplementing said nitrogen with a controlled amount of nitrogen in the form of nitrogen containing compounds, synthesizing ammonia in the system, and continuously neutralizing all or a portion of the formic acid produced in the system with the ammonia synthesized in the system and with additions of supplemental ammonia from an external source. Carbon-steel process equipment and piping is thereby protected from corrosion and system upsetting emulsions are prevented from forming in the carbon recovery zone.

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### 3,759,838
### RHODIUM HALIDE COMPLEX CATALYST COMPOSITIONS

**Kenneth C. Dewhirst, San Pablo, Calif., assignor to Shell Oil Company, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 705,582, Nov. 30, 1967, now Patent No. 3,639,439, which is a division of application Ser. No. 417,482, Dec. 10, 1964, now Patent No. 3,489,786. This application June 11, 1971, Ser. No. 152,391**

**Int. Cl. C07c** *11/26;* **C07d** *103/00*

**U.S. Cl. 252—429 R** **16 Claims**

An improved homogeneous hydrogenation catalyst composition comprises rhodium halide complexes incorporating stabilizing phosphine or arsine ligands, and excess ligand.

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### 3,759,839
### PROCESS FOR THE MANUFACTURE OF A PALLADIUM CATALYST

**Hans Fernholz, Fischbach, Taunus, Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Continuation of abandoned application Ser. No. 777,898, Nov. 21, 1968. This application Feb. 22, 1971, Ser. No. 117,694**

**Claims priority, application Germany, Dec. 2, 1967, F 54,191**

**Int. Cl. B01j** *11/12*

**U.S. Cl. 252—431 C** **12 Claims**

A carrier catalyst containing palladium carboxylate which is suitable for the alkenylation of carboxylic acids with olefins in the gaseous phase is manufactured by impregnating the carrier with a solution containing a palladium carboxylate, drying the impregnated carrier at temperatures below 120° C. and evaporating the solvent to a residual content of less than 20% by weight.

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### 3,759,840
### CATALYST FOR HYDROCARBON OXIDATION

**Robert S. Barker, Little Ferry, N.J., assignor to Halcom International, Inc.**

**No Drawing. Filed Sept. 28, 1970, Ser. No. 76,249**

**Int. Cl. B01j** *11/82*

**U.S. Cl. 252—432** **4 Claims**

A catalyst useful for the oxidation of organic compounds, particularly the partial oxidation of benzene with molecular oxygen to produce maleic anhydride, comprises the oxides of molybdenum and vanadium and a minor amount of boron. A preferred form of the catalyst further includes phosphorus and at least one member of the group consisting of cobalt, nickel and iron, and sodium.

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### 3,759,841
### METHOD OF MANUFACTURING A SUPPORTED CATALYST CONTAINING PLATINUM GROUP METAL, RHENIUM OR GROUP IV–A METAL

**Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**No Drawing. Filed May 10, 1971, Ser. No. 142,029**

**Int. Cl. B01j** *11/78*

**U.S. Cl. 252—441** **10 Claims**

A method of catalyst manufacture. A platinum group metal compound in common solution with a group IV–A metal and/or rhenium compound is impregnated on a carrier material. The common solution further contains a weak acid which acts as a buffer to maintain the solution at a pH of less than about 3.5 in contact with the carrier material.

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## 3,759,842
### ACTIVATED GRAPHITE

**Giuseppe Bianchi and Antonio E. Nidola, Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy**
**Filed Jan. 26, 1971, Ser. No. 109,781**
**Claims priority, application Italy, Nov. 24, 1970, 32,119/70, Patent 909,429**
**Int. Cl. B01j** *11/06*
**U.S. Cl. 252—447** **8 Claims**

Graphite impregnated with at least one valve metal oxide such as molybdenum oxide alone or optionally co-deposited with an oxide of a metal of the eighth group of the periodic table which is useful in an amalgam denuder and a process for the preparation and use of the said impregnated graphite.

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## 3,759,843
### NICKEL CATALYSTS

**Ebo Jan Holscher, Vlaardingen, Netherlands, and Theo Jan Osinga, Cleves, Germany, assignors to N.V. Internationale Octrooi Maatschappij "Octropa," Rotterdam, Netherlands**
**No Drawing. Filed Dec. 17, 1971, Ser. No. 209,436**
**Claims priority, application Great Britain, Dec. 21, 1970, 60,499/70**
**Int. Cl. B01j** *11/22, 11/32*
**U.S. Cl. 252—459** **5 Claims**

A process for preparing a supported nickel catalyst is described in which precipitation of the nickel on the support occurs by mixing an aqueous solution of a nickel salt, an aqueous alkali metal carbonate and the support to form a suspension which during the whole of the precipitation is between 75° C. and 95° C., is at a pH between 8.0 and 10 and has an alkalinity between 0.010 N and 0.2 N.

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## 3,759,844
### CATALYST FOR CATALYTIC CRACKING OF HYDROCARBONS

**Goro Yamaguchi, 1554 Tsuda-machi, Kodaira-shi, Tokyo, Japan; and Susumu Komatsu, 1099 Uraimbe, Bizen-cho, Wake-gun; and Tetsuo Fukumoto, 783 Uraimbe, Bizen-cho, Wake-gun, both of Okayama-ken, Japan**
**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,177**
**Claims priority, application Japan, Oct. 2, 1970, 45/85,908**
**Int. Cl. B01j** *11/12, 11/22*
**U.S. Cl. 252—465** **1 Claim**

A catalyst or catalyst carrier for side reactions of catalytic cracking of hydrocarbons essentially consisting of an alkali polyaluminate selected from the group consisting of $\beta$-alumina ($R_2O \cdot 11Al_2O_3$), $\beta'$-alumina ($R_2O \cdot 7\text{-}8Al_2O_3$), and $\beta''$-alumina ($R_2O \cdot 5\text{-}6Al_2O_3$) wherein R is Na or K, respectively, and a catalyst or a catalyst carrier of a mixture for side reactions of catalytic cracking of hydrocarbons which essentially consists of at least 1% by weight of said alkali polyaluminate and a refractory inorganic material.

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## 3,759,845
### CATALYST FOR PREPARING 1,4-BUTANEDIOL

**Stanley Rudoff, Elizabeth, and Waldo R. De Thomas, Parsippany, N.J., assignors to GAF Corporation, New York, N.Y.**
**No Drawing. Filed Sept. 16, 1970, Ser. No. 72,870**
**Int. Cl. B01j** *1/22*
**U.S. Cl. 252—466 J** **5 Claims**

An improved hydrogenation catalyst is provided comprising a high surface area amorphous or gamma alumina support carrying thereon from about 12 to about 20% by weight of nickel, about 1 to about 10% by weight of copper and from 0 to about 15% by weight of manganese.

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## 3,759,846
### DETERGENT COMPOSITION

**Derek John MacDonald Robb, Bromborough, and John Raymond Samuel, Port Sunlight, England, assignors to Lever Brothers Company, New York, N.Y.**
**No Drawing. Filed Mar. 3, 1971, Ser. No. 120,745**
**Claims priority, application Great Britain, Mar. 16, 1970, 12,501/70**
**Int. Cl. C11d** *3/066*
**U.S. Cl. 252—527** **2 Claims**

A fabric-washing detergent powder having superior fabric-softening properties, imparted by the presence in the composition of a water-insoluble soap in a very finely-divided form, is disclosed. A process for the manufacture of the composition, in which the water-insoluble soap is formed in situ in a slurry in the presence of a dispersing agent prior to spray-drying, is also disclosed.

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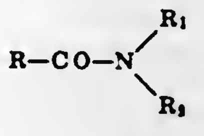
## 3,759,847
### CLEANING COMPOSITIONS

**Jean Martineau, 5 Rue des Arenes, Limoges, France, and Francois Joseph Biechler, 366 Ter rue de Vaugirard, Paris, France**
**No Drawing. Filed Mar. 15, 1971, Ser. No. 124,523**
**Claims priority, application France, Mar. 17, 1970, 7009513**
**Int. Cl. C11d** *3/26*
**U.S. Cl. 252—544** **1 Claim**

A cleaning composition containing as an active ingredient, at least one fatty acid amide, in a free or complexed state of the formula:



$$\mathrm{R{-}CO{-}N}\begin{matrix}\diagup \mathrm{R_1}\\ \diagdown \mathrm{R_2}\end{matrix}$$

in which R is a straight or branched aliphatic chain having at least 8 carbon atoms, $R_1$ and $R_2$ identical or different are chosen from hydrogen, alkyl, hydroxyalkyl and oxyhydroxyalkyl radicals.

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## 3,759,848
### PROCESS FOR THE PRODUCTION OF PRESSURE RESISTANT, HIGHLY HEAT RESISTANT FOAM PLASTICS MADE FROM MIXTURES OF A BITUMINOUS MASS AND A NOVOLAK

**Jaafar Omran, Castrop-Rauxel, Heinz-Gerhard Franck, Duisburg-Meiderich, and Maximilian Zander, Castrop-Rauxel, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany**
**No Drawing. Filed Jan. 14, 1972, Ser. No. 217,962**
**Claims priority, application Germany, Jan. 18, 1971, P 21 02 118.1-43**
**Int. Cl. C08g** *22/24*
**U.S. Cl. 260—2.5 F** **22 Claims**

An improved process for the production of a pressure resistant and highly heat resistant foam plastic by simultaneously foaming and hardening a reaction mixture of a bituminous mass with a novolak, said foaming accomplished by means of gas liberated during said hardening process or by means of an added expanding agent, the improvement comprising simultaneously foaming and hardening a mixture of said bituminous mass with a modified novolak comprising the reaction product of a phenol, carbazol and formaldehyde. The foamed plastics are useful where pressure resistance and high heat resistance are required.

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## 3,759,849
### CROSS-LINKED ACRYLIC FIBERS OR FILMS PREPARED BY COPOLYMERIZING ACRYLONITRILE, UNSATURATED MONOMER CONTAINING HALOGENATED s-TRIAZINYL GROUPS, AND PROTEIN

**Akira Yamamoto, Kunio Nakaoji, Kunio Oohara, Zenjiro Momiyama, Heiichiro Murakami, and Akira Tomita, Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha**
**Original application Aug. 19, 1968, Ser. No. 753,515. Divided and this application July 26, 1971, Ser. No. 166,313**
**Claims priority, application Japan, Sept. 2, 1967, 42/56,502; Dec. 22, 1967, 42/82,509**
**Int. Cl. C08f** *15/40;* **C08h** *7/00*
**U.S. Cl. 260—8** **4 Claims**

Cross-linked acrylic fibers or films which are of improved hot water-resistance and have a silky hand or feel, are obtained by (i) preparing an acidic solution of a copolymer obtained by copolymerizing in an acidic medium (a) a vinyl monomeric material consisting mainly of acrylonitrile and (b) a polymerizable unsaturated monomer having a halogenated s-triazinyl group or halogenated pyrimidinyl group in the presence of (c) a polymerizable unsaturated monomer having a group containing active hydrogen, a group capable of forming active hydrogen, a pyridyl group, a pyrazinyl group or quinolyl group, and/or (d) protein, and then (ii) extruding a very stable acidic solution of the resulting polymer into the form of fibers or films, and then heat-treating. The obtained fibers, for example, are useful in making woven or knitted fabrics of correspondingly superior properties.

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## 3,759,850
### LACQUER EMULSION COMPOSITION FOR LITHOGRAPHIC PLATES

**Donald Gregory Lehman, Rahway, N.J., assignor to Inmont Corporation, New York, N.Y.**
**No Drawing. Filed May 14, 1971, Ser. No. 146,579**
**Int. Cl. C08d** *9/06;* **C08f** *45/18;* **G03f** *7/02*
**U.S. Cl. 260—17.4 ST** **3 Claims**

A lacquer emulsion composition for lithographic plates which has the following preferred composition by weight:

| | |
|---|---|
| 14° Baumé aqueous gum arabic solution | 50.00 |
| Ethylene glycol | 5.00 |
| Phosphoric acid 85% | 4.00 |
| Fumed silica (Cab-O-Sil) | 1.00 |
| Water | 9.90 |
| Tween 60 surfactant | 0.10 |
| Cyclohexanone | 25.35 |
| Carbon black | 1.49 |
| Bakelite VYHH vinyl resin | 3.16 |
| | 100.00 |

Also, the method of preparing the composition, and the method of preparing exposed lithographic plates for printing comprising applying the above composition to the exposed plate.

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## 3,759,851
### FLAME-RESISTANT TEXTILE FABRICS

**Wolfgang Carl and Martin Wandel, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**
**No Drawing. Continuation of application Ser. No. 776,773, Nov. 18, 1968. This application Aug. 2, 1971, Ser. No. 168,471**
**Claims priority, application Germany, Aug. 5, 1968, P 17 69 913.7**
**Int. Cl. C08f** *29/20*
**U.S. Cl. 260—17.4** **9 Claims**

A flame-resistant textile article comprising filaments, staple fibers or yarns from natural and/or synthetic material and a homogeneous mixture consisting of a halogen phosphoric acid esters, a phosphorus-containing plasticizing agent, a polyalkyl halide, antimony oxide, and a polyurethane.

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## 3,759,852
### PROTECTIVE COATINGS CONTAINING GLASS FLAKE PIGMENT AND ARTICLES COATED THEREWITH

**William J. Bradley, 245 Upper Toyon Drive, Kentfield, Calif. 94904**
**No Drawing. Application Mar. 3, 1967, Ser. No. 620,651, which is a continuation-in-part of application Ser. No. 348,304, Feb. 21, 1964, both now abandoned. Divided and this application Oct. 30, 1969, Ser. No. 872,772**
**Int. Cl. C08f** *45/04;* **C08g** *51/04;* **C09c** *3/02*
**U.S. Cl. 260—18 EP** **27 Claims**

A pigment for use in organic resin coating compositions which is leafing glass flakes. Protective coating and paint compositions containing the leafing glass flakes and organic resin binder vehicles such as epoxy resin binder vehicles form a glass veneer on a substrate. After the coating composition is applied to a substrate, the glass flakes migrate toward and leaf at the outer surface of the coating forming laminar layers adjacent the surface of the coating. The coatings and paint compositions can be applied as by spraying in a single step to numerous stubstrates to form relatively thin coatings ranging, for example, from 1 to 10 mils in thickness. The coating is bonded to the surface of an article to form an impermeable glass veneer.

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## 3,759,853
### OIL-MODIFIED ALKYD COMPOSITIONS

**Robert L. Formaini, Montvale, N.J., and Young D. Kim, Severn, Md., assignors to Allied Chemical Corporation, New York, N.Y.**
**No Drawing. Continuation of application Ser. No. 760,661, Sept. 18, 1968, which is a continuation-in-part of application Ser. No. 454,991, May 11, 1965, both now abandoned. This application June 26, 1969, Ser. No. 836,933**
**Int. Cl. C09d** *3/52, 3/66*
**U.S. Cl. 260—21** **3 Claims**

An alkyd composition produced by reacting a polycarboxylic acid, a polyhydric alcohol, a tris - 2 - hydroxyalkyl isocyanurate wherein the 2-hydroxyalkyl group contains between two and four carbon atoms, with an oily modifier selected from the group consisting of vegetable oils, marine oils, and fatty acids derived from vegetable oils, marine oils, and fatty acids derived from vegetable oils or marine oils. The resulting reaction product is then blended with an amino resin.

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## 3,759,854
### POLYESTER POWDER COATING COMPOSITIONS

**Wen-Hsuan Chang and Rostyslaw Dowbenko, Gibsonia, and Joseph M. Makhlouf, Mars, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**
**No Drawing. Filed Jan. 27, 1972, Ser. No. 221,406**
**Int. Cl. C09d** *3/52, 3/66*
**U.S. Cl. 260—21** **10 Claims**

Powder coatings can be formulated from thermosetting polyester resins and a crosslinking agent, such as a condensation product of aldehydes with melamine, urea, or benzoguanamine. Such powder compositions when applied by fluidized bed, electrostatic fluidized bed or electrostatic spray provide for coatings that have particularly good exterior weatherability, good electrical insulation properties, even at high temperature, and good resistance to abrasion.

**3,759,855**

### POLYESTERS HAVING IMPROVED STRETCHABILITY AND DYEABILITY PROPERTIES

**Robert Schnegg, Herbert Pelousek, and Robert Dippelhofer, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

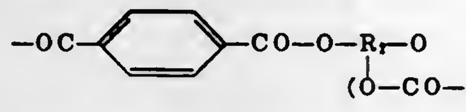
**No Drawing. Filed Apr. 15, 1971, Ser. No. 134,481**

**Claims priority, application Germany, Apr. 22, 1970, P 20 19 429.0**

**Int. Cl. C08g** *17/16*

**U.S. Cl. 260—22 R** 5 Claims

Improved stretchability and dyeability properties are shown by novel terephthalic acid polyesters having melt viscosities of from 500 to 20,000 poises at 280° C., and comprising recurring alkylene diol terephthalate units, and of 0.02 to 12 mol percent of units containing polyol radicals that are partially esterified with fatty acids, and corresponding to the general formula



in which $R_2$ represents a linear or branched aliphatic or hydroaromatic radical having a functionality of $2+n$, $R_3$ represents hydrogen or a $C_1$–$C_{19}$ alkyl radical, and $n$ represents an integer from 1 to 6.

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**3,759,856**

### METAL HALIDE AND POLYGLYCERAL CARBOXYLIC ACID ESTER STABILIZERS FOR VINYL CHLORIDE POLYMERS

**Philip H. Rhodes and Robert L. Ahr, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio**

**No Drawing. Filed May 30, 1972, Ser. No. 258,059**

**Int. Cl. C08f** *45/56, 45/58*

**U.S. Cl. 260—23 XA** **11 Claims**

Liquid stabilizer compositions are provided which are useful with vinyl halide resins to impart improved antistatic and antifogging properties in addition to stabilizing the resins against the deleterious effects of oxygen, heat and light. The stabilizer solutions are obtained by mixing a Group II metal halide with a polyglycerol partial ester.

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**3,759,857**

### CROSS LINKING OF ACRYLAMIDE POLYMERS

**William J. I. Bracke, Brussels, Belgium, assignor to Labofina S.A.**

**No Drawing. Filed June 18, 1971, Ser. No. 154,607**

**Claims priority, application Great Britain, June 23, 1970, 30,444/70**

**Int. Cl. C08f** *3/90, 45/24*

**U.S. Cl. 260—29.6 H** **12 Claims**

A process for the cross-linking of polymers of acrylamide comprising treating an aqueous solution of said polymers at a temperature of from 0° C. to 100° C. with an aqueous solution of a salt selected from the group consisting of the hypochlorite and hypobromite salts of alkali metals and alkaline-earth metals.

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**3,759,858**

### ACID-MODIFIED POLY(VINYL ACETATE-VINYL PROPIONATE) TEXTILE

**Albert E. Corey, East Longmeadow, and Donald D. Donermeyer, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.**

**No Drawing. Filed Oct. 4, 1971, Ser. No. 186,441**

**Int. Cl. C08f** *15/40, 45/44*

**U.S. Cl. 260—29.6 TA** **10 Claims**

Disclosed herein are acid-modified poly(vinyl acetate-vinyl propionate) textile sizes and textiles sized therewith.

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**3,759,859**

### EMULSION COPOLYMERIZATION

**Paul J. Steinwand, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 884,030, Dec. 10, 1969. This application July 19, 1971, Ser. No. 163,997**

**Int. Cl. C08f** *1/13, 15/40*

**U.S. Cl. 260—29.7 T** **9 Claims**

Latex compositions suitable for use as adhesives and for application in carpet manufacturing are described wherein a rubbery copolymer of a conjugated aliphatic diolefin, an unsaturated comonomer and a minor amount of an ethylenically unsaturated carboxylic acid are copolymerized in an emulsion polymerization using a combination of surfactants found to be highly effective in the emulsification of comonomers and the resultant latex. Specifically disclosed is a combination of an ester of an alkali metal sulfoalkanedionic acid and a block polymer of polyoxypropylene and polyoxyethylene having a low to moderate content of polyoxyethylene units.

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**3,759,860**

### COATING COMPOSITIONS AND COATED ARTICLES

**Charles R. Peaker, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.**

**No Drawing. Original application Aug. 13, 1969, Ser. No. 849,876. Divided and this application June 19, 1972, Ser. No. 264,108**

**Int. Cl. C08d** *7/10;* **C08f** *45/56, 45/60*

**U.S. Cl. 260—29.7 SQ** **14 Claims**

Coating compositions for textiles, which compositions comprise a stabilized latex containing an alkyl sulfone terminated oligomeric emulsifier.

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**3,759,861**

### POLYMER COMPLEX OF A CARBOXY-CONTAINING POLYMER AND A NONIONIC CATIONIC OR AMPHOTERIC SURFACE ACTIVE AGENT

**Wataru Shimokawa, 1–1–1–303 Sakurajosui, Tokyo, Japan**

**No Drawing. Filed Dec. 18, 1970, Ser. No. 99,715**

**Claims priority, application Japan, Dec. 20, 1969, 44/102,779; Apr. 10, 1970, 45/30,645**

**Int. Cl. C08f** *45/24, 45/42*

**U.S. Cl. 260—31.4 R** **21 Claims**

A polymer complex obtained by reacting a vinyl polymer having carboxyl groups and at least one nonionic, cationic or amphoteric surface active agent. The complex is water-soluble and useful as a sizing agent for the paper industry. It is also useful as a fluocculant or a heat-sensitive or pressure-sensitive adhesive.

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**3,759,862**

### LUBRICATING OIL COMPOSITION

**Yukimasa Fukui, 4–3 Umaokoshi 1-chome; Tsunehiro Kotani, 30–3 Maedacho; and Toshitsugu Ozeki, 2273–1 Ikuwacho, all of Yokkaichishi, Japan**

**No Drawing. Filed May 16, 1972, Ser. No. 253,728**

**Claims priority, application Japan, Sept. 30, 1971, 46/76,645**

**Int. Cl. C10m** *1/26*

**U.S. Cl. 252—32.7 E** **7 Claims**

Lubricating oil composition which maintains a proper viscosity at higher temperatures and also a sufficiently low viscosity suitable for good starting property of engines, at low temperatures, can be obtained by blending a complex-ester or complex-esters of 3-hydroxy-2,2-dimethylpropyl 2,2-dimethylhydracrylate (which can be also called hydroxypivalyl hydroxyprivalate) with one or more kinds of straight or branched chain saturated fatty acids having 4–18 carbon atoms, with a solvent-refined petroleum lubricating oil.

**3,759,863**

### PROCESS FOR THE MANUFACTURE OF IMPACT RESISTANT THERMOPLASTIC MOULDING MATERIALS

**Arno Czekay, 13 Dr. Krauss-Strasse, Knapsack, near Cologne, Germany; Bruno Kramer, 79 Bergstrasse, Hurth, near Cologne, Germany; and Hans Welden, 67 Friedenstrasse, Frechen, near Cologne, Germany**

**No Drawing. Filed Jan. 6, 1971, Ser. No. 104,507**

**Claims priority, application Germany, Jan. 7, 1970, P 20 00 468.6**

**Int. Cl. C08f** *45/28*

**U.S. Cl. 260—33.6 AQ** **6 Claims**

Production of impact-resistant thermoplastic moulding compositions. Between 90 and 97 weight percent of a mixture of 40 to 95 weight percent polyvinyl chloride and 5 to 60 weight percent terpolymer based on acrylonitrile-butadiene-styrene and their derivatives, are intimately blended with 1 to 4 weight percent dialkyl-tin mercaptide stabiliser and 2 to 6 weight percent lubricant, which essentially contains hydrocarbons with at least 16 C atoms; and the resulting blend is made into a moulding composition. The terpolymer used is produced by polymerizing butadiene, in a first step, with a vinyl compound in aqueous emulsion, in contact with 0.1 to 1 weight percent customary catalyst and at most 0.2 weight percent emulsifier, based on the amount of diene and vinyl compounds used, at a temperature of between −20° C. and +100° C., to give an elastomeric copolymer; reacting the said copolymer, in a second step, with a vinyl monomer, such as styrene, α-methylstyrene or mixtures of these compounds with acrylonitrile or methacrylonitrile, in aqueous emulsion, to give a graft polymer; and blending the graft polymer in a third step with a copolymer based on the second step vinyl compounds to form the final copolymer.

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**3,759,864**

### COATING COMPOSITIONS

**Peter Francis Nicks, Maidenhead, England, assignor to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed Oct. 15, 1971, Ser. No. 189,789**

**Int. Cl. C08g** *51/04, 51/28*

**U.S. Cl. 260—33.6 EP** **11 Claims**

Pigmented solid particles of film-forming polymer, suitable for use in powder coating compositions, are prepared by volatilising the volatile liquid continuous phase of a pigmented dispersion of film-forming polymer. The polymer is dispersed by emulsification in volatile liquid in the presence of a defined polymeric agent. Volatilisation is preferably effected by spray drying.

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**3,759,865**

### PROCESS FOR THE PRODUCTION OF POLYCARBONATE SOLUTIONS

**Gerhard Emmer, Hugo Vernaleken, Kurt Weirauch, and Hermann Schnell, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Jan. 28, 1971, Ser. No. 110,733**

**Claims priority, application Germany, Feb. 2, 1970, P 20 04 517.4**

**Int. Cl. C08g** *51/30*

**U.S. Cl. 260—33.8 R** **13 Claims**

A process for the production of a solution of a high molecular weight polycarbonate suitable for the production of filaments and films which comprises forming a solid solution of a polycarbonate with a molecular weight in excess of 30,000 by removing the solvent from a solution of the polycarbonate in a solvent at a temperature below its melting point under shear stressing, and redissolving the solid solution.

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**3,759,866**

### SOLVENT EPOXY RESIN COMPOSITION AND AN ELECTRICAL MEMBER IMPREGNATED THEREWITH

**Don A. Rogers, Jr., Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Oct. 14, 1971, Ser. No. 189,382**

**Int. Cl. C08g** *51/04*

**U.S. Cl. 260—37 EP** **4 Claims**

A resinous composition, suitable as a solventless impregnating resin for large rotating apparatus insulation, is made from a mixture containing about 85 to 115 parts of a bisphenol A or novolac glycidyl ether epoxy resin, about 100 to 155 parts of an acid anhydride and about 25 to 95 parts of a diglycidyl ether of neopentyl glycol.

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**3,759,867**

### MOLDING COMPOSITIONS CONTAINING SILANOL-FREE RESINS

**Duane F. Merrill, Ballston Spa, and Richard C. Cooke, Jr., Elnora, N.Y., assignors to General Electric Company**

**No Drawing. Filed Mar. 2, 1972, Ser. No. 231,402**

**Int. Cl. C08g** *51/04*

**U.S. Cl. 260—37 GB** **29 Claims**

A silicone molding composition having improved thermal shock resistance having as its main ingredients a silicone resin of a high silanol content, that is, a silanol content of 3 to 11% by weight of the resin, and a low silanol content resin having less than .5 weight percent of silanol groups and preferably being substantially silanol-free. The molding composition is prepared by mixing the low content silanol resin with a filler and then adding to the mixture a pigment, catalyst system, a process aid and a release agent. To this resulting mixture there is then added the high silanol content binder resin and additional filler, such as glass fibers. The resulting mixture is extruded to a sheet which is then ground into fine particles, the fine particles being an uncured molding resin composition.

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**3,759,868**

### CARBOXYNITROSO-POLYBUTADIENE VULCANIZATE

**Robert A. Meyers, Encino, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.**

**No Drawing. Filed Dec. 28, 1970, Ser. No. 102,269**

**Int. Cl. C08d** *9/08;* **C08f** *45/04*

**U.S. Cl. 260—41.5 R** **10 Claims**

A decrease in permeability and an increase in resistance of carboxynitroso rubbers can be effected by the addition of small amounts of polybutadiene resins. Liquid functionally terminated polybutadiene is mixed into a terpolymer containing trifluoronitrosomethane, tetrafluoroethylene, and a small amount of nitrosoperfluorobutyric acid. The mixture is cured in the presence of a peroxide free radical initiator.

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**3,759,869**

### SILANE SUBSTITUTED POLYDIENES

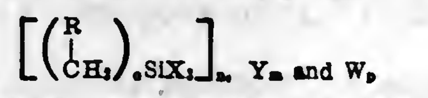
**Irving Skeist, Summit, and Jerry Miron, Livingston, N.J., Murray Steinfink, Monsey, N.Y., Manilal Savla, Parsippany, and Joseph Robles, Newark, N.J., and Pradip Bhatt, Northborough, Mass., assignors to Skeist Laboratories, Inc., Livingston, N.J.**

**No Drawing. Filed Sept. 14, 1971, Ser. No. 181,611**

**Int. Cl. C08d** *9/10*

**U.S. Cl. 260—41.5 R** **13 Claims**

A polymeric composition which can be used to enhance the strength of bonding in filled and reinforced polymer products, as well as enhance the bonding strength of conventional adhesives is disclosed. The polymeric composition is comprised of the following groups:



$$\left[\left(\overset{R}{\underset{}{|}}\atop CH_2\right)_o SiX_2\right]_n,\ Y_m \text{ and } W_p$$

where W is an end group and $p$ is at least 2, $Y_m$ is a divalent radical which may be alkylene, alkenylene and arylalkylene, X is a halogen, an alkoxy radical or an acyloxy radical, R is an alkylidene radical which may be substituted. $o$ is zero or an integer from 2–5, and $n$ and $m$ are chosen so that the molecular weight is at least about 500 to about 50,000 so long as $n$ is never less than 1.

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### 3,759,870

### POLYESTER BASED ON HYDROXYBENZOIC ACIDS

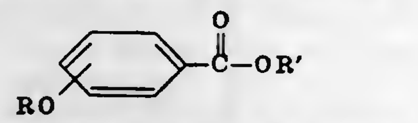
**James Economy, Eggertsville, and Bernard E. Nowak, Lancaster, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 619,577, Mar. 1, 1967. This application Aug. 24, 1970, Ser. No. 66,566**

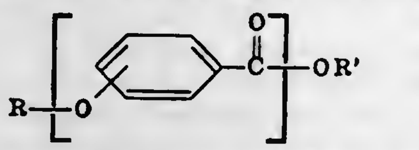
**Int. Cl. C08g** *17/00, 17/02*

**U.S. Cl. 260—47 C** **26 Claims**

Polyesters based on hydroxybenzoic acids may be produced by condensing, in a liquid state at an elevated temperature, a monomer having the formula



to form a linear polyester having the formula



wherein the bracketed portion represents the recurring structural unit; the oxy function of the polyester and the RO group of the monomer are para or meta to the carboxylic group; R is hydrogen, acetyl, propionyl or benzoyl; and R′ is phenyl or substituted phenyl.

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### 3,759,871

### POLYETHERPOLYTHIOLS, METHOD OF PREPARATION AND MIXTURES OF POLYTHIOETHERPOLYTHIOLS WITH EPOXIDE RESINS

**Richard A. Hickner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Original application Oct. 29, 1968, Ser. No. 771,648, now abandoned. Divided and this application Aug. 12, 1971. Ser. No. 171,331**

**Int. Cl. C08g** *30/10*

**U.S. Cl. 260—47 EC** **20 Claims**

Polythioetherpolythiols with a thiol functionality greater than 2 are made by reacting a polythiol with a triene, a tetraene or mixtures thereof or mixtures of the polyenes with a diene, in the presence of a free radical generating catalyst. The polythioetherpolythiols can be reacted with epoxide resins to effect cures of the latter.

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### 3,759,872

### PROCESS FOR THE PRODUCTION OF EPOXIDE POLYADDUCTS WITH PHOSPHINE OXIDE ACCELERATORS

**Joachim Lorenz, Bensheim-Auerbach, Germany, assignor to Ciba-Geigy Marienberg GmbH, Lautern, Odenwald, Germany**

**No Drawing. Filed Feb. 1, 1972, Ser. No. 222,695**

**Claims priority, application Germany, Feb. 3, 1971, P 21 04 910.5**

**Int. Cl. C08g** *30/14*

**U.S. Cl. 260—47 EC** **1 Claim**

Process for the production of epoxide polyadducts by the reaction of epoxide compounds with compounds giving polyadducts of epoxide compounds, whereby the reaction is carried out in the presence of a phosphine oxide as a reaction accelerator in an amount of 0.1 to 10 parts by weight to 100 parts by weight of the epoxide compound.

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### 3,759,873

### WATER-DISPERSIBLE POLYURETHANES BASED ON POLYESTERS PREPARED FROM CARBOXY POLYOLS

**Stephen F. Hudak, Minneapolis, Minn., assignor to Ashland Oil, Inc., Columbus, Ohio**

**No Drawing. Continuation of abandoned application Ser. No. 716,349, Mar. 27, 1968. This application May 20, 1971, Ser. No. 145,502**

**Int. Cl. C08g** *22/10, 22/16, 51/22*

**U.S. Cl. 260—75 NK** **11 Claims**

Polyester resins containing urethane linkages, comprising:

(A) The reaction product of (1) a polyester prepared from at least one polycarboxylic acid and at least one polyhydric alcohol substantially free or unsaturated reactants and naturally occurring oils, and (2) an organic polyisocyanate; the ratio of (1) and (2) being such that equivalents of hydroxyl/equivalents of (carboxyl+isocyanate) is greater than 1 and up to 0.5 to 2.0 and the ratio of equivalents of carboxyl/equivalents of isocyanate is greater than 1 and up to about 30; or

(B) The reaction product of (1) a polyester prepared from at least one alpha, beta-ethylenically unsaturated polycarboxylic acid and at least one polyhydric alcohol, and (2) an organic polyisocyanate; the ratio of (1) to (2) being such that the ratio of equivalents of hydroxyl/equivalents of (carboxyl+isocyanate) is 0.5 to 2.0 and the ratio of equivalents of carboxyl/equivalents of isocyanate is greater than 1 and up to about 30.

Film forming compositions made by blending the saturated resin (A), which may be water dispersible, with 5% to 50% of an aminoplast resin in water or organic solvent, or with a free isocyanate containing prepolymer or adduct, or by blending the unsaturated resin (B) with an ethylenically unsaturated monomer and effecting addition polymerization.

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### 3,759,874

### FLUORINATED POLYURETHANES AS SOIL RELEASE AGENTS

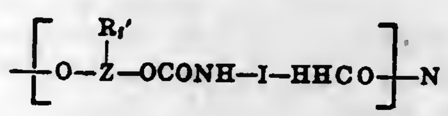
**John T. Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.**

**No Drawing. Filed Aug. 30, 1971, Ser. No. 176,325**

**Int. Cl. C08g** *22/16*

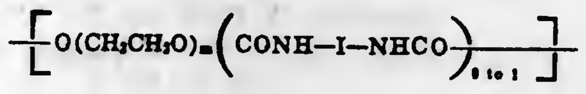
**U.S. Cl. 260—77.5 AP** **6 Claims**

Fluorinated polyurethanes are described having a chemical structure made up of the units



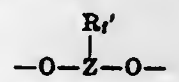
$$\left[-O-\overset{R_f'}{\overset{|}{Z}}-OCONH-I-HHCO-\right]_N$$

and



$$\left[-O(CH_2CH_2O)_m\left(CONH-I-NHCO\right)_{0\ to\ 1}-\right]$$

in the ratio of from at least 2 to about 24 fluorinated units to one nonfluorinated unit containing repeating oxyethylene groups, where



$$-O-\overset{R_f'}{\overset{|}{Z}}-O-$$

is a residue of a fluorinated diol of the formula

$$R_fC_nH_{2n-a}(OH)_aXR'(OH)_b$$

in which $R_f$ is a perfluoroalkyl group of 4–16 carbon atoms, X=O or S, R′ is an organic radical of 2–15 carbon atoms which may contain one or more ether linkages and $n=1–11$, $a=1$ or 0, $b=1$ or 2, $a+b=2$, and I is a divalent organic group from a diisocyanate,

$$I(NCO)_2$$

$m$ is an integer from about 8 to over 100. The polyurethanes are effective soil release agents for durable press fabrics.

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### 3,759,875

### CURABLE LIQUID PIGMENT COMPOSITION AND METHOD

**James L. Guthrie, Ashton, Md., assignor to W. R. Grace & Co.**

**No Drawing. Filed Oct. 12, 1971, Ser. No. 188,608**

**Int. Cl. C08g** *39/00*

**U.S. Cl. 260—76** **2 Claims**

The invention disclosed is for a method of preparing a new curable liquid pigment composition which includes a pigment component, a polyester-polyene component having at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, and a polythiol component containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule of the polythiol. Upon curing by a free radical generator such as actinic radiation, the curable liquid composition rapidly forms substantially odorless, solid elastomeric films which effectively color and coat a substrate.

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### 3,759,876

### LACTAM POLYMERIZATION WITH AMIDE INITIATORS

**Markus Matzner, Edison, Walter T. Reichle, Millington, and Sui-Wu Chow and James E. McGrath, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 26,128, Apr. 6, 1970. This application Sept. 24, 1971, Ser. No. 183,700**

**Int. Cl. C08g** *20/18*

**U.S. Cl. 260—78 L** **6 Claims**

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

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### 3,759,877

### SHRINKABLE FILM FORMING COPOLYAMIDES PREPARED BY COPOLYMERIZING ω-AMINOUNDECANOIC ACID AND THE SALT OF A DICARBOXYLIC ACID AND TRIMETHYLHEXAMETHYLENE DIAMINE

**Helmut Huhn and Lutz Hoppe, Walsrode, Germany, assignors to Wolff & Co. Aktiengesellschaft, Walsrode, Germany**

**No Drawing. Continuation-in-part of application Ser. No. 88,123, Nov. 9, 1970, now Patent No. 3,692,748, which is a continuation of abandoned application Ser. No. 823,939, May 12, 1969. This application Feb. 24, 1972, Ser. No. 229,185**

**Claims priority, application Germany, May 14, 1968, P 17 70 406.2**

**The portion of the term of the patent subsequent to Sept. 19, 1989, has been disclaimed**

**Int. Cl. C08g** *20/04*

**U.S. Cl. 260—78 A** **2 Claims**

Shrinkable film-forming copolyamides which are glass-clear in appearance and which are obtained by polycondensation of 65–85% by weight of ω-amino-undecanoic acid and 35–15% by weight of a salt of a dicarboxylic acid and a diamine, between 50 and 100 mol percent of the diamine being trimethylhexamethylene diamine, and films produced therefrom.

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### 3,759,878

### POLYMERS MODIFIED WITH SULFONAZIDE-ISOCYANATE COMPOUNDS

**David S. Breslow, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.**

**No Drawing. Original application Sept. 22, 1969, Ser. No. 860,018, now Patent No. 3,657,047. Divided and this application Sept. 29, 1971, Ser. No. 184,956**

**Int. Cl. C08f** *27/06, 27/10*

**U.S. Cl. 260—78.4 E** **6 Claims**

Disclosed are sulfonazide-isocyanate compounds of the formula

$$\left(N_3O_2S\right)_x R\left(NCO\right)_y$$

where R is a polyvalent aliphatic radical and $x$ and $y$ are integers from 1 to 100. The use of said sulfonazide-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with a sulfonazide-isocyanate compound.

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### 3,759,879

### CONTINUOUS BULK POLYMERIZATION PROCESS FOR VINYL CHLORIDE COPOLYMERS

**John C. Floros, Lunenburg, Mass., assignor to The Firestone Tire & Rubber Company, Akron, Ohio**

**Filed May 28, 1971, Ser. No. 147,907**

**Int. Cl. C08f** *1/06*

**U.S. Cl. 260—78.5 CL** **8 Claims**

A continuous, homogeneous bulk polymerization process for producing copolymers, terpolymers, and tetrapolymers of vinyl chloride and lower alkyl esters of maleic or fumaric acids, which polymers contain a minimum amount of residual unreacted monomer, in a specific temperature-time cycle in at least two reaction zones in the presence of known catalysts and modifiers under substantially anhydrous conditions. The polymer formed must be soluble in the monomer at all times throughout the polymerization reaction.

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### 3,759,880

### MANUFACTURE OF INSOLUBLE AND ONLY SLIGHTLY SWELLABLE POLY - N - VINYLPYRROLIDONE-2

**Ernst Hoffmann and Karl Herrle, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed Nov. 30, 1971, Ser. No. 203,436**

**Int. Cl. C08f** *1/66*

**U.S. Cl. 260—80.3 R** **4 Claims**

Manufacture of poly-N-vinylpyrrolidone-2 by polymerization of vinyl pyrrolidone in the presence of unsaturated cyclic acid amides and an oxidizable metal.

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### 3,759,881

### POLYACRYLATE CASTING PROCESS

**Charles B. Holder, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.**

**No Drawing. Filed Dec. 14, 1970, Ser. No. 98,174**

**Int. Cl. C08f** *3/64, 3/66, 15/16*

**U.S. Cl. 260—86.1 E** **14 Claims**

Polyacrylate castings are prepared by first forming a viscous prepolymer by intimately admixing an acrylic acid ester with an amine initiator, such as morpholine, and then, in a second step, completing the polymerization in a mold thus forming a clear polyacrylate casting.

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### 3,759,882

## PROCESS FOR PREPARING RANDOM HIGH CIS-SBR

**Walter Nudenberg, West Caldwell, and Edward A. Delaney, Dover, N.J., assignors to Uniroyal, Inc., New York, N.Y.**

**No Drawing. Filed June 22, 1971, Ser. No. 155,619**

**Int. Cl. C08d** *1/22, 1/44, 3/04*

**U.S. Cl. 260—84.1** **6 Claims**

A process for preparing a rubbery copolymer of butadiene and styrene wherein at least 50% of the butadiene units are in the cis-1,4 configuration and which contains from 10 to 45% by weight of bound styrene, the bound styrene having random distribution, which comprises polymerizing monomeric butadiene and monomeric styrene in solution in an inert organic solvent with an iodine-containing catalyst formed in situ in the solution by separately introducing an organomagnesium compound, a titanium tetrahalide and elemental oxygen, the amount of oxygen being equal to from 12 to 35 mol percent per mol of titanium present.

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### 3,759,883

## COLD FLOW RESISTANT HOMOGENEOUS COPOLYMERS OF TETRAFLUOROETHYLENE AND CHLOROTRIFLUOROETHYLENE AND PROCESS FOR PREPARING THEM

**Max B. Mueller, Morristown, Peter P. Salatiello, Morris Plains, and Herman S. Kaufman, Teaneck Township, N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Nov. 16, 1971, Ser. No. 199,157**

**Int. Cl. C08f** *15/06*

**U.S. Cl. 260—87.5 A** **4 Claims**

Granular copolymers of tetrafluoroethylene and between about 0.05 mol percent and about 0.50 mol percent of chlorotrifluoroethylene have superior physical properties and are adapted for molding into objects having enhanced resistance to cold flow under load.

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### 3,759,884

## PROCESS FOR THE POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE WITH THE USE OF A CATALYST SUPPORTED BY A CARRIER

**Tadaichi Tokuzumi, Otake-shi, Hiroshima-ken, Hiroshi Fujimura, Yamaguchi-ken, and Norio Kashiwa, Hiroshima-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan**

**No Drawing. Filed Nov. 14, 1968, Ser. No. 775,901**

**Claims priority, application Japan, Sept. 11, 1968, 43/64,936**

**Int. Cl. C08f** *1/56, 3/06*

**U.S. Cl. 260—88.2 R** **18 Claims**

In the process for the polymerization or copolymerization of ethylene in an inert solvent in the presence of a catalyst comprising a titanium or vanadium halogen compound chemically bonded onto the surface of inorganic solid particles, and an organoaluminum compound or a dialkyl zinc, the improvement wherein the inorganic solid particles are particles of magnesium hydroxide having an average particle diameter exceeding 1μ but not greater than 70μ, and a specific surface area in the range of from 20 to 100 m.²/g.

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### 3,759,885

## VINYL CHLORIDE POLYMERS AND METHODS OF PREPARING THEM

**Jean Claude Thomas and Francis Fournel, Lyon, and Salomon Soussan, Saint-Fons, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France**

**No Drawing. Continuation of abandoned applications Ser. No. 648,965 and Ser. No. 649,014, both June 26, 1967. This application Sept. 16, 1970, Ser. No. 72,864**

**Claims priority, application France, June 28, 1966, 67,215, 67,216**

**Int. Cl. C08f** *3/22*

**U.S. Cl. 260—92.8 R** **9 Claims**

The polymerization in mass of vinyl chloride, alone or in combination with compatible monomers, is carried out in two distinct stages separated in time or in time and space, with sharp differences in temperature and intensity of agitation, producing superior polymers.

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### 3,759,886

## BIODEGRADABLE EMULSIFIERS FOR POLYCHLOROPRENE

**Nathan L. Turner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.**

**No Drawing. Filed May 17, 1971, Ser. No. 144,226**

**Int. Cl. C08f** *1/13, 3/32*

**U.S. Cl. 260—92.3** **5 Claims**

Use of octyl sulfate salts as emulsifying agents in chloroprene polymerization. Octyl sulfate salts are biodegradable and replace the nonbiodegradable salts of the condensation product of naphthalene sulfonic acids and formaldehyde.

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### 3,759,887

## PROCESS FOR THE PREPARATION OF POLYMERS OR COPOLYMERS

**Hendrik J. Rang and Sjoerd Kaarsemaker, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands**

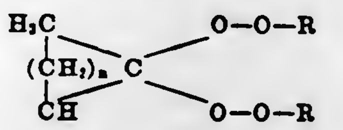
**No Drawing. Filed July 7, 1964, Ser. No. 380,934**

**Claims priority, application Netherlands, July 8, 1963, 295,066**

**Int. Cl. C08f** *1/60, 3/04*

**U.S. Cl. 260—94.9 R** **10 Claims**

Ethylene polymers are prepared by polymerizing ethylene at temperatures above 150° C. and pressures above 500 atmospheres with an organic peroxide of the formula



where R is tertiary alkyl and *n* is an integer from 2 to 5, or with 2,2-bis[4,4-di(tertiary butylperoxy)cyclohexyl] propane.

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### 3,759,888

## PROCESS FOR THE PREPARATION OF CHLORINATED POLYETHYLENE, AND COMPOSITIONS THEREOF

**Shinji Nose, Amagasaki, Hideaki Tsujimura, Ikeda, Katumi Iio, Ibaraki, Hitoshi Ishihara, Amagasaki, and Hiroshi Yoshimoto, Ibaraki, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan**

**Filed Nov. 10, 1970, Ser. No. 88,339**

**Int. Cl. C08f** *29/04*

**U.S. Cl. 260—94.9 H** **8 Claims**

An improved process of making chlorinated polyethylenes, which comprises the steps of:

(a) first stage chlorination of polyethylene powder, under introduction of chlorine, at a temperature not exceeding the upper critical melting temperature (T) or the fluctuated upper critical melting temperature ($T_a$) of crystalline portion of the polyethylene,

(b) heat-treatment of the first-stage-chlorinated polyethylene at a temperature ($T_b$) exceeding the lower critical melting temperature of crystalline portion of said chlorinated polyethylene and the temperature at which the first stage chlorination is performed, following the interruption of chlorine introduction, and

(c) further chlorination of the heat-treated, chlorinated polyethylene until the desired chlorine content is obtained, under resumption of chlorine introduction at a temperature ($T_c$) below the above temperature ($T_b$).

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### 3,759,889

## ETHYLENE POLYMERIZATION IN THE PRESENCE OF COMPLEX NICKEL CATALYSTS CONTAINING A GLYCOLIC ACID, THIOGLYCOLIC, OR THIOLACTIC ACID LIGAND

**Ronald Bauer, Orinda, and Harold Chung and Wilhelm Keim, Berkeley, Calif., and Henry Van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Original application Jan. 15, 1970, Ser. No. 3,199, now Patent No. 3,661,803. Divided and this application Sept. 16, 1971, Ser. No. 181,264**

**Int. Cl. C08f** *1/74, 3/06*

**U.S. Cl. 260—94.9 C** **12 Claims**

Ethylene is polymerized in the presence of a catalyst which is the reaction product of a nickel compound with a ligand selected from the group consisting of glycolic acid, thioglycolic acid and thiolactic acid. The nickel compounds comprise olefinically unsaturated compounds of from 2 to 20 carbon atoms. The preferred nickel compound is biscyclooctadiene-1,5-nickel.

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### 3,759,890

## IMIDAZOLYL DERIVATIVES OF PROTEINS AND POLYSACCHARIDES

**Donald Victor Wilson, Needingworth, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**No Drawing. Filed Aug. 31, 1971, Ser. No. 176,755**

**Claims priority, application Great Britain, Sept. 17, 1970, 44,510/70**

**Int. Cl. C07g** *7/00;* **C08h** *1/00*

**U.S. Cl. 260—112 R** **20 Claims**

Imidazolyl derivatives of polypeptides, proteins, amino-containing polysaccharides and polymers containing at least one primary aliphatic amino group are described. These derivatives are converted into corresponding diazonium compounds which are employed in coupling reactions to produce products useful in immunochemistry.

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### 3,759,891

## (1-β-ALANINE, 15-ORNITHINE)-CORTICOTROPIN PEPTIDES

**Hideo Otsuka, Mino, and Ken Inouye, Kobe, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan**

**No Drawing. Filed Mar. 22, 1971, Ser. No. 127,000**

**Claims priority, application Japan, Mar. 24, 1970, 45/2,554**

**Int. Cl. C07c** *103/52;* **C07g** *7/00;* **C08h** *1/00*

**U.S. Cl. 260—112.5** **2 Claims**

Corticotropically active octadecapeptides wherein the first amino acid, serine, and the fifteenth amino acid, lysine, in the native corticotropin molecule are substituted respectively by β-alanine and ornithine, derivatives thereof, non-toxic acid addition salts thereof and complexes thereof are disclosed. Such peptides are useful as a medicament, because they show corticotropic properties remarkably improved in prolongation of action. They can be prepared by condensing the amino acids together one by one or by condensing the small peptide fragments together in a per se conventional manner.

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### 3,759,892

## AZO DYE WITH A BIS-(2-HYDROXY-3-CARBOXYPHENYL) METHANE COUPLING COMPONENT

**Heinz Wicki, Allschwil, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland**

**No Drawing. Filed Feb. 12, 1970, Ser. No. 10,991**

**Claims priority, application Switzerland, Feb. 19, 1969, 2,496/69; Aug. 22, 1969, 12,772/69**

**Int. Cl. C09b** *29/14, 33/14, 33/18*

**U.S. Cl. 260—145 C** **28 Claims**

Azo dyes and their metal complex compounds are formed by coupling 1 or 2 moles of a diazo component with a bis-1-(2-hydroxy-3-carboxyphenyl methane. They are highly suitable for dyeing leather, for which they have very good penetrative properties and yield light-fast dyeings.

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### 3,759,893

## BISCATIONIC MONOAZO DYES FOR ACID-MODIFIED NYLONS

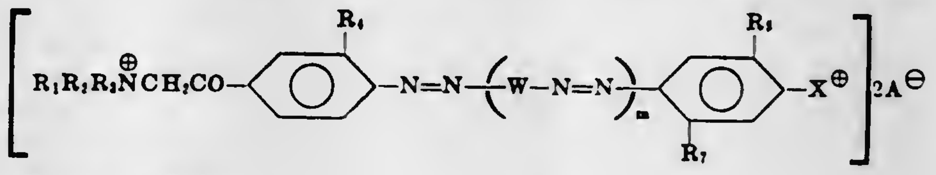
**Daniel Shaw James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed July 27, 1970, Ser. No. 58,707**

**Int. Cl. C09b** *29/08*

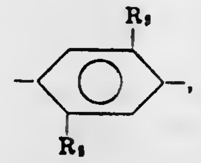
**U.S. Cl. 260—149** **2 Claims**

Orange to violet biscationic azo dyes having the formula

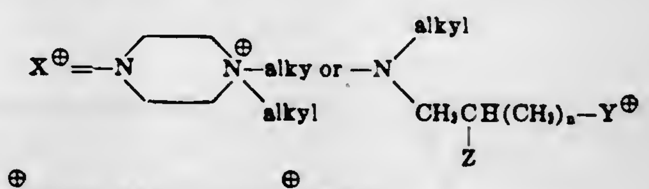


where

$R_1$=alkyl
$R_2$=alkyl or hydroxyalkyl
$R_3$=alkyl, hydroxyalkyl or benzyl
or $R_2$ and $R_3$ together=alicyclic ring
or $R_1$, $R_2$, and $R_3$ together=pyridinium ring
$R_4$=H or Cl
W=1,4-naphthylene or



$R_5$ and $R_6$=H, alkyl, alkoxy or Cl
$R_7$=H, alkyl, alkoxy, Cl, NHCO alkyl or $NHCOC_6H_5$
$R_8$=H, Cl, alkyl or alkoxy



$Y^{\oplus}=\overset{\oplus}{N}R_9R_2R_3$ or $NHCOCH_2\overset{\oplus}{N}R_9R_2R_3$,

where

$R_9$=$R_1$ or H
*m*=0 or 1
*n*=0 or 1
Z=H when *n*=0 and OH when *n*=1
$A^{\ominus}$=anion

and where alkyl groups contain 1–4 carbon atoms, are particularly well suited for dyeing of bulk continuous filament (BCF) nylon styling carpet, and have good exhaust and light-fastness on acid-modified nylon and excellent reserve on unmodified nylons, at the preferred dyeing pH range of 6–6.5. The dyes are prepared by coupling p-aminophenacylammonium or p-(p-aminophenylazo) phenacylammonium salts to N,N-disubstituted anilines containing a pendant tertiary amine or quaternary ammonium group attached to the nitrogen atom.

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## 3,759,894
## HETEROCYCLIC DIAZO DYESTUFFS

**Hans-Joerg Angliker and Richard Peter, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzehland**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 716,267, Mar. 12, 1968. This application July 30, 1970, Ser. No. 59,699**

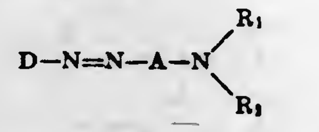
**Claims priority, application Switzerland, Mar. 15, 1967, 3,756/67; Aug. 4, 1967, 11,011/67**

**Int. Cl. C09b** *33/02, 33/12;* **D06p** *3/52*

**U.S. Cl. 260—158** **5 Claims**

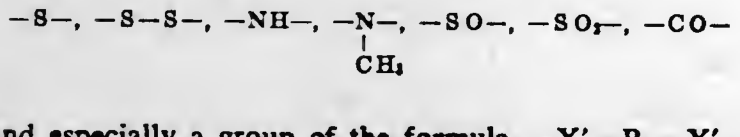
Disazo dyestuffs in which two monoazo dyestuff molecules of the general formula

(I)



$$D-N{=}N-A-N\begin{matrix}R_1\\ \\R_2\end{matrix}$$

in which D represents the residue of a monocyclic or bicyclic diazo component, A represents a para-phenylene residue and $R_1$ and $R_2$ each represents an alkyl residue that may be substituted, are linked together through the residues of their coupling components by a bifunctional bridging component Z which has no dyestuff characteristics, and is one of the following formulae:



$$-S-,\ -S-S-,\ -NH-,\ \underset{\displaystyle CH_3}{\underset{|}{-N-}},\ -SO-,\ -SO_2-,\ -CO-$$

and especially a group of the formula —X'—$R_5$—X'—, in which X' represents an oxygen atom, a sulphur atom or an —NH— group, the hydrogen atom of which may be substituted by an alkyl group having up to 4 carbon atoms, especially a methyl group, and $R_5$ represents a bifunctional aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic residue, the carbon chain of which may be interrupted by hetero atoms, especially oxygen atoms, and which, when the two diazo components are heterocyclic ring systems and/or X' is an oxygen atom, is preferably not a polymethylene chain and in which both of the monoazo dyestuff residues are joined to the bifunctional residue Z directly via the aromatic nucleus A.

The dyestuffs are used to dye synthetic fibers such as polyester fibers. The dyeings so obtained are very fast to light and to sublimation.

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## 3,759,895
## BENZOTHIAZOLYL-AZO-INDOLE COMPOUNDS

**Clarence A. Coates, Jr., and Max A. Weaver, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Dec. 20, 1971, Ser. No. 210,173**

**Int. Cl. C09b** *29/36*

**U.S. Cl. 260—158** **7 Claims**

Monoazo compounds, which exhibit excellent fastness and dyeability properties on polyamide textile materials on which the compounds produce reddish-yellow to orange shades, consist of a 2-benzothiazolyl diazo component which may be substituted with certain alkyl, alkoxy, cyclohexoxy, aryloxy, halogen and acylamido substituents and an N-carbamoylalkyl- or N-acylamido-alkyl-indole coupling component.

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## 3,759,896
## PROCESS FOR MANUFACTURE OF POLYSACCHARIDES WITH ANTITUMOR ACTION

**Nobuhiko Komatsu, 485 Tabata-cho, Kita-ku; Syoichi Kikumoto and Keitaro Kimura, both of 1, 6-chome, Yaesu, Chuo-ku; Sumio Sakai, 1–106 of 6, 3-chome, Yayoi-cho, Nakano-ku; Teruo Kamasuka, 1631 Gakuen Nishimachi, Kodaira-shi; and Yoshio Momoki, 31, 3-chome, Shimouma-cho, Setagaya-ku, all of Tokyo, Japan; Shoichi Takada, 967–3, Angyojirin; and Toshiyuki Yamamoto, 1700, 2-chome, Motogo-cho, both of Kawaguchi-shi, Saitama-ken, Japan; and Junichi Sugayama, 5–13, 3-chome, Sengen-cho, Kurume-machi, Kitatama-gun, Tokyo, Japan**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 808,311, Mar. 18, 1969. This application June 10, 1971, Ser. No. 151,977**

**Claims priority, application Japan, Mar. 28, 1968, 43/19,712**

**Int. Cl. C07c** *47/18*

**U.S. Cl. 260—209** **8 Claims**

Process for manufacture of polysaccharides with antitumor action, mainly consisting of β-(1→3)-linked D-glucose residue.

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## 3,759,897
## CERTAIN 1-OXAMOYL-1,4-BENZODIAZEPINES

**Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Tadashi Okamoto and Toshiyuki Hirohashi, Ashiya, Kikuo Ishizumi, Minoo, Michihiro Yamamoto, Toyonaka, Isamu Maruyama, Minoo, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan**

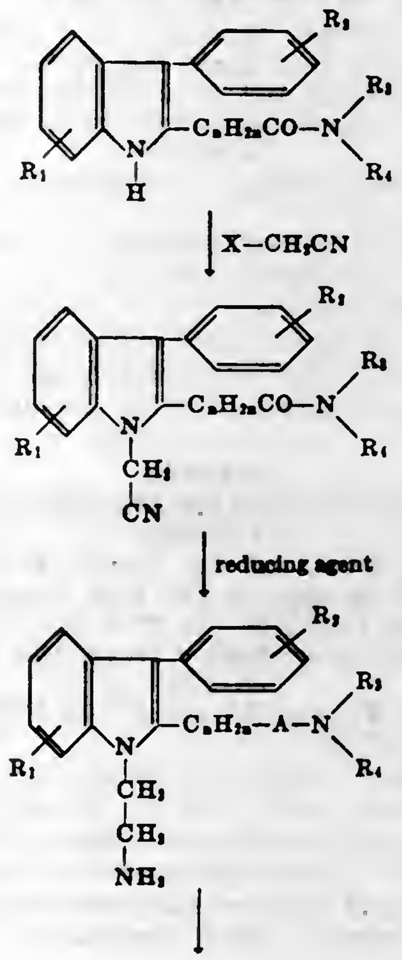
**No Drawing. Original application Jan. 19, 1970, Ser. No. 4,040, now Patent No. 3,663,534. Divided and this application Feb. 25, 1972, Ser. No. 229,598**

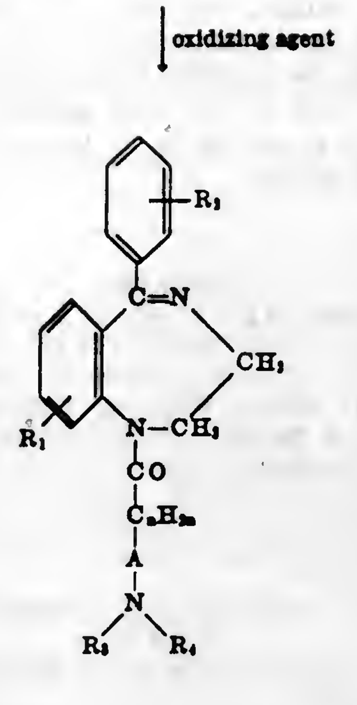
**Claims priority, application Japan, Jan. 25, 1969, 44/5,573, 44/5,574, 44/5,575; Apr. 18, 1969, 44/30,604; May 13, 1969, 44/37,159; June 9, 1969, 44/45,690**

**Int. Cl. C07d** *53/06*

**U.S. Cl. 260—239 BD** **2 Claims**

A novel process for preparing benzodiazepine derivatives and salts thereof, which are useful as tranquilizers, muscle-relaxants, antispasmodics and hypnotics. This process is shown by reaction schema as follows:





wherein $R_1$ and $R_2$ signify individually hydrogen atom, halogen atom, lower alkyl group having up to 4 carbon atoms, lower alkoxy group having up to 4 carbon atoms, trihalomethyl group, nitro group or amino group; $R_3$ and $R_4$ signify individually hydrogen atom or lower alkyl group having up to 4 carbon atoms; and A signifies a carbonyl group or a methylene group, *n* signifies 0, 1 or 2, and X signifies a halogen atom. Among these compounds, benzodiazepine derivatives wherein *n* is 0 and A is carbonyl group are novel compounds.

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## 3,759,898
## SYNTHESIS OF ALPHA-[CARBO(5-INDANYLOXY)] BENZYLPENICILLIN

**Susumu Nakanishi, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.**

**No Drawing. Filed Sept. 14, 1971, Ser. No. 180,502**

**Int. Cl. C07d** *99/16*

**U.S. Cl. 260—239.1** **7 Claims**

The preparation of α-[carbo(5-indanyloxy)]benzylpenicillin via the esterification of α-carboxypenicillin with 5-indanol in the presence of N,N'-dicyclohexylcarbodiimide in a reaction-inert solvent at a pH of 2–8.

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## 3,759,899
## PROCESS FOR INTRODUCING A DELTA 5,6-DOUBLE BOND INTO A STEROID

**Percy L. Julian and Arnold Hirsch, Oak Park, Ill., and Ernst Iseli, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Continuation of application Ser. No. 47,907, June 19, 1970. This application Jan. 20, 1972, Ser. No. 219,545**

**Int. Cl. C07c** *173/00*

**U.S. Cl. 260—239.55** **34 Claims**

The present invention provides a process for introducing an olefinic double bond into the 5,6-position of a steroid by reducing a 5,6-oxido group. Since in general the 5,6-oxido group is formed from a 5,6-unsaturated compound by treatment with an organic peracid, a process for the elimination of such an oxido group with formation of a 5,6-double bond is of special value when a 5,6-oxido group can be used as protective group or for reactions with peracids in other positions of the molecule in which a 5,6-oxido group is formed but is not desired.

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## 3,759,900
## OPTICAL BRIGHTENING AGENTS

**Walter Horstmann, Cologne-Buchheim, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

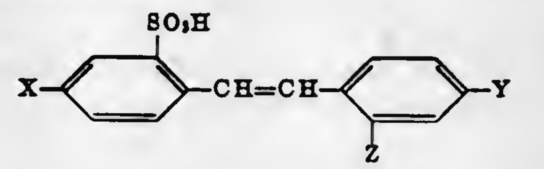
**No Drawing. Filed June 4, 1970, Ser. No. 43,580**

**Claims priority, application Germany, June 11, 1969, P 19 29 664.1**

**Int. Cl. C07d** *55/22*

**U.S. Cl. 260—240 B** **6 Claims**

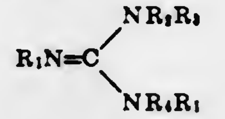
Optical brighteners on the basis of salts of sulphonic acids of the formula



(I)

in which X denotes a triazine, triazole, naphthotriazole, pyrazole, acylamino or urea radical; Y represents H, Cl, CN or X; Z denotes H or —$SO_3H$,

with guanidines of the general formula



$$R_1N{=}C\begin{matrix}NR_2R_3\\ \\NR_4R_5\end{matrix}$$

(II)

in which $R_1$ denotes H, $NH_2$, alkyl or a carbocyclic radical; $R_2$, $R_3$, $R_4$ and $R_5$ represent H, alkyl, a carbocyclic radical; and $R_2$ together with $R_3$ or $R_4$ together with $R_5$ may also denote an alkylene radical linked to the N-atom,

compared with the free sulphonic acid or the alkali metal salts of the stilbene-sulphonic acids (I), the salts with guanidines (II) have advantages in respect of their sensitivity to hardness, in the brightening of mixed fabrics and in simultaneous high quality finishing and optical brightening.

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## 3,759,901
## CERTAIN ARYLHYDRAZONALKYL QUATERNARY SALTS

**Lewis L. Lincoln and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Apr. 28, 1969, Ser. No. 819,946**

**Int. Cl. C07d** *91/44*

**U.S. Cl. 260—240 G** **8 Claims**

Reactive N-substituted, cyclammonium quaternary salts wherein the N-substituent includes substituted alkyl radicals whose terminal carbon atom can be additionally substituted with, for example, a formyl radical, an acetal or thioacetal grouping including cyclic oxyacetals and cyclic thioacetals, or a hydrazono radical which is itself optionally substituted, are useful as chemical intermediates, as photographic addenda such as antifoggants or as nucleating agents in silver halide reversal emulsions. The salts are prepared by reacting a hydro salt of a cyclammonium base with an aliphatic organic compound having an active double bond system between the first and second carbon atoms.

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## 3,759,902
## METHINE DYESTUFFS

**Hans-Peter Kuhlthau and Klaus-Friedrich Lehment, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Aug. 17, 1971, Ser. No. 172,586**

**Claims priority, application Germany, Aug. 17, 1970, P 20 40 652.4**

**Int. Cl. C09b** *23/00*

**U.S. Cl. 260—240.8** **10 Claims**

Methine dyestuffs, processes for their manufacture and their use of dyeing and printing of polyacrylonitrile, copolymers of acrylonitrile with other vinyl compounds, acid modified aromatic polyesters, acid modified polyamides, leather, tanned cotton, cellulose, polyurethanes and for the production of writing liquids and stamping inks.

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### 3,759,903

### THIAZOLINYL AND THIAZINYL DERIVATIVES OF INDAZOLES

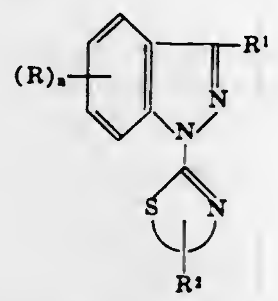
**Rudiger D. Haugwitz, Highland Park, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.**

**No Drawing. Filed July 28, 1971, Ser. No. 166,959**

**Int. Cl. C07d** *93/06*

**U.S. Cl. 260—243 R** **10 Claims**

Thiazolinyl and thiazinyl derivatives of indazoles are provided having the structure



which are useful as anthelmintic agents.

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### 3,759,904

### 7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYLACETAMIDO)]-3 - [S-(1,2,3-TRIAZOLE-5-YL)THIOMETHYL]-3 - CEPHEM - 4-CARBOXYLIC ACIDS AND SALTS THEREOF

**Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 107,448, Jan. 18, 1971. This application July 29, 1971, Ser. No. 167,534**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **24 Claims**

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)] - 3 - [S - (1,2,3 - triazole - 5 - yl)thiomethyl]-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as afitibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitus in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

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### 3,759,905

### 7-[o-, m- AND p-(2′ - AMINOETHOXY)PHENYLACETAMIDO] - 3 - (SUBSTITUTED METHYL)-CEPH-3-EM-4-CARBOXYLATES

**Raymond Urgel Lemieux, Edmonton, Alberta, and Clinton Gordon Chin, Sherwood Park, Alberta, Canada, assignors to R & L Molecular Research Ltd., Edmonton, Alberta, Canada**

**No Drawing. Filed Oct. 14, 1971, Ser. No. 189,369**

**Int. Cl. C07d** *99/24*

**U.S. Cl. 260—243 C** **29 Claims**

7-[o-, m- and p-(2′-aminoethoxy)phenylacetamido]-3-(substituted methyl)-ceph - 3-em-4-carboxylates, wherein the substituent on the "3-methyl" group is hydrogen, acetoxy, pyridinium, picolinium, lutidinium, 5-methyl-1, 3,4 - thiadiazol - 2-ylthio, 1-methyl-5-tetrazolylthio or 3-methyl - 1,2,4-thiadiazol-5-ylthio and their zwitterions, betaines and nontoxic, pharmaceutically acceptable acid addition and cationic salts are valuable as antibacterial agents and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7 - [p-(2′-aminoethoxy)-phenylacetamido] - 3-(pyridiniummethyl)ceph-3-em-4-carboxylate is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a tert.-butoxycarbonyl group.

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### 3,759,906

### ACETYLENICALLY UNSATURATED DIARYL NITRILES AND DERIVATIVES THEREOF

**John F. Cavalla, Isleworth, Gillian M. Sandison, Datchet, and Alan C. White, Windsor, England, assignors to John Wyeth & Brother Limited, Maidenhead, England**

**No Drawing. Application Nov. 18, 1969, Ser. No. 877,840, now Patent No. 3,594,401, which is a continuation-in-part of abandoned application Ser. No. 619,207, Feb. 28, 1967. Divided and this application Feb. 18, 1971, Ser. No. 116,617**

**Claims priority, application Great Britain, Mar. 3, 1966, 9,319/66**

**Int. Cl. C07d** *87/36, 87/42*

**U.S. Cl. 260—247** **12 Claims**

Certain diaryl-substituted acetylenically unsaturated compounds bearing a cyano, carboxylic acid, ester, or amide substituent or hydroxymethyl or aminomethyl, and optionally an amino substituent, exhibit useful CNS activity as anticonvulsants and are also useful as anti-inflammatory agents and tranquillizers, etc.

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### 3,759,907

### 3 - (α-SUBSTITUTED AMINO-β-ALKOXYBENZOXYPROPYL)-6,7- OR 6,7,8-ALKOXY - 1,2,3-BENZOTRIAZINE-4(3H)-ONES

**Adolf Stachel, Deceased, by Ingeburg Lydia Katharina Stachel, widow and heiress-at-law, Offenbach am Main, Rudi Beyerle, Bruchkobel, Rolf-Eberhard Nitz, Bergen-Enkheim, and Klaus Resag and Eckhard Schraven, Frankfurt am Main-Fechenheim, Germany; said Beyerle, Nitz and Schraven assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany**

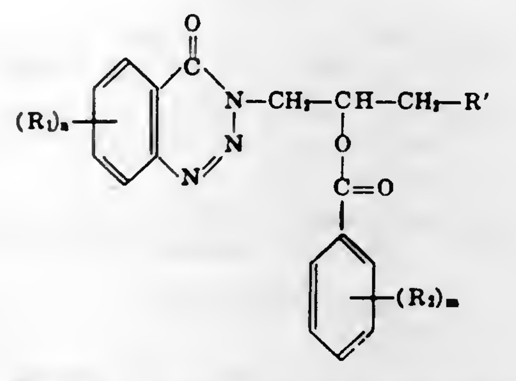
**No Drawing. Original application May 18, 1970, Ser. No. 38,544, now Patent No. 3,706,739. Divided and this application June 22, 1972, Ser. No. 265,225**

**Claims priority, application Germany, May 22, 1969, P 19 26 075.4**

**Int. Cl. C07d** *55/08*

**U.S. Cl. 260—248 AS** **3 Claims**

The present invention pertains to new, pharmacologically valuable basically substituted 1,2,3-benzothiazine-4(3H)-one derivatives having excellent coronary dilator properties and which have the structural formula



wherein $R'$ is a N-methyl-N-cycloalkylamino radical, cycloalkyl having 3–6 carbon atoms, said radical being bound via its nitrogen atom; $R_1$ is a lower alkoxy group having 1–4 carbon atoms which may be in the 6,7 or 6,7,8-position; $R_2$ is an alkoxy group having 1–4 carbon atoms; *m* is an integer selected from 1, 2 and 3; and *n* is an integer selected from the group consisting of 2 and 3 and pharmaceutically acceptable acid addition salts thereof.

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### 3,759,908

### 4-THIOURACIL COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHOTOGRAPHY

**Robert W. Lamon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Original application Aug. 12, 1968, Ser. No. 751,744, now Patent No. 3,622,340. Divided and this application Feb. 12, 1971, Ser. No. 115,088**

**Int. Cl. C07d** *51/32*

**U.S. Cl. 260—251** **1 Claim**

4-thiouracil compounds, including novel 4-thiouracil compounds, are prepared by reacting ammonia or a primary amine with novel adducts of an alkoxycarbonyl isothiocyanate and a tertiary enamine. The 4-thiouracil compounds are useful photographic fog inhibitors.

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### 3,759,909

### FUMARAMIC ACID DERIVATIVES

**Howard A. Hageman, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.**

**No Drawing. Continuation of application Ser. No. 523,545, Jan. 28, 1966. This application May 16, 1969, Ser. No. 825,441**

**Int. Cl. C07d** *87/42*

**U.S. Cl. 260—247.2 A** **21 Claims**

N-[disubstituted amino] fumaramic acids and their preparation. Useful as plant growth regulants.

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### 3,759,910

### TRIAZOLO TRIAZINONES

**Karlfried Dickore and Ludwig Eue, both % Farbenfabriken Bayer AG., Leverkusen, Germany**

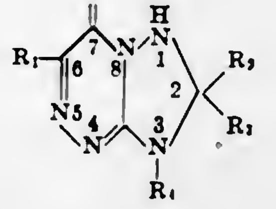
**No Drawing. Filed Dec. 9, 1970, Ser. No. 96,647**

**Claims priority, application Germany, Dec. 31, 1969, P 19 65 739.7**

**Int. Cl. C07d** *57/34*

**U.S. Cl. 260—249.5** **21 Claims**

New 1,2,3,7 - tetrahydro-[1,2,4]triazolo[3,2-c][1,2,4]-triazinone-(7) compounds of the formula



in which:

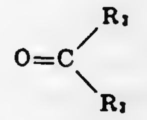
$R_1$ is hydrogen, substituted or unsubstituted alkyl, alkenyl, cycloalkyl, aralkyl or aryl;

$R_2$ and $R_3$ individually are hydrogen, substituted or unsubstituted alkyl, alkenyl, cycloalkyl, cycloalkenyl or aralkyl; and

$R_2$ and $R_3$ taken together, are alkylene of from 4 to 7 ring carbon atoms which may carry one or more alkyl group substituents, and

$R_4$ is hydrogen, alkyl, alkenyl, aralkyl or substituted or unsubstituted aryl

are prepared by a novel synthesis by reacting the corresponding diamino dihydro triazinone compound with an oxo compound of the formula



in the presence of a lower alkanoic acid.

The novel compounds are outstandingly effective as herbicides, e.g., as selective herbicides.

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### 3,759,911

### TRIAZINE DERIVATIVES

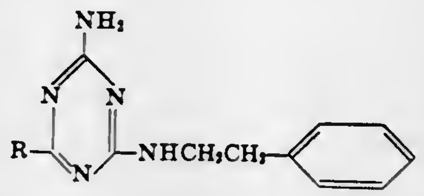
**Tsutomu Irikura, Yasuo Abe, Kyuya Okamura, Kyoichi Higo, Akitoshi Maeda, and Fumihiko Morinaga, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan**

**No Drawing. Continuation of abandoned application Ser. No. 808,294, Mar. 18, 1969. This application June 15, 1971, Ser. No. 153,395**

**Int. Cl. C07d** *55/22*

**U.S. Cl. 260—249.6** **1 Claim**

s-Triazine derivatives of the formula



wherein R is pyrrolidino, piperidino, 2-ketopiperazine-4-yl or $NR_1R_2$, $R_1$ being hydrogen or straight or branched alkyl of from 1–6 carbon atoms and $R_2$ being cycloalkyl or straight or branched alkyl of 1–6 carbon atoms, and the acid addition salts of the compound with organic or inorganic acids.

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### 3,759,912

### QUINOXALINES

**Romano Derungs, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

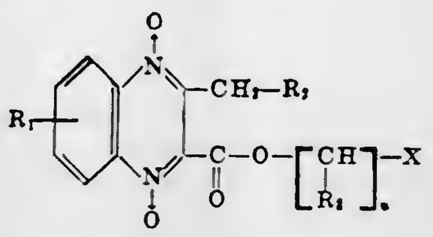
**No Drawing. Filed Nov. 25, 1970, Ser. No. 92,905**

**Claims priority, application Switzerland, Dec. 12, 1969, 18,520/69**

**Int. Cl. C07d** *51/78*

**U.S. Cl. 260—250 R** **4 Claims**

Compounds of the formula



I

in which $R_1$ represents hydrogen, halogen, lower alkyl or lower alkoxy, $R_2$ represents hydrogen, halogen, lower alkanoyloxy, aroyloxy, heterocyclylcarbonyloxy, lower alkanoylthio, aroylthio or heterocyclylcarbonylthio; $R_3$ represents hydrogen or lower alkyl, *n* denotes a number from 2 to 5 inclusive; X represents lower alkoxy, lower alkylthio, lower dialkylamino, a monocyclic 5- or 6-membered saturated heterocyclic amino or a monocyclic 5- or 6-membered saturated herterocyclic amino containing an additional hetero atom selected from the group of oxygen, sulphur or nitrogen,

useful as broad spectrum antimicrobials in human and veterinary medicine; novel intermediates useful in their preparation; processes for their production from the appropriate quinoxaline, N-monoxide quinoxaline, quinoxaline carboxylic acid or furazan oxide are disclosed.

### 3,759,913

### POLYIMIDE POLYMERS OF BENZOPHENONE TETRACARBOXYLIC DIANHYDRIDES AND SATURATED ALIPHATIC DIAMINES

**William D. Blackley, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.**

**Continuation-in-part of Ser. No. 2,644, Jan. 13, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,858**

**Int. Cl. C08g** *20/32*

**U.S. Cl. 260—33.4 P** **8 Claims**

The invention comprises solid, tack-free, thermo-setting linear polyimides of benzophenone tetracarboxylic dianhydride and a saturated aliphatic diamine having from three to 12 carbon atoms, containing not more than a 2% excess of dianhydride or diamine over the amount needed to form the linear polyimide. The adhesives of the present invention have softening points between 150° C. and 300° C., inherent viscosities of about 0.1 and 2.0 as measured from a 0.5% solution of polyimide in m-cresol at 25° C. and substantially complete solubilities in m-cresol at 25° C. in the ratio of 10% by weight of polymer to 90% by weight of solvent, said polyimides releasing not more than 1% by weight of volatiles upon being heated for a period of 10 hours at 200° C. and thereby rendered thermally set.

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### 3,759,914

### IMPROVED CURING COMPOSITIONS FOR EPOXY RESINS COMPRISING LATENT AMINE CURING AGENT AND ACCELERATOR

**John A. Simms, and Henry S. Tremper, III, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Aug. 10, 1971, Ser. No. 170,623**

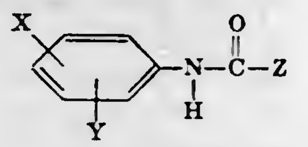
**Int. Cl. C08g** *30/14, 51/04*

**U.S. Cl. 260—37 EP** **11 Claims**

Composition, useful for curing polyepoxide having a plurality of 1,2-epoxy groups comprising an admixture of:

A. a latent amine curing agent for a polyepoxide having a plurality of 1,2-epoxy groups, and

B. an accelerator for (A), the accelerator having the formula



wherein

$X = Cl, Br, CH_3, NO_2, H, \text{or } OCH_3$

$Y = Cl, Br, CH_3, NO_2, H, \text{or } OCH_3$

X and Y can be the same as each other or different from each other,

Z = a monovalent radical derived from a secondary amine having at least three carbon atoms,

provided that when X and Y are selected from the group consisting of Cl, Br, $CH_3$, $NO_2$, or $—OCH_3$ or when X = Br and Y = H, then Z can be a monovalent radical derived from a secondary amine having at least two carbon atoms,

the accelerator being present in an amount of about 0.1–300 percent by weight based on the weight of the latent amine curing agent.

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### 3,759,915

### CAULKING COMPOSITION COMPRISING POLYMER HAVING ADDITION POLYMERIZED BACKBONE HAVING CARBOXYL GROUPS ESTERIFIED WITH DRYING OIL FATTY ACID HYDROXYAMIDE

**Roger H. Kottke, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 81,529, Oct. 16, 1970, abandoned. This application Aug. 30, 1971, Ser. No. 176,338**

**Int. Cl. C08f** *45/02*

**U.S. Cl. 260—41 R** **9 Claims**

The caulking or sealing composition of the invention has as its binder an acrylic backbone containing pendant unsaturated groups, preferably derived from drying oil fatty acids, and attached to the acrylic backbone through amidoester linkages. The acrylic modified product has the flexibility and durability characteristic of acrylics, and the advantage that the composition will cure similarly to drying oils, using driers such as cobalt naphthenate and zinc naphthenate.

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### 3,759,916

### PROCESS FOR TRIMERIZING POLYISOCYANATES WITH PYRAZINE CATALYSTS

**James J. Pitts, Wallingford, and John S. Babiec, Jr., Milford, both of Conn., assignors to Olin Corporation, New Haven, Conn.**

**Filed Mar. 27, 1972, Ser. No. 238,661**

**Int. Cl. C08g** *22/36, 22/44*

**U.S. Cl. 260—77.5 NC** **9 Claims**

A process for trimerizing organic polyisocyanates using selected pyrazine compounds as catalysts. The trimers produced are useful in the preparation of polyurethane resins.

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### 3,759,917

### USE OF AN OPEN-BARREL SCREW PRESS DRYER FOR CHAIN-BRANCHING AN EPDM COPOLYMER

**Lawrence Klinge Layton, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Apr. 8, 1971, Ser. No. 132,290**

**Int. Cl. C08f** *15/40*

**U.S. Cl. 260—79.5 PR** **13 Claims**

The use of the water-vaporizing section of an open-barrel screw press dryer for simultaneously drying and chain-branching a copolymer, said use consisting essentially of introducing said copolymer into one end of said dryer, introducing a promoter into said water-vaporizing section at one or more points on said barrel, and heating the resulting mixture while conveying the mixture through said water-vaporizing section, thereby forming a vulcanizable branched elastomeric polymer. The branched polymers are useful for improving the ozone resistance of blends with other elastomers.

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### 3,759,918

### PROCESS FOR PREPARING ETHYLENE COPOLYMER

**Kazno Yamaguchi; Masayoshi Hasuo, and Isao Ito, all of Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan**

**Filed Dec. 3, 1971, Ser. No. 204,747**

**Claims priority, application Japan, Dec. 15, 1970, 45/112258**

**Int. Cl. C08f** *15/40, 1/54*

**U.S. Cl. 260—80.7** **7 Claims**

Ethylene copolymers having high Environmental Stress Cracking Resistance, which is especially useful for blow-molding, is prepared by copolymerizing ethylene with at least one α-olefin, in the presence of a catalyst system comprising:(1) chromium oxide supported on silica or silica-alumina having an average pore diameter or 150–10A and (2) pentaalkylsiloxyalane or dihydrocarbyl aluminum hydrocarbonoxide.

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### 3,759,919

### COPOLYMERIZATION OF A CONJUGATED DIENE WITH A VINYL AROMATIC COMPOUND

**Jean-Paul Dillenschneider, Beaumont, France, assignor to Compagnie Generale des Etablissements Michelin, raison Societe Michelin & Cie, Clermont-Ferrant, France**

**Filed Apr. 1, 1971, Ser. No. 130,498**

**Claims priority, application France, Apr. 9, 1970, 7012942**

**Int. Cl. C08f** *19/06, 19/08, 1/74*

**U.S. Cl. 260—83.7** **9 Claims**

In the solution copolymerization of a conjugated diene monomer with a vinyl aromatic monomer dissolved in a hydrocarbon solvent reaction medium therefor containing a solubilized organolithium copolymerization initiator, the distribution of the monomers along the macromolecular

copolymer chain can be rendered uniform or variably controlled while also reducing the 1,2- or 3,4- addition content of the conjugated diene monomer within the copolymer product molecules in a reproducible manner by conducting the copolymerization in the reaction medium which contains a weakly polar solution of a complex of an aromatic ketone with an alkali metal other than lithium.

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### 3,759,920

### PROCESS FOR THE PREPARATION OF 1-SUBSTITUTED-PHENYL-2(1H)-QUINAZOLINONES

**Jerome Linder, Westfield, N.J.; Paul G. Mattner, Brooklyn, N.Y., and William G. Salmond, Mount Arlington, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.**

**Filed June 24, 1971, Ser. No. 156,460**

**Int. Cl. C07d** *51/48*

**U.S. Cl. 260—251 QB** **10 Claims**

1-alkyl-4-phenyl-2(1H)-quinazolinones, e.g., 1-isopropyl-7-methyl-4-phenyl-2(1H)-quinazolinone, are prepared by the reaction of an alkyl-N-alkyl-N-(substituted or unsubstituted-2-benzoyl-phenyl)-carbamates with ammonium salts of aliphatic carboxylic acids. The compounds are useful as anti-inflammatory and analgesic agents.

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### 3,759,921

### METHOD OF SUPPRESSING IMMUNERESPONSE WITH 1 SUBSTITUTED-3-(2 PYRIMIDYL)UREAS

**Charles J. Paget, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation-in-part of Ser. No. 867,079, Oct. 16, 1969, abandoned. This application June 9, 1971, Ser. No. 151,540**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—251** **3 Claims**

1-Substituted-3-(2-pyrimidyl)ureas as immunosuppressants and as antiviral agents.

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### 3,759,922

### PREPARATION OF PYRIMIDO(5,4-C)(1,5) BENZ OXAZEPIN-5(11H)-ONES AND INTERMEDIATES

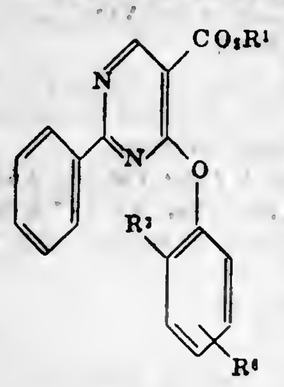
**Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Filed June 25, 1971, Ser. No. 156,941**

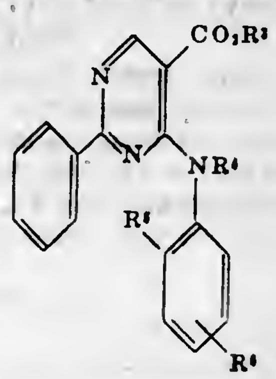
**Int. Cl. C07d** *99/10*

**U.S. Cl. 260—256.4 F** **5 Claims**

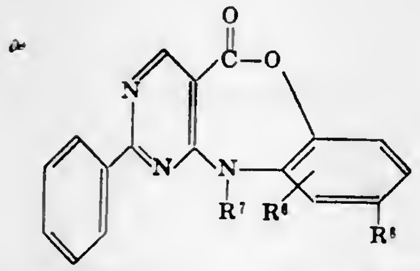
The disclosure is directed to the method of preparing and the resultant products of pyrimido[5,4-c][1,5]-benzoxazepin-5(11H)-ones and intermediates having the general formulae:



(I)



(II)



(III)

where $R^1 – R^8$ are as defined below. The products are prepared by a series of reactions involving first reacting 5-carbethoxy-4-chloro-2-phenyl pyrimidine with o-nitrophenol, catalytically reducing, and then hydrolizing the product, and finally treating the reduced carboxylic acid product with an acid anhydride. The final products are pharmacodynamically active, particularly as central nervous system depressants. That is, the products produce a calming effect in the host, inter alia.

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### 3,759,923

### QUINOBENZOXA(OR THIA)ZEPIN-3-ONES

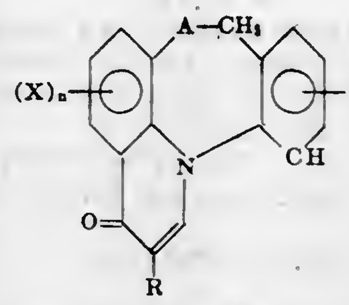
**Harry Louis Yale, and Ramesh B. Petigara, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc.,, New York, N.Y.**

**Filed Dec. 9, 1970, Ser. No. 96,614**

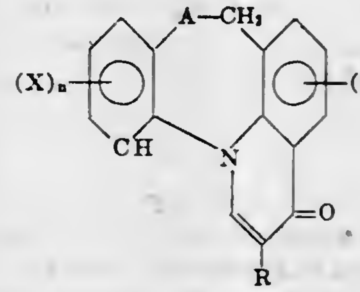
**Int. Cl. C07d** *87/54*

**U.S. Cl. 260—283 S** **6 Claims**

Quinobenzoxa(or thia)zepin-3-one derivatives are provided having the structures



or



wherein X, Y, R, n, n′ and A are as defined hereinafter. These compounds are useful as antifungal agents and antibacterial agents.

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### 3,759,924

### 1-AMINO-3(OR4)-PHENYL-3,4-DEHYDROISOQUINOLINES

**Claude Jeanmart, Brunoy; Mayer Naoum Messer, Dievres, and Pierre Simon, Hauts-de-Seine, all of France, assignors to Rhone-Poulenc S.A., Paris, France**

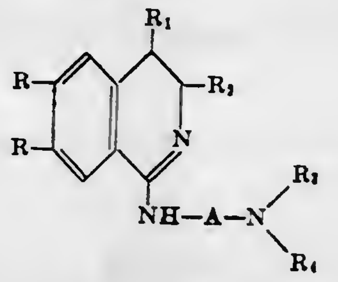
**Filed Mar. 11, 1971, Ser. No. 123,375**

**Claims priority, application France, Mar. 12, 1970, 7008932**

**Int. Cl. C07d** *35/14*

**U.S. Cl. 260—286 R** **9 Claims**

3,4-Dihydroisoquinoline derivatives of the formula:-



wherein the symbols R represent hydrogen, halogen or methoxy, or together form the methylenedioxy radical, the symbols $R_1$ and $R_2$ represent hydrogen or phenyl, at least one of the symbols $R_1$ and $R_2$ representing phenyl, the symbol A represents an alkylene radical, and (a) the symbols $R_3$ and $R_4$ represent alkyl, or (b) $R_3$ represents alkylene forming a nitrogen-containing heterocyclic ring by attachment to a carbon atom of the alkylene radical A, and $R_4$ represents alkyl, or (c) the symbols $R_3$ and $R_4$ together with the nitrogen atom form a mononuclear heterocyclic group optionally substituted by alkyl, are useful as anti-arhythmic agents.

3,759,925

### PREPARATION OF BICYCLICAL LACTAMS

**Martin Cherubim, Rheinkamp-Eick, and Faisal Abodagga, Rheinkamp-Utfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Munich, Germany**

**Filed Aug. 28, 1972, Ser. No. 284,191**

**Claims priority, application Germany, Sept. 3, 1971, P 21 44 178.1**

**Int. Cl. C07d** *39/10*

**U.S. Cl. 260—293.55** **9 Claims**

1,8-Diaza-9,10-dialkyl-bicyclo-(4,4,0)-decane-(2,7)-diones are prepared by reacting a dicyanoethylated ketone, such as 2,2-di (beta-cyanoethyl)-butanone-3 in the presence of an inert solvent, such as methyl alcohol, and a basic catalyst at a temperature of about 20° to about 200° C.

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3,759,926

### PIPERIDINE DERIVATIVES AS STABILIZERS

**Alexander Michael Chalmers, Cheadle Hulme, and Donald Richard Randell, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed June 9, 1971, Ser. No. 151,511**

**Claims priority, application Great Britain, June 10, 1970, 28,063/70**

**Int. Cl. C07d** *29/16*

**U.S. Cl. 260—293.9** **8 Claims**

New 4-Phosphinyl-4-hydroxypiperidines are useful as stabilizers for organic materials. They are prepared by reacting a 4-keto-piperidine with a phosphite.

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3,759,927

### B-BENZOFURYLMETHYL-1,3,8-TRIAZASPIRO(4,5)DECANES

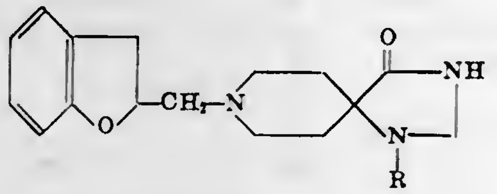
**Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation-in-part of Ser. No. 183,694, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 105,126, Jan. 8, 1971, abandoned. This application Nov. 10, 1971, Ser. No. 197,475**

**Int. Cl. C07d** *49/34*

**U.S. Cl. 260—293.58** **7 Claims**

8-[1-(2,3-dihydro-2-benzofuryl)-alkyl]-1,3,8-triazaspiro(4,5)decanes, e.g. those of the formula



R = H, aliphatic, araliphatic or aromatic radical

or functional derivatives thereof are neuroleptic agents.

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3,759,928

### DIPHENYL-METHYLENE-N-BENZYL-PIPERIDINES

**Dusan Zivkovic, Rhode-Saint-Genese, Belgium, assignor to U.C.B., Societe Anonyme, Bruxelles, Belgium**

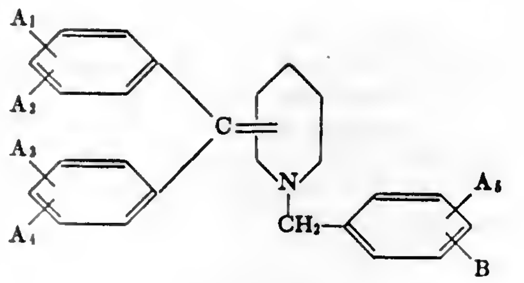
**Filed June 2, 1970, Ser. No. 42,893**

**Claims priority, application Great Britain, June 5, 1969, 28,569/69**

**Int. Cl. C07d** *29/12*

**U.S. Cl. 260—293.72** **11 Claims**

Blood circulation activating, anti-arrhythmic and antihistaminic diphenyl-methylene-N-benzyl-piperidines having the general formula



wherein $A_1$, $A_2$, $A_3$, $A_4$, $A_5$ and B, taken separately, each represents hydrogen, halogen, halomethyl, alkyl, alkoxy, nitro, cyano or amino, and

$A_5$ and B, taken together, represent a bivalent radical selected from the group consisting of alkylene, alkenylene and alkadienylene having 3 to 5 carbon atoms and alkylene dioxy having 1 to 3 carbon atoms, said bivalent radical being connected to two adjacent carbon atoms of the benzene nucleus,

with the proviso that when $A_1$, $A_2$, $A_3$, $A_4$, $A_5$ and B are all hydrogen atoms, the diphenyl-methylene radical is in the ortho or meta position with regard to the nitrogen atom in the piperidine nucleus,

and the addition salts thereof with pharmaceutically acceptable inorganic or organic acids.

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3,759,929

### MANUFACTURE OF β-HYDROXY CARBONYL COMPOUNDS AND/OR α-UNSATURATED CARBONYL COMPOUNDS

**Georg Klotmann, Ludwigshafen, and Herbert Mueller, Frankenthal, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany**

**Filed Nov. 2, 1970, Ser. No. 86,389**

**Int. Cl. C07d** *29/24*

**U.S. Cl. 260—293.88** **5 Claims**

The manufacture of β-hydroxy carbonyl compounds and/or α-unsaturated carbonyl compounds by the reaction of ketones with derivatives of glyoxylic acid and derivatives of α-ketoaldehydes in the absence of catalysts at a temperature below 140° C.

Some of the compounds obtainable by the process of the invention are solvents and valuable starting materials for the manufacture of dyes, plastics, adhesives and varnishes.

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3,759,930

### CERTAIN 8-METHYL-4-HYDROXY-5-METHYLTHIOMETHYL-4H-M DIOXINO/4,5-C/PYRIDINES

**Gustav Schorre; Herbert Nowak, and Otto Saiko, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany**

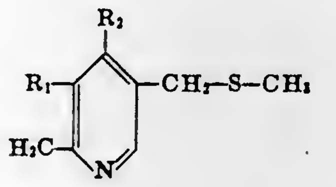
**Division of Ser. No. 882,348, Dec. 4, 1969, Pat. No. 3,658,825. This application Jan. 13, 1972, Ser. No. 217,636**

**Claims priority, application Germany, Dec. 5, 1968, P 18 12 794.1**

**Int. Cl. C07d** *31/50*

**U.S. Cl. 260—294.8 C** **7 Claims**

5-Methylthiomethyl-pyridines having electro-encephalogram-modifying and anti-lipidic activity of the formula



wherein $R_1$ is OH and $R_2$ is $-CHO$ or $-CH_2NR_3R_4$ in which $R_3$ and $R_4$ are H or lower-alkyl or, collectively a methylene chain containing 4 or 5 carbon atoms, or $R_1$ and $R_2$ collectively are a group of the formula $-O-CR_5R_6-O-CHOH-$ in which $R_5$ and $R_6$ have the same values as $R_3$ and $R_4$ or, when $R_6$ is H, $R_5$ can be also an unsubstituted or substituted phenyl group.

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3,759,931

### NEW MEROCYANINE DYESTUFFS

**David Sydney Brown; Geoffrey Ernest Ficken, and Elizabeth Joan Treherne, all of Ilford, England, assignors to Ilford Limited, Ilford, England**

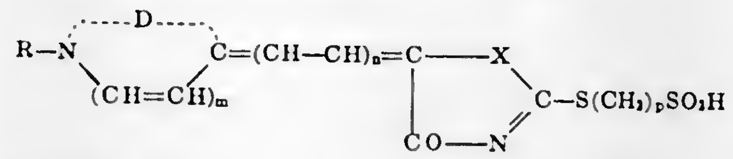
**Filed Oct. 22, 1971, Ser. No. 191,797**

**Claims priority, application Great Britain, Oct. 27, 1970, 51,031/70**

**Int. Cl. C09b** *23/10*

**U.S. Cl. 260—294.8 D** **2 Claims**

New merocyanine dyestuffs of the formula



wherein R is alkyl or aralkyl, X is oxygen or sulphur, *m* is 0 or 1, *n* is 0 or 1, *p* is 1 to 4 and D is the residue of a heterocyclic ring, electrophotographic material comprising said dyestuffs as sensitizers and a liquid sensitizer for electrophotographic material are disclosed.

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3,759,932

### METHOD FOR PREPARING MERCAPTOPYRIDINES USING ALKALI METAL POLYSULFIDES

**David F. Gavin, Cheshire, and Maurice A. Raymond, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.**

**Continuation-in-part of Ser. No. 33,517, April 30, 1970, abandoned. This application Aug. 25, 1972, Ser. No. 283,862**

**Int. Cl. C07d** *31/50*

**U.S. Cl. 260—294.8 G** **13 Claims**

This invention relates to an improved and economical method for preparing mercaptopyridines by reaction of selected halosubstituted pyridines with an alkali metal polysulfide.

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3,759,933

### 3H-IMIDAZO(4,5-C)PYRIDINES

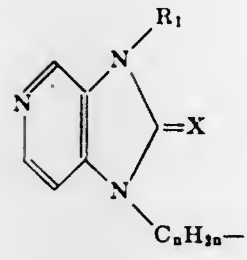
**Michael Mullen Robison, Bottmingen, Switzerland, and Neville Finch, West Orange, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Mar. 6, 1972, Ser. No. 232,259**

**Int. Cl. C07d** *31/40*

**U.S. Cl. 260—295 K** **3 Claims**

3H-1,2-dihydro-imidazo[4,5-c]pyridines, e.g., those of the formula



$R_1$ = H or aliphatic radical
X = O or S, n = 0 to 4
$R_2$ = aromatic radical

acyl derivatives, N-oxides, quaternaries or salts thereof exhibit anti-inflammatory effects.

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3,759,934

### 2,3 OR 4-PYRI DINEMETHANOL-ALPHA-SUBSTITUTED OR UNSUBSTITUTED PHENYLS-ALPHA-(2 OR 3-ALKOXY-1-NAPHTHYLS)

**William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.**

**Filed Dec. 9, 1970, Ser. No. 96,667**

**Int. Cl. C07d** *31/28*

**U.S. Cl. 260—297 B** **13 Claims**

2,3 Or 4-pyridinemethanol-α-substituted or unsubstituted phenyls-α-(2 or 3-alkoxy-1-naphthyls), e.g., 4-pyridinemethanol-α-phenyl-α-(2-methoxy-1-naphthyl), prepared by treating a 1-lithium-2-methoxynaphthalene with a 4-pyridyl phenyl ketone. The compounds are useful as hypolipidemic agents.

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3,759,935

### METHOD FOR THE PREPARATION OF 2-ALKYL SUBSTITUTED THIAZOLES AND SELENAZOLES

**Arthur Henri De Cat, Mortsel, and Leo Hypoliet Manssens, Schilde, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium**

**Filed Oct. 27, 1970, Ser. No. 84,490**

**Claims priority, application Great Britain, Nov. 3, 1969, 53,824/69**

**Int. Cl. C07d** *97/02, 91/44*

**U.S. Cl. 260—298** **9 Claims**

A method of preparing 2-alkylthiazoles or 2-alkylselenazoles is described wherein an aromatic disulphide or diselenide having amino groups or nitro groups in the 2-positions relative to the disulphide or diselenide group is catalytically hydrogenated using a rhenium sulphide as catalyst in the presence of an aliphatic carboxylic anhydride. The method is a one-step synthesis and high yields of 2-alkyl thiazoles or selenazoles are obtained having a high degree of purity.

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3,759,936

### OXIDATION OF O-TOLUENESULFONAMIDES BY MOLECULAR OXYGEN

**Paulin Mounier, Rhone, France, assignor to Rhone-Poulenc S.A., Paris, France**

**Filed Mar. 31, 1971, Ser. No. 129,976**

**Claims priority, application France, Apr. 1, 1970, 7011659; Nov. 16, 1970, 7040970**

**Int. Cl. C07d** *91/08*

**U.S. Cl. 260—301** **8 Claims**

Compounds containing a 1,2-benzisothiazolidin-3-one-1,1-dioxide group, notably saccharin are prepared by a 1 step oxidation of an ortho-toluenesulphonamide compound with molecular oxygen in the liquid phase in the presence of a metal oxidation catalyst e.g., a manganese or cobalt salt. The oxidation is preferably carried out in aqueous acetic acid using carbonyl compound as oxidation initiator.

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3,759,937

### PROCESS FOR PREPARING CERTAIN 2-IMINOTHIAZOLIDINES

**Asbjorn Baklien, Kingsbury, Victoria, and Jan Kolm, Kew, Victoria, both of Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia**

**Filed July 14, 1966, Ser. No. 565,092**

**Claims priority, application Australia, July 19, 1965, 61653/65**

**Int. Cl. C07d** *91/18*

**U.S. Cl. 260—306.7** **21 Claims**

Process for preparing certain 2-imino-thiazolidines which comprises reacting certain aziridines with thiourea or thiocyanic acid.

**3,759,938**

### THIAZOLIDINE DERIVATIVES

**Raymond Giraudon, Lesigny, France, assignor to Rhone-Poulenc S.A., Paris, France**

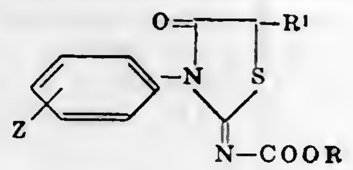
**Filed July 15, 1971, Ser. No. 163,071**

**Claims priority, application France, July 17, 1970, 7026473; Oct. 9, 1970, 7036618; Apr. 16, 1971, 7113534**

**Int. Cl. C07d** *91/16*

**U.S. Cl. 260—306.7** **14 Claims**

Compounds of the formula:



wherein R represents alkyl of one through four carbon atoms, $R^1$ represents hydrogen, alkyl of one through four carbon atoms or phenyl, and Z represents amino or a group -NH-CO-$R^2$ in which $R^2$ represents hydrogen, or alkyl or alkoxy of one through four carbon atoms, possess fungicidal and anthelmintic properties.

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**3,759,939**

### CERTAIN 1-(1,3,4-THIADIAZOL-2-YL)-IMIDAZOLIDINONE-(2) COMPOUNDS

**Carl Metzger, Wuppertal-Elberfeld; Dietrich Rucker, Bietigheim, and Ludwig Eue, Koeln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

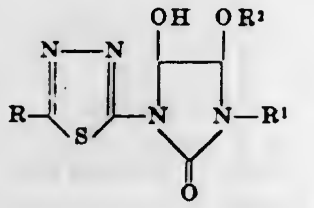
**Filed Mar. 10, 1971, Ser. No. 123,013**

**Claims priority, application Germany, Mar. 20, 1970, P 20 13 406.9**

**Int. Cl. C07d** *99/08*

**U.S. Cl. 260—306.8 D** **11 Claims**

Certain novel 1-(1,3,4-thiadiazol-2-yl)-imidazolidinone-(2) compounds of the formula:



in which

R is hydrogen, alkyl, haloalkyl, cycloalkyl, alkoxy, alkoxyalkyl, halocycloalkyl, alkoxyalkylthio, unsubstituted and substituted aryl, alkenyl, alkynl, alkylthio, (optionally substituted) aralkylthio, alkenylthio, alkynylthio or alkyl-, alkenyl-, alkynyl and aralkyl-sulfur substituents in which the sulfur is oxidized to sulfonyl or sulfoxy;

$R_1$ is lower alkyl, alkenyl or alkynyl; and

$R_2$ is lower alkyl or alkenyl;

are outstandingly effective herbicides exhibiting particularly selective action.

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**3,759,940**

### DIALKYL ACETALS OF HETEROCYCLIC UREIDOACETALDEHYDE

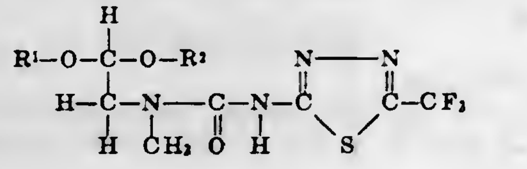
**John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.**

**Filed Dec. 13, 1971, Ser. No. 207,529**

**Int. Cl. C07d** *91/62*

**U.S. Cl. 260—306.8 D** **4 Claims**

This invention discloses new chemical compounds of the formula



wherein $R^1$ and $R^2$ are each alkyl of up to three carbon atoms. Further described are herbicidal compositions utilizing the above defined compositions.

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**3,759,941**

### INSECTICIDAL ISOXAZOLE DERIVATIVES

**Nobuyoshi Sampei; Kazuo Tomita, and Hideakira Tsuji, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan**

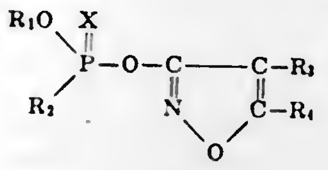
**Continuation-in-part of Ser. No. 812,965, March 20, 1969, abandoned, Continuation-in-part of Ser. No. 573,211, Aug. 18, 1966, abandoned. This application May 5, 1970, Ser. No. 34,867**

**Claims priority, application Japan, Aug. 20, 1965, 40/50835; Sept. 4, 1965, 40/54144; Sept. 11, 1965, 40/55537; Sept. 13, 1965, 40/56025; July 5, 1966, 41/43202**

**Int. Cl. C07d** *85/22*

**U.S. Cl. 260—307 H** **11 Claims**

Insecticidally active 3-hydroxyisoxazole compounds represented by the formula



wherein

- $R_1$ is alkyl group, preferably having one to five carbon atoms;
- $R_2$ is alkoxy group, preferably having one to five carbon atoms or phenyl group;
- $R_3$ is hydrogen, halogen or alkyl group, preferably having one to five carbon atoms;
- $R_4$ is hydrogen, alkyl group, preferably having one to 10 carbon atoms, phenyl group which may be substituted with such substituent or substituents as alkyl, alkoxy, halogen, nitro or cyano, alkoxycarbonyl, preferably having two to six carbon atoms, amino group, or dialkoxymethyl group having one to five carbon atoms in each alkoxy moiety; and
- X is sulfur or oxygen atom.

Method for combatting harmful insects which comprises applying to said insects an insecticidally effective amount of a compound having the above formula.

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**3,759,942**

### CROSSLINKING MONOMERS CONTAINING THE 1-AZA-3,7-DIOXABICYCLO [3.3.0] OCTANE STRUCTURE

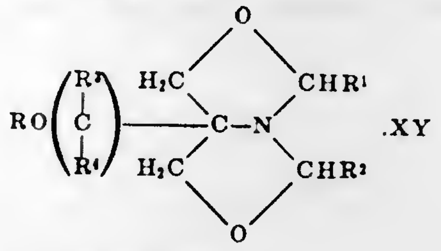
**Richard J. Himics, Lake Hiawatha, N.J., assignor to Sun Chemical Corporation, New York, N.Y.**

**Filed June 8, 1970, Ser. No. 44,534**

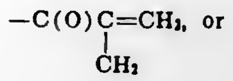
**Int. Cl. C07d** *85/26*

**U.S. Cl. 260—307 F** **10 Claims**

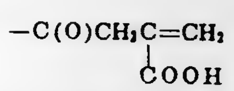
Compounds having the structure



wherein R is $-\mathrm{C(O)CH{=}CH_2}$,



$$-\mathrm{C(O)}\underset{\mathrm{CH_3}}{\underset{|}{\mathrm{C}}}{=}\mathrm{CH_2},\ \text{or}$$



$$-\mathrm{C(O)CH_2}\underset{\mathrm{COOH}}{\underset{|}{\mathrm{C}}}{=}\mathrm{CH_2}$$

$R^1$ and $R^2$ is each hydrogen, phenyl, halophenyl, or alkyl of one to 20 carbon atoms and may be the same or different; $R^3$ and $R^4$ is each hydrogen; XY may be absent; X may be hydrogen and Y may be a p-toluenesulfonate radical or a picrate radical; or X may be alkyl of one to 20 carbon atoms and Y may be a halogen, such as 1-aza-5-acryloxymethyl-3,7-dioxabicyclo [3.3.0] octane, are radiation curable and are suitable for use in printing inks, coating compositions, adhesives, and the like.

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**3,759,943**

### AMIDO AND AMINO TRIAZOLO BENZODIAZEPINES

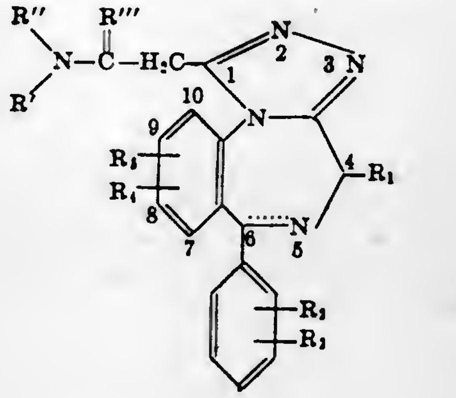
**Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Apr. 28, 1971, Ser. No. 138,287**

**Int. Cl. C07d** *57/02, 99/02*

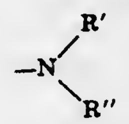
**U.S. Cl. 260—308 R** **3 Claims**

Compounds of the formula:



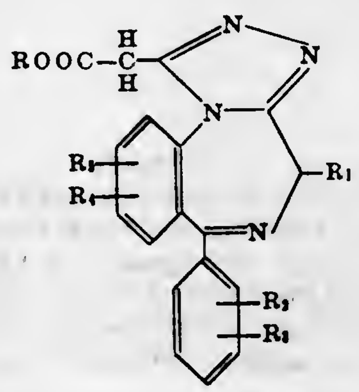
(V)

wherein R′ and R″ are hydrogen, alkyl of one to three carbon atoms, inclusive, or together



are pyrrolidino, piperidino, hexamethyleneimino, or morpholino; wherein R‴ is

or oxygen; $R_1$ is hydrogen or alkyl defined as above; $R_2$, $R_3$, $R_4$, and $R_5$ are selected from the group consisting of hydrogen, alkyl defined as above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, and dialkylamino, in which the carbon chain moiety is of one to three carbon atoms, inclusive, and in which the five to six nitrogen-carbon linkage is selected from the group consisting of double bonds and single bonds, with the proviso that the linkage is always a double bond whenever R‴ is oxygen; are produced from the carboxylic acid esters (I)



I

wherein $R_1$, $R_2$, $R_3$, $R_4$, and $R_5$ are defined as above and R is alkyl of one to three carbon atoms, inclusive.

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**3,759,944**

### ISOTHIOUREAS AND THEIR DERIVATIVES

**James Whyte Black, Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England**

**Filed Oct. 14, 1970, Ser. No. 80,818**

**Int. Cl. C07d** *49/18, 49/36, 55/06*

**U.S. Cl. 260—309** **5 Claims**

S-(Heterocyclic-alkyl)isothioureas and a method of inhibiting histamine activity.

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**3,759,945**

### ALIPHATIC OXAALKYL-2,4,5-TRIHALOGENO-IMIDAZOLES

**Hans Rutz, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation of Ser. No. 723,903, April 24, 1968, Pat. No. 3,625,953. This application June 28, 1971, Ser. No. 157,698**

**Claims priority, application Switzerland, Apr. 26, 1967, 5960/67The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.**

**Int. Cl. C07d** *49/36*

**U.S. Cl. 260—309** **3 Claims**

2,4,5-trihalogeno-imidazoles substituted in 1-position at the imidazole nucleus by a group of the formula R—O—A— wherein R represents an optionally substituted aliphatic hydrocarbon radical and A represents an alkylene group, are described, which imidazoles are herbicidally active and useful in the control of weeds and the like undesirable plant growth; herbicidal compositions containing such imidazoles as active ingredients, and method of controlling undesirable plant growth with the aid of such compounds are also disclosed.

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**3,759,946**

### 1-ARYLOXY-4,5-DIPHENYLIMIDAZOLES

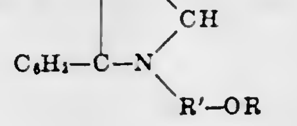
**Yoshio Osawa, Yokohama, and Koitiro Ueno, Kawasaki, both of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan**

**Continuation of Ser. No. 708,203, Feb. 26, 1968, abandoned. This application Sept. 20, 1971, Ser. No. 182,174**

**Int. Cl. C07d** *49/36*

**U.S. Cl. 260—309** **10 Claims**

Imidazole derivatives represented by the general formula :



wherein R is a member of group consisting of alkyl group of one to four carbon atoms and aryl group, and R′ is a member of alkylene group of one to six carbons and a process for the preparation thereof.

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**3,759,947**

### TERT-SILYL AND TERT-ALKYL PHTHALOCYANINE DYESTUFFS

**Andre Pugin, Riehen; Heinrich Hopfe, Kusnacht, and Pasquale Gallegra, Zurich, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation of Ser. No. 758,671, Sept. 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 717,382, March 29, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,501**

**Claims priority, application Switzerland, Sept. 15, 1967, 12945/67; Apr. 7, 1967, 4980/67**

**Int. Cl. C09b** *47/04*

**U.S. Cl. 260—314.5** **5 Claims**

Unmetallized and metallized phthalocyanine dyestuffs being substituted in the benzene nuclei of the phthalocyanine system by from one to four organically trisubstituted tertiary silyl or alkyl groups are described, which dyestuffs are useful for the coloring of synthetic macromolecular materials of polymerizates and polycondensation products, in particular by dyeing in the mass especially of synthetic polyamide and polyolefine fibers; those of the new dyestuffs containing three or, preferably, four tertiary silyl or alkyl groups per phthalocyanine nucleus being of particularly good solubility in certain organic solvents and also useful, apart from the above purposes, for the dyeing of lacquer raw materials, while those new dyestuffs having fewer tertiary silyl or alkyl groups and especially those having only one tertiary silyl or alkyl group per phthalocyanine nucleus are useful as pigments and for the coloring, in the mass, of polyolefin fibers.

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### 3,759,948
### NON-STEROID ANTI-INFLAMMATORY COMPOUNDS

**Tsung-Ying Shen; Bruce E. Witzel; Gordon L. Walford, all of Westfield, and William V. Ruyle, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Division of Ser. No. 836,603, June 25, 1969, Pat. No. 3,655,697. This application Nov. 1, 1971, Ser. No. 194,598**

**Int. Cl. C07d** *63/24, 27/68*

**U.S. Cl. 260—315** **8 Claims**

This invention relates to new tricyclic carboxylic acid and ester derivatives and processes for their preparation. These compounds have anti-inflammatory, anti-pyretic and analgesic activity. Also included are claims for methods of treating inflammation using the carboxylic acid compounds of this invention.

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### 3,759,949
### PROCESS OF MANUFACTURING ORGANO-PHOSPHOROUS DERIVATIVES

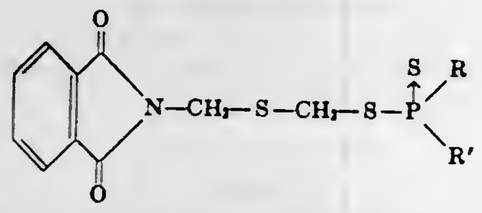
**Llewellyn W. Fancher, Orinda, and Jules Kalbfeld, Pinole, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 868,580, Oct. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,378**

**Int. Cl. C07d** *27/52*

**U.S. Cl. 260—326 E** **4 Claims**

A process of manufacturing organo-phosphorous derivatives is described herein. The process involves first forming a solution of sodium bisulfide in situ by reacting a sodium compound with hydrogen sulfide in the presence of a solvent. Then, a solution is formed consisting of tetrahydrofuran and N-halomethylphthalimide which is reacted with the sodium bisulfide solution to form N-mercaptomethylphthalimide. The N-mercaptomethylphthalimide is then isolated and reacted with a dialkylphosphorodithioic acid and an aldehyde to form a compound of the following formula:



wherein R and R′ can each be selected from a lower alkyl group having from 1 to 5 carbon atoms or a lower alkoxy group having from 1 to 5 carbon atoms.

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### 3,759,950
### 2-PHENOXYALKANOIC ACID ESTERS

**Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Division of Ser. No. 737,837, June 18, 1969. This application Sept. 20, 1971, Ser. No. 182,235**

**Int. Cl. C07d** *27/10, 27/52*

**U.S. Cl. 260—326 A** **6 Claims**

This invention concerns 2-phenoxyalkanoic acid esters which are pharmacologically active as anticholesterol agents.

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### 3,759,951
### CARBANILATE DITHIOLANES AND DITHIANES

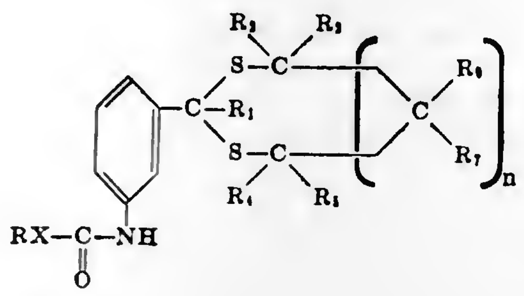
**Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.**

**Filed Oct. 26, 1971, Ser. No. 192,317**

**Int. Cl. C07d** *71/00, 73/00*

**U.S. Cl. 260—327 M** **13 Claims**

Substituted carbanilate dithiolanes and dithiane compounds having the formula



in which R is lower alkyl; $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$ and $R_7$ each are independently selected from the group consisting of hydrogen and lower alkyl; X is selected from the group consisting of oxygen and sulfur; and n is 0 or 1 These compounds are useful as herbicides.

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### 3,759,952
### UREIDO DITHIOLANES AND DITHIANES

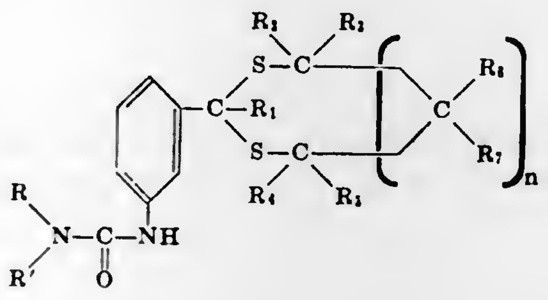
**Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.**

**Filed Oct. 26, 1971, Ser. No. 192,318**

**Int. Cl. C07d** *71/00, 73/00*

**U.S. Cl. 260—327 M** **15 Claims**

Substituted ureido dithiolane and dithiane compounds having the formula



in which R is lower alkyl, R′ is selected from the group consisting of lower alkyl and hydrogen; $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$ and $R_7$ each are independently selected from the group consisting of hydrogen and lower alkyl; and n is 0 or 1. These compounds are useful as herbicides.

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### 3,759,953
### BENZOXANTHENE AND BENZOTHIOXANTHENE

**Helmut Troster, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

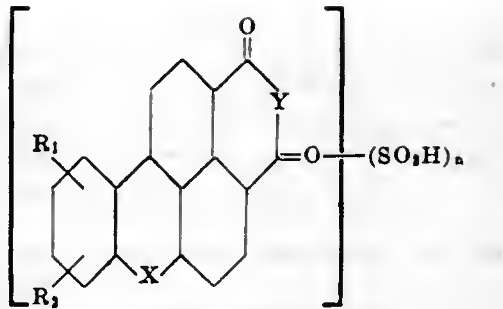
**Filed Apr. 12, 1971, Ser. No. 133,351**

**Claims priority, application Germany, Apr. 14, 1970, P 20 17 764.4**

**Int. Cl. C07d** *7/42, 65/16*

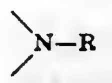
**U.S. Cl. 260—328** **4 Claims**

Valuable benzoxanthene and benzothioxanthene dyestuffs of the general formula



(1)

in which X represents an oxygen or sulfur atom, Y represents an oxygen atom or a



$>N-R$

group, wherein R stands for a hydrogen atom or an alkyl, cycloalkyl or aryl group which may be substituted, a heterocyclic radical, a hydroxyl or amino group, $R_1$ and $R_2$ each represent hydrogen atoms, halogen atoms, especially chlorine or bromine atoms, alkyl or alkoxy groups, and n stands for a number of 1 to 3, which dyestuffs are suitable for dyeing and printing of plastic materials and excellently suitable as fluorescing dyestuffs in the dyeing of condensation resins which when dyed are distinguished by excellent fastness to bleeding and good fastness to light.

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### 3,759,954
### DIEPOXIDES, PROCESSES FOR THEIR MANUFACTURE AND USE

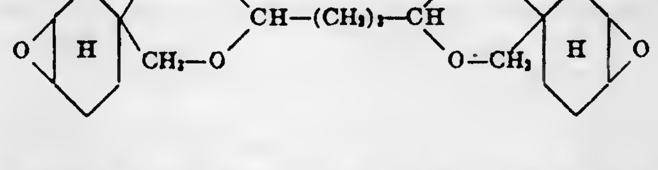
**Hans Batzer, Arlesheim; Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Filed Feb. 8, 1971, Ser. No. 113,717**

**Int. Cl. C07d** *15/04*

**U.S. Cl. 260—340.7** **5 Claims**

Diepoxides manufactured by epoxidation of diacetals or diketals from $\Delta^3$-cyclohexene-1,1-dimethanol or its homologues and dialdehydes or diketones which apart from the two aldehyde groups or keto groups only contain hydrocarbon radicals, for example the diepoxide of the formula



The new diepoxides couple good mechanical properties with a significantly higher heat distortion point according to Martens than the known epoxidised diacetals of similar constitution, in which the acetal groups are interrupted by an alkylene-oxyalkylene chain instead of by an alkylene chain which is free of ether oxygen.

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### 3,759,955
### PROCESS FOR INHIBITING DIKETENE POLYMERIZATION

**Max LeRoy Jacobs, Livermore, Colo., and Buster Watson Higdon, Pampa, Tex., assignors to Celanese Corporation, New York, N.Y.**

**Continuation of Ser. No. 628,835, April 6, 1967, abandoned. This application Mar. 19, 1971, Ser. No. 126,301**

**Int. Cl. C07d** *3/00*

**U.S. Cl. 260—343.9** **3 Claims**

A process for inhibiting the polymerization of diketene in storage which comprises adding water to the diketene in amounts of from about 0.001 to about 2 weight percent.

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### 3,759,956
### BIS-TETRAHYDROPYRANYL SULFONES AND SULFOXIDES

**Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Continuation-in-part of Ser. No. 783,737, Dec. 13, 1968, Pat. No. 3,651,093. This application Dec. 20, 1971, Ser. No. 210,221**

**Int. Cl. C07d** *7/46*

**U.S. Cl. 260—345.9** **3 Claims**

Bis-tetrahydropyranyl sulfones and sulfoxides are prepared by oxidizing bis-tetrahydropyranyl sulfide with hydrogen peroxide.

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### 3,759,957
### ANTHRAQUINOID DYESTUFFS

**Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,577. This application Nov. 16, 1971, Ser. No. 199,344**

**Claims priority, application Switzerland, July 26, 1968, 11234/68**

**Int. Cl. C09b** *1/22, 1/50*

**U.S. Cl. 260—368** **4 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

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### 3,759,958
### ANTHRAQUINOID DYESTUFFS

**Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,577. This application Nov. 16, 1971, Ser. No. 199,343**

**Claims priority, application Switzerland, July 26, 1968, 11234/68**

**Int. Cl. C09b** *1/22, 1/50*

**U.S. Cl. 260—372** **4 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

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### 3,759,959
### ANTHRAQUINOID DYESTUFFS

**Richard Peter; Hans-Joerg Angliker, and Angelo Della Casa, all of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation-in-part of Ser. No. 843,834, July 22, 1969, Pat. No. 3,663,557. This application Nov. 16, 1971, Ser. No. 199,345**

**Claims priority, application Switzerland, July 26, 1968, 11234/68**

**Int. Cl. C09b** *1/32, 1/50*

**U.S. Cl. 260—376** **5 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

### 3,759,960

### NOVEL 16-METHYLENE-9$\beta$, 10$\alpha$-STEROID COMPOUNDS, PHARMACEUTICAL PREPARATIONS WHICH CONTAIN THE NOVEL COMPOUNDS AS ACTIVE INGREDIENTS, AND METHODS OF PRODUCING THE SAID COMPOUNDS AND PREPARATIONS

**Harmen Van Kamp, and Anna Maria DeWachter, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 3, 1971, Ser. No. 120,720**

**Claims priority, application Netherlands, Mar. 4, 1970, 7003061**

**Int. Cl. C07c** *169/66*

**U.S. Cl. 260—397.4** **19 Claims**

The invention relates to novel 16-methylene-17$\alpha$-acyloxy (or etherified hydroxy)-9$\beta$, 10$\alpha$-steroid compounds of the pregnane series which have an exceptionally high endocrinological activity, such as a very strong progestational and anti-ovulatory activity. After the compounds have been worked up into pharmaceutical preparations they may be used inter alia as contraceptives or for maintaining pregnancy. Highly active substances according to the invention are, for example, 6-chloro-16-methylene-17$\alpha$-hydroxy-9$\beta$, 10$\alpha$-pregna-4,6-diene-3,20-dione 17-acetate and 6-fluoro-16-methylene-17$\alpha$-hydroxy-9$\beta$, 10$\alpha$-pregna-4,6-diene-3,20-dione 17-acetate.

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### 3,759,961

### PROCESS FOR ETHINYLATING 17-KETOSTEROIDS

**Reinhold Wieske, and Paul-Eberhard Schulze, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin/Bergkamen, Germany**

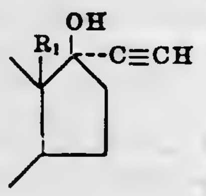
**Filed June 3, 1971, Ser. No. 149,808**

**Claims priority, application Germany, June 13, 1970, P 20 30 056.5**

**Int. Cl. C07c** *167/20*

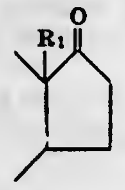
**U.S. Cl. 260—397.4** **6 Claims**

Process for preparing 17$\alpha$-ethinyl-17$\beta$-hydroxysteroids characterized by the partial formula



(I)

wherein $R_1$ is lower alkyl by ethinylating 17-ketosteroids characterized by the partial formula



(II)

wherein $R_1$ has the same meaning as above, with acetylene in the presence of an alkali alcoholate of a tertiary alcohol and in the presence of a solvent in the absence of any tertiary alcohol.

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### 3,759,962

### NEW 6 ALPHA-METHYL-19-NOR-PROGESTERONE AND A PROCESS OF ITS MANUFACTURE

**Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 78,581, Oct. 6, 1970. This application July 14, 1972, Ser. No. 271,874**

**Claims priority, application Switzerland, Oct. 10, 1969, 15272/69**

**Int. Cl. C07c** *169/34*

**U.S. Cl. 260—397.4** **1 Claim**

The present invention provides the new 3,20-dioxo-6$\alpha$-methyl-17$\alpha$-caproyloxy-19-nor-$\Delta^4$-pregnene.

It may be used as gestagen and for fertility control.

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### 3,759,963

### WATER INSOLUBLE ANTHRAQUINONE DYES FOR CELLULOSIC AND SYNTHETIC FIBERS

**Thomas Michael McGuire, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed July 30, 1971, Ser. No. 167,828**

**Int. Cl. C09b** *1/42*

**U.S. Cl. 260—377** **7 Claims**

Essentially water insoluble, non-vattable, blue to green 1-nitroaroylamino-5,8-di(N-substituted)aminoanthraquinone dyes, for example, 1-(p-nitrobenzamide)-5,8-bis(p-toluidino)-anthraquinone, useful for dyeing water swellable cellulosic fibers, for example, cotton fibers, or synthetic fibers, for example, polyester fibers, or blends or mixtures thereof, said dyed fibers being fast to light, washing, drycleaning and sublimation.

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### 3,759,964

### DIHALOMETHYLENE SUBSTITUTED ESTERS AND DERIVATIVES

**John B. Siddall, Palo Alto, Calif., and Jean Pierre Calame, Locarno, Switzerland, assignors to Zoecon Corporation, Palo Alto, Calif.**

**Division of Ser. No. 843,818, July 22, 1969, Pat. No. 3,641,558, which is a continuation-in-part of Ser. No. 800,266, Feb. 18, 1969, which is a continuation-in-part of Ser. No. 618,351, Feb. 24, 1967, which is a continuation-in-part of Ser. No. 579,490, Sept. 15, 1966, which is a continuation-in-part of Ser. No. 590,195, Oct. 28, 1966, which is a continuation-in-part of Ser. No. 592,324, Nov. 7, 1966, which is a continuation-in-part of Ser. No. 594,664, Nov. 16, 1966, which is a continuation-in-part of Ser. No. 605,566, Dec. 29, 1966, which is a continuation-in-part of Ser. No. 605,578, Dec. 29, 1966. This application Mar. 19, 1971, Ser. No. 126,297**

**Int. Cl. C07c** *69/74, 61/12;* **A01n** *9/24*

**U.S. Cl. 260—408** **7 Claims**

Novel aliphatic hydrocarbon esters, acids and alcohols having a backbone of at least 12 carbon atoms, a lower alkyl group at C-3, C—7 and C—11 and unsaturation or saturation at C—2,3, C—6,7 and/or C—10, 11 which are substituents with, for example, halo, hydroxy, methylene, oxido, dihalomethylene, and the like, and the esters and ethers of said hydroxy substituent useful as arthropod maturation inhibitors.

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### 3,759,965

### PGA

**Philip F. Beal, III, and John E. Pike, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 82,121, Oct. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 520,876, Jan. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,107, Aug. 16, 1965, abandoned. This application June 28, 1971, Ser. No. 157,713**

**Int. Cl. C07c** *61/32, 69/74*

**U.S. Cl. 260—468 D** **6 Claims**

This invention is a group of novel prostanoic acid derivatives, namely prostaglandin $A_2$ ($PGA_2$), prostaglandin $A_3$ ($PGA_3$), and 13,14-dihydroprostaglandin $A_1$ (13,14-dihydro-

$PGA_1$), and the salts, esters, formates and alkanoates of those. These novel compounds are useful as antisecretory agents, vasodepressors, oxytocic agents, and abortifacients. These novel compounds are also useful to manage cases of renal disfunction and to regulate the menstrual cycle of women.

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### 3,759,966

### POLYMERIC TIN MERCAPTIDES

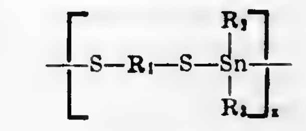
**Paul Daniel Morton, Malvern, and Bernard Buchholz, Blue Bell, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.**

**Filed May 25, 1971, Ser. No. 146,811**

**Int. Cl. C07f** *7/22*

**U.S. Cl. 260—429.7** **19 Claims**

Polymeric tin mercaptides of the structure:



$$\left[-S-R_1-S-\overset{R_3}{\underset{R_2}{Sn}}-\right]_x$$

where $R_1$ is the hydrocarbon residue of a cycloaliphatic dimercaptan, $R_2$ and $R_3$ are alkyl groups of four to about 10 carbon atoms, and $x$ is an integer from about 2 to about 10, are complexed with a phenolic antioxidant. The resultant complexes are useful as non-toxic thermal stabilizers for polymers such as polyvinyl chloride.

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### 3,759,967

### SILICON DERIVATIVES OF FERROCENE

**Gilbert P. Soliott, Plymouth Meeting, and William R. Peterson, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Sept. 12, 1968, Ser. No. 759,492**

**Int. Cl. C07f** *15/02, 7/08*

**U.S. Cl. 260—439 CY** **1 Claim**

Silyation of ferrocene in $AlCl_3$-catalyzed reactions with aminosilanes, chlorosilanes or aminochlorosilanes, constituting successful use of halosilanes in reactions analogous to Friedel-Crafts alkylation, and providing a novel, facile route to silicon compounds of ferrocene.

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### 3,759,968

### SILYL MALEATES AND POLYSILOXANE MALEATES

**Abe Berger, and Terry G. Selin, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.**

**Filed May 17, 1971, Ser. No. 144,306**

**Int. Cl. C07f** *7/08, 7/12*

**U.S. Cl. 260—448.2 Q** **12 Claims**

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans- 1,2-bis-carbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane of hydrogen polysiloxane in the presence of a platinum catalyst.

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### 3,759,969

### ORGANOSILICON COMPOUND WITH ISOTHIOCYANATE SUBSTITUENT BONDED THROUGH DIVALENT BRIDGE

**Abe Berger, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.**

**Continuation-in-part of Ser. No. 796,647, Jan. 31, 1969, Pat. No. 3,646,089. This application June 9, 1971, Ser. No. 151,549**

**Int. Cl. C07f** *7/08, 7/18*

**U.S. Cl. 260—448.2 N** **3 Claims**

A new class of organosilicon compounds having an isothiocyanate group bonded to the silicon atom through an alkylene bridge of at least three carbon atoms, or an alkylene bridge having sulfur oxygen or nitrogen linkages therein is made by reacting the corresponding amino alkyl-substituted organosilicon compound with carbon disulfide and a dialkyl carbodiimide. The compositions are extremely useful where base cleavage of the silicon atom from the isothiocyanate substituted group is a problem, such as glass sizing where the glass is basic and the formation of polyurethanes where a base catalyst is implied.

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### 3,759,970

### THERMAL STABILIZERS FOR SILICONE FLUIDS

**A. D. Britt, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Continuation-in-part of Ser. No. 12,456, Feb. 18, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,871**

**Int. Cl. C09k** *3/00;* **C07f** *7/08*

**U.S. Cl. 260—448.2 R** **5 Claims**

High temperature stable polysiloxane fluids are produced by reacting the polysiloxane with a fluorinated aromatic amide. About 1.0 percent by weight of the amide is used with the polysiloxane to produce a stabilized fluid requiring up to 6 hours before gelation at 400°C. Such stabilized polysiloxanes are useful in hydraulic systems which are subjected to high temperature environments.

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### 3,759,971

### PURIFICATION OF ISOCYANATES

**Michael Cuscurida, Austin, and James Edward Kmiecik, Houston, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.**

**Filed Jan. 20, 1971, Ser. No. 108,146**

**Int. Cl. C07c** *119/04*

**U.S. Cl. 260—453 SP** **7 Claims**

Synthetic metal silicates greatly reduce the amount of hydrolyzable chlorides and acids present in isocyanates. Isocyanates are useful, for example, in forming polyurethane materials.

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### 3,759,972

### FUNGICIDAL CARBONATES AND THIOLOCARBONATES OF DIHALODINITRO-PHENOLS

**Max Pianka, St. Albans, England, assignor to The Murphy Chemical Company Limited, St. Albans, England**

**Continuation of Ser. No. 662,910, Aug. 24, 1967, abandoned. This application Jan. 14, 1971, Ser. No. 106,551**

**Claims priority, application Great Britain, Sept. 9, 1966, 40,426/66; Sept. 9, 1966, 40,427/66**

**Int. Cl. C07c** *79/28, 154/00;* **A01n** *9/20*

**U.S. Cl. 260—463** **3 Claims**

Carboxylate, carbonate and thiolocarbonate esters of dichloro- and dibromodo-nitrophenols, particularly those in which the halogen atoms are in the 2-and 5-positions and the nitro groups are in the 4- and 6-positions. The compounds have activity against fungi which are plant pathogens and they have a very low degree of mammalian toxicity.

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### 3,759,973

### MANUFACTURE OF 2,6-DIALKYL-3-SUBSTITUTED-6-(BETA-CYANOETHYL-CYCLOHEXENE-(2)-ONE AND PRODUCTS

**Martin Cherubim, Rheinkamp-Erick, and Faisal Abo Dagga, Rheinkamp-Utfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany**

**Filed Mar. 3, 1971, Ser. No. 120,728**

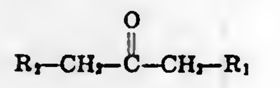
**Claims priority, application Germany, Mar. 4, 1970, P 20 10 124.0**

**Int. Cl. C07c** *121/48*

**U.S. Cl. 260—464** **4 Claims**

2,6-dialkyl-3-amino-6-(beta-cyanoethyl)-cyclohexene-(2)-one (I) and 2,6-dialkyl-3-hydroxy-6-(beta-carboxyethyl)-

cyclohexene-(2)-one (II) and manufacture comprising contacting a dialkyl ketone of the general formula:



$$R_2{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}CH_2{-}R_1$$

where $R_1$ and $R_2$ are alkyl of from one to five carbons with acrylonitrile in the presence of an alkaline catalyst and inert solvent to form I and contacting I with an aqueous metal hydroxide to form II.

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## 3,759,974
## SUBSTITUTED 4-CYANO-4-PHENYL-AMINOCYCLOHEXANES

**Hans-Joerg Treiber, Bruehl, and Frank Zimmermann, Mannheim, both of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen/Rhine, Germany**

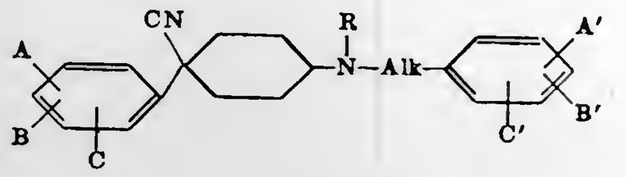
**Filed Sept. 9, 1969, Ser. No. 856,498**

**Claims priority, application Germany, Sept. 10, 1968, P 17 93 383.4**

**Int. Cl. C07c** *121/64*

**U.S. Cl. 260—465 E** **29 Claims**

Basically substituted 4-cyano-4-phenyl-aminocyclo-hexanes of the general formula



wherein A, B, C, A′, B′, C′ are each hydrogen, halogen, trifluoromethyl, lower alkyl or lower alkoxy; R is hydrogen or lower alkyl; and Alk is straight or branched chain lower alkylene or hydroxy lower alkylene, their acid addition salts and their pharmaceutical composition. The compounds and compositions are valuable blood pressure depressants, which also exhibit spasmolytic, neuroleptic and coronary dilating properties.

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## 3,759,975
## DICHLOROMETHYLENE CARBAMIC ACID ESTERS AND THIOESTERS

**Wolfgang Reusche, Leverkusen-Schlebusch, and Hans Holtschmidt, Leverkusen-Steinbuchel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Dec. 12, 1969, Ser. No. 884,717**

**Claims priority, application Germany, Jan. 8, 1969, P 19 00 755.7**

**Int. Cl. C02c** *125/06*

**U.S. Cl. 260—465 D** **5 Claims**

Dichloromethylenecarbonic acid esters and -thioesters are obtained by reacting dichloromethylenecarbamic acid chloride with alcohols, thioalcohols, phenols or thiophenols at a temperature range of from −50° to + 100° C. The compounds obtained by this process show pesticidal activity. They can, furthermore, be used for the preparation of the corresponding isocyanates.

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## 3,759,976
## NITRILE COMPOUNDS

**Christian Jutz, Munich, Germany, and Werner Mueller, Germantown, Pa., assignors to Byk-Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany**

**Division of Ser. No. 674,695, Sept. 26, 1967, Pat. No. 3,523,119. This application May 22, 1970, Ser. No. 38,646**

**Int. Cl. C07c** *121/42, 121/52*

**U.S. Cl. 260—465 E** **7 Claims**

An improved process of producing known 5-pyrimidine carboxylic acids which have in 4-position a basic group, such as the 2,3-dimethyl anilino, 3-trifluoro methyl anilino, dimethylamino, anilino, N-methyl anilino, and other groups, by using the readily available malonic acid dinitrile or dimethylamino methylene malonic acid dinitrile and dimethylformamide chloride as starting reactants, reacting said reactants at a temperature between 10°C. and 110°C., preferably in the presence of an inert solvent to yield the heretofore unknown 1-dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium chloride which is preferably purified by conversion into the perchlorate, replacing the chlorine atom in 3-position by an amino group to yield the heretofore unknown corresponding 1-amino-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) compound, causing ring closure to the corresponding 4-amino-5-cyano pyrimidine compound by reaction with ammonia, and saponifying the cyano group to the carboxyl group. The final products are known antiphlogistic, analgesic, and antirheumatic drugs.

Examples of such intermediates and final products are:

a. 1-Dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium perchlorate → 1-(3′-trifluoro methyl anilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate → 4-(3′-trifluoro methylanilino)-5-cyano pyrimidine → 4-(3′-trifluoro methyl anilino) pyrimidine-5-carboxylic acid;

b. 1-Dimethylamino-3-chloro-4-cyano-2-azapentadiene-5-dimethyliminium perchlorate → 1-(2′,3′-dimethylanilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate → 4-(2′,3′-dimethyl anilino)-5-cyano pyrimidine → 4-(2′,3′-dimethylanilino)pyrimidine-5-carboxylic acid.

In a similar manner there are obtained 4-dimethylamino-5-cyano pyrimidine 4-dimethylamino pyrimidine-5-carboxylic acid or 1-(N-methylanilino)-1-dimethylamino methylene amino-3-dimethyliminium-2-cyano propene-(1) perchlorate→ 4-(N-methyl anilino)-5-cyano pyrimidine → 4-(N-methyl anilino) pyrimidine-5-carboxylic acid.

The process has the advantage over known processes of producing the respective pyrimidine-5-carboxylic acids that the starting materials are readily available, that the reaction steps are carried out in a simple manner and without any considerable expenditures, and that the resulting intermediates are obtained in a pure state and a high yield.

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## 3,759,977
## METHOD FOR PREPARING TETRA-N,N,N′,N′-(2-HYDROXYETHYL)-ETHYLENEDIAMINE TETRANITRATE AND SALTS THEREOF

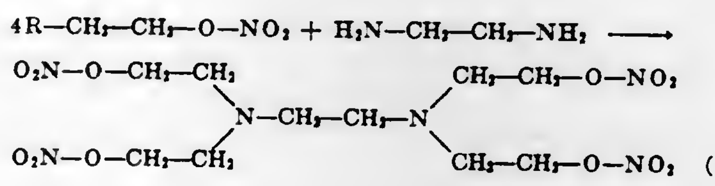
**Raffaele Pessina, Via De Ambrosis 6, Novi Ligure, Italy**

**Filed Oct. 7, 1971, Ser. No. 187,541**

**Int. Cl. C07c** *77/02*

**U.S. Cl. 260—467** **5 Claims**

This invention relates to a method for preparing tetra-N,N,N′,N′-(2-hydroxyethyl)-ethylenediamine tetranitrate of the general formula (I), and salts thereof, wherein the reaction is provided between a haloethyl-nitrate and ethylenediamine according to the scheme:



(I)

wherein R is a halogen, both in the presence and in the absence of a solvent, at a temperature between −5°C and 100°C.

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## 3,759,978
## 5,6-TRANS PGE$_2$

**Frank H. Lincoln, Jr., Portage, and John E. Pike, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 72,511, Sept. 15, 1970, abandoned. This application June 28, 1971, Ser. No. 157,651**

**Int. Cl. C07c** *61/36, 69/74*

**U.S. Cl. 260—468 D** **15 Claims**

5,6-Trans-postaglandins $E_2$, $F_{2\alpha}$, $F_{2\beta}$, $A_2$ and $B_2$ are disclosed. These are useful for the same pharmacological purposes as the known prostaglandins $PGE_2$, $PGF_{2\alpha}$, $PGF_{2\beta}$, $PGA_2$, and $PGB_2$.

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## 3,759,979
## AROMATIC AMINO ACIDS AND ESTERS THEREOF

**Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Rueil-Malmaison, and Jean-Claude LeDouarec, Suresnes, all of France, assignors to Science Union et Cie, Suresnes, France**

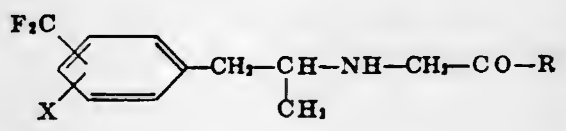
**Filed Feb. 13, 1970, Ser. No. 11,330**

**Claims priority, application Great Britain, Feb. 27, 1969, 10,617/69**

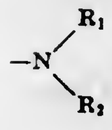
**Int. Cl. C07c** *101/08*

**U.S. Cl. 260—471 A** **3 Claims**

Amino acids and their derivatives of the formula:

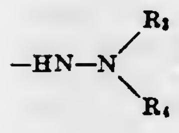


wherein
  X is hydrogen or halogen,
  R is
    hydroxyl
    lower alkyloxy,



$$-N\begin{matrix}R_1\\R_2\end{matrix}$$

wherein $R_1$ and $R_2$ are hydrogen, lower alkyl, phenyl, pyridyl, halophenyl, halopyridyl, lower alkylphenyl, lower alkylpyridyl, lower alkyloxyphenyl, lower alkyloxypyridyl, trifyloromethylphenyl, trifluoromethylpyridyl; $R_2$ is $CONH_2$ provided that $R_1$ is hydrogen, and $R_1 + R_2$ together with the nitrogen atom to which they are attached are morpholinyl, pyrrolidinyl, piperidyl, indolinyl or isoindolinyl; or



$$-HN-N\begin{matrix}R_3\\R_4\end{matrix}$$

wherein $R_3$ and $R_4$ are hydrogen or lower alkyl.

These compounds possess anorezigenic, analgesic and lipid metabolism regulating properties.

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## 3,759,980
## SALICYLATES

**William E. Rosen, Summit, and Philip A. Berke, Milburn, both of N.J., assignors to Stockton Chemicals, Inc., Union, N.J.**

**Filed May 26, 1969, Ser. No. 827,893**

**Int. Cl. C07c** *69/86*

**U.S. Cl. 260—480** **5 Claims**

A complex consisting essentially of $(R_1,R_2,R_3,R_4N^+)_n$ $(Mg^{++})$An1 $(ArCOO^-)_n2$ $(Ar\ COO^-)_n3$ $(X^-)_n4$ $(H_2O)_n5$ wherein

$R_1$, $R_2$, $R_3$ and $R_4$ are selected from the group consisting of hydrogen, alkyl of one to 20 carbon atoms, hydroxyalkyl of one to 20 carbon atoms, carboxyalkyl of one to 20 carbon atoms and aralkyl of 1 to 20 carbon atoms in the alkyl moiety,

Ar and Ar′ are an aromatic monocycle or substituted aromatic monocycle,

X is sulfate, chloride or substituted carboxylate,

$n$, $n^1$ and $n^2$ are integers of at least one, and

$n^3$, $n^4$ and $n^5$ are zero or an integer of at least 1, provided that when $(R_1, R_2, R_3, R_4\ N^+)_n$ is choline, $(Mg^{++})_n1$ is magnesium, $(ArCOO^-)_n2$ is salicylate and $n^3$ is zero, $(X^-)_n4$ is not sulfate, is produced by reacting a salicylate compound with a magnesium salt. The complexes produced exhibits analgesic, anti-pyretic, anti-inflammatory and anti-rheumatic acitivity. A particularly valuable compound is choline magnesium salicylate.

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## 3,759,981
## ESTERS OF PERFLUOROALKYL TERMINATED ALKYLENE THIOALKANOIC ACIDS

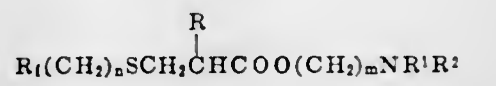
**Robert Bonner Hager, Collegeville, and Gerald Joseph Walter, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.**

**Filed May 20, 1971, Ser. No. 145,556**

**Int. Cl. C07c** *149/16*

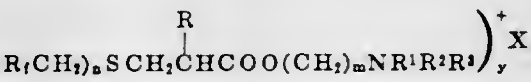
**U.S. Cl. 260—481 R** **7 Claims**

Sulfur-containing, perfluoroalkyl amines and their quaternary salt and amine oxide derivatives having outstanding surfactant properties are provided having the structures



$$R_f(CH_2)_nSCH_2\overset{R}{\overset{|}{C}}HCOO(CH_2)_mNR^1R^2$$

and



$$\left(R_f(CH_2)_nSCH_2\overset{R}{\overset{|}{C}}HCOO(CH_2)_mNR^1R^2R^3\right)_y^+ X_z^{-k}$$

where $R_f$ is straight or branched-chain perfluoroalkyl, R is hydrogen or methyl, $R^1$ and $R^2$ are independently hydrogen or lower alkyl, $n$ is an integer of 1 to 3, m is an integer of 2 to 4; X is an anion, $y$ is an integer equal to $k$, the valence of X; $z$ is 0 or 1, and when $z$ is 1, then $R^3$ is hydrogen, lower alkyl or $CH_2COOH$; and when $z$ is 0, then $R^3$ is oxygen, $CH_2COO^-$, $CH_2CH_2COO^-$ or $CH_2CH_2CH_2SO_3^-$.

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## 3,759,982
## ANIONIC COMPLEXES OF MONOMERIC EMULSION STABILIZERS

**Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.**

**Filed May 26, 1970, Ser. No. 40,705**

**Int. Cl. C07c** *69/40*

**U.S. Cl. 260—485 J** **3 Claims**

Anionic complexes of quaternary ammonium salts having an ethylenically-unsaturated radical and a lipophilic radical covalently linked to the quaternary nitrogen atom are disclosed. These anionic complexes are useful as monomeric emulsion stabilizers.

### 3,759,983

### COUPLING OF ORGANIC COMPOUNDS

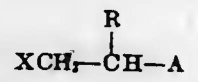
**Olav T. Onsager, Waldwick, N.J., assignor to Halcon International Inc., New York, N.Y.**

**Division of Ser. No. 872,395, Oct. 29, 1969, Pat. No. 3,644,477, and a continuation-in-part of Ser. No. 801,757, Feb. 24, 1969, Pat. No. 3,644,474, and a continuation-in-part of Ser. No. 801,758, Feb. 24, 1969, Pat. No. 3,644,473, and a continuation-in-part of Ser. No. 835,722, June 23, 1969, Pat. No. 3,644,476. This application Dec. 9, 1971, Ser. No. 206,542**

**Int. Cl. C07c** *55/14, 69/44*

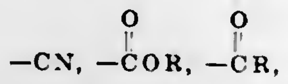
**U.S. Cl. 260—485 R** **13 Claims**

A process for the reductive coupling of a compound having the formula



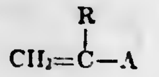
$$XCH_2-CH(R)-A$$

wherein X is Cl, Br, or I, R is H or lower alkyl, and A is



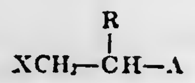
$$-CN,\ -\overset{O}{\overset{\|}{C}}OR,\ -\overset{O}{\overset{\|}{C}}R,$$

or $—CONR_2$, using as reducing agent a zero valent reducing metal or compound thereof in combination with a promoter salt. The invention especially relates to an overall process for the production of linear dimers of compounds of the formula



$$CH_2=C(R)-A$$

by first hydrohalogenation to



$$XCH_2-CH(R)-A$$

followed by the reductive coupling.

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### 3,759,984

### PROCESS FOR PREPARING SUCCINIC ACID OR DERIVATIVE THEREOF

**Chiyuki Fujii, Yamato; Michimasa Hirata, Tokyo, and Masao Ogasawara, Machida, all of Japan, assignors to Denki Kagaku Kogyo K.K., Tokyo, Japan**

**Filed Dec. 10, 1971, Ser. No. 206,867**

**Claims priority, application Japan, Dec. 24, 1970, 45/117292**

**Int. Cl. C07c** *69/40*

**U.S. Cl. 260—485 R** **4 Claims**

Succinic acid or derivative thereof is prepared by reacting ethylene with carbon monoxide in the presence of a palladium compound.

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### 3,759,985

### METHOD FOR PREPARING SALTS OF SULFOALKYL ESTERS

**Shogo Nukina, Osaka; Yoshihiro Hayashi, and Kyohei Yamada, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan**

**Filed Jan. 28, 1971, Ser. No. 110,650**

**Claims priority, application Japan, Jan. 28, 1970, 45/7510**

**Int. Cl. C07c** *69/54*

**U.S. Cl. 260—486 R** **4 Claims**

Salts of sulfoalkyl acrylate or salts of sulfoalkyl methacrylate can be produced in high purity by reacting salts of acrylic acid or salts of methacrylic acid with 1,3-propane sultone or 1,4-butane sultone in the presence of acrylic acid or methacrylic acid.

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### 3,759,986

### ESTERS OF 2,2-DIMETHYL-5-(ARYLOXY)-1-PENTANOLS

**Paul E. Creger, and Winifred A. Neuklis, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.**

**Division of Ser. No. 24,000, March 30, 1970, Pat. No. 3,707,566. This application Aug. 25, 1972, Ser. No. 283,863**

**Int. Cl. C07c** *67/00, 69/14, 67/74, 69/78*

**U.S. Cl. 260—488 CD** **3 Claims**

Ester derivatives of 2,2-dimethyl-5-(2,5-xylyloxy)-1-pentanol and 2,2-dimethyl-5-(3,5-xylyloxy)-1-pentanol. These compounds lower serum triglyceride levels. They can be produced by reacting the 1-pentanol compounds with an esterifying agent.

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### 3,759,987

### PREPARATION OF 5-FLUORO-2-METHYL-1-(P-METHYLSULFINYLBENZYLIDENE)-3-INDENYL ACETIC ACID

**John B. Conn, and Frederick W. Bollinger, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Filed May 1, 1970, Ser. No. 33,974**

**Int. Cl. C07c** *147/00*

**U.S. Cl. 260—515 A** **1 Claim**

Process for preparing 1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acids by introducing a methylsulfinyl group into a 1-benzylidene-3-indenyl acetic acid.

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### 3,759,988

### PROCESS FOR CONTINUOUSLY PRODUCING SORBIC ACID BY CONVERTING KETENE WITH CROTONALDEHYDE

**Gerhard Kunstle, and Hellmuth Spes, both of Burghausen-Obb., Germany, assignors to Wacker-Chemie G. m.b.H., Munich, Germany**

**Filed Mar. 13, 1970, Ser. No. 19,206**

**Claims priority, application Germany, Mar. 14, 1969, P 19 13 097.3; May 23, 1969, P 19 26 538.4**

**Int. Cl. C07c** *51/00*

**U.S. Cl. 260—526 N** **10 Claims**

Process for continuously producing sorbic acid by converting ketene with crotonaldehyde in the presence of catalysts, and converting the produced polyester into sorbic acid by saponification. In performing the process we convert ketene with crotonaldehyde containing 0.01 to 1% of a sterically hindered phenol as a stabilizer against oxidation, in the presence of tetraalkyl titanates or their condensation products and of a co-catalyst containing one or several compounds, at temperatures from 60° to 102° C, preferably 70° – 90° C, and we convert the resulting polyester containing the catalyst and co-catalyst, and freed from crotonaldehyde, into sorbic acid by acid hydrolysis, by,

a. using for saponification a 20.2 to 25 percent hydrochloric acid, subsequently
b. reheating the hydrolysis mixture, consisting of raw sorbic acid and hydrochloric acid, for about 1 to 5 hours to a temperature from 70° and 90° C, and after cooling we separate it in the known manner into raw sorbic acid and hydrochloric acid, and the hydrochloric acid is recirculated without purification,
c. removing the hydrogen chloride still present in the raw sorbic acid in the form of hydrochloric acid after separation — by washing with water down to a residue of about 0.2 to 0.5 percent, and neutralizing it in part or entirely.

### 3,759,989

### BIS(P-PHENOXYPHENYL)IODONIUM SALTS

**Zdravko Jezic, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Nov. 2, 1970, Ser. No. 86,387**

**Int. Cl. C07c** *43/28*

**U.S. Cl. 260—539 A** **5 Claims**

A 4-(diacetoxyiodo)diphenyloxide is condensed with a diphenyloxide in the presence of a condensing agent such as trichloroacetic acid or trifluoroacetic acid to form a new bis(p-phenoxyphenyl)iodonium trifluoroacetate or trichloroacetate salt. The 4-(diacetoxyiodo)diphenyloxide and the diphenyloxide reagents each may have a halo, a loweralkyl, or a loweralkoxy substituent on their unsubstituted phenyl nucleus to give symmetrical and unsymmetrical bis(p-phenoxyphenyl)iodonium trichloroacetates or trifluoroacetates. Such salts can be converted to other salt forms in usual ways. The novel products have antimicrobial activity.

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### 3,759,990

### FORMIC ACID SYNTHESIS

**Allen N. Webb, Wappingers Falls, N.Y., and Bernardus Cornelis Lippens, Zomergem, Belgium, assignors to S. A. Texaco Belgium N.V., Brussels, Belgium**

**Filed Sept. 15, 1971, Ser. No. 180,830**

**Int. Cl. C07c** *51/00*

**U.S. Cl. 260—542** **3 Claims**

Formic acid is produced by passing carbon monoxide at about 200°C over an oxidic substrate which has a surface layer of hydroxyl groups but which is free of adsorbed water and then removing the product formed from the surface of the substrate. Such removal can be effected by extraction with water or with aqueous alkaline solutions and the substrate can be recycled for the production of additional formic acid.

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### 3,759,991

### THIOCARBAMYLATED GUANIDINES - GROWTH REGULANT

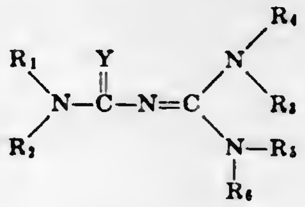
**Alfred F. Marks, Trenton, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.**

**Filed May 4, 1970, Ser. No. 34,590**

**Int. Cl. C07c** *127/00*

**U.S. Cl. 260—552 R** **2 Claims**

Carbamylated and thiocarbamylated guanidines have demonstrated effective growth regulating activity. Such compounds are represented by the following structure:



where $R_1$–$R_6$ are each selected from a group consisting of hydrogen, $C_1$–$C_{10}$ alkyl, $C_3$–$C_{10}$ alkenyl, $C_3$–$C_{10}$ cycloalkyl group; phenyl, naphthyl. These groups may be optionally substituted with $C_1$–$C_6$ akyl, chloro or bromo. $R_1$ and $R_2$ and/or $R_3$ and $R_4$ and/or $R_5$ and $R_6$ together can be a carbocyclic ring containing one or more heteroatoms such as N or S; and Y is either O or S.

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### 3,759,992

### UREA SYNTHESIS

**Ivo Mavrovic, 530 E. 72nd St., New York, N.Y.**

**Filed June 29, 1970, Ser. No. 50,777**

**Int. Cl. C07c** *127/00*

**U.S. Cl. 260—555 A** **11 Claims**

Ammonia, $CO_2$ and ammonium carbamate are reacted in a reactor at elevated temperature and pressure to form urea. From 10 to 100 percent of the $CO_2$ fresh reactor feed stream, which is substantially equivalent to the stoichiometric net amount of urea formed in the reactor, is reacted with $NH_3$ at 10 – 670 psia to form an aqueous ammonium carbamate solution, and this solution is charged to the reactor to form urea.

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### 3,759,993

### FLUOROMETHANESULFONIC ACID DERIVATIVES

**Jerry E. Robertson, North Oaks, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.**

**Filed Sept. 27, 1971, Ser. No. 184,229**

**Int. Cl. C07c** *143/74*

**U.S. Cl. 260—556 A** **6 Claims**

The compounds disclosed are the amphoteric compound 2-hydroxy-5-[1-hydroxy-2-(4′-methoxyphenethylamino)propyl]-fluoromethanesulfonanilide and its acid addition and metal salts. These compounds have physiological activity, including significant insecticidal activity evinced as activity against mosquito larvae.

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### 3,759,994

### 1-SUBSTITUTED BIGUANIDES

**Julius Diamond, Lafayette Hill; George H. Douglas, Paoli, and Bernard J. Burns, Philadelphia, all of Pa., assignors to William H. Rorer, Inc., Ft. Washington, Pa.**

**Division of Ser. No. 89,005, Nov. 12, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,298**

**Int. Cl. C07c** *129/08*

**U.S. Cl. 260—565** **9 Claims**

Novel 1-aryl and aralkyl biguanide compounds have been prepared. The compounds of this invention possess useful gastric anti-secretory and spasmolytic properties. Compounds of this type which also display anti-hypertensive and CNS depressant properties are also disclosed.

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### 3,759,995

### N-(NONACHLOROBIPHENYL)AMINOPROPYL-N′-DIMETHYLAMINE

**John J. Merianos, Jersey City, N.J.; Edward Griffin Shay, Suffern, N.Y.; Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.**

**Division of Ser. No. 883,636, Dec. 9, 1969, Pat. No. 3,663,620. This application Mar. 15, 1972, Ser. No. 235,064**

**Int. Cl. C07c** *91/16*

**U.S. Cl. 260—570.5 P** **1 Claim**

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

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### 3,759,996

### PROCESS FOR DIMERIZING DIARYLAMINES

**Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Jan. 13, 1971, Ser. No. 106,248**

**Int. Cl. C07c** *87/64*

**U.S. Cl. 260—576** **9 Claims**

Dimers of diarylamines are prepared by a process comprising treating a diarylamine-perchlorate salt with an oxidizing agent in an acidic medium. Exemplary of the products obtained is 4,4′-dianilino-1,1′-binaphthyl, which is made by treating N-phenyl-α-naphthylamine-perchlorate with chromium trioxide in acetic acid and water. The products thus produced are useful antioxidants in lubricants.

**3,759,997**

## DEALKYLATION OF N-ALKYL AROMATIC AMINES

**John P. Napolitano, 2444 Clawson, Royal Oak, Mich.**

**Filed Feb. 14, 1969, Ser. No. 799,522**
**Int. Cl. C07c** *85/00*

**U.S. Cl. 260—578** **6 Claims**

Aromatic amines mono-substituted on the amino nitrogen atom with a non-aromatic hydrocarbon substituent such as N-ethyl aniline are converted to primary aromatic amines by removal of the non-aromatic hydrocarbon substituent at a temperature of 275°–400°C in the presence of an aluminum anilide catalyst.

**3,759,998**

## 2,2-BIS (DIFLUORAMINO)-5-FLUORO-5,5-DINITRO-1-PENTANOL

**Clifford L. Coon, Fremont; Marion E. Hill, Palo Alto, and Donald L. Ross, Menlo Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 10, 1969, Ser. No. 866,437**
**Int. Cl. C07c** *87/22, 91/00*

**U.S. Cl. 260—584 R** **4 Claims**

2,2-bis (difluoramino)-5-fluoro-5,5-dinitro-1-pentanol having plasticizer properties for double-base propellants is synthesized by reacting 2,2-bis (difluoramino)-5-fluoro-5,5-dinitro-1-pentyl trifluoracetate with methanol.

**3,759,999**

## METHOD OF PURIFYING ACIDIC COMPONENTS OF A HOP EXTRACT

**William C. Herwig, Milwaukee, and Donald H. Westermann, Brookfield, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.**

**Filed Sept. 22, 1967, Ser. No. 669,947**
**Int. Cl. C07c** *45/24*

**U.S. Cl. 260—586 R** **6 Claims**

A method for separating isohumulones from lupulones and residual hop constituents as contained in e.g., an isomerized hop extract, by means of a strongly basic ion exchange resin.

**3,760,000**

## PREPARATION OF PHOSPHINE OXIDES BY CATALYTIC OXIDATION OF TERTIARY PHOSPHINES

**John D. Curry, Oxford, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio**

**Filed Mar. 15, 1971, Ser. No. 124,452**
**Int. Cl. C07f** *9/50*

**U.S. Cl. 260—605.6 P** **7 Claims**

Process for preparing trialkyl and triaryl phosphine oxides employing zero-valent palladium complexes of ditertiary phosphines as catalysts. The resulting phosphine oxides are useful as surfactants and in skin preparations.

**3,760,001**

## PRODUCTION OF TRIALKYLPHOSPHINES

**Horst Staendeke, Bruhl, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany**

**Filed Mar. 31, 1972, Ser. No. 239,922**

**Claims priority, application Germany, Apr. 3, 1971, P 21 16 439.6**

**Int. Cl. C07f** *9/50*

**U.S. Cl. 260—606.5 P** **19 Claims**

Production of trialkyphosphines of the general formula $R_3P$, in which R stands for alkyl groups having from 1 to 3 carbon atoms. In a first step a vaporous or gaseous mixture of phosphorus and an alkyl halide is passed in the absence of oxygen or air and at a temperature between 280° and 420°C, over an active carbon catalyst, the resulting gaseous reaction mixture is subjected to fractional condensation so as to isolate monoalkylhalogenophosphine, dialkylhalogenophosphine and a two layer-forming mixture of trialkylphosphonium halide and unreacted phosphorus therefrom, the trialkylphosphonium halide is decanted and, in a second step an aqueous alkali is added to the trialkylphosphonium halide so as to produce trialkylphosohine therefrom.

**3,760,002**

## POLYHALO DISULFIDE ALCOHOLS AND DERIVATIVES

**Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.**

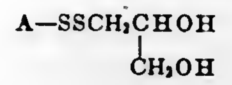
**Division of Ser. No. 757,487, Sept. 4, 1968, Pat. No. 3,641,109, which is a continuation-in-part of Ser. No. 560,125, June 24, 1966, abandoned.**

**Filed Sept. 9, 1969, Ser. No. 856,501**
**Int. Cl. C07c** *149/12*

**U.S. Cl. 260—608** **11 Claims**

Compounds are prepared having one of the formulae

(1)



$$A{-}SSCH_2\underset{\displaystyle CH_2OH}{\underset{|}{C}}HOH$$

and

$$(2)\ B{-}SSCH_2CH_2OH$$

where A is di to tetrahaloethyl or di to trihalovinyl and B is di to trihalovinyl and all halogen atoms have an atomic weight of 35 to 80. The compounds are useful as fungicides, desiccants and nematocides and to some extent as herbicides.

**3,760,003**

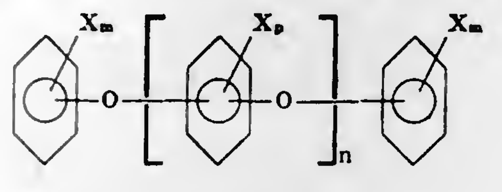
## HALOGENATED POLYPHENYL ETHERS

**Arthur A. Asadorian, Midland, Mich.; Horst G. Langer, Wayland, Mass., and Jeffrey A. Funsher, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Oct. 2, 1970, Ser. No. 77,704**
**Int. Cl. C07c** *43/20*

**U.S. Cl. 260—613 R** **3 Claims**

Halogenated polyphenyl ethers having the general formula



wherein:

each X is independently Cl or Br,
each *m* is independently an integer of 0 to 5,
each *p* is independently an integer of 0 to 4,
*n* is an integer of 1 to 5, and
50 percent of more by weight of the compound is halogen have been found to be suitable fire retardants for polyester.

**3,760,004**

## PRODUCTION OF DERIVATIVES OF OMEGA-HYDROXYTIGLALDEHYDE

**Herwig Freyschlag, Ludwigshafen, Rhine; Fritz Stolp, Limburgerhof, Upper Palatine; Werner Reif, and Horst Pommer, both of Ludwigshafen, Rhine, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany**

**Continuation-in-part of Ser. No. 390,714, Aug. 19, 1964, abandoned. This application Sept. 8, 1969, Ser. No. 856,186**

**Claims priority, application Germany, Aug. 23, 1963, B 73234**

**Int. Cl. C07c** *43/30*

**U.S. Cl. 260—615 A** **8 Claims**

Production of 4-halogen-2-formylbutene-(2) or its lower alkyl acetals or lower fatty acid acylates by the action of certain halogenating agents on 2-formyl-2-hydroxybutene-(3) or its acetals or its acylates in the presence of tertiary amines such as trialkyl amines or N-alkyl derivatives of nitrogen containing heterocyclic compounds such as piperidine, morpholine, piperazine or similar compounds having 5 to 6 ring members.

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**3,760,005**

## CYCLIC POLYETHERS AS CATALYST ACTIVATORS IN THE ALKALICATALYZED REACTION OF ALKYLENE OXIDES

**Jurgen H. Exner; David P. Sheetz, and Edwin C. Steiner, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed June 2, 1971, Ser. No. 149,378**
**Int. Cl. C07c** *41/02*

**U.S. Cl. 260—615 B** **7 Claims**

In the alkali-catalyzed reaction of an alkylene oxide with an active hydrogen compound, the rate of the reaction is increased by the presence of a cyclic polyether having at least four ether groups. Preferred polyethers are those consisting of 4–10 oxyethylene groups.

**3,760,006**

## ION EXCHANGE CATALYSTS FOR THE PREPARATION OF BISPHENOLS

**Benny B. Gammill, Lake Jackson; Glen R. Ladewig, Freeport, and George E. Ham, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.**

**Division of Ser. No. 17,291, March 6, 1970, Pat. No. 3,634,341. This application June 28, 1971, Ser. No. 157,721**
**Int. Cl. C07c** *39/16, 37/00*

**U.S. Cl. 260—619 A** **4 Claims**

Modification of an insoluble strong-acid cation-exchange resin in acid form by partial neutralization with a thiazolidine yields an improved catalyst for the preparation of bisphenols by condensation of a phenol and a ketone.

**3,760,007**

## BICYCLIC BENZHYDRYLIDENE DERIVATIVES

**Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Bloomfield, N.J.**

**Continuation-in-part of Ser. Nos. 873,112, Oct. 31, 1969, abandoned, and Ser. No. 714,027, March 18, 1968, abandoned. This application June 11, 1970, Ser. No. 45,535**
**Int. Cl. C07c** *39/12*

**U.S. Cl. 260—619 R** **4 Claims**

Disclosed herein are bicyclic benzhydrylidene compounds which are non-steriodal hormonal agents useful, for example, in the inhibition of gestation in mammals.

**3,760,008**

## RESORCINOL PROCESS

**Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Jan. 22, 1970, Ser. No. 5,121**
**Int. Cl. C07c** *29/00*

**U.S. Cl. 260—621 R** **9 Claims**

Resorcinol is produced from the alkali metal salts of symmetrical dichloroisophthalic acid by heating the salt at an elevated temperature in the presence of a limited amount of water.

**3,760,009**

## HYDROQUINONE PROCESS

**Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Feb. 13, 1970, Ser. No. 11,309**
**Int. Cl. C07c** *29/00*

**U.S. Cl. 260—621 R** **9 Claims**

Hydroquinone is produced from the alkali metal salts of 2,5-dichloroterephthalic acid by heating the salt at an elevated temperature in the presence of a limited amount of water.

**3,760,010**

## PURIFICATION OF 2,4,5-TRICHLOROPHENOL

**Alexander H. Widiger, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed July 30, 1970, Ser. No. 59,740**
**Int. Cl. C07c** *39/32*

**U.S. Cl. 260—623 R** **3 Claims**

2,4,5-Trichlorophenol containing methoxyphenol impurities is purified by reacting the crude material with aqueous chromic acid and separating the purified product.

**3,760,011**

## TRIOLS BY HYDROGENATION OF BICYCLIC FURODIOXOLES

**Alfred G. Robinson; Alden E. Blood, and Hugh J. Hagemeyer, Jr., all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Continuation-in-part of Ser. No. 798,803, Feb. 12, 1969, Pat. No. 3,564,017. This application Apr. 14, 1969, Ser. No. 816,073**
**Int. Cl. C03c** *31/18;* **C08f** *3/30;* **C08g** *17/00*

**U.S. Cl. 260—635 E** **28 Claims**

Triols having a neopentyl structure are prepared by catalytic hydrogenation, preferably in the presence of water, of certain bicyclic furodioxole compounds at elevated temperatures and pressures. For example, 3,3-dimethyl-1,2,4-butanetriol is prepared by catalytic hydrogenation of tetrahydro-[2,3-d]-1,3-dioxol-5-ol at temperatures in the range from about 75°C. to about 175°C. and pressures of about 100 psi to about 10,000 psi. Triols are useful solvents and intermediates in the preparation of alkyd coating compositions and plasticizers for resinous materials such as polyvinyl chloride.

**3,760,012**

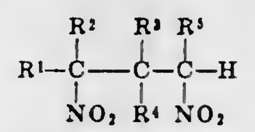
## PREPARATION OF 1,3-DINITROALKANES

**John M. Larkin, Wappingers Falls, N.Y., assignor to Texaco, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 782,411, Dec. 9, 1968, abandoned. This application Dec. 10, 1971, Ser. No. 206,870**

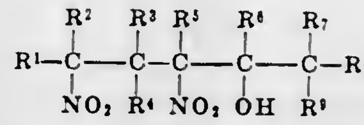
**U.S. Cl. 260—644** **10 Claims**

A method of preparing 1,3-dinitroalkanes corresponding to the formula:



$$R^1-\underset{NO_2}{\overset{R^2}{C}}-\underset{R^4}{\overset{R^3}{C}}-\underset{NO_2}{\overset{R^5}{C}}-H$$

by contacting a dinitroalcohol having at least five carbon atoms corresponding to the formula:



$$R^1-\underset{NO_2}{\overset{R^2}{C}}-\underset{R^4}{\overset{R^3}{C}}-\underset{NO_2}{\overset{R^5}{C}}-\underset{OH}{\overset{R^6}{C}}-\underset{R^9}{\overset{R_7}{C}}-R^8$$

with a basic catalyst at a temperature of from 0° to 150°C. Valuable co-products recoverable from the reaction are ketones or aldehydes. The contemplated 1,3-dinitroalkanes are useful as fuel and lubricant additives and may be converted by hydrogenation to corresponding diamines.

**3,760,013**

## 1-(DICHLORONITROMETHYL)BENZENE

**Wilson F. Gum, Jr., and David A. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Sept. 15, 1972, Ser. No. 289,320**
**Int. Cl. C07c** *79/12*

**U.S. Cl. 260—646** **1 Claim**

1-(Dichloronitromethyl)benzene was prepared and found to be active as a bacteriocide and fungicide.

**3,760,014**

### CHLORINATION OF HYDROCARBONS

**Frank Barry Haskett, Geneva, Switzerland, assignor to Joan Hixon Martin, Washington, D.C.**

**Continuation-in-part of Ser. No. 735,397, June 7, 1968, Pat. No. 3,565,792. This application Feb. 22, 1971, Ser. No. 117,382**

**Int. Cl. C07c** *25/06, 25/08*

**U.S. Cl. 260—650 R** **3 Claims**

A process for the chlorination of hydrocarbons wherein the production of the chlorinated hydrocarbon is accelerated by carrying out such chlorination in the presence of sodium sulfide. The presence of sodium sulfide leads to the production of the chlorinated hydrocarbon, hydrogen sulfide, and sodium chloride as products. The sodium sulfide is preferably that produced in the desulfurization of petroleum fractions utilizing metallic sodium.

**3,760,015**

### PRODUCTION OF VINYLIDENE CHLORIDE AND METHYL CHLOROFORM

**Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, New York, N.Y.**

**Filed Dec. 18, 1969, Ser. No. 886,378**

**Int. Cl. C07c** *17/08*

**U.S. Cl. 260—658 R** **6 Claims**

1,1,2-Trichloroethane is cracked to vinylidene chloride and other dichloroethylenes, and hydrogen chloride, by heating to 300°–500°C in the presence of sodium chloride crystals; the resultant mixture can be separated, or fed directly into a suspension in an anhydrous carrier of a Friedel-Crafts carrier such as ferric chloride, maintained at a temperature of below 75°C, where the vinylidene chloride is converted to methyl chloroform, and the other dichloroethylenes are reconverted to 1,1,2-trichloroethane.

**3,760,016**

### EXO-3-METHYLTRICYCLO(4.2.1.$0_{2,5}$)NONA-3,7-DIENES AND THEIR PREPARATION FROM ALLENE AND A BICYCLO (2.2.1)HEPTA-2,5-DIENE

**Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Mar. 23, 1971, Ser. No. 127,398**

**Int. Cl. C07c** *3/00*

**U.S. Cl. 260—666 PY** **3 Claims**

Novel polymer-forming exo-3-methyltricyclo[4.2.1.$0^{2,5}$]-nona-3,7-dienes are prepared from allene and bicyclo[2.2.1]-hepta-2,5-dienes in the presence of palladium(o) or nickel(o) compounds used as catalysts.

**3,760,017**

### HYDROALKYLATION CATALYST AND PROCESS

**Alfred Arkell, Wappingers Falls; John M. Crone, Jr., Fishkill, and Robert M. Suggitt, Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.**

**Filed May 17, 1971, Ser. No. 144,211**

**Int. Cl. C07c** *15/20*

**U.S. Cl. 260—668 F** **14 Claims**

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 110° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises a Group VIII metal or metal compound selected from the group consisting of nickel, cobalt and palladium and an acidic oxide suppport consisting essentially of a substantially alkali metal-free mixture of about 5 to 60 percent by weight of a crystalline zeolite and about 95 to 40 percent by weight of a silica-alumina cracking catalyst. Preferred Group VIII metals include nickel and palladium. The hydrogenation activity of the Group VIII metal may be modified by the inclusion of tungsten. Before use the composite catalyst is calcined at a temperature within the range of about 800° to 1,500°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1,200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

**3,760,018**

### HYDROALKYLATION CATALYST AND PROCESS

**Robert M. Suggitt; Alfred Arkell, and John M. Crone, Jr., all of Wappingers Falls, N.Y., assignors to Texaco, Inc., New York, N.Y.**

**Filed May 17, 1971, Ser. No. 144,213**

**Int. Cl. C07c** *15/20*

**U.S. Cl. 260—668 F** **16 Claims**

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 200° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises rhenium and an acidic oxide support. The acidic oxide support may be a silica-alumina cracking catalyst or a substantially alkali metal-free mixture of about 5 to 60 percent by weight of a crystalline zeolite and about 95 to 40 percent by weight of an alumina or a silica-alumina cracking catalyst. The hydrogenation activity of the rhenium may be modified by the inclusion of a Group VIII metal, a Group VI metal or their mixtures. Before use the composite catalyst is calcined at a temperature within the range of about 800° to 1500°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

**3,760,019**

### HYDROALKYLATION CATALYST AND PROCESS

**John M. Crone, Jr., Fishkill, and Alfred Arkell, Wappingers Falls, both of N.Y., assignors to Texaco, Inc., New York, N.Y.**

**Filed May 17, 1971, Ser. No. 144,214**

**Int. Cl. C07c** *15/20*

**U.S. Cl. 260—668 F** **14 Claims**

A method for the catalytic hydroalkylation of an aromatic hydrocarbon. An aromatic hydrocarbon, for example, benzene is contacted with hydrogen and a dual function catalyst at hydroalkylation conditions including a temperature within the range of about 110° to 450°F. and at a hydrogen pressure of at least one atmosphere. The dual function catalyst comprises a Group VIII metal or metal compound selected from the group consisting of nickel, and cobalt and an acidic oxide support consisting essentially of a silica-alumina cracking catalyst. A preferred Group VIII metal is nickel. The hydrogenation activity of the Group VIII metal may be modified by the inclusion of tungsten. Before use the composite catalyst is steamed at a temperature within the range of about 800° to 1400°F. and is reduced with hydrogen at a temperature within the range of about 400° to 1200°F. The process is useful in the hydroalkylation of benzene to prepare cyclohexylbenzene.

**3,760,020**

### BIS-(DIALKYLADAMANTYL)BENZENES

**Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**

**Filed Sept. 2, 1971, Ser. No. 177,459**

**Int. Cl. C07c** *15/12*

**U.S. Cl. 260—668 F** **12 Claims**

Novel compounds of bis-(dialkyladamantyl)benzenes are produced. The compounds are useful as coolants, lubricants and mold release agents.

**3,760,021**

### ALKYLATION CATALYST

**Jesse K. Boggs, Seabrook, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.**

**Filed Aug. 13, 1971, Ser. No. 171,733**

**Int. Cl. C07c** *5/28*

**U.S. Cl. 260—671 P** **11 Claims**

A homogeneous catalyst system useful in selectively tertiary alkylating aromatic hydrocarbons consists essentially of the complex resulting from the reaction of aluminum chloride and cuprous chloride in a molar excess of aromatic hydrocarbon solvent, wherein the molar ratio of $AlCl_3$ to CuCl is within the range of about 0.4 to about 0.5.

The complex may be formed by admixing the constituents at room temperature and allowing the admixture to stand under an inert atmosphere for an extended period, or the constituents may be refluxed under substantially atmospheric pressure for a shorter time period in order to form the complex.

The homogeneous catalyst may be used under calculated conditions which are generally known to those skilled in the art. The use of a tertiary (Type III) olefin as the alkylating agent permits alkylation conditions which employ higher temperatures and pressures than can be used if a tertiary alkyl chloride is employed as the alkylating agent.

**3,760,022**

### ALKYLATION OF AROMATIC HYDROCARBONS

**Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 8, 1971, Ser. No. 196,794**

**Int. Cl. C07c** *3/56*

**U.S. Cl. 260—671 R** **10 Claims**

Aromatic hydrocarbons are alkylated with saturated hydrocarbons by treating the mixture of reactants with an alkyl halide in the presence of a Friedel-Crafts catalyst.

**3,760,023**

### HYDRODEALKYLATION PROCESS WITH PROMOTED GROUP VIB METALS AND PROMOTERS

**Ralph E. Patrick, Flatwoods; Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.**

**Continuation of Ser. No. 769,735, Oct. 22, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,666**

**Int. Cl. B01j** *11/06;* **C07c** *3/58*

**U.S. Cl. 260—672 R** **8 Claims**

A process for the hydrodealkylation of alkyl-substituted aromatic hydrocarbons, including contacting the alkyl-substituted aromatic hydrocarbons with a catalyst comprising a metal of Group VIB of the Periodic System, such as chromium, molybdenum, and tungsten, and mixtures thereof, in an amount of about 5 to 15 per cent by weight of the finished catalyst, and a promoter selected from the group consisting of alkali metals, alkaline earth metals, rare earth metals, and mixtures thereof, such as potassium, rubidium, cesium, calcium, strontium, barium, cerium, thorium, etc., in an amount between about 1 to 10 percent by weight of the finished catalyst, at a temperature of about 1,050° to 1,200°F, a pressure of about 100 to 1,000 psig., a liquid hourly space velocity of about 0.1 to 5, and a hydrogen-to-hydrocarbon mole ratio between about 3 and 15 to 1.

**3,760,024**

### PREPARATION OF AROMATICS

**John Cattanach, Camberley, England, assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed June 16, 1971, Ser. No. 153,855**

**Int. Cl. C07c** *5/27*

**U.S. Cl. 260—673** **4 Claims**

A process for the preparation of aromatic compounds is set forth which involves contacting a feed consisting essentially of $C_2$–$C_4$ paraffins and/or olefins with a crystalline aluminosilicate of the ZSM-5 type and recovering the aromatics produced. The described process can be carried out in the absence of a hydrogenation/dehydrogenation component and in the absence of added hydrogen.

**3,760,025**

### TELOMERIZATION REACTIONS UTILIZING CATALYSTS COMPOSED OF CERTAIN ORGANOMETALLIC COMPLEXES AND TRANSITION METALS OR THEIR COMPOUNDS

**Joseph H. Merkley, Gastonia, N.C., assignor to First National City Bank, New York, N.Y.**

**Filed Aug. 31, 1970, Ser. No. 68,589**

**Int. Cl. C07c** *3/10*

**U.S. Cl. 260—680 B** **27 Claims**

Telomerization reactions utilizing catalyst systems composed of (1) liquid hydrocarbon solutions or mixtures of complexes such as those made from (a) n-butylsodium or n-butylpotassium, with (b) alkyllithiums such as n-butyllithium and (2) transition metals or their compounds such as Raney nickel and nickel acetylacetonate give a polybutadiene having a high cis-1,4 content.

**3,760,026**

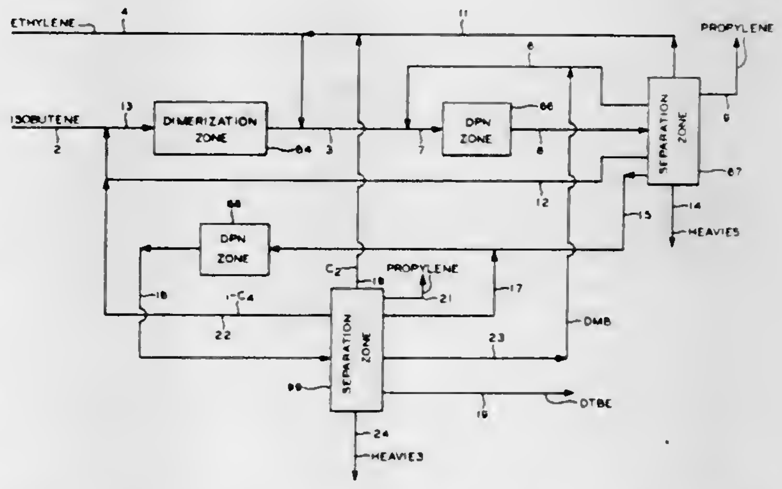
### SYNTHESIS OF DI-TERT-BUTYLETHYLENE USING OLEFIN DISPROPORTIONATION

**Robert E. Reusser, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Aug. 30, 1971, Ser. No. 176,095**

**Int. Cl. C07c** *3/62*

**U.S. Cl. 260—683 D** **10 Claims**



Di-tert-butylethylene is prepared by contacting neohexene with an olefin disproportionation catalyst having activity for concurrent double bond isomerization. The di-tert-butylethylene is a suitable high octane component of gasoline fuels and finds particular utility in non-leaded gasolines.

**3,760,027**

### AMIDE-NICKEL SALT COMPLEXES USED AS OLEFIN OLIGOMERIZATION CATALYST

**Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 864,564, Oct. 7, 1969, Pat. No. 3,651,111. This application Sept. 17, 1971, Ser. No. 181,595**

**Int. Cl. C07c** *3/10*

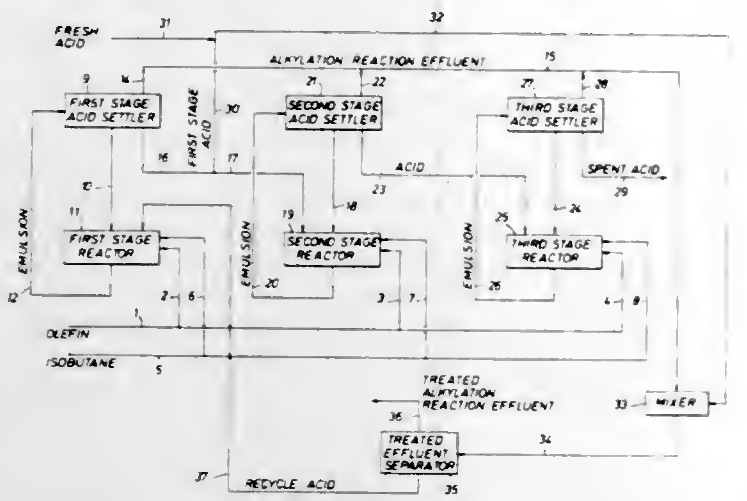
**U.S. Cl. 260—683.15 D** **7 Claims**

Amide-nickel salt complexes having constituents of substituted 2-aminomalonamides and nickel salts are produced, which complexes are useful as a catalyst in the oligomerization of monoolefins. Bis[N,N′-dicyclohexyl-2-(cyclohexylamino)malonamide] reacts with nickel chloride to form bis[N,N′-dicyclohexyl-2-(cyclohexylamino)malonamide] dichloronickel, which is used as an oligomerization catalyst for propylene.

### 3,760,028
### REMOVING DIALKYL SULFATES FROM A HYDROCARBON EFFLUENT WITH SULFURIC ACID FROM AN ALKYLATION SETTLER

**James O. Francis, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**

**Filed Aug. 5, 1971, Ser. No. 169,282**
**Int. Cl. C07c *3/54***
**U.S. Cl. 260—683.46** **10 Claims**



A multi-stage alkylation for alkylating lower isoparaffins with lower olefins with sulfuric acid catalyst in which the sulfuric acid is transferred serially from one reaction stage to another utilizes sulfuric acid separated from the first stage acid settler to treat the hydrocarbon effluent. The acid from the initial reaction stage separates dialkyl sulfates from the hydrocarbon effluent, and the acid containing dialkyl sulfates is recycled as alkylation catalyst to the alkylation process.

### 3,760,029
### DIMETHYLSULFIDE REMOVAL IN THE ISOMERIZATION OF NORMAL PARAFFINS

**Charles S. McCoy, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Continuation of Ser. No. 803,123, Feb. 27, 1969, abandoned. This application May 6, 1971, Ser. No. 142,839**
**Int. Cl. C07c *5/30***
**U.S. Cl. 260—683.68** **8 Claims**

Dimethylsulfide, which is found to be especially harmful in the isomerization of normal butane and/or normal pentane in the presence of hydrogen and with a platinum-alumina catalyst, is removed by contacting the hydrocarbon or hydrogen feed with molecular sieve particles. The molecular sieves are regenerated at least every 24 hours in order to maintain less than 1 ppm dimethylsulfide in the reactor feed.

### 3,760,030
### MULTIPLE SEQUENCE BLOCK COPOLYMERS OF SILICONES AND STYRENE

**John William Dean, Averill Park, N.Y., assignor to General Electric Company, Waterford, N.Y.**

**Continuation-in-part of Ser. No. 26,082, April 6, 1970. This application June 2, 1971, Ser. No. 149,396**
**Int. Cl. C08f *33/02, 35/02, 35/06***
**U.S. Cl. 260—827** **13 Claims**

Multiple sequence block copolymers of silicone and styrene having the formula:

$(1)\ (ABA)_x$

are produced, where A represents repeating diorganosiloxy units and B represents a polystyrene chain. This ABA chain is repeated from three to 10 times. The materials have high elongation and tensile strength and are useful in the formation of strong, elastic films.

### 3,760,031
### ADHESIVE COMPOSITIONS FROM EPOXIDE AND ETHYLENE VINYL ACETATE COPOLYMER HAVING UNSATURATED CARBOXYLIC ACID GRAFTED THERETO

**Koichi Sato; Akira Niki, both of Osaka; Hiroshi Kitamura, Yasu-gun, and Masanobu Morimoto, Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Continuation-in-part of Ser. No. 47,564, June 18, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,967**
**Claims priority, application Japan, June 20, 1969, 44/48821**
**Int. Cl. C08g *45/04***
**U.S. Cl. 260—836** **6 Claims**

Adhesive compositions for effecting adhesion between an ethylene-vinyl acetate copolymer and a solid material comprising (A) a grafted product obtained by reacting an ethylene-vinyl acetate copolymer or a derivative thereof with a carboxylic acid or its anhydride having a conjugated double bond in the molecule and (B) a compound having epoxide group.

### 3,760,032
### UNSATURATED ESTERS, POLYESTERS, AND CROSS-LINKED POLYESTERS

**Ernest C. Ford, Jr., Newark, Del., assignor to ICI America, Inc., Wilmington, Del.**

**Filed Aug. 5, 1970, Ser. No. 61,170**
**Int. Cl. C08f *21/02***
**U.S. Cl. 260—869** **6 Claims**

Novel unsaturated esters and polyesters terminated with alkoxylated phenols and novel cross-linked polyesters formed by reacting these esters and polyesters with a styrene compound. The halogenated cross-linked polyesters are flame retardant.

### 3,760,033
### POLYESTER RESIN COMPOSITIONS

**Kenneth Harold Arbuckle, and David Mendel Lazarus, both of London, England, assignors to Berger, Jenson & Nicholson Limited, London, England**

**Filed Mar. 10, 1971, Ser. No. 123,030**
**Int. Cl. C08f *21/02***
**U.S. Cl. 260—872** **4 Claims**

Curable coating compositions based on unsaturated polyester resin and styrene, particularly those in which the polyester resin has a high degree of unsaturation and/or of chain branching, may be difficult to thin to application viscosity without hazing or phase separation. This problem is solved by adding a minor proportion of an unsaturated hydroxy-ester, particularly $\beta$-hydroxyethyl methacrylate or $\beta$-hydroxypropyl methacrylate.

### 3,760,034
### GRAFT COPOLYMERS OF LACTONE POLYESTERS

**Frank E. Critchfield, South Charleston, and Joseph V. Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed Jan. 26, 1971, Ser. No. 109,982**
**Int. Cl. C08g *39/00, 17/017***
**U.S. Cl. 260—874** **21 Claims**

Various ethylenically unsaturated monomers can be graft copolymerized onto lactone polyesters, such as, homopolymers of $\epsilon$-caprolactone or copolymers of $\epsilon$-caprolactone and $\epsilon$-alkyl-$\epsilon$-caprolactones at temperatures between 90° and 150° C. Preferred vinyl monomers include acrylic acid, methacrylic acid, acrylic and methacrylic acid alkyl esters, styrene, vinyl halides, vinylidene halides, alkali metal ar-(methacryloxyethoxy) or -(acryloxyethoxy) benzene sulfonates, alkali metal benzene sulfonates, N-methyl-N-vinyl acetamide, dialkylaminoalkyl acrylic and methacrylic acid esters, vinyl pyridines, acrylonitrile, and vinyl esters of aliphatic acids.

### 3,760,035
### RUBBER-RESIN NETWORK BLENDS AND METHOD OF MAKING SAME

**Philip C. Kelley, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.**

**Filed May 12, 1971, Ser. No. 142,524**
**Int. Cl. C08f *37/18, 15/40***
**U.S. Cl. 260—876 R** **9 Claims**

Blends of tough, rubbery, essentially completely insoluble alkyl acrylate polymer and of a hard, unplasticized vinyl chloride resin in which a very small proportion of the rubbery polymer is uniformly dispersed as a more or less continuous network are superior high impact rigid resin formulations. Such a product is produced by a two-step overpolymerization process starting in the first step with small latex particles 200–1700 A, more preferably 250 – 1250 A, and most preferably 250 – 800 A, in average diameter of a vinyl chloride seed resin and overpolymerizing on such seed resin particles a thin layer 50 – 700 A, more preferably 100 – 500 A, and most preferably 125 to 350 A, in thickness of the rubbery polyacrylate and, in the second step overpolymerizing on the first step rubber-coated latex particles additional vinyl chloride resin to produce a rubber/resin concentrate or masterbatch which is unique in its ability to be diluted, preferably in powder form, with rubber-free vinyl chloride resin to obtain a final composition containing from about 3 to about 6, more preferably 3 to 5.5 parts/wt. of rubber network material for every 100 parts/wt. of total vinyl chloride resin. The latter blended granular composition requires fluxing and fusing under shear at 350° – 440°F., more preferably about 375° to about 420°F, to develop high resistance to impact (Izod values of 10 to 20 ft.lbs/in. or more), maximized resistance to distortion by heat, maximized resistance to chemicals, and heretofore unrealized high resistance to degradation during processing and during outdoor exposure. In addition, such compositions also are unique in requiring no resinous processing aids during processing on commercial equipment. The vinyl chloride seed resin may be crosslinked, preferably with a crosslinking agent that induces the formation of graft linkages between the seed and the rubbery phases. The blends also exhibit during processing excellent high viscosity hot strength, good high temperature body and dimensional integrity, low die swell, and a somewhat lower coefficient of expansion than many other high impact resin compositions.

### 3,760,036
### PVA LUBRICANT FOR POLYVINYL CHLORIDE

**Stephen B. Matthews, Waynesboro, Va., assignor to Reynolds Metals Company, Richmond, Va.**

**Filed Apr. 12, 1972, Ser. No. 243,474**
**Int. Cl. C08f *29/24***
**U.S. Cl. 260—899** **8 Claims**

The heat seal characteristics of extruded oriented polyvinyl chloride film are improved by the addition of low molecular weight polyvinyl acetate homopolymers to a conventional extrusion mix and thereafter carrying out extrusion operations.

### 3,760,037
### METHOD OF PREPARING PHOSPHOROUS CONTAINING OLIGOMERS OR POLYMERS

**Masao Yoshizawa, Omiya City; Takeo Mikami, Kawagoe City; Nobuo Kobayashi, and Akira Iida, both of Mikawamachi, Ishikawa Gun, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and The Dainippon Ink Institute of Chemical Research, Saitama Pref., both of Japan**

**Filed Aug. 21, 1970, Ser. No. 66,153**
**Claims priority, application Japan, Aug. 25, 1969, 44/66501**
**Int. Cl. C07f *9/40;* D06c *27/00***
**U.S. Cl. 260—931** **2 Claims**

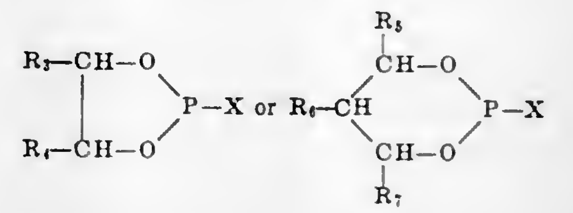
Phosphorus-containing oligomers or polymers useful as flame-resistant substances are obtained by reacting a tertiary phosphite (A) of the general formula:

$$(R_1O)_3P, \qquad (A)$$

a dialkyl phosphite halogenide (B) of the general formula:

$$(R_2O)_2PX, \qquad (B)$$

a cyclic halogenophosphite (C) of the general formula:

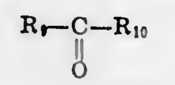


(C)

an aldehyde (D) of the general formula:

$$R_8CHO \qquad (D)$$

and a ketone (E) of the general formula:



$$R_9-\underset{\underset{O}{\|}}{C}-R_{10} \qquad (E)$$

wherein $R_1$ to $R_{10}$ and X are as defined below.

### 3,760,038
### PHOSPHONATED POLYOXYALKYLENE ETHERS

**Morton Lewis, Elmhurst, Ill., assignor to Swift & Company, Chicago, Ill.**

**Filed Nov. 20, 1969, Ser. No. 878,570**
**Int. Cl. C07f *9/40;* C08g *22/44***
**U.S. Cl. 260—932** **5 Claims**

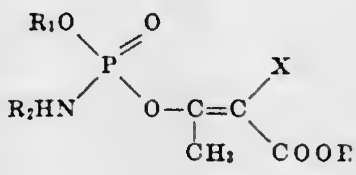
Phosphonated polyoxyalkylene ethers are produced by reacting a halogen-containing polyoxyalkylene ether with an aliphatic or aromatic phosphite. The resulting compositions are used to prepare flame resistant, non-rigid polyurethane foams.

### 3,760,039
### CIS-PHOSPHORIC ACID AMIDE ESTERS

**Jean-Pierre Leber, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland**

**Continuation-in-part of Ser. No. 829,747, June 2, 1969, abandoned. This application Nov. 12, 1969, Ser. No. 876,086**
**Claims priority, application Switzerland, June 6, 1968, 8521/68; Mar. 19, 1969, 4133/69; Apr. 21, 1969, 5974/69**
**Int. Cl. C07f *9/24;* A01n *9/36***
**U.S. Cl. 260—941** **29 Claims**

Insecticidally and acaricidally active phosphoric acid amides of formula:



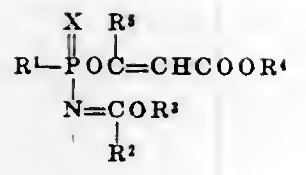
in which $R_1$, $R_2$ and $R_3$, which may be the same or different, each represent alkyl containing from one to five carbon atoms, and X represents a hydrogen or a chlorine atom, and in which the $-CH_3$ is cis to the $-COOR_3$ in the crotonic acid moiety.

### 3,760,040
### PHOSPHORUS CONTAINING COMPOUNDS

**Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.**

**Filed Apr. 24, 1972, Ser. No. 247,172**
**Int. Cl. C07f *9/08, 9/20, 9/24***
**U.S. Cl. 260—941** **10 Claims**

The compounds of this invention are those having the formula



$$R^1-\overset{\substack{X\\ \|}}{\underset{\substack{| \\ N=\underset{\substack{| \\ R^2}}{C}OR^3}}{P}}O\overset{\substack{R^5\\ |}}{C}=CHCOOR^4$$

in which
- $R^1$ is alkyl or alkoxy,
- $R^2$ is hydrogen or alkyl,
- $R^3$ is alkyl,
- $R^4$ is alkyl,
- $R^5$ is methyl or $-CH_2COOCH_3$ and
- X is oxygen or sulfur and their use as insecticides and acaricides.

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### 3,760,041
### O-(N-ALKOXY-BENZIMIDOYL)-(THIONO) PHOSPHORIC(PHOSPHONIC) ACID ESTERS

**Walter Lorenz, c/o Farbenfabriken Bayer Aktiengesellschaft, Wuppertal-Cronenberg; Ingebog Hammann; Wolfgang Behrenz, both of c/o Farbenfabriken Bayer Aktiengesellschaft, Cologne, and Wilhelm Stendel, c/o Farbenfabriken Bayer Aktiengesellschaft, Wupertal-Elberfeld, all of Germany**

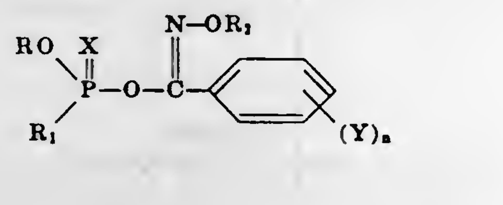
**Filed Oct. 20, 1971, Ser. No. 191,072**

**Claims priority, application Germany, Oct. 26, 1970, P 20 52 379.4**

**Int. Cl. C07f** *9/08, 9/16, 9/40*

**U.S. Cl. 260—944** **7 Claims**

O-(N-alkoxy-benzimidoyl)-(thiono)phosphoric (phosphonic) acid esters of the general formula



(I)

in which
- R and $R_2$ each is an alkyl radical of one to six carbon atoms,
- $R_1$ is an alkyl or alkoxy radical of one to six carbon atoms,
- X is an oxygen or sulfur atom,
- *n* is an integer from 0 to 5, and
- Y is a halogen atom, an alkyl radical of one to four carbon atoms or a nitro group,

which possess insecticidal, and acaricidal properties.

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### 3,760,042
### S,S-DIALKYL-O-ALIPHATICOXYALKYL PHOSPHITES

**Ernst Beriger, Neuallschwil, and Henry Martin, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

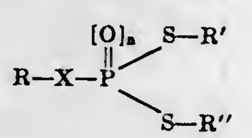
**Filed Jan. 8, 1971, Ser. No. 105,125**

**Claims priority, application Switzerland, Jan. 16, 1970, 595/70**

**Int. Cl. C07f** *9/16;* **A01n** *9/36*

**U.S. Cl. 260—950** **7 Claims**

Phosphoric acid esters of the formula



wherein X denotes oxygen or sulphur, the integer *n* is the number 0 or 1, R′ and R″ independently of each other represent an alkyl radical with 3 to 5 carbon atoms and wherein a. if X is oxygen, R represents an alkoxyalkyl, alkylmercaptoalkyl or alkenyloxyalkyl radical with at most 7 carbon atoms, an alkenyl radical with 3 to 6 carbon atoms or an unsubstituted benzyl group or a benzyl group which is substituted by halogen, methyl and/or methoxy, or wherein b. if X is sulphur, R represents an alkenyl radical with 3 to 6 carbon atoms or an unsubstituted benzyl group or a benzyl group substituted by halogen, methyl and/or methoxy; these compounds are useful for defoliating and promoting the ripening of crop plants especially cotton.

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### 3,760,043
### O-PHENYL-S-ALKYL-N-ALKYL-PHOSPHOROAMIDO-THIOLATES

**Shigeo Kishino; Yasuo Yamada; Shizuo Higashikawa; Akio Kudamatsu; Tatsuo Tamura; Shozo Sumi, and Osamu Katsumata, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Mar. 27, 1970, Ser. No. 23,510**

**Claims priority, application Japan, Mar. 27, 1969, 44/22714**

**Int. Cl. C07f** *9/24;* **A01n** *9/36*

**U.S. Cl. 260—951** **19 Claims**

O-Phenyl-S-alkyl-N-alkyl-phosphoroamido-thiolates, i.e. O-[(optionally mono to tri halo and/or optionally mono to di alkyl and alkoxy -substituted)-phenyl]-S-(alkyl, alkenyl, alkynyl, chloroalkyl and phenyl-alkyl)-N-(alkyl and -phosphoroamido-thiolates or -amido-thiolphosphoric acid esters, which possess fungicidal, acaricidal and insecticidal, as well as nematocidal properties and which may be produced by conventional methods.

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### 3,760,044
### N-ALKYL-PHOSPHORO-AMIDO-THIOATES

**Gerhard Schrader, Wuppertal-Cronenberg; Ludwig Eue; Helmuth Hack, both of Cologne, all of Germany; Seiichi Hirane; Masahiro Aya; Shigeo Kishino, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Feb. 9, 1970, Ser. No. 10,026**

**Claims priority, application Japan, Feb. 14, 1969, 44/10486**

**Int. Cl. C07f** *9/24;* **A01n** *9/36*

**U.S. Cl. 260—954** **9 Claims**

N-alkyl-phosphoro-amido-thioates, i.e. O-(2-nitrophenyl)-O-alkyl-N-alkyl-phosphoro-amido-thioates or O-(2-nitrophenyl)-O-alkyl-N-alkyl-amido-thionophosphates, which possess herbicidal properties and which may be produced by conventional methods.

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### 3,760,045
### PROCESS OF PREPARING SHAPED OPTICAL BODIES USEFUL AS AIDS TO VISION

**Heinrich Thiele, Kiel, and Wilhelm P. Soehnges, Munich, both of Germany, assignors to said Heinrich Thiele, Kiel, Germany, by said Soehnges**

**Continuation-in-part of Ser. No. 690,028, Dec. 12, 1967, Pat. No. 3,553,299. This application Dec. 23, 1970, Ser. No. 101,121**

**Int. Cl. B29d** *11/00, 11/02*

**U.S. Cl. 264—1** **5 Claims**

Optical lenses useful for replacing damaged or cataractous eye lenses, contact lenses, and other aids to vision obtained from the lens nucleus substance have a high transparency and their optical characteristics such as curvatures, refractive index, and others, can be varied as required.

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### 3,760,046
### PROCESS FOR PRODUCING A COMPOSITE YARN WHICH IS BULKY, SLIP-RESISTANT AND OF HIGH STRENGTH

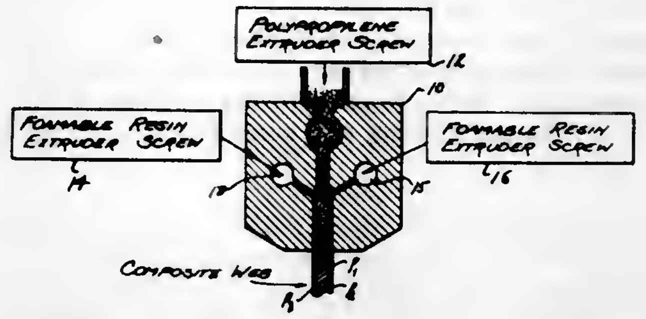
**Harold A. Schwartz, Litchfield, Conn., and Morton I. Port, West End, N.J., assignors to Avisun Corporation, Philadelphia, Pa.**

**Filed Aug. 4, 1967, Ser. No. 658,562**

**Int. Cl. B29d** *7/20, 27/00*

**U.S. Cl. 264—47** **6 Claims**

Composite polyolefin yarns formed by a polypropylene or high-density polyethylene core or center ply coated with at least one layer of a thermoplastic material such as a foamed resin, which serves to deluster and to reduce the slippage properties of the resultant yarn, and also to impart other characteristics thereto which improve the dye-ability and bondability of fabrics woven from the yarn, without sacrificing the advantages gained by the use of a high-strength core.


Polypropylene Extruder Screw
12
10
Foamable Resin Extruder Screw
14
Foamable Resin Extruder Screw
16
15
Composite Web

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### 3,760,047
### PROCESS FOR THE MANUFACTURE OF POLYMER FOAMS CONTAINING ESTERS OF TERTIARY ALCOHOLS AS SIDE GROUPS

**Rudolf Gaeth, Limburgerhof; Bernhard Schmitt, Kirchzarten, and Dieter Blum, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany**

**Filed Dec. 4, 1970, Ser. No. 95,379**

**Claims priority, application Germany, Dec. 30, 1969, P 19 65 588.0**

**Int. Cl. B29d** *27/08;* **C08f** *3/50*

**U.S. Cl. 264—54** **7 Claims**

A process for the manufacture of foams by heating polymers containing polymerized units of esters of ethylenically unsaturated polymerizable acids having three or four carbon atoms with tert-butanol at elevated temperatures wherein a pH of from 2.0 to 0.1 is set up in aqueous systems of the polymers, the water is evaporated and the residue is heated to temperatures above the decomposition temperature of the carboxylic esters.

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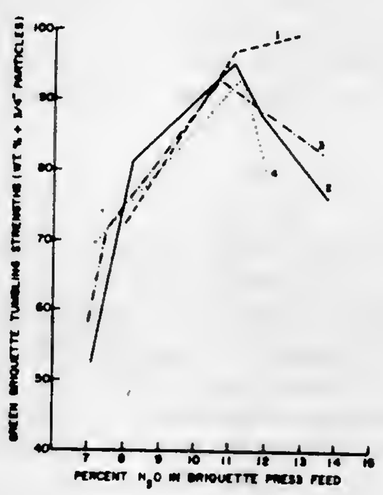
### 3,760,048
### BRIQUETTING AND CALCINING CRUSHED MINE RUN WESTERN PHOSPHATE SHALE ORE

**James K. Sullivan, and Richard I. Howard, both of Pocatello, Idaho, assignors to FMC Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 871,647, Oct. 17, 1969, abandoned, which is a continuation of Ser. No. 708,580, Feb. 27, 1968, abandoned. This application Apr. 22, 1970, Ser. No. 30,688**

**Int. Cl. C22b** *1/20, 1/14*

**U.S. Cl. 264—56** **5 Claims**



A strong, calcined phosphate agglomerate useful as a phosphorous furnace feed is produced by crushing mine run western phosphate shale ore to substantially -½ inch, agglomerating the crushed shale with sufficient water to produce phosphate agglomerates having a moisture content of between about 9 to about 12% (preferably 10 to 11.5%), placing the phosphate agglomerates on a non-agitated, perforate carrier to form a feed bed, passing the feed bed on the non-agitated, perforate carrier through a calcining zone, calcining the feed bed for at least about 15 minutes at a temperature in the range of 2,000 to 2,500°F, cooling the feed bed, and recovering calcined agglomerates.

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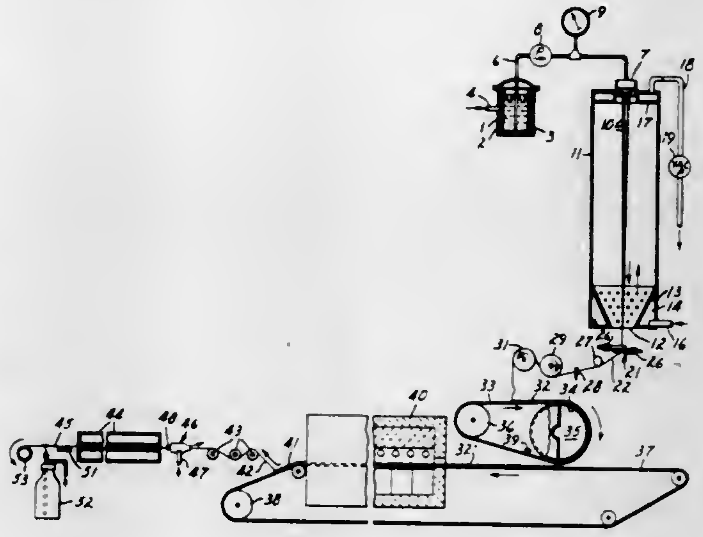
### 3,760,049
### METHOD OF FIRING DRY SPUN REFRACTORY OXIDE FIBERS

**Albert Borer, St. Paul, and Gerald P. Krogseng, Village of Bayport, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Mar. 1, 1971, Ser. No. 119,748**

**Int. Cl. C04b** *35/64*

**U.S. Cl. 264—57** **6 Claims**



A viscous solution or dispersion of soluble or dispersed metal compounds is extruded from a spinnerette, the resulting continuous green fibers are drawn in air (preferably as a strand) and allowed to continuously accumulate or collect in a free-form, relaxed manner in the configuration of offset or superimposed loops on a moving belt which is continuously passed through a furnace to remove volatiles and burn off organic material, and the resulting continuous refractory fibers are continuously pulled in a straight or linear form through a furnace at higher temperature to densify, strengthen, straighten and/or modify the microstructure of the fibers or develop desired crystalline species therein.

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### 3,760,050
### PROCESS FOR THE PREPARATION OF SUBSTANTIALLY ANHYDROUS MAGNESIUM CHLORIDE FROM MAGNESIUM CHLORIDE HYDRATES

**Ivar Blaker, Nystrand; Oystein Boyum, Skien; Knut Anton Andreassen; Reidar Skipperud Lunde, both of Porsgrunn, and Kjell Wallin Tveten, Bole, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway**

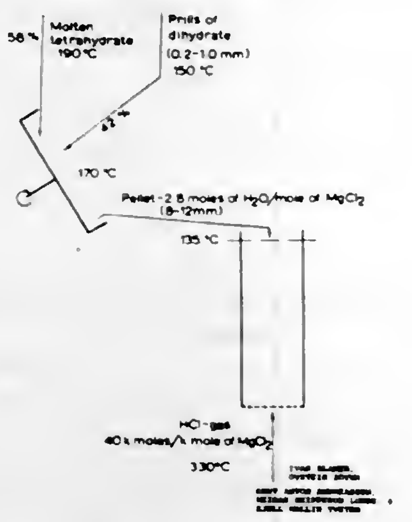
**Filed Oct. 28, 1970, Ser. No. 84,652**

**Claims priority, application Norway, Oct. 29, 1969, 4294/69**

**Int. Cl. B01j** *2/14*

**U.S. Cl. 264—82** **9 Claims**

This invention relates to a process for preparing magnesium chloride pellets suitable for fusion electrolysis to produce magnesium metal. Solid particles of magnesium chloride hydrate, such as the dihydrate, are agglomerated with molten magnesium chloride hydrate, such as the tetrahydrate, to form a raw pellet product having a moderate moisture content, such as about 2.8 moles of $H_2O$ per mole of $MgCl_2$. The raw pellets are further dehydrated in a shaft kiln to the extent desired. It is possible to prepare a raw-pellet product that can be dehydrated to substantially anhydrous magnesium chloride in a one-stage dehydration operation. The solid particles of magnesium chloride hydrate advantageously are prills, suitably of a size between 0.2 and 1.0 mm.


58%
Molten tetrahydrate 190°C
Prills of dihydrate (0.2-1.0 mm) 150°C
170°C
Pellet - 2.8 moles of H2O/mole of MgCl2 (8-12mm)
135°C
HCl-gas
40 k moles/h mole of MgCl2
330°C

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### 3,760,051
### METHOD OF FORMING GRANULES

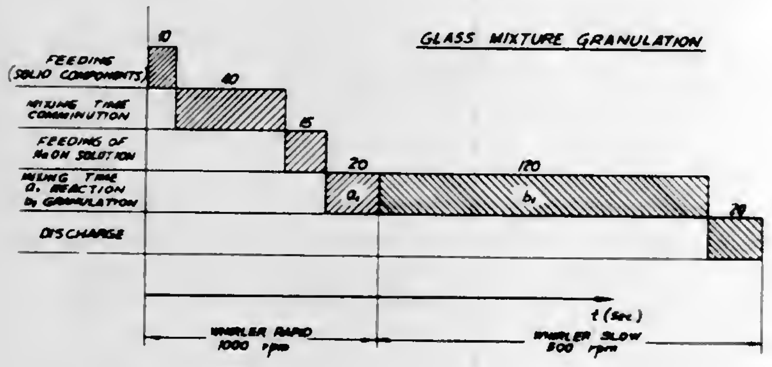
**Wilhelm Adolf Eirich, Bahnhofstr. 19, and Gustav Josef Eirich, Walldurner Str. 41, both of Hardheim, Germany**

**Filed Mar. 22, 1971, Ser. No. 126,699**

**Claims priority, application Switzerland, Apr. 1, 1970, 4871/70**

**Int. Cl. B01j** *2/12*

**U.S. Cl. 264—117** **6 Claims**



Method of forming granules from meltable mixtures containing sand, aqueous sodium hydroxide and quicklime. The components are fed to a granulating mixer and are mixed in the presence of heat until compact granules have been obtained. The mixture to be fed to the granulating mixer may also contain soda ash and limestone.

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### 3,760,052
### MANUFACTURE OF CONJUGATED SHEATH-CORE TYPE COMPOSITE FIBERS

**Norboru Fukuma; Hiroshi Chayamichi; Toshio Okamoto, and Hiroshi Henmi, all of Nobeoka, Japan, assignors to Asahi Chemical Industry Company Limited, Osaka, Japan**

**Continuation of Ser. No. 822,333, Jan. 16, 1969, abandoned, Division of Ser. No. 641,617, May 26, 1967. This application May 24, 1971, Ser. No. 146,475**

**Claims priority, application Japan, May 28, 1966, 41/33875; Aug. 10, 1966, 41/52111**

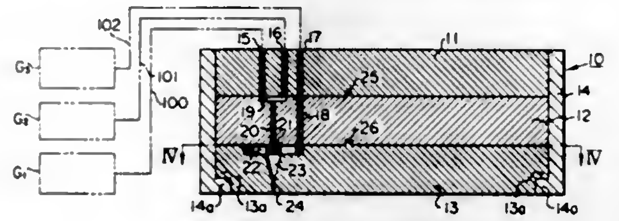
**Int. Cl. B29f** *3/10*

**U.S. Cl. 264—171** **8 Claims**

1. A conjugated sheath-core type composite fiber, wherein the core is arranged concentrically with the sheath and composed of two different spinning materials conjugated to each other.

2. A process for the manufacture of conjugated sheath-core type of composite fibers, comprising for each fiber the following steps of : conjoining two different spinning materials so as to form a conjugated core; supplying a different spinning material around the thus conjoined core mass in a concentric manner so as to form a sheath; and extruding the thus conjugated core-and-sheath mass through a discharge opening.

3. A spinneret assembly for the manufacture of conjugated sheath-core type composite filaments, having a number of spinneret elements, wherein each of the latter contains a conjugating zone for two different spinning materials destined for the core; a sheath-forming and conjugating zone to form a concentric sheath around the thus conjugated core mass and an extruding zone for extruding the thus conjugated core-and-sheath through a discharge opening.



List of References:

(1) Great Britain, Patent Specification No. 760,179 of Oct. 31, 1956, granted to Paul Halbig.

(2) Great Britain, Patent Specification No. 805,033 of Nov. 26, 1958, granted to E.I. Du Pont Nemours and Company, corresponding to U.S. Pat. No. 2,931,091.

(3) Great Britain, Patent Specification No. 896,955 of May 23, 1962, granted to E.I. Du Pont Nemours and Company.

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### 3,760,053
### WET-SPINNING PROCESS FOR "DOG-BONE" SHAPED ACRYLONITRILE POLYMER FIBERS

**Arutun Maranci, Stratford, Conn., assignor to American Cyanamid Company, Stamford, Conn.**

**Filed Dec. 6, 1971, Ser. No. 205,366**

**Int. Cl. B28b** *21/54*

**U.S. Cl. 264—177 F** **2 Claims**

In a wet-spinning process for spinning acrylonitrile polymer fibers from a spinning solution of said polymer in a concentrated aqueous sodium thiocyanate solvent, said process comprising extruding said spinning solution through orifices directly into a cold aqueous coagulating bath to form filaments, pulling the freshly-coagulated filaments away from the orifices, followed by washing, stretching, drying, and relaxing said filaments; the improvement comprising forming such fibers having dog-bone or dumbbell cross-sectional configuration by use of the following conditions; said spinning solution contains 9 percent to 13 percent by weight of acrylonitrile polymer dissolved therein; said aqueous coagulating bath contains 22 percent to 28 percent by weight of sodium thiocyanate dissolved therein; said rectangular orifices each have a long dimension between about 450 and about 700 microns and a short dimension such that the resulting filament spun therefrom has an aspect ratio between 3.0 and 4.0; and said pulling, washing, and stretching steps are operated at a denier-speed product per filament of between 75 and 850 denier-meters per minute.

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### 3,760,054
### PROCESS FOR PREPARING POROUS AROMATIC POLYAMIDE FIBERS

**Gordon M. Moulds, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 71,286, Aug. 26, 1970, Pat. No. 3,695,992, which is a continuation-in-part of Ser. No. 856,183, Sept. 8, 1969, abandoned. This application July 28, 1972, Ser. No. 276,235**

**Int. Cl. D01d** *5/12*

**U.S. Cl. 264—210 F** **4 Claims**

Porous fibers of an aromatic polyamide in which the void volume for pores having pore diameters of 0.12 micron or less

is greater than 0.03 cc./gm., and the void volume for pores having pore diameters of more than 0.12 micron is less than 0.02 cc./gm. Such fibers are prepared by a process wherein freshly spun fibers are drawn and extracted in one or more solvent-containing aqueous baths of specified composition and temperature, subjected to steam when the drawing step is carried out at certain conditions, and are then dried. Such fibers are dyeable without the use of superatmospheric pressures or dyeing assistants.

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### 3,760,055
### PROCESS FOR REUSING THERMOPLASTIC MATRICES

**John B. Wheelen, III, Somerville; John Sonia, Califon; Thomas E. Hayes, Highland Park, and Robert P. Petrochko, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed Aug. 19, 1969, Ser. No. 851,490**

**Int. Cl. B29d** *7/22*

**U.S. Cl. 264—220** **14 Claims**

The process for forming at least two matrices from a thermoplastic matrix and a thermoplastic overlay sheet by contacting a thermoplastic matrix blank with a first pattern and applying heat and pressure to make a first matrix; placing the overlay sheet in contact with the first matrix and a second pattern; applying heat and pressure to the overlay sheet and first matrix in contact with the second pattern to form a second matrix.

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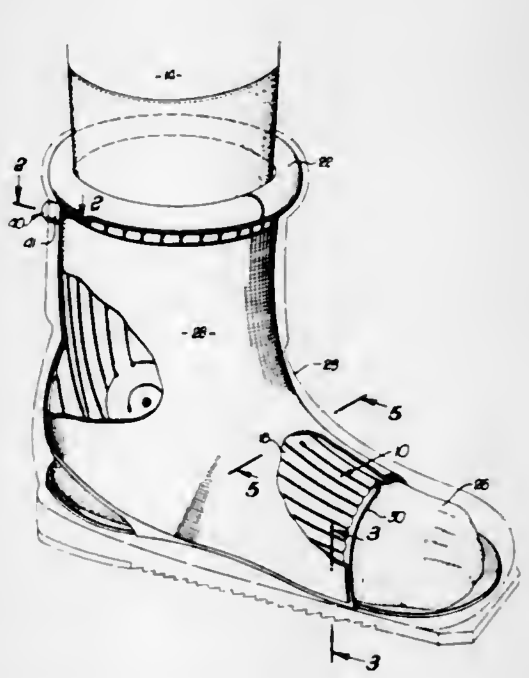
### 3,760,056
### METHOD FOR CUSTOM FITTING AN INFLATABLE BLADDER TO A WEARER'S FOOT

**Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif.**

**Filed Sept. 23, 1970, Ser. No. 74,791**

**Int. Cl. B29c** *27/20, 17/00;* **A43b** *7/20*

**U.S. Cl. 264—299** **7 Claims**



An improved method for custom fitting an inflatable bladder (e.g., for ski boots or the like) to a portion of a person's anatomy (e.g., a wearer's foot). The inflatable bladder is made of a suitable elastomer (e.g., ether base polyurethane) which may be heated, distended and then cooled to room temperature to set the bladder in the distended shape. A preferred embodiment of the improved method comprises placing the inflatable bladder on a wearer's foot, placing the boot to be worn on the wearer's foot over the bladder, heating the bladder, inflating the bladder to a desired pressure to force the bladder into intimate contact with the wearer's foot and cooling the bladder to room temperature to set it in its distended shape. The bladder, which now conforms to the contour of the wearer's foot, is deflated and the boot and bladder are removed. When the bladder is later re-inflated, it will custom fit the wearer's foot.

Preferably, the elastomer from which the bladder is made will return to its original shape when reheated. Thus, the bladder may be reheated to restore it to its original shape, and the process of the present invention may be re-employed to custom fit the bladder to a different foot.

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### 3,760,057
### SEPARATION OF MERCURY FROM AQUEOUS SOLUTION

**Ivan K. Kressin, Los Almos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Aug. 2, 1971, Ser. No. 168,339**

**Int. Cl. C01g** *13/04, 13/00;* **C01d** *3/12*

**U.S. Cl. 423—463** **4 Claims**

A solvent extraction process in which mercury, converted to the triiodide, is rapidly extracted from sulfuric acid solution into octyl alcohol. The extraction is quantitative from 2M or higher acid concentrations and about 98 percent from 1M acid concentrations. The n-octanol is readily made available for reuse by back extracting the mercury from the alcohol as the tetraiodide.

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### 3,760,058
### PROCESS LEADING TO THE PRODUCTION OF TITANIUM DIOXIDE PIGMENTS WITH A HIGH DEGREE OF WHITENESS

**Paul Werner Langmesser, deceased, late of Krefeld, Germany; by Martha Adele Hildegard Langmesser, heir, Muenster/W.-Gremmendorf, Germany; Hans G. Volz, Krefeldbockum, and Gerhard Kienast, Krefeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany**

**Continuation of Ser. No. 763,488, Sept. 18, 1968, abandoned. This application Feb. 19, 1971, Ser. No. 117,144**

**Claims priority, application Germany, Sept. 25, 1967, F 53576**

**Int. Cl. C01g** *23/00, 23/06, 23/08*

**U.S. Cl. 423—85** **8 Claims**

Production of a hydrolysis solution used to form titanium oxyhydrate and in turn titanium dioxide pigments having a high degree of whiteness, by digesting titanium dioxide-containing raw material with sulfuric acid at a weight ratio of $TiO_2$ to $H_2SO_4$ of about 1:1-20, crystallizing the digested titanium in the form of titanyl sulfate dihydrate by adjusting the acid concentration, separating and redissolving the crystals to form an aqueous hydrolysis solution, and separating the hydrolysis solution from any undissolved constitutents present, to permit subsequent hydrolysis of the titanium content in the hydrolysis solution to form titanium oxyhydrate, and recovery of the oxyhydrate thereby formed for producing in turn $TiO_2$ pigment.

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### 3,760,059
### PROCESS FOR THE RECOVERY OF ANTIMONY PENTACHLORIDE FROM CATALYST SOLUTIONS

**Hartmut Ertel, Hofheim/Taunus, and Peter Frisch, Schwalheim, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany**

**Filed Nov. 16, 1971, Ser. No. 199,308**

**Claims priority, application Germany, Nov. 18, 1970, P 20 56 648.7**

**Int. Cl. C01b** *29/00*

**U.S. Cl. 423—87** **1 Claim**

The invention relates to the recovery of antimony pentachloride from catalyst solutions, which are used for the fluorination of chlorosubstituted methanes or ethanes. The process is based on the reduction of antimony pentachloride, which is dissolved in a used catalyst solution by means of trichloroethylene, at a temperature of from 100° C to 170° C.

The crystalline antimony trichloride obtained precipitates from the solution and is separated from all the impurities. The antimony trichloride obtained can be re-oxidized to form antimony pentachloride by any known process.

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### 3,760,060

### SOLVENT EXTRACTION OF GERMANIUM FROM ALUM SOLUTION

**Kenneth A. Morgan, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Feb. 25, 1972, Ser. No. 229,566**

**Int. Cl. C01g** *17/00, 17/04*

**U.S. Cl. 423—89** **5 Claims**

Germanium is extracted from an alum solution utilizing a hydrocarbon solution of a monosubstituted phosphoric acid as the extractant. The hydrocarbon solution is then back extracted with an aqueous oxalic acid solution to recover the germanium component.

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### 3,760,061

### HIGH-STRENGTH ACID CONTAINING H2O2 TO SCRUB SO2

**Myers G. Hammond, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Mar. 2, 1971, Ser. No. 120,337**

**Int. Cl. C01b** *17/00*

**U.S. Cl. 423—242** **5 Claims**

Sulfur dioxide can be oxidized to sulfuric acid by a process that involves contacting the $SO_2$ with an aqueous scrubbing solution of sulfuric acid containing hydrogen peroxide and/or the peroxy acids of sulfur in a gas-liquid contacting device in which the liquid scrubbing phase is made the continuous phase during the actual contacting. In this process the acid concentration of the scrubbing solution can be as high as 99 percent + by weight $H_2SO_4$.

The process is useful in the abatement of sulfur dioxide from waste gases created during the manufacture of sulfuric acid and also for abating $SO_2$ from other stack gases, thus alleviating pollution problems. Further, since the hydrogen peroxide or peroxy acids oxidize the sulfur dioxide to $H_2SO_4$, the process results in a useful product.

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### 3,760,062

### SYNTHETIC ZEOLITE

**Leonard B. Sand, and Michael L. Sand, both of Holden, Mass., assignors to Zeochem Corporation, Worcester, Mass.**

**Filed Oct. 26, 1971, Ser. No. 192,488**

**Int. Cl. C01b** *33/28*

**U.S. Cl. 423—329** **2 Claims**

Crystalline zeolites are prepared from lithia and lithia-soda systems. A lithium crystalline zeolite having the mordenite crystal structure is prepared from a lithia system having the oxide mole ratios $Li_2O/Al_2O_3/SiO_2/H_2O$ of 3/1/40/314. A lithium-sodium crystalline zeolite having the mordenite crystal structure and the formula $0.34Li_2O \cdot 0.36Na_2O \cdot Al_2O_3 \cdot 10.2SiO_2 \cdot 6.6H_2O$ is prepared from a lithia-soda system.

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### 3,760,063

### SYNTHESIS OF PHOTOCHROMIC SODALITE BY A DIFFUSION PROCESS

**Russell W. Dreyfus, Cross River, and William P. Hornberger, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 18, 1971, Ser. No. 154,651**

**Int. Cl. C01b** *33/26;* **C09k** *1/54, 1/68*

**U.S. Cl. 423—328** **4 Claims**

A novel, simple and inexpensive method of synthesizing photochromic sodalite is provided. The method is particularized by the diffusion of NaCl and sulfur into the zeolite $(Na_2O \cdot Alb[2O_82SiO_2)$ x $H_2O$, known commercially as Molecular Sieve No. 4A. A mixture of this zeolite, NaCl and a sulfur compound is heated in the presence of forming gas and for a time sufficient to cause diffusion of NaCl and sulfur into the lattice structure of the zeolite. The photochromic sodalite produced can be used in display units and in computer memories.

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### 3,760,064

### PROCESS FOR THE PRODUCTION OF NEUTRAL CALCIUM HYPOCHLORITE CRYSTALS

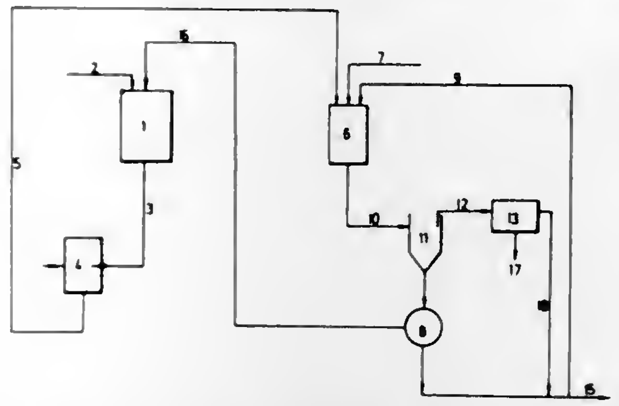
**Theodore Carl Droste, Johannesburg, South Africa, assignor to Klipfontein Organic Products Corporation Limited, Transvaal, South Africa**

**Filed Oct. 21, 1971, Ser. No. 191,251**

**Claims priority, application South Africa, Oct. 27, 1970, 7296**

**Int. Cl. C01b** *11/00;* **C01f** *11/00*

**U.S. Cl. 423—474** **13 Claims**



A process for producing crystals of neutral calcium hypochlorite of good filterability from a lime containing about 600 or more parts per million by weight of iron as Fe comprising reacting a slurry of lime with a chlorinating agent to form crystals of a basic calcium hypochlorite, preferably dibasic, adding a barium, zinc, strontium, cadmium, silver or mercury salt to the slurry to precipitate the ferrate and/or ferrite ions as an insoluble or substantially insoluble salt, allowing the basic crystals to settle out of the slurry, removing the supernatant suspension containing the salt from the crystals, and converting the basic crystals into crystals of neutral calcium hypochlorite.

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### 3,760,065

### PRODUCTION OF CHLORINE DIOXIDE

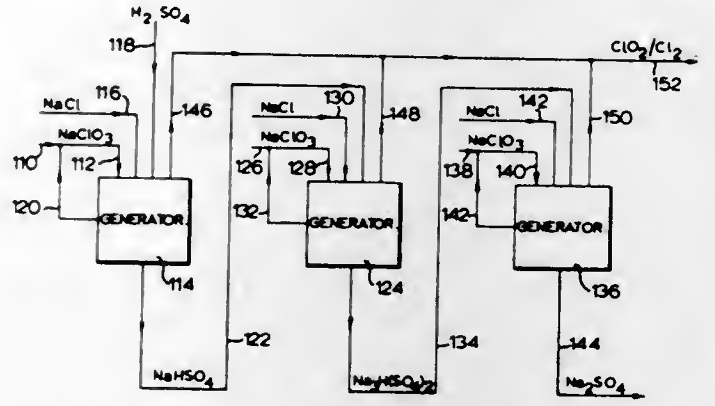
**William Howard Rapson, Scarborough, Ontario, Canada, assignor to ERCO Industries Limited, Ontario, Canada**

**Filed May 28, 1971, Ser. No. 147,821**

**Claims priority, application Canada, May 29, 1970, 084077**

**Int. Cl. C01b** *11/02;* **C01d** *5/02;* **C01b** *7/02*

**U.S. Cl. 423—478** **10 Claims**



Chlorine dioxide is produced from two reactors, the first reacting sodium chlorate, sodium chloride and/or hydrogen chloride, and sulphuric acid at an acidity in excess of 4.8N to deposit sodium acid sulphate, and the second reacting sodium chlorate, sodium chloride and/or hydrogen chloride, and a sulphate-ion material which is constituted at least in part by the sodium acid sulphate deposited in the first reaction, at an

acidity less than 4.8N to deposit sodium sulphate. In an alternative embodiment, the reaction is carried out in three vessels, the first producing sodium acid sulphate which is used as at least part of the source of acid for a second reactor producing sodium sesquisulfate which in turn is used as at least part of the acid source of the third reactor.

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### 3,760,066

### PROCESS FOR PREPARING ALUMINUM TRICHLORIDE

**Benedetto Calcagno; Luigi Piccolo, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy**

**Continuation of Ser. No. 43,175, June 3, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 240,269**

**Claims priority, application Italy, June 13, 1969, 18123 A/69**

**Int. Cl. C01f** *7/60, 7/44*

**U.S. Cl. 423—496** **6 Claims**

Aluminium chloride is prepared by the action of chlorine and carbon on alumina previously heated for 1 to 2 hours at 700° to 1,000° C with improvement in chlorine yield and the maintenance of an exothermic reaction.

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### 3,760,067

### PROCESS FOR THE PRODUCTION OF ELEMENTAL HALOGEN

**Raymond W. Ingwalson, Chattanooga, Tenn., assignor to Velsicol Chemical Company, Chattanooga, Tenn.**

**Division of Ser. No. 737,810, June 18, 1968, Pat. No. 3,600,331. This application Aug. 24, 1970, Ser. No. 66,637**

**Int. Cl. C01b** *7/00*

**U.S. Cl. 423—502** **5 Claims**

A process for the production of elemental halogen which comprises contacting a corresponding hydrogen halide with an oxygen containing gas at oxidation conditions in the presence of a catalyst composition which comprises a composite of a catalytic component of a copper phosphate and a silver phosphate and a non-catalytic refractory support.

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### 3,760,068

### PRODUCTION OF FIBROUS ALKALI METAL HEXATITANATES

**Gerhard Winter, Krefeld; Hans Zirngibl, Duisburg, and Manfred Mansmann, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Mar. 23, 1971, Ser. No. 127,414**

**Claims priority, application Germany, Apr. 1, 1970, P 20 15 401.2**

**Int. Cl. C01g** *23/00*

**U.S. Cl. 423—598** **10 Claims**

In the manufacture of fibrous, water-insoluble alkali metal hexatitanates of the composition $Me_2Ti_6O_{13}$, wherein Me is an alkali metal except lithium by reaction of $TiO_2$ with an alkali metal compound which gives a basic reaction under the reaction conditions, the improvement which comprises effecting the reaction in a sulfate melt at a temperature up to about 1,300°C. The sulfate melt is preferably an alkali metal sulfate. The $TiO_2$ may be formed in situ by addition of some other titanium compound. The alkali metal compound preferably comprises sodium, potassium, rubidium or caesium and, expressed as the oxide, is present in about one-half to one-sixth the molar amount of the $TiO_2$.

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### 3,760,069

### PROCESS FOR PRODUCING FERROUS SULFATE

**Francis Joseph Mattia, Brooklyn, and Stephen Allen Sakler, Bronx, both of N.Y., assignors to M & T Chemicals Inc., New York, N.Y.**

**Continuation of Ser. No. 815,189, April 10, 1969, abandoned. This application May 7, 1971, Ser. No. 141,350**

**Int. Cl. C01g** *49/14*

**U.S. Cl. 423—558** **1 Claim**

A process is provided for converting iron, such as scrap iron, directly to ferrous sulfate monohydrate in the absence of intermediate formation of ferrous sulfate heptahydrate, the use of pressure, vacuum and/or excessively high operating temperatures. The above is achieved by reacting iron and a sulfuric acid solution having a concentration within the range of between about 10–90 percent for a period of time sufficient to reduce the free acid concentration to between about 2–35 percent, separating the resulting solution from the unreacted iron, filtering the solution to remove any precipitation and impurities contained therein, adding concentrated sulfuric acid to the solution to bring the free sulfuric acid concentration up to between about 35–45 percent for precipitating pure ferrous sulfate monohydrate and separating the pure ferrous sulfate monohydrate precipitate from the filtrate.

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### 3,760,070

### MANUFACTURE OF COPPER OXIDE

**Brian James Joice, Leeds, and Richard Frederick Niven Mallinson, Oakes, both of England**

**Filed Sept. 23, 1971, Ser. No. 183,274**

**Claims priority, application Great Britain, Sept. 24, 1970, 45,497/70**

**Int. Cl. C01g** *3/02, 9/02*

**U.S. Cl. 423—604** **9 Claims**

A method for the production of copper oxide or zinc hydroxide which comprises contacting metallic copper or zinc is contacted with an aqueous solution containing oxygen or an oxygen-containing gas, ammonia and an ammonium salt which is preferably ammonium nitrate. The concentration of ammonia is maintained above 4 moles per mole of dissolved copper and the aqueous solution of copper ammine or zinc ammine is separated from any undissolved metal before it becomes saturated with the metal and then heated to precipitate copper oxide or zinc hydroxide from the solution. Preferably the heating is carried out in the absence of added alkali and in the presence of a stream of purging gas and the mother liquor and the purging gas are recycled.

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### 3,760,071

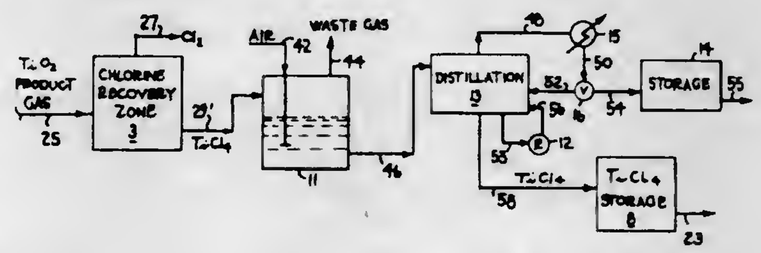
### PROCESS FOR TREATING BY-PRODUCT TITANIUM TETRACHLORIDE FROM PYROGENIC $TiO_2$ PRODUCTION

**Stanley F. Brzozowski; Alonzo Farmer, and William C. Pefferman, all of New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Jan. 8, 1971, Ser. No. 195,033**

**Int. Cl. C01g** *23/04, 23/02*

**U.S. Cl. 423—613** **11 Claims**



By-product titanium tetrachloride recovered from production of pyrogenic titanium dioxide is degassed to remove dissolved free chlorine and subsequently distilled to remove objectionable concentrations of silicon and/or tin present as chlorides therein.

### 3,760,072

## CERTAIN OXIMINOPHOSPHONODITHIOATES AND THEIR USE AS INSECTICIDES AND ACARICIDES

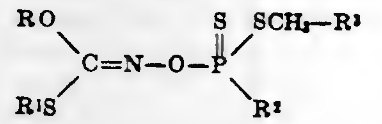
**Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.**

**Division of Ser. No. 26,149, April 6, 1970, Pat. No. 3,652,736. This application Nov. 22, 1971, Ser. No. 201,170**

**Int. Cl. A01n** *9/36*

**U.S. Cl. 424—210** **10 Claims**

Compounds having the formula



CCl

in which R is (1) alkyl or (2) allyl; $R^1$ is alkyl; $R^2$ is alkyl; and $R^3$ is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen, (6) ethynyl, or (7) $CCl_2{=}CH—$, are used as insecticides and acaricides.

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### 3,760,073

## TREATMENT OF WOUNDS

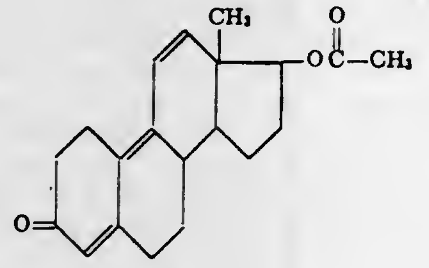
**Bernard Mathieu De Fossey, Paris, France, assignor to Roussel UCLAF, Paris, France**

**Filed June 9, 1971, Ser. No. 151,569**

**Int. Cl. A61k** *17/00*

**U.S. Cl. 424—243** **3 Claims**

A method of healing wounds in the skin of warm-blooded animals which comprises applying to such a wound an effective amount of 17β-acetoxy-$\Delta^{4,9,11}$-estratriene-3-one of the formula



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### 3,760,074

## PHARMACEUTICAL COMPOSITIONS CONTAINING A 5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONE

**Karl Heinz Weber, Gau-Algesheim; Karl Zeile; Peter Dannesberg, both of Ingelheim am Rhine; Rolf Giesemann, Bingen, all of Germany, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhine, Germany (by Maria Hauptmann, heir), assignors to Boehringer Ingelheim GmbH, Rhine, Germany**

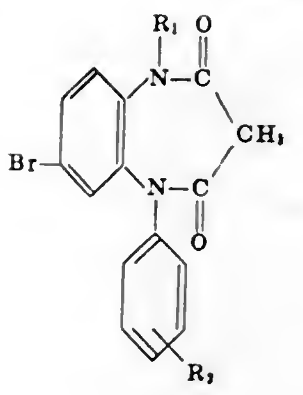
**Division of Ser. No. 111,714, Feb. 1, 1971, Pat. No. 3,711,470, which is a continuation-in-part of Ser. No. 89,482, Nov. 13, 1970, abandoned, which is a continuation of Ser. No. 703,188, Feb. 5, 1968, abandoned. This application Sept. 27, 1972, Ser. No. 292,748**

**Claims priority, application Germany, Feb. 7, 1967, B 91,071; Jan. 18, 1968, B 96,281; Jan. 18, 1968, B 96,282**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—244** **3 Claims**

Psychosedative and anticonvulsive pharmaceutical compositions containing as an active ingredient a compound of the formula



wherein

$R_1$ is hydrogen, methyl, ethyl, hydroxy-ethyl or (cycloalkyl of 3 to 6 carbon atoms)-methyl, and

$R_2$ is hydrogen or halogen;

and a method of tranquilizing and suppressing convulsions in warm-blooded animals therewith.

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### 3,760,075

## ULTRASONIC DEAGGREGATION OF THE COPPER COMPLEX OF -METHOXY-1-PHENAZINOL 5,10-DIOXIDE

**Joseph Anthony Ranucci, Bloomfield, N.J., assignor to Hoffmann-LaRoche, Inc., Nutley, N.J.**

**Filed Apr. 23, 1971, Ser. No. 139,290**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—245** **3 Claims**

Copper complexes of 6-lower alkoxy-1-phenazinol 5,10-dioxides and, in particular, the copper complex of myxin, 6-methoxy-1-phenazinol 5,10-dioxide, are prepared in micronized form, i.e., having discrete particles of less than 20 microns in size, by ultrasonic deaggregation of the copper complex aggregates.

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### 3,760,076

## COMBATING PESTS WITH BENZOTHIADIOZINES

**Francis Leslie Charles Baranyovits, Wokingham, and Joan Irene Masters, Crowthorne, both of England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Oct. 8, 1970, Ser. No. 79,322**

**Claims priority, application Great Britain, Mar. 12, 1970, 11,935/70**

**Int. Cl. A01n** *9/12*

**U.S. Cl. 424—246** **5 Claims**

Methods and compositions for combating pests wherein the active component is a 3-amino-1H-2,1,4-benzothiadiazine and the corresponding sulphoxide; and acid addition salts and metal derivatives thereof.

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## ERRATUM

For Class 424—251 see:
Patent No. 3,759,921

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### 3,760,077

## INJECTABLE COMPOSITIONS OF THE (PLUS)-OPTICAL ISOMER OF THE ALPHA RACEMATE OF 2-(2-ETHYL-2-PHENYL-1, -DIOXOLAN-4-YL)PIPERIDINE AND THEIR USE

**Charles R. Thompson, Walnut Creek, and John Hidalgo, Oakland, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.**

**Continuation-in-part of Ser. No. 800,282, Feb. 18, 1969, Pat. No. 3,655,680. This application Oct. 15, 1971, Ser. No. 189,760**

**Int. Cl. A01k** *27/00*

**U.S. Cl. 424—267** **21 Claims**

Injectable compositions of the (+) optical isomer of the alpha racemate of 2-(2-ethyl-2-phenyl-1,3-dioxolan-4-yl)piperidine, in free base or acid addition salt form, and their

use as a general anesthetic, immobilizing or calming agent or depressant.

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### 3,760,078

## FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING N-ACYL-PARA-DIALKYLAMINOPHENYL-HYDRAZONES

**Karl Heinz Buchel, Wuppertal; Elberfeld Ferdinand Grewe, Burscheid; Paul Ernst Frohberger, Leverkusen, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 876,589, Nov. 13, 1969, Pat. No. 3,660,410. This application Feb. 8, 1972, Ser. No. 224,623**

**Claims priority, application Germany, Nov. 23, 1968, P 18 10 581.2**

**Int. Cl. A01n** *9/00, 9/20, 9/24*

**U.S. Cl. 424—267** **9 Claims**

N-acyl-para-dialkylaminophenyl-hydrazones, i.e., N-(4-dialkylamino- and 4- tetra to penta methylene-imino-substituted phenyl)-N-(alkanoyl, chloroalkanoyl, alkenoyl, carboalkoxy, benzoyl and carbophenoxy)-N′-[(acetyl and cyano)- (alkanoyl and carboalkoxy)-carbonyl]-hydrazones, or N-(4- dialkylamino-, 4-pyrrolidino- and 4-piperidino- substituted phenyl)-N-(alkylcarbonyl, chloroalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, phenylcarbonyl and phenoxycarbonyl)-N′-[(methylcarbonyl and cyano)-(alkylcarbonyl and alkoxycarbonyl)- carbonyl]-hydrazones, which possess fungicidal properties.

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### 3,760,079

## METHOD FOR PROTECTING CHICKENS AND HOGS FROM PASTEURELLA

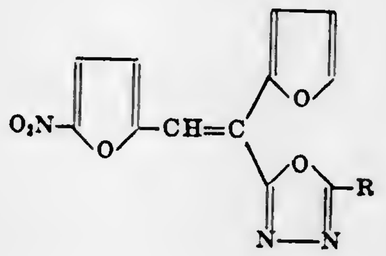
**Ryuzo Ueno, Nishinomiya; Shota Watanabe, Takarazuka, and Sotoyuki Ota, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan**

**Filed Jan. 5, 1971, Ser. No. 104,156**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—272** **4 Claims**

A method of protecting fowl and hogs from *Pasteurella* which comprises administering an effective dose of a compound of the formula



in which R is a member of the group consisting of hydrogen and a tetrahydrofurylacetylamino radical,
to the fowl or hogs to be protected.

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### 3,760,080

## PHENYLBUTAZONE-SODIUM-MONOGLYCERATE IN THE TREATMENT OF INFLAMMATION

**Heinrich Urwyler, Reinach/Basel-Lands, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 882,693, Dec. 5, 1969, Pat. No. 3,644,395. This application Sept. 17, 1971, Ser. No. 181,629**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—273** **2 Claims**

Phenylbutazone-sodium-monoglycerate is prepared in crystalline form; the compound is comprised in pharmaceutical compositions and has advantageous properties in the treatment of inflammatory diseases.

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### 3,760,081

## METHOD OF TREATMENT

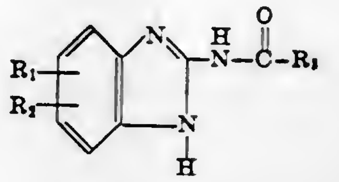
**Louis L. Skaletzky, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 44,903, June 9, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,406**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—273** **4 Claims**

Compounds of the formula I



and the pharmacologically acceptable acid addition salts thereof, wherein $R_1$ is hydrogen, lower-alkyl, lower alkoxy, halogen or $—CF_3$; $R_2$ is hydrogen, lower-alkyl, lower-alkoxy, halogen or $—CF_3$ and $R_3$ is lower alkyl are prepared in pharmacologically acceptable formulations are used treating hypertension in warm-blooded, hypertensive animals free of helminthic infestations by administration of such compounds and compositions thereof at a dosage of from 5–50 mg./kg. per day.

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### 3,760,082

## COMPOSITIONS CONTAINING 5-AMINO-3-ETHYL-1-PHENYL-4-PYRAZOLECARBOXAMIDES AND METHODS OF USING THE SAME

**Joseph William Marsico, Jr., Pearl River; Joseph Peter Joseph, Cliffside Park, and Leon Goldman, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed May 1, 1972, Ser. No. 248,990**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—273** **5 Claims**

The methods of using compounds 5-amino-3-ethyl-1-phenyl-4-pyrazolecarboxamide and 5-amino-3-ethyl-1-(m-fluorophenyl)-4-pyrazolecarboxamide in compositions containing these compounds and a pharmaceutically acceptable carrier, are described. They are useful as analgetic agents in warm-blooded animals.

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### 3,760,083

## A METHOD FOR THE USE OF 5-AMINO-3-ETHYL-1-(M-FLUOROPHENYL)-4-PYRAZOLECARBOXAMIDE

**Joseph William Marsico, Jr., Pearl River, and Leon Goldman, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed May 1, 1972, Ser. No. 248,991**

**Int. Cl. A01k** *27/00*

**U.S. Cl. 424—273** **3 Claims**

The compound 5-amino-3-ethyl-1-(m-fluorophenyl)-4-pyrazolecarboxamide and compositions with a pharmaceutically acceptable carrier are described. The compositions are useful as anti-psychoneurotic agents in warm-blooded animals.

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### 3,760,084

## METHOD OF USING 5-AMINO-1-PHENYL OR SUBSTITUTED PHENYL-4-PYRAZOLECARBONITRILES OR CARBOX-AMIDES

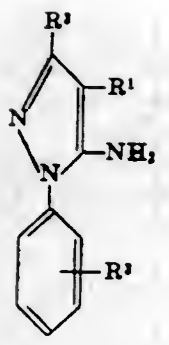
**Joseph William Marsico, Jr., Pearl River, N.Y.; Joseph Peter Joseph, Cliffside Park, N.J., and Leon Goldman, Nauet, N.Y., assignors to American Cynamid Company, Stamford, Conn.**

**Filed May 1, 1972, Ser. No. 249,286**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—273** **8 Claims**

Compositions of matter and method of use of compounds of the formula:



wherein $R^1$ is carbamoyl or cyano, $R^2$ is hydrogen or lower alkyl having one to three carbon atoms and $R^3$ is hydrogen, fluoro, m- and p- chloro, m-bromo, o- and p-methyl and m-nitro. The compounds are useful for meliorating inflammation in warm-blooded animals.

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### 3,760,085
### METHOD OF COMBATING FUNGI USING N-SUBSTITUTED PHTHALIMIDES

**Ferdinand Grewe, Burscheid; Gerhard Schrader, Wuppertal-Cronenberg; Helmut Kaspers, Leverkusen, and Werner Meiser, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 641,125, May 25, 1967, Pat. No. 3,562,292. This application Jan. 2, 1970, Ser. No. 5,395**
**Int. Cl. A01n** *9/22*
**U.S. Cl. 424—274** **3 Claims**

Method of combating fungi, especially powdery mildew fungi, using N-[(p-chloro-phenyl, p-methyl-phenyl and ethyl)-mercapto methyl]-phthalimides, alone or in admixture with a carrier vehicle.

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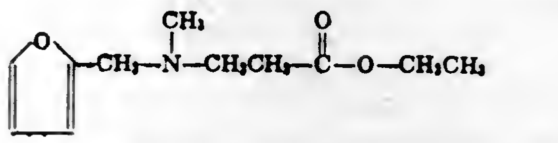
### 3,760,086
### TRANQUILIZER

**Morton W. Leeds, Murray Hill, and Elex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.**

**Filed Mar. 29, 1971, Ser. No. 129,129**
**Int. Cl. A61k** *27/00*
**U.S. Cl. 424—285** **6 Claims**

This invention relates to the compound ethyl($\beta$-N-methylfurfurylamino) propionate having the formula:



its water soluble salts and a method of preparing the compound by reacting ethyl acrylate with N-methylfurfurylamine. Compositions containing an effective amount of the compounds of the present invention are useful for tranquilizing and producing analgesia in mammals.

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### 3,760,087
### PERFUME COMPOSITIONS CONTAINING ETHYL 2,4-DIOXOHEXANOATE

**Zoltan G. Hajos, Upper Montclair, and David R. Parrish, Glen Ridge, both of N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.**

**Filed Jan. 19, 1970, Ser. No. 4,134**
**Int. Cl. A61k** *7/00;* **C11b** *9/00*
**U.S. Cl. 424—365** **3 Claims**

The present invention comprises perfume compositions containing ethyl 2,4-dioxohexanoate.

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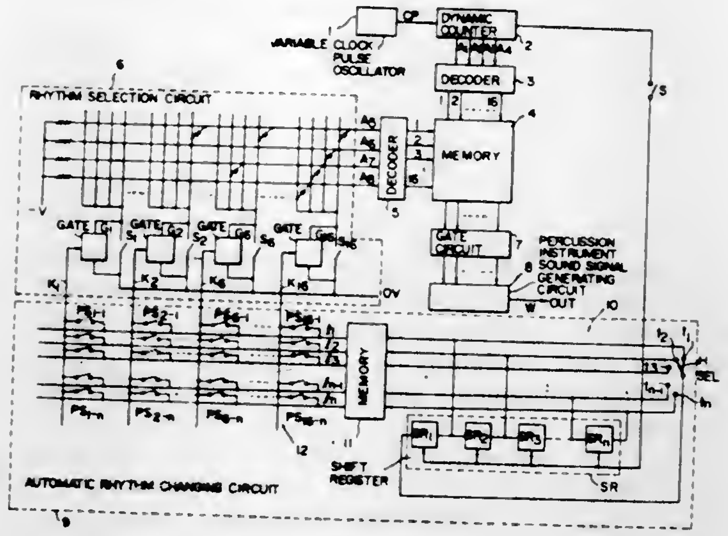
# ELECTRICAL

### 3,760,088
### AUTOMATIC RHYTHM PLAYING APPARATUS

**Akira Nakada, Shizuoka-ken, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushika Kaisha, Hamanatsu-shi, Shizuoka-ken, Japan**

**Filed Apr. 24, 1972, Ser. No. 247,311**
**Claims priority, application Japan, Apr. 27, 1971, 46/27732; Apr. 27, 1971, 46/27733**
**Int. Cl. G10h** *1/00*
**U.S. Cl. 84—1.03** **6 Claims**


VARIABLE CLOCK PULSE OSCILLATOR
CP
DYNAMIC COUNTER
DECODER
RHYTHM SELECTION CIRCUIT
A5
A6
A7
A8
DECODER
MEMORY
GATE
GATE CIRCUIT
PERCUSSION INSTRUMENT SOUND SIGNAL GENERATING CIRCUIT
OUT
OV
MEMORY
SEL
SHIFT REGISTER
SR
AUTOMATIC RHYTHM CHANGING CIRCUIT

An automatic rhythm playing apparatus has a memory which stores note arrangements for a plurality of rhythms. Timing pulse trains representing the rhythm patterns of the note arrangements of specific percussion instrument sounds for a selected rhythm are read out of the memory by circulating address signals and a stationary address signal proper to the selected rhythm. Required percussion instrument sound signals are produced in response to the pulses, and a rhythm sound signal composed of the percussion instrument sound signals is obtained therefrom. The automatic rhythm playing apparatus also has an automatic rhythm changing circuit which is capable of changing the stationary address signal at every one or two measures in accordance with a preset order and thereby automatically changing the rhythm. The apparatus further has a rhythm pattern changing circuit which is capable of generating percussion instrument sound signals having rhythm patterns which are anomalous compared with standard rhythms by gating the outputs of the memory by means of control pulses having a selectively variable period.

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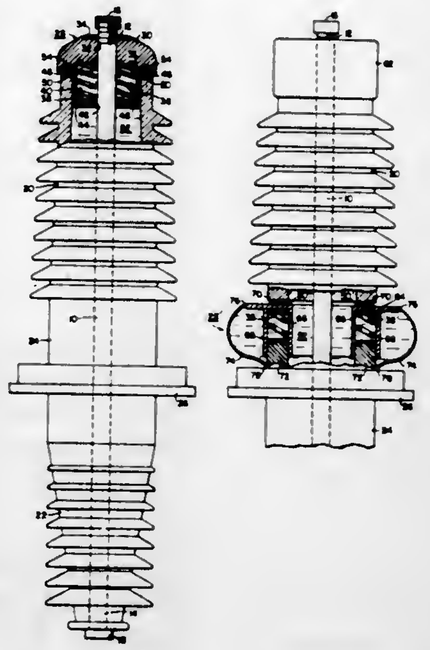
### 3,760,089
### ELECTRICAL BUSHING ASSEMBLY HAVING RESILIENT MEANS ENCLOSED WITHIN SEALING MEANS

**Jerry L. Hildenbrand, and Loren B. Wagenaar, both of Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 27, 1972, Ser. No. 247,951**
**Int. Cl. H01b** *17/26*
**U.S. Cl. 174—12 BH** **4 Claims**

Mechanical stress-relieving means for high-voltage bushings. Resilient means is located between a first member attached to the bushing lead tube and a second member which is adjacent to the upper weather casing of the bushing. Different rates of thermal expansion of the bushing components are compensated for by the resilient means. Bushing dielectric seal between the first and second members is provided by either a gasket member or a semi-flexible band.



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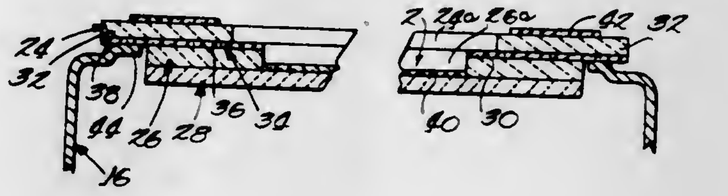
### 3,760,090
### ELECTRONIC CIRCUIT PACKAGE AND METHOD FOR MAKING SAME

**William Lee Fowler, Fox Point, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.**

**Filed Aug. 19, 1971, Ser. No. 173,145**
**Int. Cl. H05k** *5/00*
**U.S. Cl. 174—52 S** **11 Claims**



A multilayered electronic circuit package is disclosed containing a cavity for the mounting of one or more electronic devices such as semiconductor chips. A metallized lead pattern at the interface of two adjacent layers of the body extends from the top surface portion of the underlying layer within the cavity to the overhanging underlying surface portion of the overlying layer of the body. Bonding wires from the electronic device may be attached to the inner ends of these metallized leads, and external leads may be attached to the exterior ends of these metallized leads.

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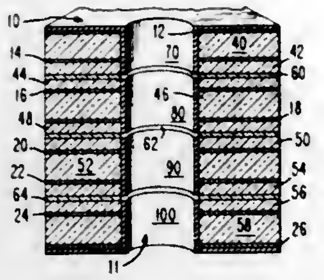
### 3,760,091
### MULTILAYER CIRCUIT BOARD

**Joseph R. Cannizzaro, and Charles F. Emery, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Nov. 16, 1971, Ser. No. 199,206**
**Int. Cl. H05k** *1/04*
**U.S. Cl. 174—68.5** **1 Claim**

An improved multilayer circuit board and a method of manufacture thereof comprising a plurality of layers of conductive material separated by layers of dielectric material. Selected dielectric layers include a readily, electrolessly plateable, hydrophilic material while other dielectric layers are made of a hydrophobic material which is not readily plateable. All layers are laminated, and holes are formed in the board where layers of conductive material are to be interconnected. An electroless plating interconnects only those layers of conductive material separated by hydrophilic dielectric material, leaving other layers separated by hydrophobic dielectric material isolated. Embodiments are also disclosed in which all layers of conductive material are interconnected regardless of the type of dielectric material separating them.



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### 3,760,092
### SUPERCONDUCTING COMPOSITE

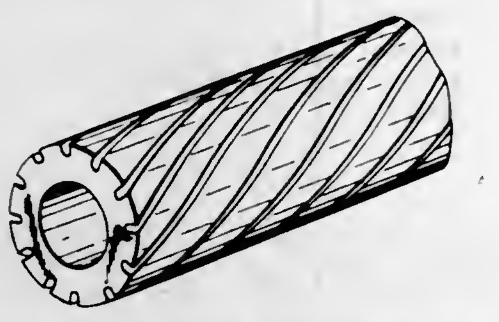
**Alan Woolcock; Ian Leitch McDougall, both of Staffordshire, and Anthony Clifford Barber, Warwickshire, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, witton Birmingham, England**

**Division of Ser. No. 67,740, Aug. 28, 1970, Pat. No. 3,686,750. This application June 20, 1972, Ser. No. 264,453**

**Claims priority, application Great Britain, Sept. 2, 1969, 43,330/69**

**Int. Cl. H01v** *11/08*

**U.S. Cl. 174—126 CS** **7 Claims**



A rod conductor of normal material has superconductive filaments located in grooves extending in a helical path on the periphery of the rod. The mouths of the grooves are closed and the composite is a superconductor.

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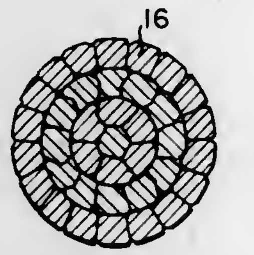
### 3,760,093
### COMPACT CONDUCTOR

**Denver L. Pemberton, Fairmount, Ind., assignor to The Anaconda Company, New York, N.Y.**

**Filed Apr. 14, 1972, Ser. No. 244,083**

**Int. Cl. H01b** *5/08*

**U.S. Cl. 174—128** **5 Claims**



Improved electrical conductor is formed by compacting concentric conductors which have outside wires with gages at least equal to the gages of the inside wires. Such a conductor with 37 or more wires may have the outer layer only, made up of square wires.

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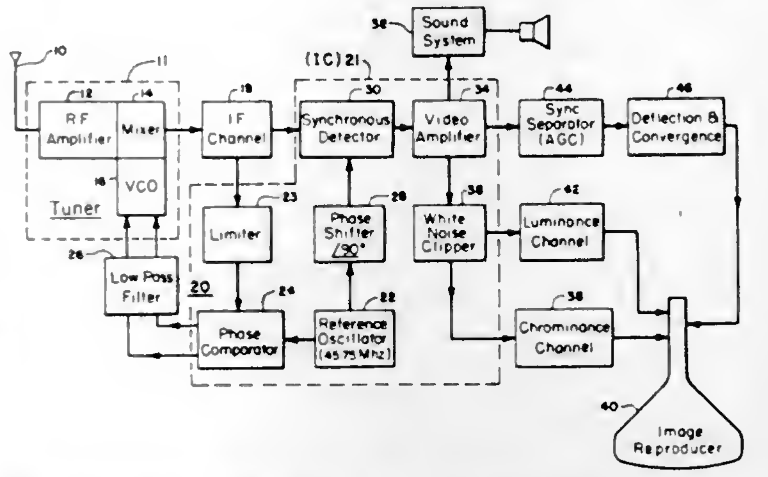
### 3,760,094
### AUTOMATIC FINE TUNING WITH PHASE-LOCKED LOOP AND SYNCHRONOUS DETECTION

**Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Feb. 18, 1971, Ser. No. 116,319**

**Int. Cl. H04n** *9/50, 5/58*

**U.S. Cl. 178—5.4 SD** **13 Claims**



An automatic fine tuning and modulation detection arrangement for a color television receiver for automatically obtaining optimum picture presentation and the elimination of quadrature, intermodulation distortion and other undesirable interference components in the processing of the received signal information. Disclosed is an automatic phase locked or control loop interconnected between a point in the intermediate frequency channel and the local oscillator of the receiver's tuner. Automatic fine tuning is obtained by electronically controlling the frequency of the tuner oscillator in relation to the output of a reference oscillator operating at the desired picture carrier frequency. A single synchronous detector is provided in lieu of the several conventional peak or envelope detectors, which synchronous detector is keyed to the action of the phase-locked or APC loop. The circuitry, with the exception of a low pass filter, is designed in integrated form for inclusion on a single monolithic chip.

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### 3,760,095
### COLOR SUB-CARRIER REFERENCE SYSTEM FOR A COLOR TELEVISION RECEIVER

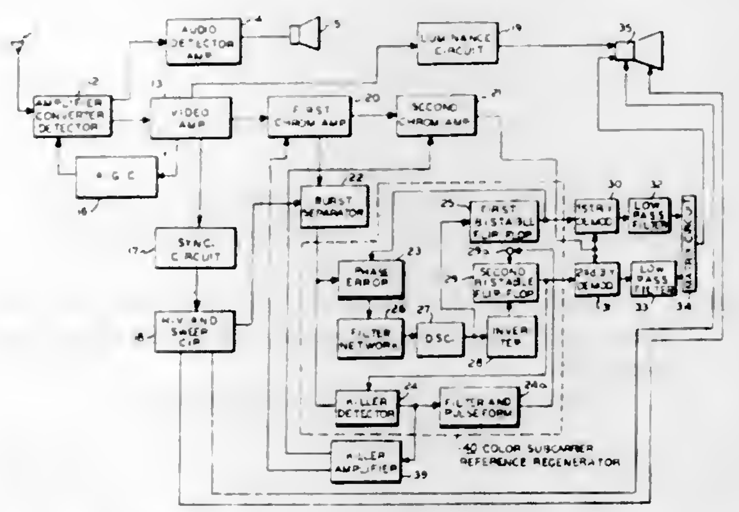
**Michio Furuhashi, Katano-shi, Osaka-fu; Teruo Kitani, Takatsuki-shi, Osaka-fu, and Reiichi Sasaki, Hirakata-shi, Osaka-fu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed May 18, 1972, Ser. No. 254,650**

**Claims priority, application Japan, Aug. 11, 1971, 46/60805; Aug. 11, 1971, 46/60806**

**Int. Cl. H04n** *9/46*

**U.S. Cl. 178—5.4 SY** **8 Claims**



A color sub-carrier reference system for a color television receiver which makes possible the elimination of a conventional phase shift means connected between the subcarrier regenerator and the chroma demodulator. The system comprises a signal generating means which is controlled according to the information on frequency and phase contained in the burst signal. The signal generating means produces signals having an opposite polarity and the second harmonic or double the frequency of the sub-carrier, and feeds these signals to first and second bistable flip-flops which divide the frequency of the input signals by two, respectively. The first flip-flop produces the R-Y reference signal for R-Y chroma demodulation and the second flip-flop produces the B-Y reference signal for B-Y demodulation.

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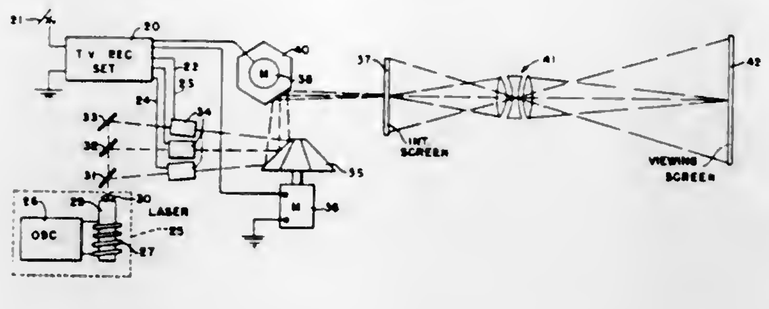
### 3,760,096
### TELEVISION RECEIVER INCLUDING A LARGE SCREEN PROJECTION SYSTEM

**Solo S. Roth, One Sherwood Ter., Yonkers, N.Y.**

**Filed June 26, 1972, Ser. No. 266,260**

**Int. Cl. H04n** *3/08*

**U.S. Cl. 178—5.4 ES** **10 Claims**



A large screen television receiver using a laser beam to excite discrete elements of rare earth oxides to incandescence. The discrete elements are focused onto a viewing screen which may be viewed by a large audience. A laser beam is split into three parts to show a three color image. Laser beam modulators, of any known type, are used to vary the beam intensity in accordance with the receiver signals. Synchronous moving mirrors are employed to scan the array of elements and a projector system is employed to project the received pattern onto a large screen.

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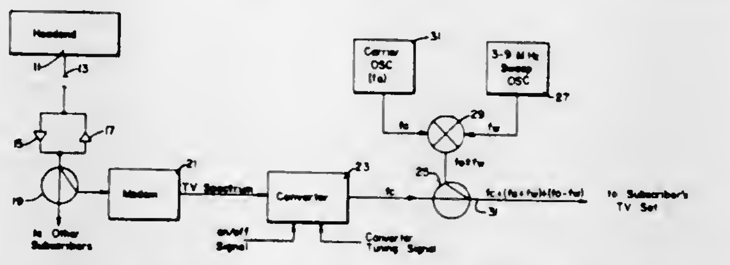
### 3,760,097
### ADJACENT CATV CHANNEL JAMMING

**Robert S. Burroughs, Redondo Beach, and F. Douglas Forbes, Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed June 26, 1972, Ser. No. 266,033**

**Int. Cl. H04n** *1/44*

**U.S. Cl. 178—5.1** **6 Claims**



A system for allowing the intelligible reception of a selected CATV channel at the subscriber's TV set and for jamming the CATV channels adjacent to the selected channel so that the subscriber cannot intelligibly receive the adjacent channels by adjusting the fine tuning control on his TV set. In one embodiment, the output signal of a first oscillator which sweeps from 3 to 9 megahertz is heterodyned in a double balanced mixer with the output signal of a second oscillator which is tuned to the center frequency of the selected channel spectrum appearing at the output of a CATV converter. The suppressed carrier, modulated sidebands from the mixer are then added to the selected channel spectrum in order to jam the channels adjacent to that selected channel.

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### 3,760,098
### METHOD AND APPARATUS FOR THE SEAMLESS ENGRAVING OF HALF-TONE PRINTING PLATES

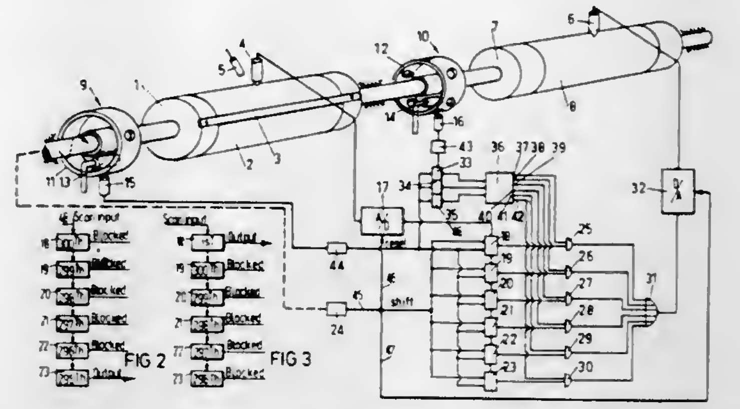
**Ferdinand Allard de Vos, Castricum, and Jan Hendrik Terter Steege, Abcoude, both of Netherlands, assignors to N. V. Werkspoor-Amsterdam, Amsterdam, Netherlands**

**Continuation-in-part of Ser. No. 25,978, April 4, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 201,025**

**Claims priority, application Netherlands, Apr. 17, 1969, 6905923**

**Int. Cl. H04n** *5/78, 1/38*

**U.S. Cl. 178—6.6 B** **12 Claims**



Method and apparatus is provided for point by point and line by line production of half-tone printing cylinders which are seamless in a direction perpendicular to the direction of the lines from a cylindrical master having a seam in that direction. The surfae of the master, including the seam, is scanned to produce a selected number of engraving signals per revolution of the master and printing cylinders. Of these, a certain small number will correspond to the seam on the master and these are eliminated on the printing cylinder and the engraved image on the printing cylinder is "stretched" a corresponding number of engraving points by repeating the engraving of a number of scanning points on the master image.

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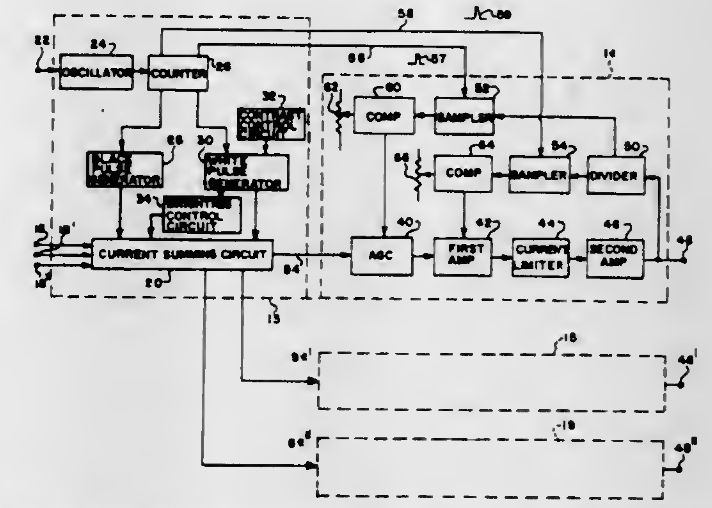
### 3,760,099
### VIDEO AMPLIFIER FOR A COLOR TELEVISION APPARATUS

**Victor Kong, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.**

**Filed Nov. 1, 1971, Ser. No. 194,266**

**Int. Cl. H04n** *9/12*

**U.S. Cl. 178—5.4 R** **12 Claims**



A video amplifier for a color television monitor apparatus or the like is disclosed, wherein the DC level and the gain thereof are automatically adjusted by interposing respectively a black reference pulse and a white reference pulse during the horizontal blanking period of the composite video signal as a pilot signal. The black reference pulse has a predetermined amplitude corresponding to the cut-off voltage of a cathode ray tube. The white reference pulse varies in amplitude according to the setting of the contrast control.

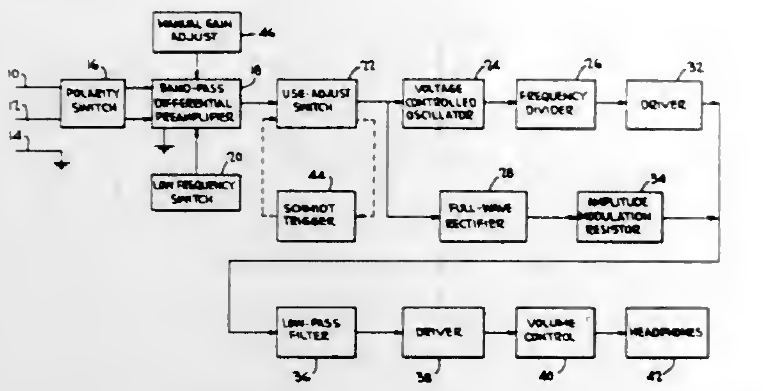
### 3,760,100
## AUDIO ELECTROCARDIOGRAM MONITOR

**Charles W. Ragsdale, Laramine, Wyo., and Edward A. Wright, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Continuation-in-part of Ser. No. 866,992, Oct. 16, 1969, abandoned. This application July 30, 1971, Ser. No. 167,738**

**Int. Cl. H04m** *1/00*

**U.S. Cl. 179—1 R** **5 Claims**



The audio monitor disclosed herein is an electronic device which converts the electrocardiogram into an amplitude and frequency modulated tone. This allows the listener to evaluate the shape of an electrocardiogram merely by listening. This is achieved by converting ECG potentials into an amplitude and frequency modulated tone. The tone increases with frequency and becomes louder as the ECG pattern goes positive, and the tone decreases in frequency while becoming louder as the ECG pattern goes negative.

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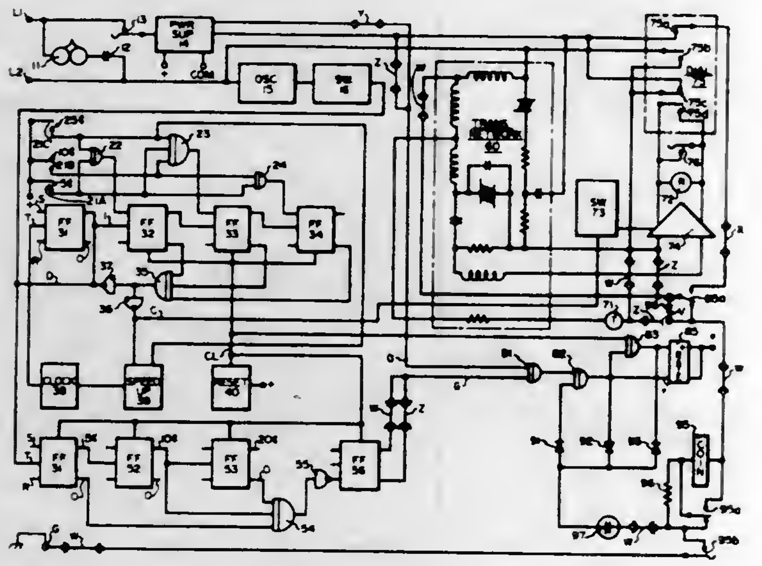
### 3,760,101
## COIN TELEPHONE CIRCUIT

**Robert Vincent Burns, Tinley Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Jan. 24, 1972, Ser. No. 220,000**

**Int. Cl. H04m** *17/02*

**U.S. Cl. 179—6.3 R** **16 Claims**



A coin telephone circuit operable by minor strapping changes in the prepay, semi-postpay and emergency service modes of operation. Included is an electronic totalizer which permits the phone to be programmed for any initial deposit rate required. Audio frequency signals are applied to the telephone line, corresponding to the value of the coins deposited and in prepay service provides an indication to the central office that the proper rate has or has not been deposited.

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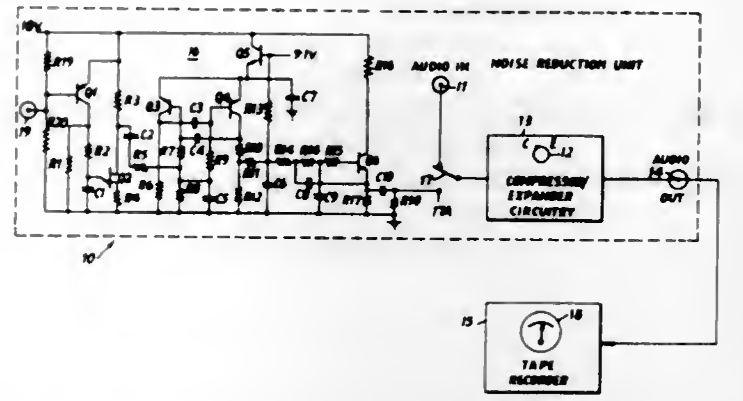
### 3,760,102
## LEVEL SETTING IN NOISE REDUCTION SYSTEMS

**David Peter Robinson, and Ray Milton Dolby, both of London, S.W.9, England, assignors to Dolby Laboratories Inc., New York, N.Y.**

**Filed Oct. 26, 1971, Ser. No. 192,375**

**Int. Cl. H03g** *7/00*

**U.S. Cl. 179—1 R** **13 Claims**



A special test tone at a predetermined level is recorded or transmitted to enable the level to be set correctly on playback or reception. To enable the tone to be identified, it is intermittently and briefly frequency modulated to give the aural impression of a constant tone with intermittent "blips" therein. Because the amplitude stays constant, the modulation does not interfere with level meters and the like.

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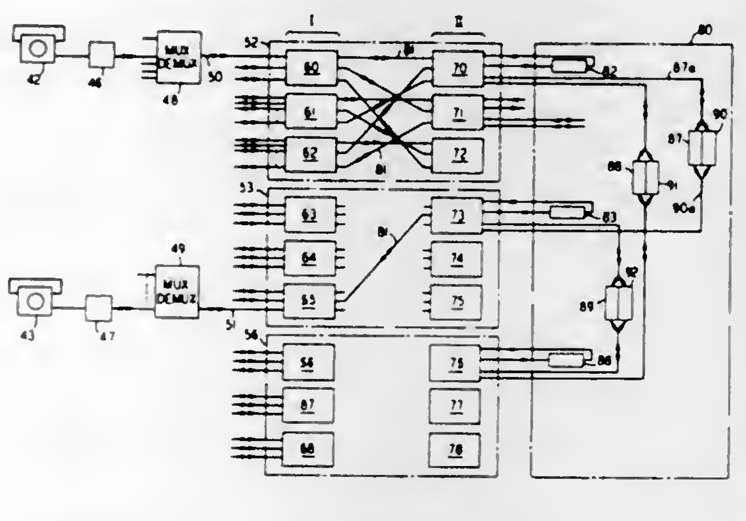
### 3,760,103
## BIDIRECTIONAL STORAGE CROSSPOINT MATRICES FOR MIRROR IMAGE TIME DIVISION SWITCHING SYSTEMS

**Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Dec. 2, 1971, Ser. No. 204,013**

**Int. Cl. H04j** *3/16*

**U.S. Cl. 179—15 AQ** **15 Claims**



Two orthogonally oriented sets of matrix coordinate circuit sets are arranged in bidirectional signal transmission pairs within their respective circuit sets. Respective circuit pairs in the two sets are coupled together at matrix crosspoints by signal storage registers that are operated by clock-driven control memories. Those memories determine both the distribution of input signals from one set of coordinate circuits to crosspoint-coupling storage registers for circuits of the other set and the sequence for collecting crosspoint-stored signals onto circuits of the latter set. The bidirectional crosspoint matrices are utilized in mirror image switching networks for communication systems.

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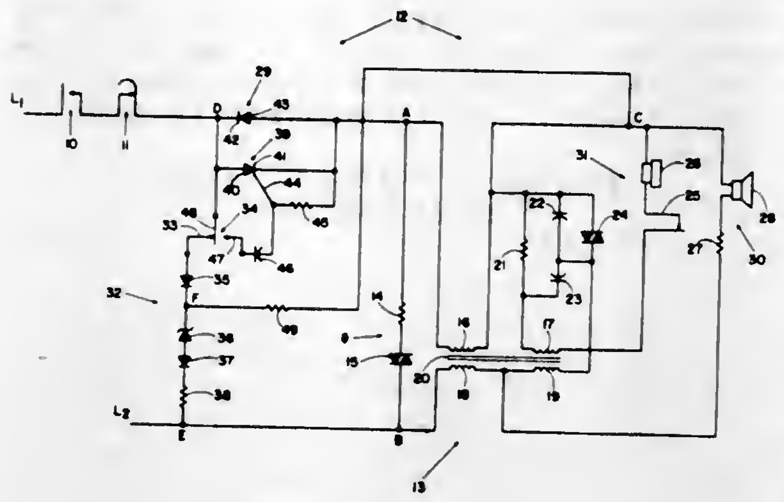
### 3,760,104
## POST PAY TELEPHONE PAYSTATION CIRCUIT

**Joseph Thompson; Raymond Charles Hemming; John Edward Critchley, and Ronald Joseph Morrell, all of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada**

**Continuation-in-part of Ser. No. 170,454, Aug. 10, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,542**

**Int. Cl. H04m** *17/02*

**U.S. Cl. 179—6.3 R** **14 Claims**



A telephone paystation which permits normal dialling to, and reception from, a called party without deposition of a coin. When the called party answers, the paystation transmitter circuit is completely disabled by the transmission of reverse battery polarity from the central office to the telephone paystation. Normal transmission is restored, upon deposit of a coin, by turning on a controlled rectifier to complete a low impedance path from the telephone line to the voice transmitter circuit.

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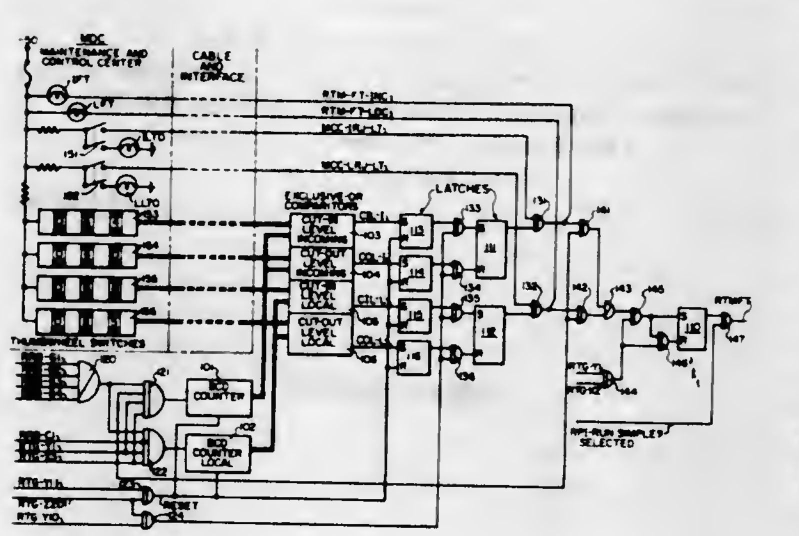
### 3,760,105
## TRAFFIC MONITOR FOR DATA PROCESSING SYSTEM

**Sergio E. Puccini, Wooddale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed May 1, 1972, Ser. No. 249,282**

**Int. Cl. H04m** *15/26*

**U.S. Cl. 179—8 A** **8 Claims**



In the register-sender subsystem of a telephone switching system, the traffic monitor for determining the number of busy registers in order to distinguish periods of heavy traffic from light traffic comprises a counter, and comparison circuits, with a set of thumbwheel switches in a control center for setting a predetermined number, the comparison circuits being arranged to indicate when the number of busy registers is equal to or exceeds the setting on the thumbwheel switches. The registerosender is of the time-division multiplex type having common logic circuits and a memory which stores information relating to a state of a call, including processing sequence state information which indicates various states including an idle state. The registers have access to the memory and common logic circuits during sequential time slots, and during each time slot when the information for a register is read from memory, the processing sequence state indication is supplied to the counter so as to advance the counter if the register is busy. The settings on the thumbwheel switches include a cut-in level and a cut-out level, and separate comparison circuits are used for comparing the settings against the same counter. There are separate counters and comparison circuits as well as sets of thumbwheel switches for incoming registers and local registers.

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### 3,760,106
## PCM TELECOMMUNICATION SYSTEM WITH TDMA VOICE TRANSMISSION

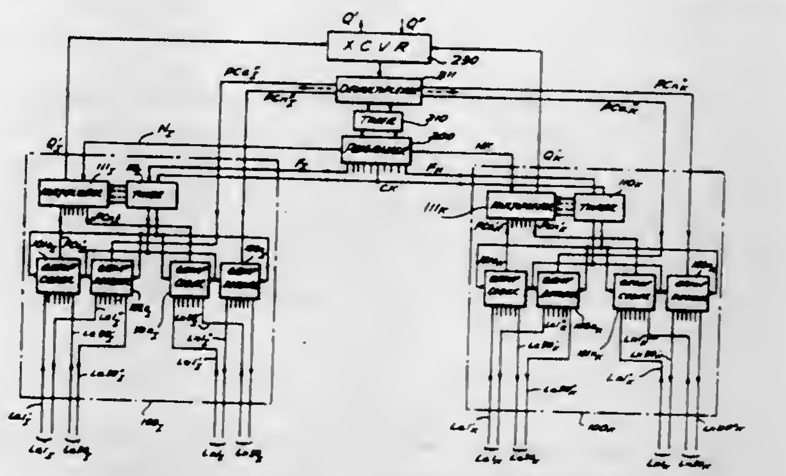
**Giancarlo Monti, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy**

**Filed Apr. 17, 1972, Ser. No. 244,578**

**Claims priority, application Italy, Apr. 15, 1971, 23212 A/71**

**Int. Cl. H04j** *3/00*

**U.S. Cl. 179—15 BA** **10 Claims**



A terminal of a pulse-code-modulation (PCM) time-division multiple-access (TDMA) telecommunication system, serving for the exchange of digitized message samples in the form of interleaved multibit pulse codes between a multiplicity of local channels and a like number of remote channels accessible through another terminal, has K associated processing stations each serving *n* 30-channel groups whose incoming lines are sampled by respective group coders. Each station includes a multiplexer for the outputs of respective group coders whose access to the multiplexer is controlled by a gate in response to a binary activity pattern read out from an associated buffer register, this activity pattern being stored in a memory and periodically updated under the control of respective monitoring units which test the instantaneous condition of the several incoming lines feeding each group coder. The gate blocks the inscription of blank codes from inactive lines in a shift register individually assigned to each group, the shift register thus containing only significant pulse codes from active lines which are read out at high speed to the multiplexer together with allocation bits derived from the activity pattern to inform the remote terminal of the origins of the individual pulse codes in a composite word transmitted during a frame of 125 μsec, the frame being divided into a number of subframes each assigned to a respective station and consisting of a predetermined number of time slots established by a programmer; extra bits may be included in each composite word to make up the allotted number of time slots. At the receiving end, the reverse procedure is followed with restoration of the individual pulse codes to their original relative time position, in respective scanning intervals of a frame, prior to their distribution to the outgoing lines for which they are intended.

### 3,760,107
### TIME DIVISION MULTIPLEX COMMUNICATION SYSTEMS

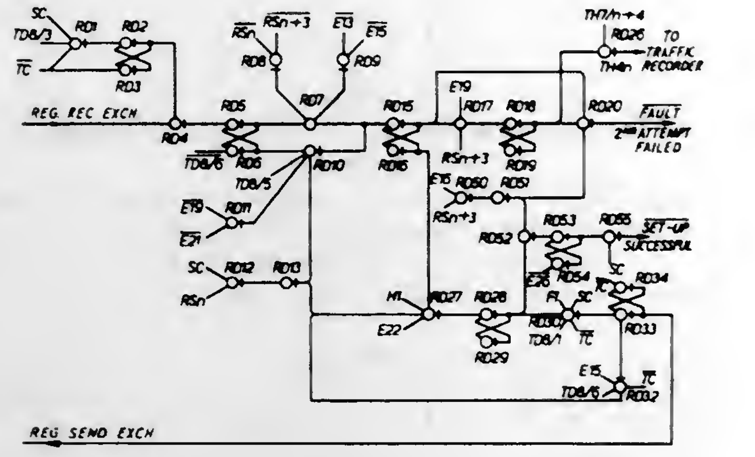
**Winston Theodore Duerdoth, Ruislip; Charles Joseph Hughes, London; John Frederick Hesketh, Greenford, and William Desmond Morton, Rickmansworth, all of England, assignors to Her Majesty's Postmaster General, London, England**

**Division of Ser. No. 782,541, Dec. 12, 1968. This application Mar. 22, 1971, Ser. No. 126,527**

**Claims priority, application Great Britain, Dec. 11, 1967, 36,149/67**

**Int. Cl. H04j** *3/14*

**U.S. Cl. 179—15 BF** **2 Claims**



A time division multiplex telephone system has testing apparatus for testing the setting-up of a communication path between two subscribers before the path is switched through to the subscribers. Circuits responsive to signals emitted by the testing apparatus initiate a further attempt to set up the communication path if the testing apparatus signals that the test made on the set up connection indicate that the setting up is not successful.

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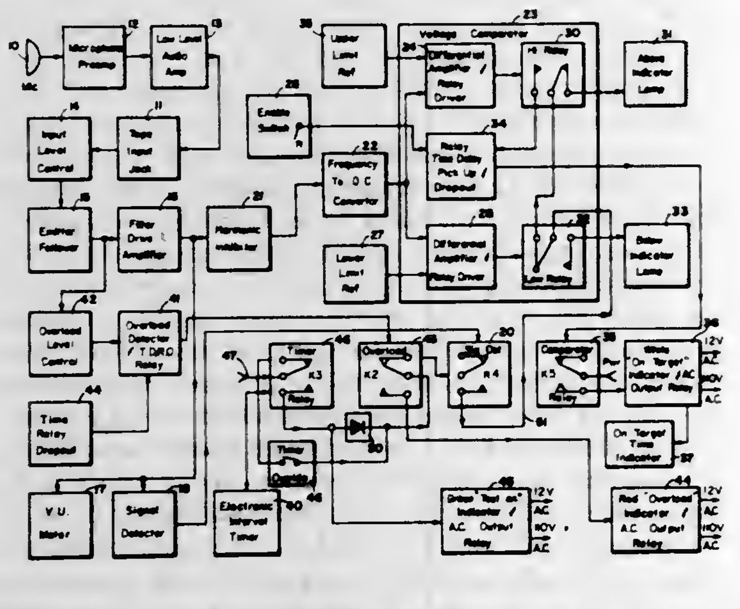
### 3,760,108
### SPEECH DIAGNOSTIC AND THERAPEUTIC APPARATUS INCLUDING MEANS FOR MEASURING THE SPEECH INTENSITY AND FUNDAMENTAL FREQUENCY

**Joseph A. Gacek, Cape Canaveral, and Joseph E. Parker, Cocoa Beach, both of Fla., assignors to Tetrachord Corporation, Cocoa Beach, Fla.**

**Filed Sept. 30, 1971, Ser. No. 185,272**

**Int. Cl. G10l** *1/04*

**U.S. Cl. 179—1 SA** **9 Claims**



An apparatus for the measurement of fundamental vocal frequencies and relative speech intensity is provided which apparatus has an immediate feedback of information. An input of a complex wave form into the present apparatus produces an output indicating whether the intensity of the input exceeds a predetermined set level. The input is also applied to a harmonic inhibitor circuit which produces an output of the lowest frequency component of the input complex waveform and inhibits harmonics of this lowest frequency component and produces an output indicative of whether the fundamental vocal frequency detected is within a predetermined selected range.

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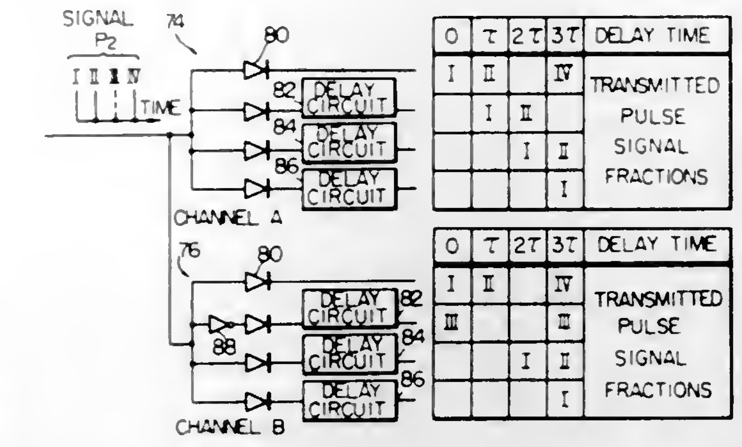
### 3,760,109
### TIME DIVISION MULTIPLEX TRANSMISSION SYSTEM

**Hiroshi Kogo, Toshima-ku, Tokyo, and Kuniyuki Tanabe, Minami-ku, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan**

**Filed Nov. 15, 1971, Ser. No. 198,781**

**Int. Cl. H04j** *3/04*

**U.S. Cl. 179—15 BA** **4 Claims**



A system in which each single pulse generator is provided for producing each one single pulse representing each one information, which system including a transmitter consisting of at least two pulse signal generators for producing separate pulse signals each within a pulse duration of the single pulse on each channel, and at least two coding units provided in each channel for converting the pulse signals into corresponding binary coded signals, and a receiver consisting of at least two decoding units provided in each channel for re-converting the transmitted binary coded signals into original pulse signals.

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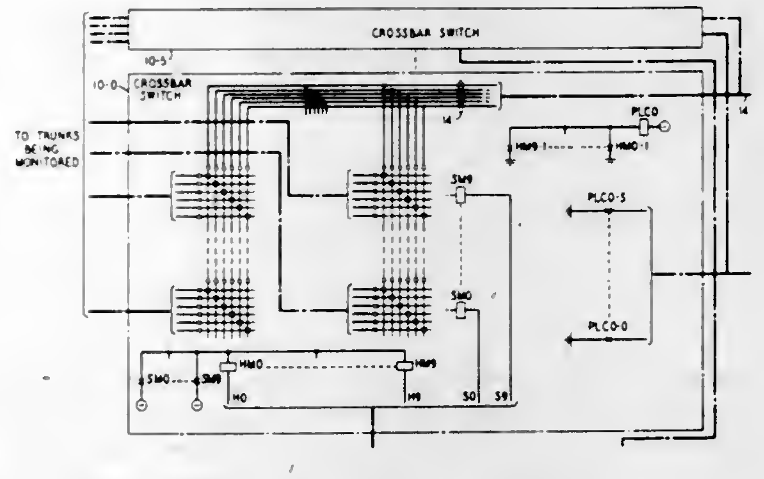
### 3,760,110
### TRAFFIC RECORDING SYSTEM

**Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.**

**Filed Feb. 24, 1972, Ser. No. 229,085**

**Int. Cl. H04m** *15/26*

**U.S. Cl. 179—8 A** **25 Claims**



Traffic monitoring equipment includes a concentration stage of switches connected to the apparatus, such as trunks,

to be monitored and an expansion stage of switches connected to the recording equipment for scoring or registering trunk usage. A counter sequentially enables the concentration switches. However a memory is provided, and circuitry stores in that memory the identity of the destination of each call on the trunks being monitored. Control circuitry sets the expansion switches in accordance with the call destination of the call on the specific trunk being monitored. Information received from the marker of the associated central office writes into memory the destination codes for each call at an address defined by the specific trunk employed on that call. The trunks are scanned in groups of six with an initial assumption that calls on all will be to the same destination. Accordingly, a match is first attempted between the actual call destination from the memory and the assumed call destination priorly stored in a register from the memory address for a prior trunk. On failure of this match trunk status flip-flops allow the proper call destinations to be used for each trunk.

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### 3,760,111
### PULSE REGENERATIVE REPEATER FOR A MULTILEVEL PULSE COMMUNICATION SYSTEM

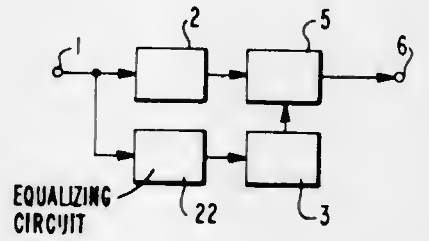
**Akira Sawai, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan**

**Filed June 14, 1971, Ser. No. 152,942**

**Claims priority, application Japan, June 20, 1970, 45/53614**

**Int. Cl. H04b** *3/04, 3/36*

**U.S. Cl. 179—16 E** **2 Claims**



Disclosed herein is a pulse regeneration repeater system which includes means for extracting from a train of multi-level code pulses the clock signal defining the bit interval. Received code pulses, prior to entering a clock signal extracting circuit, pass through a distortion compensating equalizing circuit. The equalizing circuit modifies the pulses in the code pulse train to produce output pulses having a half-level width T′ less than the clock period T, but greater than one-half of the clock period in response to code signals which, prior to transmission distortion, have a half-level width of T/2.

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### 3,760,112
### PARTY AND COIN DETECTION ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM

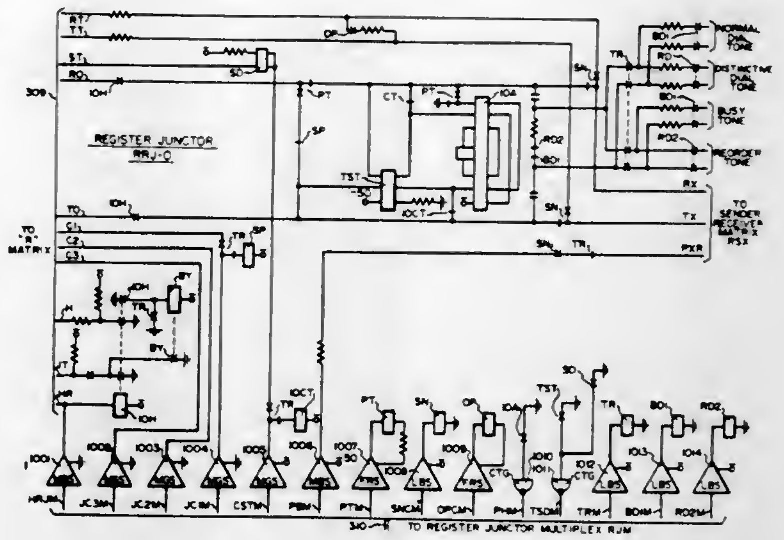
**John Edward Busch, Clarendon Hills, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Feb. 18, 1972, Ser. No. 227,580**

**Int. Cl. H04q** *5/02*

**U.S. Cl. 179—17 A** **20 Claims**

A register-sender common control communication switching system having a plurality of registers sharing common memory and logic circuits on a time division multiplex basis and having a plurality of register junctors individually associated with the registers for connection to calling lines to receive signals therefrom includes a party and coin detection arrangement for identifying the calling party of a two party line and for identifying a coin deposit at a paystation. The arrangement includes a switching device in each one of the register junctors for connecting a source of current for a predetermined time interval to one side of a calling line to charge the ringer capacitors and line capacitance connected thereto to the potential of the source prior to connecting a sensitive indicating device to such a side of the calling line to respond to a detection signal supplied thereover indicative of one party of a two party line, or alternatively of a coin deposit at a paystation, and a second switching device for connecting the indicating device to that same side of the line at the end of the time interval so that the capacitance cannot cause a momentary erroneous actuation of the indicating device due to a transient discharge thereof in the absence of the detection signal since the capacitance is fully charged before the indicating device is connected to the line.



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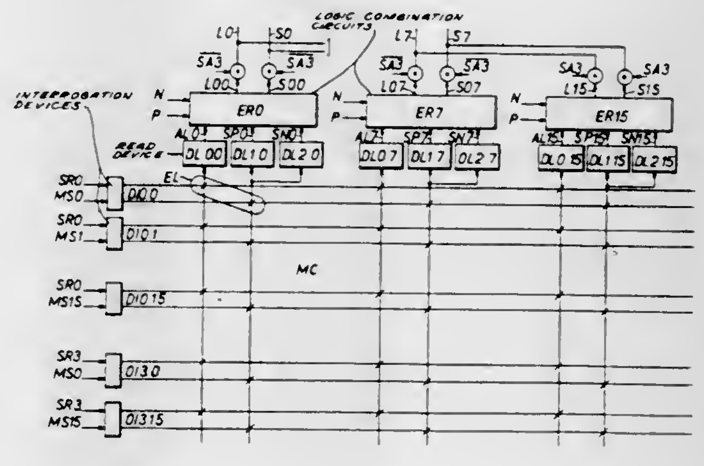
### 3,760,113
### LINE FINDER FOR A COMMON CONTROL TELEPHONE EXCHANGE

**Claude Bouchet, La Varenne-St-Hilaire; Roger Meliani, Sevres, and Vladimir Tomasovitch, Meudon-La-Foret, all of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Jan. 26, 1972, Ser. No. 220,986**

**Int. Cl. H04q** *3/24*

**U.S. Cl. 179—18 FG** **4 Claims**



Subscribers' line circuits and a linefinder are disclosed for use in a common control telephone exchange to determine the status of subscriber lines. Biasing potentials and switches in the line circuit together with logic circuits in association with the linefinder and the line circuits enable the combination to identify lines requesting service and those in faulty operating condition.

### 3,760,114
### FAULT DISCRIMINATION CIRCUIT

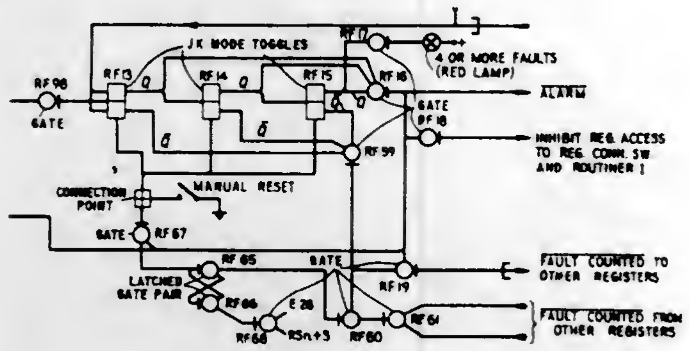
**William Desmond Morton, Rickmansworth, and William George Tilston Jones, London, both of England, assignors to Her Majesty's Postmaster General, London, England**

**Filed Mar. 22, 1971, Ser. No. 126,516**

**Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67**

**Int. Cl. H04m** *3/12*

**U.S. Cl. 179–18 EB** 4 Claims



A fault discrimination circuit for a group of registers of a time division multiplex communication system. Each register of the group has a fault counter for counting faults detected by the register. When a predetermined number of faults is recorded the register is taken out of service. Faults detected by a register are signalled to the fault counters of all other registers in the group and set to zero the fault counters of such other registers provided none has recorded the predetermined number.

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### 3,760,115
### CROSSPOINT ERROR DETECTION IN TIME DIVISION MULTIPLEX SWITCHING SYSTEMS

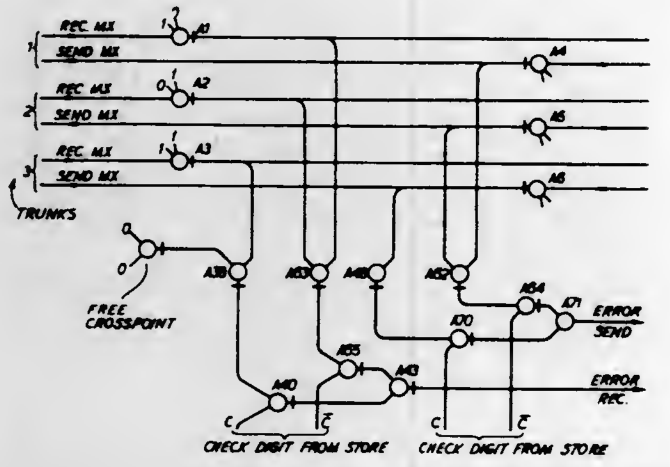
**Winston Theodore Duerdoth, Ruislip, and Charles Joseph Hughes, London, both of England, assignors to Her Majesty's Postmaster General, London, England**

**Division of Ser. No. 782,541, Dec. 12, 1968, Pat. No. 3,622,705. This application Mar. 22, 1971, Ser. No. 126,518**

**Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67**

**Int. Cl. H04j** *3/14*

**U.S. Cl. 179–18 GF** 3 Claims



A circuit for detecting the operation of crosspoint switches in a time division multiplex switching system. The crosspoints are coded and when a crosspoint is operated its code is transmitted to a checking circuit that compares the code against a check code and produces an error signal in the event of a discrepancy.

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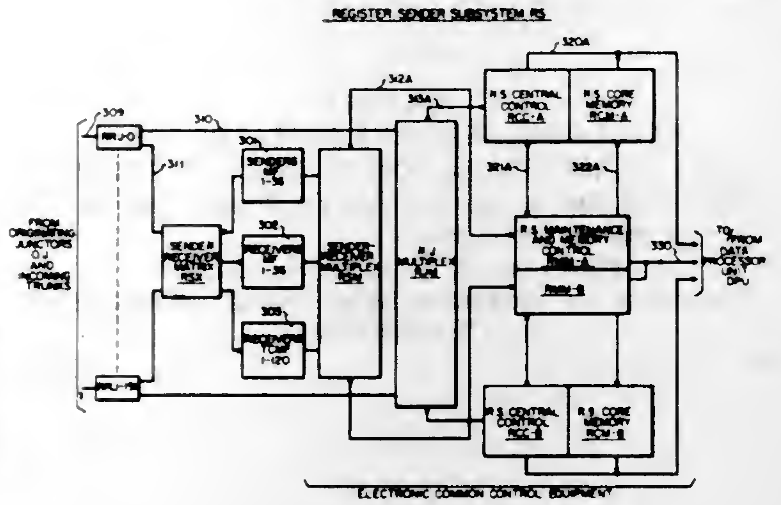
### 3,760,116
### SENDER PULSE TIMING CONTROL

**Gerald O'Toole, Elmhurst, and Sergio E. Puccini, Wood Dale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Jan. 3, 1972, Ser. No. 214,621**

**Int. Cl. H04q** *11/04*

**U.S. Cl. 179–18 J** 6 Claims


REGISTER SENDER SUBSYSTEM RS
FROM ORIGINATING JUNCTORS OJ AND INCOMING TRUNKS
SENDER RECEIVER MATRIX
R.S. CENTRAL CONTROL RCC-A
R.S. CORE MEMORY RCM-A
R.S. MAINTENANCE AND MEMORY CONTROL
R.S. CENTRAL CONTROL RCC-B
R.S. CORE MEMORY RCM-B
TO/FROM DATA PROCESSOR UNIT DPU
ELECTRONIC COMMON CONTROL EQUIPMENT

The register-sender subsystem of a telephone switching system is of the type having common logic circuits including a wired program shared during cyclically recurring time slots by a plurality of register-senders, with each register-sender comprising a block of a common memory and having an associated register junctor serving as a peripheral unit for connection via a switching network to an outgoing trunk. The memory block for each register comprises a plurality of sets of storage elements including control sets and data sets which are accessed during sub-time slots. One of the control sets is a sender processor control set, which includes a timing store, a digit store, a dial pulse on-off control bit for controlling an outpulsing relay in the register junctor, and a multifrequency on-off control store for controlling a "time-on period" relay connecting a multifrequency sender output to the line. The timing store is used with common timing counters in the logic circuits for timing the pulse train generation for both dial pulse and multifrequency sending. Since the timing stores are in the individual memory of each register-sender, the pulse trains for different register-senders may be formed independently.

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### 3,760,117
### ELECTROMECHANICAL COMMON CONTROL CROSSPOINT TELEPHONE SWITCHING SYSTEM

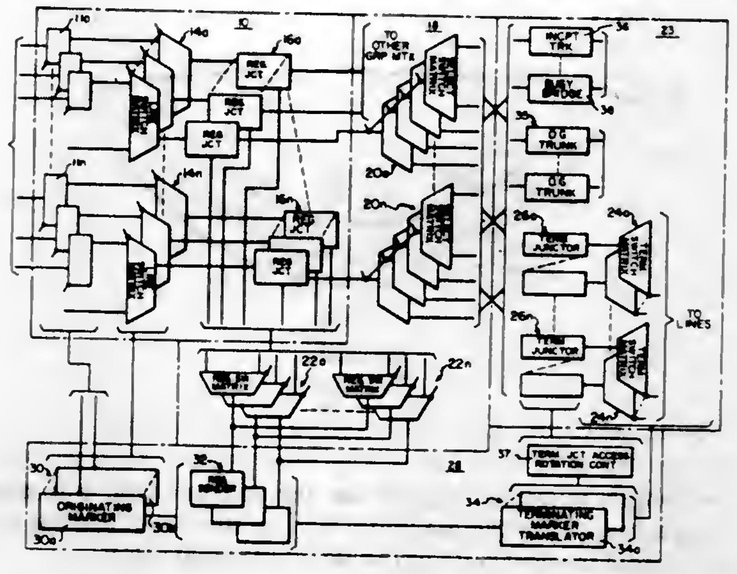
**Stephen J. Czarnecki, Lemont; Harry G. Evers, Genoa; Frank Kellogg, Genoa; William W. Newcum, Genoa; Richard F. Vogel, Wheaton, and John W. Woodward, Schaumberg, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Jan. 27, 1972, Ser. No. 221,236**

**Int. Cl. H04q** *3/42*

**U.S. Cl. 179–18 GE** 10 Claims

A common control crosspoint switching system, employing electromechanical switching matrices of the terminal-per-station type, wherein the matrix connections are such that the originating and terminating markers are completely in-



depedent (requiring no interfacing or interlocking) to perform their respective originating and terminating connections.

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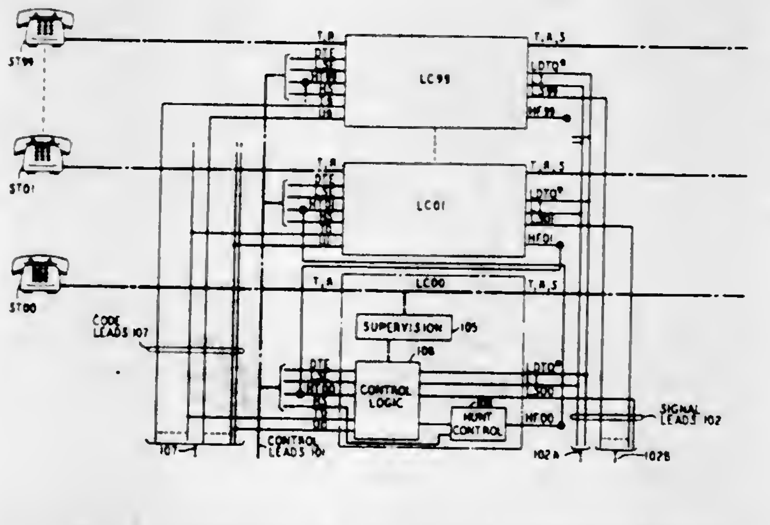
### 3,760,118
### SWITCHING SYSTEM EQUIPPED FOR ROTARY LINE HUNTING

**John Joseph Horenkamp, 31 Longview Ave., Freehold, N.J.; Henry August Meise, Jr., 4140 Eutan Dr., and George William Taylor, 3340 Layola Ct., both of Boulder, Colo.**

**Filed May 3, 1972, Ser. No. 249,800**

**Int. Cl. H04q** *3/62*

**U.S. Cl. 179–18 HA** 14 Claims



A wired logic scanner controlled switching system is disclosed equipped for the rotary hunting of lines subdivided into hunting groups. When a call is directed to a busy line, it applies a priming signal to the next line in the same hunting group and a scanner is activated to hunt to the next line to test its idle-busy state. If all lines of the group are busy, hunting continues until the called station itself is hunted. At that time, a match circuit terminates the hunting when it detects that the newly hunted line is the originally called line.

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### 3,760,119
### CROSSPOINT SWITCH ALLOTTER RELEASE DETECTION CIRCUIT

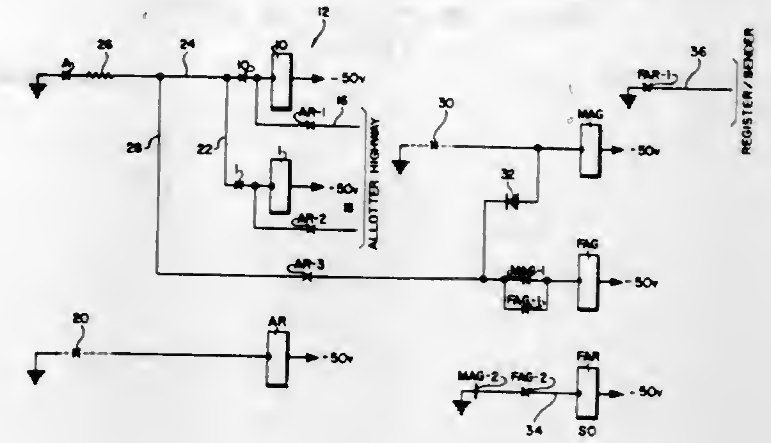
**Frank Kellogg, Genoa, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Aug. 31, 1972, Ser. No. 285,279**

**Int. Cl. H04q** *3/495*

**U.S. Cl. 179–18 GE** 7 Claims

A crosspoint allotter release detection circuit for disabling the crosspoint connection if the allotter is falsely held operated following establishment of the connection, including, first relay means for detecting the completion of crosspoint selection, second relay means, with a slow-to-operate relay coil, coupled to a holding ground for the crosspoint connection, and third relay means interconnecting the first and



second relay means, the third relay means responsive to a falsely held operated allotter and operative on the slow-to-operate relay coil to break the crosspoint connection, thereby avoiding undesired erroneous multiple selections in the allotter highway's associated switches.

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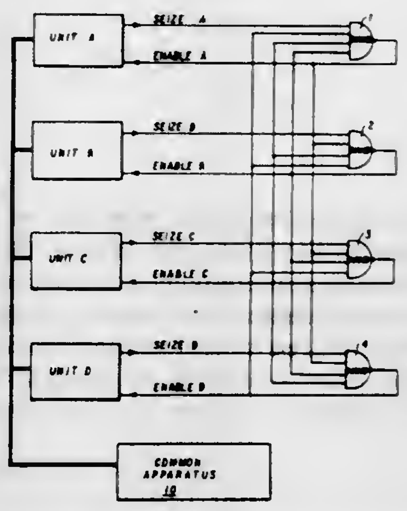
### 3,760,120
### LOCKOUT SELECTION CIRCUIT

**Thomas J. Moorehead, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed July 27, 1972, Ser. No. 275,593**

**Int. Cl. H04m** *3/16*

**U.S. Cl. 179–19** 2 Claims



In a system in which a number of units operate one at a time with common apparatus, a lockout circuit comprises a set of NAND gates, one for each unit. Each gate has a seize input normally at logical "0" from its unit and an enable output normally at logical "1" thereto. The output of each gate is also connected to an input of each of the others, so that only one gate at a time may have a "0" output to enable its unit for operation with the common apparatus.

### 3,760,121

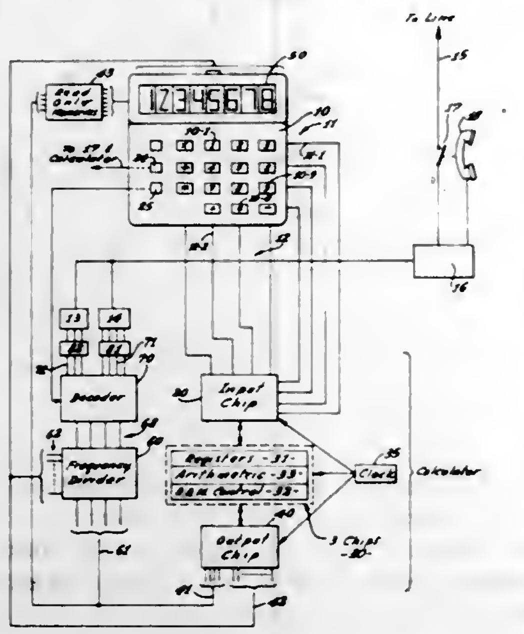
### TELEPHONE DIALER WITH ARITHMETIC CALCULATION CAPABILITY AND VISUAL DISPLAY OF DIGITS

**Samuel Nissim, Malibu, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.**

**Filed Dec. 28, 1970, Ser. No. 101,768**

**Int. Cl. H04m** *1/44*

**U.S. Cl. 179—90 K** **6 Claims**



A telephone desk calculator combination with shared keyboard and display for display of dialed-in telephone numbers, general figure entry and arithmetic results.

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### 3,760,122

### SWITCHING DEVICE FOR TELEPHONE INSTRUMENTS

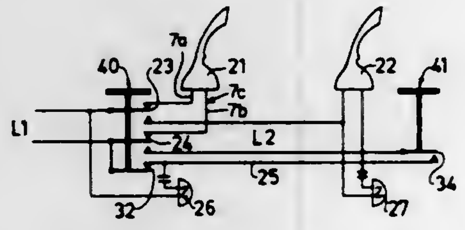
**Knut Hugo Blomberg, Lakattsrager 39, 161 37 Bromma, Sweden**

**Filed Feb. 23, 1971, Ser. No. 118,025**

**Claims priority, application Sweden, Feb. 27, 1970, 2659/70**

**Int. Cl. H04m** *1/04, 1/72*

**U.S. Cl. 179—99** **9 Claims**



A switching device for a telephone instrument with a base support surface for the telephone instrument and a number of switching contacts, said contacts, together with the contacts comprised in the telephone instrument, being operated when the instrument is placed on said support surface, said contacts being adapted upon operation to perform certain desired functions, such as to connect the incoming line to an extension line.

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### 3,760,123

### EFFICIENT DIRECT CONTACT TRANSFER OF LONG WAVELENGTH SIGNALS

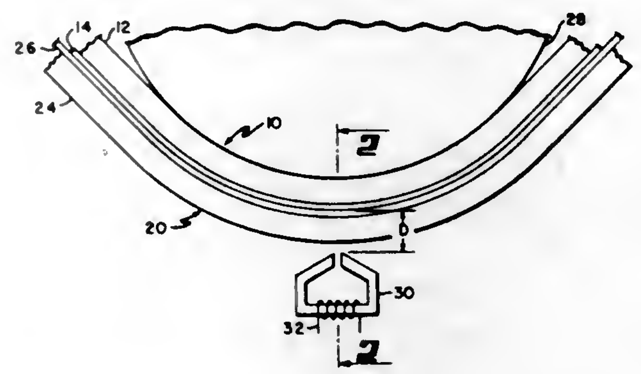
**Philip Smaller, 4155 Wilke St., Palo Alto, Calif.**

**Filed Apr. 7, 1972, Ser. No. 242,014**

**Int. Cl. G11b** *5/86*

**U.S. Cl. 179—100.2 E** **3 Claims**

A selected signal track on a master magnetic tape having other signal tracks is direct contact transferred to a copy tape. The portion of the copy tape in line with the selected signal track is magnetically biased by magnetic lines of force emanating from a high permeability magnetic structure. This structure is spaced from the copy tape a predetermined amount sufficient to prevent dispersal of the longest wavelength magnetic signals on the master tape but close enough to localize the magnetic bias on the copy tape for efficient signal transfer only of the selected signal track.



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### 3,760,124

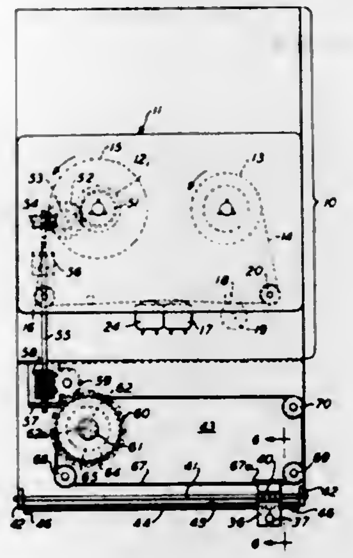
### DICTATOR-TRANSCRIBER INDEXING SYSTEM

**Thomas J. Gaven, Livingston, N.J., assignor to McGraw-Edison Company, Elgin, Ill.**

**Filed Feb. 14, 1972, Ser. No. 225,799**

**Int. Cl. G11b** *23/42, 27/12*

**U.S. Cl. 179—100.2 Z** **5 Claims**



A new indexing system for a tape-record dictating and transcribing machine is provided wherein a dictator records distinguishing electrical indexing signals signifying length and correction marks either in superimposed relation to the audio signals or on a separate track of the tape. The transcriber then generates visible index marks on an index slip as she rewinds the tape preparatory to transcribing the dictation and utilizes the index slip in the usual way during the transcribing operation.

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### 3,760,125

### MAGNETIC PICK UP WITH FLUXBRIDGE AND REPLACEABLE STYLUS

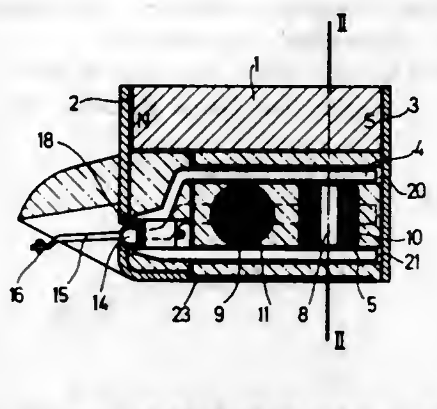
**Eckhard Laue, St. Georgen, Schwarzwald, Germany, assignor to Dual Gerbrueder Steidinger, Georgen/Schwarzwald, Germany**

**Filed Mar. 31, 1972, Ser. No. 240,879**

**Int. Cl. H04r** *11/12*

**U.S. Cl. 179—100.41 K** **4 Claims**

A stereophonic magnetic tone pickup with an armature, which distributes the magnetic flux corresponding with the needle position differently over four magnetic, parallel disposed paths. Two oppositely disposed paths are connected by a magnetic bridge, which contains a spool. A different magnetic flux in the four parallel paths leads to an equalization flux over the bridge, which flux induces in turn the use voltage.



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### 3,760,126

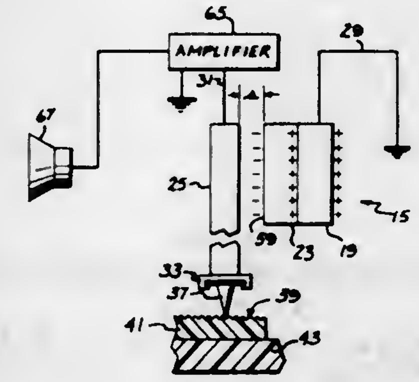
### ELECTRET PHONOGRAPH PICKUP

**Thaddeus V. Rychlewski, Seneca Falls, N.Y., and Abdulgafoor M. Serang, Acton, Mass., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.**

**Filed Apr. 17, 1972, Ser. No. 244,446**

**Int. Cl. H04r** *23/00*

**U.S. Cl. 179—100.41 B** **4 Claims**



An efficient kinetoelectric transducer is provided for use in a phonograph playback system. The transducer is positioned in the forward end portion of the pickup arm and includes a first electrode, an electret member oriented contiguous to the first electrode, and a second electrode juxtapositionally oriented relative to the side of the electret opposite that of the first electrode. The second electrode, which has a stylus support means attached thereto, is oriented to facilitate a degree of controlled vibratory movement relative to the electret member. A holding means retains the electrodes and intermediate electret member to effect a unitized transducer structure from which the stylus support member protrudes.

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### 3,760,127

### SYSTEM FOR THE REMOTE SUPERVISION OF MULTICHANNEL PCM REPEATERS

**Roberto Camiciottoli, and Giuseppe Grossi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni S.p.A., Milan, Italy**

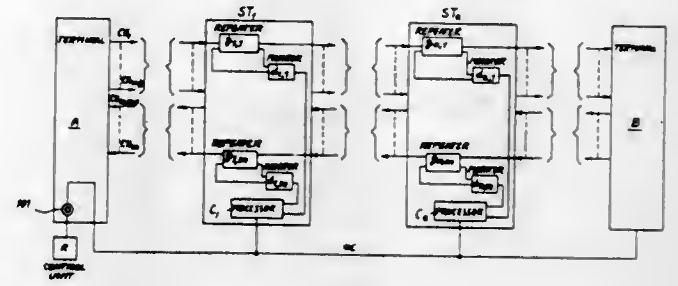
**Filed Nov. 15, 1971, Ser. No. 198,788**

**Claims priority, application Italy, Nov. 16, 1970, 31796 A/70**

**Int. Cl. H04b** *3/46*

**U.S. Cl. 179—175.31 R** **10 Claims**

Groups of repeaters in *n* cascaded repeating stations of a multichannel PCM transmission system are individually tested via a supervisory d-c circuit by different interrogation codes emitted from one terminal of the transmission path, each interrogation code including a train of equispaced address pulses whose number (ranging from 1 through *n*) identifies a selected station. A control unit at the code-emitting terminal comprises a binary counter manually adjustable to count a selected number of address pulses followed in the code by a pulse interval long enough to allow for the generation of a one-pulse reply code at the station so addressed, a similar counter at that station enabling a pulse generator to produce the reply code in the presence of consent signals from a processor receiving the outputs of *m* monitoring circuits connected across as many repeaters in each station. The processor is divided into two halves each serving a subgroup of *m*/2 repeaters used to transmit in one or the other direction.



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### 3,760,128

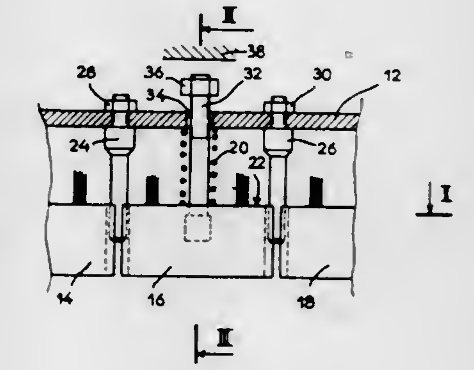
### ELECTRIC CURRENT COLLECTING SYSTEM

**Pierre Charamel, 38 Les Cotes De Sassenage, France, assignor to Merlin Gerin, Grenoble, France**

**Filed Jan. 11, 1971, Ser. No. 105,301**

**Int. Cl. B60l** *5/38*

**U.S. Cl. 191—49** **2 Claims**



Electric current distribution and collecting system comprising contact shoes resiliently urged towards feed rails extending along a path of a vehicle moving at a high speed. The contact shoes are supported and guided by guide fingers which slidably engage recesses or holes provided in the shoes.

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### 3,760,129

### PROGRAMMER FOR HOUSEHOLD ELECTRIC MACHINES WITH IMPROVED CAM OPERATING MECHANISM

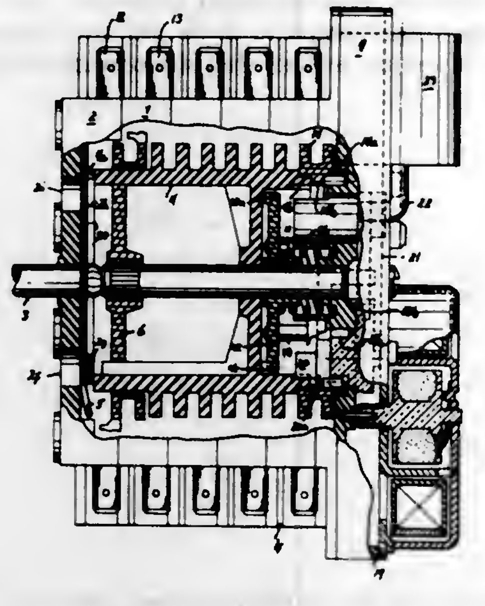
**Jean Jullien-Davin, Valence, France, assignor to Crauzet, Paris, France**

**Filed June 1, 1971, Ser. No. 148,810**

**Int. Cl. H01h** *7/08, 43/00*

**U.S. Cl. 200—38 R** **2 Claims**

Programmer for mechanical step by step household appliances in which the output pinion of a synchronous reduction motor carries on its axis an eccentric fitted in the middle part of a lever 35, with a circular cam driven by the output pinion and acting on a self-substaining contactor to maintain the power supply of reduction motor during a complete turn of the eccentric when a starting impulse has actually been sent. The rotation of the eccentric making a driving pawl operative or inoperative at the moment when a recess of an internal profile cam 14b is in phases therewith.



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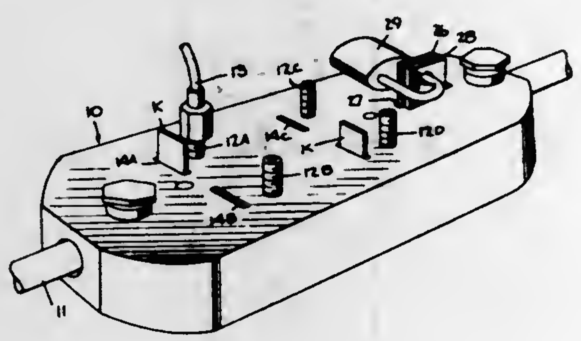
### 3,760,130
### CATV MULTI-TAP DISTRIBUTION BOX WITH A KEY ACTUATED CONNECTOR FOR EACH OF A PLURALITY OF TAPS

**Joseph I. Ross, East Norwich, N.Y., and Kay G. Sears, Keyport, N.J., assignors to Entron, Inc., Glendale, N.Y., by said Sears**

**Filed Aug. 1, 1972, Ser. No. 277,178**
**Int. Cl. H01h** *27/04*
**U.S. Cl. 200—42 R** **10 Claims**



A multi-tap distribution box for a community antenna television system. The box is interposed in a primary cable carrying video and radio signals from a master station to subscribers who are linked to the cable by drop lines coupled to the taps. To prevent illegal taps, security keys are provided, each of which is insertable in a keyway associated with a tap. When fully inserted, each key is received by a connector whose circuit, in the absence of a key, is adapted to terminate the related tap and thereby prevent the transfer of signals to the subscriber, the connector circuit, in the presence of a key, rendering the tap operative. A guard system is provided which in one phase blocks all keyways to prevent the entry of keys therein, in another phase unblocks the keyways to permit insertion of keys in selected keyways, and in a third phase captures the inserted keys to prevent removal thereof, and also blocks the remaining keyways to preclude the entry of additional keys. Also provided are means to lock the guard system in the third state to maintain status quo, whereby the only taps which are operative are those which are legal.

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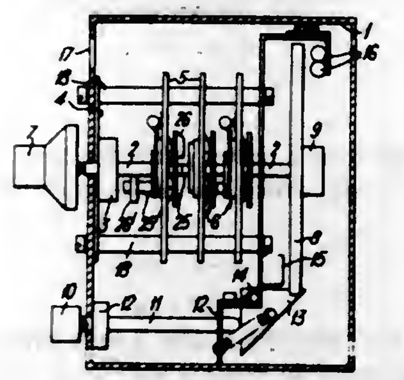
### 3,760,131
### ELECTRIC PERMUTATION LOCK ARRANGEMENT

**Robert Brough Ford, Richmond, and Martin Herbert Lloyd, Addington, both of England, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Oct. 27, 1970, Ser. No. 84,391**
**Claims priority, application Great Britain, Nov. 25, 1969, 57,600/69**
**Int. Cl. H01h** *27/10*
U.S. Cl. 200—43 **6 Claims**



A permutation mechanism for a lock arrangement which avoids detection by stethoscope or other mechanical or electrical means. A set of multicontact rotary switches takes the place of conventional tumblers. When arranged in the correct sequence, a current path is established through the switches, which path becomes completely conductive upon the activation of an "unlocking" push-button switch. The push-button switch however, cannot be activated until the rotary switches are in proper sequence, and thus no detectable current flow can exist until the unlocking push-button is activated.

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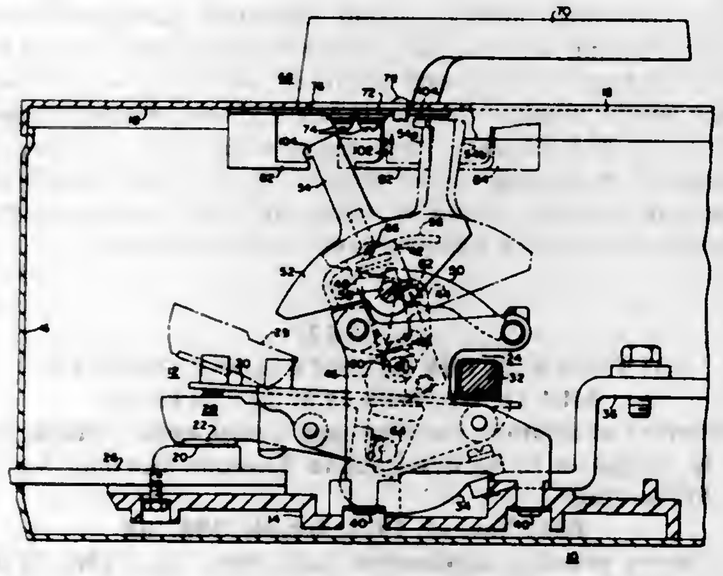
### 3,760,132
### ENCLOSED SWITCH DEVICE WITH COVER INTERLOCK

**James P. Ellsworth, and James B. Wallace, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 19, 1972, Ser. No. 245,456**
**Int. Cl. H01h** *9/20, 33/46*
**U.S. Cl. 200—50 A** **7 Claims**

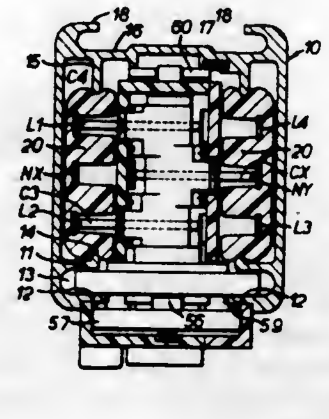


A switch device characterized by a switch structure within an enclosure having an openable cover and having interlock means between the switch structure and a handle on the cover for preventing opening of the cover if the contacts of the switch structure are welded in the closed-circuit position.

### 3,760,133
### ELECTRICAL LIGHTING INSTALLATIONS

**John Howard, Bovingdon, England, assignor to Rotaflex (Great Britain) Limited, London, England**

**Filed Mar. 27, 1972, Ser. No. 238,194**
**Claims priority, application Great Britain, Mar. 29, 1971, 8106/71**
**Int. Cl. H01r** *9/00;* **H01h** *9/20*
**U.S. Cl. 200—50 B** 5 Claims



An appliance feeding and supporting adaptor for continuous outlet current supply installations, has retractable contacts controlled by a rotary, manual operating member arranged transversely to the mouth of the track channel of the installation, so that the adaptor housing can fit substantially wholly within the channel. Mechanical interlocks prevent the contacts being moved to conductor engaging positions unless the adaptor housing is properly inserted in the track channel and an isolating switch is in its neutral (open contact) condition.

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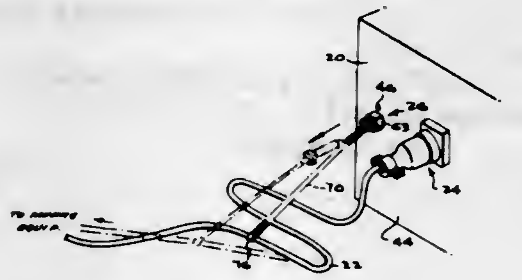
### 3,760,134
### CABLE AND SWITCH APPARATUS AND METHOD FOR PREVENTING DAMAGE TO TRAILING CABLE POWER SYSTEM

**Richard N. McCray, Bluefield, W. Va., assignor to Pemco Corporation, Tazewell County, Va.**

**Filed Aug. 3, 1972, Ser. No. 277,508**
**Int. Cl. H01h** *17/12*
**U.S. Cl. 200—52 R** **23 Claims**



An electric power source is disclosed connected to an electrically driven movable vehicle such as a mining machine by a trailing power cable with a flexible chain connected to the cable at a point on the cable spaced from the cable connection to the power source and with the chain connected on its other end to a switch on the power source for interrupting power to the cable upon tensioning movement of the chain outwardly from the power source. The chain is of less length than the length of the cable between the point at which the chain is connected to the cable and the end of the cable connected to the power source so that the power is interrupted before the cable is tensioned and any damage to the cable or connector is consequently avoided.

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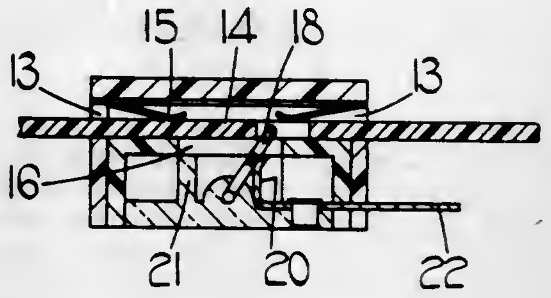
### 3,760,135
### SEAT BELT SAFETY SWITCH WITH OVERCENTER SNAP ACTING CONTACT ENGAGING BELT ACTUATING MEANS

**Leslie James Nevett, Clitheroe, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**

**Filed Apr. 11, 1972, Ser. No. 242,952**
**Claims priority, application Great Britain, Apr. 13, 1971, 9,268/71**
**Int. Cl. H01h** *3/16*
**U.S. Cl. 200—61.58 B** **8 Claims**



An electrical switch for use with a vehicle safety harness has an insulating body through which a web of the harness passes. The body contains a resilient moving contact spring engageable with a hole in the web. The contact spring is biased by its own over-centering snap action to either of two stable positions, in one of which it engages a fixed contact to complete a circuit.

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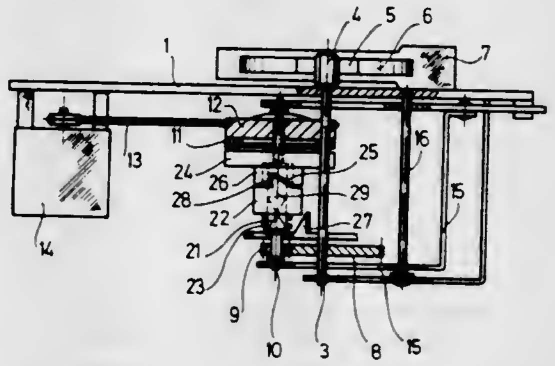
### 3,760,136
### SWITCHING DEVICE FOR A TONE BAND DRIVE

**Helmut Laufer, St. Georgen/Schwarzwald, Germany, assignor to Dual Gebrueder Steidinger, Schwarzwald, Germany**

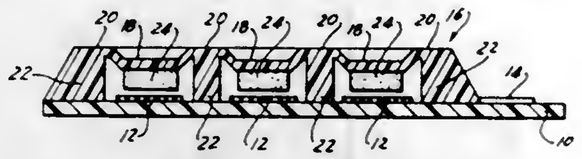
**Filed Jan. 17, 1972, Ser. No. 218,235**
**Claims priority, application Germany, Jan. 28, 1971, P 21 03 953.2**
**Int. Cl. B65h** *25/14;* **H01h** *3/16*
**U.S. Cl. 200—61.13** **6 Claims**



A switching device for driving of a tone band from an unwinding to a winding spool carrier, the end of said tone band being secured to said spool carrier of said unwinding tone band, which comprises drive means and a spool carrier. A drive shaft is provided for driving the spool carrier by the drive means. A disc fly-wheel mass is rotatably, but non-slidingly mounted on the drive shaft. A coupling means is disposed between the drive shaft and the disc fly-wheel mass for joining rotation of the latter. A member is adjustable against elastic means and rotatably, but non-slidingly mounted on said drive shaft. A shifting device for the member for shifting in dependency upon the transmission force of the coupling means against the force of the elastic means into an operative position, upon the transmission force being opposite as during an acceleration of the disc fly-wheel mass, and a switching device for stopping the drive, operable by the adjustable member, upon shifting the latter into its effective position.

### 3,760,137
### MATRIX PUSH-BUTTON SWITCH

**Takemi Shimojo, and Makoto Yanaga, Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan**
**Filed Sept. 27, 1971, Ser. No. 184,107**
**Claims priority, application Japan, Oct. 5, 1970, 45/98909**
**Int. Cl. H01h** *3/12*
**U.S. Cl. 200—166 C** **4 Claims**



A switch has a substrate with a plurality of conductor pairs on it. A resilient cover is disposed over the substrate and has depressible areas aligned with the respective conductor pairs. Conducting contact pieces are mounted on the cover below each of the depressible areas, but normally spaced above the pairs. Upon pressing down a given depressible area, the corresponding contact piece moves to engage the conductor pair associated therewith, and thus closes the circuit between them.

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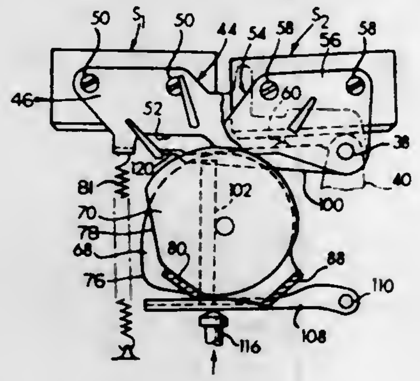
### 3,760,138
### CONTROL INSTRUMENT FOR TWO OR MORE SWITCHES

**Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.**
**Filed Jan. 31, 1972, Ser. No. 222,203**
**Int. Cl. H01h** *35/24*
**U.S. Cl. 200—835 A** **8 Claims**



A control instrument wherein there is a transmitter bar movable in response to a change in pressure, a pair of switches, arms supporting the switches with their actuating elements adjacent the transmitter bar for movement relative to each other and to the transmitter bar, cams operably associated with the respective arms for effecting displacement of the arms and hence the switches at different distances from the transmitter bar to predetermine the operation of the switches relative to each other, pointers for indicating the points of operation of the switches and limits interengageable at a terminal position to effect actuation of said switches in predetermined relation to each other.

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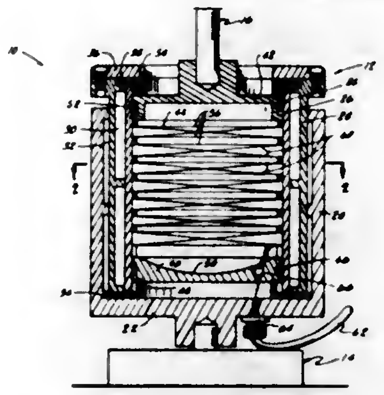
### 3,760,139
### METHOD AND MEANS FOR ACOUSTIC ENERGY CONVERSION

**Don B. Porter, Jr., P. O. Box 115, Neodesha, Kans.**
**Filed May 27, 1971, Ser. No. 147,347**
**Int. Cl. H05b** *9/00;* **H02k** *45/00*
**U.S. Cl. 219—10.65** **28 Claims**

A method of converting acoustic energy to another form of energy establishes a magnetic field in an electrically conductive fluid medium. Acoustic energy is passed into the electrically conductive fluid medium and converted therein into another form of energy. A conversion device receives acoustical energy passed into an electrically conductive fluid medium which is under the influence of a magnetic field. The energy passed into the electrically conductive fluid medium causes electric currents in the fluid which are dissipated in the magnetic field and transformed to thermal energy which is dissipated by the device.



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### 3,760,140
### SUBMERGED-ARC WELDING WITH STRIP ELECTRODE AND FOAMED FLUX

**Ingo Kretschmer, Lohhof, and Marjan Mursic, Munich, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany**
**Filed Apr. 16, 1971, Ser. No. 134,906**
**Claims priority, application Germany, Apr. 24, 1970, P 20 20 047.9**
**Int. Cl. B23k** *9/18*
**U.S. Cl. 219—73** **13 Claims**

To obtain higher quality welds in the submerged-arc welding of electrode strips having a width to thickness ratio above 90 : 1, there is employed a flux having a bulk density of 0.4–0.8 kg./l., e.g. a foamed flux. The process is especially applicable to the economical production of stainless steel clad vessels and the like.

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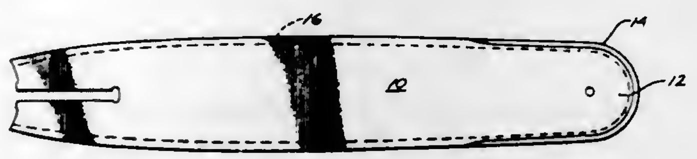
### 3,760,141
### METHOD FOR APPLYING HARD FACING TO AN OBJECT

**Salvador Espana, San Pedro, Calif., and Brunson Bert Font, Lake Havasu City, Ariz., assignors to McCulloch Corporation, Los Angeles, Calif.**
**Division of Ser. No. 852,587, Aug. 25, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,437**
**Int. Cl. B23k** *9/04*
**U.S. Cl. 219—77** **12 Claims**



The nose of a chain saw blade is radiused along its edges. The radiused nose is then grit blasted to roughen its surface and to remove any oxides. A first layer of particulate hard facing material is applied to the radiused nose and fused to obtain a metallurgical bond between the nose and the first layer. A second layer of hard facing is then welded to the prepared first layer with an inert gas shielded arc process without marked penetration into the nose's parent material. The hard facing is then finished by grinding.

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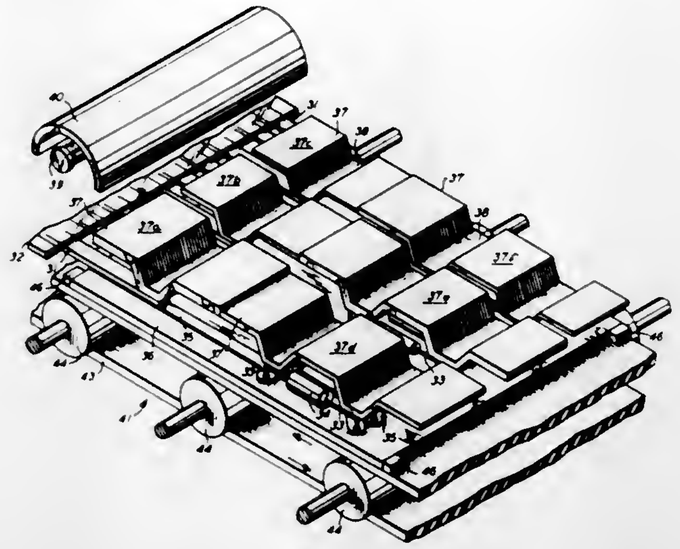
### 3,760,142
### SOLDERING APPARATUS HAVING A NON-UNIFORM HEAT TRANSFER DISTRIBUTION

**David Schoenthaler, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.**
**Filed July 31, 1972, Ser. No. 276,275**
**Int. Cl. B23k** *1/02*
**U.S. Cl. 219—85** **13 Claims**



Radiantly heated tools are used for bonding leads to an array of circuit paths. The heat transfer characteristics of the tools over their area of contact with the leads and circuit paths cause a profile or contour to be formed which matches the heat capacity profile or contour of the array to the heat output contour of a heat source. The heat transfer contour of the tools may be obtained by varying parameters such as material, mass, density, specific heat and absorptivity over the contact area of the tools.

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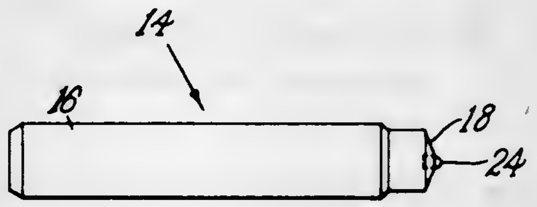
### 3,760,143
### WELDING STUD

**Herbert F. Rondeau, Winchester, Mass., and Donald H. Ettinger, Royal Oak, Mich., assignors to Warren Fastener Corporation, Mount Clemens, Mich.**
**Filed Jan. 3, 1972, Ser. No. 214,926**
**Int. Cl. B23k** *9/20, 35/22*
**U.S. Cl. 219—98** **6 Claims**



A weldable stud, especially one of high carbon steel to be drawn-arc welded to high or low carbon substrates (or vice versa), desirably includes a fluxing combination consisting essentially of nickel and aluminum. The conical end of the stud to be welded preferably has a hole in its tip for receiving a flux assembly wherein the nickel and aluminum respectively are present roughly on the order of about 30 to 70 percent by weight in novel and alternative forms for engendering austenitic joints. Resultant alloying at the fusion zone of the stud and substrate interfaces provides improved weld strength.

The different flux assemblies may have substantially the same outer diameter and, accordingly, one mechanism is employed for practicing a novel method of successively producing and mounting the different assemblies in studs or the like.

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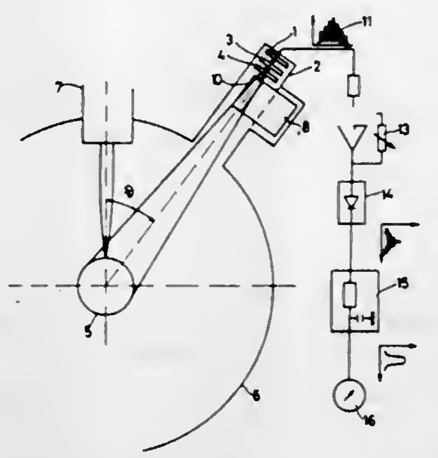
### 3,760,144
### OPTIMUM FOCUSING IN AN ELECTRON BEAM WELDING MACHINE

**Peter Herzberger, Canonica Di Cuveglio, and Learco Di Piazza, Angera, both of Italy, assignors to European Atomic Energy Community, Luxemburg, Luxembourg**
**Filed May 28, 1971, Ser. No. 148,113**
**Claims priority, application Luxembourg, June 2, 1970, 61.048**
**Int. Cl. B23k** *15/00*
**U.S. Cl. 219—121 EB** **2 Claims**



Apparatus for determining optimum focusing of an electron beam at the site of a weld wherein the electron beam is directed onto a sample and the intensity of the infra-red radiation emitted at the point of incidence between the beam and the sample is measured by means of a photoelectric cell. A radiation chopper is placed between the photoelectric cell and the samples in such a manner that particles displaced from the workpiece are deflected away from the photoelectric cell. The focus is adjusted in dependence upon the intensity of the infrared radiation.

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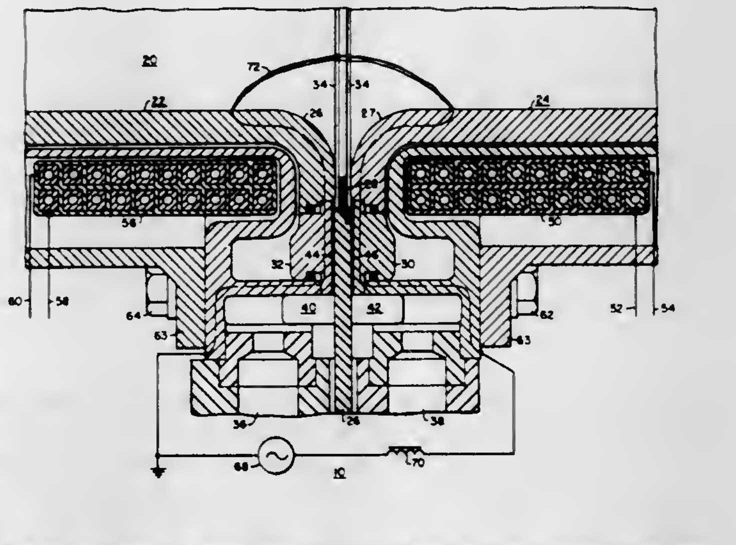
### 3,760,145
### SHORT GAP ELECTRIC ARC HEATER WITH OPPOSING GAS SWIRL

**Charles B. Wolf, Irwin, and Maurice G. Fey, Turtle Creek, both of Pa., assignors to Panelera International Inc., Salt Lake City, Utah**
**Filed Dec. 13, 1971, Ser. No. 207,453**
**Int. Cl. B23k** *9/00*
**U.S. Cl. 219—121 P** **8 Claims**



An electric arc heater useful in chemical processing operation where a thin annular disc is placed between two axially disposed hollow electrodes. The disc aids in channeling a gas which may be tangentially introduced into a chamber within the electrodes where chemical processing occurs. The gas flows on either side of the disc and between the electrodes to blow electrical arclets which are struck between one electrode and the disc and between the disc and another electrode into the arc chamber, stretching the arclets transversely with respect to the axis of the arc chamber. The arclets join to form a single arc once the arclets have been blown a sufficient distance away from the electrically conducting disc. The opposing introduction of gas on either side of the disc into the arc chamber reduces net swirling and reduces centrifugal forces within the gas which otherwise may create boundary layers of cool heavy gas against the side wall of the arc chamber which would in turn cause poor temperature distribution transversely across the arc chamber and impede heat removal through the walls of the arc chamber or throw heavy process particles into the gap thus creating a potential for unwanted short circuits between electrodes.

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### 3,760,146
### PHOSPHOR BRONZE ARC WELDING ELECTRODE FOR ALTERNATING CURRENT

**David Rozet, York, Pa., assignor to Chemetron Corporation, Chicago, Ill.**

**Filed Oct. 14, 1971, Ser. No. 189,339**

**Int. Cl. B23k** *35/22*

**U.S. Cl. 219—146** **5 Claims**

A phosphor bronze electrode including a coating of materials having a low ionization potential, i.e., easily ionized, is disclosed which is suitable for use either with direct current or alternating current having an open circuit as low as 40 volts.

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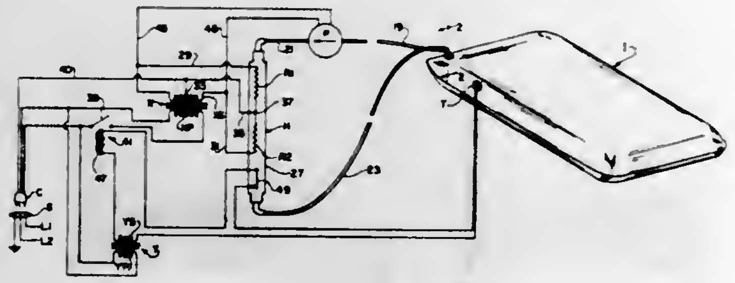
### 3,760,147
### APPARATUS FOR HEATING A WATER BED

**Elasco A. Tyrey, 239 Estridge, St. Louis, Mo.**

**Filed June 15, 1972, Ser. No. 262,950**

**Int. Cl. H05b** *3/78*

**U.S. Cl. 219—217** **6 Claims**



Apparatus for heating a water bed in which an electrical fluid pump circulates water from a water bed through an electrical heater interposed in a conduit system interconnecting the pump to the water bed. The electrical heater includes a resistance wholly immersed in and exposed to water flowing through the conduit system. A transformer having a primary winding connected to an a.c. line voltage power source has a secondary winding connected to supply low voltage a.c. power of approximately 30 v. or less to the resistance thereby eliminating electrical shock hazard to the user of the water bed.

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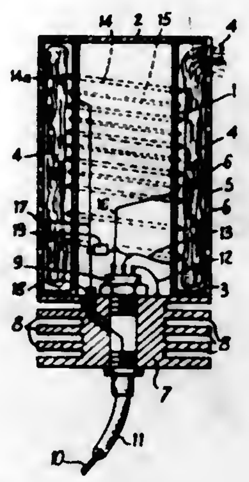
### 3,760,148
### APPARATUS FOR TREATING HAIR UTILIZING DIELECTRIC LOSSES

**Georges Boudouris, Grenoble; Gregoire Kalopissis, Paris; Jean-Luc Levesque, Paris, and Paul Roussopoulos, Paris, all of France, assignors to L'Oreal, Paris, France**

**Filed Dec. 20, 1971, Ser. No. 209,696**

**Int. Cl. A45d** *2/36;* **H05b** *9/06*

**U.S. Cl. 219—222** **6 Claims**



Device for treating hair by dielectric losses in which most of the high frequency current utilized is generated within or closely adjacent an electromagnetically closed jacket which holds the hair to be treated.

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### 3,760,149
### CORDLESS ELECTRIC IRON AND CURRENT-SUPPLYING MEANS THEREFOR

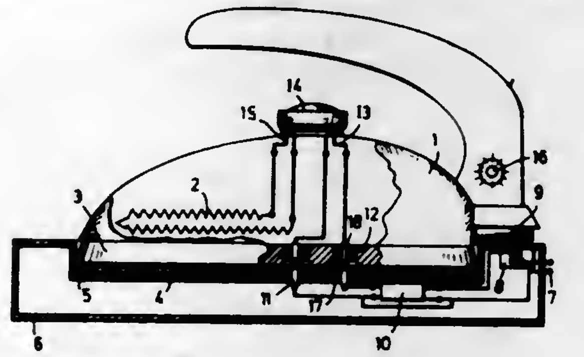
**Eugen Harsanyi, Hauptstr. 73, Esch, near Bergheim, Germany**

**Filed July 14, 1971, Ser. No. 162,372**

**Claims priority, application Germany, July 22, 1970, P 20 36 268.9; Feb. 13, 1971, P 21 06 896.2**

**Int. Cl. D06f** *75/28*

**U.S. Cl. 219—247** **14 Claims**



A cordless electric iron has one or two sets of terminals which engage terminals in a base when the iron is deposited on the base in a single predetermined position (e.g., in a position in which the sole plate is substantially horizontal) or in one of two predetermined positions (in one of which the sole plate is horizontal and in the other of which the sole plate is vertical). The iron and the base carry the component parts of a safety device which automatically disconnects the terminals of the base from the source of electrical energy and/or which completely conceals or retracts the terminals of the base and/or the terminals of the iron in response to movement of the iron from its predetermined position on the base. This insures that the touching of terminals in the base when the iron is in use and while the base is connected with the energy source cannot cause harm to a careless operator or to another person who accidentally touches the terminals of the base. The safety device can employ a permanent magnet in the iron and a normally open switch provided in the base in such position that it is closed by the magnet and thereby connects the base terminals with the energy source only when the iron is supported by the base in a predetermined position of rest. Also, the safety device can employ one or more relays which are energized to connect the base terminals with the energy source in response to establishment of an electrical connection between two auxiliary terminals in the base which are connected to each other by the sole plate of the iron when the latter is properly deposited on the base.

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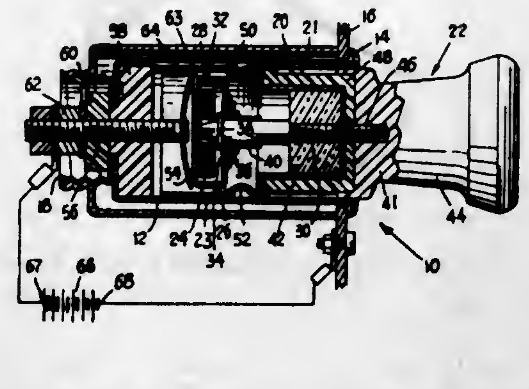
### 3,760,150
### ELECTRIC CIGAR LIGHTER WITH THERMOSTATIC BIMETALLIC CURRENT CONTROL

**Lawrence E. Fenn, 40 Anchorage Dr., Bridgeport, Conn., and Charles R. Sperry, 25 S. Court St., Providence, R.I.**

**Filed June 9, 1972, Ser. No. 261,233**

**Int. Cl. F23g** *7/02*

**U.S. Cl. 219—265** **9 Claims**



An instant cigar lighter comprising a holder adapted for mounting on an automobile dashboard, an elongate igniter plug receivable in the holder and having a spiral heating coil disposed at its inner end, a metal cup surrounding the heating coil and at one end connected thereto, and means for establishing an electrical circuit through the cup and heater coil to enable energization of the latter. The lighter is intended for use with a source of power having a higher voltage than the voltage rating of the coil, and has special heat responsive means comprising a bimetal disk engageable with the rim of the cup and closely juxtaposed to the heating coil for substantially instantly opening the circuit in response to heating of the coil to a useful predetermined temperature. The bimetal disk and the metal cup can cooperate to constitute a tightly closed enclosure closely surrounding the heating coil, the disk comprising one large wall of the enclosure whereby heat from the coil is immediately experienced by the disk to effect a very rapid response of the latter. The voltage rating of the heating coil can be one-half of the output voltage from the power source such that the coil becomes heated at a greatly increased rate and reaches a useful temperature in a period of less than several seconds, after which its circuit is opened to prevent burn-out.

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### 3,760,151
### ARC DETECTING MATERIAL ADMISSION APPARATUS FOR USE IN COMBINATION WITH AN ELECTRIC ARC HEATER

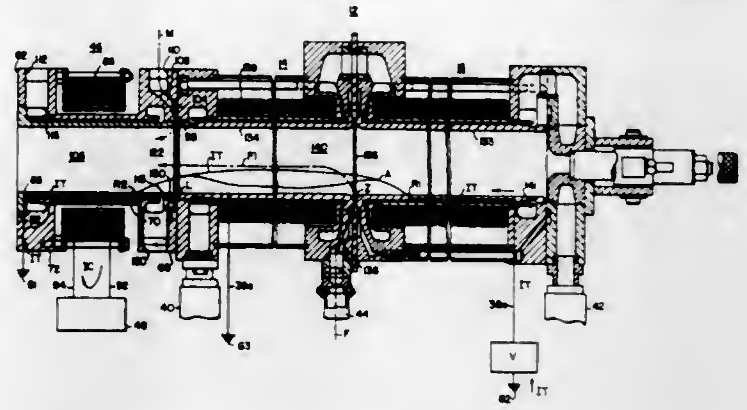
**Charles B. Wolf, Irwin; Maurice G. Fey, and Frederick A. Azinger, Jr., both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Aug. 11, 1972, Ser. No. 279,894**

**Int. Cl. H05b** *7/18*

**U.S. Cl. 219—383** **16 Claims**

A materials admission or quench tube assembly disposed downstream of an electric arc heater, this assembly being disposed adjacent to the downstream electrode of the electric arc heater but insulated therefrom, the assembly having the capability of admitting quench material to a stream of gas which has been previously heated by an arc in the upstream heater or being capable of providing process material to that stream or both, the materials admission and quenching assembly having as an integral part thereof an electrical current transformer electrically connected to an indicating or control means. In the event a root of an electric arc which normally resides or strikes against the downstream electrode in the arc heater strikes against an internal portion of the materials admission and quenching tube the electrical current flowing from the root of the arc which has struck the internal portion of the materials admission and quenching tube will flow through the region enclosed by the current transformer and returned to ground through a suitable ground connection. The flow of current through the region enclosed by the current transformer will energize the current transformer to an extent sufficient to cause the indicating or control means electrically connected to the current transformer to reach to the current and therefore provide an indication of the fact that the root of an arc has struck an internal part of the materials admission and quenching structure and compensate therefor if desirable.



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### 3,760,152
### CORONA DISCHARGE DEVICE FOR REMOVING DIELECTRIC LIQUID

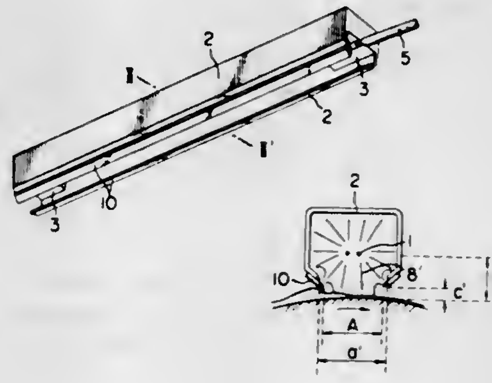
**Takashi Saito, Tokyo, and Yujiro Ando, Yokohama-shi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan**

**Filed Feb. 25, 1972, Ser. No. 229,540**

**Claims priority, application Japan, Mar. 1, 1971, 46/10501**

**Int. Cl. H05b** *7/18*

**U.S. Cl. 219—384** **11 Claims**

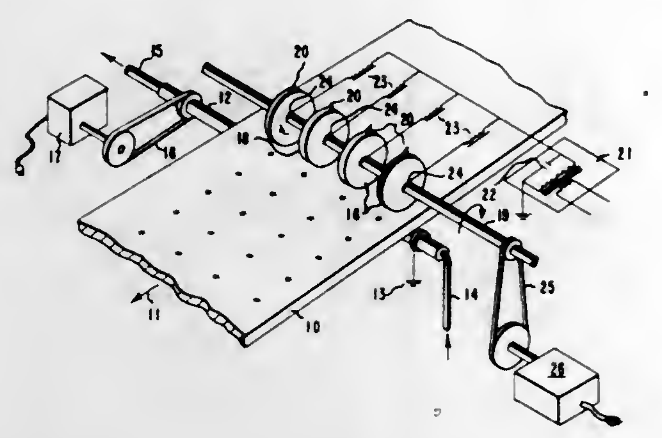


A device for removing dielectric liquid from a holder member for a photosensitive medium or the like used in an electrophotographic copying machine includes a corona discharging electrode, a shield member substantially surrounding the corona discharging electrode in electrically isolated relationship therewith and having at least a discharge opening, corona discharge converging means provided adjacent to the discharge opening of the shield member, and a power source from which a voltage is applied to the corona discharge electrode.

### 3,760,153
### APPARATUS FOR PERFORATING THERMOPLASTIC SHEET MATERIALS WITH AN ELECTRIC ARC

**Robert Dillwyn Davies, Wilmington, Del., and Leslie Yarnall Weston, Jr., Avondale, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Feb. 16, 1972, Ser. No. 226,804**
**Int. Cl. H05b** *7/18*
**U.S. Cl. 219—384** **3 Claims**



Apparatus for perforating thermoplastic sheets by controlled high current density electric arcing through the sheet, wherein the high current density arc is established between electrically charged and grounded electrodes, both electrodes comprising discs having at least one pin mounted on the periphery thereof, the discs synchroneously rotating such that a grounding pin opposes a charged pin at the desired spacing of perforations to cause an electric arc to form said perforations.

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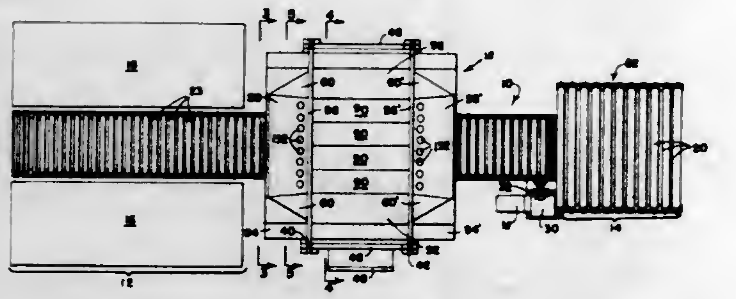
### 3,760,154
### APPARATUS FOR HEAT-SHRINKING A PLASTIC FILM ON A LOAD

**Alfred P. Konger, McHenry, Ill., assignor to Signode Corporation, Chicago, Ill.**

**Filed Feb. 29, 1972, Ser. No. 230,427**
**Int. Cl. F27b** *9/06*
**U.S. Cl. 219—388** **5 Claims**



A method and apparatus for applying a protective covering to a load by pulling the open end of a heat-shrinkable inverted film bag downwardly over the load until the lower rim of the bag appreciably overhangs the lower end of the load, initially directing infrared radiant heat on the overhanging rim region of the bag to rapidly shrink the same beneath the load, subsequently directing additional infrared heat inwardly through the sides and closed top of the bag and against the load to establish surface heating of the load and consequent outward reflection of infrared heat through the sides and top of the bag to enhance and rapidily shrinking thereof with a consequent pulling of the underlying pre-shrunk rim region of the bag upwardly to thus establish a seal between such rim region and the bottom of the load and inhibit escape of heated air from the bag, such shrinking of the sides of the bag serving to place the thus covered load under both horizontal and vertical compression.

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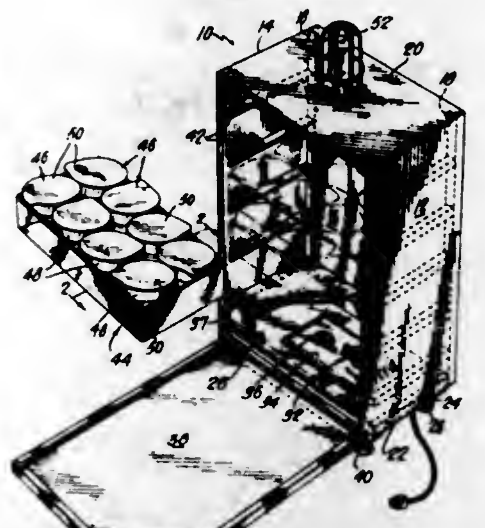
### 3,760,155
### HEATING CABINET FOR TREATING NUT MEATS

**Maurice I. Polansky, Montreal, Quebec, Canada, assignor to Quebec Vending Machine Co., Inc., Montreal, Quebec, Canada**

**Filed Aug. 28, 1972, Ser. No. 284,397**
**Claims priority, application Canada, Sept. 13, 1971, 122721**
**Int. Cl. F27d** *11/02;* **A21b** *1/00*
**U.S. Cl. 219—399** **1 Claim**



A nut meat cabinet constructed of heat-conductive material. Shelving is provided on the walls of the cabinet for receiving trays of individual sealed packets of nut meats, wherein a portion of the packet is of conductive material and a heating element is fixed to one of the walls of the cabinet so as to heat the enclosed chamber formed by the cabinet by conductive heat.

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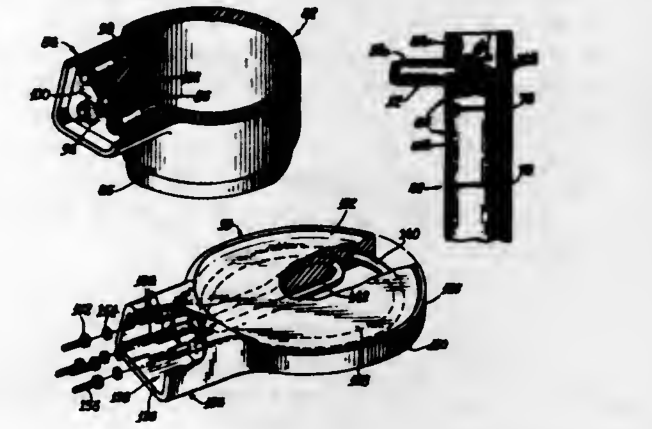
### 3,760,156
### DETACHABLE ELECTRICAL HEATING GRIDDLE

**Lawrence Joseph Kehl, North Riverside; Irvin Richard Triner, Stickney, and Robert Gerald Janis, Cicero, all of Ill., assignors to the Bunker-Ramo Corporation, Oak Brooks, Ill.**

**Division of Ser. No. 79,409, Oct. 9, 1970, Pat. No. 3,683,150. This application Dec. 27, 1971, Ser. No. 212,796**
**Int. Cl. H05b** *3/68*
**U.S. Cl. 219—447** **4 Claims**

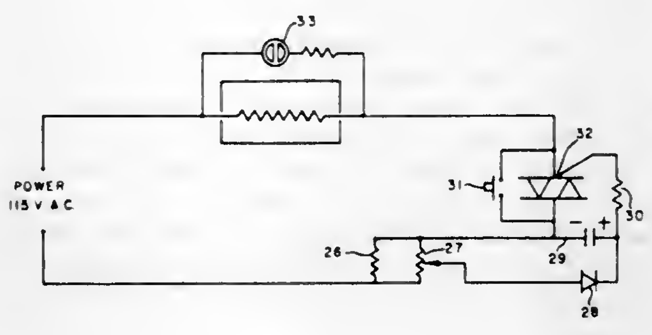


An electrically heated griddle for detachably mounting in a cantilever fashion to a mounting member, including heating and sensing elements internally imbedded in a thin, flat plate with terminals on said elements for engagement with contacts of the mounting member, and an integral mounting arm extending radially from the periphery of the plate with a polygonal portion for telescoping and frictional engagement in a predetermined position on the mounting member and including an enlarged solid portion adjacent the plate with said terminals being grouped therein and extending therethrough for engagement with said contacts.

### 3,760,157
### ELECTRICALLY HEATED WINDOW WITH CONNECTOR BLOCK AND A CIRCUIT BREAKER

**Irvin Newman, Cherry Hill, N.J., and Roy Strengholt, Holland, Mich., assignors to Thermoseal Glass Corporation, Camden, N.J.**

**Filed July 11, 1972, Ser. No. 270,856**
**Int. Cl. H05b** *3/06*
**U.S. Cl. 219—522** **5 Claims**



An electrically heated window including an insulated corner gusset having an electrical lead extending therethrough to supply electrical power to one sheet of a plurality of parallelyarranged sheets of glass, one of which has been coated with an electroconductive transparent coating, and from which the supply of electrical power is removed upon a breakage of the glass sheet having the electroconductive coating, thus avoiding the possibility of an individual being subjected to an electrical shock by coming into contact with the broken glass.

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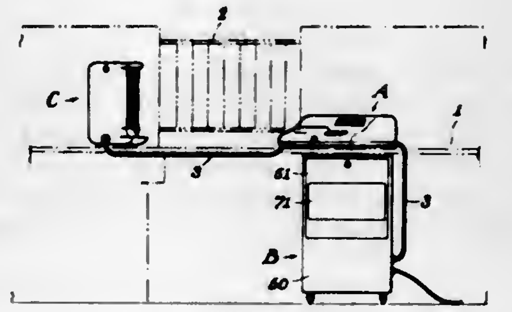
### 3,760,158
### CASH DISPENSING APPARATUS

**James Whitehead, Harpenden, and Stuart McEwen Jenkins, Rowlands Castle, both of England, assignors to De La Rue Instruments Limited, London, England**

**Filed May 28, 1971, Ser. No. 147,741**
**Int. Cl. G06k** *15/00, 15/06;* **G07f** *11/00*
**U.S. Cl. 235—61.6 R** **36 Claims**



A machine for dispensing banknotes of a plurality of different denomination comprising means for storing a corresponding plurality of stacks of banknotes, each such stack containing banknotes of a single denomination, means for selectively removing individual banknotes from each such stack, means for transporting the banknotes so removed to a dispensation station, means for sensing the passage of each banknote through the transportation means, means for selecting the value of money to be dispensed in each denomination, and means for causing the dispensation from each stack of the number of notes equivalent to the value selected in the corresponding denomination.

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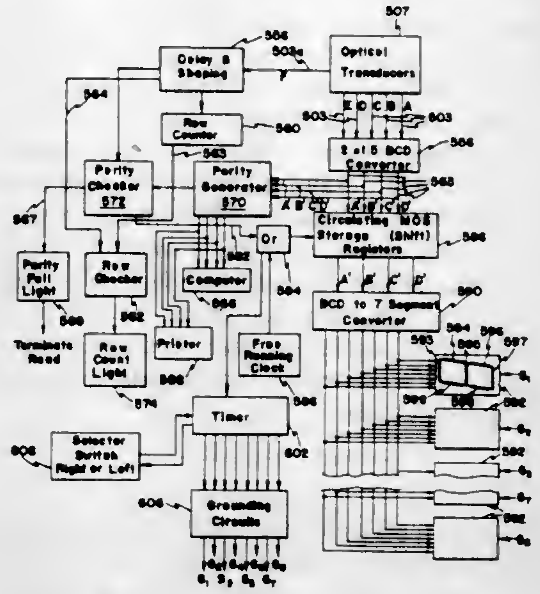
### 3,760,159
### ENCODING AND VERIFYING INFORMATION

**Louis E. Davis, Bountiful; Billy M. Jensen, Sandy; Floyd L. Larson, Granger; Rainer F. Huck, and Stephen L. Stumph, both of Salt Lake City, all of Utah, assignors to Bio-Logics Products, Inc., Salt Lake City, Utah**

**Division of Ser. No. 850,978, Aug. 12, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 217,774**
**Int. Cl. G06k** *15/00;* **G08b** *5/36*
**U.S. Cl. 235—61.6 R** **3 Claims**



Method and apparatus for encoding a device presenting rows of encodable sites and for verifying the correctness of the encoding of such a device, the apparatus including a ram assembly for press-fitting balls or the like, received from a ballfeeder assembly, into selected ones of the encodable sites, which sites take the form of blind cavities. The encodable device is light-transmitting and, after being encoded, the rows of sites are successively sensed by an optical reader to verify the accuracy of the encoding procedure. Electrical signals, derived from optical signals generated by the reader and representing the code of each row, are converted to Binary Coded Decimal (BCD) data format and stored in a circulating shift register in a row-by-row fashion so that the stored information can be subsequently converted into human readable form.

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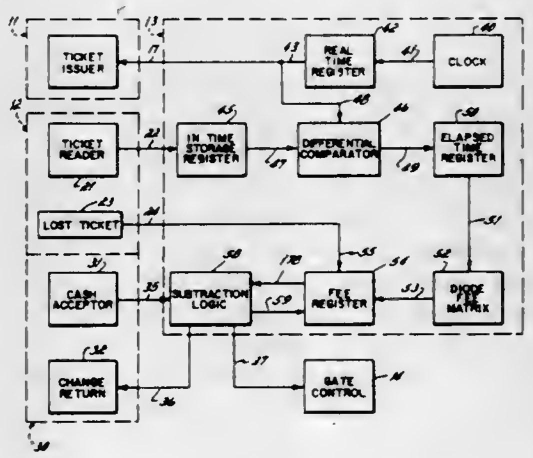
### 3,760,160
### AUTOMATIC FEE DETERMINING SYSTEM FOR PARKING GARAGES

**Carl K. Gieringer; Vernon T. Kleimeyer; Thomas J. Schinner; Paul A. Singer, and Ernest B. Zimmer, all of Cincinnati, Ohio, assignors to Cincinnati Time Recorder Company Inc., Cincinnati, Ohio**

**Filed Apr. 14, 1972, Ser. No. 244,009**
**Int. Cl. G06k** *15/00*
**U.S. Cl. 235—61.7 R** **11 Claims**



An automatic fee determining system is provided with a real time clock associated with a storage register for recording in encoded form the identification of a given 15-minute time interval of the day. A ticket issuer is positioned adjacent the entry lane of a parking facility to encode the entry time upon the ticket information from the real time storage register. The information is encoded by passing the ticket beneath continuously energized tone heads which place BCD codes on the tickets. Switching of the signal to the tone heads in response to the position of the tickets at the issuer provides for multiple digit encoding in longitudinally spaced relationship on the tickets. The tone heads are transversely movable and register with the edge of the card for proper alignment. A ticket reader reads a separate channel on the ticket to test its proper orientation and validity and then stores the information read from the ticket in an IN-time storage register. A third storage register stores the elapsed time and is differentially coupled to the real time storage register and the IN-time register loaded by the reader. Mechanical and electronic storage registers are alternatively provided. The differential comparator is similarly either a mechanical differential drive or an electronic comparator. The mechanical version includes an overdrive anti-slack feature. Fees are computed based on the elapsed time computed and stored in a fee register. The coded fee information operates either a recording cash register or an automatic cash-receiving pay station.

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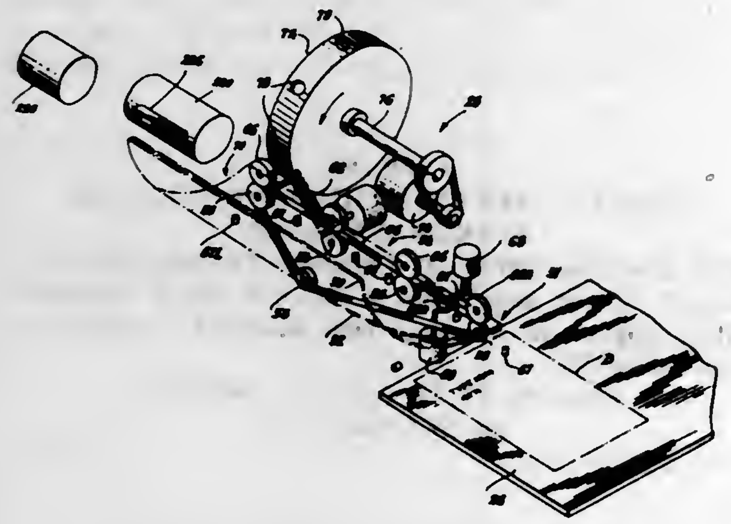
## 3,760,161
## METHOD AND APPARATUS FOR AUTOMATICALLY RETRIEVING INFORMATION FROM A SUCCESSION OF LUMINESCENT CODED DOCUMENTS WITH MEANS FOR SEGREGATING DOCUMENTS ACCORDING TO THEIR CHARACTERISTICS

**William E. Lohne, New Hope, Pa.; John R. Montgomery, Trumbull, Conn.; Jay L. Carley; Richard Darling, both of Fairfield, Conn., and William R. Smith-Vaniz, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed May 19, 1971, Ser. No. 144,877**
**Int. Cl. G11b** *5/74*; **G06k** *9/04, 7/12, 13/06*
**U.S. Cl. 235—61.11 E** **7 Claims**



A method and device are provided of the type arranged to accept documents bearing a code, to retrieve the coded information from the documents for subsequent use as electric signals, and to deliver the documents to an output station where they are periodically removed for storage, for mailing, or for other purposes. The device is arranged to retrieve information from documents typically bearing standard typographic information (e.g., typewriter characters formed with carbon-based inks) and, in addition, bearing a corresponding code, such as a bar code, formed with a photoluminescent material which is invisible until stimulated with ultraviolet radiation. To retrieve information from such documents, the device feeds the documents through a scanning stage which detects the luminescent code and supplies a corresponding electrical signal, and then through a stacking stage which segregates the documents according to information contained thereon or according to a determination that the documents have been processed either acceptably or unacceptably. The scanning stage retrieves information by guiding the document through a region illuminated only with ultraviolet light, causing only the luminescent areas to emit radiation, and stationing in this region a scanning wheel which successively passes a scanning field, optically coupled to a photodetector, across the document. The scanning wheel is preferably provided with a plurality of peripheral lenses which focus an image of the document, which is held in a arcuate guide, to a central fixed photodetector. After scanning, the document feed carries the document to a stacking stage which has a document ejection station with selectively engageable constantly moving feed means for delivering documents with one characteristic to one location and documents with another characteristic to a second location. Documents bearing visible characters as well as an invisible luminescent code are thus automatically processed in succession by a continuously operating device receiving coded documents, accurately retrieving the coded information therefrom, and conveniently segregating the documents into a plurality of output bins according to their characteristics.

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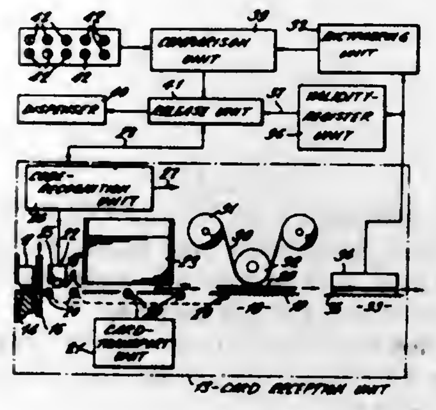
## 3,760,162
## PHOTOELECTRIC READERS

**Godfrey George Holter, Cheltenham, England, assignor to Smiths Industries Limited, London, England**

**Filed Nov. 9, 1970, Ser. No. 88,015**
**Claims priority, application Great Britain, Nov. 13, 1969, 55,594/69**
**Int. Cl. G06k** *7/14, 19/08, 9/04*; **G01n** *21/30*
**U.S. Cl. 235—61.11 E** **2 Claims**



A photoelectric reader used in a money-dispensing system to read information that is impressed on a punched-card blank by a bank-customer's embossed credit-card, includes an extra photo-responsive device that receives reflected light from a part of the blank outside the field of the impressions. Serial energization of light-emitting devices that illuminate the blank is regulated in dependence upon the output of the extra photo-responsive device to tend to maintain this output constant and thereby compensate for temperature and other variations that would otherwise affect the read-out of the information-imprint.

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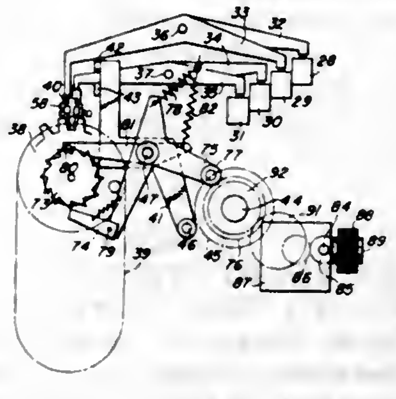
## 3,760,163
## PROGRAMMING DEVICE

**Hirotugu Takano, and Toshitsugu Inoue, both of Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed June 14, 1971, Ser. No. 152,807**
**Claims priority, application Japan, June 19, 1970, 45/53681; June 19, 1970, 45/53682; June 19, 1970, 45/53683; July 20, 1970, 45/64112**
**Int. Cl. G06k** *7/04*
**U.S. Cl. 235—61.11 C** **3 Claims**

A programming device comprising a plurality of code pins each supplying a multiplicity of different kinds of information, a plurality of switches for converting such information into electrical signals, and an endless belt on which the code pins



are arranged in different manners, whereby required information is easily obtained as an electrical signal for controlling the operation of an automatic machine.

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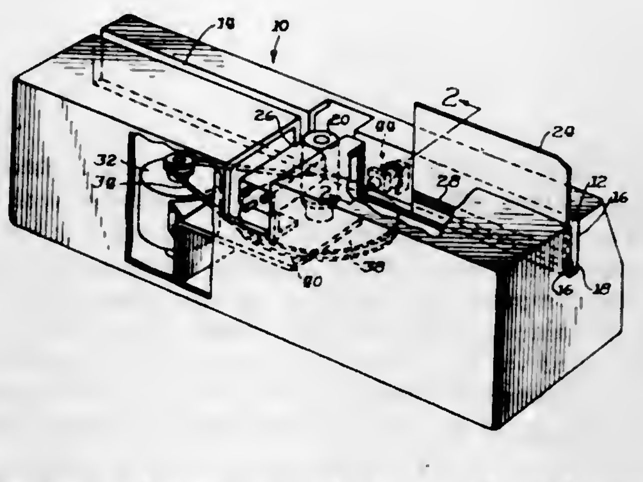
## 3,760,164
## MAGNETICALLY STRIPED CARDS FOR USE IN A SPEED MACHINE

**Fred G. Karl, Lake Villa, Ill., assignor to Bell & Howell Company, Chicago, Ill.**

**Division of Ser. No. 67,451, Aug. 27, 1972, Pat. No. 3,712,973.**
**This application Nov. 10, 1972, Ser. No. 305,399**
**Int. Cl. G09b** *19/04*; **G06k** *19/08, 7/06, 7/08*
**U.S. Cl. 235—61.12 N** **4 Claims**



Disclosed is a novel information card having a conductive control stripe in addition to a known magnetic stripe and a machine for accepting the novel card and prior art cards and for transporting the cards at different pre-set rates depending on the rate at which the card was transported when recorded. The control stripe on a card actuates a control circuit of the transport machine by closing a selecting circuit through a card sensor so that the machine will transport cards with and without stripes at a selected of the pre-set rates.

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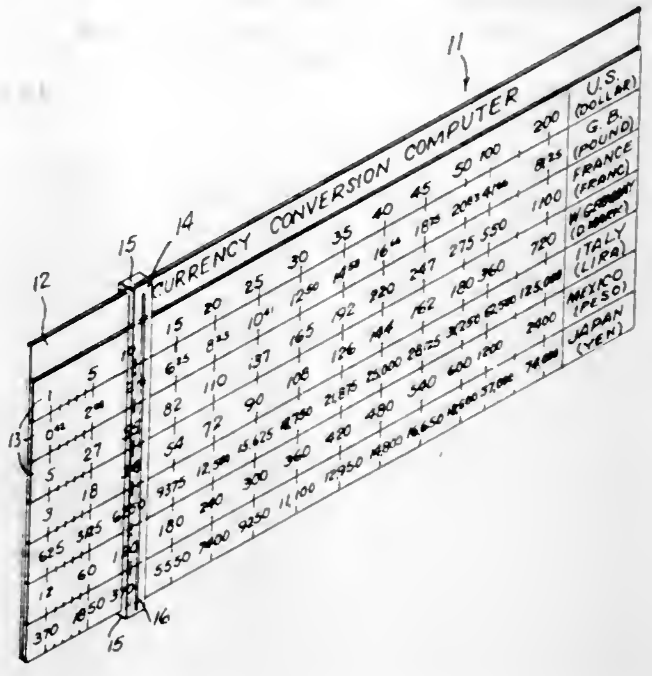
## 3,760,165
## CURRENCY CONVERTER

**Frederick C. Marcks, 505 Old Mill Road, Easton, Pa.**

**Filed June 27, 1972, Ser. No. 266,634**
**Int. Cl. G06c** *3/00*
**U.S. Cl. 235—89 R** **9 Claims**

A foreign currency converter consisting of an elongated body carrying a series of parallel longitudinal removable currency scale strips including a United States dollar scale strip, with the dollar currency values aligned with the corresponding foreign currency values. A slide with an index line is mounted transversely on the body for aligning the respective corresponding currency values. The scale strips have lugs providing a snap fit with apertures in the body. The original scale



strips can be readily removed and replaced and corrected currency scale strips when there are changes in the currency exchange rates.

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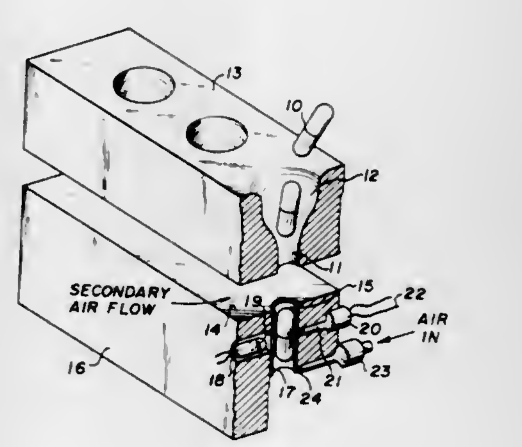
## 3,760,166
## RANDOM FLOW COUNTER

**Jim Mills Adams, West Caldwell, and William Charles Grimmell, Lake Hiawatha, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.**

**Filed Dec. 8, 1971, Ser. No. 206,065**
**Int. Cl. G06m** *1/272*
**U.S. Cl. 235—92 PK** **6 Claims**



A highly accurate counting technique for large numbers of randomly flowing, discrete solid particular sample materials such as capsules utilizing a feeder-sensor assembly and associated circuitry is described. The feeder-sensor assembly employs a pressure gradient along the sample passageway induced by a high-velocity air jet below the sensing element to effectuate proper spacing of the sample so that the sensing element can register individual passage of the samples. A secondary air flow which assists in sample separation is provided by employing an air space between the sample imput cavity and the sensor element position of the feeder sensor assembly. In a preferred embodiment the output of a plurality of feeder-sensor assemblies is fed to discrete channels into a counter circuit distinguished in having the memory latch reset controlled by a delayed multiplexer pulse synchronized to the address counter output. Thus, a reset pulse is supplied to the memory latch only if it were previously set.

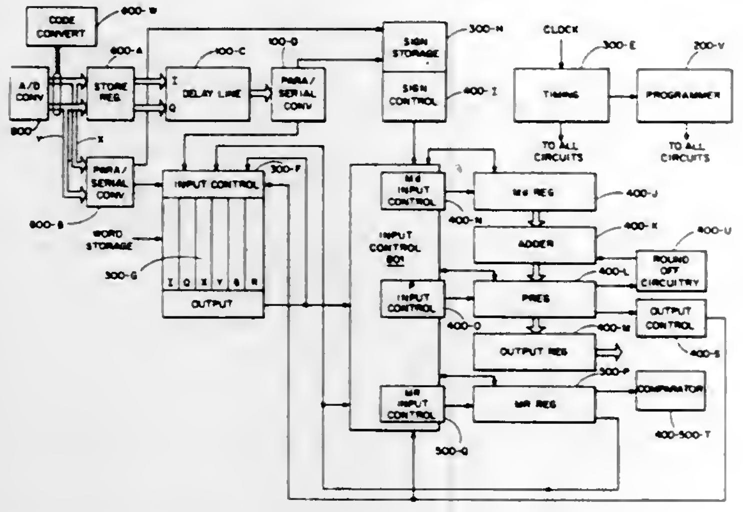
### 3,760,167
### PHASE JITTER SPECIAL PURPOSE COMPUTER

**Rex A. Schrimshaw, Tampa, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed Mar. 16, 1972, Ser. No. 235,230**

**Int. Cl. H04b** *1/10, 3/04*

**U.S. Cl. 235—151** **15 Claims**



A special purpose computer for correcting phase jitter of a communication channel. The computer performs a predetermined algorithm for estimating the phase jitter of the communication system and delaying the data signals so that their delay is equal to the carrier phase estimation delay at the point where the final carrier phase correction is applied.

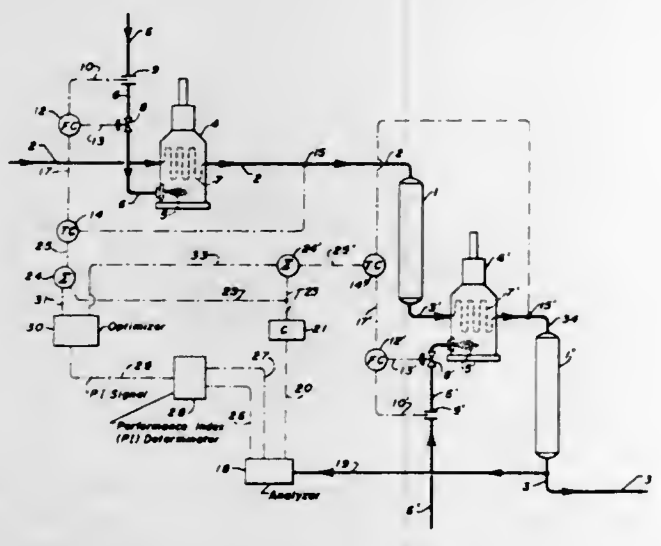
### 3,760,168
### REACTION ZONE CONTROL

**David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed May 24, 1971, Ser. No. 146,400**

**Int. Cl. C10g** *35/04;* **C07c** *15/10;* **G06g** *7/58*

**U.S. Cl. 235—151.12** **14 Claims**



The method and means of controlling the output of a multi zone reaction installation about a desired conversion level and at optimum performance conditions. An input to the reaction installation is regulated to regulate the severity of reaction in individual zones and such regulation is controlled by means including a regulatable set point for each reaction zone. The discharge effluent from the downstream reaction zone is analyzed and the signal responsive to the character of such effluent is used first to determine a performance index output signal and secondly for determining the total conversion level. An optimizer utilizes the performance index output signal to determine a first output signal for each reaction zone representing a first component of each regulatable set point. The optimizer analyzes the performance index output signal and then determines a first output signal necessary for each reaction zone to approach an optimum performance in the reaction zones. A controller utilizes the signal indicative of the conversion level of the reaction zones and determines a second output signal representing a second component of the regulatable set points corresponding to the desired total conversion level of the reaction zones. The first and second output signals are combined and are utilized as the regulatable set points for controlling the regulation of the severity of reaction in each reaction zone.

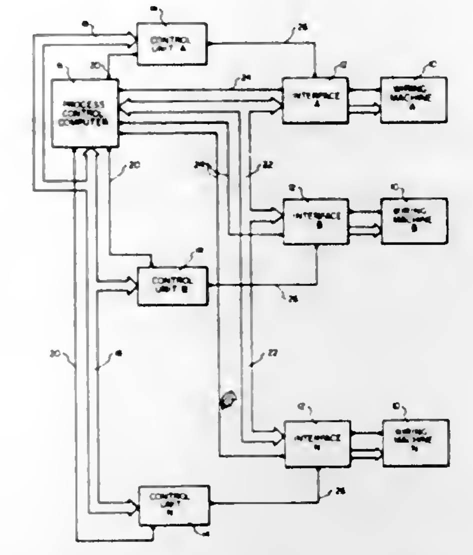
### 3,760,169
### INTERFACE SYSTEM FOR DIRECT NUMERIC CONTROL OF AUTOMATIC WIRING MACHINES

**Robert E. Paculat, Chicago, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.**

**Filed Sept. 18, 1972, Ser. No. 290,037**

**Int. Cl. G06f** *15/46*

**U.S. Cl. 235—151.1** **21 Claims**



An electronic system for interfacing a plurality of automatic wiring machines with a process control computer such as to permit direct numeric control of the machines. The interfacing system automatically calls up wiring machine instructions from the computer and presents the instruction data to the wiring machine in accordance with initial condition information provided via an operator control console. A provision is made for sensing the completion of a given level of wiring and interrupting operation prior to proceeding to the next wiring level.

### 3,760,170
### METHOD AND APPARATUS FOR AUTOMATIC CONTROL

**Theodore Weber, Jr., Nyack, N.Y., assignor to Cam Technology, Inc., Elmsford, N.Y.**

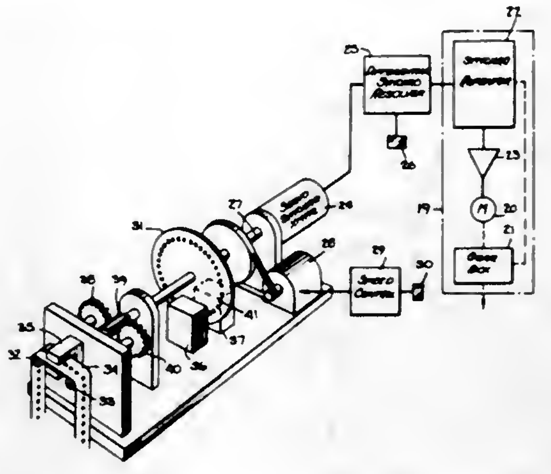
**Continuation-in-part of Ser. No. 63,114, Aug. 12, 1970, abandoned. This application Mar. 19, 1971, Ser. No. 126,164**

**Int. Cl. G06f** *15/46;* **G05b** *19/30*

**U.S. Cl. 235—151.11** **17 Claims**

The position Y of one member relative to the position Z of a second member is controlled in accordance with a prerecorded schedule such that Y = *f*(Z) where Z is subject to independent control and data is recorded representative of the slope of the function for successive equal increments of Z. Only the six least significant digits of the slope are recorded, the next three significant digits are manually inserted in the apparatus and up dated subject to the carry requirements inferred from the entry of the six least significant digits. The nine-digit slope quantum is then algebraically added $R^s$ times to an accumulated ordinate representation shifted down *s*

places in a register having more than *s* places. The number is effectively divided by this procedure and is added a sufficient number of times to recover the initial magnitude but at a slower rate. The recovered number is used for controlling the Y member.



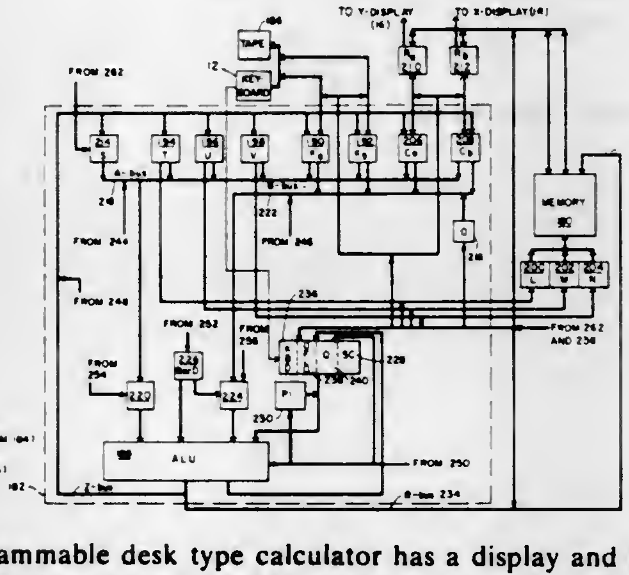
### 3,760,171
### PROGRAMMABLE CALCULATORS HAVING DISPLAY MEANS AND MULTIPLE MEMORIES

**An Wang, Lincoln; Harold Stanley Koplow, Peabody, and Shu-Kuang Ho, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.**

**Filed Jan. 12, 1971, Ser. No. 105,875**

**Int. Cl. G06f** *15/00, 15/02*

**U.S. Cl. 235—156** **16 Claims**



A programmable desk type calculator has a display and a keyboard having a first group of keys for entering numerical values, a second group of keys for entering instructional values including subroutine designators, and a key for causing the calculator to display an extended precision result. The calculator also has a first memory for storing instructional and numerical values, a second memory for storing a plurality of fixed control words, each of which has a plurality of control fields and an arithmetic unit for operating on numerical values in accordance with a series of control words selected in response to an instructional value for producing a result which is displayed directly.

### 3,760,172
### METHOD OF AND APPARATUS FOR SIGNAL PROCESSING

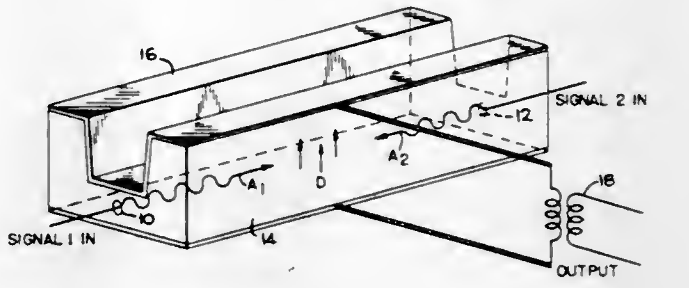
**Calvin F. Quate, Los Altos Hills, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.**

**Filed June 15, 1970, Ser. No. 46,248**

**Int. Cl. G06g** *7/19;* **H01v** *7/00;* **332** *26*

**U.S. Cl. 235—181** **26 Claims**

Method of and apparatus for convolution and correlation of electromagnetic signals by application of two signals to a piezoelectric medium to establish two acoustic waves which are propagated in a fashion such that phase matching and frequency conservation conditions are met whereby parametric coupling occurs.



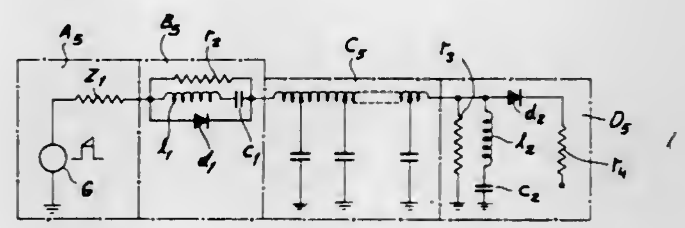
### 3,760,173
### METHOD OF AND APPARATUS FOR ELECTRONICALLY SIMULATING THE OPERATING CHARACTERISTICS OF A FUEL-INJECTION SYSTEM AND FOR DESIGNING SAME

**Mibai Boita, Bucharest, Romania, assignor to Institutul de Crecetari Energetice Industriale si Proiectari Utilaje Energetice, Bucharest, Romania**

**Filed Nov. 9, 1971, Ser. No. 196,935**

**Int. Cl. G06g** *7/57*

**U.S. Cl. 235—184** **6 Claims**



The four major elements of a fuel-injection system for a combustion engine, i.e. the pump, metering valve, pressure line, and injector, are simulated by respective electronic analog networks whose various operating characteristics can be adjusted to electronically simulate just the operating conditions of these elements whereby the system design can be optimized by the variation-of-parameters method. The pump analog is a pulse generator. A pulse-shaping network is connected to this generator to form the pulse in analogy to the operation of the metering valve which forms the fluid pulse of the pump. An electronic delay circuit simulates the action of the pressure line and another shaping network replaces the injector. Shunt switches are provided to bypass both the first shaping network and the delay network to duplicate the performance of fuel-injection systems without a metering valve and/or pressure line.

### 3,760,174
### PROGRAMMABLE LIGHT SOURCE

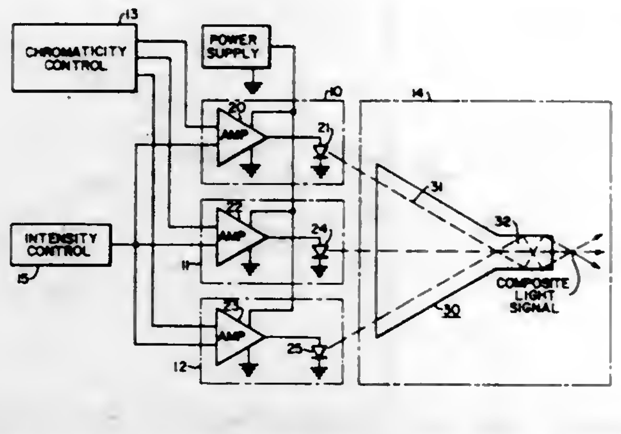
**Robert A. Boenning, and Anthony T. Nasuta, Jr., both of Baltimore, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 31, 1972, Ser. No. 258,376**

**Int. Cl. G03b** *15/02;* **F21v** *9/00*

**U.S. Cl. 240—1 R** **8 Claims**

A programmable light source in which the intensity and chromaticity of the light output signal can be modulated in accordance with a predetermined program is disclosed. The output of a plurality of light emitting diodes is combined in a light funnel to produce a composite light signal. The current



through each of the diodes is selectively controlled to intensity and chromatically modulate the composite signal.

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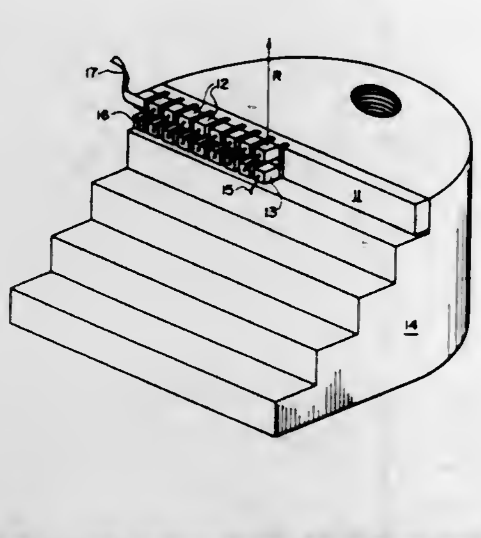
### 3,760,175
### UNCOOLED GALLIAM-ALUMINUM-ARSENIDE LASER ILLUMINATOR

**Steve B. Gibson, Manassas; William B. Lyttle, Fairfax, and Andy J. Repasy, Alexandria, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Sept. 22, 1972, Ser. No. 291,521**
**Int. Cl. F21v**
**U.S. Cl. 240—1 EL** **9 Claims**



A compact room temperature laser illuminator is provided. A cylindrical design allowing both radial and axial power and heat flow is employed. A stepped heat sink provides adequate cooling for close packed diodes. Shape and placement of electronic and optical elements as well as their composition materials are combined to insure unusually high reliability, small size, and low weight.

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### ERRATUM

For Class 240—7 see:
Patent No. 3,759,084

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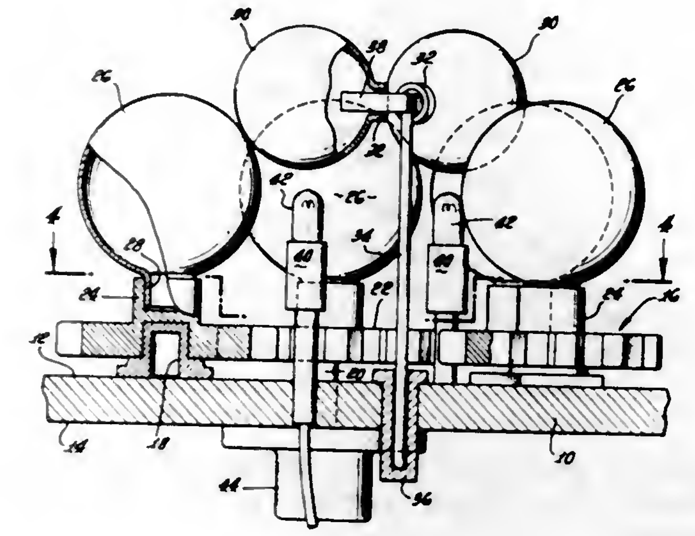
### 3,760,176
### LIGHT MACHINE

**Lawrence B. Trop, 3714 Englewood Blvd., Los Angeles, Calif.**

**Filed Sept. 24, 1971, Ser. No. 183,530**
**Int. Cl. F21p** *3/00*
**U.S. Cl. 240—10.1** **3 Claims**

A machine for generating multicolored moving light patterns in which light from a source is projected through a plurality of counterrotating transparent globes onto a translucent cover so that constantly changing, never repeating colored



light patterns are visible on the surface of the translucent cover.

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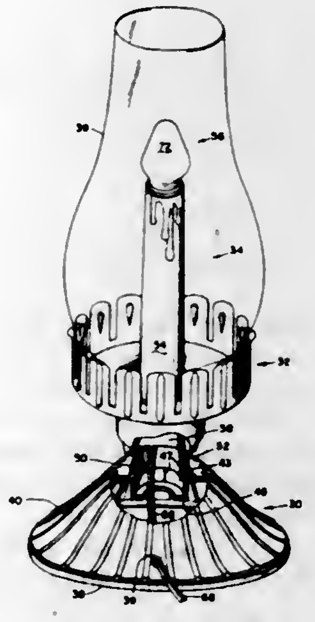
### 3,760,177
### LIGHTING DEVICE

**George D. Levy, Boston, Mass., assignor to Acla, Inc., Boston, Mass.**

**Filed Feb. 16, 1972, Ser. No. 226,877**
**Int. Cl. F21v** *35/00*
**U.S. Cl. 240—81 BS** **11 Claims**



The lighting device, preferably in the form of an electrified hurricane lamp, comprises a base, a holder, and a hollow simulated candle assembly which are fitted together as a unitary piece, and a chimney which is accommodated by the holder. The candle assembly includes a hollow member having a lower portion for mating with an opening in the base and a tapered upper portion for mating with a passage in the holder, and a socket and bulb arrangement disposed at a top end of the hollow member and having conductor wires for connecting to a power source. The hollow member preferably includes an annular ridge disposed intermediate the lower portion and tapered upper portion for limiting the position of the base and holder relative to the candle assembly.

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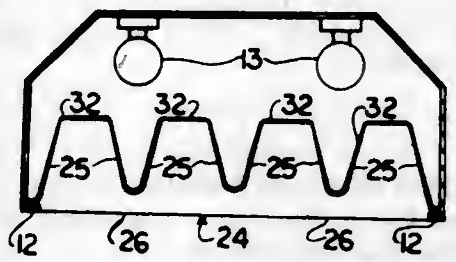
### 3,760,178
### VARIABLE DENSITY DIFFUSER FOR LIGHTING FIXTURES

**Jack V. Miller, Sierra Madre, Calif., assignor to Sunbeam Lighting, Los Angeles, Calif.**

**Filed Jan. 6, 1972, Ser. No. 215,822**
**Int. Cl. H05b** *33/02;* **F21v** *5/00*
**U.S. Cl. 240—106 R** **21 Claims**



A new form of diffuser for fluorescent luminaires constituting a unitary sheet of translucent material formed with a number of deep recesses framed by planar edge portions. The material defining the recess is of variable thickness and at its greatest depth less than half of the material at the edge portions. In certain embodiments the edge regions are metallized.

In certain embodiments the recesses are asymmetrical longitudinally with respect to the lamp with a preferred direction of light radiation at an angle $\alpha$.

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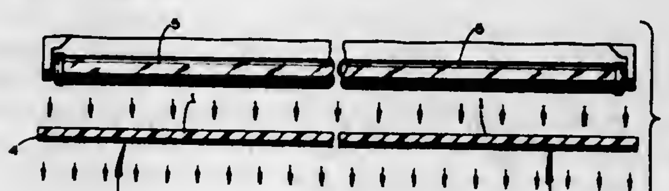
### 3,760,179
### INDIRECTLY LIGHTED PANELS FOR WALLS AND CEILINGS

**Conley R. Addington, Jr., 9626 Banes St., Philadelphia, Pa.**

**Filed July 24, 1972, Ser. No. 274,469**
**Int. Cl. F21v** *5/00*
**U.S. Cl. 240—106 R** **6 Claims**



A lighting system for walls and ceilings wherein a plurality of transparent plastic panels of uniform thickness are positioned in adjacent edge spaced relation to a wall or ceiling surface, with each panel having secured to the outer surface thereof a compacted plurality of fiberglass pile or nap of uniform length secured substantially normal to the outer surface of the panel for uniformly transmitting artificial light positioned between the inner surface of the said panels and the adjacent wall or ceiling through said panels and from the ends of fiberglass pile.

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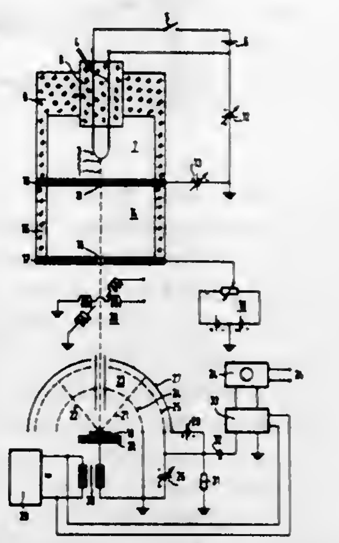
### 3,760,180
### ELECTRON-BEAM MICRO-ANALYZER WITH AN AUGER ELECTRON DETECTOR

**Ulrich Weber, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Oct. 12, 1972, Ser. No. 297,017**
**Claims priority, application Germany, Oct. 14, 1971, P 21 51 167.1**
**Int. Cl. G01n** *23/20;* **G01t** *1/36*
**U.S. Cl. 250—49.5 PE** **15 Claims**

An electron-beam micro-analyzer for investigating solid test specimens and radiation penetrable test specimens is disclosed. The micro-analyzer has an electron-beam generator for directing a focussed electron beam unto the test specimen to release Auger electrons therefrom. An electron spectrometer then separates the released Auger electrons according to the respective kinetic energies thereof and an electron detector detects the Auger electrons of specified energy separated in the spectrometer. The electron-beam generator has a field-emission point cathode having a small radius of curvature and



an anode having an opening for passing the electron beam therethrough. A voltage supply applys a voltage to develop an electric field between the anode and the point cathode of sufficient strength to excite the cathode to electron field emission. A deceleration lens disposed intermediate the anode and the test specimen reduces the velocity of the electrons of the electron beam passing from the opening of the anode.

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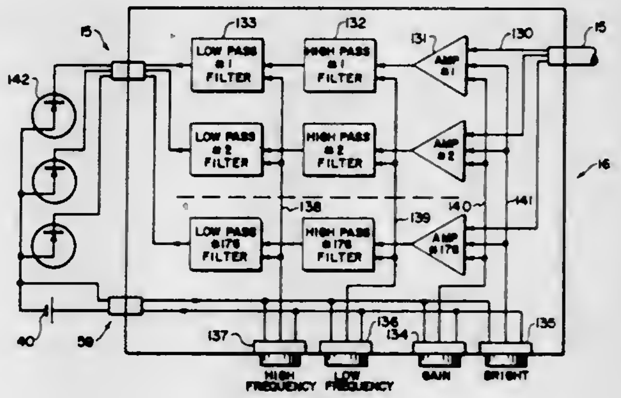
### 3,760,181
### UNIVERSAL VIEWER FOR FAR INFRARED

**Patrick J. Daly, Alexandria; William E. Grogg, Fairfax; Stuart F. Layman, Woodbridge; Harold J. Orlando, Alexandria, all of Va.; James E. Perry, Bethesda, Md., and Dennis P. Van Derlaske, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

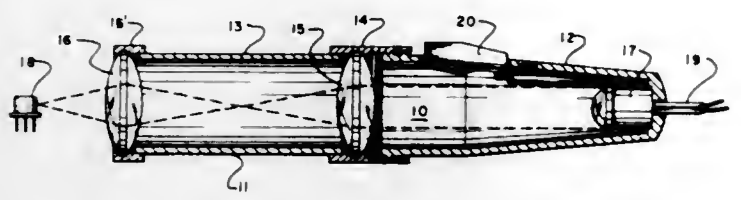
**Filed Mar. 3, 1972, Ser. No. 231,545**
**Int. Cl. G01t** *1/16*
**U.S. Cl. 250—83.3 H** **10 Claims**



The viewer is an all solid-state device employing diode detectors and display diodes of the light emitting type. Mechanical-optical scanning is employed to economize on diodes and to avoid the use of tube scanners. Novel optical arrangements are provided particularly in the IR portion of the device to provide a broad range of operation with a minimum of critical optical components. The image quality is maximized by a special configuration of the diode arrays and novel processing techniques of the analog electrical signals generated.

### 3,760,182
## SEMI CONDUCTOR HEAT-FAULT DETECTOR

**Clarence A. Poole, 3 N. 40th Ave., Yakima, Wash.**
**Filed Feb. 29, 1972, Ser. No. 230,433**
**Int. Cl. H01j** *35/00;* **G01t** *1/16*
**U.S. Cl. 250—492** **4 Claims**



The semiconductor heat-fault detector of this invention comprises a barrel, an infrared generator, and lens means. The infrared generator is disposed at the terminal end of the body portion at its end opposite the lens portion with the infrared generator directed into the barrel. The infrared generator is powered from a suitable source, and has a preselected intensity. The lens means is disposed in the lens portion of the barrel, and is operable to condense and focus energy emitted from the generator.

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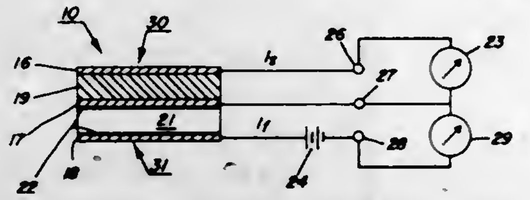
### 3,760,183
## NEUTRON DETECTOR SYSTEM

**John P. Neissel, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.**
**Filed June 8, 1972, Ser. No. 261,033**
**Int. Cl. G01t** *3/00*
**U.S. Cl. 250—252** **26 Claims**



A neutron detector unit and system comprising ion chamber and self-powered portions wherein signals from the ion chamber and self-powered portions are compared and the calibration of the ion chamber portion adjusted accordingly.

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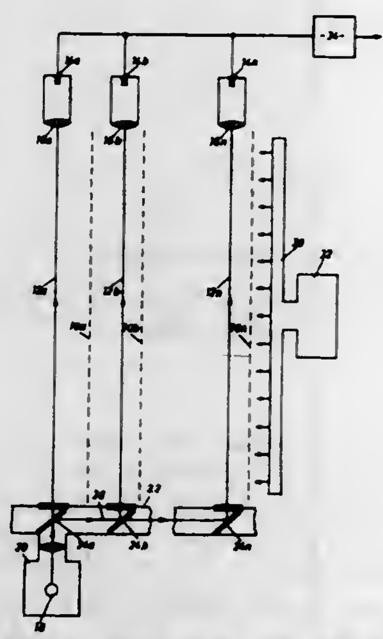
### 3,760,184
## PHOTOELECTRIC MONITORING DEVICE FOR PLURALITIES OF THREADS

**Peter Brose, Wolfratshausen, Germany, assignor to Firma Erwin Sick, An der Allee, Germany**
**Filed Mar. 10, 1972, Ser. No. 233,676**
**Int. Cl. G01n** *21/30*
**U.S. Cl. 250—219 S** **15 Claims**



In a photoelectric monitoring device for pluralities of threads, such as in warp knitting machines, a laser beam is split into a number of parallel partial beams by means of beam splitting partially transparent mirrors arranged in the optical path of the laser beam at an angle to the beam axis thereof. Each such partial beam is directed transversely across one group of threads, the threads of said group being parallel and arranged in one plane, and impinges on an associated photoelectric detector. Air flow means either in the form of an air outlet pipe or in the form of a pipe surrounding the light path of each partial beam, having a longitudinal slot and connected to a suction source make sure that broken threads are moved through the respective partial beam to cause a pulse signal from the detector.

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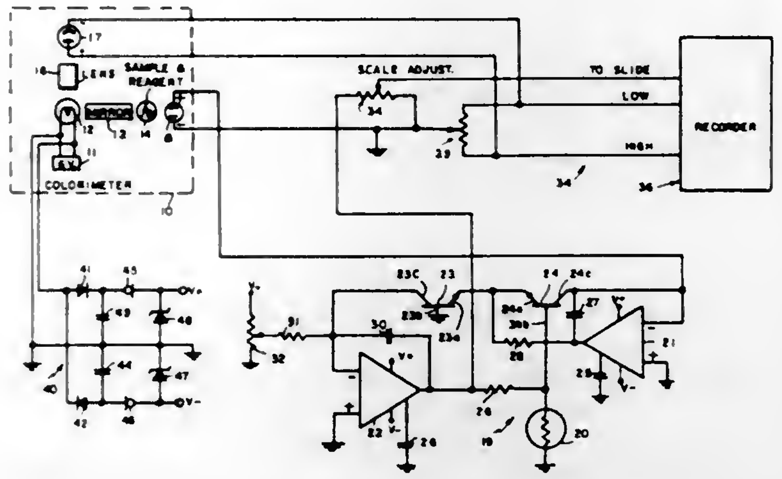
### 3,760,185
## SYSTEM FOR LINEARIZING SIGNALS

**Aaron F. Green, Cambridge, Mass., assignor to Knobelsdorff Instruments Incorporated, Natsch, Mass.**
**Filed Aug. 18, 1972, Ser. No. 281,973**
**Int. Cl. G01j** *3/34, 3/50;* **G06g** *7/12*
**U.S. Cl. 250—226** **10 Claims**



A system for linearizing a logarithmic signal provided by a colorimeter photocell or the like and for applying the linearized output signal therefrom to a strip recorder or other storage means, the system includes a double diffused transistor which is coupled to a plurality of amplifiers in a manner to utilize the logarithmic relationship between the emitter-base voltage and collector current of said transistor while at the same decreasing linearity error of said photocell.

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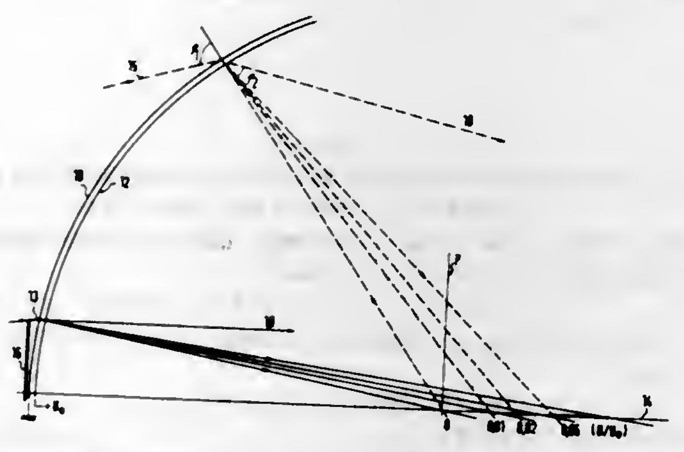
### 3,760,186
## DEVICE FOR DETERMINING THE ENERGY OF CHARGED PARTICLES

**Philippe G. Staib, Mannhardtstrasse 3, Munich, Germany**
**Filed Jan. 24, 1972, Ser. No. 219,934**
**Claims priority, application Germany, Jan. 25, 1971, P 21 03 306.7**
**Int. Cl. H01j** *37/26*
**U.S. Cl. 250—305** **7 Claims**



A device for determining the energies of charged particles, as Auger electrons, comprises at least one durved or domeshaped electrode biased to converge the paths of particles which are emitted by a particle source into a solid angle spanned by said electrode. The electrode is convex toward the particle source and cooperates with a similar, fairly closely spaced second electrode, and with a bias source connected to said electrodes to produce a particle accelerating field between them, to focus particles of a predetermined energy into a particle detecting device.

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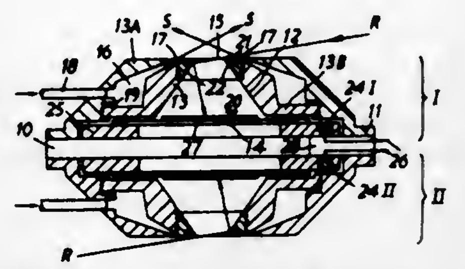
### 3,760,187
## APPARATUS FOR MEASURING RADIATION

**Victor V. Volkovisky, Paris, France, assignor to Compteurs-Schlumberger, Montrouge, France**
**Filed Feb. 11, 1972, Ser. No. 225,516**
**Claims priority, application France, Feb. 12, 1971, 7104778**
**Int. Cl. G01t** *1/16*
**U.S. Cl. 250—349** **5 Claims**



The radiation measuring apparatus comprises two absorbent cavities each having a geometrical form of revolution of general trunconical shape with reflecting lateral walls, the outer base being provided with an axial orifice forming a passage for the radiation to be measured and the inner base comprising the central junctions of a star-shaped thermopile. A window transparent to the radiation is disposed between these two bases, and the two cavities are assembled on their inner base by means of a support.

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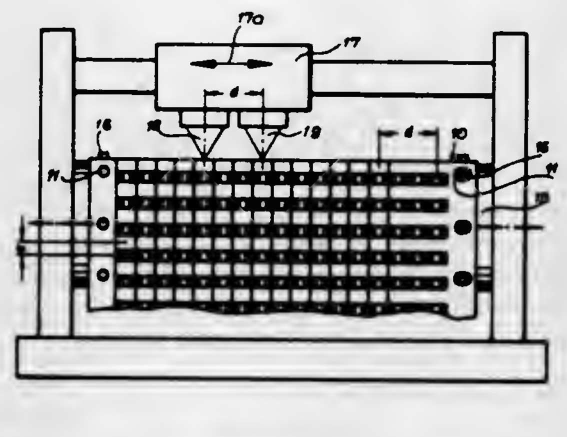
### 3,760,188
## KNITTING PATTERN AND THE LIKE AND ELECTRO-OPTIC SCANNING MECHANISM THEREFOR

**Ernst Dieter Plath, Tailfingen/Wuertt., Germany, assignor to Mayer & Cie Maschinenfabrik, Tailfingen, Germany**
**Filed Dec. 16, 1971, Ser. No. 208,636**
**Claims priority, application Germany, Jan. 19, 1970, P 21 02 238.8**
**Int. Cl. G01n** *21/30*
**U.S. Cl. 250—557** **5 Claims**



Knitting pattern and the like having pattern fields of different characteristics adapted for being scanned line-by-line and point-by-point, and an electro-optic scanning device for use therewith. The pattern is provided with parallel transverse trace tracks spaced at equal intervals, and with scanning pattern lines alternating with the trace tracks and parallel thereto. Each of the trace tracks consists of longer and shorter fields which alternate with each other and which have different optical characteristics, for example, different light permeability or different degrees of light reflection.

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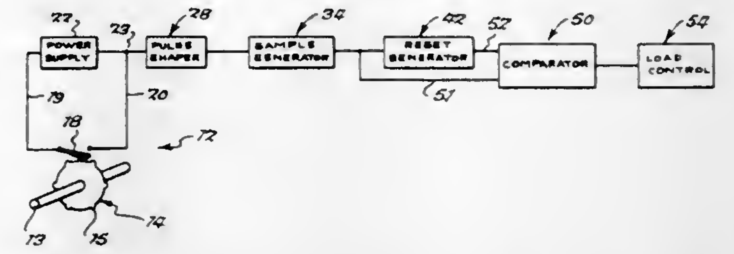
### 3,760,189
## MOTION DETECTING APPARATUS

**Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.**
**Filed Oct. 10, 1972, Ser. No. 296,102**
**Int. Cl. H01h** *35/06*
**U.S. Cl. 307—120** **8 Claims**



Detecting apparatus for providing a signal when a rotating machine element stops and comprising a pulse generating means mechanically coupled to the machine element for producing electrical pulses at a frequency directly proportional to the speed of rotation of the element. The pulses are applied through a pulse shaper to signal generating means for producing, in response to the occurrence of each pulse, first and second signals which decrease and increase, respectively, in a regular and continuous, preferably linear, manner until the next pulse occurs whereupon the signals are repeated. The signals are applied to a comparison circuit which provides an indicating signal in response to a predetermined relationship between the first and second signals indicating that the machine element has stopped rotating, and the indicating signal is used to control the machine. In preferred form, the element is a cam fixed to the shaft of rotary switching apparatus which is coupled to the drive shaft of a machine such as a power press and which controls the machine.

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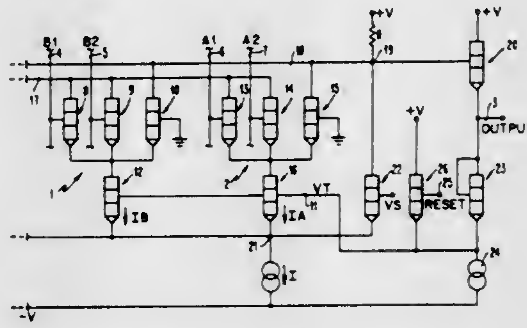
### 3,760,190
## NON-CURRENT SUMMING MULTIPLE INPUT LATCHING CIRCUIT

**Colin William Hannaford, North Poulner, Ringwood, England, assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed June 29, 1972, Ser. No. 267,273**
**Int. Cl. H03k** *17/00*
**U.S. Cl. 307—218** **6 Claims**



A multiple input latching circuit which responds to the satisfaction of any one or more of a plurality of predetermined input signal conditions by the production of an output signal which persists (until reset) irrespective of any subsequent change in the input signals. The latching circuit comprises a plurality of circuit units, each of which includes a current switch which is placed into a predetermined current conduction condition upon the satisfaction of respective input signal conditions. Said conduction condition allows a predetermined fraction of a specified total current to flow through the circuit unit to an output load and, by feedback action, to trigger into conduction a latching current switch which causes all of the specified current to flow directly to said output load. The voltage drop across the output load provides the output signal from the latching circuit.

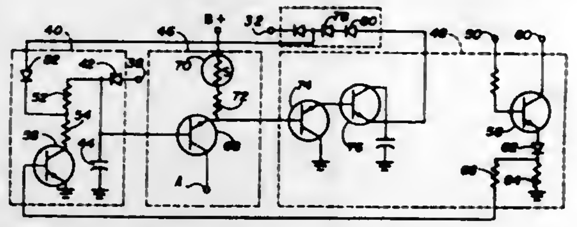
### 3,760,191
## RAMP GENERATOR FOR PRODUCING RAMP CURRENT DURING CONTROLLED RATE DISCHARGE OF STORED CAPACITANCE

**James J. Jones, 2604 Natalie, Plano, Collin, Tex.**

**Division of Ser. No. 837,855, June 30, 1969, abandoned, Continuation of Ser. No. 229,345, Feb. 25, 1972. This application Aug. 24, 1971, Ser. No. 174,537**

**Int. Cl. H03k** *4/08*

**U.S. Cl. 307—228** **4 Claims**



A vehicle skid control braking system of the type that includes means for generating a signal varying in accordance with braking conditions, such as vehicle speed, wheel speed and road surface conditions. The system includes a ramp generator responsive to the varying signal means for storing a charge proportional to the varying signal, control means having an output signal varying between first and second values, and discharge means for discharging the storage means at a controlled rate to a level determined by the varying of the control means output signal from the first value to the second value.

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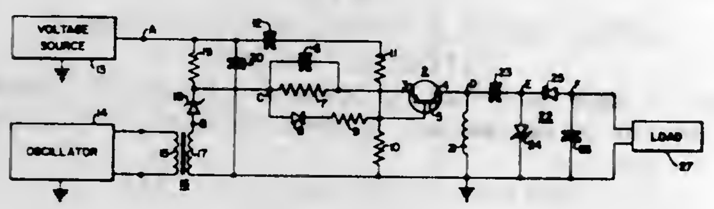
### 3,760,192
## FAIL-SAFE LEVEL DETECTOR

**John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Feb. 18, 1972, Ser. No. 227,585**

**Int. Cl. H03k** *17/74, 5/20*

**U.S. Cl. 307—235 R** **7 Claims**



A periodic or carrier signal is provided to the anode electrode of a zener diode through a transformer. A signal means provides a direct current level to the cathode electrode of the zener diode. Whenever the direct current level provided by the signal means is at least at a predetermined signal level the zener diode conducts and provides a low impedance path for the periodic signal to the input of an amplifier. The amplifier amplifies the periodic signal and provides the latter signal to the input of a signal utilization device. Whenever the direct current level provided by the signal means is at a signal level less than the predetermined signal level the zener diode is held non-conductive and the signal path to the input of the amplifier is blocked, whereby an amplified signal is not provided to the input of the signal utilization means.

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### 3,760,193
## VOLTAGE MEMORY APPARATUS

**Yoichi Sakamoto, Toyonaka City, Japan, assignor to Matsushita Electric Industrial Co., Kadoma City, Osaka Prefecture, Japan**

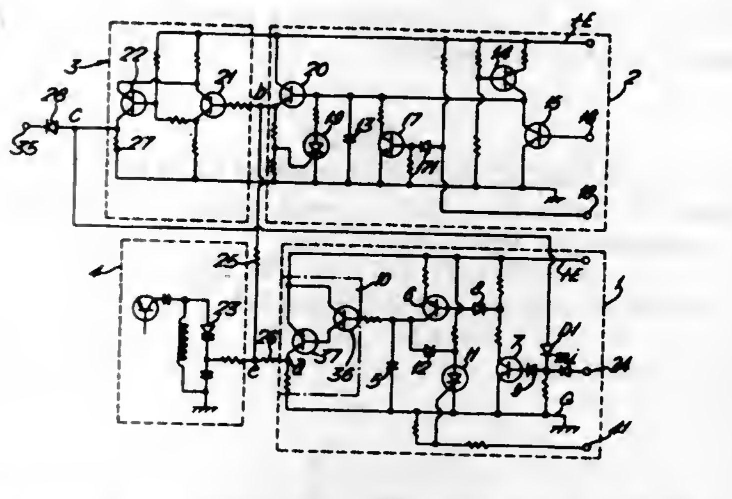
**Filed Feb. 22, 1972, Ser. No. 227,753**

**Claims priority, application Japan, Feb. 19, 1971, 46/8275; Feb. 19, 1971, 46/8276; Feb. 19, 1971, 46/8277; Feb. 19, 1971, 46/8278; Feb. 19, 1971, 46/8279**

**Int. Cl. H04b** *1/34*; **H03j** *3/18*

**U.S. Cl. 307—233** **14 Claims**

A voltage-memory apparatus comprises a main voltage-sweep circuit capable of holding a voltage without prominent loss of voltage and an auxiliary voltage-sweep circuit capable of boosting the held voltage. The memory apparatus is capable of memorizing a specified voltage applied to a variable capacitance diode which is provided as a tuning capacitance in tuner of a television receiver set, so that a tuned status is retained even when a broadcast wave is interrupted for a short time.



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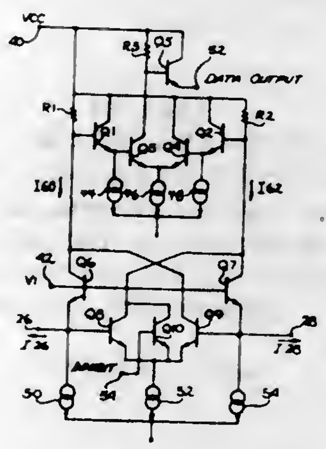
### 3,760,194
## HIGH SPEED SENSE AMPLIFIER

**Robert Clare Lutz, Sunnyvale, and Jerald R. Bernacchi, Los Altos, both of Calif., assignors to Advanced Mamory Systems, Sunnyvale, Calif.**

**Filed Jan. 31, 1972, Ser. No. 222,148**

**Int. Cl. H03k** *5/20, 19/38*; **H03f** *3/30*

**U.S. Cl. 307—235 R** **10 Claims**



A high speed sense amplifier particularly suited for use with ECL compatible integrated memory components. The sense amplifier is basically a two-stage amplifier having an input stage and an output stage. The input stage is a low input impedance differential current amplifier and the output stage is a differentially driven current switch typically coupled to a standard single ended ECL emitter follower output. The differential current amplifier used for the input stage responds to a low input current. The response time of the amplifier is short even in the presence of relatively high capacitance at the input terminals due to the circuitry connected thereto.

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### 3,760,195
## TRIGGER COMPARATOR CIRCUIT

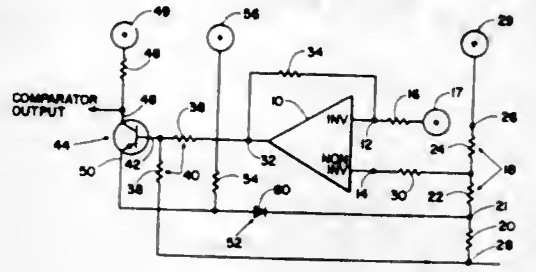
**Bronislaw Tadeusz Szpakowski, Kanta, Ontario KOA 2CO, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada**

**Filed Aug. 28, 1972, Ser. No. 284,148**

**Int. Cl. H03k** *5/20*

**U.S. Cl. 307—235** **13 Claims**

A trigger comparator circuit having an operational amplifier which compares a reference voltage with a sample of a source voltage developed across a second portion of a first voltage divider. When the source voltage increases beyond a predetermined level a corresponding signal is generated at the output terminal of the operational amplifier which begins to drive a transistor switch into conduction. The transistor switch



in turn channels current through a first portion of the first voltage divider so as to increase the voltage level appearing at the second portion of the first voltage divider until the transistor switch is driven into saturation.

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### 3,760,196
## NOISE SUPPRESSION CIRCUIT

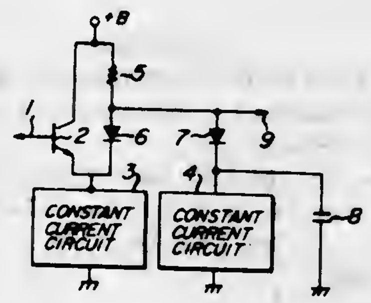
**Yoshisa Nomoto; Masanori Oguino, both of Totsuka-ku, Yokohama; Seiichi Ueda, Kodaira, and Sadao Kitamura, Kamakura, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan**

**Filed Apr. 25, 1972, Ser. No. 247,347**

**Claims priority, application Japan, Apr. 30, 1971, 46/27963**

**Int. Cl. H03k** *5/08*

**U.S. Cl. 307—237** **8 Claims**



A noise suppression circuit comprising a transistor, a resistor, a first and a second diode, a first and a second constant current circuit and a capacitor in which the resistor and the first diode are connected in series between the collector and the emitter of the transistor, the first constant current circuit is connected between the emitter of the transistor and ground, the second diode and the second constant current circuit are connected in series between the connecting point of the resistor and the first diode and ground, a capacitor is connected between the connecting point of the second diode and the second constant current circuit and ground, and, an input signal is supplied to the base of the transistor and an output signal in which noise is supressed appears at the connecting point of the resistor and the first diode.

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### 3,760,197
## SELF-OSCILLATING LIMITER

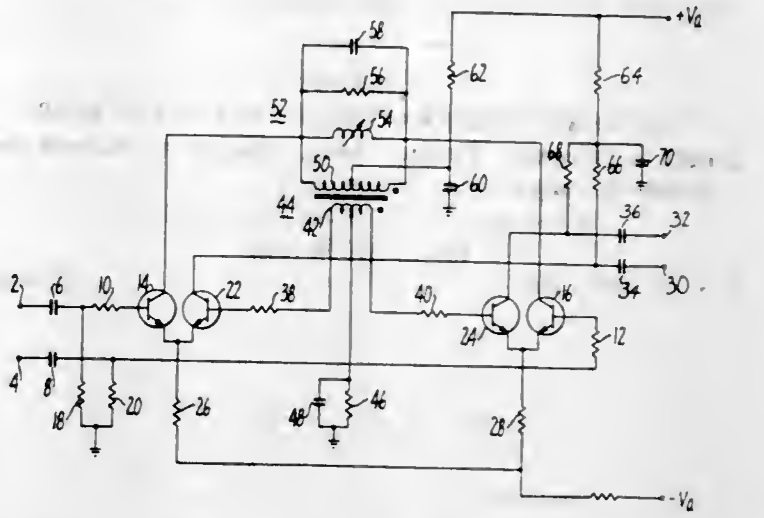
**Bert H. Dann, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.**

**Filed Jan. 19, 1972, Ser. No. 218,862**

**Int. Cl. H03k** *5/08*; **H03b** *3/02*

**U.S. Cl. 307—237** **6 Claims**

A first pair of NPN transistors operate to amplify and limit an input signal. A second pair of NPN transistors, gated on by the first pair, function to provide the circuit output when an input is applied, and function together in conjunction with an



RLC tank to oscillcate a predetermined frequency when no input is applied.

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### 3,760,198
## CIRCUITRY FOR TRANSMITTING PULSES WITH GROUND ISOLATION BUT WITHOUT PULSE WAVEFORM DISTORTION

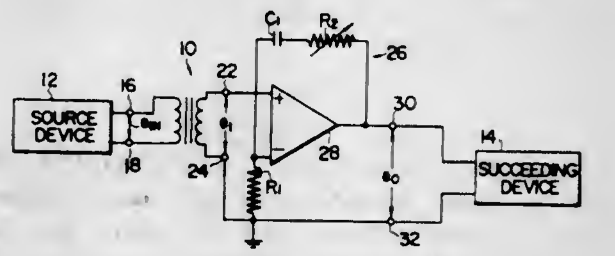
**Hiroshi Mori; Yutaka Wakasa, and Hisayuki Uchiike, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan**

**Filed Oct. 21, 1971, Ser. No. 191,176**

**Claims priority, application Japan, Nov. 6, 1970, 45/97616**

**Int. Cl. H03k** *5/01, 6/04*

**U.S. Cl. 307—268** **19 Claims**



A ground isolation circuit, capable of transferring signal pulses from a source device to a succeeding device operating at a different ground potential, is characterized by a distortion free transfer of the pulse waveform. Signal pulses at the source device are applied to the input winding of a pulse transformer to cause pulses to be induced across an isolated output winding of the transformer. The induced pulses, containing waveform sag distortion due to transformer inductance, are applied to an operational amplifier which includes a resistive-capative negative feedback circuit having its impedance parameters valued in relation to the impedance parameters of the pulse transformer to compensate by means of feedback for the pulse waveform sag introduced by the pulse transformer.

The output of the operational amplifier is applied directly to the succeeding device or to a second isolation circuit adapted to eliminate distortion in pulses having a relatively long duration. In the second isolation circuit a pair of coincidence gates are each gated both by the output waveform of the operational amplifier and by an oscillator supplying opposite polarity clock pulses to the two gates, and thus the gate outputs are clock pulse trains of opposite polarity, occurring contemporaneously with the signal pulse. A second pulse transformer has its input winding connected to the gate outputs, to cause an alternating polarity waveform to be induced across an isolated output winding. This alternating waveform is rectified and applied to a switch to cause it to be "on" during the signal pulse. By selecting the clock pulse period to be short in relations to the signal pulse period, insignificant pulse waveform sag is introduced by the second pulse transformer, since each clock pulse restores the transformer output to its previous level, and the switch is accurately controlled.

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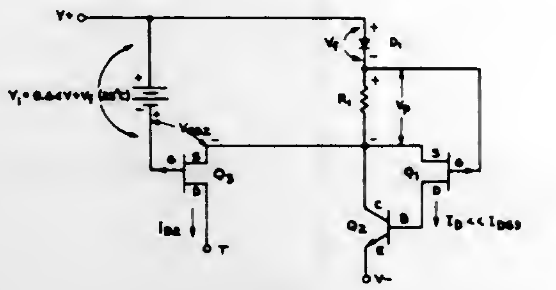
### 3,760,199
### FET ZERO TEMPERATURE-COEFFICIENT BIAS

**Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.**

**Filed Sept. 11, 1972, Ser. No. 287,775**
**Int. Cl. H03k** ***1/00***
**U.S. Cl. 307—296** **10 Claims**



Compensatory circuitry is disclosed for developing biasing voltage sources, which sources are adjusted to conform with temperature sensitive variations and manufacturing variations of junction field effect transistors, and thereby consistently produce a zero temperature coefficient bias. The pinchoff voltage of junction field effect transistors varies with temperature and must be compensated by an equal and opposite compensating voltage. The pinchoff and compensatory voltages are developed and the combination of the two will provide a zero temperature coefficient bias voltage by providing a stable bias to the junction field effect transistor resulting in a drain current equivalent to the drain current at the zero temperature coefficient point.

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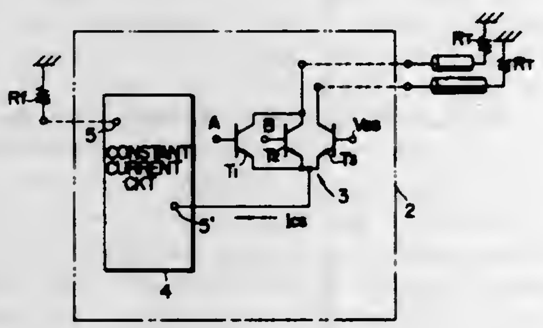
### 3,760,200
### SEMICONDUCTOR INTEGRATED CIRCUIT

**Kenji Taniguchi, Kodaira; Akio Hayasaka, Kokubunji; Akira Masaki; Tsuneyo Chiba, both of Kodaira, and Tadao Kaji, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Feb. 24, 1972, Ser. No. 229,147**
**Claims priority, application Japan, Feb. 24, 1971, 46/8645**
**Int. Cl. H03k** ***19/08***
**U.S. Cl. 307—303** **7 Claims**



A semiconductor integrated circuit is formed on a semiconductor substrate and includes a current mode type logic circuit and a constant current circuit to supply a constant current to the logic circuit. A reference resistor for adjusting the constant current is provided separately from the semiconductor substrate and connected to the constant current circuit. With this construction, fluctuations of the amplitude of the logic circuit output signal may be reduced.

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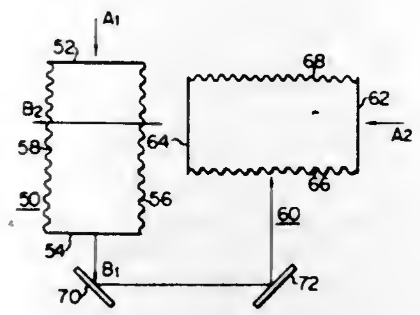
### 3,760,201
### OPTICAL FLIP-FLOP ELEMENT

**Jun-ichi Nishizawa, and Kaoru Takahashi, both of Sendai, Japan, assignors to Semiconductor Research Foundation, Kawauchi, Sendai, Japan**

**Filed Sept. 16, 1971, Ser. No. 181,078**
**Int. Cl. H03k** ***19/14***
**U.S. Cl. 307—312** **4 Claims**



A semiconductor laser diode has two opposite parallel mirror end faces normal to its PN junction. With a forward current flowing through the PN junction, the application of an optical pulse to one of the mirror faces causes a sustained coherent light to be emitted through the other mirror face. When a coherent light from a similar diode falls upon the first diode, the latter terminates its emission. The pulse is again applied to the first diode to emit the coherent light from it. Thus both diodes form a FLIP-FLOP. Those two diodes may be formed in a single semiconductor wafer.

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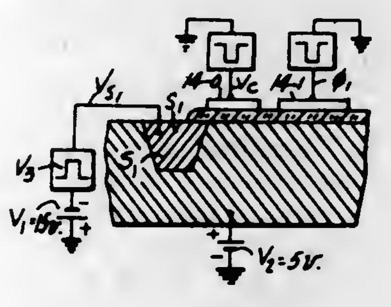
### 3,760,202
### INPUT CIRCUITS FOR CHARGED-COUPLED CIRCUITS

**Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, Princeton, N.J.**

**Division of Ser. No. 106,381, Jan. 14, 1971. This application Jan. 31, 1972, Ser. No. 222,237**
**Int. Cl. H01l** ***11/14***
**U.S. Cl. 307—304** **8 Claims**

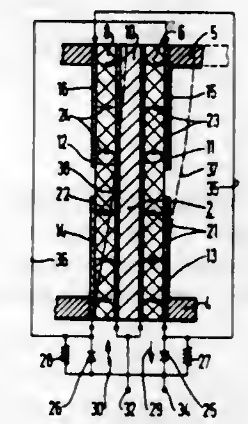


An input circuit for a charge-coupled circuit includes a source electrode in the substrate and a gate electrode spaced from the substrate located between the source electrode and a storage electrode. The amount of surface charge signal which becomes stored beneath the storage electrode may be controlled by controlling the source electrode voltage while the gate electrode is at a sufficiently high voltage level to form a low impedance conduction channel in the substrate. The time at which this charge signal transfers to the surface of the substrate beneath the storage electrode may be controlled by controlling the timing of the application of the voltage to the control electrode.

### 3,760,203
### DEPOLARIZATION PROTECTION FOR CERAMIC PIEZOELECTRIC MOTOR

**Max Guntersdorfer, and Peter Kleinschmidt, both of Munich, Germany, assignor to Siemens Aktiengesellschaft and Braun AG, both of Frankfurt, Germany, by said Guntersdorfer**

**Filed Feb. 22, 1972, Ser. No. 228,085**
**Claims priority, application Germany, Feb. 25, 1971, P 21 09 063.1**
**Int. Cl. H01v** ***7/00***
**U.S. Cl. 310—8.1** **7 Claims**



A piezoelectric motor employs a bending strip or several bending strips having piezoelectric ceramic elements which are mechanically connected in parallel in a single or several packages wherein each bending strip undergoes bending or torsional deformation upon the application of an alternating electrical voltage applied to one or several electrode pairs carried by the ceramic bending strip. The direction of the voltage reverses from between the same direction and the direction opposite to that of the permanent polarization of the ceramic material between the pair of electrodes and the motor includes a circuit comprising parallel connected rectifier and resistor elements connected in series with pairs of electrodes and having the rectifier poled with its forward direction opposite to that of the permanent polarization of the ceramic material and the resistor is dimensioned such that the peak voltage across a pair of electrodes does not exceed a predetermined fraction of the peak value of the applied alternating voltage during the non-conducting phase of the rectifier.

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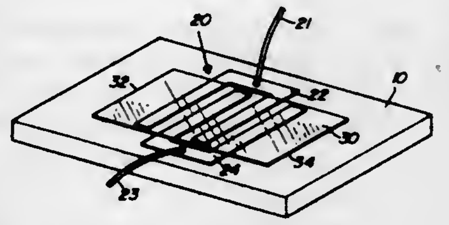
### 3,760,204
### ACOUSTIC SURFACE WAVE RESONATOR

**Francis R. Yester, Jr., Northlake, Ill., assignor to Motorola, Inc., Franklin Park, Ill.**

**Filed Mar. 1, 1972, Ser. No. 230,813**
**Int. Cl. H01v** ***7/00***
**U.S. Cl. 310—8.2** **15 Claims**



A piezoelectric resonator including body of piezoelectric material capable of propagating acoustic surface waves in response to electrical signals applied thereto. The surface waves are confined to a predetermined area on the surface of the piezoelectric material by bonding to the piezoelectric material a layer of acoustically transmissive material having an acoustic transmission velocity lower than the acoustic transmission velocity of the piezoelectric material. The dimension of the resultant laminate along the direction of propagation of the acoustic surface waves determines the resonant frequency of the laminate. The electrical characteristics of the resonant laminate are similar to those of quartz crystals commonly used in oscillators and filters.

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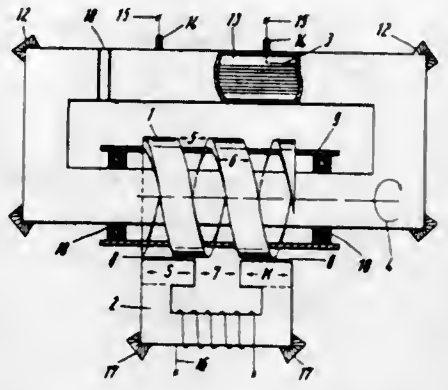
### 3,760,205
### VARIABLE-RELUCTANCE ELECTRICAL GENERATOR

**Pavel Imris, Konigsbergerstr. 4, Eldagsen, Germany**

**Filed Sept. 11, 1972, Ser. No. 287,821**
**Claims priority, application Germany, Nov. 12, 1971, P 21 56 274.3**
**Int. Cl. H02k** ***19/20***
**U.S. Cl. 310—168** **7 Claims**



An electrical generator particularly designed to generate high voltages is disclosed. The generator includes an induction coil and a driven rotor associated with the coil and a curvilinear, spirally or helically-shaped band made of ferromagnetic material provided on the surface of the rotor. A magnet is provided which produces a magnetic field. The terminal sections of the ferromagnetic band which envelop a section of the induction coil are positioned opposite to the North and South poles of the magnet and the ferromagnetic band is so proportioned and affixed that the maximum effective band length for transmitting continuous magnetic flux to the induction coil, measured in degrees of angle, is 720°, and the minimum effective band length is 360°. The width of the poles and the gap between the poles are of such a dimension that when the ferromagnetic band turns through half a revolution the effective band length for the magnetic flux is changed by 360°.

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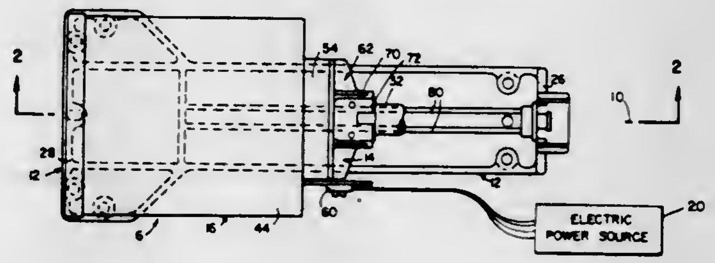
### 3,760,206
### LIGHTWEIGHT LINEAR MOTOR

**Friedrich R. Hertrich, Boulder, Colo., assignor to Iomec, Inc., Santa Clara, Calif.**

**Filed Jan. 12, 1972, Ser. No. 217,119**
**Int. Cl. H02k** ***41/02***
**U.S. Cl. 310—13** **19 Claims**



A linear motor for the positioning of objects such as magnetic pickup heads and the like comprising a support structure that mounts a guide rod, an annular permanent magnet, and a concentric pole piece that is spaced from the magnet. A voice coil assembly slidably engages the rod and a cylindrical surface of the pole piece and slides linearly along the rod and the surface into and out of an annular space between the magnets. An electric conductor is wound about a lightweight sleeve of the coil assembly and connected with an electric power source for generating electromagnetic forces and linearly moving the motor. The coil assembly includes means for mounting the pickup head or the like and an arm that extends radially away from the assembly into engagement with a guide track on the support structure to prevent rotary motions of the coil assembly on the rod or the cylindrical surface.

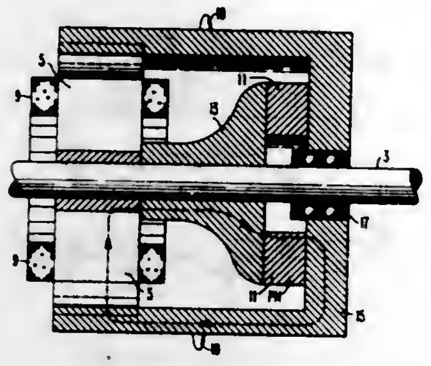
### 3,760,207
### STEPPING MOTOR STRUCTURE

**Dennis G. Abraham, Vestal; George J. Dohanich, Endicott; Frederick W. Doolittle, Binghamton, and Stephen H. Mills, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed May 15, 1972, Ser. No. 253,064**

**Int. Cl. H02k** *37/00*

**U.S. Cl. 310—49** **7 Claims**



A dynamoelectric machine having a stator enclosed in a rotor, the stator including spider-like projections each having teeth which coact with teeth on the interior of the rotor. The operating windings are located on the legs of the stator spider. A cylindrical permanent magnet provides an operating magnetic bias, and a flux guiding element steers the flux appropriately. A single-ended and a balanced embodiment are disclosed.

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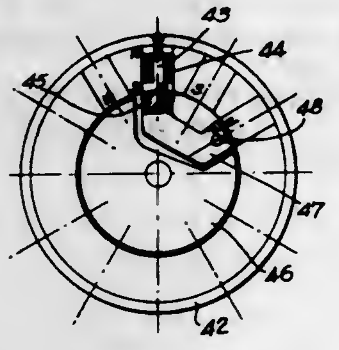
### 3,760,208
### ELECTROMAGNETIC STEPPING MOTOR

**Emile Francois Joseph Hamon, La Seyne Sur Mer, France, assignor to Etat Francais represente par Le Ministre d'Etat charge de La Defense Nationale-Delegation Ministerielle pour L'Armement, Paris, France**

**Filed July 31, 1972, Ser. No. 276,723**

**Int. Cl. H02k** *37/00*

**U.S. Cl. 310—49** **17 Claims**



An electromagnetic stepping motor with interdependent controls, especially suitable for the internal controls of missiles, torpedoes and magnetic mines. A mobile slide is provided in a molded structure carrying firstly two permanent magnets enabling motor action on excitation of magnetic frames by control windings, and secondly two permanent magnets securing mechanical locking in each position. This device can be used in programming systems, arming jacks for propellants or military charges, valves or gate controls.

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### 3,760,209
### SPLIT END BELL FOR MOTOR HOUSING

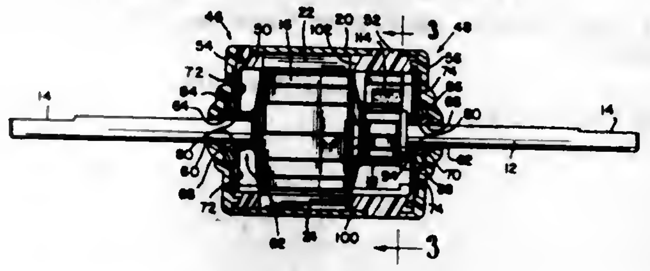
**David R. Hult, Columbus, Ind., assignor to Vernco Corporation, Columbus, Ind.**

**Filed May 25, 1972, Ser. No. 256,905**

**Int. Cl. H02k** *5/00*

**U.S. Cl. 310—91** **17 Claims**

A motor comprising a rotor assembly including an elongated shaft and an armature assembly mounted on the shaft intermediate its ends, stator elements disposed about the armature assembly, and a housing including an axially extending cylindrical shell enclosing the stator elements and end bells for closing each end of the shell and journal mounting the shaft. Each end bell is a 2-piece end bell including a peripherally extending axially inner piece and a mating peripherally extending axially outer piece. The end bell pieces, which are preferably made of plastic, capture and support the bearings for the shaft, hold the commutator brushes and position the stator elements.



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### 3,760,210
### MOUNTING ARRANGEMENT FOR AN ANGULAR SPEED OR POSITION SENSING DEVICE FOR A VEHICLE WHEEL

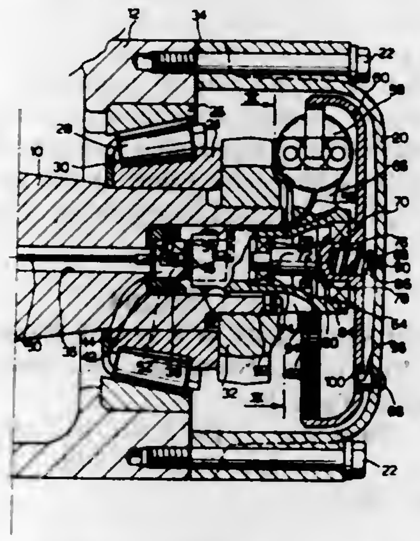
**Galileo Abate, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy**

**Filed Sept. 20, 1971, Ser. No. 181,901**

**Claims priority, application Italy, Oct. 16, 1970, 70447 A/70**

**Int. Cl. H02k** *19/20*

**U.S. Cl. 310—168** **2 Claims**



An angular speed sensing device for use in an anti-skid braking system has a magnetic sensor carried by a single support and cooperating with a tone wheel which is rotatably coupled to a wheel bearing cap, the sensor having electrical output leads connected to a plug carried by the support. The mounting arrangement permits bench-assembly of the device, and avoids overheating due to proximity to the brakes.

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### 3,760,211
### WIRING CONNECTION TO A BRUSH ASSEMBLY IN A DYNAMO ELECTRIC MACHINE

**Herbert John Thomas Cotton, Hollywood, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**

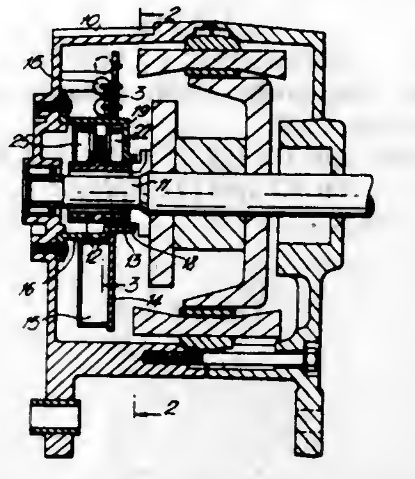
**Filed Mar. 1, 1972, Ser. No. 230,623**

**Claims priority, application Great Britain, Mar. 2, 1971, 5,860/71**

**Int. Cl. H02k** *13/00*

**U.S. Cl. 310—242** **3 Claims**

A dynamo electric machine comprises a stator, a rotor, a pair of slip rings mounted on the shaft of the rotor, and a pair of brushes. The brushes are mounted in a housing which is bolted to a printed circuit board surrounding the rotor shaft by bolts passing through bosses in the housing. Torsion springs are mounted on the bosses and urge the brushes against the slip rings. The bolts are electrically connected to appropriate parts of the printed circuit board and leads extend from the brushes to the bolts so that the brushes are electrically connected to the printed circuit by way of the bolts.



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### 3,760,212
### IONIZATION PRESSURE GAUGE TUBE

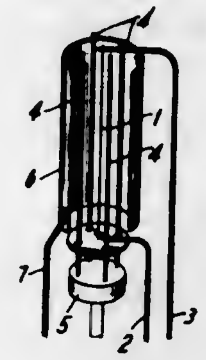
**Hermann Mennenga, Balzers, Germany, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Liechtenstein**

**Continuation of Ser. No. 866,504, Oct. 15, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,633**

**Claims priority, application Switzerland, Oct. 15, 1968, 15503/68**

**Int. Cl. G01t** *1/18;* **G01n** *27/00*

**U.S. Cl. 313—7** **4 Claims**



An ionization pressure gauge tube is designed as a triode including an electron-emitting hot cathode, an electron-accelerating electrode and an ion collector arranged between the cathode and the accelerating electrode. The cathode, accelerating electrode and collector have dimensions and a relative arrangement such that the triode system has a transconductance of 0.25 to 1.00. The accelerating electrode is designed as a cylinder and the ion collector is designed as a system of 3 to 5 rods extending parallel to the axis of the tube and arranged symmetrically around the cathode. The cylindrical accelerating electrode has a diameter of from 8 to 16 mm.

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### 3,760,213
### ANODE FOR A DISCHARGE TUBE

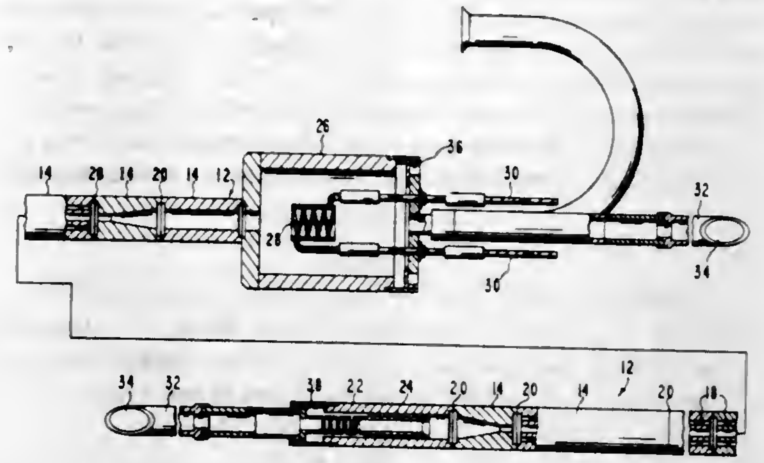
**Robert J. Buzzard, Palo Alto, Calif., assignor to Coherent Radiation, Palo Alto, Calif.**

**Filed Apr. 29, 1971, Ser. No. 138,815**

**Int. Cl. H01j** *7/24, 61/52;* **H01k** *1/58*

**U.S. Cl. 313—39** **11 Claims**

An improved anode for a discharge tube is provided in which an anode member is positioned within an anode receiving envelope and wherein the anode is constructed of a thermal-expanding material such that during operation of the discharge tube the anode expands into intimate mechanical and thermal contact with the envelope.



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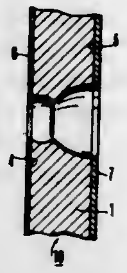
### 3,760,214
### SHADOW MASKS FOR USE IN COLOUR PICTURE TUBES

**Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan**

**Filed Jan. 3, 1972, Ser. No. 214,551**

**Int. Cl. H01j** *29/46*

**U.S. Cl. 313—85 S** **4 Claims**



In a shadow mask for use in a colour picture tube of the type including a plurality of perforations for passing an electron beam there are provided on the opposite sides of the shadow mask layers of a substance capable of suppressing the emission of secondary electrons caused by the collision of the electron beam.

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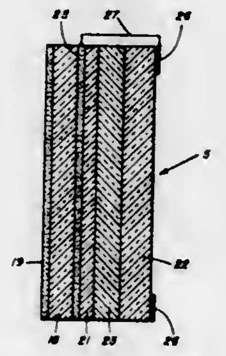
### 3,760,215
### LOW-REFLECTION FILTER FOR CATHODE RAY TUBE FACE PLATE

**Gary M. Sach, Orange, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 22, 1972, Ser. No. 282,741**

**Int. Cl. H01j** *5/16*

**U.S. Cl. 313—92 R** **9 Claims**



The invention consists of a filter for the display screen of a cathode-ray tube (CRT). The filter permits a high contrast ratio to be obtained for operation of a CRT in intense ambient light and comprises a faceplate sandwich bonded to the viewing side of the phosphor coated CRT glass. The filter includes two layers of tempered glass, having a circular polarizer sandwiched between them. The layer of tempered glass attached to the CRT glass is covered with a conductive, neutral density, specular-reflective, filter coating. The filter coating may be connected to a conductive annular ring, which ring surrounds the other piece of tempered glass. This connection serves the dual purpose of providing an RFI shield and a Faraday shield.

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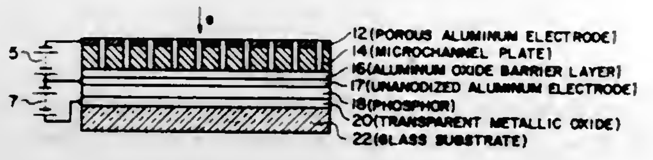
### 3,760,216
### ANODIC FILM FOR ELECTRON MULTIPLICATION

**Howard G. Lasser, Springfield, and Bipin C. Almaula, Alexandria, both of Va., assignors to the United States of America as represented by the Secretary of the Army**

**Filed Jan. 25, 1972, Ser. No. 220,673**

**Int. Cl. H01j** *43/12*

**U.S. Cl. 313—94** **17 Claims**


5
7
12(POROUS ALUMINUM ELECTRODE)
14(MICROCHANNEL PLATE)
16(ALUMINUM OXIDE BARRIER LAYER)
17(UNANODIZED ALUMINUM ELECTRODE)
18(PHOSPHOR)
20(TRANSPARENT METALLIC OXIDE)
22(GLASS SUBSTRATE)

A plurality of electron multipliers which are basically similar in construction but have different specific characteristics. These characteristics include a solid or porous electron producer and/or preamplifier on one side of a microchannel plate with a separately prepared glass substrate having a transparent metallic oxide layer, a phosphor layer, and a transparent cathode, singly or in combination on one side of the glass substrate. The microchannel plate and glass substrate are held together mechanically with the electron producer or preamplifier and the glass substrate on the outermost sides.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment to us of any royalties thereon.

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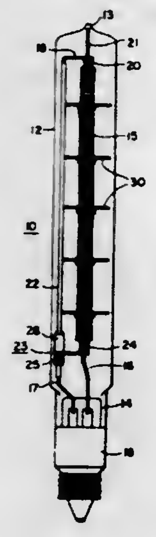
### 3,760,217
### SINGLE-ENDED HALOGEN-CYCLE INCANDESCENT LAMP WITH BRIDGELESS MOUNT ASSEMBLY

**Jack Martin, Paramus, and Joseph S. Gorecki, West Caldwell, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Aug. 25, 1972, Ser. No. 283,682**

**Int. Cl. H01k** *1/14, 1/18*

**U.S. Cl. 313—276** **10 Claims**



The coiled filament of a tubular halogen-cycle type lamp is suspended within the envelope by a mount assembly which is so constructed that the lead wires are rigidly coupled to and electrically insulated from each other without the quartz bridge member customarily employed. Discoloration of the envelope in the region of the bridge member is inhibited and the lumen maintenance of the lamp is thus enhanced.

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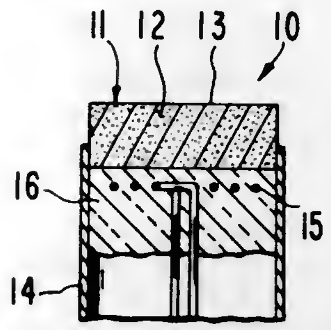
### 3,760,218
### THERMIONIC CATHODE

**Leo J. Cronin, Watsonville, Calif., assignor to Spectra-Mat, Inc., Watsonville, Calif.**

**Filed Apr. 10, 1972, Ser. No. 242,345**

**Int. Cl. H01j** *1/14, 19/06*

**U.S. Cl. 313—346 R** **9 Claims**



A cathode is disclosed utilizing an emission material of barium oxide, calcium oxide and an oxide selected from the group consisting of cobalt oxide, manganese oxide and molybdenum oxide.

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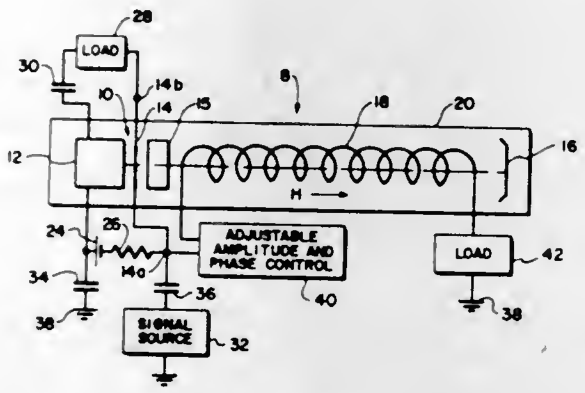
### 3,760,219
### TRAVELING WAVE DEVICE PROVIDING PREBUNCHED TRANSVERSE-WAVE BEAM

**Charles M. DeSantis, Neptune, and Arthur H. Gottfried, Rumson, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 25, 1972, Ser. No. 247,456**

**Int. Cl. H01j** *25/34*

**U.S. Cl. 315—3.5** **7 Claims**



A traveling wave tube having a control grid that backs and fills across the entire cathode emitting surface to form a delay line with the cathode. This delay line causes the electron beam to take on the helical pattern of a transverse wave. The traveling wave tube has a slow wave circuit which interacts with the transverse beam wave. Circuit means is provided for coupling signal energy to both the control grid and to the slow wave interaction circuit in a predetermined amplitude and phase relationship. The control grid is operated with DC cutoff bias. Each peak of the signal propagated by the grid-cathode delay line annuls the cutoff bias locally and forms a moving window, analogous to a moving window of a focal plane shutter, emitting an electron beam only from a local area of the cathode, which local area cyclically traverses the cathode at the signal frequency whereby the emitted beam is properly prebunched in a helical configuration for efficient transverse wave interaction.

### 3,760,220
### POST FOCUSING TYPE COLOUR PICTURE TUBES

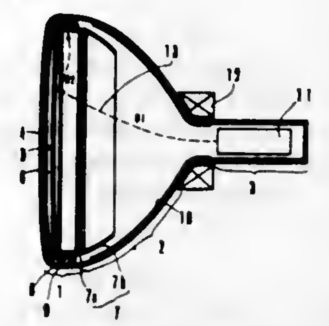
**Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Nov. 7, 1972, Ser. No. 304,509**

**Claims priority, application Japan, Nov. 8, 1971, 46/088218**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—17** **6 Claims**



In a post focussing type colour picture tube comprising an evacuated envelope including a panel, a funnel and a neck, a fluorescent screen formed on the inner surface of the panel, an electron gun assembly contained in the neck, a colour selection electrode disposed between the electron gun assembly and the fluorescent screen, and a supporting member for supporting the colour selection electrode, the colour selection electrode is electrically insulated from the supporting member and a potential higher than that impressed upon the colour selection electrode is impressed upon the supporting member.

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### 3,760,221
### DEFLECTION AND PICTURE POSITION ADJUSTING APPARATUS

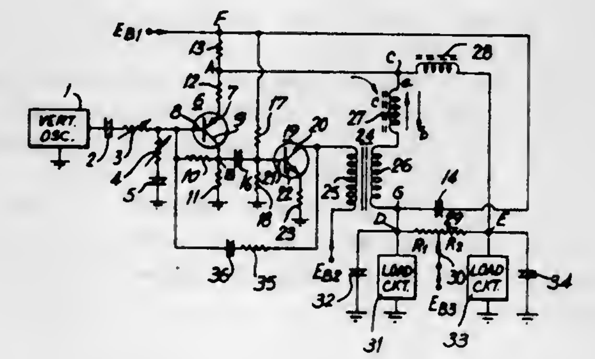
**Sadayoshi Yoshikawa, and Mitsuo Arita, both of Osaka, Japan, assignors to New Nippon Electric Company Ltd., Osaka, Japan**

**Filed Oct. 19, 1970, Ser. No. 81,870**

**Claims priority, application Japan, Nov. 29, 1969, 44/95940; Nov. 29, 1969, 44/95941**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—27 TD** **20 Claims**



Vertical deflection and picture position adjusting circuits are provided for color television receivers. These circuits include a vertical output transformer having a primary winding to which is supplied a sawtooth wave from a vertical output element, and a secondary winding for supplying vertical deflection current to a vertical deflection coil. Feedback is provided from a circuit including the deflection coil and secondary winding to the vertical driver stage connected thereto for the purpose of compensating linearity. A vertical deflection and picture position adjustment arrangement provides that the primary winding and secondary winding are isolated from each other in a DC sense. Also current is supplied to the vertical output element from a first DC source. In a first type of circuit of the invention, a first loop circuit is formed by said secondary winding, the vertical deflection coil, a feedback resistor associated with the vertical deflection coil, a feedback resistor associated with the vertical driver stage, and a capacitor which passes the vertical deflection current. A second loop circuit is formed by said secondary winding, said vertical deflection coil, a choke coil for blocking vertical deflection current and a variable resistor. The brush of the variable resistor is connected to a second DC source, and load circuits are connected to the respective terminals of said variable resistor in a DC sense or alternatively a switchable load circuit is connected selectively to said variable resistor. A third DC source is provided for supplying DC current to said vertical driver stage via said feedback resistor. Current feedback is supplied to said driver stage through said feedback resistor when vertical deflection current flows through said first loop circuit. The value and direction of the DC current which will flow in the vertical deflection coil when DC current is supplied to said load circuit(s) from said second DC source by way of said second loop circuit are determined by said variable resistor whereby the picture position is adjusted. In a second type of circuit of the invention, a series circuit is formed by said secondary winding and vertical deflection coil and an AC loop circuit is formed by said series circuit and a feedback resistor associated with the vertical driver stage and a capacitor. One terminal of said series circuit is connected to a second DC source via a DC current shunting circuit. The secondary winding is connected via a DC current shunt-ing, variable resistor to a third DC source whose potential is higher than that of said second DC source. DC current is supplied to said vertical driver stage from said second DC source through said feedback resistor. Current feedback is effected to said driver stage by using said feedback resistor when vertical deflection current flows through said AC loop circuit. The value and direction of the DC current flowing in the vertical deflection coil are determined by said variable resistor. Unidirectional conductive elements are connected between said second and third DC sources and form a stabilizing circuit for keeping the voltage ratio between the two DC sources constant.

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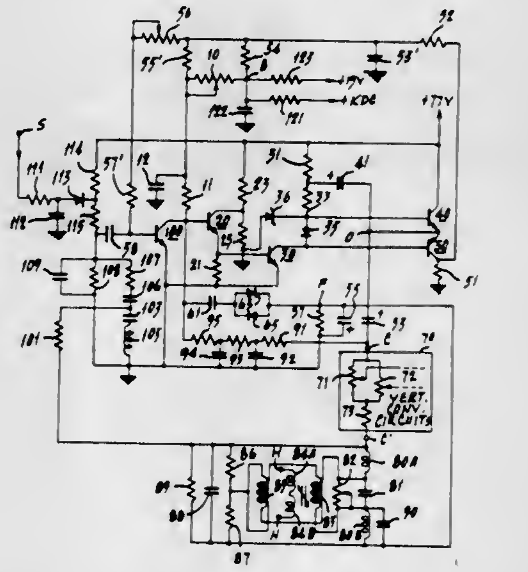
### 3,760,222
### PINCUSHION CORRECTED VERTICAL DEFLECTION CIRCUIT

**Lawrence Edward Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.**

**Division of Ser. No. 37,668, May 15, 1970, Pat. No. 3,684,970. This application Feb. 7, 1972, Ser. No. 224,191**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—27 GD** **4 Claims**



Transistorized vertical deflection circuit employs output stage of class B, push-pull, complementary symmetry configuration with vertical yoke winding halves serially connected in output circuit. Miller integrator approach is used for sawtooth wave generation, with feedback waveform derived from yoke current sampling resistor. Discharge transistor is responsive to feedback of flyback pulses developed across serially connected yoke winding halves. Apparatus disposed between winding halves introduces modulated horizontal deflection frequency current components in winding halves for pincushion correcting purposes. One winding half of vertical deflection yoke is shunted by a capacitor of a value selected to introduce cancellation of horizontal deflection frequency components across yoke/pincushion circuitry, in order to minimize feedback of interlace-disturbing horizontal components in pincushion corrected vertical deflection circuit.

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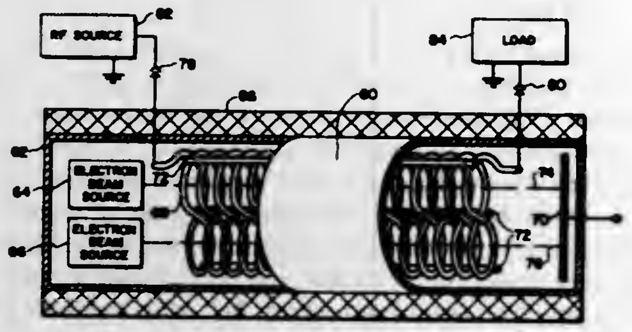
### 3,760,223
## SINGLE CONDUCTOR MULTI-COIL MULTI-BEAM MICROWAVE DEVICE

**Louis J. Jasper, Jr., Neptune City, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Aug. 10, 1972, Ser. No. 279,592**
**Int. Cl. H01j** *25/34*
**U.S. Cl. 315—3.6** **1 Claim**



A traveling wave tube is provided with a low-wave, electron beam interaction means in the form of a single wire conductor coiled into at least two parallel series of aligned turns; in each series, the turns are of identical size and configuration. In one form, all the turns have rectilinear stretches of equal length that are in a common plane; an electron beam source, a collector, a sole electrode and electric and magnetic fields direct a sheet beam alongside the rectilinear stretches outside the turns. In another form, the turns of the single wire conductor are almost entirely circular and in figure-eight configuration viewed endwise; electron beams are directed through either one or both series of turns. In still other forms of the invention, the slow-wave means viewed endwise has more than two turns and the axes are coplanar or in a circular distribution.

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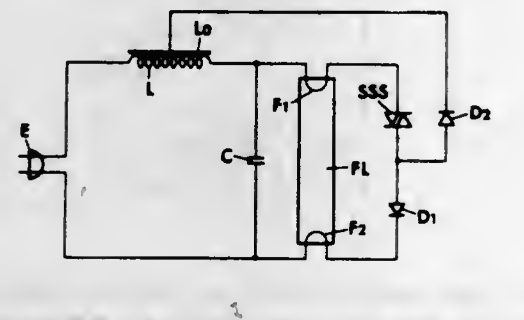
### 3,760,224
## DISCHARGE LAMP IGNITING CIRCUIT

**Tetsuji Shimizu; Makoto Iwakura, both of Nagoya City, and Hiroshi Tanaka, Yoro-gun, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Pref., Japan**

**Filed Aug. 5, 1971, Ser. No. 169,234**
**Int. Cl. H05b** *39/00*
**U.S. Cl. 315—94** **8 Claims**



A discharge lamp igniting circuit in a discharge lamp of short tube length and capable of being ignited only by preheating a filament thereof, comprising a stabilizer winding having a secondary winding; a switching element connected to the discharge lamp at a terminal of one filament of said discharge lamp which is not connected to a power supply; and a diode connected to said secondary winding to keep said switching element conductive for at least one cycle until the discharge lamp is started; said secondary winding of the stabilizer winding, said filament of the discharge lamp, said switching element and said diode forming a closed loop to promote pre-heating of the filament and energize the stabilizer winding throughout all cycles by a short-circuit current flowing through the secondary winding, the switching element and the diode. With such a discharge lamp igniting circuit, a kick voltage produced at a time of ignition of the discharge lamp can be well prevented to eliminate possible darkening of the discharge lamp at its end portions.

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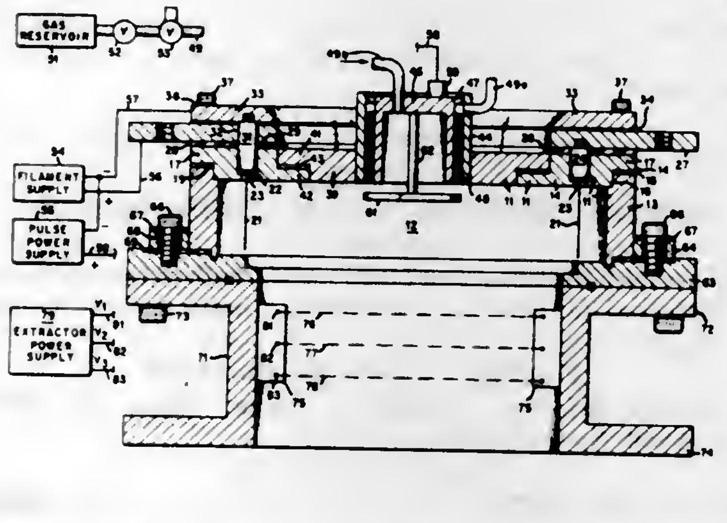
### 3,760,225
## HIGH CURRENT PLASMA SOURCE

**Kenneth W. Ehlers, Alamo; Wulf B. Kunkel, Berkeley, and William R. Baker, Orinda, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed June 6, 1972, Ser. No. 260,236**
**Int. Cl. H01j** *7/24;* **H05h** *1/00*
**U.S. Cl. 315—111** **8 Claims**



A plasma source in which a plurality of sturdy filaments are distributed around the perimeter of a truncated cylindrical discharge chamber. A small area anode is situated axially at one end of the chamber with an accel-decel extraction grid system at the other end. A high current electron discharge pulse is established between the filaments and anode and a puff of gas is directed past the anode into the discharge chamber to be ionized to form an arc plasma from which a high current beam is extracted and directed by the extractor grids. The output contains a high proportion of energetic neutrals suitable for use in fueling a fusion reactor or other purpose.

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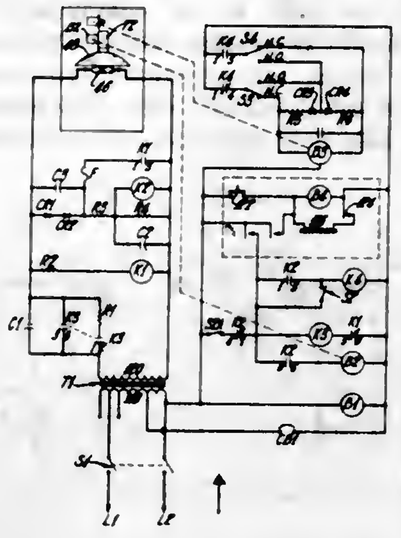
### 3,760,226
## ELECTRIC SYSTEM

**Edward J. Kiefer, and Dale W. Rogers, both of Toledo, Ohio, assignors to Holophane Company Incorporated, New York, N.Y.**

**Filed July 26, 1971, Ser. No. 166,034**
**Int. Cl. H05b** *39/04*
**U.S. Cl. 315—227** **7 Claims**

The disclosure embraces an electric system including a gas discharge arc lamp construction of a character particularly for use in the graphic arts field and a transformer power circuit for a gas discharge arc lamp wherein an increased voltage for momentarily effecting gas ionization and establishment of the arc is attained through the summation of a peak charge of applied alternating current voltage of a capacitor occurring during one-half cycle applied directly to the lamp in series with the applied voltage from the transformer during the alternate half cycle and thereafter shorting out the capacitor for applying the normal voltage of the transformer to the arc lamp for normal operation.



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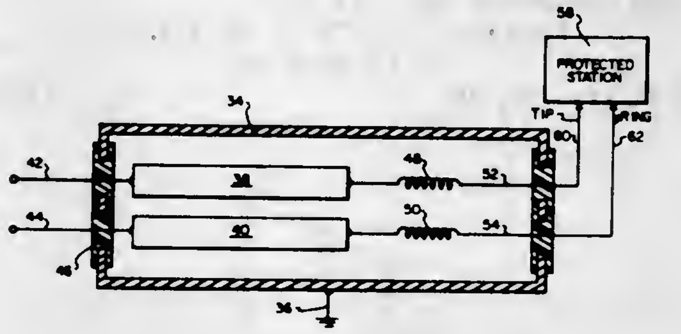
### 3,760,227
## GAS TUBE PROTECTOR HAVING AN INTERNAL FUSE LINK

**Carleton H. Poindexter, Bensenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Dec. 29, 1972, Ser. No. 319,579**
**Int. Cl. H02h** *1/04*
**U.S. Cl. 317—16** **6 Claims**



A series connected gas tube protector having an internal fuse link attached between the protector electrode and the output. Normal line current passes through the electrode and fuse link, high voltage surges operate to ionize the protector gases and arc between the electrode and grounded tube case, and excessive line current opens the fuse link.

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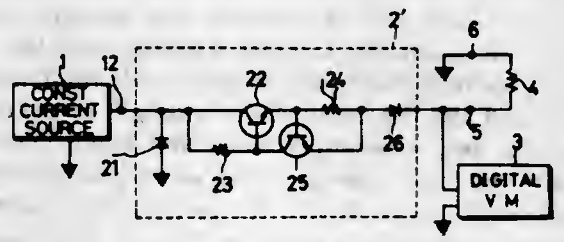
### 3,760,228
## PROTECTING CIRCUIT

**Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co. Ltd., Tokyo, Japan**

**Filed Oct. 5, 1972, Ser. No. 295,260**
**Int. Cl. H02h** *3/20*
**U.S. Cl. 317—31** **9 Claims**



A protecting circuit of this invention comprises a transistor circuit proof against higher voltage, connected in series between one circuit having the possibility that the overvoltage is supplied to it, and another circuit to be protected against the overvoltage, a resistance circuit supplying a base current to a transistor of the said transistor circuit, a detecting resistance connected in series with the said transistor circuit proof against higher voltage, a control circuit connected in series with the said resistance circuit supplying the base current and connected to control the said transistor circuit proof against higher voltage by the ON-OFF operation depending on the growth of the voltage drop across the said detecting resistance, a diode circuit proof against higher voltage, connected in series with the said transistor circuit proof against higher voltage to prevent a higher reverse voltage from being applied to the said transistor circuit proof against higher voltage, and a diode connected essentially in parallel with the said circuit to be protected against the overvoltage and connected so as to keep a conductive state when the overvoltage is supplied to the said circuit having the possibility that the overvoltage is supplied to it. It has normally little influence on the supply of a current, and functions to protect a circuit when the overvoltage is applied.

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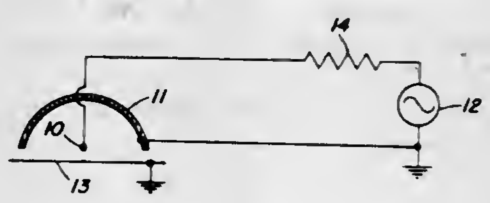
### 3,760,229
## AC COROTRON

**Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 30, 1971, Ser. No. 214,125**
**Int. Cl. H05f** *3/00;* **H01t** *19/04*
**U.S. Cl. 317—2 F** **4 Claims**



An improved a.c. corotron for neutralizing the charge on a charge receiving surface is provided according to the teachings of the present invention. The a.c. corotron, which includes an electrode and a shield partially surrounding the electrode is adapted to be driven by an a.c. source connectable between the electrode and the shield. According to one embodiment of the invention an impedance is connected intermediate the electrode and the a.c. source to tend to equalize the magnitude of the a.c. potential applied to the electrode during the intervals in the operation of the a.c. corotron in which positive and negative ion current flows. This reduces the magnitude of any offset voltage which may ultimately remain on the charge receiving surface.

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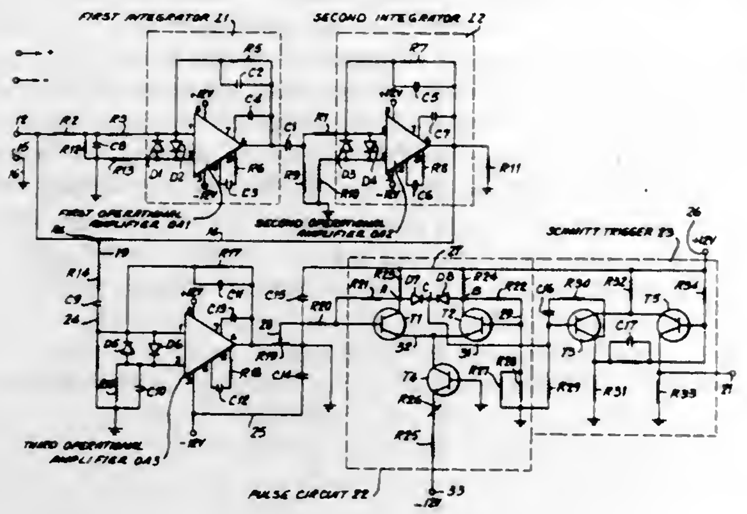
### 3,760,230
## HIGH SPEED AC FAILURE DETECTOR CIRCUIT

**Ross Henderson, North Reading, Mass., assignor to Gould Inc., Mendota Heights, Minn.**

**Filed Nov. 9, 1972, Ser. No. 304,996**
**Int. Cl. H02h** *3/26*
**U.S. Cl. 317—27 R** **7 Claims**

A high speed AC failure detector circuit for detecting an AC power failure and producing an output signal upon the occurrence of such failure comprises an integrator circuit having an input and an output. The output of the integrator circuit is connected to the input of the integrator circuit in a manner whereby there is a 180° phase shift between the input and the output. A signal input is connected to the input of the integrator circuit. A potentiometer is connected between the input and the output of the integrator circuit. When a continuous AC signal is supplied to the signal input the resultant signal at the potentiometer is zero due to the 180° phase shift between the input and the output of second integrator circuit. When a discontinuity appears in an AC signal supplied to the signal input the resultant signal at the potentiometer is a sine wave. An output connected to the potentiometer fails to produce an output signal when the resultant signal at the potentiometer is zero and produces an output signal when the resultant signal at the potentiometer is other than zero.


FIRST INTEGRATOR 21
SECOND INTEGRATOR 22
FIRST OPERATIONAL AMPLIFIER OA1
SECOND OPERATIONAL AMPLIFIER OA2
SCHMITT TRIGGER 23
THIRD OPERATIONAL AMPLIFIER OA3
PULSE CIRCUIT 32

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### 3,760,231

### ELECTROMAGNETIC LIGHTER WITH AN APERTURED METAL CASING

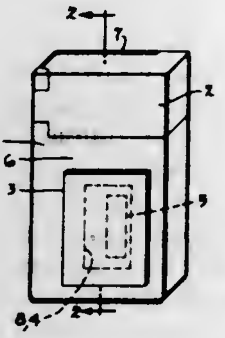
**Hans Schindler, Engelsbach, Germany, assignor to Braun A.G., Frankfurt/Main, Germany**

**Filed Feb. 2, 1972, Ser. No. 222,940**

**Claims priority, application Germany, Feb. 28, 1971, P 21 42 295.7**

**Int. Cl. F23q** *13/02*

**U.S. Cl. 317—92** **5 Claims**



A pocket lighter having a metal housing including wide and narrow opposite sidewalls, and an electromagnetic igniter surrounded by said housing and including an electromagentic coil closely fitting in said housing. An aperture in each of the wide opposite sidewalls, said apertures being adjacent and larger than the electromagnetic coil to restrain the occurance of a condenser effect, and an electrically insulating protective cover plate closing each of said apertures.

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### 3,760,232

### SWITCHRACK FOR ELECTRIC MOTOR STARTERS AND CONTROLS

**E. Leroy Swindell, 5 E. 51 St., Apt. 3A, New York, N.Y.**

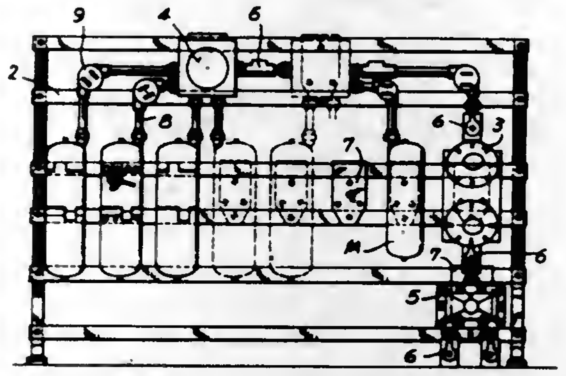
**Filed June 16, 1972, Ser. No. 263,608**

**Int. Cl. H02b** *1/04*

**U.S. Cl. 317—99** **1 Claim**

An improved metal switchrack for mounting weatherproof and explosionproof self contained electric motor starters and electric motor controls as they are commonly manufactured and used by the electrical industry; and more particularly, as they are applied to motor control systems of the petroleum industry; chemical industry; and industries using motors and starters which are to be installed in areas surrounded by atmospheres containing hazardous concentrations of flammable gases, combustible dusts, ignitible fibers or flyings.

That which is new is an adaptable and adjustable prefabricated motor switchrack that can be erected at the site of installation which will accommodate mountings of any combination of self-contained electrical motor starters and self-contained electrical motor controls of standard sizes.



An infinite number of combination mountings of switchrack electrical components heretofore described are possible on my switchrack by utilizing an adjustable mounting plate which supports the electric motor starter or electric motor control. The adjustable mounting plate slides horizontally on a predrilled channel to the selected location and the aligning pins engage into the predrilled aligning holes and is clamped into final position by means of an adjustable pressure clamp.

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### 3,760,233

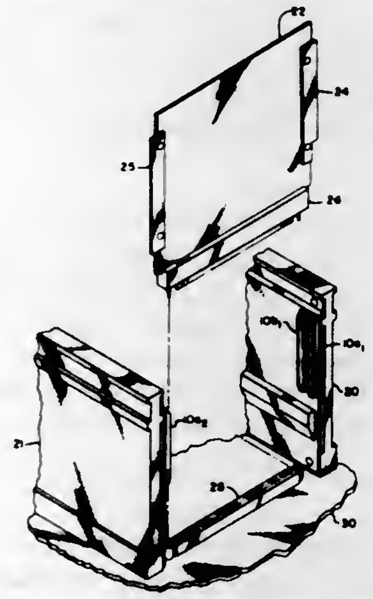
### PRINTED CIRCUIT CARD GUIDE

**James S. Warwick, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Mar. 27, 1972, Ser. No. 238,523**

**Int. Cl. H02b** *1/02*

**U.S. Cl. 317—101 DH** **7 Claims**



A device for guiding and supporting a printed circuit card incorporating electronic circuitry is disclosed. The device is of a long, narrow, rectangular form and is formed of a single sheet having a series of tabs formed on the four sides. Two separate devices are required to support each edge of the printed circuit card; the two devices are mounted parallely side-by-side on a suitable support member with the spacing between adjacent devices determined by the thickness of the supported card and the compressive strength of the opposing flanges of the two adjacent devices that make compressive contact with the card. Also provided are angulated flanges on the narrow ends of the device for guiding the inserted card between the compressively opposing flanges. The device may be formed of heat conductive and/or electrically conductive materials to function as a heat sink coupling means and/or as a ground/voltage bus for side-entry of printed circuit cards.

### 3,760,234

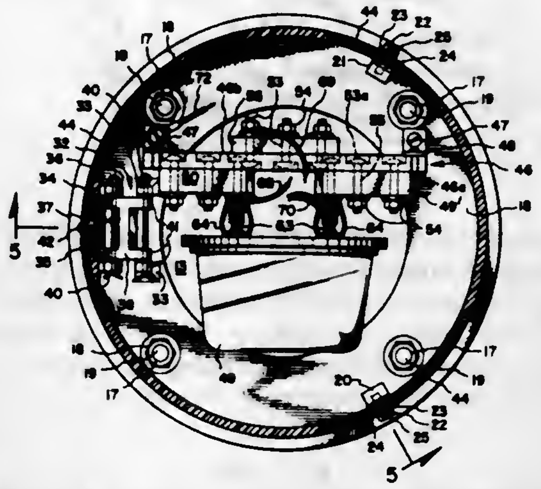
### UNDERGROUND DISTRIBUTION SYSTEM FOR UTILITIES WITH METER PULLBOX

**Richard Sterling Jones, 3922 S. 775 West, Bountiful, Utah, and George Michael Stevenson, 2080 W. 5900 South, Roy, Utah**

**Continuation-in-part of Ser. No. 770,915, Oct. 28, 1968, Pat. No. 3,596,141. This application July 16, 1971, Ser. No. 163,282**

**Int. Cl. H02b** *9/00*

**U.S. Cl. 317—111** **20 Claims**



A system and apparatus for the underground distribution of utilities, notably electric power, includes a meter box with a housing having a portion of dome-like configuration with an open bottom, a mounting ring over which the housing portion closely fits for stability, and an upstanding meter-receiving panel rigidly carried by the mounting ring. A pullbox section may be provided as part of the meter box, as also may a lamp post portion rising upwardly from the dome-like portion and adapted to carry a luminaire for outdoor lighting. The panel is provided with bus bar mountings for electrical and meter plug-in connections. The housing is preferably hingedly attached to the mounting ring for free-swinging covering and uncovering movement relative to the meter-mounting panel.

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### 3,760,235

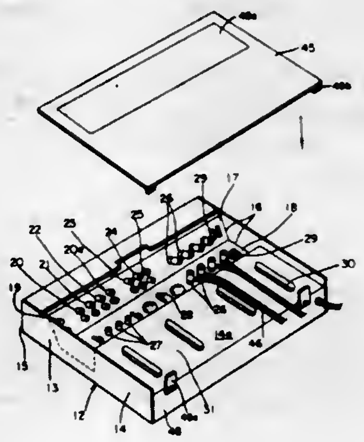
### AMPLIFIER UNIT CASING HAVING RECESSED CONNECTOR TERMINAL SURFACE

**Kazushi Takami, Higashiosaka; Yoshiro Koga, Ashiya; Yoichi Ide, Kadoma; Masatoshi Kubota, Osaka; Yoshiro Hirasawa, Kyoto; Noriki Matsumoto, Takatsuki, and Takao Miyake, Yao, all of Japan, assignors to Onkyo Kabushiki Kaisha, Osaka-shi, Japan**

**Continuation-in-part of Ser. No. 50,071, June 26, 1970, abandoned. This application Mar. 8, 1972, Ser. No. 232,795**

**Int. Cl. H02b** *1/10*

**U.S. Cl. 317—118** **9 Claims**



An amplifier unit casing comprising a recess located in the rear of and relatively close to a front panel of the amplifier unit and below the level of an upper portion of the front panel, the recess having a surface which is adapted for installation thereon of adjusting attachments including semi-fixed variable resistors and terminals to be electrically connected to a speaker, tape recorder, record player or the like, wherein each conductor connected to such terminal is led to a speaker, tape recorder, record player or the like through a conductor guide space extending continuously from the recess to the rear end of the casing and provided on the upper wall of the casing and below the level of the upper portion of the front panel.

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### 3,760,236

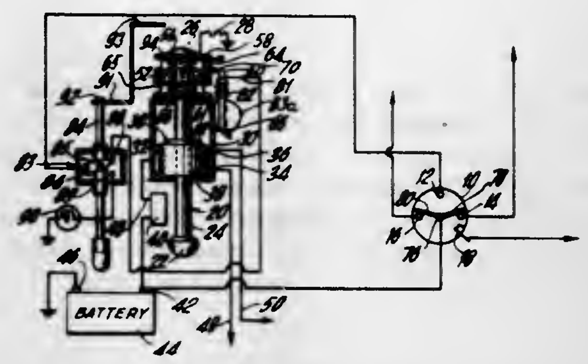
### APPARATUS FOR AUTOMATICALLY EXTINGUISHING LIGHTS OF A VEHICLE

**Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y.**

**Filed Nov. 8, 1971, Ser. No. 196,274**

**Int. Cl. H01h** *47/18*

**U.S. Cl. 317—142 TD** **5 Claims**



Apparatus for automatically extinguishing lights of a vehicle. The apparatus includes an ignition switch having "ON" and "OFF" contact terminals and at least one pole, a light control switch for turning the lights of the vehicle on and off, and a source of power coupled to the pole of the ignition switch and to the light control switch. Means are provided for automatically moving the light control switch to the "OFF" position for extinguishing the lights of the vehicle. There is also provided electric circuit means coupled to the "OFF" contact terminal of the ignition switch so that an electric current is supplied from the source of power through the "OFF" contact terminal of the ignition switch and to the electric circuit means for activating the automatic moving means when the pole of the ignition switch is electrically connected to the "OFF" contact terminal of the ignition switch.

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### 3,760,237

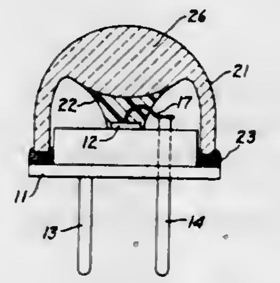
### SOLID STATE LAMP ASSEMBLY HAVING CONICAL LIGHT DIRECTOR

**Mary S. Jaffe, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.**

**Filed June 21, 1972, Ser. No. 264,861**

**Int. Cl. H01l** *3/00, 5/00*

**U.S. Cl. 317—234 R** **9 Claims**



A lens cap is positioned over a light-emitting diode, and a somewhat conical-shaped plastic light director extends between and in intimate contact with the lens cap and the diode, the smaller end of the conical light director being at the diode. A method of manufacture is disclosed in which a viscous plastic monomer is placed in the lens cap and/or on the diode and allowed to deform by gravity to form the conical light director.

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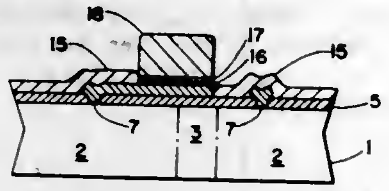
### 3,760,238
### FABRICATION OF BEAM LEADS

**Colin A. Hamer, and Alberto Loro, both of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada**

**Filed Feb. 28, 1972, Ser. No. 229,993**

**Int. Cl. H01l** *5/00*

**U.S. Cl. 317—234 R** **13 Claims**



A structure and method of fabricating beam leads or bump terminals for semiconductor chips in which a common potential for plating purposes is obtained using a metallized short circuitry grid in the cleavage channel which is severed during chip separation. The grid is deposited at the same time as normal metallization, and the beams or bumps are plated through holes in a scratch protection layer used as a mask.

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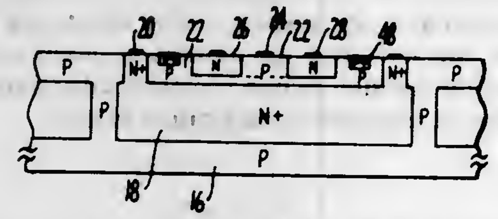
### 3,760,239
### COAXIAL INVERTED GEOMETRY TRANSISTOR HAVING BURIED EMITTER

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Ronald J. Hruby, Campbell; Steven B. Cress, Hacienda Heights, and William R. Dunn, San Jose, all of Calif.**

**Filed June 9, 1971, Ser. No. 151,412**

**Int. Cl. H01l** *9/00*

**U.S. Cl. 317—235 R** **8 Claims**



The invention relates to an inverted geometry transistor wherein the emitter is buried within the substrate. The transistor can be fabricated as a part of a monolithic integrated circuit and is particularly suited for use in applications where it is desired to employ low actuating voltages. The transistor may employ the same doping levels in the collector and emitter, so these connections can be reversed.

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### 3,760,240
### LIGHT-SENSITIVE SEMICONDUCTOR DEVICE

**Hans-Eberhard Bergt, Munchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munchen, Germany**

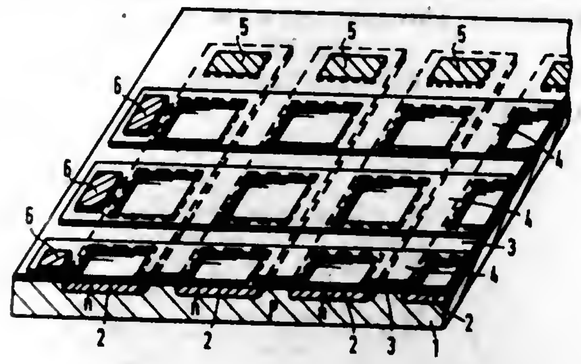
**Filed Oct. 6, 1971, Ser. No. 186,969**

**Claims priority, application Germany, Oct. 8, 1970, P 20 49 507.2**

**Int. Cl. H01l** *5/00*

**U.S. Cl. 317—235 R** **8 Claims**

Light sensitive semiconductor device with several light sensitive elements, mutually separated from each other, arranged in the form of a matrix in rows and columns on a doped semiconductor substrate. Each of the light sensitive elements has a rectifying hetero junction, which is formed by a thin, light transparent semiconductor layer made as an antireflex layer, and a first semiconductor region diffused into the semiconductor substrate or a second partial region diffused into the first semiconductor region. The thin light transparent semiconductor layer extends in rows on the semiconductor substrate isolated from the latter by an isolating layer. The diffused first semiconductor region extends in columns, into the surface of the semiconductor substrate. The light sensitive semiconductor layers, extending in the rows, and the diffused first semiconductor regions, extending in columns, are provided with barrier free contacts at the edges.



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### 3,760,241
### SEMICONDUCTOR DEVICE HAVING A RECTIFYING JUNCTION SURROUNDED BY A SCHOTTKY CONTACT

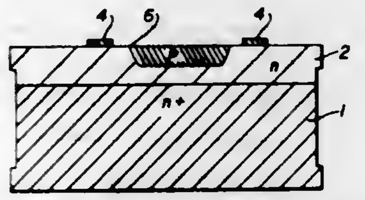
**Richard R. Epple, Schwaigern, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**

**Filed June 9, 1970, Ser. No. 44,798**

**Claims priority, application Germany, June 21, 1969, P 19 31 613.3**

**Int. Cl. H01l** *11/00, 15/00*

**U.S. Cl. 317—235 R** **10 Claims**



A semiconductor device comprises a semiconductor body having a junction such as a metal to semiconductor contact or a p-n junction surrounded by a metal to semiconductor contact.

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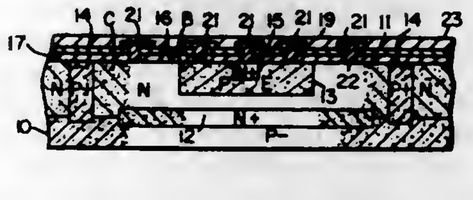
### 3,760,242
### COATED SEMICONDUCTOR STRUCTURES AND METHODS OF FORMING PROTECTIVE COVERINGS ON SUCH STRUCTURES

**Michael C. Duffy, Wappingers Falls; Jacob Riseman, and Bevan P. F. Wu, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of Ser. No. 778,527, Nov. 25, 1968, abandoned. This application Mar. 6, 1972, Ser. No. 232,235**

**Int. Cl. H01l** *3/10, 3/00*

**U.S. Cl. 317—235 R** **11 Claims**



A semiconductor structure with a metallic oxide coated surface, a silicon nitride coating on the metal oxide and a covering coating of glass over the coated surface.

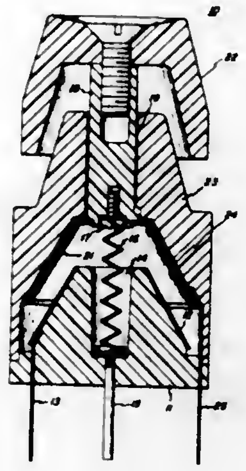
### 3,760,243
### CAPACITIVE KEYSWITCH

**Donald C. Peroutky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 21, 1972, Ser. No. 290,831**

**Int. Cl. H01g** *5/16*

**U.S. Cl. 317—249 R** **3 Claims**



A variable capacitance keyswitch is disclosed in which a differential capacitor is formed by two fixed plates and a moveable plate therebetween. Each plate is in the shape of the frustum of a cone. Depression of the pushkey varies the capacitance between each fixed plate and the moveable plate over a range of about one order of magnitude, or greater. In addition, depression of the pushkey provides a push-pull capacitance variation between fixed and moveable plates, achieving an electrical snap action effect useful in typical bistable flip-flop circuitry.

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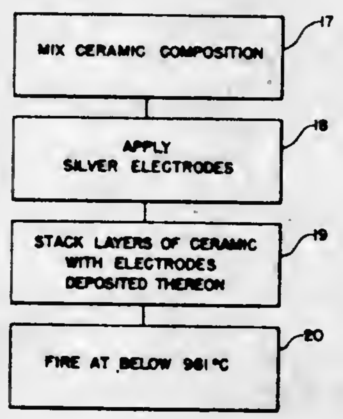
### 3,760,244
### CERAMIC CAPACITOR AND METHOD OF FORMING SAME

**Roland Hill McClelland, Jr., San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.**

**Filed Aug. 31, 1972, Ser. No. 285,160**

**Int. Cl. H01g** *1/01*

**U.S. Cl. 317—258** **23 Claims**



A ceramic capacitor is disclosed herein having ceramic layers formed of a composition of lead oxide, aluminum oxide, silicon oxide, barium oxide, and calcium oxide. Deposited on the ceramic layers are silver electrodes and the entire ceramic capacitor including the electrodes are fired at a temperature below 961°C which is below the melting temperature of the silver electrodes.

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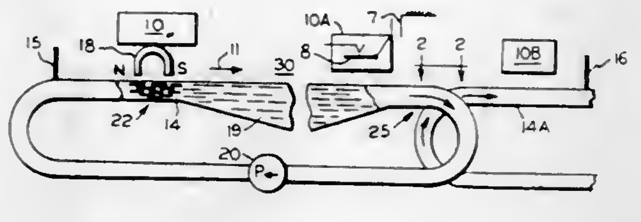
### 3,760,245
### MAGNETIC CONVEYER SYSTEM

**Harold W. Halvorsen, 8600 16th St., 106, Silver Spring, Md.**

**Filed Nov. 12, 1971, Ser. No. 198,162**

**Int. Cl. H02k** *45/00*

**U.S. Cl. 318—38** **18 Claims**



A magnetic conveyer system includes a pump passing a magnetic fluid through a pipe path along which a carriage magnetically coupled to the moving fluid is conveyed by the fluid. The speed is varied along the path by changes of fluid cross section in the pipe. A drape traverse arrangement has a plurality of hooks moved to open or close the drapes as the direction of fluid flow is reversed.

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### 3,760,246
### RELATIVE SPEED CONTROL SYSTEM FOR DC MOTOR VEHICLE DRIVE

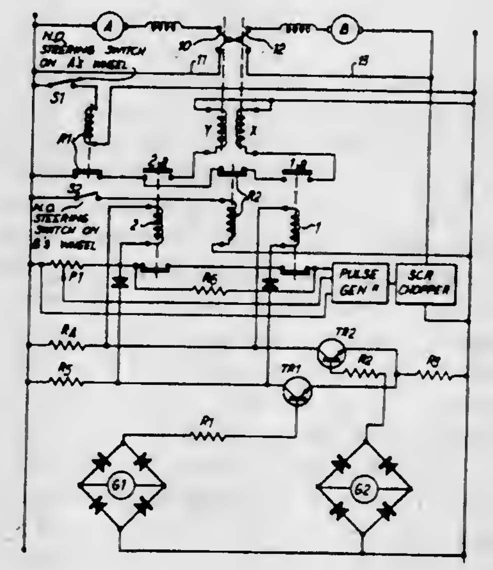
**David Gurwicz, Gateshead; Edwin Amitage Battye, Lymm, and James Wright, Winwick, all of England, assignors to Conveyancer Limited, Warrington and Sevcon Engineering Limited, Durham, England**

**Continuation-in-part of Ser. No. 13,151, Feb. 20, 1970. This application June 28, 1971, Ser. No. 157,416**

**Claims priority, application Great Britain, Feb. 25, 1969, 10,019/69**

**Int. Cl. H02p** *5/46*

**U.S. Cl. 318—52** **9 Claims**


A
B
N.O. STEERING SWITCH ON A'S WHEEL
N.O. STEERING SWITCH ON B'S WHEEL
10
11
12
15
S1
S2
PULSE GEN
SCR CHOPPER
TR1
TR2
G1
G2

A control system for two DC motors driving the driving wheels of an electric vehicle. Sensing means detect a differential speed between the two motors and act to remove the voltage to the faster motor, to eliminate the speed differential, and simultaneously reduce the voltage to the other motor. Override means are preferably provided to enable the system to be bypassed when the vehicle is turning to allow the outer wheel to revolve faster than the inner wheel.

### 3,760,247

## SINGLE-PHASE MOTOR WITH AUXILIARY COILS SELECTIVELY SHORT-CIRCUITED BY A SOLID STATE SWITCH ELEMENT

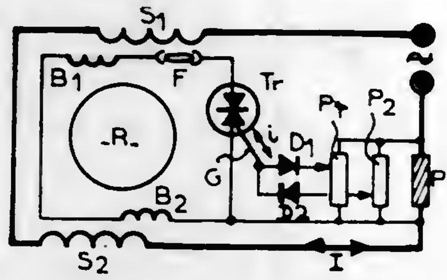
**Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France**

**Filed Nov. 10, 1971, Ser. No. 197,446**

**Claims priority, application France, Nov. 30, 1970, 7047330**

**Int. Cl. H02p** *1/44*

**U.S. Cl. 318—221 E** **17 Claims**



A single-phase, asynchronous motor of the split-pole type is provided with wound shading coils which are temporarily short-circuited during starting operation by a controlled solid-state switching element, to which is applied a triggering signal derived from the current flowing through the stator winding.

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### 3,760,248

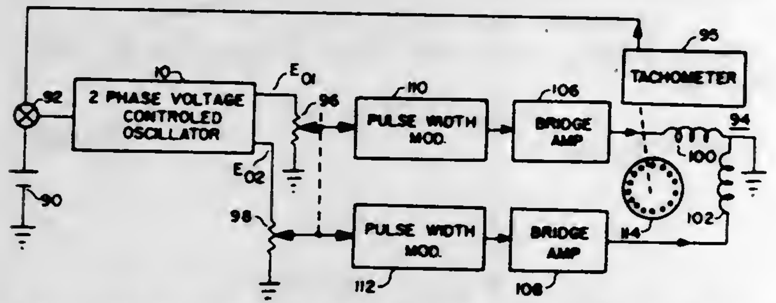
## INDUCTION MOTOR CONTROL SYSTEM WITH VOLTAGE CONTROLLED OSCILLATOR CIRCUIT

**Frank J. Nola; James R. Currie, and Harry Reid, Jr., all of Huntsville, Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration**

**Filed Jan. 19, 1972, Ser. No. 218,965**

**Int. Cl. H02p** *5/34*

**U.S. Cl. 318—230** **5 Claims**



A voltage controlled oscillator circuit, single or two phased, in which there is employed a first and second differential amplifier, the first differential amplifier being employed as an integrator for developing equal and opposite slopes proportional to an input voltage, and the second differential amplifier functioning as a comparator to detect equal amplitude positive and negative selected limits and providing switching signals which gate a transistor switch which switches the integrating differential amplifier between charging and discharging modes, whereby there is provided an output of the first differential amplifier which is triangular and which upon the application of wave shaping provides a substantially sinusoidal output signal. A two phased version, adds a second, like, integrator which is switched between charging and discharging modes by a zero crossing detector responsive to the output of the first integrator to provide a second, 90° phase shifted, output.

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### 3,760,249

## COARSE-FINE ANALOG POSITIONING SYSTEM

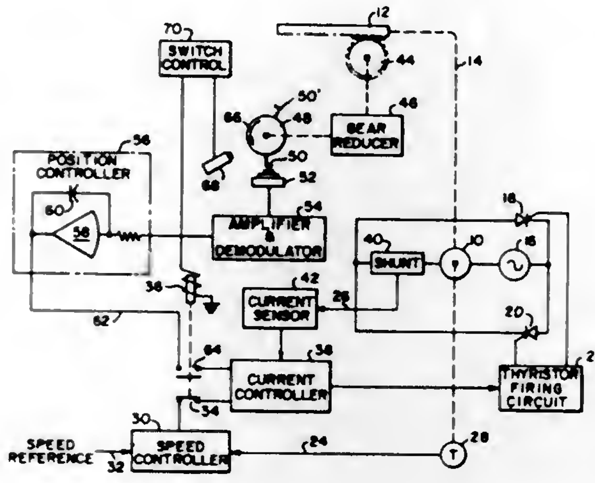
**John J. Connors, West Seneca, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Mar. 30, 1971, Ser. No. 129,502**

**Int. Cl. G05b** *11/18*

**U.S. Cl. 318—592** **6 Claims**

An accurate closed loop analog positioning system utilizing a linear sensor of the type employing a magnetic sensing element and a balance coil which acts basically as a transformer so as to eliminate direct current drift which is prevalent in most analog positioning systems. The magnetic sensing element is preferably mounted on the periphery of a disc of insulating material geared to a machine part which travels along a linear path of travel such that the disc will rotate through less than one complete revolution as the machine part moves from one end of its path of travel to the other. By causing the sensing element to rotate to a position where it is directly opposite the balance coil, the drive motor driving the machine part can be made to slow down and stop at that exact point.



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### 3,760,250

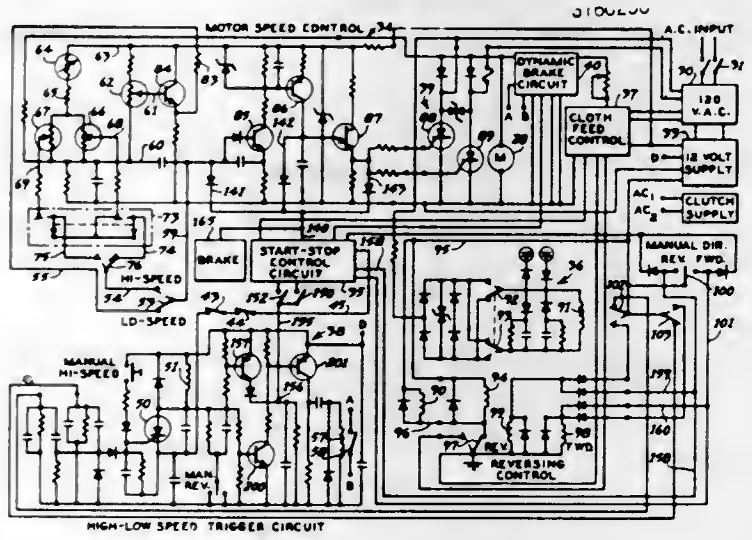
## EMERGENCY STOP CONTROL SYSTEM FOR CLOTH SPREADING MACHINE

**Samuel H. Pearsall, Donelson, and Norman E. Witthauer, Jr., Nashville, both of Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.**

**Filed Sept. 11, 1972, Ser. No. 287,896**

**Int. Cl. H02h** *7/00*

**U.S. Cl. 318—282** **7 Claims**



An electrically driven and controlled cloth spreading machine including means for controlling the high and low speeds, the braking, and reversing of a machine, characterized by an emergency switch system for de-energizing the drive of the machine and actuating the reverse control means, when the switch for shifting the controls from the high speed to the low speed mode fails to function.

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### 3,760,251

## APPARATUS FOR CONTROLLING A PLURALITY OF INJECTION MOLDING MACHINES

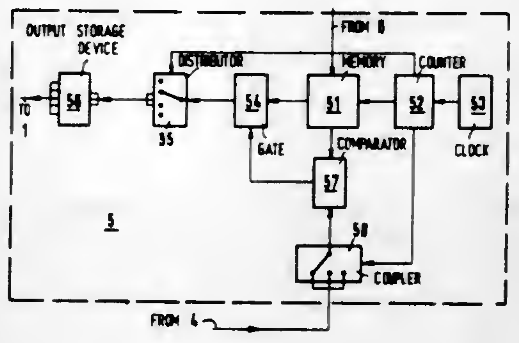
**Rudolf Posl, and Burkard Popp, both of Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed June 12, 1972, Ser. No. 261,658**

**Claims priority, application Germany, June 14, 1971, P 21 29 419.9**

**Int. Cl. G05b** *11/32*

**U.S. Cl. 318—601** **6 Claims**



An apparatus for controlling a plurality of injection molding machines is disclosed wherein each injection molding machine is provided with a digital memory. The memories are provided with data from a central unit and are activated as a function of travel of appropriate machine parts of the respective molding machines.

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### 3,760,252

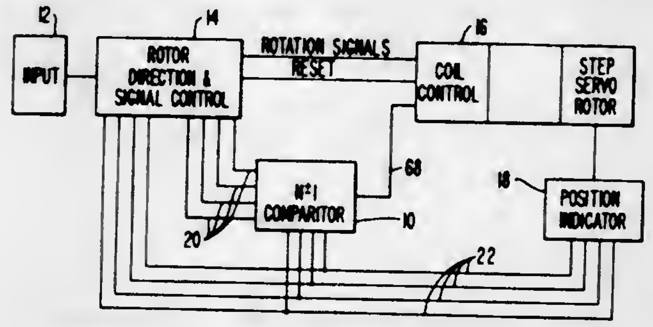
## DAMPING OF A STEP SERVO MOTOR USING ONE STEP ANTICIPATION LOGIC

**Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Filed July 5, 1972, Ser. No. 269,164**

**Int. Cl. G05b** *5/01*

**U.S. Cl. 318—611** **4 Claims**



A damping means for a stepper motor that will enable the motor to rotate between any two positions in either direction in a minimum of time. During rotation the actual position of the rotor is compared to the destination position and this comparison, in light of the direction of rotation, is utilized to determine when the rotor is one step from the destination. When the rotor reaches the point one step from the final position, a damping signal causes the energization of the stator coils thus producing a damping force that will prevent overshoot and oscillation about the destination position by gradually reducing the rate of angular rotation of the motor as it approaches the final position.

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### 3,760,253

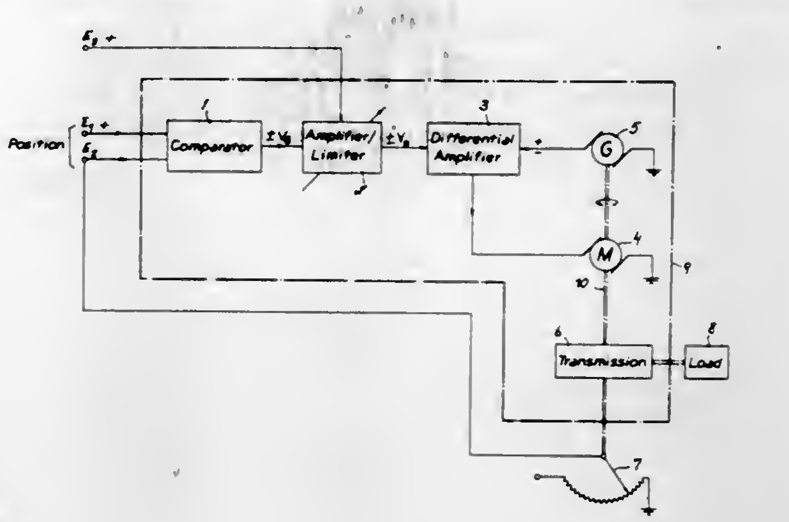
## TWO-WAY DRIVE FOR OPTICAL SYSTEMS AND THE LIKE

**Karl-Gunter Hess, Waldlaubersheim, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach/Rhld., Germany**

**Continuation-in-part of Ser. No. 80,018, Oct. 12, 1970, Pat. No. 3,673,483. This application Jan. 12, 1972, Ser. No. 217,166**

**Int. Cl. G05b** *5/01*

**U.S. Cl. 318—618** **4 Claims**



A load, such as a servomotor for the positioning (e.g., tilting) of a television camera, is operable by a control circuit provided with an input ($E_1$) for a speed signal. The positioning signal is applied, together with a feedback signal ($E_2$) from a position sensor, to a comparator generating an error signal of corresponding polarity whose magnitude is controlled, in response to the speed signal, by a limiter in the output of the comparator. A reversible load motor, coupled with the position sensor, also drives a generator to produce a reference signal of either polarity, the difference between the error signal and the reference signal producing a drive voltage of one or the other polarity for the load motor until the system is in balance. The limiter includes two differentially connected amplifiers driven in parallel by the speed signal to produce a positive and a negative operating voltage of identical magnitudes for two transistors of opposite conductivity types simultaneously energized by the error signal.

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### 3,760,254

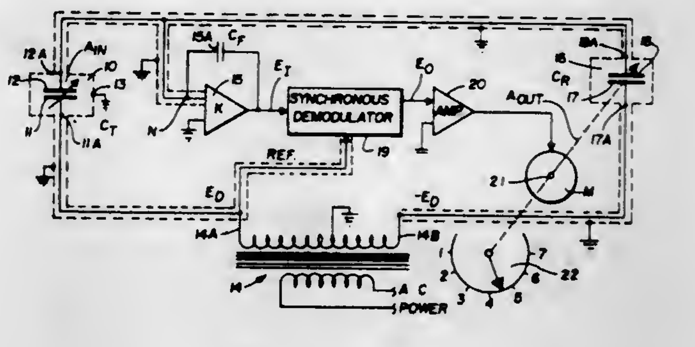
## THREE-TERMINAL CAPACITIVE SERVOMECHANISM

**Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.**

**Filed Mar. 6, 1972, Ser. No. 232,153**

**Int. Cl. G05b** *1/06*

**U.S. Cl. 318—662** **25 Claims**



Three-terminal capacitive servomechanisms are disclosed using single and differential three-terminal capacitors, as the transmitting and receiving elements thereof. Each of the transmitter and receiver capacitors includes a conductive driven element connected to a source of electrical drive signals, a conductive receptor element connected to a high gain amplifier, and shielding circuits connected to ground. The amplifier includes a capacitive feedback loop and clamps the receptor elements to virtual ground. The feed-through capacitances of the transmitter and receiver capacitors are unaffected by stray and cable capacitance thus permitting remote sensing, and the effect of conductance in these capacitors can be cancelled out by use of a synchronous demodulator connected to the output of the amplifier.

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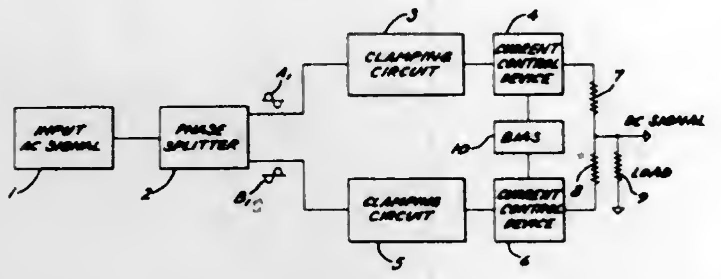
### 3,760,255
## AC TO DC CONVERTER CIRCUIT

**Robert M. Grodinsky, 4448 W. Howard St., Skokie, Ill.**
**Continuation-in-part of Ser. No. 141,780, May 10, 1971, abandoned. This application Feb. 25, 1972, Ser. No. 229,374**
**Int. Cl. H02m ; H03k ; H03f**
**U.S. Cl. 321—8 R** **18 Claims**



An AC to DC converter for producing a varying DC signal proportional to the amplitude of the varying AC input signal, the converter including a pair of clamping circuits for providing output signals having DC components proportional to the AC amplitude of the AC input signal and AC components following the AC input signal, and where either the DC or the AC signal components of the outputs of the clamping circuits are of opposite sense while the other of same are of the same sense. Means are provided for combining the clamped signals so that the AC signal components are substantially cancelled and the DC signal components are added together.

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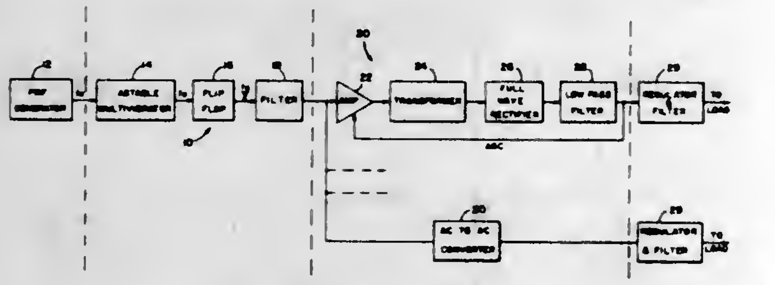
### 3,760,256
## SYNCHRONOUS DC POWER SUPPLY

**Gustaf J. Rast, Jr., and Thomas A. Barley, both of Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army**
**Filed July 31, 1972, Ser. No. 276,501**
**Int. Cl. H02m** *1/12*
**U.S. Cl. 321—9 R** **5 Claims**



A synchronous direct current (dc) power supply has the power supply input drive synchronized with the pulse repetition frequency (PRF) of the amplifying or load circuit requiring the dc power for operation. This limits the occurrence of ripple components in the power supply output to the spectral positions of the PRF lines, eliminating ripple interference with signal processing in the load. An astable multivibrator is synchronized with the PRF generator output frequency. The multivibrator output is converted to a square wave, filtered, and processed to provide a fully rectified output voltage for coupling to the desired load circuit.

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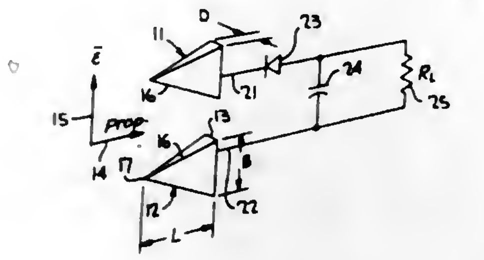
### 3,760,257
## ELECTROMAGNETIC WAVE ENERGY CONVERTER

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert L. Bailey, Gainesville, Fla.**
**Filed Sept. 27, 1972, Ser. No. 292,698**
**Int. Cl. H02m**
**U.S. Cl. 321—1.5** **19 Claims**



Electromagnetic wave energy is converted into electric power with an array of mutually insulated electromagnetic wave absorber elements each responsive to an electric field component of the wave as it impinges thereon. Each element includes a portion tapered in the direction of wave propagation to provide a relatively wideband response spectrum. Each element includes an output for deriving a voltage replica of the electric field variations intercepted by it. Adjacent elements are positioned relative to each other so that an electric field subsists between adjacent elements in response to the impinging wave. The electric field results in a voltage difference between adjacent elements that is fed to a rectifier to derive d.c. output power. The element pairs may be arranged in a two-dimensional array to provide power conversion of randomly polarized electromagnetic waves, such as sunlight.

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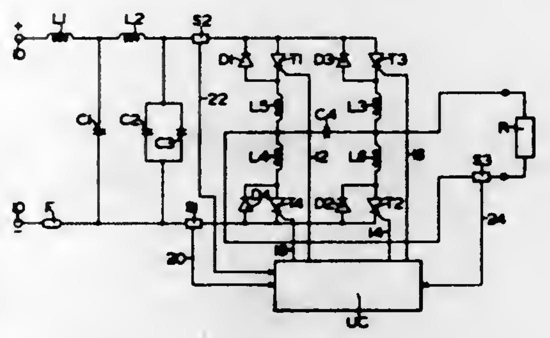
### 3,760,258
## STATIC INVERTER

**Marcello Percorini; Vittorio DiNunzio, and Giuseppe Careglio, all of Turin, Italy, assignors to Compagnia Italiana Westinghouse Freni e Segnali, Torino, Italy**
**Filed July 28, 1972, Ser. No. 276,251**
**Claims priority, application Italy, Dec. 29, 1971, 71265 A/71**
**Int. Cl. H02m** *1/18*
**U.S. Cl. 321—11** **8 Claims**



A static inverter system for high power applications providing built-in protection against short circuits appearing in either the inverter or the load. Thyristors arranged in a common bridge network of the inverter have their firing signals terminated when strategically located current sensors indicate, by means of a threshold circuit, that a short circuit has developed, in response to which an oscillating circuit produces a free oscillation of current to reverse bias of the thyristors during a semi-period of the oscillating cycle, thereby terminating current conduction by the thyristors for a duration sufficient to allow the thyristors to regain their normal resistance to forward conduction. In the non-conducting condition, the thyristors block current flow in the inverter system and accordingly protect the inverter components, as well as the thyristors themselves from damage due to excessive levels of current. The system further includes means for periodically restoring the thyristor firing circuitry to provide for automatic resumption of normal inverter operation in the event the short circuit condition is only transient. If the short circuit condition still exists after a predetermined number of such restorations, the thyristor firing signals are permanently extinguished until the fault is corrected and the system is manually reset.

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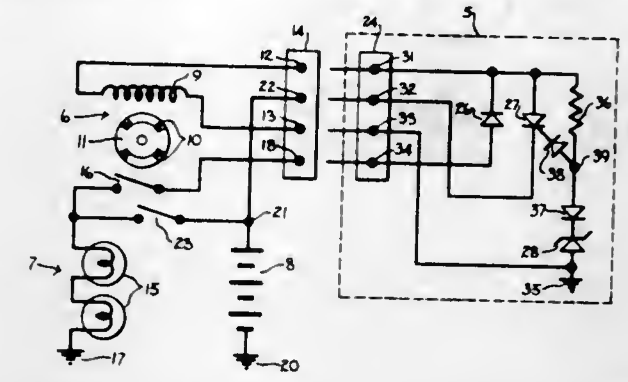
### 3,760,259
## RECTIFIER-REGULATOR MODULE FOR ALTERNATOR-BATTERY ELECTRICAL SYSTEMS

**Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.**
**Filed Aug. 16, 1972, Ser. No. 280,940**
**Int. Cl. H02p** *9/30*
**U.S. Cl. 322—28** **3 Claims**



A regulator-rectifier module comprises a diode, an SCR having its gate connected with a resistor-zener diode regulating circuit, and a plug connector with four terminal members. One terminal member is connected with one side of each of the SCR and the diode, which are arranged for alternate conduction. A second terminal member is connected with the other side of the SCR, and a third with the other side of the diode, and the fourth is grounded. Connections to the plug connector are disclosed whereby half-wave regulated battery charging is effected with one module, full-wave operation with two.

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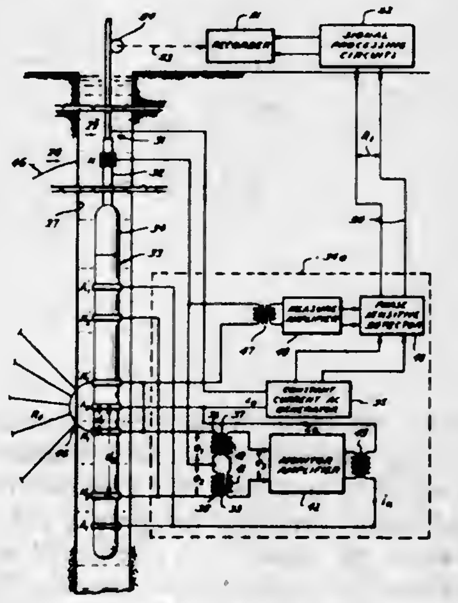
### 3,760,260
## METHOD AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS BY EMITTING SURVEY AND AUXILIARY CURRENTS FROM THE SAME ELECTRODE

**Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.**
**Continuation of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,076**
**Int. Cl. G01v** *3/18*
**U.S. Cl. 324—10** **34 Claims**



In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehold without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

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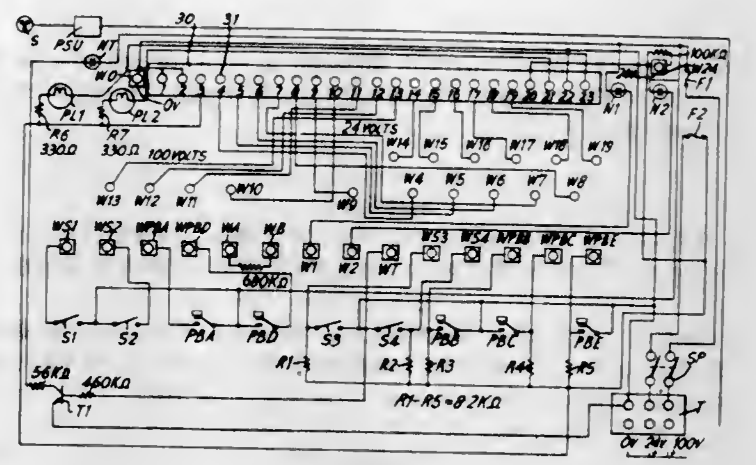
### 3,760,261
## PRINTED CIRCUIT CARD TEST UNIT

**George Thomas Collins, 12 Blackwood Rd., Streetly, Sutton Coldfield, England**
**Continuation-in-part of Ser. No. 6,719, Jan. 29, 1970, abandoned. This application June 19, 1972, Ser. No. 264,308**
**Claims priority, application Great Britain, Jan. 23, 1970, 3,440/70**
**Int. Cl. G01n** *31/00*
**U.S. Cl. 324—73 R** **8 Claims**



A test assembly for testing circuitry on one of a plurality of different but generically related printed circuit cards each having a common type of edge connector comprises an edge connector socket adapted to receive said common edge connector, power supply means for providing suitable voltage levels for said circuitry, a plurality of wander leads for connecting selected terminals of said socket to a plurality of manually operable switches whereby pre-chosen voltage levels may be applied to selected portions of said circuitry on actuation of said switches, together with indicating means associated with said switches to indicate if said selected portions of the circuitry are functioning correctly.

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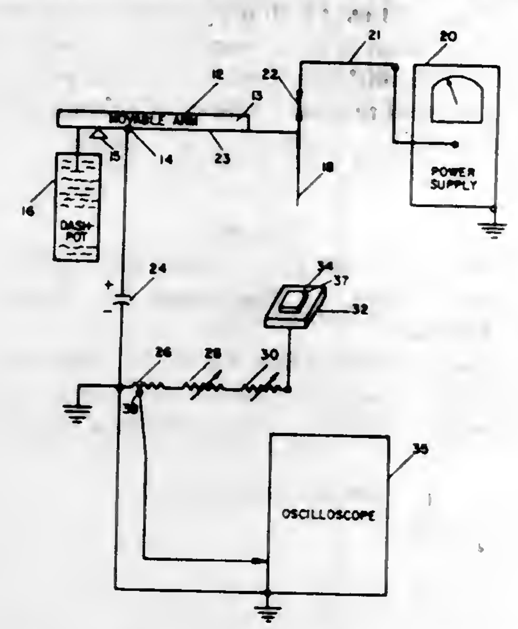
### 3,760,262
## ELECTROSTATIC SPARK IGNITION SENSITIVITY TEST APPARATUS AND METHOD

**John J. Chovanec, Dover, and Floyd J. Hildebrant, Andover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Feb. 28, 1972, Ser. No. 229,803**
**Int. Cl. G01r** *5/28, 31/12*
**U.S. Cl. 324—32** **7 Claims**

A variable gap electrostatic spark ignition sensitivity test apparatus has a: cathode terminal for holding a test sample, an anode terminal in the form of a needle separated from the cathode terminal by an air gap, and a controllable movable arm which holds the anode terminal and moves it toward said cathode terminal and test sample, a capacitor disposed intermediate to and in electrical connection with both the anode terminal and cathode means terminal through a series limiting and viewing resistance, wherein the capacitor may be charged to a desired voltage by a power supply and further wherein an arc discharge will occur when the anode terminal is moved sufficiently close to the test sample held on said cathod terminal. The relative electrostatic spark ignition sensitivity of one test sample to another is measurable on an oscilloscope by measuring the peak current through a viewing resistor as a function of the relative discharge time through the respective test samples.



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## 3,760,263

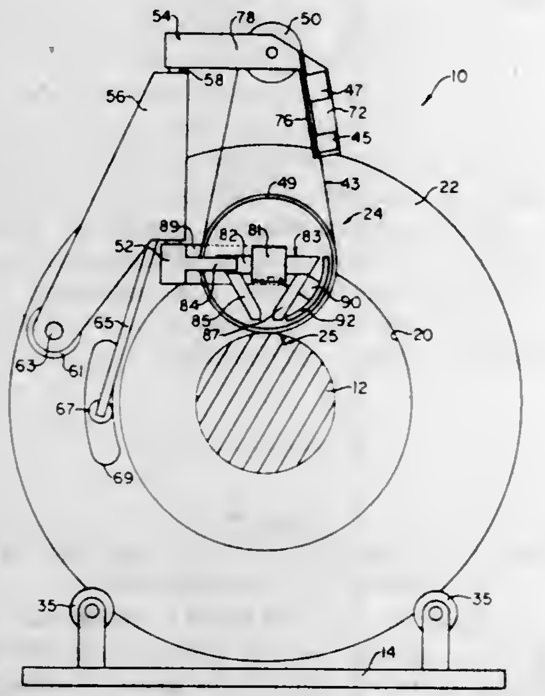
## FLAW DETECTOR FOR SQUARE BILLETS USING MAGNETIC TAPE HELICALLY MOVED ABOUT SAID BILLETS

**Donald T. O'Connor, Barrington; Peter J. Rosauer, Mount Prospect, and Donald E. Lorenzi, Des Plaines, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.**

**Filed May 20, 1971, Ser. No. 145,316**

**Int. Cl. G01r** *33/12*

**U.S. Cl. 324—37** **11 Claims**



A method and apparatus for inspecting an elongated magnetic object for structural flaws includes a magnetic tape entrained for movement on a support structure, and the support structure and the object are moved relative to one another about a longitudinal axis of the object. The tape is moved through a predetermined path relative to the support structure and into pressure engagement with a peripheral surface of the object to be inspected so that a magnetic flux pattern along the peripheral surface of the object is recorded on the tape during relative rotation of the support structure and the object. A pick-up head disposed at a remote location along the path of movement of the tape reads the flux pattern recorded on the tape, and an erase head erases the recorded flux pattern after it is read from the tape by the pick-up head.

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## 3,760,264

## METHOD AND DEVICE FOR MEASURING MINIMA OR MAXIMA OF THE THICKNESS OF A DIELECTRIC LAYER ON AN ELECTRIC CONDUCTOR

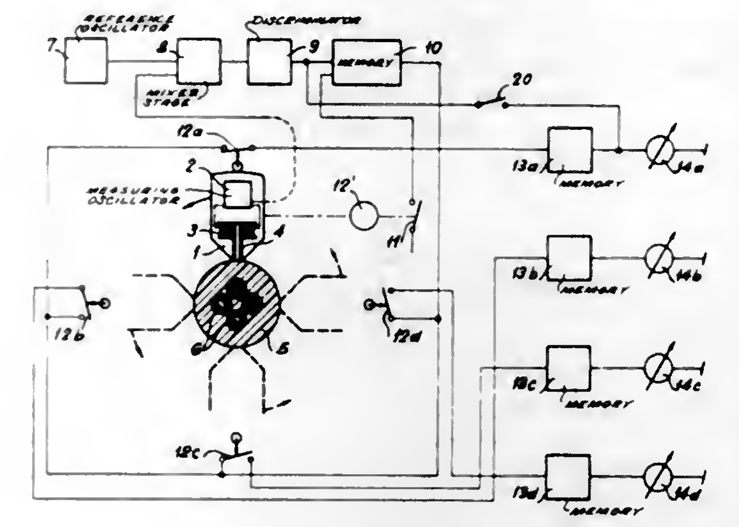
**Bruno Zumbach, Grunemattstr. 8, Orpund, Switzerland**

**Filed Apr. 22, 1971, Ser. No. 136,719**

**Claims priority, application Germany, Apr. 24, 1970, P 20 20 122.3**

**Int. Cl. G01r** *33/00*

**U.S. Cl. 324—34 TK** **8 Claims**



This invention relates to a method and a device for measuring minima or maxima of the thickness of a dielectric layer on electric conductor means having prominent portions, wherein a measuring head scans the surface of the layer and minima or maxima of the thickness of the dielectric layer are detected, stored and indicated. Several minima or maxima may simultaneously be indicated and compared with each other whereby it is possible to determine the general position of the conductor means in a dielectric and absolute extremum values of the thickness.

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## 3,760,265

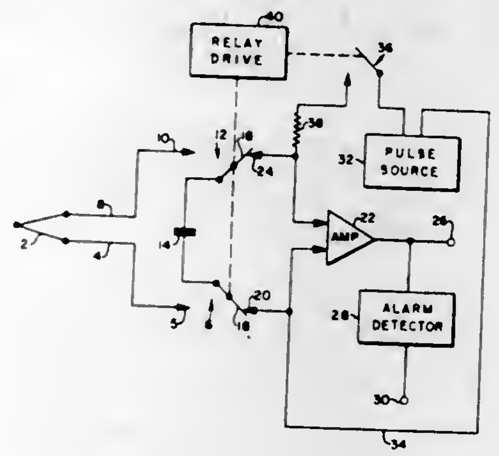
## OPEN CIRCUIT DETECTION APPARATUS FOR THERMOCOUPLE CIRCUITS

**Frederick S. Hutch, Warminster, Pa., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed May 16, 1972, Ser. No. 253,898**

**Int. Cl. G01r** *31/02*

**U.S. Cl. 324—51** **6 Claims**



A circuit for detecting an open circuit condition of a thermocouple using a storage capacitor to transfer a thermocouple output signal to an analog to digital converter circuit and pulse signal means arranged to apply a pulse signal to the capacitor when the capacitor is connected to the analog to digital converter for storage by the capacitor. The stored pulse signal is subsequently discharged by a thermocouple circuit which is a complete circuit. An open-circuited thermocouple circuit will not discharge the pulse signal stored on the capacitor, and the total stored signal will accumulate during subsequent successive switching of the capacitor between the open-circuited thermocouple circuit and the analog to digital converter until a sufficient charge has been accumulated to energize an alarm signal connected to the analog to digital converter.

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## 3,760,266

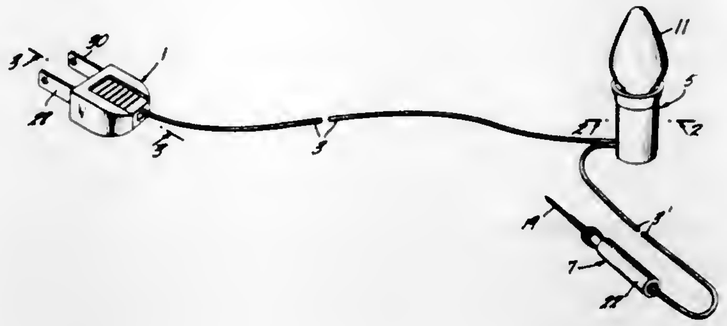
## CIRCUIT TESTER FOR CHRISTMAS TREE LIGHT SETS

**Gerardo Ocasio, Bronx, N.Y., and Edwin Tuman, Chicago, Ill., assignors to Noma-World Wide Inc., Chicago, Ill.**

**Filed Oct. 14, 1970, Ser. No. 80,628**

**Int. Cl. G01r** *31/02*

**U.S. Cl. 324—51** **2 Claims**



A simple and economical light circuit tester for use with a set of Christmas tree lights is provided. The circuit tester is composed of a plug having a single wire electrical lead connected to one prong of the plug. The single wire lead is connected in series with a light bulb mounted in a Christmas tree light socket. The light bulb is connected in series with a probe by means of the same single wire lead.

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## 3,760,267

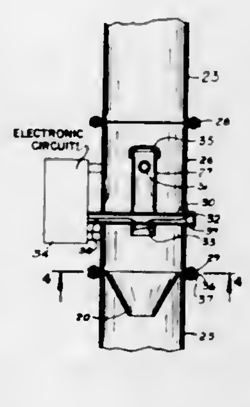
## MOISTURE TESTER FOR CONTINUALLY FLOWING GRANULAR MATERIALS

**D. Michael Williams, Rock Island, Ill., assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa**

**Filed Apr. 3, 1972, Ser. No. 240,423**

**Int. Cl. G01r** *27/26*

**U.S. Cl. 324—61 R** **6 Claims**



A moisture tester of the type having outer and inner cylindrical electrodes and means for measuring permittivity has an upper extension connected to receive by gravity samples of material from a conveyor and a lower, funnel-shaped outlet for discharging material back into the mainstream at a lower point. The upper extension of predetermined length is continually overfilled, and the funnel-shaped portion has an opening of required form and size to control the flow of material by gravity, and thereby to provide a desired close and consistent amount of packing between the electrodes.

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## 3,760,268

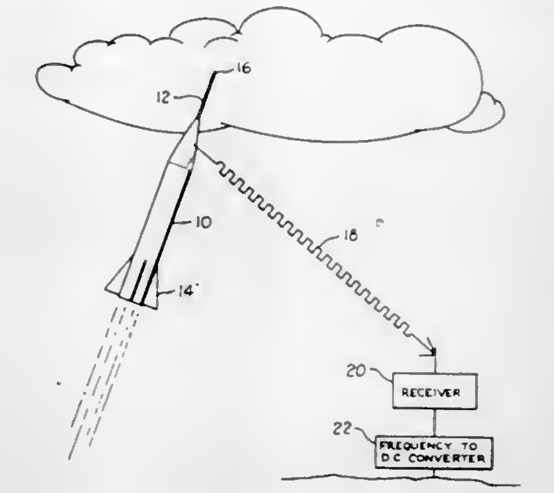
## ROCKET BORNE INSTRUMENT TO MEASURE ELECTRIC FIELDS INSIDE ELECTRIFIED CLOUDS

**Lothar Ruhnke, Boulder, Colo., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Apr. 28, 1972, Ser. No. 248,469**

**Int. Cl. G01r** *29/12*

**U.S. Cl. 324—72** **3 Claims**



An apparatus for measuring the electric field in the atmosphere which includes a pair of sensors carried on a rocket for sensing the voltages in the atmosphere being measured. One of the sensors is an elongated probe having a fine point thereon, which causes a corona current to be produced as it passes through the electric field. An electric circuit is coupled between the probe and the other sensor and includes a high ohm resistor which linearizes the relationship between the corona current and the electric field being measured. A relaxation oscillator and transmitter are provided for generating and transmitting an electric signal having a frequency corresponding to the magnitude of the electric field.

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## 3,760,269

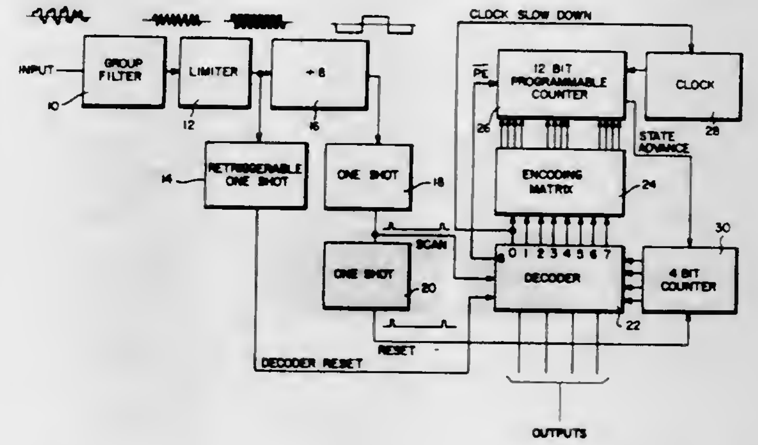
## MULTI-FREQUENCY TONE DETECTOR

**Robert H. Beeman, and Lloyd A. Tarr, both of Berkeley, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed July 31, 1972, Ser. No. 285,394**

**Int. Cl. G01r** *23/02*; **G04f** *9/00*

**U.S. Cl. 324—78 D** **10 Claims**



A multi-frequency tone detector wherein tone detection is accomplished by timing the interval or period of the input tone signal to determine its frequency. Preferably counting, or timing, is accomplished over more than one period, eight in a preferred embodiment, to reduce the effect of noise. A programmable counter is used, with the count thereof being programmed to establish recognition bandwidth limits. The programmable counter is reset each time it counts to a programmed lower or upper bandwidth limit, thus permitting a smaller counter and less memory and logic than otherwise would be required, to be used.

### 3,760,270
### CIRCUIT ARRANGEMENTS FOR MEASURING THE INSTANTANEOUS PHASE DIFFERENCE BETWEEN TWO SIGNALS

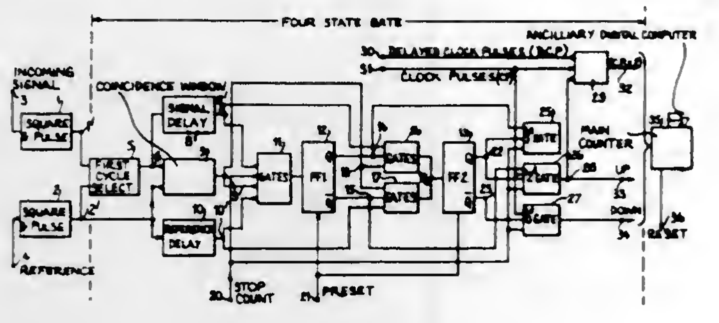
**James Ledson Irvin, Walton-on-Thames, England, assignor to Redifon Limited, London, England**

**Filed May 21, 1971, Ser. No. 145,800**

**Claims priority, application Great Britain, May 28, 1970, 25,750/70**

**Int. Cl. G01r** *25/00*; **H03d** *13/00*

**U.S. Cl. 324—83 D** **9 Claims**



A circuit arrangement for measuring the phase difference between a received radio signal pulse and a locally-generated reference pulse, particularly for use in a hyperbolic navigation system receiver, by measuring the number of clock pulses occurring between a pair of signal and reference pulses and averaging a number of such counts to reduce phase error due to random noise. The ambiguity arising from averaging clock pulse counts for pulses with phase difference in the 0°, 360° region is avoided by the use of circuit elements including a four-state gate, two states of which relate to the normal sequence of alternate signal and reference pulses, to start and stop clock pulse counts, and the other two states of which relate to abnormal sequences of two successive signal pulses or two successive reference pulses, due to random noise phase errors, whereupon double upward counting and single downward counting of clock pulses is initiated, respectively.

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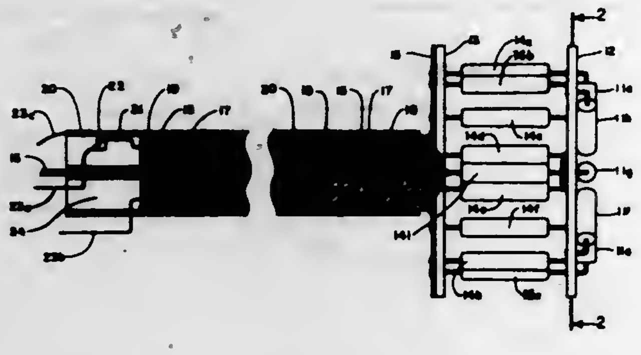
### 3,760,271
### MICROWAVE SURVEY METER

**Stanley Mourad Bach, Jr., Hopkins; Leonard S. Smith, Minneapolis, and Reed E. Holaday, Minnetonka, all of Minn., assignors to Holaday Industries, Inc., Hopkins, Minn.**

**Filed June 7, 1971, Ser. No. 150,372**

**Int. Cl. G01r** *21/04*, *31/02*

**U.S. Cl. 324—95** **6 Claims**



A device to measure low level near field microwave power density, such as leakage from a microwave appliance. A radial array of semiconductor diodes functions both as an antenna and a detector. The dc current generated in the array by an electric field causes a voltage drop across a load resistance. The voltage drop is a function of electric field strength and is measured by a sensitive dc voltmeter calibrated in power density. A switching sequence in the device provides both an internal battery check and an operational test of the diode array before the device is utilized to measure a microwave field.

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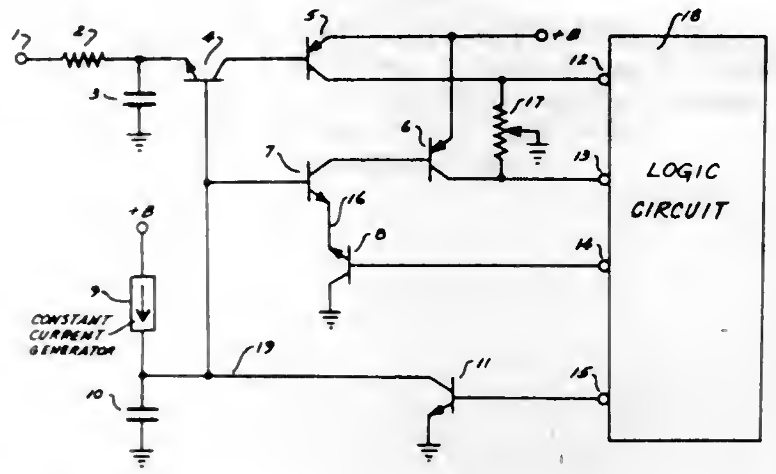
### 3,760,272
### HIGH IMPEDANCE SIGNAL LEVEL DETECTOR

**Robert J. Battes, 25 E. Palatine Rd., Arlington Heights, Ill.**

**Filed Aug. 25, 1970, Ser. No. 66,832**

**Int. Cl. G01r** *19/26*, *17/06*

**U.S. Cl. 324—111** **3 Claims**



A high impedance signal level detector for use in electronic apparatus, such as instrumentation and the like, whereby pairs of electronic pulses may be generated in which the elapsed time between the pulses in each pair is as directly proportional as desired, or nearly so, to the amplitude of an applied DC voltage. Means are provided for the precise adjustment of the time between pulses in each pair to compensate for circuit component variations, or to provide a deliberately induced off-set in time between the pulses in each pair which is not related to the amplitude of the applied input signal voltage.

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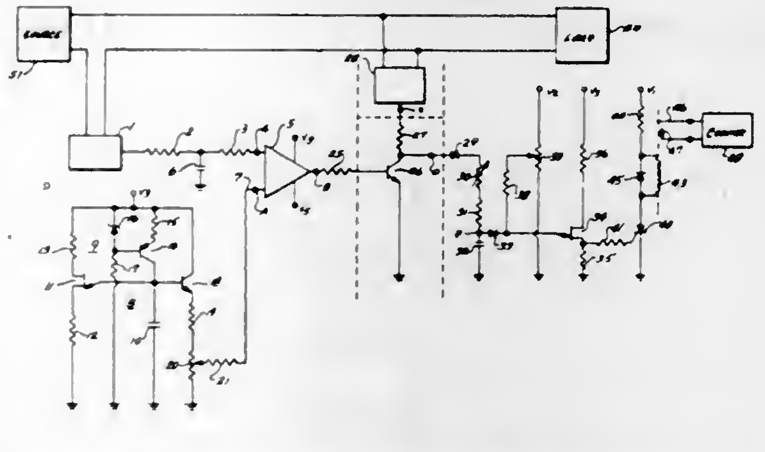
### 3,760,273
### ELECTRONIC WATT HOUR METER

**Wilford B. Burkett, Pacific Palisades, and George D. Carlsen, II, Playa Del Rey, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.**

**Filed June 24, 1971, Ser. No. 156,376**

**Int. Cl. G01n** *21/00*

**U.S. Cl. 324—142** **21 Claims**



A method of measuring a selected unit of energy such as a watt hour comprising the steps of measuring the current flowing through a load, measuring the voltage across the load, generating a first series of periodic pulses related in width to the rms value of the current measured and related in amplitude to the rms value of the voltage measured, integrating the first series of pulses, and generating a second series of pulses related in number to the integral by generating a pulse each time that a capacitor is charged from the integrated signal to a predetermined voltage. The range of measurement is extended by modifying the method so that the first series of pulses are not directly integrated but rather are first converted to a second series of pulses from a constant current source which second series of pulses are integrated. The invention also relates to the electronic circuitry of a watt hour meter including means for generating a series of pulses having a width directly related to the measured current, means for multiplying the series of pulses representing the measured current and the unknown voltage, means for integrating the multiplied signal, and means for developing a series of pulses related in number to the integral by generating a pulse each time that a capacitor is charged from the integrated signal to a predetermined value.

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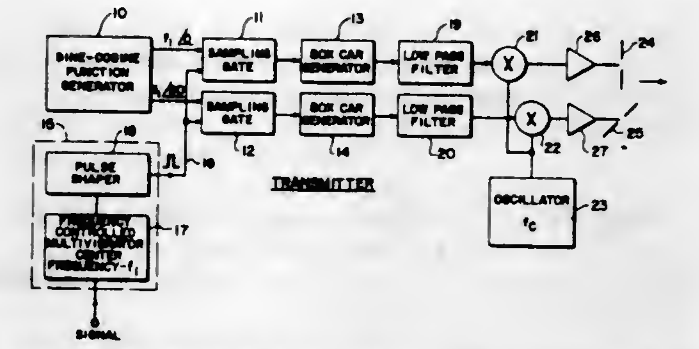
### 3,760,274
### MODULATION OF POLARIZATION ORIENTATION AND CONCURRENT CONVENTIONAL MODULATION OF THE SAME RADIATED CARRIER

**Gottfried F. Vogt, Lincroft, N.J., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Oct. 13, 1971, Ser. No. 188,407**

**Int. Cl. H04b** *7/00*

**U.S. Cl. 325—26** **5 Claims**



A radio transmission system comprising transmitting and receiving facilities for modulating and detecting respectively the orientation angle of linear polarization of a radiated carrier and including provision for concurrent conventional modulation of the carrier.

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### 3,760,275
### AUTOMATIC TELECASTING OR RADIO BROADCASTING MONITORING SYSTEM

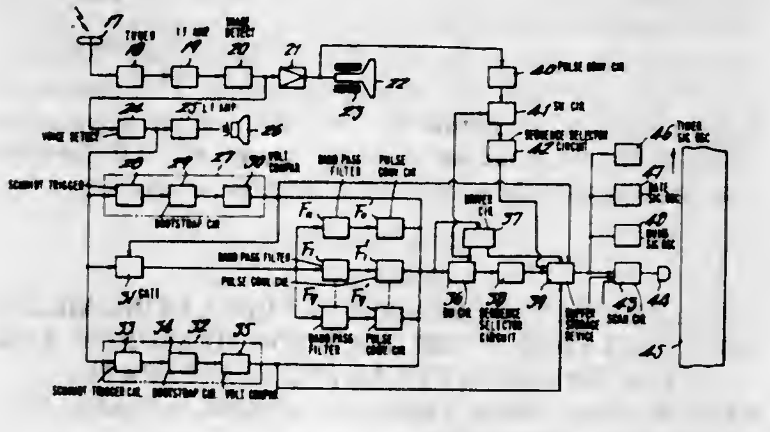
**Takashi Ohsawa, No. 4-5, Akasaka 8-chome, Minato-ku, Tokyo, and Michiaki Karita, No. 35-25, Naritahigashi 4-chome, Suginami-ku, Tokyo, both of Japan**

**Filed Dec. 28, 1970, Ser. No. 101,543**

**Claims priority, application Japan, Oct. 24, 1970, 45/93281**

**Int. Cl. H04b** *1/16*

**U.S. Cl. 325—31** **2 Claims**



An automatic telecasting or radio broadcasting monitoring system. The system has a tuner and a start signal detector circuit coupled to the tuner for picking up a first arriving signal having a particular wave form from among a group of signals received by the tuner and containing information relating to a particular program. An end signal detector circuit is coupled to the tuner for picking up a last arriving signal having a different particular wave form from the first arriving signal from among the group of signals. A plurality band pass filters is coupled to the tuner for passing signals having predetermined different frequencies from the first and last arriving signals from among the group of signals between the first and last arriving signals. A plurality of temporary monitoring signal storing devices is coupled to the detector circuits and the filters each comprising a buffer storing device for temporarily storing at least the intermediate signals which have passed the filters. Each of the buffer storing devices further comprise means to read out the signals temporarily stored therein in response to the last arriving signal. A scanner circuit coupled to the temporary monitoring signal storing devices supplying the signals from the buffer memory devices in succession to a monitoring signal recording means.

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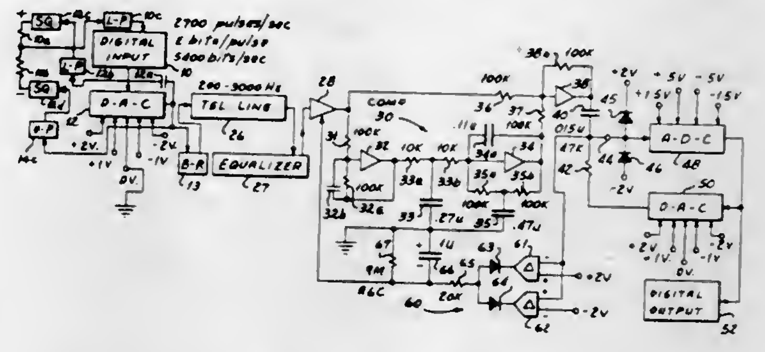
### 3,760,276
### DIGITAL TRANSMISSION SYSTEM

**Richard S. Shenier, Forest Hills, N.Y., assignor to Savin Business Machines Corporation, Valhalla, N.Y.**

**Filed Mar. 29, 1972, Ser. No. 239,302**

**Int. Cl. H04b** *1/68*

**U.S. Cl. 325—38 B** **80 Claims**



A digital transmission system wherein low-frequency signal components are suppressed in transmission but restored by a compensating circuit in response to the high-frequency signal components transmitted.

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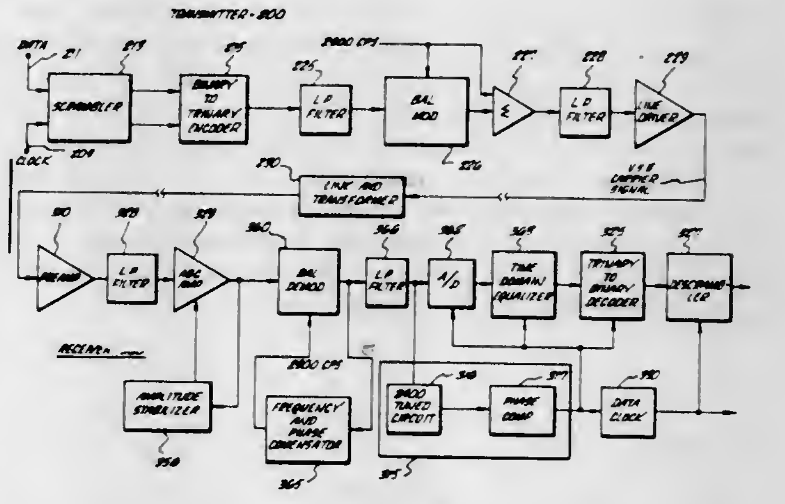
### 3,760,277
### CODING AND DECODING SYSTEM WITH MULTI-LEVEL FORMAT

**Sang Y. Whang, Miami, Fla., assignor to Milgo Electronic Corporation, Miami, Fla.**

**Filed May 17, 1971, Ser. No. 143,762**

**Int. Cl. H03k** *13/00*, *13/24*; **H04l** *3/00*

**U.S. Cl. 325—38 A** **9 Claims**



The present invention is directed to a method and apparatus for coding and decoding data so that it may be transmitted from point to point in either a baseband system or in a carrier system. The method and apparatus involves forming a multi-bit group of binary signals (bits) and transmitting such signals with at least one bit and a fractional part of another bit of the group in an encoding period. In a preferred embodiment of my invention a pair of adjacent encoding periods are employed to fully identify all of the bits of a multi-bit group. My format requires less bandwidth than prior art binary formats. Furthermore, my format, when employed with a three level system, also requires less bandwidth than any known prior art three level system.

The invention also includes an inherent error detection capability. Such inherent error detection is utilized at the receiver to automatically emit a decoded signal which has a high probability of being the correct signal that was transmitted. In addition, the invention readily provides a signal of a unique characteristic from which a decoding clock can be simply and easily derived.

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### 3,760,278
### LIMITED RANGE RADIOCOMMUNICATION SYSTEM

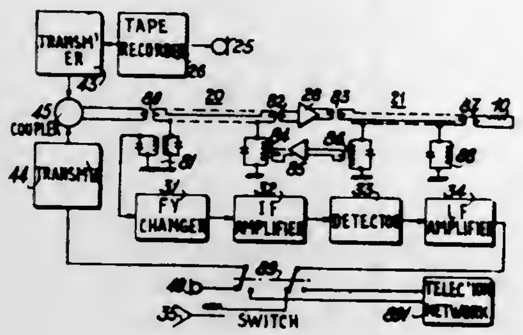
**Jean Raymond Narbaits-Jaureguy, and Henri Billottet, both of Paris, France, assignors to Thomson-CSF, Paris, France**

**Filed Dec. 15, 1971, Ser. No. 208,172**

**Claims priority, application France, Dec. 23, 1970, 7046504; Apr. 9, 1971, 7112745**

**Int. Cl. H04b** *1/00*

**U.S. Cl. 325—51** **16 Claims**



A fixed control station in a zone of high traffic density exchanges information with mobile stations aboard vehicles within that zone by short-range radiocommunication. The control station has an antenna in the form of a coaxial cable, with leakage losses, terminated by a dissipative load at one end while its other end is coupled to a transmitter supplying it with a frequency-modulated outgoing carrier destined for the vehicles within range. The outer conductor of the cable is grounded, at its end proximal to the load, through a parallel-resonant network tuned to the frequency of an incoming carrier from transmitter-equipped vehicles; the other end of this conductor, remote from the load, is grounded through a similarly tuned circuit whose inductive branch forms the primary of a transformer coupling it to an associated receiver. A vehicle equipped with a car radio may have switchover means for selectively listening in on a radio program or on traffic information from the control station; a monitoring relay may respond to such traffic information to reverse a switch normally positioned for radio reception.

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### 3,760,279
### BEAM CURRENT LIMITING CIRCUIT

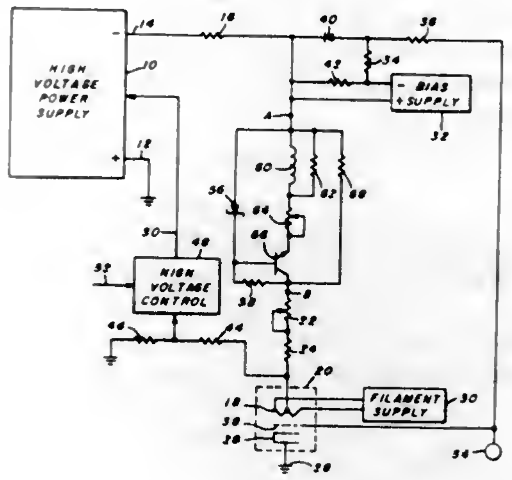
**Ralph G. Rudolph, Edgewood Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Sept. 16, 1971, Ser. No. 181,131**

**Int. Cl. H02h** *7/20*

**U.S. Cl. 328—8** **3 Claims**

A circuit for limiting the current supplied to the cathode of a grid controlled electron beam gun welder. When the current attempts to rise above a predetermined level because of a change of bias voltage, the voltage drop across a sensing resistor approaches that of a zener diode which clamps the base voltage of a transistor in the cathode circuit causing the transistor to shut off sufficiently to limit the current to the maximum set point level. An inductor in the cathode circuit also tends to limit beam current for a short duration change of bias voltage. Several circuits are connected in series.



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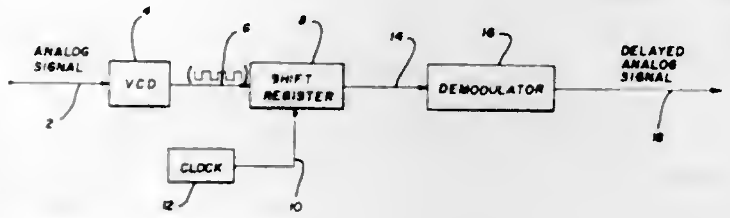
### 3,760,280
### METHOD AND APPARATUS FOR DELAYING AN ELECTRICAL SIGNAL

**Morris T. Covington, Houston, Tex., assignor to Taft Broadcasting Corporation, Houston, Tex.**

**Filed June 7, 1972, Ser. No. 260,585**

**Int. Cl. H03k** *5/159, 5/00*

**U.S. Cl. 328—55** **7 Claims**



A system for actively delaying an electrial signal. The electrical signal to be delayed is converted into a frequency modulated signal. This FM signal is coupled to a digital memory device operating responsive to a control signal. The rate of the control signal and the physical capacity of the memory device determine the delay of the FM signal. The delayed FM signal is demodulated back into its original format. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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### 3,760,281
### AXIAL TRAJECTORY SENSOR HAVING GATING MEANS CONTROLLED BY PULSE DURATION MEASURING FOR ELECTRONIC PARTICLE STUDY APPARATUS

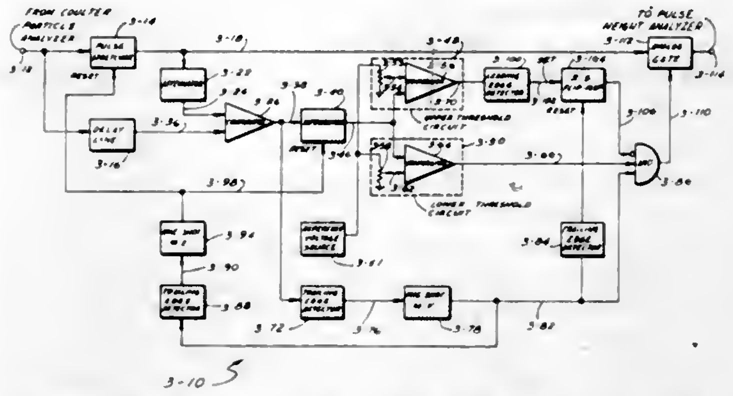
**Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.**

**Continuation of Ser. No. 84,440, Oct. 27, 1970, Pat. No. 3,701,029. This application Sept. 21, 1972, Ser. No. 290,843**

**Int. Cl. H03k** *17/02, 5/20*

**U.S. Cl. 328—91** **8 Claims**

An axial trajectory sensor for use with an electronic particle study apparatus, for differentiating between particles passing on or nearly on axial paths through the detecting zone of the apparatus and particles passing displaced from such an axial path. The sensor derives a duration-measuring pulse for each particle, with such duration being that of the particle generated pulse at a fractional amplitude of the particle pulse. The sensor establishes a duration criteria, subjects each duration-measuring pulse to that criteria, and responds to each duration-measuring pulse by distinguishing between those longer and shorter than the duration criteria.



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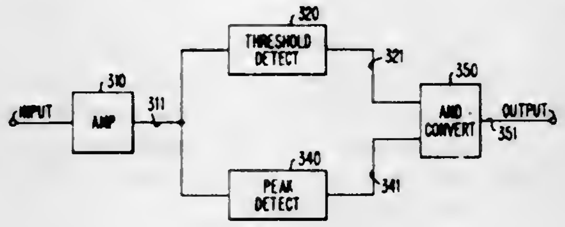
### 3,760,282
### DATA RECOVERY SYSTEM

**Robert W. Arnold, Glen Aubrey, and Louis V. Galetto, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 29, 1972, Ser. No. 239,022**

**Int. Cl. H03k** *5/20, 5/18*

**U.S. Cl. 328—116** **5 Claims**



A system for recovering data subject to amplitude and phase variations including one or more threshold detectors having a hysteresis effect, a peak detector for detecting the positive and negative peaks of a data input signal voltage, gating circuits for logically combining the outputs the threshold detectors with the output of the peak detectors to recover data subject to amplitude and phase variations.

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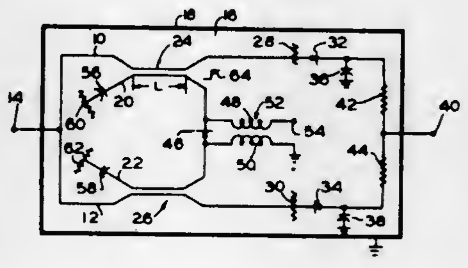
### 3,760,283
### SAMPLING DEVICE

**Larry R. Lockwood, McMinnville, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.**

**Filed Aug. 23, 1971, Ser. No. 174,109**

**Int. Cl. H03k** *5/00*

**U.S. Cl. 328—151** **13 Claims**



A sampling device employing micro-strip components charges a pair of memory capacitors during predetermined sampling periods. Directional couplers, formed by input transmission lines and sampling pulse transmission lines, provide rectangular sampling pulses of predetermined duration. The sampling pulse is also substantially attenuated at the signal input.

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### 3,760,284
### CIRCUIT ARRANGEMENT FOR TAKING THE MEAN OF SEVERAL INPUT VOLTAGES

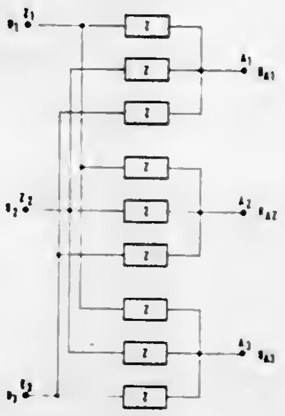
**Edgar Matejka, Singen/Hohentwiehl, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany**

**Continuation of Ser. No. 175,581, Aug. 27, 1971, abandoned. This application Sept. 20, 1971, Ser. No. 181,819**

**Claims priority, application Germany, Sept. 18, 1970, P 20 46 140.9**

**Int. Cl. H03k** *5/08;* **H02h** *7/20*

**U.S. Cl. 328—158** **4 Claims**



A control apparatus has redundant input signals from which an output signal is produced. There is an input for each input signal respectively and a double-pole between the respective input and the common output. Each double-pole defines a predetermined magnitude of signal that it will pass and predetermined resistance below the threshold so as to limit the extent of the voltage step at the output by interference in a respective channel.

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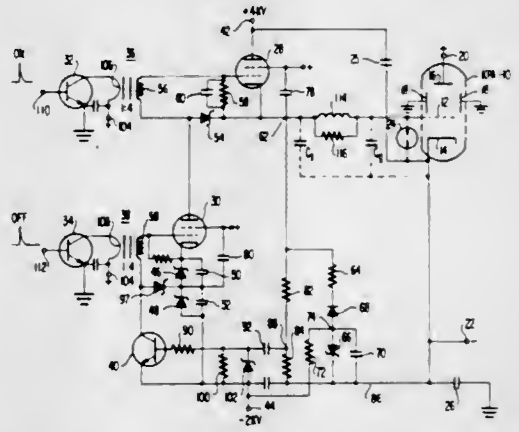
### 3,760,285
### HIGH SPEED PULSER

**Walter E. Milberger, Serverna Park; George W. Massing, Glen Burnie, and Charles M. Allen, Jessups, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 11, 1972, Ser. No. 270,776**

**Int. Cl. H03c** *1/28*

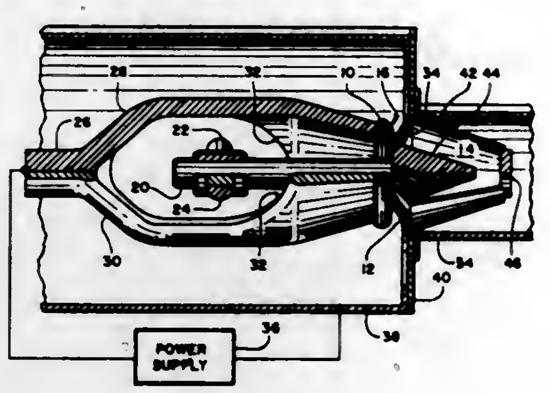
**U.S. Cl. 328—232** **12 Claims**



A hybrid combination of transistors and vacuum tubes for controlling the conduction of high frequency tubes such as klystrons and the like in respone to the resonant charging and discharging of the klystron's grid capacitance. A pair of mutually opposite conductive vacuum tube switches alternately operate to resonantly charge and discharge the tube capacitance through an inductance in response to a first trigger signal applied to turn the tube "on" and to a second trigger to turn the tube "off" in a bistable mode. in the event that the second trigger signal is not applied within a predetermined time period, or is missing, a transistor switch circuit causes the vacuum tube switches to operate in a monostable mode to automatically turn the klystron "off."

### 3,760,286
### ELECTRON BEAM GENERATOR

**John G. Kelly, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**
**Filed Oct. 18, 1972, Ser. No. 298,739**
**Int. Cl. H01j** *29/54*
**U.S. Cl. 328—228** **10 Claims**



An electron beam generator in which an annular sheath of electrons is produced by an annular cathode and anode arrangement and injected in a converging manner to a focal point with a portion of the beam current returned to the center of the converging beam and through the center of the cathode annulus. Another portion of the beam current is fed back around the exterior of the converging beam.

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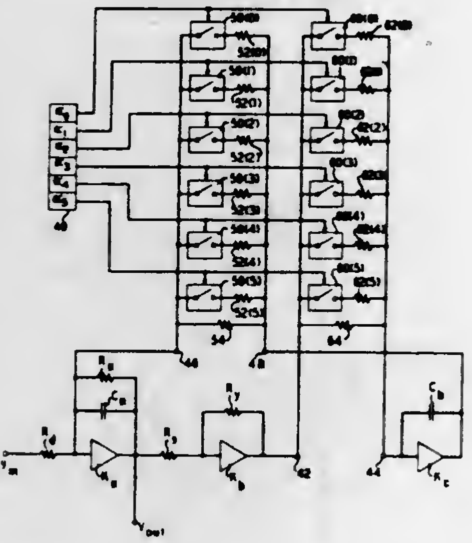
### 3,760,287
### DIGITALLY CONTROLLABLE VARIABLE ACTIVE RC FILTER

**Cliff Andrew Harris, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Aug. 28, 1971, Ser. No. 172,717**
**Int. Cl. H03f** *1/02*
**U.S. Cl. 330—9** **23 Claims**



The several transmission characteristics of an active RC filter are adjusted by digital control of passive networks included at particular points in the filter circuit. Each network includes a plurlaity of passive circuit elements connected either in series or in parallel, each circuit element having a switching element in circuit relation thereto for selectively preventing current from flowing in the associated circuit element. Each switching element is uniquely controlled by the logical condition of a predetermined place of a binary control quantity. The values of the elements in a given network are related by a geometric progression such that the filter characteristic controlled by that network varies linearly with the associated binary control quantity.

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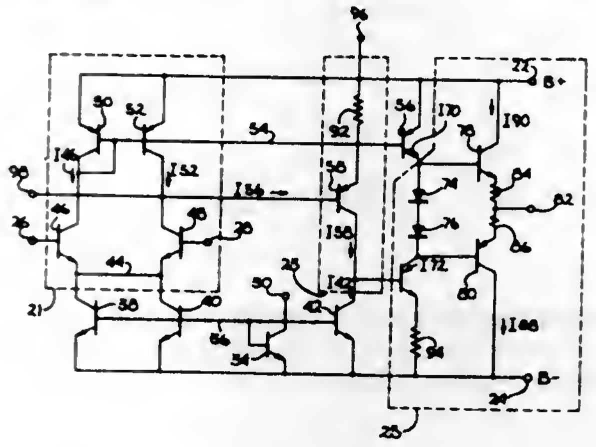
### 3,760,288
### OPERATIONAL AMPLIFIER

**Paul L. Leonard, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.**
**Filed Aug. 9, 1971, Ser. No. 170,210**
**Int. Cl. H03f** *3/68*
**U.S. Cl. 330—30 D** **10 Claims**



An operational amplifier having a broad bandwidth, very low power consumption and an externally variable bias current which adjusts the bias of various stages of the amplifier. The externally adjustable bias allows the adjustment of bias for various supply voltages and operating conditions and allows the operation of the amplifier on supply voltages as low as plus or minus one volt with a power dissipation as low as 60 microwatts. Active loads are used for each stage of the amplifier and the broadband capability of the amplifier is obtained by relatively low reflected resistances which determine the time constant of certain of the stages in the amplifier. In an integrated circuit configuration, improved stability and common mode rejection are achieved by forming a plurality of transistors in a common base pocket.

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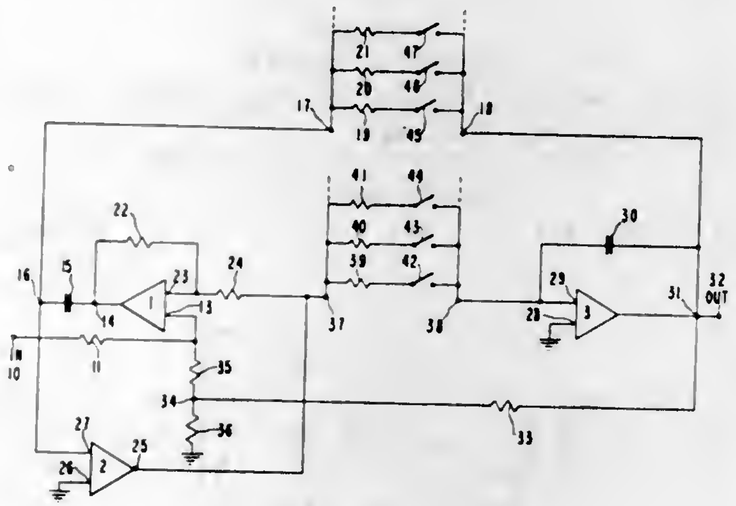
### 3,760,289
### ACTIVE FILTER NETWORK HAVING A VARIABLE CENTER FREQUENCY

**Gunnar Hurtig, III, Santa Clara, Calif., assignor to Kinetic Technology, Inc., Santa Clara, Calif.**
**Filed June 21, 1972, Ser. No. 265,095**
**Int. Cl. H03f** *1/14*
**U.S. Cl. 330—51** **4 Claims**



An active filter network having a variable center frequency including a first amplifier having first and second input terminals and an output terminal, the first input terminal being resistively coupled to the output terminal; an input terminal to the network resistively coupled to the second input terminal of the first amplifier; a second amplifier having first and second input terminals and an output terminal, the first input terminal being coupled to a point of fixed reference potential, the second input terminal being capacitively coupled to the output terminal of the first amplifier, and the output terminal of the second amplifier being resistively coupled to the input terminal of the first amplifier; a first pair of switching terminals adapted to have one of a first plurality of resistors each having different predetermined resistive values coupled therebetween; a means coupling a first terminal of the first pair of switching terminals to the output terminal of the second amplifier; a third amplifier having first and second input terminals and an output terminal, the first input terminal being coupled to a point of fixed reference potential, and the second input terminal being capacitively coupled to the output terminal; means coupling the second terminal of the first pair of switching terminals to the second input terminal of the third amplifier; a second pair of switching terminals adapted to have one a second plurality of resistors each having different predetermined resistive values coupled therebetween; a means coupling the first terminal of the second pair of switching terminals to the second input terminal of the second amplifier; a means coupling the second terminal of the second pair of switching terminals to the output terminal of the third amplifier; a pair of series-connected resistors having a connecting terminal therebetween and two other terminals; a means resistively coupling the output terminal of the third amplifier means to the connecting terminal of the pair of series-connected resistors; a means coupling the first of the other two terminals of the series-connected resistors to a point of fixed reference potential; a means coupling the second of the other two terminals of the series-connected resistors to the second terminal of the first amplifier; and an output terminal of the network coupled to the output terminal of the third amplifier, whereby the selection of one of the first plurality and one of the second plurality of resistors for connection into the first and second pairs of switching terminals respectively, together determine the center frequency of the network.

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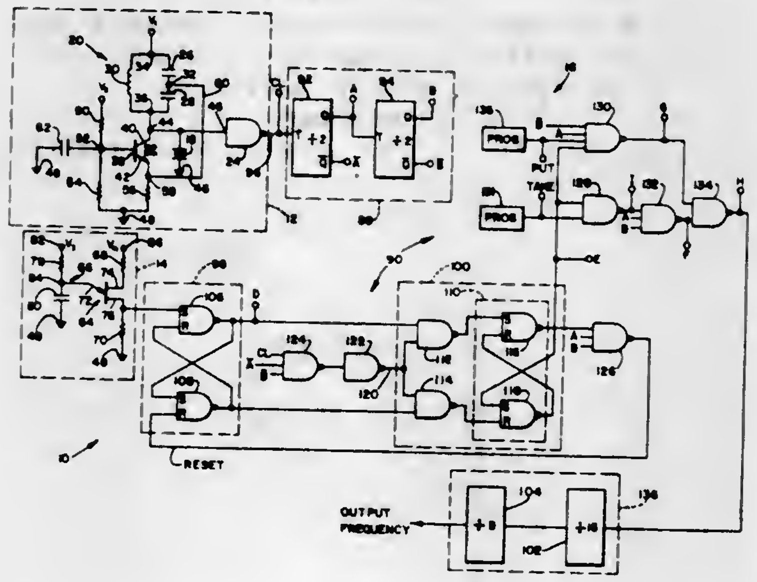
### 3,760,290
### CRYSTAL CONTROLLED VARIABLE FREQUENCY OSCILLATOR

**Philip L. Epstein, Elizabeth, N.J., assignor to Quinder Electronics, Inc., Springfield, N.J.**
**Filed June 16, 1972, Ser. No. 263,542**
**Int. Cl. H03b** *21/00*
**U.S. Cl. 331—40** **10 Claims**



A crystal oscillator frequency and a shift oscillator frequency are selectively combined in a PUT and TAKE circuit comprising digital dividers and logic gating for generating an output signal at a center frequency, at a high frequency and at a low frequency. The center frequency is governed by the crystal oscillator, the high and low frequencies are determined by the center frequency plus and minus the shift frequency of the shift oscillator.

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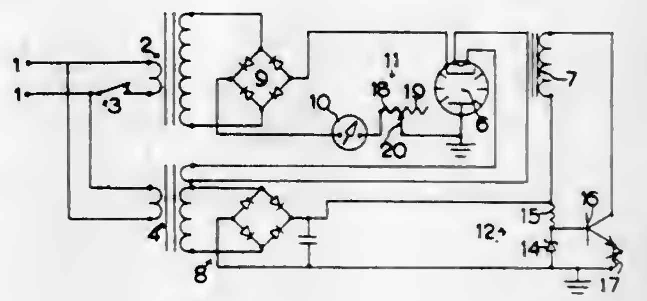
### 3,760,291
### POWER SUPPLY FOR HEATING MAGNETRON

**Melvin L. Levinson, 1 Melnzer St., Avenel, N.J.**
**Continuation-in-part of Ser. No. 841,507, July 14, 1969. This application Nov. 26, 1971, Ser. No. 202,314**
**Int. Cl. H03b** *3/14*
**U.S. Cl. 331—86** **13 Claims**



A power supply for varying the power output of a heating magnetron which includes a variable resistance in series with said magnetron and a source of power for said magnetron, and where the lowest resistance section of said variable resistance is designed to carry more current than the other resistance sections.

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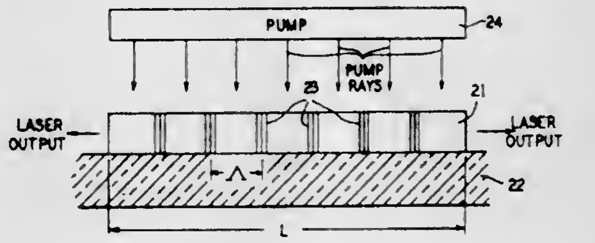
### 3,760,292
### INTEGRATED FEEDBACK LASER

**Herwig Werner Kogelnik, Fair Haven, and Charles Vernon Shank, Laurence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Continuation-in-part of Ser. No. 100,659, Dec. 22, 1970, abandoned. This application Mar. 25, 1971, Ser. No. 128,165**
**Int. Cl. H01s** *3/00*
**U.S. Cl. 331—94.5 C** **12 Claims**



Active materials having substantially time constant, spatially alternating variations in the propagation characteristics thereof produce laser oscillations when excited above a threshold of oscillation.

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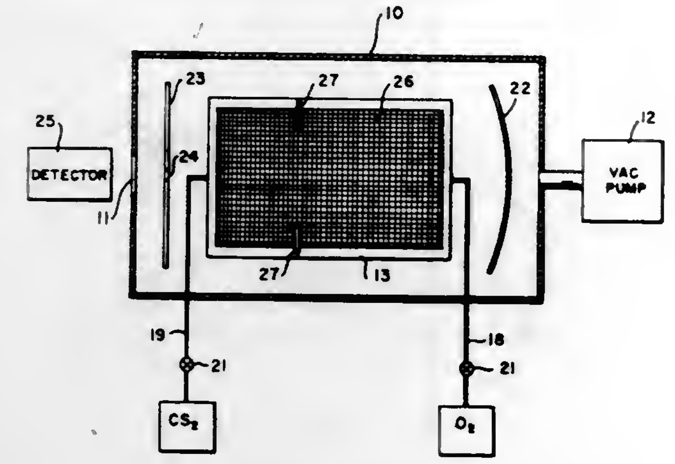
### 3,760,293
### CONTINUOUS WAVE, FREE-BURNING FLAME LASER

**Herschel S. Pilloff, Oxon Hill; Stuart K. Searles, Temple Hills, both of Md., and Nicholas I. Djeu, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Feb. 24, 1972, Ser. No. 229,142**
**Int. Cl. H01s** *3/22, 3/09*
**U.S. Cl. 331—94.5** **4 Claims**

This disclosure is directed to a self-sustaining infrared continuous wave laser in which laser oscillation is achieved from a free-burning flame in a vacuum. Laser action is maintained as long as the chemical agents are supplied and burned. $CS_2$ and $O_2$ are injected from alternate tubes and burned together to form CO with a population inversion between vibration-rotation levels. The optical cavity is formed by spaced dielectrically coated mirrors each having a reflectivity of approximately 99.2 percent. One of the mirrors has a centrally located hole, for output coupling. The flame is ignited by a glow discharge several inches above the burner. The discharge is



turned off once the flame is started. The system will produce laser oscillations as long as the supply of chemicals are maintained.

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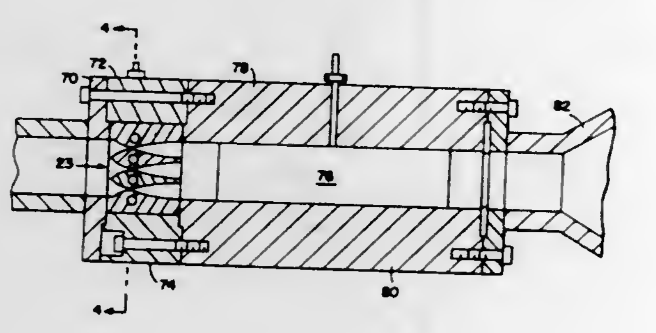
### 3,760,294
## THERMAL MIXING GAS LASER
**Thomas G. Roberts; Guilford J. Hutcheson, and Charles M. Rust, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Sept. 27, 1971, Ser. No. 183,834**

**Int. Cl. H01s** *3/09, 3/22*

**U.S. Cl. 331—94.5** **4 Claims**



A laser having a gas generating section that delivers a flow of hot nitrogen gas ($N_2$) to a nozzle. The $N_2$ is expanded through the nozzle to achieve supersonic flow of the $N_2$. The nozzle includes injection ports positioned so as to inject cold carbon dioxide gas ($CO_2$) into the $N_2$ flow at a point in the nozzle where flow is supersonic, just downstream of the throat. The injection of a cold gas enhances population inversion in the cold gas. Thorough mixing of the hot and cold gases occurs prior to exit of the gases from the nozzle. The gases exhaust from the nozzle into a lasing chamber wherein laser energy is extracted from the flow.

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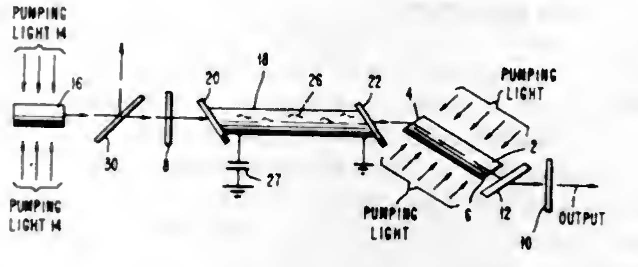
### 3,760,295
## Q-SWITCH FOR SYNCHRONIZING MODE-LOCKED LASER PULSE TRANS WITH EXTERNAL EVENTS
**John R. Lankard, Mahopac, and Peter P. Sorokin, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed May 22, 1972, Ser. No. 255,361**

**Int. Cl. H01s** *3/11*

**U.S. Cl. 331—94.5** **6 Claims**

A capacitive discharge in cesium vapor is used to realize an externally controllable Q-switch synchronizing the appearance of pulse trains from a passively mode-locked



neodymium glass laser with other events occurring on a microsecond time scale.

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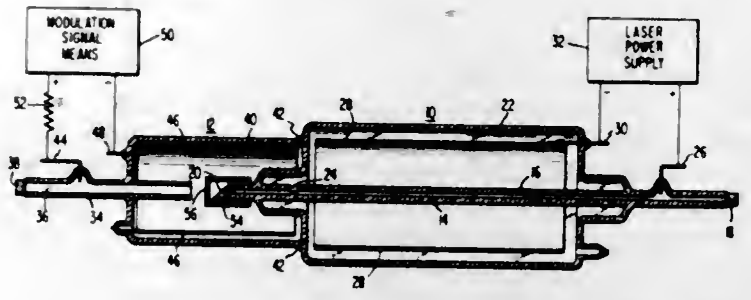
### 3,760,296
## INTERNALLY-MODULATED GAS LASER
**Karl Gerhard Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed June 26, 1972, Ser. No. 266,074**

**Int. Cl. H01s** *3/10*

**U.S. Cl. 331—94.5** **8 Claims**



An internally-modulated gas laser employing a first discharge tube for generating laser wave energy in which modulation is effected by a second discharge tube which includes solely two electrodes, one of which is a cold cathode and the other of which is an anode. Preferably the first and second discharge tubes and the optical resonant cavity mirrors are physically attached to one another to provide a single unitary structure.

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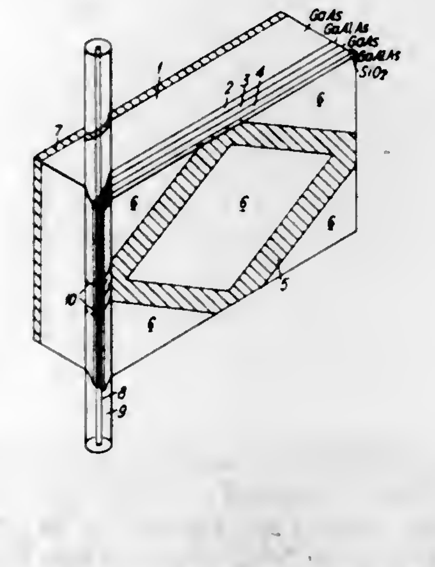
### 3,760,297
## LASER TO OPTICAL FIBER COUPLING
**George H. B. Thompson, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Jan. 20, 1972, Ser. No. 219,464**

**Int. Cl. H01s** *3/02*

**U.S. Cl. 331—94.5** **15 Claims**



An optical fiber is coupled along an edge of a rectangular GaAs injection laser. A circulatory mode of light reflection is established between the four side walls of the laser at an angle of incidence which provides a narrow rectangular strip of light. The fiber is positioned transversely at one reflection point or corner of the light path. A narrow rectangular metal strip contact on one face of the laser confines current to the desired path. A reflective coating on an end of the fiber may provide a unidirectional optical source. Other variations include an optical amplifier for a light input source and an optical coupler from an input fiber to an output fiber.

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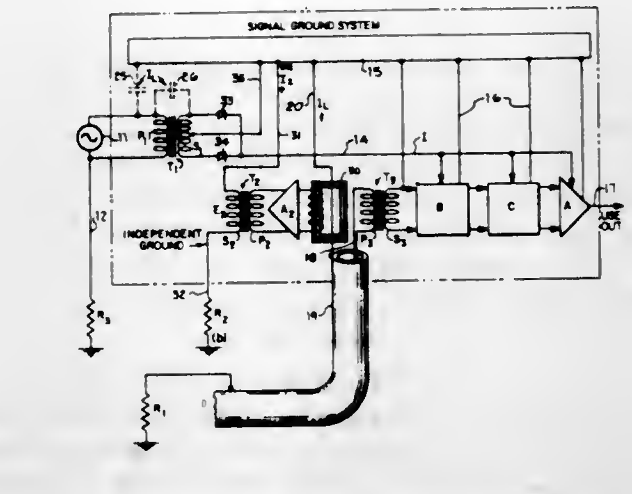
### 3,760,298
## CIRCUIT FOR SUPPRESSING LEAKAGE CURRENTS FLOWING INTO AN UNDERGROUND CABLE SHEATH
**Robert H. Pell, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 5, 1972, Ser. No. 269,002**

**Int. Cl. H04b** *3/28*

**U.S. Cl. 333—12** **3 Claims**



A circuit for suppressing leakage currents flowing into an underground or underwater cable sheath for a cable carrying low-level signals into or out of a receiver or transmitter system having a current sensing means associated with a conductor means connecting the system ground to the cable sheath to detect leakage current used to generate a voltage in a coupling means between the system ground and earth ground to bypass the leakage currents through the coupling means minimizing leakage current interference with the low-level signals.

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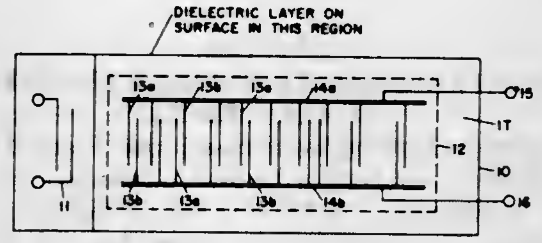
### 3,760,299
## ACOUSTIC SURFACE WAVE-APPARATUS HAVING DIELECTRIC MATERIAL SEPARATING TRANSDUCER FROM ACOUSTIC MEDIUM
**Carmine F. Vasile, Greenlawn, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.**

**Filed Aug. 9, 1971, Ser. No. 170,168**

**Int. Cl. H03h** *9/30*

**U.S. Cl. 333—30 R** **10 Claims**



Disclosed are acoustic surface wave apparatus which utilize a novel transducing system to couple energy to and from an acoustic surface wave propagation medium. The transducing system includes a conventional electromechanical transducer having a plurality of fingers for coupling energy to or from the medium. To minimize bulk wave scattering and reradiation which would normally occur when surface waves propagating in a high piezoelectric medium encounter these fingers, the transducing system further includes a dielectric material which separates the fingers from the medium. In a specific embodiment this dielectric material consists of a relatively thin layer of low piezoelectric, low dielectric constant material, coating a portion of the surface of the propagating medium.

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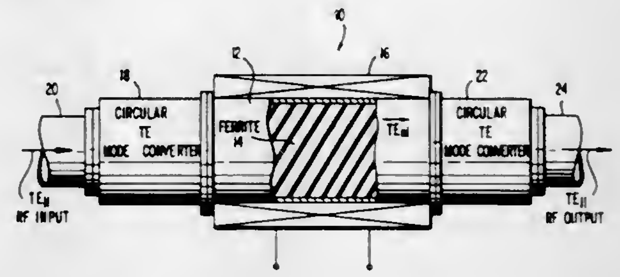
### 3,760,300
## REDUCED LOSS PHASE SHIFTER UTILIZING FARADAY ROTATOR
**Henry C. Leahy, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 31, 1972, Ser. No. 276,488**

**Int. Cl. H01p** *1/18*

**U.S. Cl. 333—31 A** **8 Claims**



Method and apparatus for reducing the loss in a microwave phase shifter by the use of circular $TE_{n1}$ modes where n is greater than unity. The apparatus comprises: a ferrite filled circular waveguide having a diameter sufficiently large to propagate $TE_{21}$, $TE_{31}$ or higher modes; a solenoid adapted to be operated so as to provide a Faraday rotation on the electromagnetic fields propagated in the ferrite filled waveguide; and a pair of circular TE mode transducers or converters respectively coupled to each side of the circular waveguide where for example a circular $TE_{11}$ mode rf input signal is fed into the first mode converter. The rf is transformed into a selected higher $TE_{n1}$ mode where $n>1$ and where it is fed through the ferrite filled circular waveguide. A predetermined Faraday rotation of the $TE_{n1}$ wave takes place with the second mode converter then transforming the $TE_{n1}$ signal back to the input mode which then comprises an rf output shifted in phase with respect to the rf input, the phase shifted in phase with respect to the rf input, the phase shift being effected through the higher mode rf signal propagating in the ferrite filled circular waveguide.

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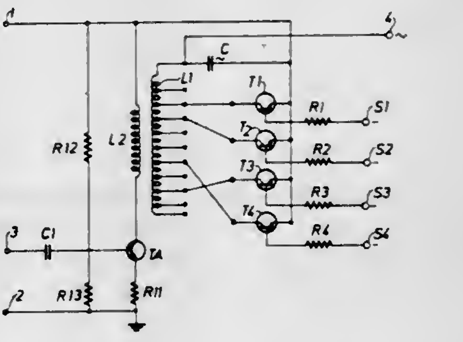
### 3,760,301
## SWITCHABLE BAND-PASS FILTER HAVING RESONANT CIRCUIT ENERGIZED INDUCTIVELY FROM CONSTANT CURRENT SOURCE
**Kjell Goransson, Sodertalje, and Jan-Ake Dahlgren, Alvsjo, both of Sweden, assignors to Sonab Development AB, Vallingby, Sweden**

**Filed Dec. 5, 1972, Ser. No. 312,371**

**Claims priority, application Sweden, Dec. 6, 1971, 15640/71**

**Int. Cl. H03h** *7/10*

**U.S. Cl. 333—70 R** **4 Claims**



A band-pass filter device, which can be switched selectively between several different frequencies, comprises a parallel resonance circuit containing a capacitance and a coil provided with several taps and switching means connected to the taps on the coil for inserting selectively and alternatively differently large portions of the coil into the resonance circuit. The resonance circuit is energized inductively from a constant current source through the coil of the resonance circuit. The input signal to the filter is applied as a control signal to the constant current source and the output on the filter device is connected across the resonance circuit.

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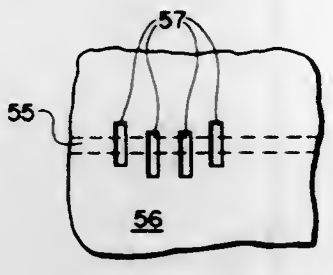
### 3,760,302
### SLOT LINE

**Seymour B. Cohn, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. Filed May 4, 1972, Ser. No. 250,455**

**Int. Cl. H03h** *7/04, 7/08*

**U.S. Cl. 333—73 R** **2 Claims**



This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. with various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

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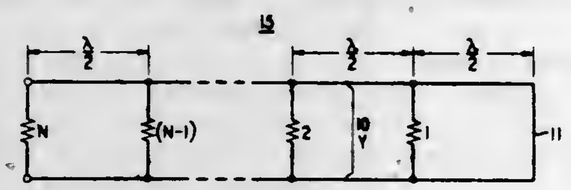
### 3,760,303
### CONDUCTANCE-LOADED TRANSMISSION LINE RESONATOR

**Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.**

**Filed Aug. 25, 1972, Ser. No. 283,827**

**Int. Cl. H03h** *7/04, 7/14;* **H01p** *1/24*

**U.S. Cl. 333—73 R** **13 Claims**



This application describes a conductance-loaded transmission line "resonator." The "resonator" comprises a reactively terminated transmission line along which there are connected a plurality of shunt conductances. The termination and the conductances are spaced such that at band-center, each conductance is in the region of a voltage null. The use of such a conductance-loaded transmission line as the resonator of an oscillator, and as the frequency selective portion of a filter are described.

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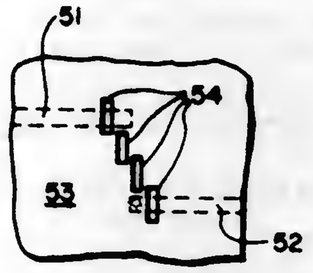
### 3,760,304
### SLOT LINE

**Seymour B. Cohn, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. This application May 4, 1972, Ser. No. 250,457**

**Int. Cl. H03h** *7/04, 7/08*

**U.S. Cl. 333—73 R** **2 Claims**



This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

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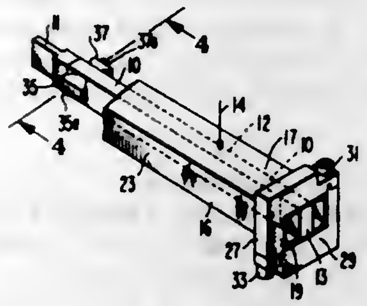
### 3,760,305
### DIELECTRICALLY LOADED WAVEGUIDE ASSEMBLY

**Robert Jean Mason, Medford, and Norman Richard Landry, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Oct. 30, 1972, Ser. No. 302,183**

**Int. Cl. H01p** *3/12, 1/00*

**U.S. Cl. 333—95 R** **8 Claims**



A body of gyromagnetic material closely fitted within a flexible waveguide is supported by means of an external clamp and a pair of dielectric guides.

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### 3,760,306
### DIELECTRIC SUPPORT FOR HIGH FREQUENCY COAXIAL LINES

**Georg Spinner, 33 Erzgiesseistrasse, and Franz Pitschi, 44 Nederlingerstrasse, both of Munich, Germany**

**Filed Apr. 23, 1971, Ser. No. 136,841**

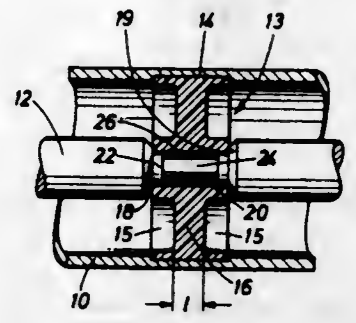
**Claims priority, application Germany, Apr. 24, 1970, P 20 20 173.4**

**Int. Cl. H01p** *1/00*

**U.S. Cl. 333—97 R** **1 Claim**

A coaxial structure employing a dielectric support positioned and secured within an outer conductor and having a central opening for receiving a short conductive member for joining two sections of coaxially aligned inner conductors whose end faces engage the end faces of the dielectric support member adjacent a central opening provided therein for receiving the short conductive member. The diameter of the

short conductive member is less than the diameter of the central opening in the dielectric support to form a hollow, annular-shaped air gap for eliminating the occurrence of damaging peak field strength within the coaxial structure. The side faces of the dielectric support are each provided with annular-



shaped compensation grooves wherein the axial thickness of the dielectric support in the region of the compensation grooves is less than the axial length of the annular gap. The size of the annular gap is selected to prevent the occurrence of inadmissable peak field strength.

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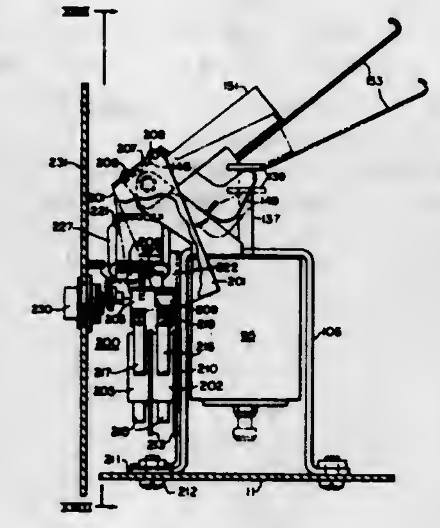
### 3,760,307
### CIRCUIT BREAKER WITH OVERCURRENT TRIP SWITCH

**Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 10, 1972, Ser. No. 251,957**

**Int. Cl. H01h** *71/46*

**U.S. Cl. 335—13** **9 Claims**



A circuit breaker characterized by a pair of contacts operable between open and closed positions, a circuit breaker mechanism releasable to effect opening of said contacts, a trip structure for latching the circuit breaker mechanism in the closed position and for releasing the circuit breaker mechanism, the trip structure comprising a coil-actuated rod and an electromagnetic means responsive to a current overload for releasing the rod from a non-trip position, biasing means biasing the rod to the tripping position, switch means for opening and closing a circuit to auxiliary apparatus, the switch means having a trip lever movable between first and second positions of the switch means, and a cam lever operatively connected with the coil actuated rod and movable across the path of movement of the trip lever for moving the trip lever from the first to the second position, whereby upon movement of the rod to the tripping position, the switch means is actuated to one of the open and closed positions.

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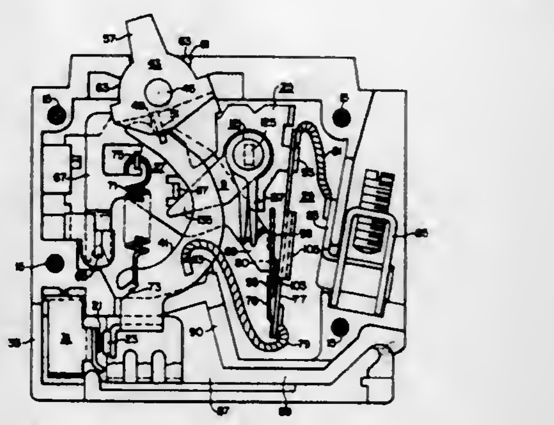
### 3,760,308
### CIRCUIT BREAKER SYSTEM

**John J. Misencik, Shelton, Conn., and Charles E. Nystrom, deceased, late of Derby, Conn. (by Mae Nystrom, administratrix), assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 31, 1972, Ser. No. 276,284**

**Int. Cl. H01h** *75/12*

**U.S. Cl. 335—35** **9 Claims**



A circuit breaker system characterized by at least two circuit breakers in side-by-side relationship and having improved interconnecting trip means for automatically tripping one breaker when the other breaker is tripped in response to overload current conditions, the trip means including a trip cam having an elongated flexible member to effect direct contact with the magnetic armature on a bimetal element of the circuit breaker whereupon movement of the trip means in one circuit breaker automatically results in tripping of the adjacent circuit breaker.

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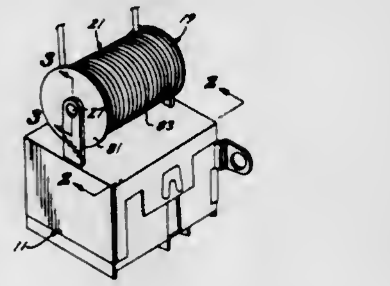
### 3,760,309
### ADJUSTABLE ACTUATING LEVEL CURRENT SENSING RELAY

**Harold A. McIntosh, South Pasadena, and George A. Yeaman, Fallbrook, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.**

**Filed June 22, 1972, Ser. No. 265,332**

**Int. Cl. H01h** *47/00*

**U.S. Cl. 335—1** **9 Claims**



An adjustable actuating level current sensing relay including a housing mounting a switch having its movable contact coupled with a solenoid coil. A current sensing transformer is mounted on the housing and includes first and second coils having first and second cores. The first and second cores are connected together by means of ferromagnetic adjustment means formed with an air gap which is adjustable to selected spacings by means of an adjustment screw and the second core is connected with the solenoid coil. Consequently, the contacts may be connected in circuit with an electrical operator to be operated, and the first coil of the sensing transformer connected with an electrical element, the electrical condition of which is to control the operator. The adjustment screw may then be adjusted to vary the spacing of the air gap to vary the electromagnetic coupling between the first and second transformer coils to provide for closure of the switch at the desired level of current in the second transformer coil.

### 3,760,310
### THERMOFERRITE SWITCH WITH PTC RESISTOR TEMPERATURE COMPENSATION

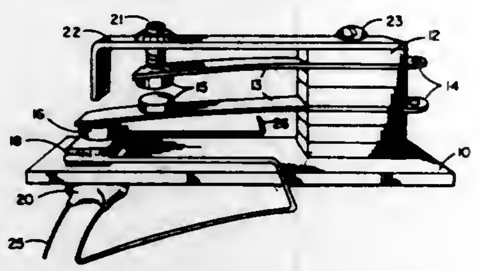
**Kenneth G. Carson, New Market, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed May 11, 1972, Ser. No. 252,173**

**Claims priority, application Canada, Aug. 6, 1971, 120024**

**Int. Cl. H01h** *61/013*

**U.S. Cl. 335—146** **6 Claims**



Disclosed are temperature responsive switches wherein a permanent magnet cooperates with a piece of thermoferrite (TF) to close or open contacts depending on whether the temperature of the TF is below or above its Curie point and hence is or is not attracted by the magnet. A positive temperature coefficient (PTC) resistor is connected electrically in series with the TF and is in intimate heat conducting relationship with it. The TF and PTC resistor are heated by passing current through them and the PTC resistor limits the ultimate temperature attained by greatly increasing its resistance as a predetermined upper limit temperature is attained.

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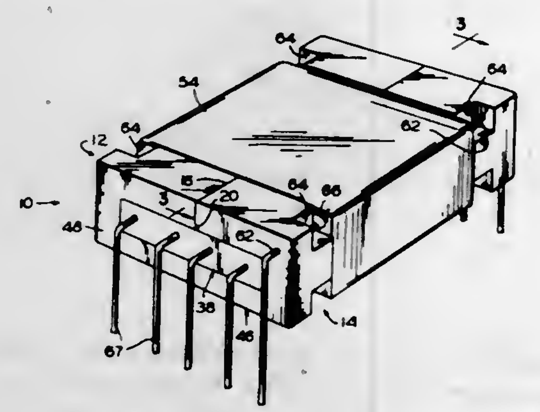
### 3,760,311
### REED RELAY

**Robert A. Zimet, Portland, and James B. Bain, Gresham, both of Oreg., assignors to Datron Systems, Inc., Parsippany, N.J.**

**Filed Apr. 17, 1972, Ser. No. 244,679**

**Int. Cl. H01h** *1/66, 51/28*

**U.S. Cl. 335—152** **10 Claims**



A reed relay includes a hollow plastic bobbin having reed contacts extending therewithin and a coil wrapped therearound. The coil functions not only to provide the magnetic field for drawing the contacts together, but also closes off an aperture initially provided for contact adjustment, whereby the contact area is protected from the surrounding environment. In one embodiment the operating coil secures bobbin portions in engaged relation, while in another embodiment the apertured construction enables one-piece forming of the relay.

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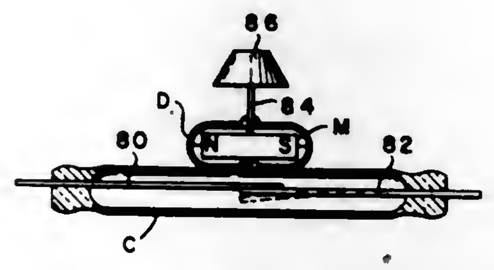
### 3,760,312
### MAGNETICALLY ACTUATED REED SWITCH ASSEMBLY

**Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va.**

**Division of Ser. No. 236,598, March 21, 1972. This application Oct. 20, 1972, Ser. No. 299,273**

**Int. Cl. H01h** *19/00, 36/00*

**U.S. Cl. 335—205** **47 Claims**



A magnetically actuated reed switch assembly comprising contact means including first and second cooperating magnetically actuated reeds in spaced relation to each other, a permanent magnet rotatable about an axis transverse to the longitudinal axis of the reeds and positioned with respect to the contact means so that its force field at certain positions of its rotation operates to influence the contact means to open or close, the contact means and magnet being encased in a housing assembly including contact and magnet supporting chambers.

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### 3,760,313
### PERMANENT MAGNETIC FLUX CIRCUIT AND AN ACTUATING MEMBER FOR IGNITERS

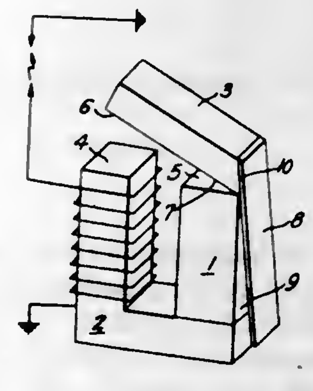
**Hans Schindler, Egelsbach, Germany, assignor to Braun A.G., Frankfurt am Main, Germany**

**Filed Jan. 26, 1972, Ser. No. 220,817**

**Claims priority, application Germany, Feb. 28, 1971, P 21 42 294.6**

**Int. Cl. H01f** *7/08*

**U.S. Cl. 335—229** **10 Claims**



An electromagnetic combination for igniters having a permanent magnetic flux circuit including a permanent magnet, an L-shaped soft iron core and an armature, said armature in the closed position closes the magnetic flux circuit and in the open position interrupts the magnetic flux circuit; and an energy storing operating member connected to the armature and extending from the magnet at an operating angle that is sufficiently large to move the armature from the closed position to the open position, when actuated.

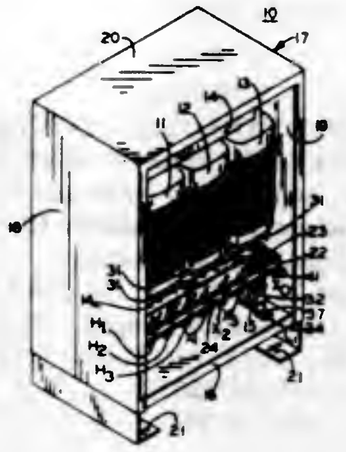
### 3,760,314
### TRANSFORMER WITH IMPROVED ARRANGEMENT FOR PROVIDING A GROUNDING CONNECTION

**Chester A. Krasienko, and Stanley G. Harmeyer, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.**

**Filed Feb. 2, 1973, Ser. No. 328,890**

**Int. Cl. H01f** *15/10*

**U.S. Cl. 336—192** **9 Claims**



A dry-type transformer including a housing with a core and coil assembly mounted in the housing. An electrically insulative terminal board is mounted in the housing and a plurality of terminals are mounted on the terminal board in spaced apart relationship to each other and to the housing. An elongated ground strap is selectively mounted to one of the terminals in first and second positions. One end of the ground strap is squared off and the other end has an attachment foot. When the groud strap is in its first position its squared off end is in interfering relationship with the adjacent edge of the terminal board and its attachment foot is spaced on the housing a distance at least equal to the normal spacing between the adjacent terminals. When the ground strap is in its second predetermined position the attachment foot is in juxtaposition to one wall of the housing and is bolted to the wall of the housing to provide electrical connection between the ground strap and the housing.

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### 3,760,315
### ELECTRICAL COIL WITH SPACING BANDS

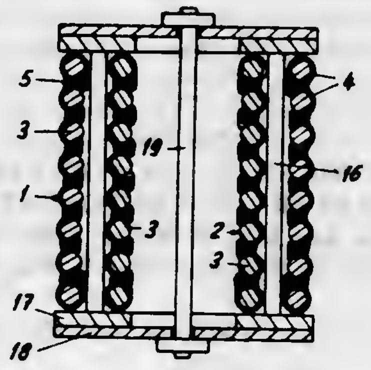
**Hans Hartmann, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland**

**Filed Dec. 1, 1971, Ser. No. 203,602**

**Claims priority, application Switzerland, Dec. 7, 1970, 18117/70**

**Int. Cl. H01j** *27/30*

**U.S. Cl. 336—205** **6 Claims**



An electrical impedance coil which has a helical configuration has applied to the outer surface thereof a plurality of circumferentially spaced bands of insulating material and which extend longitudinally of the coil. A cord wrapping applied around the bands at the helical interspace formed between adjacent turns of the coil serves to draw in those portions of the bands into this interspace so as to lie between adjacent turns and the bands in conjunction with the binding-in effect produced by the cord wrapping serve to mechanically reinforce the coil against disruptive forces which occur when the coil is required to carry high currents.

A rotatable mandrel arrangement is provided in connection with manufacture of the coil, the mandrel serving to form the electrical conductor into helical form, and as a support for the supply rolls of the band material to be applied to the outer surface of the bands, after which the cord wrapping is applied as the mandrel is rotated.

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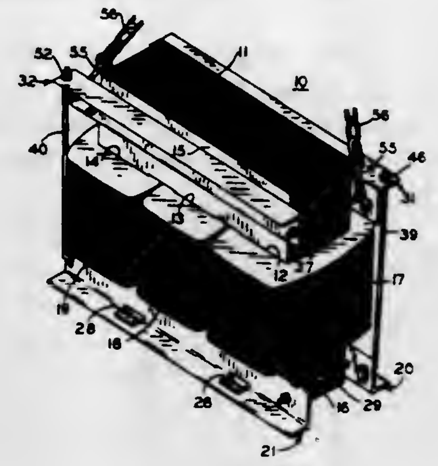
### 3,760,316
### TRANSFORMER CORE ASSEMBLY

**Robert L. Czewski, and Robert S. Gross, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.**

**Filed Feb. 5, 1973, Ser. No. 329,886**

**Int. Cl. H01f** *27/26*

**U.S. Cl. 336—210** **6 Claims**



A transformer core assembly including a plurality of laminations of magnetic material which are releasably clamped together into a unitary structure. The core includes a number of leg sections which are joined together by a number of yoke sections. The leg and yoke sections are formed of stacked laminations of magnetic material Support bars are positioned against one edge of one yoke section and are slidable received in a pair of clamp members. The clamp members are positioned against opposite sides of the yoke section and are bolted together tp confine the yoke section therebetween. Another pair of clamp members bear against the sides of the other yoke section and are bolted together to clamp that yoke section therebetween. A J-bolt interconnects one corner of each of the first clamp members with a corresponding corner of each of the other pair of clamp members and each of the other clamp members is provided with an opening to receive lifting mechanism adjacent the J-bolt.

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### 3,760,317
### THERMALLY ACTUATED CONTROL DEVICE AND CIRCUIT

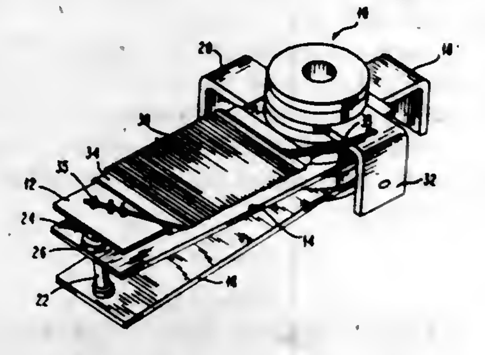
**Robert Edward Mello, Rockville, and Armand Clavatta, Meriden, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.**

**Filed Jan. 31, 1972, Ser. No. 221,887**

**Int. Cl. H01h** *61/02*

**U.S. Cl. 337—103** **2 Claims**

A control device for setting the operating period for a motor useful in actuating a shoe buffer or similar appliance. The control device is a relay whose contacts are closed and opened as a consequence of the heating of a coil surrounding one of the bi-metallic strips of the relay. The relay is so constructed that closure of the aforesaid contacts occurs substantially instantaneously, that is, in an extremely short time period upon application of current to the heating coil. Moreover, the relay is adapted to have the contacts return to the open state in a much longer time period; such longer time period constituting the operating period for the apparatus to be controlled.



### 3,760,318
### PROCESS FOR MAKING A VOLTAGE DEPENDENT RESISTOR

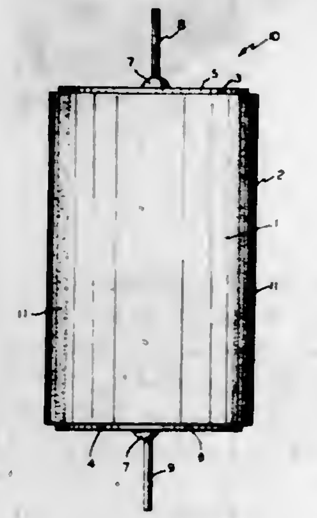
**Takeshi Masuyama; Mikio Matsuura, and Atsushi Iga, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Aug. 24, 1972, Ser. No. 283,283**

**Claims priority, application Japan, Aug. 27, 1971, 46/66185; Aug. 27, 1971, 46/66186; Aug. 27, 1971, 46/66187; Aug. 27, 1971, 46/66188;/ Sept. 17, 1971, 46/72797; Sept. 17, 1971, 46/72798; Sept. 22, 1971, 46/74351**

**Int. Cl. H01c** *7/10*

**U.S. Cl. 338—20** **12 Claims**



A voltage dependent resistor comprising a sintered body of zinc oxide having: (1). voltage dependent properties by itself, (2). at least one member selected from the group consisting of L: ions and Na ions diffused in the side surface thereof, and (3). Two electrodes applies to the opposite surfaces thereof. The invention also provides a process for making said resistor.

### 3,760,319
### TEMPERATURE DETECTING WIRE STRUCTURE

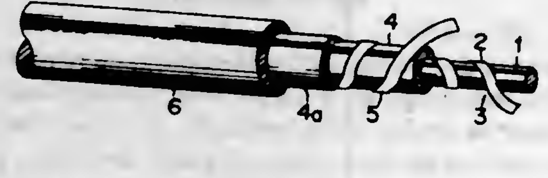
**Toshinobu Kawazoe, 863-1 Shiro, Tokorozawa-shi, Saitama-ken, Japan**

**Division of Ser. No. 881,425, Dec. 2, 1969, Pat. No. 3,375,477. This application Mar. 14, 1972, Ser. No. 234,517.**

**Claims priority, application Japan, Dec. 17, 1968, 43/92026; Jan. 21, 1969, 44/3815**

**Int. Cl. H01c** *7/02*

**U.S. Cl. 338—26** **12 Claims**



Wire structures for detecting temperature rises above a predetermined level comprise a cylindrical core formed of non-conductive material, an electrically conductive first wire spirally wound around the core, a first thermosensitive layer coated on the first metal wire made of a mixture of resin binder and fine crystals of vanadium dioxide, an electrically conductive second wire spirally wound around the first thermosensitive layer, a second thermosensitive layer made of the same components as the first coated around the second metal wire and a coating of non-conductive resin covering the second thermosensitive layer. A method for making the temperature detecting wire structure is disclosed, such method being claimed in a divisional patent.

### 3,760,320
### DEVICE FOR SIMULTANEOUSLY CONTROLLING A PLURALITY OF VARIABLE RESISTORS

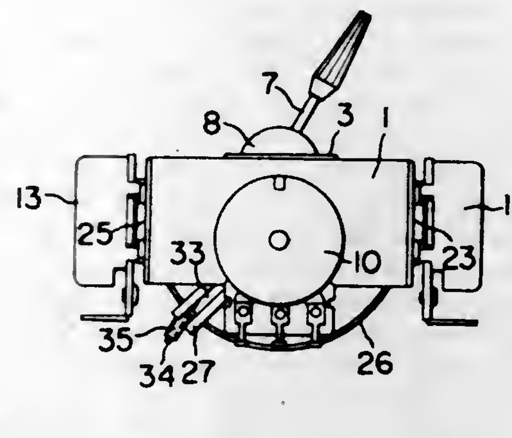
**Shunzo Oka, Osaka, and Matsuo Nishioka, Nishinomiya-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan**

**Filed Mar. 21, 1972, Ser. No. 236,681**

**Claims priority, application Japan, Mar. 25, 1971, 46/21457; Mar. 25, 1971, 46/21458; Mar. 26, 1971, 46/22058; Mar. 26, 1971, 46/22059**

**Int. Cl. H01c** *9/00*

**U.S. Cl. 338—128** **6 Claims**



A bearing having a spherical bearing surface and made of a synthetic resin by molding or the like is attached to an opening formed at the center of the top wall of a casing having four side walls. The bearing rotatably receives a spherical body having a control shaft which extends through the center of the spherical body and is securely fixed thereto. Variable resistors are attached to the side walls of the casing in such a manner that their rotary shafts may extend into the casing. Each of the opposed pairs of the variable resistors are interconnected with a bow-shaped elastic connecting member having an axially elongated slot. The lower end of the control shaft is fitted into the axially elongated slots of the connecting members which cross each other, but do not interfere with each other. As the control shaft is rotated or inclined in any direction, two or four variable resistors may be simultaneously controlled.

### 3,760,321
### CONCENTRIC SHAFT ENCASED VARIABLE ELECTRONIC COMPONENT

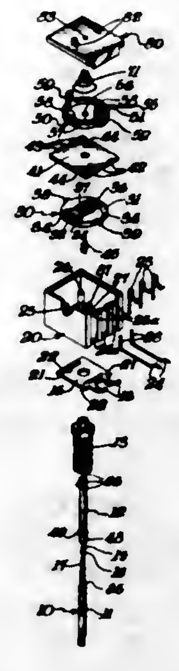
**John H. Fabricius, and John P. Maher, both of North Adams, Mass., assignors to Sprague Electric Co., North Adams, Mass.**

**Filed June 6, 1972, Ser. No. 260,293**

**Int. Cl. H01c** *9/02*

**U.S. Cl. 338—134** **10 Claims**

Two variable circuits on opposing major surfaces of a ceramic substrate are disposed on concentric shafts that extend out from a preformed insulative casing that houses the circuits and effectively isolates all internal parts from external pressures and forces. The innermost shaft operates an "off-on" switch and the "loudness" control, while the outside shaft operates the tone control of the component and has a detent thereon for adjusting the component to its optimum setting. Both circuits are held stationary and are contacted by rotatable means, all of which are disposed within a preformed casing of insulative material that has terminals running from the circuits to outside the casing. A cover of insulative material is sealed to the casing that protects the component from dirt, dust and the like.



### 3,760,322
### VARIABLE RESISTOR

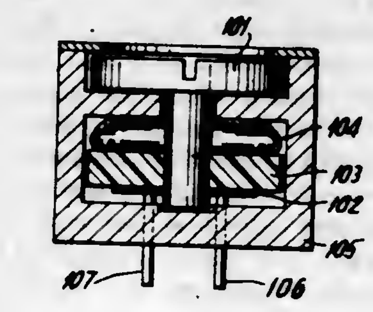
**Masanori Kogo, and Hisashi Honda, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan**

**Filed June 29, 1972, Ser. No. 267,630**

**Claims priority, application Japan, June 30, 1971, 46/48316**

**Int. Cl. H01c** *9/02*

**U.S. Cl. 338—137** **5 Claims**



A resistive element has a gradient of resistivity extending along its length. It is held in slidable contact with two brushes spaced-apart from each other. The resistance between the brushes can be varied by changing their position relative to the resistive element and the gradient of resistivity. The resistive element may have an arcuate configuration and the relative position may be changed by rotating the element.

### 3,760,323
### INSULATED WIRE WOUND RESISTOR

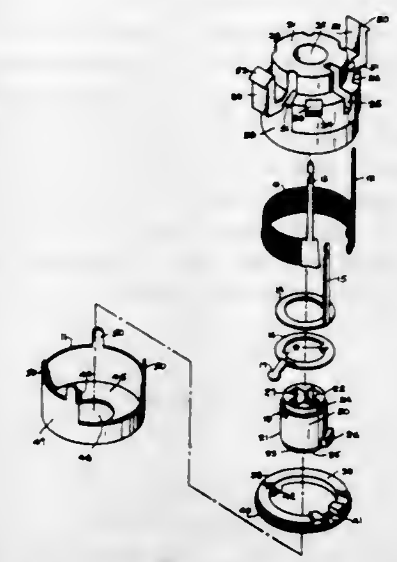
**Burton S. Lifson, Rydal, Pa., assignor to Continental-Wirt Electronics Corporation, Warminster, Pa.**

**Filed Sept. 25, 1972, Ser. No. 291,658**

**Int. Cl. H01c** *5/02*

**U.S. Cl. 338—174** **9 Claims**

A variable resistor which includes a one-piece molded plastic insulating housing having an open-ended hollow socket in which is disposed an assembly consisting of a wire wound annularly-shaped resistance element having terminal legs projecting directly through and outwardly of the insulating housing, and a pair of electrically interengaged metal rings mounted on a molded plastic rotor coaxially centered within said hollow socket, one of said rings having a contact finger engaging the resistance element and the other of said rings having a terminal lug extending through and outwardly of the molded plastic housing, all of the foregoing assembly parts being operatively held within the one-piece housing by a molded plastic insulator ring fitted in the open end of said hollow socket, and a retainer shell locked to and embracing said socket and its end closure ring to secure the entire assembly together. A detent projection from the retainer shell extends into the housing and in conjunction with an extension on the molded plastic rotor provides rotation stops for the rotor contact finger. The entire housing is secured to a mounting plate by means of a pair of locking arms having hooked ends which are integral with and project forward from the housing and are designed to pass through mounting slots in the mounting board and grip the edges of the mounting slots to thereby firmly press the broad area front face of the one-piece housing against the rear surface of the mounting plate.



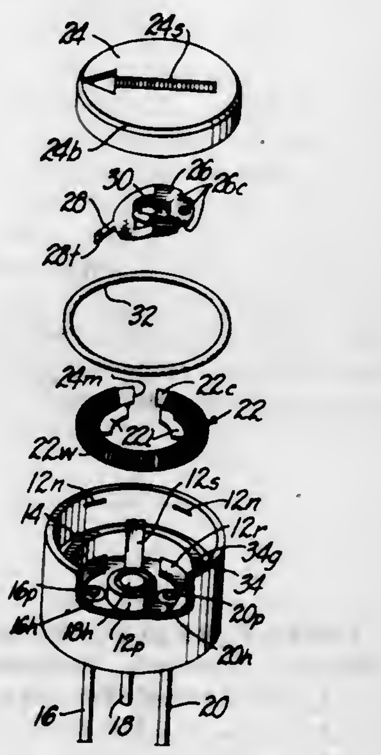
### 3,760,324
### SINGLE-TURN POTENTIOMETER

**Kenneth B. Baldwin, Corona, and Ronald D. Sullivan, Riverside, both of Calif., assignors to Bowins, Inc., Riverside, Calif.**

**Filed Sept. 26, 1972, Ser. No. 292,353**

**Int. Cl. H01c** *5/02*

**U.S. Cl. 338—174** **10 Claims**



A potentiometer comprised of an electrically insulative housing of thermoplastic material having a deep, substantially cylindrical cavity therein, a plurality of termination pins partially molded into the bottom of the housing, a substantially annular resistance element secured at the bottom of the housing and having the ends thereof attached to the heads of two of the termination pins, a disk-shaped cover member adapted to fit into the open end of the cavity, a resilient contact member attached to the underside of the cover and adapted to contact the resistance element and a third one of the termination pins, and an annular sealing member positioned between the cover member and a ledge on the housing. The housing member includes a plurality of nubs extending a short distance into the cavity adjacent the open end thereof to help retain cover member within the cavity. In the preferred embodiment, the resistance element is a wirewound element which is heat inserted into raised portions of the housing on the floor of the cavity; the heads of two of the termination pins include small integral projections for facilitating their electrical connection to the ends of the resistance element; and the tip of the contact member which contacts the resistance element has a knurled surface and is rhodium plated.

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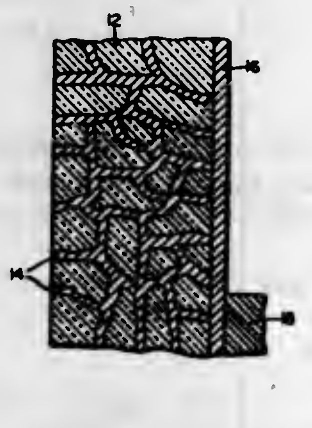
### 3,760,325
### RESISTIVE DEVICE

**Ray B. Forker, Jr., Horseheads, and William N. Lawless, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Nov. 17, 1972, Ser. No. 307,463**
**Int. Cl. H01c** *7/02*
**U.S. Cl. 338—262** **10 Claims**



A resistive device formed of a porous glass matrix member. Amorphous carbon is formed in situ in an electrically continuous manner within the pores of said matrix member. The member has two terminal ends to which means are electrically connected for making external electrical connection to the device. The resistance of the device is a determinable and measurable function of temperature and the device is useful for measuring temperatures from the cryogenic region to in excess of room temperature since the resistance of the device varies smoothly over such range and the device possesses high sensitivity in such a temperature range.

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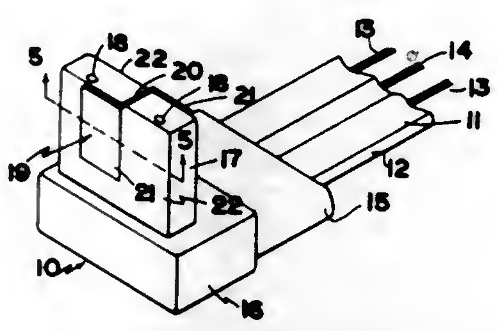
### 3,760,326
### THREE WIRE ELECTRICAL PLUG

**Lynne E. Windsor, Winnipeg, Manitoba, Canada, assignor to James B. Carter Limited, Winnipeg, Manitoba, Canada**

**Division of Ser. No. 825,208, May 16, 1969, Pat. No. 3,606,155. This application May 3, 1971, Ser. No. 139,816**
**Int. Cl. H01r** *3/06*
**U.S. Cl. 339—14 R** **2 Claims**

An electrical plug with a ground wire connected to an angulated grounding strip moulded into the plug body between the two contacts and extending on each side of the body so that it grounds to the shroud normally shielding the pins of the heater and into which the plug normally engages.



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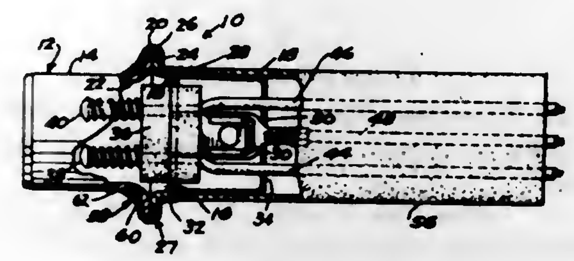
### 3,760,327
### MOUNTING AND SEALING ARRANGEMENT FOR LAMP SOCKETS

George B. Whitehead, Birmingham, Mich., assignor to Elmatic Corporation, Livonia, Mich.

**Filed Dec. 8, 1971, Ser. No. 205,904**
**Int. Cl. H01r** *3/06*
**U.S. Cl. 339—14 R** **31 Claims**



A circular plastisol sealing gasket surrounds the metal lamp socket and forms a fillet between the tubular wall of the socket shell and a circular flange which extends radially outwardly of the shell wall. The tubular shell wall immediately forward of the circular flange, around which the gasket is formed, is dimensioned for a press fit in an opening in a mounting panel. The rear end of the socket is sealingly enclosed by a protective boot which is telescoped over the rear end of the socket shell and sealed around each individual lead wire which exits from the rear of the socket. The socket is mounted by inserting its forward end through an opening in a mounting panel and pressing the socket into the panel so that the press fit portion of the shell wall is retained therein. The plastisol gasket deforms to form a waterproof seal between the socket and the mounting panel.

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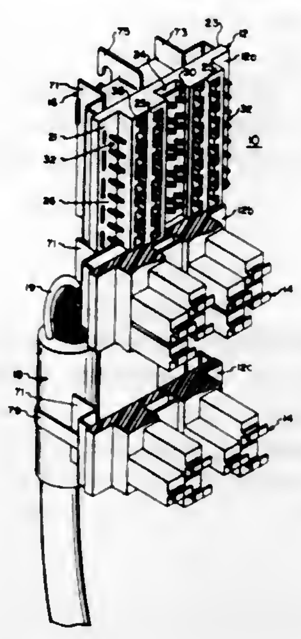
### 3,760,328
### TELEPHONE TYPE ELECTRICAL CONNECTORS

**Thomas Georgopulos, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Apr. 19, 1972, Ser. No. 245,461**
**Int. Cl. H01r** *9/08, 13/50, 29/00*
**U.S. Cl. 339—18 R** **15 Claims**

An electrical connector body for use with a main distributing frame of a telephone central office including a generally elongated flat rectangular panel having front face and rear surfaces, a plurality of socket type apertures in the panel face in which to mount pluggable circuit protector modules, a first set of pin terminals extending at once both outwardly from and axially along a central portion of the panel face, and a second set of pin terminals extending at once both outwardly from and axially along the two opposite longitudinal edge portions of the panel face. The socket type apertures are disposed intermediately of the central first set of pin terminals and both longitudinal edge second set of pin terminals, respectively. The apertures are geometrically arranged with respect to each other and with respect to the first and second sets of pin terminals, so as to provide a readily ascertainable geometrical pattern of association between selected ones of the first and second sets of pin terminals and a selected aperture. Further, the first and second sets of pin terminals are continuous in their respective length dimensions to extend into the associated apertures to provide terminal means within the apertures whereby the protector modules are connectible to said first and second sets of pin terminals.



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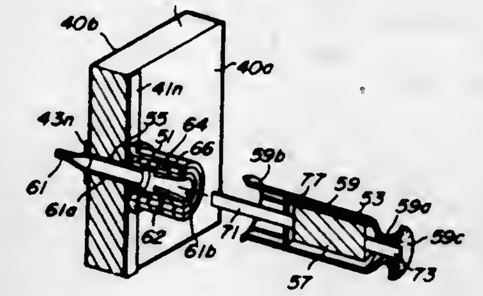
### 3,760,329
### MATED CONNECTOR APPARATUS FOR PRINTED WIRING BOARDS

**William E. Stepan, Brookfield, Ill., assignor to GTL Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Aug. 3, 1972, Ser. No. 277,712**
**Int. Cl. H01r** *29/00*
**U.S. Cl. 339—18 C** **10 Claims**



A single thickness double-sided pinboard card substrate such as a printed wiring board utilizes novel mated connector apparatus to interconnect circuit paths through pre-drilled openings through the board. The mated connector apparatus are miniaturized and are programmable to permit a desired selection of electrical connections. The mated connector apparatus are comprised of socket means pluggably mounted within the apertures and pluggable connectors means then to be removably mounted within the socket means. The pluggable connector means are useful for mounting discrete electrical components therein for interconnection between the oppositely disposed circuit paths.

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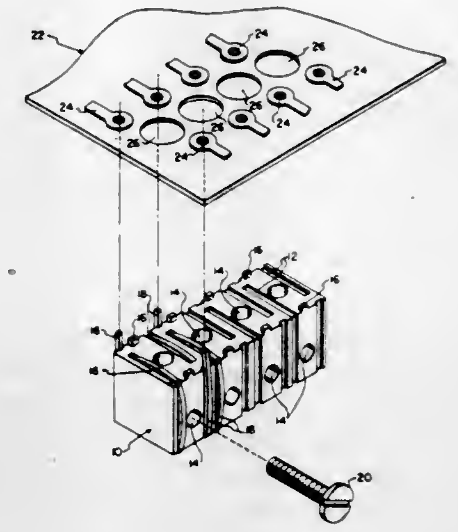
### 3,760,330
### INSULATED COMMON STRIP

**Joseph C. Bennett, Lisle, and Anton Wenzel, Villa Park, both of Ill., assignors to GTE Automatic Electric Laboratories Inc., Northlake, Ill.**

**Automatic Electric Laboratories Inc., Northlake, Ill.**

**Filed Mar. 31, 1972, Ser. No. 239,983**
**Int. Cl. H01r** *9/00, 29/00*
**U.S. Cl. 339—18 R** **8 Claims**



An insulated common strip for selectively coupling electrical components to the circuits of a printed wiring card. A self-tapping screw is used to close an electrical path between first and second pretensioned spring conductors mounted on an insulating block and coupled to the printed circuits.

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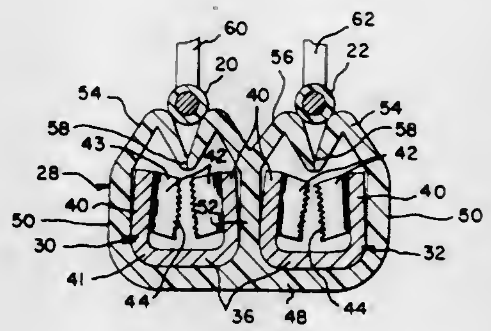
### 3,760,331
### ELECTRICAL CONNECTING DEVICE FOR INSULATED WIRES

**Grey Manning Gurley, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.**

**Continuation-in-part of Ser. No. 807,300, March 14, 1969, Pat. No. 3,593,403. This application July 16, 1971, Ser. No. 163,200**
**Int. Cl. H01r** *13/44, 9/08*
**U.S. Cl. 339—36** **5 Claims**

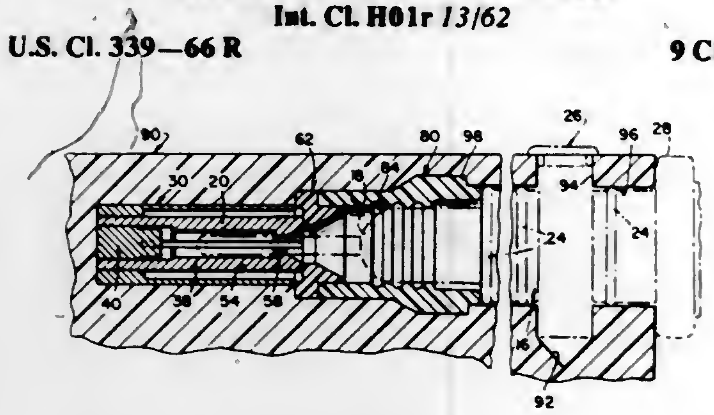


Insulated electrical connector comprises a metallic connecting device having opposed U-shaped sections integral with each other. The opposed edges of the U-shaped sections comprise wire receiving slots. The metallic connecting device is contained in a plastic housing open at one end and having an axial slit in alignment with the slots. An electrical and mechanical connection to a wire is made by passing the wire laterally of its axis through the slit and inserting the wire into the slots.

### 3,760,332
### PACER CONNECTOR

**Barouh V. Berkovits, Newton Highlands; Pieter J. Denouter, Marlboro, and Edward L. Lewis, Sharon, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed Mar. 9, 1972, Ser. No. 233,069**
**Int. Cl. H01r** *13/62*
**U.S. Cl. 339—66 R** **9 Claims**



A connector arrangement for an implantable pacer which allows an electrode plug to be inserted into a pacer receptacle without the need for set screws or the use of protective medical adhesives. The connector includes a pair of spring-loaded collets each within its own retainer for making reliable electrical connections to two plug pins. A gasket is provided for each collet to prevent body fluids from gaining access to it.

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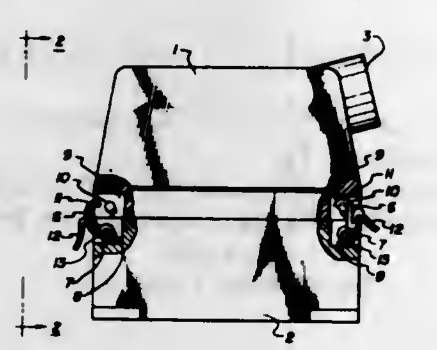
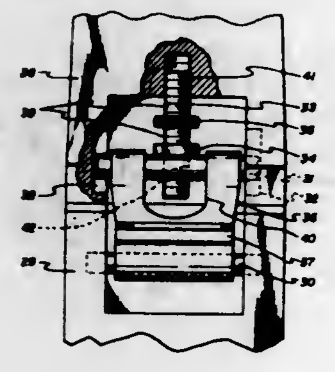
### 3,760,333
### ELECTRIC PLUG CONNECTION

**Alfred Otto H. Stieler, Heilbronn, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.**

**Filed June 7, 1971, Ser. No. 150,406**
**Claims priority, application Germany, July 21, 1970, P 20 36 207.6**
**Int. Cl. H01r** *13/54*
**U.S. Cl. 339—91 R** **4 Claims**





This invention relates to an electric plug connection with a hermetically sealed housing having a housing base member and a housing cover member, each of the members containing one of a pair of mating electric plug connectors. The invention encompasses a closure which, in a closed position elastically urges the two housing members together in a sealing relationship. The closure is in the form of a plate pivotally mounted on a shaft in the base housing member and is rotatable thereon until the rounded end portion of the closure is elastically secured to a shaft in the cover housing member. The closure has a gripping tongue which extends substantially perpendicular to the plane of the closure to provide ready access to the closure member for manipulation by an operator. In alternative forms of the invention, the closure may be adjustable in grip length or the distance between the shafts secured by the closure may be adjustable. In all of the embodiments of the invention, however, the closure cooperating with shafts disposed in the two housing members holds the shaft members against the biasing action of a resilient means in order to maintain the closure in a closed position and to maintain a hermetic seal between the two housing members.

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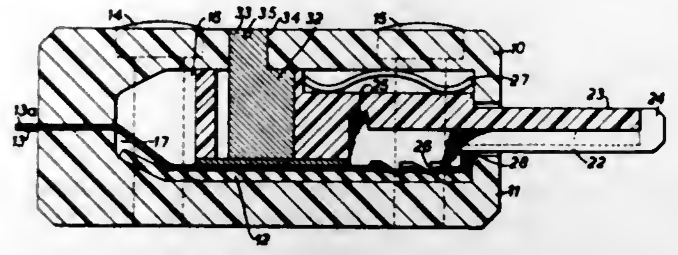
### 3,760,334
### CONNECTORS

**Kenneth Frederick Bridle, London, England, assignor to A. B. Electronics Components Limited, Abercynon, Glamorgan, Wales**

**Filed Sept. 24, 1971, Ser. No. 183,415**
**Int. Cl. H01r** *9/08, 11/20*
**U.S. Cl. 339—99 R** **11 Claims**



An electrical connector for a tape cable which consists of metallic tapes embedded side-by-side in an insulating medium, the connector consisting of a housing into which the tape cable extends and between two parts of which the tape cable is clamped. The housing contains a contact carrier carrying a number of electrical contacts each of which has teeth for engagement with one of the metallic tapes of the cable. The contact carrier is movable longitudinally within the housing, there being an eccentric mounted in the housing for moving the carrier so that the teeth plough into the cable to make electrical contact with the tape.

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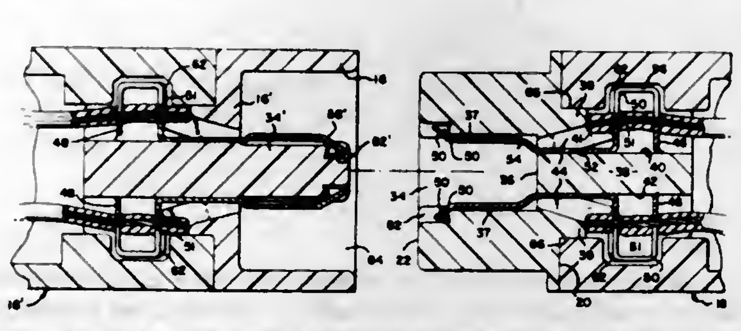
### 3,760,335
### PRE-LOADED ELECTRIC CONNECTOR

**Lincoln Edwin Roberts, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.**

**Filed May 27, 1971, Ser. No. 147,569**
**Int. Cl. H01r** *9/08*
**U.S. Cl. 339—99 R** **11 Claims**



Multi-contact electrical connector comprises an insulating body having a plurality of electrical contact terminals therein. The rearward ends of the terminals are provided with slotted plate-type contact means which are adapted to receive insulated wires to form electrical and mechanical connections between the terminals and the wires. The arrangement of the contact terminals in the connector housing is such that a plurality of wires can be connected to the individual terminals in a single operation so that the connector can be quickly applied to the end of a multi-conductor cable at a work site.

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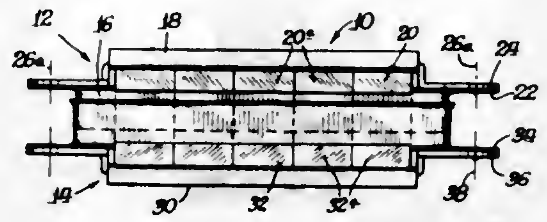
### 3,760,336
### MINIATURE CONNECTOR-MODULAR

**James Joseph Cerwin, Oak Park, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.**

**Filed Mar. 24, 1971, Ser. No. 127,609**
**Int. Cl. H01r** *13/54*
**U.S. Cl. 339—92 M** **4 Claims**



A miniature connector of which each main part includes a dielectric insert made up of a plurality of modules in the form of blocks, each having an individual arrangement for mounting pin contacts and socket contacts, respectively, the different modules accommodating different sized contacts and the modules being individually and selectively positionable within the respective connector parts, whereby to enable special make-up of a connector according to specific local and immediate requirements as to the size or other characteristics of the contacts.

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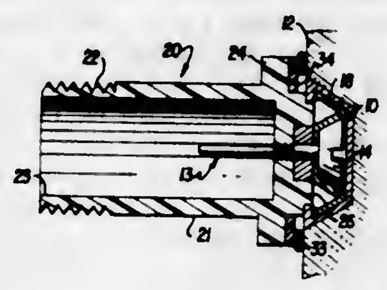
### 3,760,337
### CONNECTOR FOR DISPLAY TUBE ANODE BUTTON

**Erlon Fitch Johnson, Elizabethtown, Pa., assignor to Amp Incorporated, Harrisburg, Pa.**

**Filed May 24, 1972, Ser. No. 256,230**
**Int. Cl. H01r** *13/52*
**U.S. Cl. 339—94 R** **8 Claims**



A connector for making high voltage connection to an anode button on a display device such as a cathode ray tube which permits ready disconnection at the button features a receptacle which is designed for mating with an appropriate lead assembly having a contact pin socket. An elongate male contact pin having a screw head at one end and being threaded adjacent the same end has a snap-in piece having spring fingers arranged in a circular pattern for engaging the interior portion of the anode button fixedly positioned on the pin in abutting relation with the screw head by a nut threadably engaging the threaded portion of the pin. A receptacle has an externally threaded tubular end portion and a reduced axial opening in one end which is internally threaded for receiving the contact pin in threaded engagement so that the pin end extends into the tubular portion for engagement with the pin socket of the mating piece, and the screw head and spring fingers are positioned outside the receptacle for being engaged with the anode button so that by tightening the receptacle on the threaded contact pin, the spring fingers are forced into positive locking engagement with the button. A wide circumferential flange on the receptacle compresses an O-ring sealing member against the glass surface of the display tube about the anode button upon tightening of the receptacle on the threaded contact pin.

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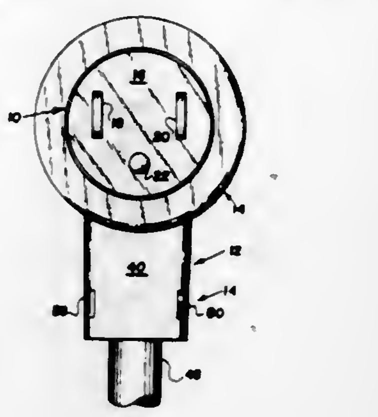
### 3,760,338
### TERMINAL PLUG CONSTRUCTION

**John F. Bruels, Danielson, Conn., assignor to Basic Electronics, Inc., Danielson, Conn.**

**Filed Apr. 10, 1972, Ser. No. 242,687**
**Int. Cl. H01r** *33/04, 33/72*
**U.S. Cl. 339—196 M** **3 Claims**



A terminal plug construction includes a base portion having three separate terminal male contacts which project from the bottom of the base for connection to an electrical circuit and which includes an interior screw connecting post which extends upwardly from the interior of the base. The base is provided with a plurality of circumferentially spaced projections which engage with a complementary number of recesses defined around a ring portion of an intermediate member which fits over the base member. The intermediate member is shaped so it may interengage with the base member in a selected one of a plurality of orientations depending on which of the recesses are engaged over the circumferentially spaced projections on the base. The orientation of the intermediate member is chosen to affect the desired angular projection of a cable receiving trough formed as a radial extension of the circumference of the ring portion of the intermediate member. The cover member includes a cylindrical portion which overlies and covers both the intermediate member ring portion and the portion of the base and it also includes an outwardly extending portion which is oriented over the trough of the intermediate member and which provides a cover for the connecting cable. The complete assembly is held in position by a single bolt or screw which is directed through a central opening in the top member and through the threaded connection of the screw connecting post member.

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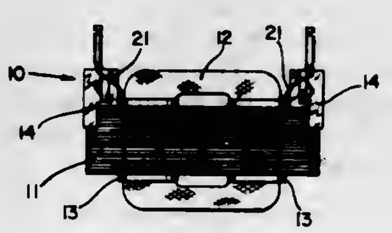
### 3,760,339
### CONNECTOR FOR PLUG IN FIELD

**James W. Marshall, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.**

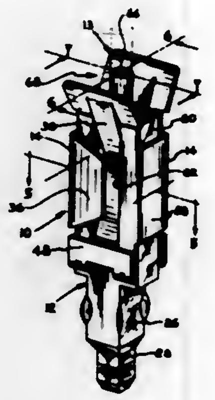
**Filed May 5, 1971, Ser. No. 140,375**
**Int. Cl. H01r** *9/08;* **H02g** *15/08*
**U.S. Cl. 339—221** **4 Claims**



A terminal is provided for use in interconnecting the magnet wire of a field coil of an electric motor to another circuit element such as a lead wire. The terminal is insulatively mounted on the field core, preferably before winding the coils. The terminal includes a channel part adapted to be crimped to the magnet wire and a socket part adapted to receive the circuit element.

### 3,760,340
### CIRCUIT BOARD SOCKET

**Lindsay C. Friend, Camp Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**Filed Oct. 29, 1971, Ser. No. 193,913**
**Int. Cl. H01r** *13/06*
**U.S. Cl. 339—262 R** **18 Claims**



An electrical disconnect socket comprising a forked body having a spring clip wrapped around the fork prongs. The clip includes a pair of spring arms extending into the space between the prongs for forming an electrical connection with a lead inserted into the socket.

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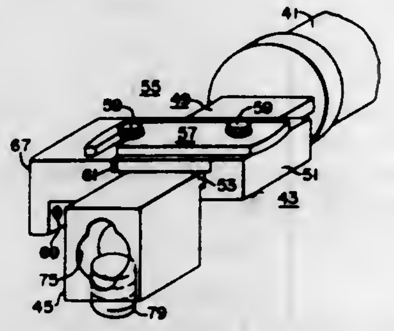
### 3,760,341
### CONNECTING ADAPTER FOR ELECTRIC CABLE AND FUSE

**John E. Grad, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Feb. 22, 1972, Ser. No. 228,134**
**Int. Cl. H01r** *7/26, 7/12*
**U.S. Cl. 339—265 F** **2 Claims**



An adapter for connecting an electric cable to a blade-type fuse characterized by two metal bodies, one of the bodies having a cable-receiving aperture and having a projecting portion extending from one side thereof, and the other body having a clamping surface adapted to receive the projecting portion in surface-to-surface contact. The adapter also includes clamping means associated with the clamping surface for retaining the projecting portion and a blade of a blade-type fuse in surface-to-surface contact with each other.

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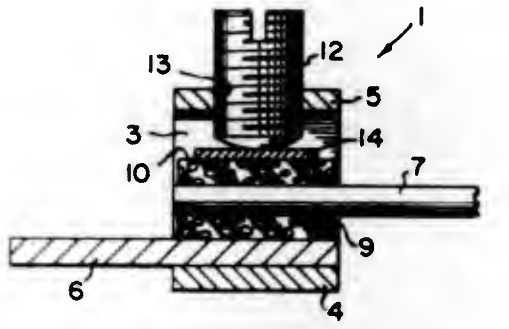
### 3,760,342
### TERMINAL CONSTRUCTION FOR ELECTRICAL CONDUCTORS

**Robert E. Prouty, and Herman G. Bear, both of Logansport, Ind., assignors to Essex International, Inc., Ft. Wayne, Ind.**
**Filed Sept. 17, 1971, Ser. No. 181,357**
**Int. Cl. H01r** *11/10*
**U.S. Cl. 339—272 R** **14 Claims**

A terminal for coupling electrical conductors formed of different materials and arranged in confronting, overlapping relation comprises a body formed of elastomeric, non-conductive material encircling at least one of the conductors and bearing against another of the conductors, the body containing a plurality of discrete, electrically conductive particles responsive to compression of the body to establish an electrically conductive path between the conductors. Force applying means acts on the body via a force distributing member which overlies a substantial portion of the length of the body so as to apply sufficient compressive force to the body to render the latter conductive.



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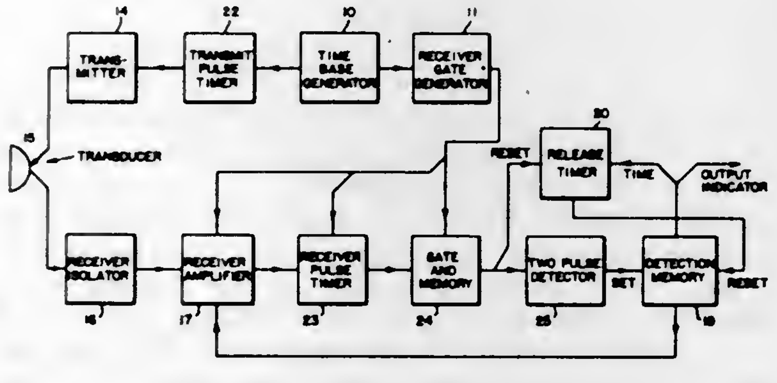
### 3,760,343
### APPARATUS FOR CONTROLLING SONIC ENERGY DISTRIBUTION

**John H. Auer, Jr., Fairport, N.Y., assignor to General Signal Corporation, Rochester, N.Y.**
**Division of Ser. No. 867,621, Oct. 20, 1969, Pat. No. 3,672,462. This application Apr. 10, 1972, Ser. No. 242,854**
**Int. Cl. G01s** *9/66*
**U.S. Cl. 340—1 T** **6 Claims**



A vehicle presence detection system for detecting the presence of vehicles preceding along a roadway. A transmitter produces periodic pulses of sonic frequency. A transducer emits the sonic energy pulses, receives reflected sonic energy from the vehicles and generates electrical signals corresponding to such received energy. A wave guide is interposed at the output of the transducer for setting up substantially a line source of sonic energy providing an operating elliptical pattern of a minimum intensity over the roadway. Detection circuitry is actuated to manifest the distinctive indication of vehicle presence.

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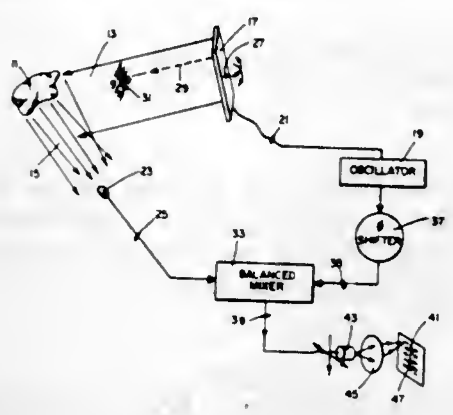
### 3,760,344
### SCANNED HOLOGRAPHY WITH A ROTATING EXTENDED SOURCE

**Bernard P. Hildebrand, Vancouver, British Columbia, Canada, assignor to Batelle Development Corporation, Richland, Wash.**
**Filed July 28, 1971, Ser. No. 166,944**
**Int. Cl. G01s** *9/66;* **G02b** *27/00*
**U.S. Cl. 340—5 H** **6 Claims**



Either a planar or a spherical source of coherent radiation is rotated to scan its generated beam across an object scene. A substantially point radiation receiver is positioned to detect the object illuminating radiation after modification by the object. The receiver generates an electronic signal used in the construction of the hologram from which a three-dimensional image of the object scene may be reconstructed.

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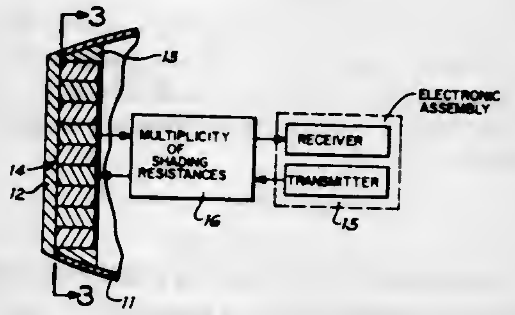
### 3,760,345
### ADAPTING CIRCULAR SHADING TO A TRUNCATED ARRAY OF SQUARE ELEMENTS

**William J. Hughes, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Aug. 28, 1972, Ser. No. 284,300**
**Int. Cl. H04b** *13/00*
**U.S. Cl. 340—6 S** **6 Claims**



A circularly housed transducer transmitting and/or receiving array of square transducer elements is so shaded as to produce patterns equivalent to a transducer composed of a superpositioned set of concentric disk elements of consecutively smaller radii from the largest disk to produce stepwise shading thereby truncating a square array to maximize the radiating area and minimize the beamwidth with low side lobes.

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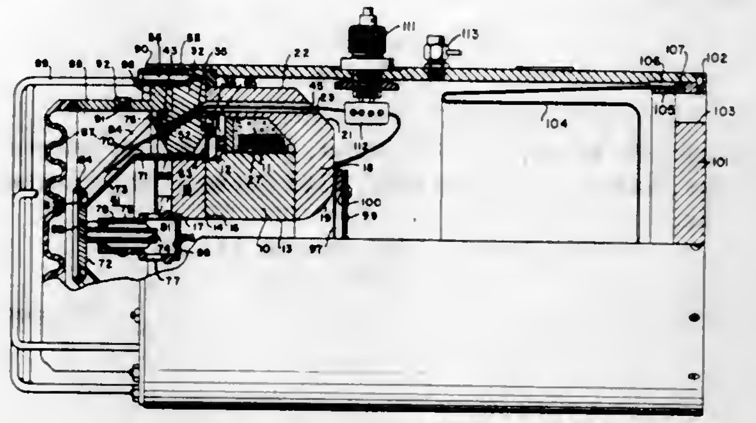
### 3,760,346
### HIGH-POWER UNDERWATER ELECTROACOUSTIC TRANSDUCER FOR THE INFRASONIC AND LOW AUDIO-FREQUENCY RANGE

**Robert J. Kieser; John R. Bass, and John E. Donovan, all of Orlando, Fla., assignors to the United States of America as represented by the Secretary of the Navy**
**Filed May 8, 1972, Ser. No. 251,410**
**Int. Cl. H04b** *13/02*
**U.S. Cl. 340—8 R** **2 Claims**



This disclosure is directed to a high power underwater electro-acoustic transducer operable in the infrasonic and low audio-frequency range.

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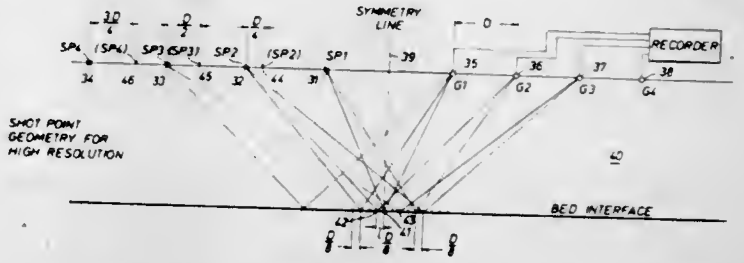
### 3,760,347
### HIGH RESOLUTION REFLECTION SHOOTING

**James Alva Treybig, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**
**Filed June 16, 1971, Ser. No. 153,554**
**Int. Cl. G01v** *1/20*
**U.S. Cl. 340—15.5 MC** **13 Claims**



An illustrative embodiment of the invention includes methods for obtaining seismic data from closely spaced subsurface reflection points using a minimal number of seismic energy generations. The invention includes methods of shot point and seismometer spacing which may be varied in a systematic manner to produce reflection from close, but assuredly not the same, subsurface bed interface areas.

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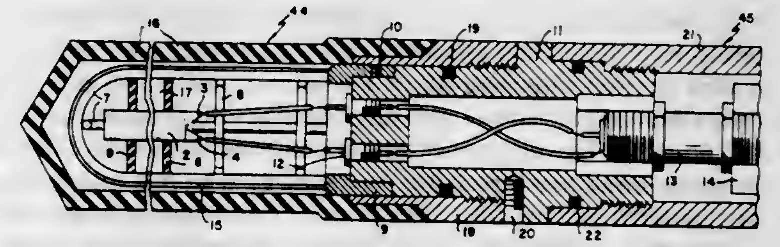
### 3,760,348
### H52 STANDARD REFERENCE HYDROPHONE

**Robert J. Kieser; Allan C. Tims, both of Orlando, Fla., assignors to the United States of America as represented by the Secretary of the Navy**
**Filed Feb. 24, 1972, Ser. No. 228,833**
**Int. Cl. H04b** *13/02*
**U.S. Cl. 340—10** **6 Claims**



An electroacoustic transducer with features permitting a structure of minimum size to thereby permit reflection and absorption measurement to be made over a broad band of frequencies without disturbing the sound field. A plurality of lithium sulfate crystals are bonded to gold plated silver foil electrodes with an isolating space being provided between each adjacent pair of crystals. The crystal assembly is supported by compliant members within a wire frame which is surrounded by an expanded metal electrostatic shield. The whole assembly is enclosed within a castor oil filled butyl boot. Output terminals are connected through a hermetic-seal-through to a conventional preamplifier. Cable connections to the preamplifier are made through a pressure resistance coupling of unique design.

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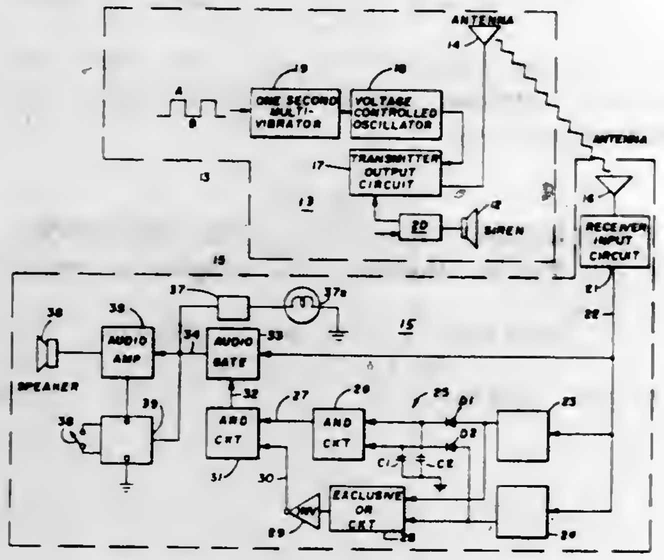
### 3,760,349
### EMERGENCY WARNING SYSTEM

**Douglas W. Keister, 1143 Brittmor, Rt. 8 Box 674, Houston, Tex., and Russel B. Leibfreid, 2113 Potomac Dr., Houston, Tex.**

**Filed June 21, 1971, Ser. No. 155,117**
**Int. Cl. G08g** *1/00*
**U.S. Cl. 340—33** **9 Claims**



An emergency warning system is disclosed which includes a transmitter adapted to be mounted in an emergency vehicle, such as an ambulance or police car, and a receiver adapted to be mounted in another vehicle such as a private automobile. The transmitter emits coded signals in response to actuation of the vehicle's siren or other emergency device, and the receiver responds to receipt of only the coded transmitted signals when the emergency vehicle and another vehicle are in close proximity to provide visual or audio signals to the driver of another vehicle to warn him of the proximity of the emergency vehicle. A switch is provided in the receiver to override the audio warning signal received by the driver of another vehicle, and the switch is automatically reset by loss or reduction of signal from the transmitter of the emergency vehicle.

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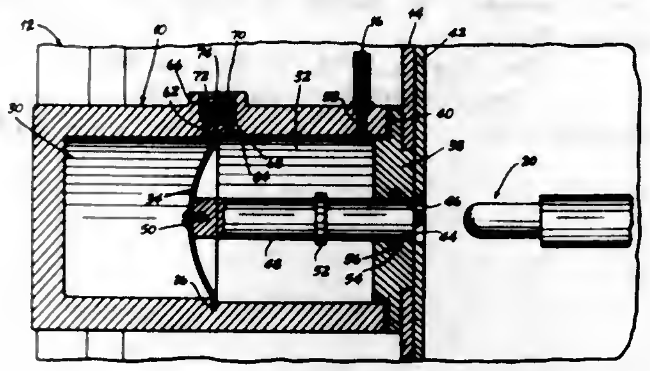
### 3,760,350
### PNEUMATIC TIRE PRESSURE SENSOR

**Eugene L. Johnson, Box 387, Holt Summit, Mo.**

**Filed Mar. 27, 1972, Ser. No. 238,561**
**Int. Cl. B60c** *23/00*
**U.S. Cl. 340—58** **5 Claims**

A tire pressure sensor for pneumatic tires. The sensor is comprised of housing mounted on a wheel having a diaphragm within the housing separating a control chamber on one side of the housing and a tire pressure chamber on the other side of the housing. The control chamber communicates with the tire pressure chamber through a passageway which is adapted to be opened and closed by a plug valve. The diaphragm operates on pressure differential when the tire pressure chamber communicating through a sensing tube at the interior of the tire falls below the pressure in the control chamber causing the movement of the diaphragm and a plunger connected to it. The plunger upon activation of the diaphragm makes contact with a circuit on the back plate of the wheel to energize a warning light on the dash board. Through the use of different diaphragms, different activating pressure differentials of two to ten pounds or more beyond the normal tire pressure can be provided to vary the sensing and alarm range.



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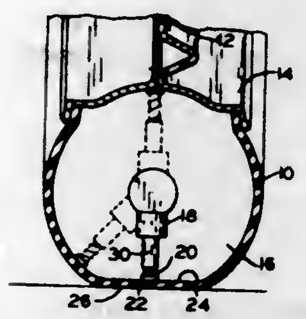
### 3,760,351
### APPARATUS AND PROCESS FOR DEVELOPING ELECTROMAGNETIC ENERGY FROM TIRE FLEXURE

**Stephen Edward Thomas, 13664 Ronnie Way, Saratoga, Calif.**

**Filed July 2, 1971, Ser. No. 159,272**
**Int. Cl. B60c** *23/06*
**U.S. Cl. 340—58** **3 Claims**



Mounted within a flexible pneumatic tire is an actuator which is reciprocated radially by the normal distortion of the tire as it moves into ground-engagement, is depressed and then expands to its original position as it moves out of ground-engagement. The periodic engagement and disengagement produces a radially reciprocable movement which is used to operate an electromagnetic generator, and the energy derived from the generator is usable either for operating an electrically operable device, or the signal may be monitored to indicate tire parameter conditions such as heat, inflation pressure and other such conditions.

A plurality of actuators are locatable within the tire each of which is radially displaceable by the successive engagement and disengagement of the tire with the ground, and each device is successively operative in relation to the electromagnetic generator.

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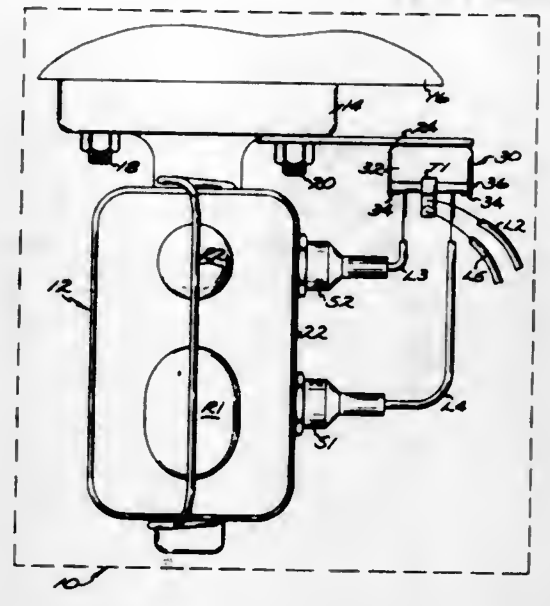
### 3,760,352
### LIQUID LEVEL INDICATING SYSTEM

**Leo Marcoux, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed July 6, 1971, Ser. No. 159,894**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 340—59** **13 Claims**

One or more liquid level sensors in the form of positive temperature coefficient (PTC) of resistivity elements suspended in probes are mounted in a fluid reservoir. The elements, electrically connected in a circuit, are either in a low or high resistance mode. When the elements are in a low resistance mode sufficient current passes through respective heaters to

cause respective heat responsive, normally closed, switches connected to a liquid level indicator, to open. Initially upon energization of the system, the PTC elements are in the low resistance mode and the indicator is actuated until the switches receive sufficient heat to cause them to open. The PTC elements remain in the low resistance mode as long as the liquid level remains above the elements permitting heat generated in the elements to be dissipated; however, if the liquid level recedes sufficiently to expose the elements their temperature will rise until an anomaly point is reached beyond which resistance rapidly increases shutting off current to the heaters, permitting reclosing of the switches and reactuation of the indicator. The invention is particularly suited for use with a master cylinder of a vehicle as an indicator of an insufficient quantity of brake fluid in the braking system.



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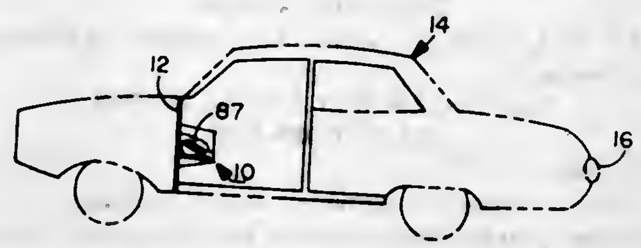
### 3,760,353
### EMERGENCY VEHICULAR WARNING SYSTEM

**Donald F. Hassinger, Ann Arbor, Mich., assignor to DV Displays Corporation, Cleveland, Ohio**

**Filed Oct. 18, 1971, Ser. No. 190,093**
**Int. Cl. B60q** *1/44*
**U.S. Cl. 340—72** **4 Claims**



An emergency warning device for flashing brake lights on a motor vehicle to signal adjacent vehicles that a sudden stop is being made or has been made. The device provides means for setting a predetermined deceleration rate to which the device reponds. A mercury switch closes when the predetermined deceleration is exceeded. The device utilizes a solid state switch sensor attached to the mercury switch which activates a flasher when the predetermined deceleration is achieved and maintains the flasher activated after the predetermined deceleration has subsided. A manual reset switch is provided to extinguish the solid state switch sensor when the emergency condition has passed.

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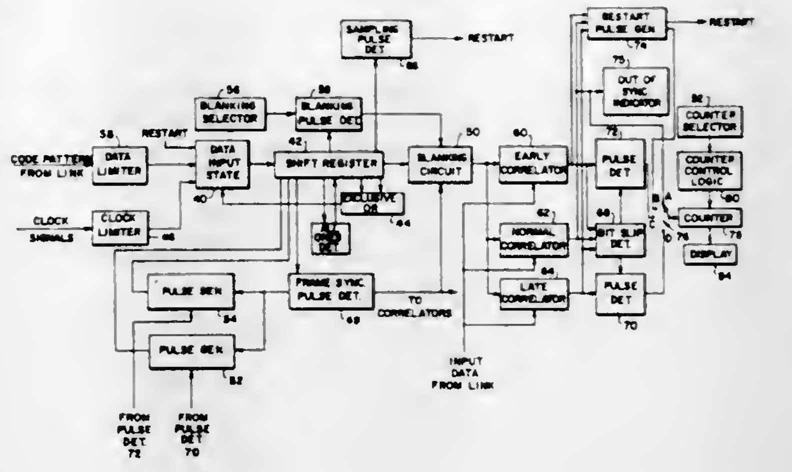
### 3,760,354
### ERROR RATE DETECTION SYSTEM

**David W. Ginn, Newtown, Conn., assignor to Data-Control Systems, Inc., Danbury, Conn.**

**Filed July 23, 1971, Ser. No. 165,077**
**Int. Cl. G08c** *25/00;* **H04l** *7/08*
**U.S. Cl. 340—146.1 E** **10 Claims**



A system for determining the error rate of a data communications link in which a locally generated code is synchronized to a pseudo-random code transmitted over the link and compared therewith to ascertain errors.

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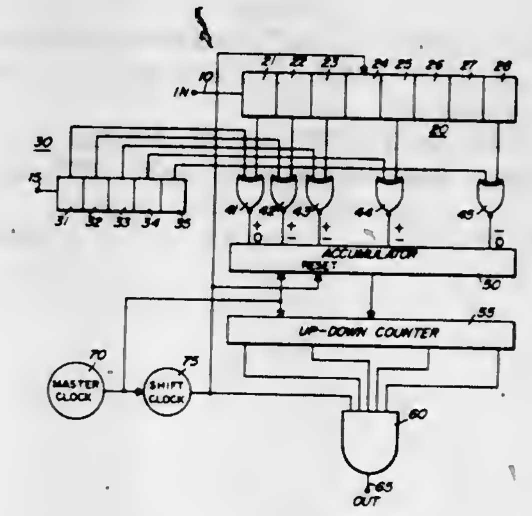
### 3,760,355
### DIGITAL PATTERN DETECTOR

**Eugene J. Bruckert, Plantation, Fla., assignor to Motorola, Inc., Franklin Park, Ill.**

**Filed Mar. 8, 1972, Ser. No. 232,884**
**Int. Cl. G06f** *7/02*
**U.S. Cl. 340—146.2** **17 Claims**

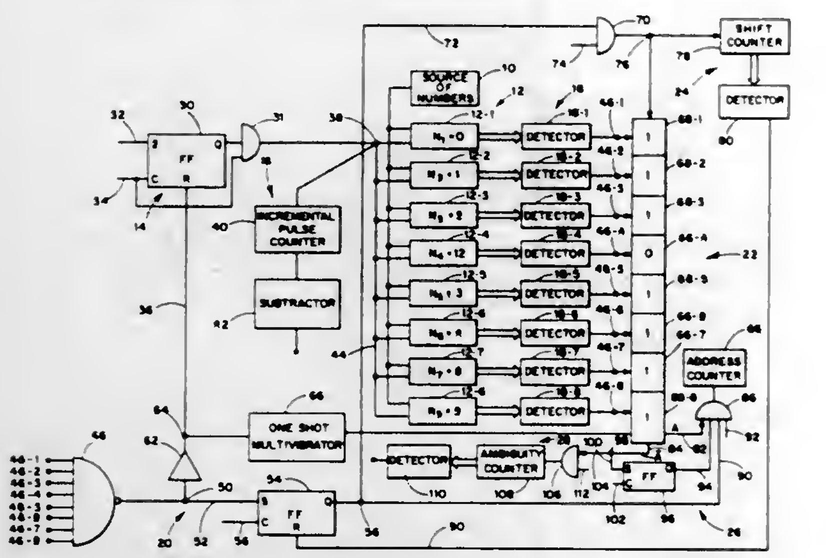


A detector for detecting a predetermined digital pattern having a predetermined number of bits employing a shift register having one stage more than the number of bits making up the predetermined digital pattern to serially receive the pattern. The first, last and selected intermediate stages of the shift register are sampled and compared with the contents of a second register having a predetermined pattern stored therein. The transitions of the pattern to be detected determine the stages of the shift register that are to be selected for sampling and the pattern to be stored in the second register. Comparison circuitry that provides a "+1," "0" or "−1" each time a bit from the shift register is compared to a bit stored in the second register is employed. An up-down counter is used to sum the signals from the comparison circuitry. The count in the counter is indicative of the received pattern, and reaches a predetermined value only upon receipt of the predetermined pattern.

### 3,760,356
### TECHNIQUE FOR DETERMINING THE EXTREME BINARY NUMBER FROM A SET OF BINARY NUMBERS

**Keshava Srivastava, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.**

**Filed Dec. 17, 1971, Ser. No. 209,051**
**Int. Cl. G06k** *9/00*; **G06f** *7/38*
**U.S. Cl. 340—146.3 Y** **7 Claims**



A technique is disclosed wherein the extreme number from a set of binary numbers is determined. Each number of the set s augmented until one number from the set reaches a predetermined amount. Detector logic associated with the one number is enabled resulting in operations which identify both he extreme number and its address in the set. Also determined is the original value of the extreme number. Further nhancements to the technique of the invention include identification of the next extreme number and the difference between the extreme number and the next extreme number.

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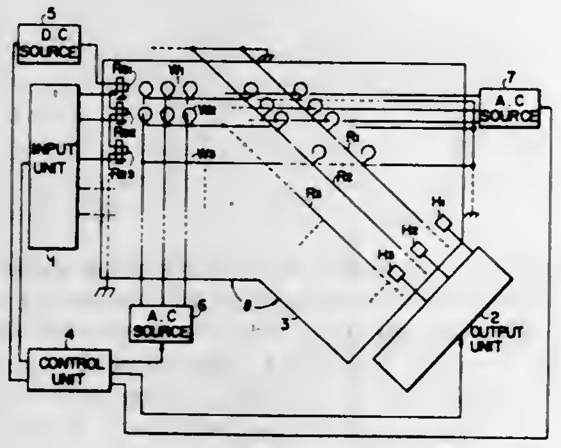
### 3,760,357
### TWO-DIMENSIONAL PATTERN NORMALIZER

**Fumiyuki Inose, and Yuzo Kita, both of Kokubunji, Japan, assignors to Hitachi, Ltd**

**Filed June 30, 1972, Ser. No. 268,113**
**Claims priority, application Japan, June 30, 1971, 46/47212**
**Int. Cl. G06k** *9/04*
**U.S. Cl. 340—146.3 H** **16 Claims**



A two-dimensional pattern normalizer includes a first and a second shift register array disposed on a substrate of magnetic material, such as orthoferrite, said first array being disposed at a desired angle with respect to said second array; wherein an input pattern provided as a parallel bit train is written in said first shift register array and said pattern is read out through said second shift register array, and thus an output pattern rotated at the desired angle with respect to the input pattern is produced.

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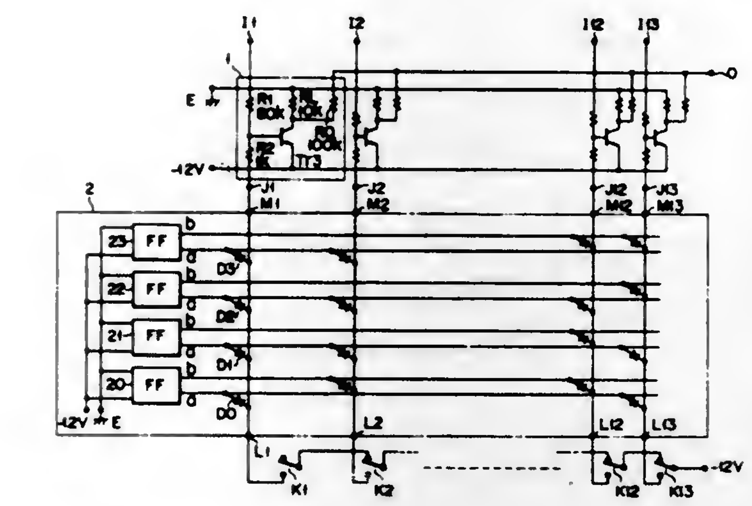
### 3,760,358
### LATCHING SELECTOR FOR SELECTIVELY DRAWING OUT A SINGLE SIGNAL FROM AMONG A PLURALITY THEREOF

**Sigeki Isii, Hamamatsu, and Yasuji Uchiyama, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan**

**Filed Aug. 8, 1972, Ser. No. 278,824**
**Int. Cl. H04q** *3/00*
**U.S. Cl. 340—147 LP** **8 Claims**



A latching selector comprises a plurality of switching circuits each switching an assigned signal, a memory circuit including bistable circuits and controlling the respective switching circuits, and the same plurality of key switches triggering the memory circuit. The switching circuits have respective signal input terminals supplied with respective assigned signals, respective control terminals and a common signal output terminal. The memory circuit includes memory output terminals respectively connected to the control terminals, memory input terminals respectively connected to the key switches, a number of bistable circuits equal to the digit number sufficient for binary notation of the plurality number, and a coding and encoding matrix connecting the memory input and output terminals to the bistable circuits in binary relation. When a key switch is actuated, the bistable circuits memorize in binary notation which key switch has been actuated, and in turn keep the corresponding switching circuit to conduct the assigned signal to signal output terminal until another key switch is next actuated.

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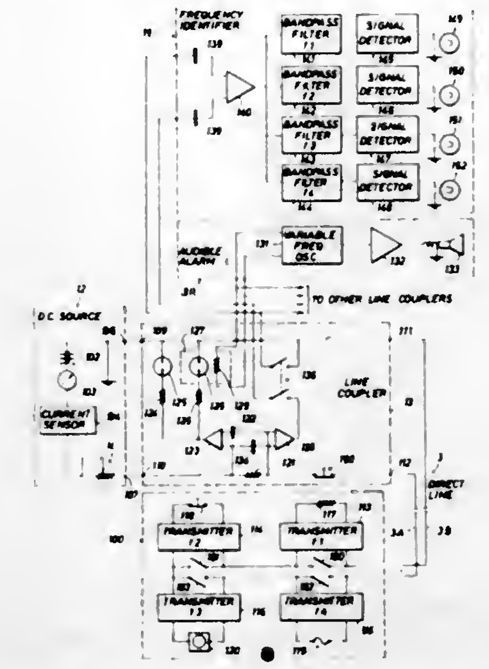
### 3,760,359
### SECURITY SIGNALLING WITH ALARM IDENTIFICATION

**Albert N. McQuown, Jr., Austin, Tex., assignor to Annandale, Inc., Austin, Tex.**

**Filed Dec. 14, 1971, Ser. No. 207,908**
**Int. Cl. G08b** *1/08*
**U.S. Cl. 340—164 R** **22 Claims**

A security system is provided which includes a central monitoring system interconnected by a two-wire telephone circuit to one or more protection loops, each being composed of one or more series-connected reporting devices or stations. A DC power supply is located in the control station for generating a supervisory current flow between the control station and the protection loop, and each reporting device is composed of a signal generator in parallel with a low resistance shunt arranged to be broken by the detected occurrence of an event sought to be observed. Detection of the event interrupts the shunt to route the supervisory current through its associated signal generator, thereby developing a voltage greater than a predetermined value. The associated signal generator is then activated by the flow of supervisory power, whereby a signal current of preselected character is superimposed on the supervisory current. The control station registers the occurrence of the event by noting the presence of

the superimposed signal current, and identifies the particular detector circuit by identifying the preselected characteristic of the signal being generated. Additionally, the routing of the supervisory current through the signal generator may be made to cause a significant decrease in the magnitude of this current. Concurrent registration of the occurrence of an event or the indication of a line fault may be noted at the control station by sensing the magnitude of the supervisory current and responding to a change of predetermined amount.



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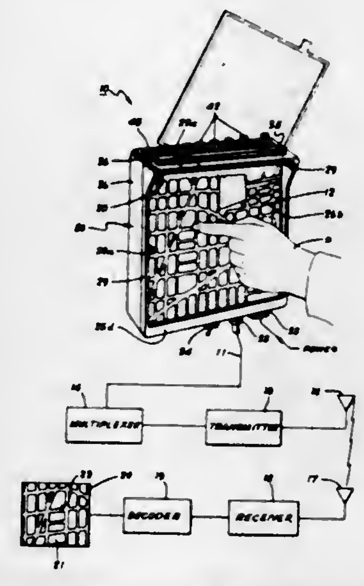
### 3,760,360
### MATRIX SWITCH

**Robert S. Reynolds, Cupertino, and Svein T. Nordberg, Saratoga, both of Calif., assignors to E-Systems Incorporated, Dallas, Tex.**

**Filed Nov. 1, 1971, Ser. No. 194,261**
**Int. Cl. H04q** *9/10*; **G08b** *5/00*; **G08g** *1/12*
**U.S. Cl. 340—166 R** **9 Claims**



A finger-pressure actuated matrix switch assembly includes a map overlay and generates a binary coded signal corresponding to the coordinates of the point of application of pressure to the map. The assembly comprises a housing with a slot for positioning a replaceable map card in operative position and a storage chamber for a plurality of such map cards. Each of the map cards is edge-notched with a unique code identifying that card, and switches supported on the housing are actuated by these notches when a map card is inserted into its operative position to generate a binary electrical signal corresponding to that code. The matrix or grid is formed by orthogonally related sets of printed conductors on stacked boards spaced apart by resilient strip separators formed directly on one of the boards. Logic circuitry for converting the coordinates of contacting conductors into binary digits is carried on a single pluggable board detachably connected to the matrix boards for quick replacement to facilitate maintenance and repair.

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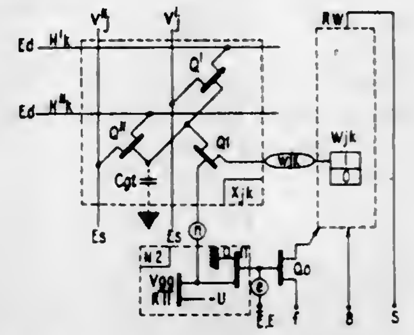
### 3,760,361
### MARKER CIRCUIT FOR A SWITCHING STAGE EQUIPPED WITH INTEGRATED DYNAMIC MEMORY SWITCHES

**Marc Jean Pierre Leger, Chaville; Claude Paul Henri Lerouge, Maurepas, and Marc Andre Regnier, Aulnay-sous-Bois, all of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Sept. 29, 1972, Ser. No. 293,356**
**Claims priority, application France, Oct. 8, 1971, 7136232**
**Int. Cl. H04q** *3/00*
**U.S. Cl. 340—166 R** **5 Claims**



Disclosed is a marker for controlling an electronic switching stage. Each crosspoint of the stage includes a holding flip-flop which is used by the marker in its path search, the holding flip flops being combined into a shift register. The contents of the shift register can be read without disturbing the condition of the associated crosspoints. A path search comprises the steps of a read-out of the crosspoint conditions followed by analysis of the available sections through which a path can be completed. A second read-out of the shift register is made during which the flip-flops are set to close the crosspoints of a switching path.

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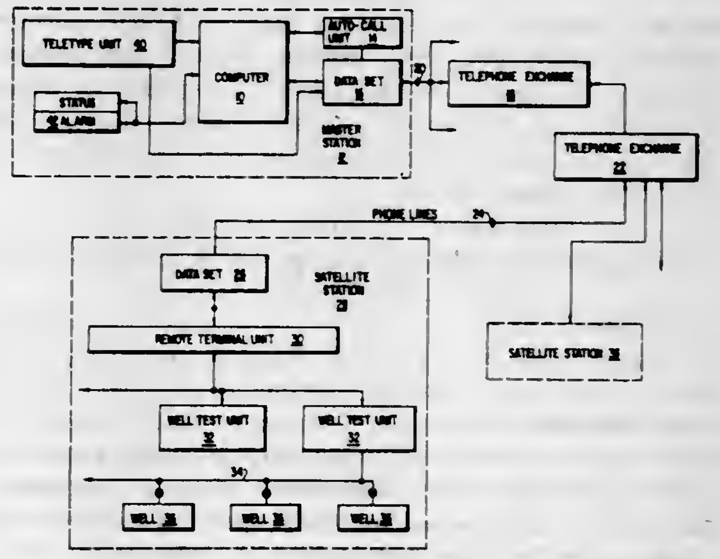
### 3,760,362
### OIL FIELD PRODUCTION AUTOMATION METHOD AND APPARATUS

**George V. Copland, and Edward W. Gass, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.**

**Continuation-in-part of Ser. No. 876,911, Nov. 14, 1969, Pat. No. 3,629,859. This application Oct. 19, 1971, Ser. No. 190,481**
**Int. Cl. H04b** *3/00*
**U.S. Cl. 340—172.5** **29 Claims**



A system for monitoring the fluid production at a producing oil well. At the central station, a computer is connected through commercial telephone lines to the producing oil well sites which are referred to as satellite stations each having a telephone subscriber's apparatus connected to a nearby commercial telephone exchange. Data phones provided by the telephone company can be used in conjunction with teletypewriting equipment and calls initiated by automatic dialing equipment also supplied by the telephone company. Monitoring of gas, oil, and water content as well as the temperature and pressure at the site can be achieved. Commands for changing valve settings at the well sites can be sent from the central station, and the command executed at the satellite station after checking the command instruction for accuracy.

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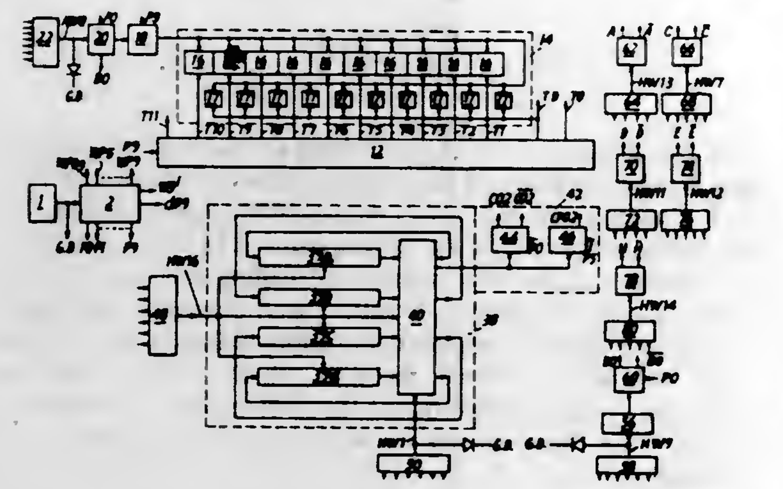
### 3,760,363
## CALCULATING MACHINES WITH A COPY ROUTINE

**James John Drage, and Norbert Kitz, both of The Island, Uxbridge, England, assignors to Bell Punch Company Limited, London, England**

**Continuation of Ser. No. 844,932, July 25, 1969, abandoned. This application Oct. 19, 1971, Ser. No. 190,629**

**Int. Cl. G06f** *7/38*

**U.S. Cl. 340—172.5** **6 Claims**



An electronic calculating machine with a plurality of number registers is disclosed wherein trains of ten pulses are gated to read out the registers at zero including a function control switch for copying numbers from one register into another.

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### 3,760,364
## ELECTRONIC SWITCHING SYSTEM

**Masaya Yamauchi; Ko Muroga, both of Tokyo; Hirotoshi Shirasu, Yokohama; Koji Hirose, Tokyo, and Toshihiko Nakajo, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation; Nippon Electric Co. Ltd.; Hitachi Limited Oki Electric Industry Co., Ltd., Fujitsu Limited**

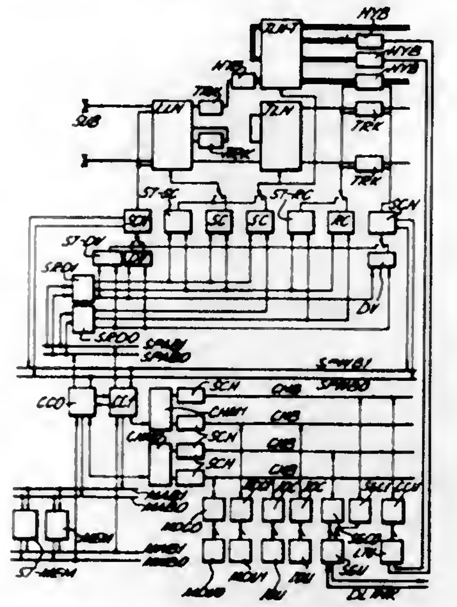
**Filed Nov. 4, 1971, Ser. No. 195,681**

**Claims priority, application Japan, Nov. 6, 1970, 45/97200**

**Int. Cl. G06f** *15/00, 15/16*

**U.S. Cl. 340—172.5** **4 Claims**

A stored program controlled electronic switching system provided with large capacity economical peripheral memory equipments, such as magnetic drums, in which a part of the basic memory content, not subject to high speed access time, is stored permanently and also continuously varying information is periodically copied for the purpose of backing up the random access main memory devices to decrease the number of the main memory devices. The switching system comprises data channel devices consisting of channel multiplexer and sub-channel equipment in order to obtain a standard interface scheme between the central control units and various input-output devices. The system further comprises four-wire type trunk link network to be controlled by the same central control units for obtaining wider system flexibility for the application of accommodating data switching facility, trunk switching facility, etc.



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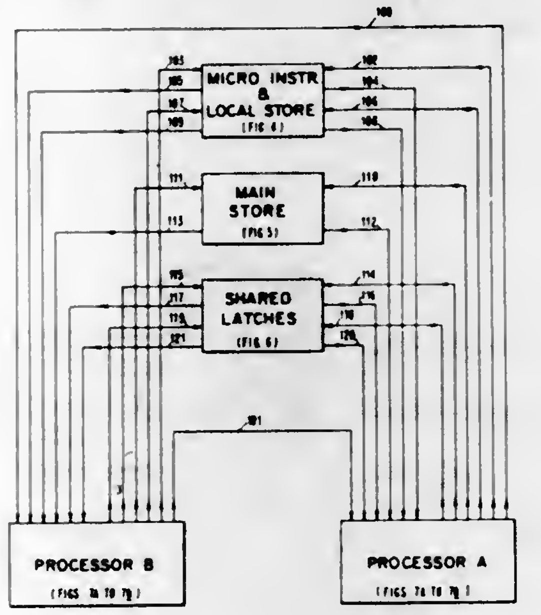
### 3,760,365
## MULTIPROCESSING COMPUTING SYSTEM WITH TASK ASSIGNMENT AT THE INSTRUCTION LEVEL

**Jerome M. Kurtzberg, Yorktown Heights; Jack L. Rosenfeld, Ossining, and Raymond D. Villani, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 30, 1971, Ser. No. 214,193**

**Int. Cl. G06f** *15/16*

**U.S. Cl. 340—172.5** **16 Claims**



The present invention relates to a multiprocessing system wherein job assignments to the respective processors are made at the level of very small tasks. Further, the system is organized so that none of the multiprocessing capabilities need be known either to the programmer or to a supervisory program. Task assignment is done at the instruction level. By instruction level is meant a typical computer's machine language. In the disclosed embodiment, two processors are shown; however, it is to be understood that the basic concepts of the present invention could well be extended to more than two processors. Each of these processors shares a main store, a microinstruction store and a local store. Further, automatic control of the two systems is performed with the use of a set of shared latches to prevent one of the processors from interfering with another, with resulting erroneous results. Maximum availability of the system is assured since the system may operate either in the multiprocessing mode or, in the event that one of the processors should fail, the other processor can continue operating completely autonomously.

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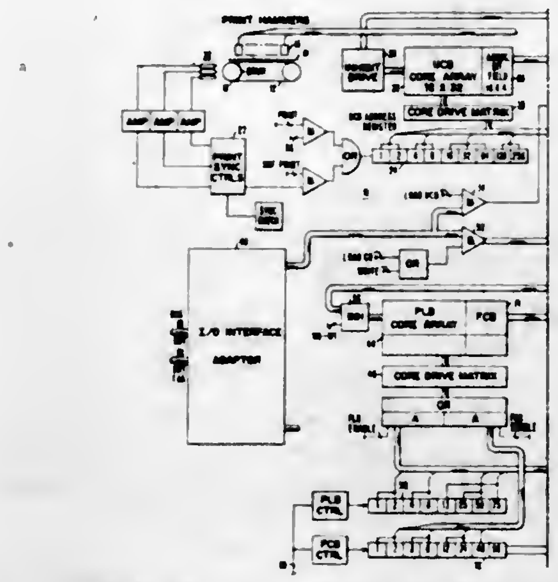
### 3,760,366
## UNPRINTABLE CHARACTER RECOGNITION

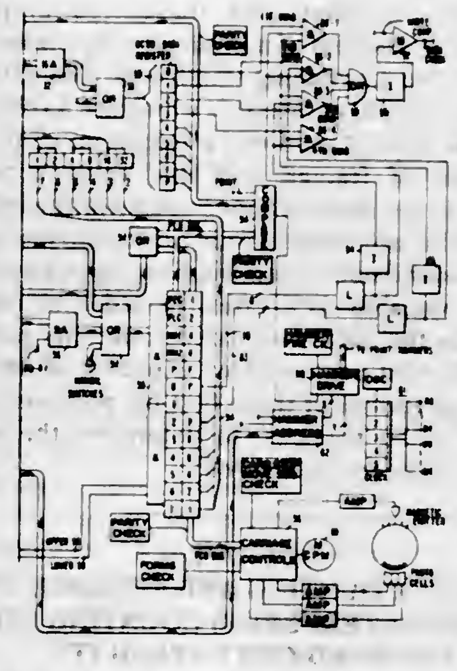
**John S. Gregor, Endicott, and Raymond Radlinsky, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Sept. 15, 1971, Ser. No. 180,680**

**Int. Cl. G06f** *3/12, 11/00*

**U.S. Cl. 340—172.5** **9 Claims**





A distinctive code for each character that appears on the type train of a printer is stored in a train image field. At the time of loading this field an associative bit is stored at a particular address in an associative field, the address being identifiable with the numerical value of the bits in the code for each character. When characters to be printed are loaded into the print line buffer of the printer, the address for the associative bit is accessed directly from the print line buffer data register and the presence of the bit identifies the character as having a matching code in the train image field.

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### 3,760,367
## SELECTIVE RETRIEVAL AND MEMORY SYSTEM

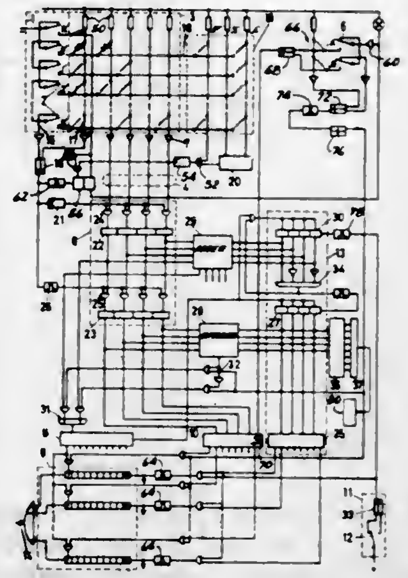
**Dieter Kortenhaus, Bingen, Germany, assignor to M S M Apparatebau GmbH, Bingen/Rhine, Germany**

**Filed Jan. 24, 1972, Ser. No. 220,014**

**Claims priority, application Germany, Feb. 20, 1971, P 21 08 219.9**

**Int. Cl. G06f** *13/02, 15/40*

**U.S. Cl. 340—172.5** **5 Claims**



A selection and memory system for selectively retrieving data respectively stored at different addresses of a shift register memory facilitates the writing in of data to a shift register while stored data from that shift register is being read out. The system is advantageously employed for selectively retrieving one or more of a plurality of articles, such as record discs in an automatic photograph, where the data corresponds to a retrieval command signal stored within the memory at an address corresponding to the storage location of the article. The functional components of the system are readily suited for metal-oxide-semiconductor construction.

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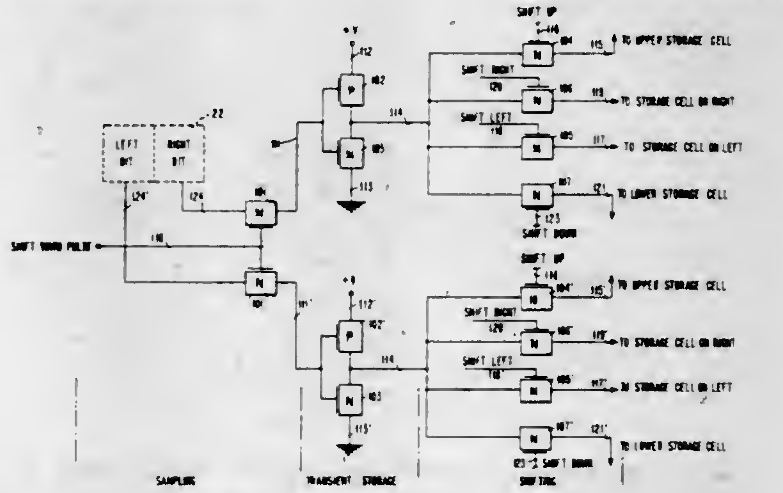
### 3,760,368
## VECTOR INFORMATION SHIFTING ARRAY

**Jack R. Dailey, Apalachin; Harry C. Kuntzleman, Newark Valley, and George E. Mitchell, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Apr. 21, 1972, Ser. No. 246,313**

**Int. Cl. G11c** *15/00*

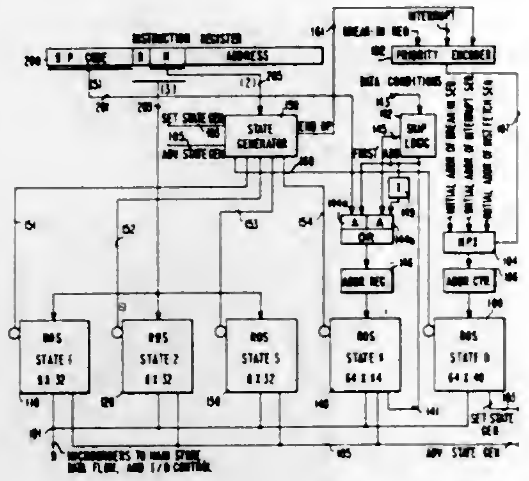
**U.S. Cl. 340—172.5** **6 Claims**



A content addressable storage array (sometimes referred to as an associative array or a functional array) having a plurality of data storage cells which allows data in one cell word group to be transferred to adjacent cell word groups or alternatively shifted left or right. This is accomplished without the data exiting the array by utilizing transfer gates between the cells which provide for the temporary storage of data during transfer operations.

### 3,760,369
### DISTRIBUTED MICROPROGRAM CONTROL IN AN INFORMATION HANDLING SYSTEM

**John Curtis Kemp, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed June 2, 1972, Ser. No. 259,264**
**Int. Cl. G06f** *9/12*
**U.S. Cl. 340—172.5** **6 Claims**



In an information handling system, microprogram control is achieved through a number of distributed microprogram storage elements operating under the control of a sequence generator in response to portions of an instruction or external signals. Each of the microprogram storage elements generates microorders for a portion of the operation of an information handling system such as instruction fetch sequence, address generation, operand fetch and instruction execution. Conditions occurring during the execution of instructions may cause a modification in the microorders generated for controlling instruction execution.

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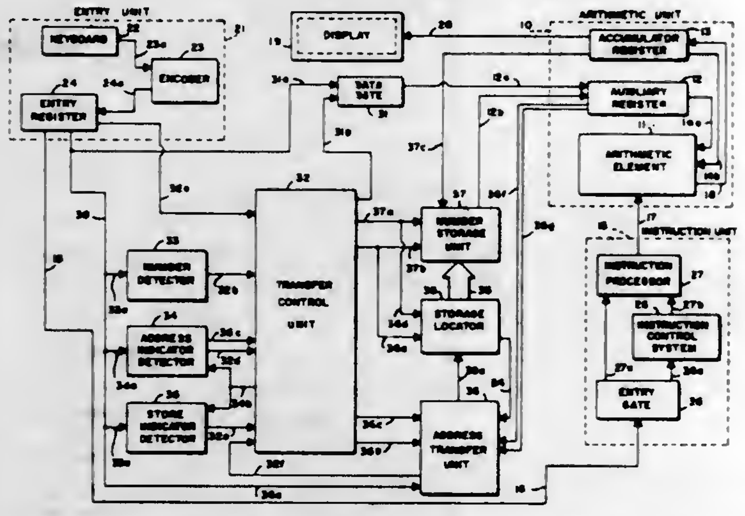
### 3,760,370
### CALCULATOR WITH A NUMBER PROCESSING SYSTEM

**Michael J. Cochran, Houston, Tex., assignor to Tektronix, Inc., Beaverton, Oreg.**
**Filed Apr. 26, 1971, Ser. No. 137,212**
**Int. Cl. G06f** *9/20, 3/02*
**U.S. Cl. 340—172.5** **9 Claims**



An electronic calculator is disclosed having an entry unit with a keyboard which can be utilized either to store data in or to retrieve data from a storage unit with a plurality of storage elements. Entries can be made in the keyboard to produce store, address, and readdress indicator signals as well as data and addresses. An entry detector is provided to develop and store signals in response to the type of entries made in the keyboard. An address transfer unit is provided to receive addresses from the entry unit and addresses retrieved from the storage unit. In response to the signals developed by the entry detector, a transfer control unit operates to cause an address produced by the entry unit to locate a storage element in the storage unit either by directly addressing, or by indirectly addressing, or by successively indirectly addressing storage elements in the storage unit. Both data retrieved from the storage unit and data transferred from the entry unit can be utilized by an arithemtic unit in performing calculations.

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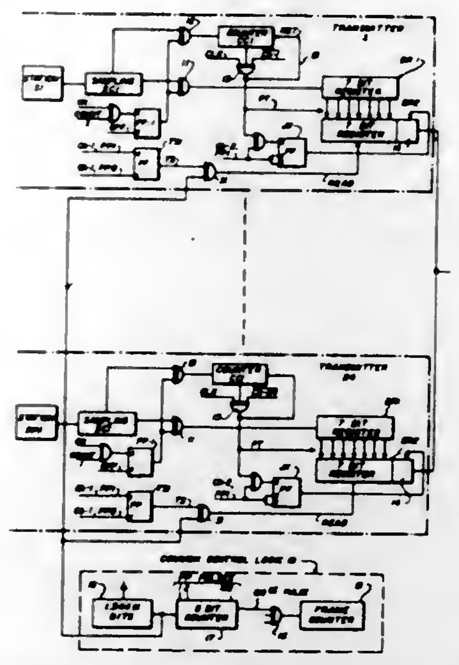
### 3,760,371
### ASYNCHRONOUS DATA TRANSMISSION OVER A PULSE CODE MODULATION CARRIER

**Satyan G. Pitroda, Villa Park, and Bernard J. Rekiere, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**
**Filed Aug. 14, 1972, Ser. No. 280,361**
**Int. Cl. G08c** *25/00*; **H04l** *1/08*
**U.S. Cl. 340—172.5** **7 Claims**



A data transmission technique utilizing asynchronous data transmission over a pulse code modulation (PCM) carrier, with variable data rates with sufficent redundancy to acomodate error burst. Generally, data from a data source is accumulated in a register, and transferred in parallel to another register in packets of a predetermined number of bits easily handled from a switching standpoint. The data from the secd register is read out at intervals which are a submultiple of the carrier. The data is read out a minimum of three times, over a multiple of frames, suh that error burst can be tolerated. Due to the asynchronous nature of the information, some data will be transmitted four times, for the purpose of bringing the transmission system back into synchronism, to acomodate the variable data rates. In order to indicate the number of times the data is repeated, a definite pattern is assigned to the first bit portion of each packet of data which is transmitted. The format of these first bit portions is detected and analyzed in the receiver, to determine the number of times the data has been transmitted

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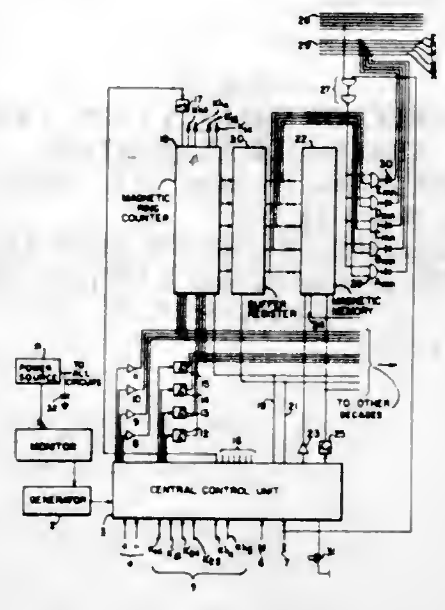
### 3,760,372
### ELECTRONIC COUNTING AND STORAGE SYSTEM HAVING NON-INTERFERING COUNTING STORAGE AND READ-OUT CAPABILITY

**Munir Bitran, Ramat Aviv, Israel, assignor to Patelhold Patentverwertungs & Elektroholding A G, Glarus, Switzerland**
**Continuation-in-part of Ser. No. 868,715, Oct. 23, 1969, abandoned. This application Dec. 8, 1971, Ser. No. 205,814**
**Int. Cl. G11c** *19/00*; **H03k** *23/10*
**U.S. Cl. 340—172.5** **11 Claims**

In an electronic counter in which each of the counting decades comprises a magnetic core shift register type ring counter enabling a non-destructive read-out, an electronic buffer register and a magnet core storage unit. The counter is operated periodically, via a control unit common to all decades, by auxiliary pulses having a repetition frequency being high compared with the means counting pulse frequency, to enable the control unit to effect a continuous read-out of the momentary counting state from the counter decades via the buffer registers to the associated storage units of the decades, without interfering with the normal counting operation.



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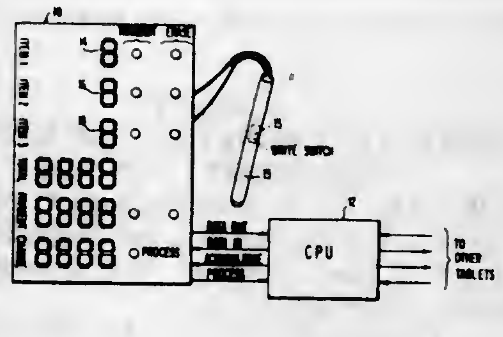
### 3,760,373
### OPTICAL DATA ENTRY AND DISPLAY SYSTEM

**Maurice R. Bartz, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Dec. 20, 1971, Ser. No. 209,911**
**Int. Cl. G08b** *5/22*
**U.S. Cl. 340—172.5** **11 Claims**



Data in the form of characters to be entered into a data processing system are traced by a light pen on a tablet consisting of an array of light emitting diodes forming segments of a pattern containing all the segments necessary to form all desired characters. All of the diodes in the array are sequentially pulsed on and off at such a high rate that the resulting light pulses are invisible to the human eye, but are sensed by the light pen which transmits corresponding electrical pulses to a register which stores the segments corresponding to the traced character. After a complete character is stored, it is displayed on the tablet by continuously energizing the same diodes corresponding to the segment pattern stored in the register. After the displayed character is verified as a correct character, the contents of the register are decoded and transmitted to a central processing unit. When the receipt of the character is acknowledged by the central processing unit, the system is reset for the entry of another character. If the displayed character is incorrect, the display and register are erased, and the character is re-entered.

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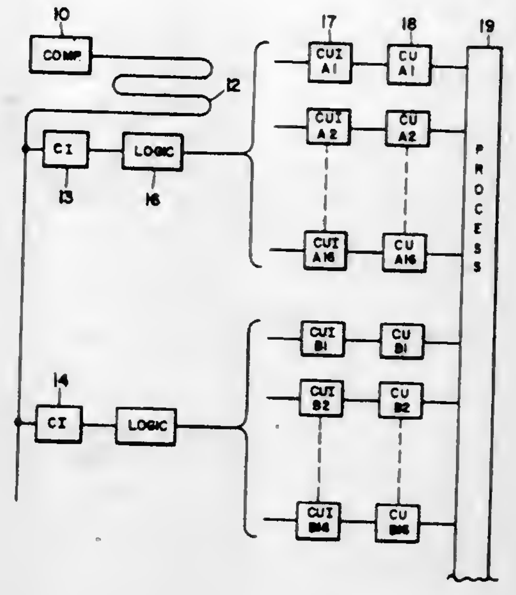
### 3,760,374
### PROCESS CONTROL SYSTEM

**Saleh A. Nabi, Sharon, Mass., assignor to The Foxboro Company, Foxboro, Mass.**
**Filed Apr. 6, 1972, Ser. No. 241,546**
**Int. Cl. G06f** *15/46*
**U.S. Cl. 340—172.5** **13 Claims**



An electronic process control system including a digital computer, a computer interface that is easily replaceable in order to change computer types; a logic module for grouping the computer and controller signals and converting betwen digital and analog representations; and a control unit interface for generating analog signals for a control unit in response to computer commands and adapting the analog control unit to communicate with a digital computer.

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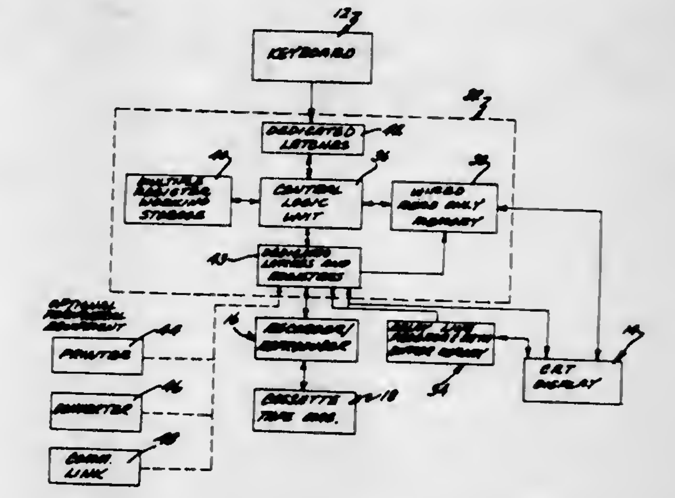
### 3,760,375
### SOURCE DATA ENTRY TERMINAL

**Samuel N. Irwin, and Michael R. Levine, both of Ann Arbor, Mich., assignors to Sycor, Inc., Ann Arbor, Mich.**
**Continuation of Ser. No. 833,898, June 13, 1969, abandoned.**
**This application July 26, 1971, Ser. No. 166,269**
**Int. Cl. G06f** *3/06*
**U.S. Cl. 340—172.5** **46 Claims**



A source data entry device having a keyboard for data entry, a cathode ray tube for visual display of key-entered data, and magnetic recorders for storing entered data upon cassette-type magnetic tape cartridges, wherein control logic for the keyboard, visual display, recorders, and other input/output peripheral devices is centralized into a central logic unit, and wherein program-controlled data entry is made possible by a wired read-only memory which, in conjunction with the central logic unit, forms a programmed microprocessor whose functional configuration can be altered by changing the hardwired read-only memory.

### 3,760,376

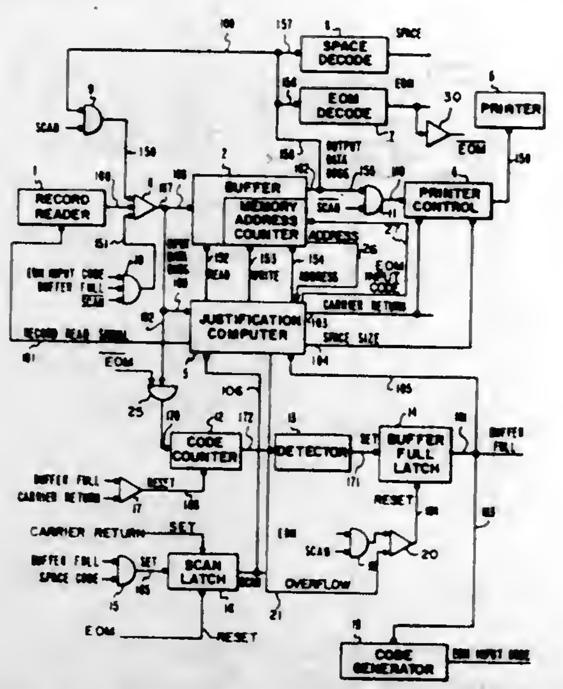
### SYSTEM FOR CONTROLLING OUTPUT LINES WITH LIMITED STORAGE CAPACITY

**Howard C. Tanner, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 28, 1970, Ser. No. 101,721**

**Int. Cl. G06k *3/00*; G11c *7/00***

**U.S. Cl. 340—172.5 4 Claims**



A system for justifying an output line where the total number of required data codes for computing a justification solution exceeds the buffer storage provided for the output line. Given a storage capacity of n data codes, when *n*-1 data codes have been read, counted, and stored, and a sufficient number of codes have not been stored for computing a justification solution based on the sum of the escapement values, a signaling data code is generated and stored. Then output from the buffer is initiated and continues until a space code is read. Thereafter, additional data codes are read and stored in the buffer and the above operation is repeated until a sufficient number of data codes have been read to compute a justification solution for remainder of the output line.

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### 3,760,377

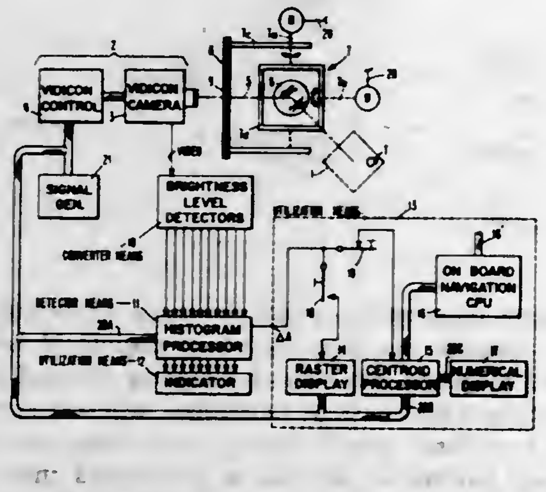
### HISTOGRAM DATA PROCESSOR

**Curtis C. Attridge, Gaithersburg, Md., and Joseph G. Ayers, Jr., Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed July 17, 1970, Ser. No. 55,713**

**Int. Cl. G06f *7/00***

**U.S. Cl. 340—172.5 12 Claims**



A histogram data processor that detects for the presence of and/or an intermediate class of the histogram data which has a lower frequency of occurrence than its adjacent classes. That is to say, the processor detects the particular intermediate class when such a condition is present and/or detects for the presence of such a condition in the data. Also, brightness level discinimator apparatus which includes the aforesaid processor to process brightness level data derived from a field of view to detect the presence and/or location of an object in the field. Also, an autonomous nagivation system for a moving craft which includes the aforesaid apparatus for deriving positional information of the craft.

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### 3,760,378

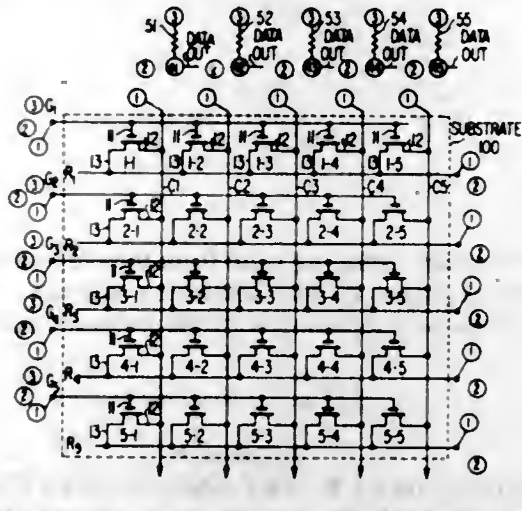
### SEMICONDUCTOR MEMORY USING VARIABLE THRESHOLD TRANSISTORS

**Joseph Richard Burns, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.**

**Continuation of Ser. No. 806,375, March 12, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,321**

**Int. Cl. G11c *11/40***

**U.S. Cl. 340—173 R 11 Claims**



A word-organized memory array employing at each storage location only a single metal-insulator-semiconductor device. Information is stored in a device by causing it to assume either a high or a low voltage threshold state. Information is read out by applying to a device a voltage lower than that required to switch the device from one state to another but of sufficient magnitude to cause a device to conduct when in one state but not when in the other. The write and read voltages are all of the same polarity and are applied to the devices in such a way that all devices may be integrated on a single substrate.

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### 3,760,379

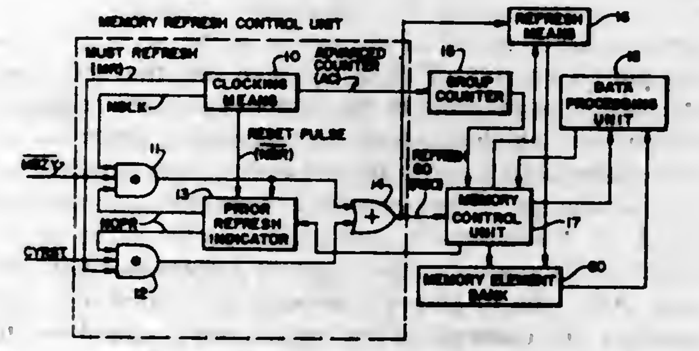
### APPARATUS AND METHOD FOR MEMORY REFRESHMENT CONTROL

**Chester M. Nibby, Jr., N. Billerica; John C. Manton, Marlboro; John L. Curley, Sudbury, and Benjamin S. Franklin, Boston, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed Dec. 29, 1971, Ser. No. 215,736**

**Int. Cl. G11c *7/00***

**U.S. Cl. 340—173 R 9 Claims**



Apparatus and method for controlling the refreshing of volatile memory elements associated with data processing units. The invention minimizes the conflict between the memory refresh operation and the requirements for access to the memory elements during data processing operations. When conflict is unavoidable, it is resolved in favor of the refresh cycle to prevent loss of information. In memory elements of the type which are automatically refreshed during utilization by the data processing unit, a separate refresh cycle is eliminated when the utilization takes place in an appropriate interval.

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### 3,760,380

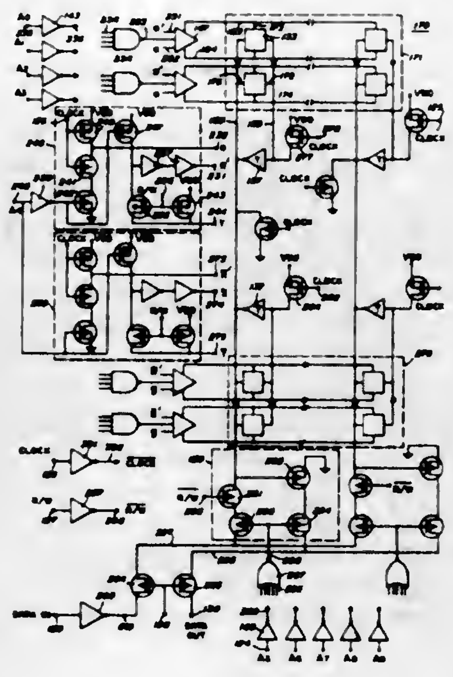
### SILICON GATE COMPLEMENTARY MOS DYNAMIC RAM

**Charles R. Hoffman, Tempe, and William W. Lattin, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.**

**Filed June 2, 1972, Ser. No. 259,216**

**Int. Cl. G11c *11/24*, *5/00*, *7/00***

**U.S. Cl. 340—173 R 14 Claims**



A monolithic integrated circuit random access memory system having a storage matrix of silicon gate MOS N-channel dynamic RAM cells interfaced with silicon gate complementary MOS addressing circuitry, requiring no diffused guard rings, and input-output circuitry. Dynamic N-channel RAM cells are used to provide very high density storage of binary data in the relatively large storage matrix, and complementary silicon gate low threshold MOS circuitry is used to implement the peripheral circuitry including the address decoding sections, refresh circuitry, and input-output section to provide extremely low power dissipation, high speed operation, low sensitivity to device parameter variations, high noise immunity, and efficient operation over a wide range of power supply voltages.

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### 3,760,381

### STORED CHARGE MEMORY DETECTION CIRCUIT

**Ying Luh Yao, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

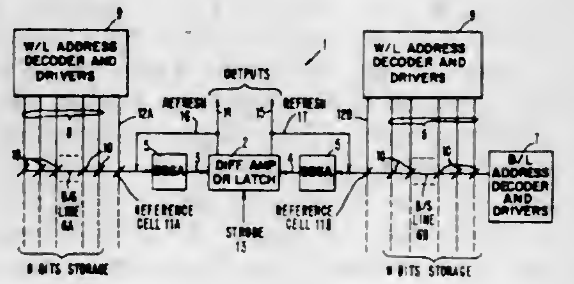
**Filed June 30, 1972, Ser. No. 267,881**

**Int. Cl. G11c *11/24*, *7/06***

**U.S. Cl. 340—173 R 30 Claims**

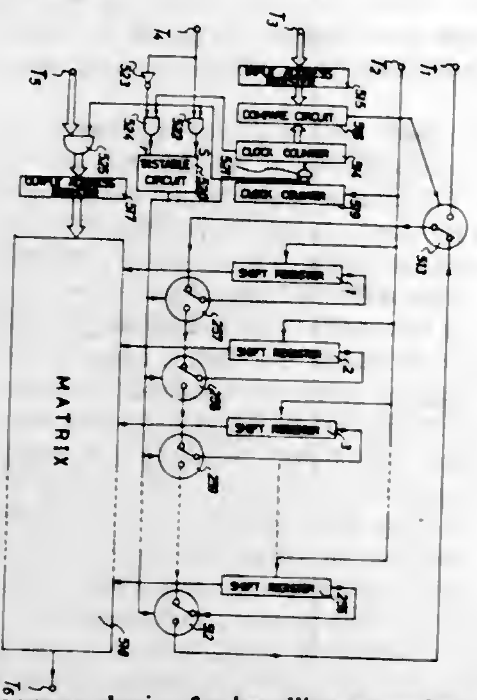
A sensing circuit which is responsive to binary information represented by the level of charge in a capacitor is disclosed. The circuit comprises a differential amplifier; the nodes of which are connected to bucket brigade sense amplifier arrangements which are in turn connected to bit lines to which a plurality of memory device which store information in the form of charge are connected. Each bit line portion connected to the bucket brigade sense amplifier represents half of a bit line to which a plurality of storage devices (such as a capacitor in series with an FET gate) are connected. Each half of the bit line is also connected to a reference capacitor via an actuable FET device or other stored charge memory device. Each of the bucket brigade sense amplifiers consists of an output capacitance which is connected in parallel with the bit line capacitances of each half of the bit line via an actuable FET device. A source of voltage for charging the bit line capacitances is connected to the bit line halves via an actuable FET device and is utilized to charge the bit line capacitance, the output capacitance and a reference capacitor of one of the bit line halves.

In operation, both bit line halves are charged to some voltage which is usually equal to the voltage to which the capacitance of a selected memory cell can be charged. At the same time, a reference capacitor is charged to approximately one half the voltage to which the selected cell capacitance can be charged. If the reference capacitor is to be charged to half the voltage of a storage cell, the size of the reference capacitor should be equal to that of the storage capacitor. Another way of implementing the reference capacitor is to use a reference capacitor half the size of a storage capacitor and discharge it completely each time before selecting a memory cell. If the memory cell capacitor is charged to full voltage (representing a binary "1") when the word line of the memory cell is activated for reading, no charge will flow from the bit line capacitance to the memory cell capacitance because both are at the same level. If the memory cell capacitance were empty (representing a binary "0") charge would flow from the bit line capacitance when reading occurred, filling the memory capacitor and reducing the bit line capacitor voltage by a small ion. When the bucket brigade circuit is actuated, no charge transfer occurs where the memory capacitor was full and a voltage approximately equal to the bit line charging voltage appears on one node of the differential amplifier. Where the memory capacitor was initially empty, charge transfer occurs to refill the bit line capacitance to its original level thereby depleting the output capacitance of charge and causing zero potential to be applied to one node of the differential amplifier. Simultaneously, with the appearance of the bit line charging voltage or zero at one node of the differential amplifier, a voltage equal to approximately half the bit line charging voltage appears at the other node of the differential amplifier. This results from the charging of the reference capacitance to one half the charging voltage. When reading of the reference capacitance occurs, charge from the bit line capacitance charges the reference capacitor up to its full value, depleting the bit line capacitance of an amount of charge equal to half the charge depleted from the opposite bit line capacitance when a memory cell storing a "0" is selected. When the bucket brigade sense amplifier is actuated, charge from the output capacitance thereof replenishes the bit line capacitance and leaves the output capacitance at a value of voltage approximately equal to one half of the charging voltage. In this manner, when a selected memory device associated with one half of a bit line is being read, the reference capacitance associated with the other half of the bit line is utilized to provide a voltage which is always the same regardless of the voltage on the selected device. The appropriate reference capacitor is selected by arranging the decoding such that when a memory device on one bit line half is selected, the reference capacitor on the other bit line half is always selected.



### 3,760,382
### SERIES-PARALLEL SHIFT REGISTER MEMORY

**Takayuki Itoh, Kawasaki, Japan, assignor to Takachiko Koeki Kabushiki Kaisha, Osaka-shi, Japan**
**Filed Mar. 3, 1972, Ser. No. 231,562**
**Claims priority, application Japan, Mar. 5, 1971, 46/11304**
**Int. Cl. G11c *19/00, 21/00*; H03k *23/24***
**U.S. Cl. 340—173 RC** **8 Claims**



A digital memory device for handling a number of digital information blocks, in which a plurality of inexpensive shift registers are provided for storing each of the digital information blocks. In a sequence operation mode, a plurality of the shift registers are connected in series to form a large circulating memory, to which a train of many digital information blocks are sequentially stored. In a parallel operation mode, a plurality of the shift registers form respectively small circulating memories by connecting the output of each shift register to the input thereof. Accordingly, the digital information blocks stored in the shift registers can be read out for each digital information block in a random-access manner from the shift registers, which operates as the above mentioned small circulating memories respectively.

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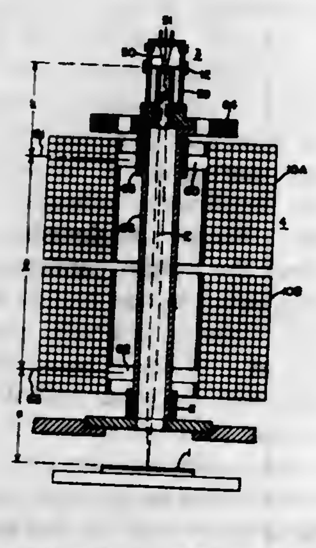
### 3,760,383
### STORAGE SYSTEM WITH COLLIMATED ELECTRON BEAM FOR MINIMAL SPHERICAL ABERRATION

**John E. Wolfe, Camillus; George E. Ledge, Liverpool, and Homer H. Glascock, Scotia, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.**
**Division of Ser. No. 847,972, Aug. 6, 1969. This application July 1, 1971, Ser. No. 158,763**
**Int. Cl. G11c *11/30*; H01j *29/56, 31/08***
**U.S. Cl. 340—173 CR** **16 Claims**



A storage system for the mass recording and readout of digital data with ultra high resolution. An electron beam structure is provided for forming a beam of extremely small focused spot diameter, on the order of 0.1 microns, and high current density capability, on the order of 1,000 amperes per sq. cm., which records data by scanning over defined areas of the storage medium surface and micromachining elemental portions of said medium as a function of beam modulation. Readout may be subsequently accomplished by similarly scanning the beam at reduced power density and detecting electrons that have been transmitted by or reflected from the storage medium.

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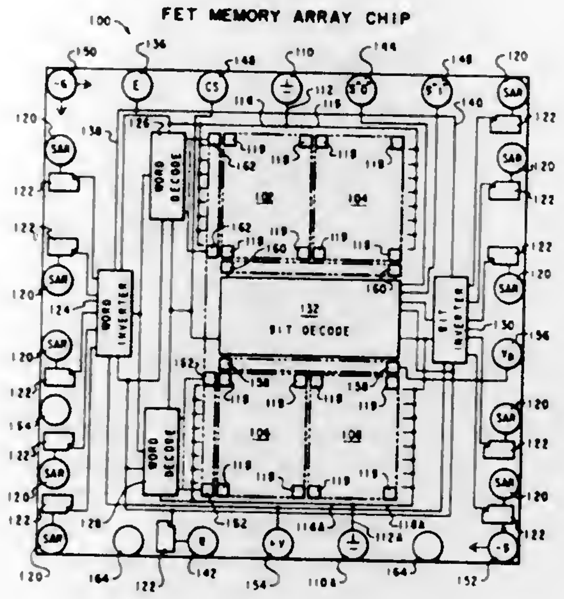
### 3,760,384
### FET MEMORY CHIP INCLUDING FET DEVICES THEREFOR AND FABRICATION METHOD

**Walter F. Krolikowski, Hopewell Junction, and Donald F. Lund, Hyde Park, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.**
**Filed Oct. 27, 1970, Ser. No. 84,277**
**Int. Cl. G11c *11/40***
**U.S. Cl. 340—173 R** **37 Claims**



This disclosure is directed to a field effect transistor (FET) semiconductor chip which includes a number of FET memory cells or circuits connected together to form a memory system or array. Some FET devices used in the memory cells of the memory array and in other locations of the memory system contain "crooked" gates. A number of different gate geometries, dimensions, or size ratios are used for a variety of FET devices used in the memory array.

Various techniques are also disclosed for laying out a very dense FET memory array on a tiny semiconductor chip so as to preserve minimum spacing and dimension rules for metallized and diffused regions. Various structures and techniques are described to maximize memory cell density within minimum semiconductor real estate. Additional features include a varying number of alignment marks for the different levels of masks used in fabricating the FET memory chip. The FET fabrication process is also disclosed which permits the formation of a high speed N-channel FET memory array with devices that have high transconductance and other desired device parameters, features and characteristics to provide a reliable, high performance FET memory array system. The fabrication process includes the formation of a thin epitaxial layer prior to the diffusion of source and drain regions and the use of a double photoresist layer in one step of the process wherein a block-out mask pattern is provided in each of the two photoresist layers to minimize pinhole probelms and to permit precise alignment of the simultaneous etched out gate window and source and drain contact areas in the thick oxide located on the surface of the chip.

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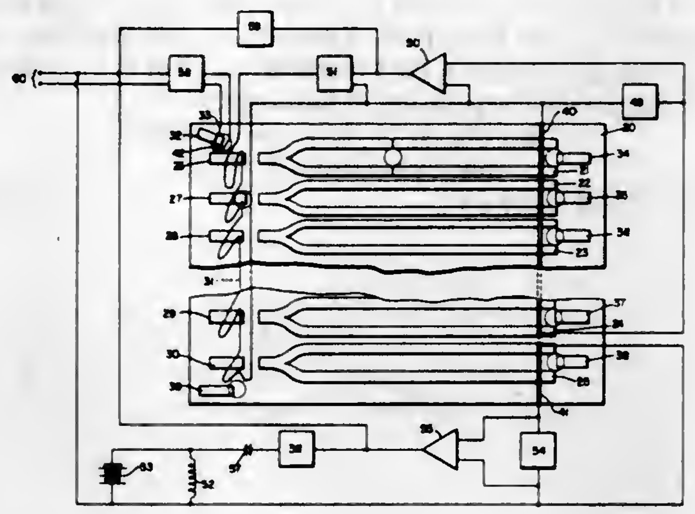
### 3,760,385
### OPTICAL SCANNER

**John David Bierlein, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.**
**Filed June 30, 1971, Ser. No. 158,368**
**Int. Cl. G11c *11/14, 11/42***
**U.S. Cl. 340—174 YC** **11 Claims**



In certain optically transparent ferrimagnetic and ferromagnetic crystal plates wherein the easy axis of magnetization is normal to the plate, reversed cylindrical magnetic domains can be generated and maintained in a stable but mobile condition. Tracks defined by bands of magnetic material along which a magnetic gradient is generated can be employed to move the bubble domains while maintaining their optically accessible area substantially constant. Polarized light passing through the plate is passed through an analyzer set to distinguish the differing rotation of light in the domain by the Faraday effect. In one embodiment, a scanner with a spiral track is used to record electrical signals, such as audio signals on photosensitive media, and to play back the same. The intensity of the light passing the scanner can be modulated or the area of the reversed cylindrical domain can be modulated to provide either density modulation or area modulation in the recording process.

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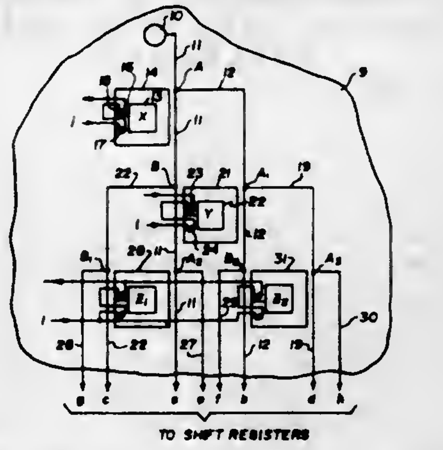
### 3,760,386
### MAGNETIC DOMAIN LOGIC DECODER

**Farooq Quadri, Addison, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.**
**Filed July 27, 1972, Ser. No. 275,661**
**Int. Cl. G11c *11/14***
**U.S. Cl. 340—174 TF** **6 Claims**



Gate for directing propagation of bubble domains entering an intersection of propagation channels comprises a pair of closed loop channels, one within the other, the outer loop having a bubble-holding position adjacent said intersection. Selection of one channel at the intersection is made by transferring bubbles from the inner to the outer loop, causing a bubble to be positioned adjacent said intersection, thus deflecting a bubble entering the intersection into the desired route.

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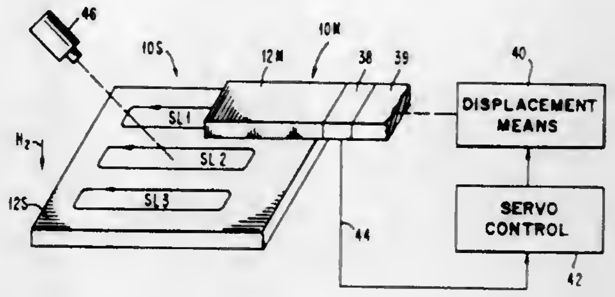
### 3,760,387
### MAGNETIC BUBBLE DOMAIN SYSTEM USING MULTIPLE MAGNETIC SHEETS

**Hsu Chang, Yorktown Heights, and George J. Fan, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed June 22, 1972, Ser. No. 265,382**
**Int. Cl. G11c *11/14, 19/00***
**U.S. Cl. 340—174 TF** **33 Claims**



A magnetic bubble domain system in which a single magnetic sheet, or a plurality of magnetic sheets, is used only for storage of information, while another magnetic sheet (memory sheet) is used for writing information into the storage magnetic sheet and for reading information from the storage magnetic sheet. The memory sheet contains circuitry for such functions as generation, decoding, sensing, clearing, storage, etc. The memory sheet can be positionally displaced with respect to the storage sheet to create bubble domains in the storage sheet and to detect the presence and absence of domains in the storage sheet. Means are provided to directly map information from the storage sheet to the memory sheet. Thus, this magnetic subsystem provides storage in a first magnetic sheet while the transducer circuits are in a second magnetic sheet which can be positionally displaced with respect to the first magnetic sheet for access of information into and from the first magnetic sheets.

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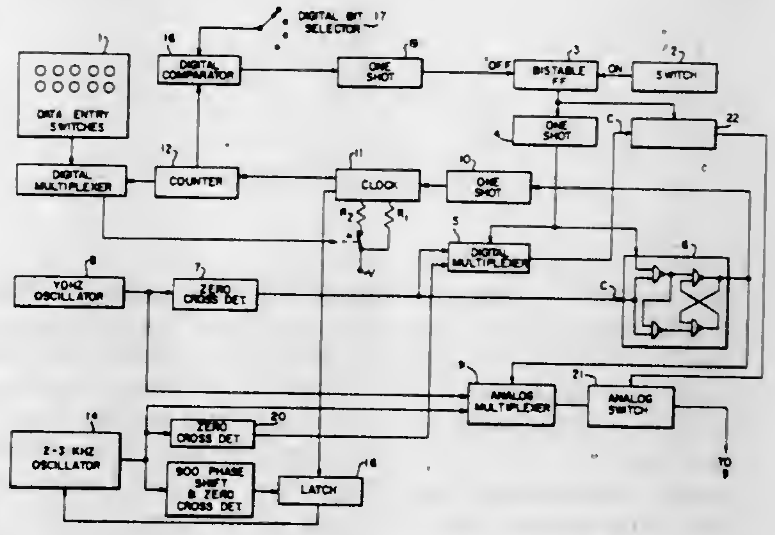
### 3,760,388
### AUDIO WAVEFORM FOR DIGITAL RECORDING

**Lawrence S. Schmitz, Pittsburgh; John E. Lambright, Monroeville, and Arthur M. Lewis, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed July 30, 1971, Ser. No. 167,582**
**Int. Cl. G11b *5/02***
**U.S. Cl. 340—174.1 H** **10 Claims**



Digital information is entered, stored on and read off of transmission channels containing audio information. The digital information is stored in the form of discrete audible tone bursts representative of the state of each bit of digital information. Subaudible tone bursts are utilized for keying associated circuitry.

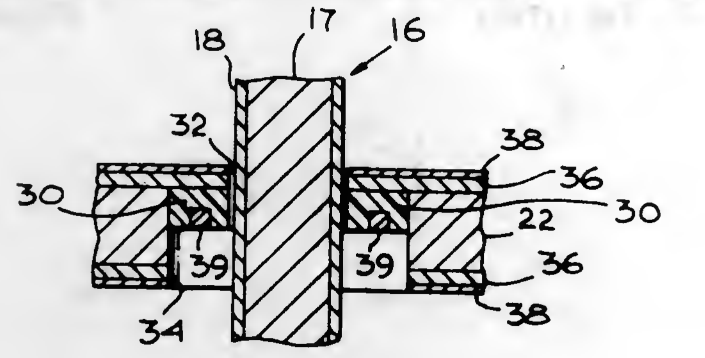
### 3,760,389
### BATCH FABRICATED MAGNETIC WIRE MEMORY

**Alfred D. Scarbrough, Northbridge, Calif., assignor to Bunker-Ramo Corporation, Oak Brooke, Ill.**

**Division of Ser. No. 864,789, Oct. 8, 1969, Pat. No. 3,685,145. This application Sept. 24, 1971, Ser. No. 183,613**

**Int. Cl. G11c** *11/14, 5/04*

**U.S. Cl. 340—174 MA** **5 Claims**



A magnetic wire memory construction and method of making in which the memory comprises a plurality of stacked memory planes having memory wires inserted in aligned holes thereof. Each memory plane is fabricated using precision batch fabricated selective chemical etching techniques on a single self-supporting metal sheet so as to form pairs of insulated drive lines within the sheet looping around respective rows of a row-column matrix of memory wire receiving holes. Additional metal and magnetic layers may be provided over the surfaces of the sheets for increasing shielding and reducing memory cell disturbances.

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### 3,760,390
### CYLINDRICAL DOMAIN ASSOCIATIVE MEMORY APPARATUS

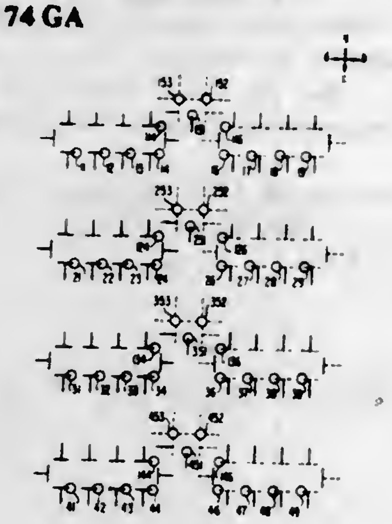
**Hiroshi Murakami, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan**

**Filed May 9, 1972, Ser. No. 251,622**

**Claims priority, application Japan, June 4, 1971, 46/39449**

**Int. Cl. G11c** *15/00, 11/14*

**U.S. Cl. 340—174 GA** **6 Claims**



An associative memory utilizing magnetic domain storage for selecting a stored memory word in response to an interrogating search word. A search word is compared to the tag bits of all memory words by proximately circulating magnetic domains corresponding to the memory word tag bits and the search word. For each memory word comparison process, there is a single domain placed in a first location. The circulation of the domains corresponding to the memory word tag bits and the domains corresponding to the search word causes corresponding bits, represented by the presence or absence of domains, of said tag bits and search word to simultaneously appear adjacent to said first location. If the adjacent bits are identical no resultant repelling force is applied to the domain in said first location. However, if the adjacent bits are not identical, i.e., one adjacent location contains a domain whereas the other adjacent location does not contain a domain, a resultant repellant force causes the domain in said first location to move away from said first location. After the circulation is complete, the existence of a domain in said first location, indicates that the search word is the same as the tag bits in the storage area near the first location.

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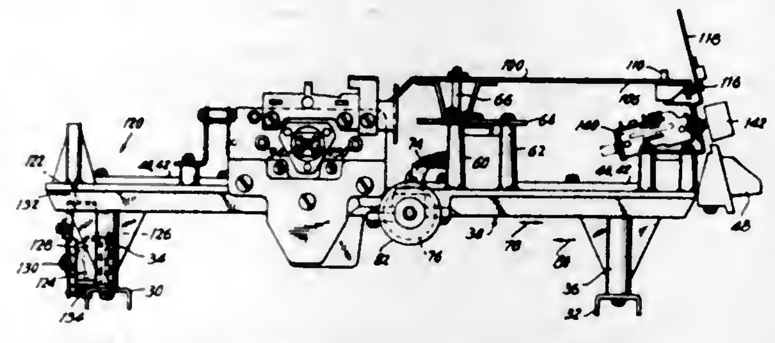
### 3,760,391
### DATA CARD TRANSPORT AND SCANNING APPARATUS

**Edgar Wolf, New Hyde Park; Edward Lau, Old Westbury, and Arthur Eisenkramer, Port Washington, all of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.**

**Filed Dec. 9, 1971, Ser. No. 206,486**

**Int. Cl. G11b** *5/10, 19/02*

**U.S. Cl. 340—174.1 C** **7 Claims**



A data card transporting apparatus for scanning a data card is provided which includes a head adapted for selectively scanning one of a plurality of data channels on the card, said head being driven by a lead screw which in turn is driven incrementally by a solenoid actuated device, which includes pins mounted on a disc and driven by pawls in either of two rotary directions to drive the lead screw. A drive is provided for the data card which consists of a capstan on each side of the card with which there is provided a cooperating pinch roller which is actuated by the use of a corresponding solenoid. An ejection mechanism is also provided which consists of a lever which engages an end of the card when the latter is in fully inserted position, the lever being solenoid actuated to impel the card to a position whereat it may be engaged by one of the aforesaid capstan and pinch roller arrangements. Additionally, the head is especially arranged to be accommodated in a trough provided in the bed of the device so that the card, in effect, is pressed into the trough by the head to provide for optimum contact conditions.

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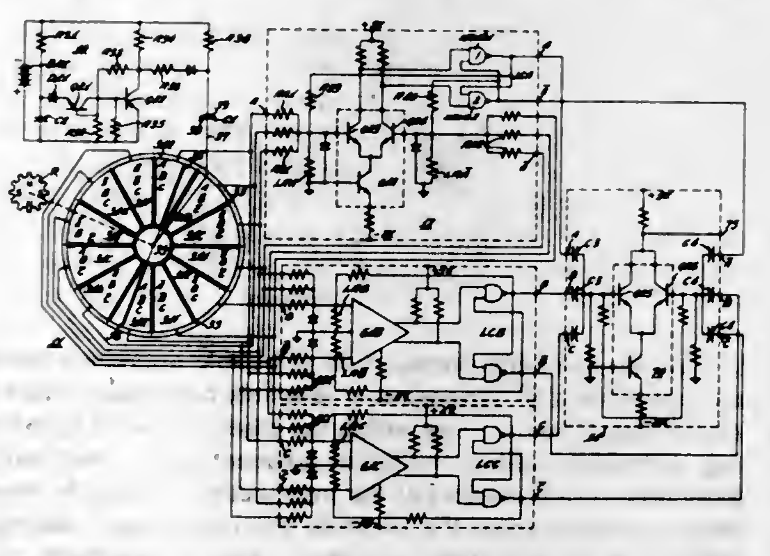
### 3,760,392
### CAPACITIVE POSITION SENSOR

**Frederick A. Stich, Hales Corners, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed May 15, 1972, Ser. No. 253,418**

**Int. Cl. H02p** *1/00*

**U.S. Cl. 340—200** **25 Claims**



A capacitive rotor position sensor generates three phase output pulses indicative of the position of the rotor of a three phase commutatorless D.C. motor. A radially elongated capacitor plate connected to the motor rotor is rotatably mounted adjacent 12 circumferentially displaced stationary capacitor plates, and a high frequency oscillator is coupled to the rotatable plate. A differential amplifier for each phase has one input coupled to three adjacent first stationary capacitor plates which together subtend 180 electrical degrees and the other input coupled to three adjacent second stationary capacitor plates which together subtend 180 electrical degrees and are displaced 180 electrical degrees from the first plates, and the corresponding inputs of the three differential amplifiers are coupled to first stationary plates displaced 120 electrical degrees apart and to second stationary plates displaced 120 electrical degrees apart. The high frequency pulses from the oscillator are coupled through the rotatable plate to the stationary plates, and the differential amplifiers enhance the one-to-zero ratio of (1) a logic one signal from a stationary plate opposite the rotatable plate at a given instant; and (2) a logic zero signal from a stationary plate simultaneously displaced 180 electrical degrees from the rotatable plate, to derive square wave output pulses at a frequency proportional to motor speed indicative of the rotor position.

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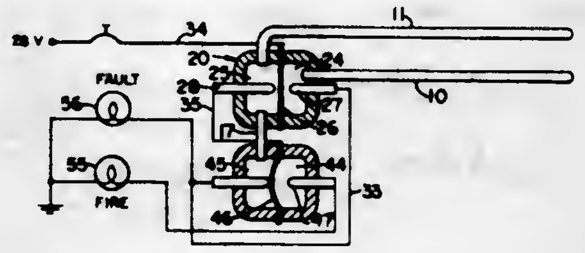
### 3,760,393
### OVERHEAT DETECTION SYSTEM

**John E. Lindberg, 1211 Upper Happy Valley Rd., Lafayette, Calif.**

**Continuation-in-part of Ser. No. 131,976, April 7, 1971, abandoned. This application May 26, 1972, Ser. No. 257,437**

**Int. Cl. H01h** *37/40*

**U.S. Cl. 340—229** **29 Claims**



A fire and overheat detection system. A primary sensor tube and a reference sensor tube each have one closed end and one responder end and contain a solid that reversibly emits gas in gross quantities above a predetermined temperature and takes it back below that temperature, and each has a continuous free space around the solid containing gas. In the primary sensor tube this gas may be at about 2 p.s.i.a., while in the reference sensor tube the gas may be at about 1 p.s.i.a. A primary responder has an electrically conductive primary diaphragm dividing a housing into (1) a first chamber connected to the responder end of the primary sensor tube and provided with a first electrode and (2) a second chamber connected to the responder end of the reference sensor tube and provided with a second electrode, the primary diaphragm normally being out of contact with both electrodes. A confirmation responder has an electrically conductive confirmation diaphragm electrically connected to the second electrode and dividing a housing into a closed third chamber at a fixed low pressure, with a third electrode, and a fourth chamber connected to and at the same pressure as the second chamber and having a fourth electrode, against which the confirmation diaphragm normally rests. Electrically actuable fault warning means is connected on one end to both of the first and fourth electrodes and on the other end to ground, and electrically actuable fire and overheat warning means is connected on one end to the third electrode and on the other end to ground. Electrical potential means is connected to said primary diaphragm.

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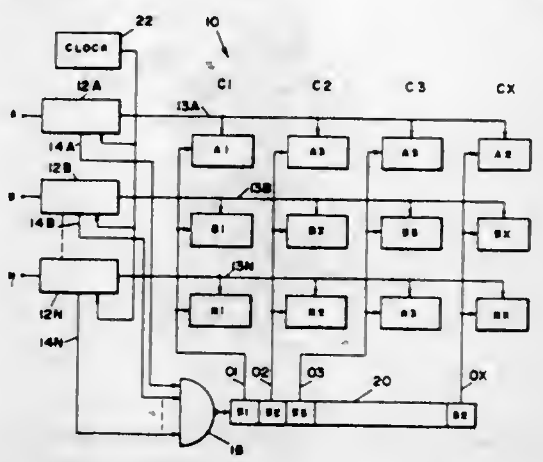
### 3,760,394
### EVENT SEQUENCE DETECTOR

**James C. Fletcher, Administrator of National Aeronautics and Space Administration with respect to an invention of, and Michael F. Hanna, 1213 Chesney Ave., Glendora, Calif.**

**Filed Feb. 4, 1972, Ser. No. 223,560**

**Int. Cl. G08b** *23/00, 26/00*

**U.S. Cl. 340—223** **8 Claims**



An event sequence detector is disclosed comprising a plurality of input units, each associated with a row of bistable elements arranged in an array of rows and columns. The detector also includes a shift register which is responsive to clock pulses from any of the units to sequentially provide enabling signals on its output lines each of which is connected to the bistable elements in a corresponding column. When an event-indicating signal is received by an input unit it provides a clock pulse to the shift register to provide the enabling signal on one of its output lines. The input unit also enables all its bistable elements so that the particular element in the column supplied with the enabling signal from the register is driven to an event-indicating state.

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### 3,760,395
### OPTICAL SMOKE DETECTOR

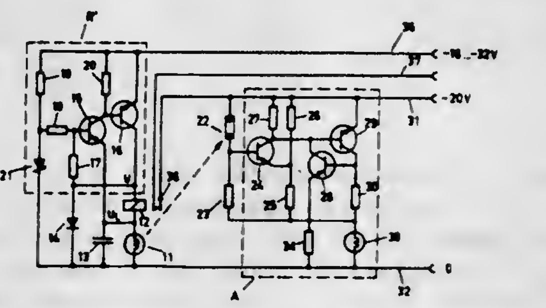
**Peter Muller, Oetwil a. See, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland**

**Filed Dec. 14, 1971, Ser. No. 207,791**

**Claims priority, application Switzerland, Dec. 21, 1970, 18902/70**

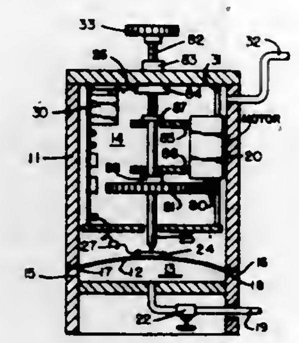
**Int. Cl. G08b** *21/00*

**U.S. Cl. 340—237 S** **11 Claims**



A detection chamber has gases, such as air, applied thereto, in which the presence of smoke is to be detected. The detection chamber is illuminated, and a light detector, such as a photoelectric transducer is provided, located to be differentially affected by light from the gases, depending upon whether smoke is included therein or not. To provide for detection of even small levels of smoke in the gases, and prevent spurious response due to changes in the illumination, an electric supply is provided for the illumination source which includes an electric lamp, and a power control means which senses the power applied to the lamp and controls power to a constant level. Preferrably, power is interrupted to the lamp, periodically, and at a rate which is so high that the thermal inertia of the lamp will provide for constant light output, the lamp itself being included in a circuit which has an energy storage device, such as an inductance therein to provide for practically continuous flow of current through the lamp.

### 3,760,396
## BOAT AND SWIMMING POOL INTRUSION DETECTOR
**Frederick R. Haselton, 1205 Fallsmead Way, Rockville, Md.**
**Continuation-in-part of Ser. No. 106,145, Jan. 13, 1971, abandoned. This application June 2, 1971, Ser. No. 149,136**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 340—240** **16 Claims**



An alarm system for use on boats or other water craft. The base displacement of the boat is altered when an intruder boards the boat, or when excessive water is shipped in the bilge. The increased displacement is monitored in a pressure-sensitive chamber, and if the displacement exceeds a predetermined level, a switch in the pressure-sensitive chamber is activated, thereby triggering an alarm. The alarm system is also applicable to swimming pools. The water level in a pool will rise if an intruder enters the pool, or if someone inadvertently falls. The change in pool water level is monitored in a pressure-sensitive chamber, and if the change exceeds a predetermined level, an alarm is energized.

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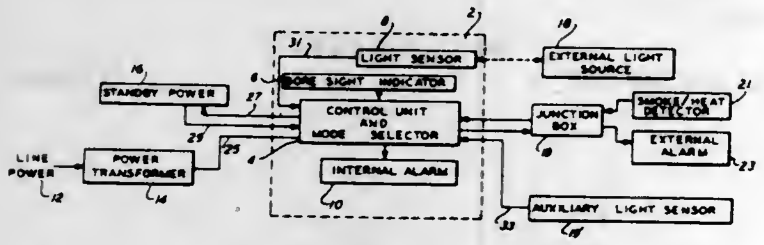
### 3,760,397
## ALARM SYSTEM
**Josh B. Taggart, Box 366, Rt. 5, Bristol, Tenn.**
**Filed Nov. 17, 1970, Ser. No. 90,338**
**Int. Cl. G08b** *13/18*
**U.S. Cl. 340—258 B** **8 Claims**



A photocell-activated intruder alarm system, including a control circuit adapted to automatically adjust system operation to ambient light conditions and adapted to facilitate bore sighting of the apparatus on an external light source. A time delay inherently present in said circuit provides delay in arming of the alarm after activation of the system, whereby a user may remove himself from the protected area without discharging the alarm.

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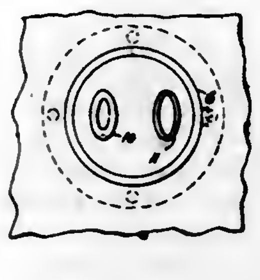
### 3,760,398
## DEVICE FOR DETECTING FLAME OUT IN A GAS TURBINE
**Edward D. Riley, Marblehead, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed July 7, 1971, Ser. No. 160,387**
**Int. Cl. G08b** *21/00;* **G01n** *27/30*
**U.S. Cl. 340—228.1** **6 Claims**

A device for detecting the presence or absence of a flame in the combustion chamber of a gas turbine or the like consisting of a pair of spaced, tubular electrodes extending through the wall of the chamber and into the gas stream. Combustion occurring in the chamber and the associated ionization produces electrically charged electrons in the gaseous gap between the electrodes. The voltage output is in the form of varying resistance of the gap. When no combustion is present in the chamber, the resistance approaches infinity and with combustion the resistance reduces to a level measurable below infinity. The electrodes are cooled by circulating air to give them a longer life.



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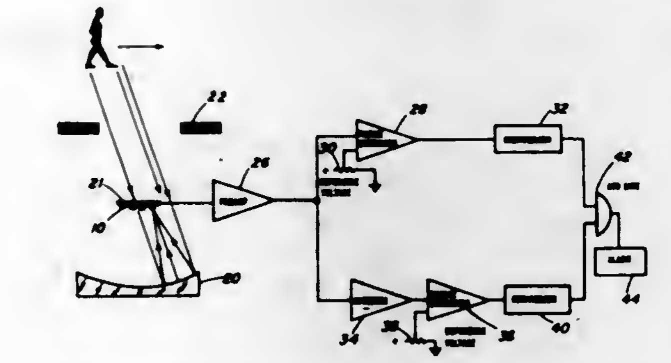
### 3,760,399
## INTRUSION DETECTOR
**Frank Schwarz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.**
**Filed Dec. 20, 1971, Ser. No. 209,660**
**Int. Cl. G08b** *13/18*
**U.S. Cl. 340—258 D** **6 Claims**



A simple optical system collects and applies radiation from a predetermined field of view onto a thermopile detector. The thermopile detector has a plurality of rows of thermocouples having all active junctions with alternate polarity which are aligned in columns of the same polarity, whereby in response to an object moving across the thermopile an output signal is produced of alternately changing polarity. Logic circuitry is provided for processing the signals from the thermopile in a predetermined polarity sequence to discriminate against false alarms and for indicating the presence of an intruder and sounding an alarm.

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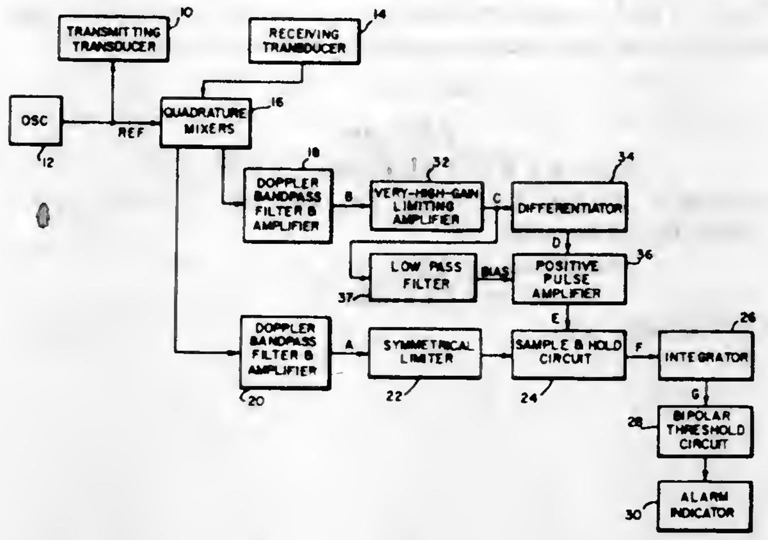
### 3,760,400
## INTRUSION DETECTION SYSTEM EMPLOYING QUADRATURE SAMPLING
**Aaron A. Galvin, Lexington, and L. Dennis Shapiro, Lincoln, both of Mass., assignors to Aerospace Research, Inc., Boston, Mass.**
**Filed Feb. 10, 1972, Ser. No. 225,049**
**Int. Cl. G08b** *13/24*
**U.S. Cl. 340—258 A** **13 Claims**

An intrusion alarm system for the reliable detection of moving targets in a manner which discriminates against noise and other interfering phenomena. Signals returned from a zone under surveillance are processed by quadrature-phased detectors, producing a pair of Doppler signals. Zero crossings of one Doppler signal are used to produce pulses that are employed to sample the other Doppler signal, the sampled signal being stored and integrated to provide an integrated output signal. An alarm indication is produced upon exceedance of a predetermined threshold by the integrated output signal. In the presence of interfering phenomena, the sample pulses occur at random times causing a bipolar fluctuating integrated output signal which does not cross the predetermined threshold. In the presence of a true moving target, sample pulses of regular timed relation are provided to cause an integrated output signal of sufficient value to exceed the predetermined threshold. An alarm indication is thereby provided only in response to a true moving target.



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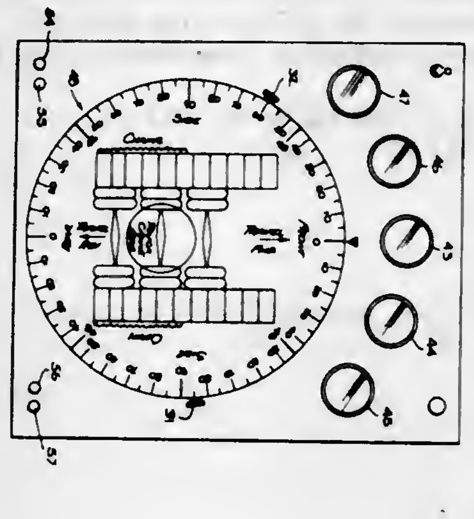
### 3,760,401
## CRANE OPERATED ROTATION MONITOR
**Harry Tallon, 37 Pompton Rd., Haledon, N.J.**
**Filed Apr. 5, 1971, Ser. No. 130,914**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 340—267 C** **7 Claims**



A crane operated rotation monitor includes a means to transduce mechanical rotation to electrical energy and means to transduce the electrical energy to mechanical rotation. An indicator rotates in correlation with the crane rotation thereby providing a visual monitor of the crane position. Means are provided to actuate warning lights to indicate danger zones. An alarm alerts the crane operator of a dangerous position of the crane. Additional means are provided to test a positive functioning of the warning lights and circuits.

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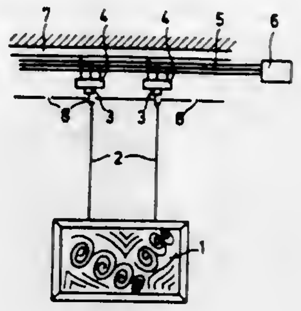
### 3,760,402
## ELECTRICAL INSTALLATION FOR PROTECTING MOVABLE ITEMS
**Rudolf Magerle, Mannedorf, and Fritz Datwyler, Stafa, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland**
**Continuation-in-part of Ser. No. 838,300, July 1, 1969, abandoned. This application Apr. 3, 1972, Ser. No. 240,741**
**Claims priority, application Switzerland, July 3, 1968, 10022/68; June 5, 1969, 8569/69**
**Int. Cl. G08b** *13/14*
**U.S. Cl. 340—280** **13 Claims**



An electrical installation for protecting articles suspended by suspension means against theft or damage, such installation comprising at least one force transducer means embodying at least one piezo-electric element. The force transducer means is disposed at the suspension means in such a way that it is normally loaded with a force of a steady-state value formed by the weight of the article to be protected. The piezo-electric element possesses a main sensitivity direction and is disposed in such a way that this main sensitivity direction is essentially identical with the direction of the force formed by the weight of the article and applied to said force transducer means. There is also provided charge amplifier means associated with and coupled with said force transducer means for generating a signal when the force acting upon siad force transducer means deviates from the steady-state value by a predetermined small amount either in the sense of an increase or a decrease, and an alarm device means is coupled with and triggered by said signal from said charge amplifier means.

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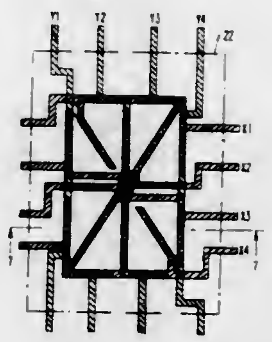
### 3,760,403
## GAS PANEL DISPLAY HAVING MONOGRAM TYPE CHARACTERS WITH MATRIX ADDRESSABLE STROKES
**B. William Kippenhan, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Sept. 29, 1971, Ser. No. 184,743**
**Int. Cl. G09f** *9/30*
**U.S. Cl. 340—336** **11 Claims**



A high resolution gaseous discharge display comprises an encapsulated panel array of bistable charge storage areas defining linearly shaped discharge cells or sites, each cell being defined by a pair of congruent linear portions formed by generally orthogonally arranged conductors insulated from direct contact with the gas by a dielectric, which, when properly energized, produce a confined gaseous discharge in the selected cell. The cells are arranged in character font areas in columns and rows at the intersections of groups of the conductor lines, the conductors being configured at the character positions to define linear cells constituting character font strokes or elements.

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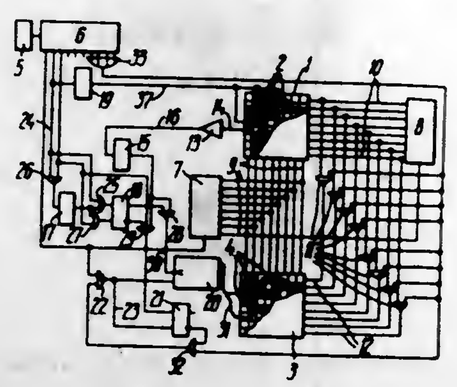
### 3,760,404
### CHESS GAME PROGRESS DEMONSTRATION DEVICE

**Gleb Sergeevich Khlebutin, ul. Bolshevistskaya, 200, kv. 30, Perm, U.S.S.R.**

**Filed July 7, 1972, Ser. No. 269,586**

**Int. Cl. G08b** *23/00*

**U.S. Cl. 340—323** **2 Claims**



A chess game progress demonstration device which comprises a chessboard with pieces; a demonstration panel with 64 actuating units; a pulse shaper; a pulse counter; a check trigger with separated inputs and a control unit, every chessman being provided with an oscillating circuit tuned to the frequency allocated to a particular category of chessmen, while placed under every square of the chessboard is an inductance coil coupled with the output of the pulse generator feeding excitation pulses in succession to all inductance coils. The pulse shaper has its input connected to the outputs of all inductance coils and its output connected, according to signals from the control unit, first to the complementing input of the pulse counter for a calibrated time interval starting at the moment an excitation pulse arrives to the subsequent inductance coil and then, to one of the inputs of the check trigger.

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### 3,760,405
### CHARACTER DISPLAY SYSTEM UTILIZING CIRCULATING MEMORIES

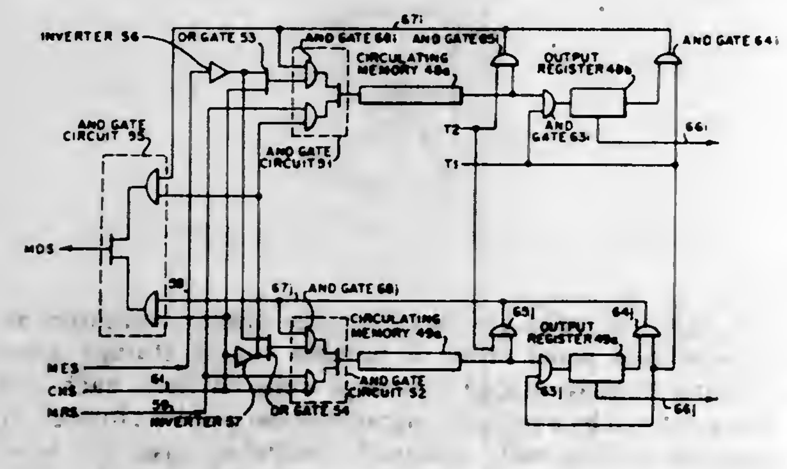
**Atsushi Ishii, Kawasaki; Masayuki Murakami, Yokohama; Yoichi Hagiwara, Kawasaki; Tomio Ono, Tokyo; Kiyoshi Adachi, Kawasaki, and Shuji Hashimoto, Chiba, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan**

**Filed Dec. 20, 1971, Ser. No. 209,965**

**Claims priority, application Japan, Dec. 24, 1970, 45/118083**

**Int. Cl. G06f** *3/14*

**U.S. Cl. 340—324 AD** **3 Claims**



In a character display system having an electronic computer for providing code informations, a keyboard provides input informations. A control arrangement couples the computer and the keyboard to a display system. The control arrangement comprises a circulating memory coupled to the computer and the keyboard for storing informations from the computer and from the keyboard. First and second marker signal circulating memories circulate first and second marker signals synchronously with the circulating memory. Delimiting signals for delimiting the computer are supplied from the keyboard. The first and second marker signal circulating memories are adapted to be used independently by the delimiting signals.

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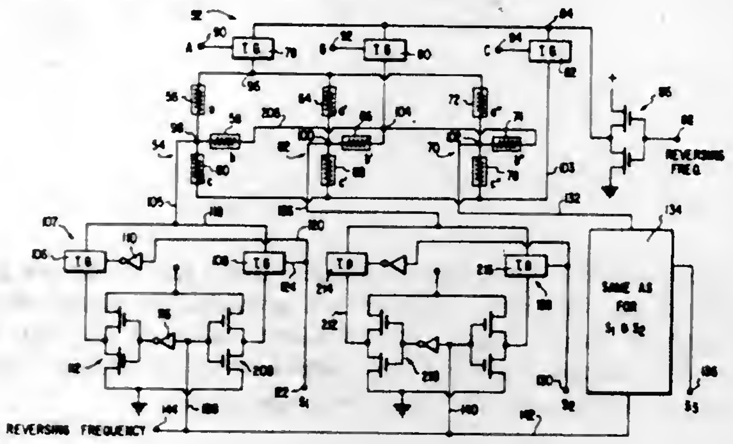
### 3,760,406
### LIQUID CRYSTAL DISPLAY CIRCUIT

**Richard S. Walton, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.**

**Filed Jan. 13, 1972, Ser. No. 217,592**

**Int. Cl. G08b** *5/36*

**U.S. Cl. 340—336** **11 Claims**



A circuit for multiplexing or energizing the crystals of a nematic liquid crystal display in timed sequence. Complementary MOS transistor logic circuits are used to create an equal potential at the opposite ends of these liquid crystals that are to be deenergized. The remaining liquid crystals are energized through direct paths or through paths in series with other energized crystals.

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### 3,760,407
### P.C.M. CODERS

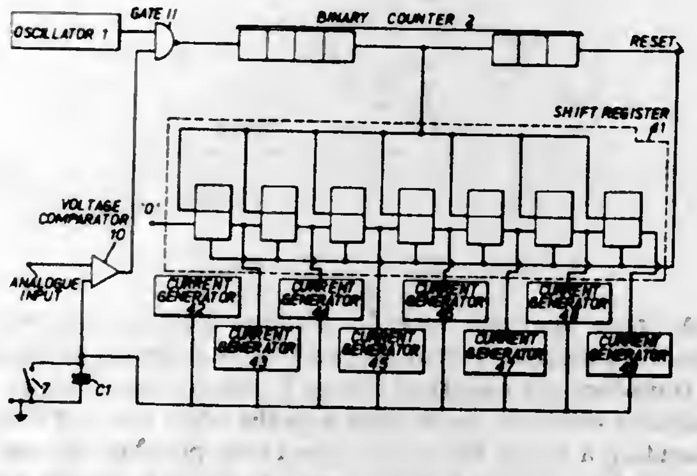
**John Brian Terry, Maldon, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England**

**Filed Dec. 10, 1971, Ser. No. 206,749**

**Claims priority, application Great Britain, Dec. 19, 1970, 60,407/70**

**Int. Cl. H03k** *13/02*

**U.S. Cl. 340—347 NT** **4 Claims**



To achieve a segmented-law analogue to digital signal conversion, a capacitor is charged by a constant current which changes as the states of the three most significant digits of a binary counter, counting pulses supplied by an oscillator, change. Counting ceases and the count is read out when the capacitor voltage reaches the sampled analogue signal voltage. The constant current is derived from a constant current generator and either three current dividers or three or more further constant current generators which are switched in to or out of circuit as the count changes.

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### 3,760,408
### INDUCTION TYPE TELEMETERING SYSTEM

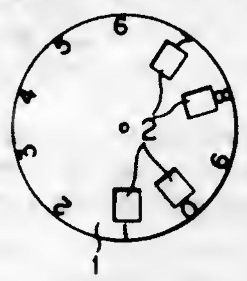
**Yoshio Maeda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 27, 1972, Ser. No. 238,558**

**Claims priority, application Japan, Mar. 31, 1971, 46/23198**

**Int. Cl. G08c** *9/04*

**U.S. Cl. 340—347 P** **3 Claims**



A digit wheel bearing 10 decimal digits is provided on the magnetic disc-shaped portion thereof with four coupling openings radially aligned with selected four of the digits. When the wheel rotates, the openings are stepwise moved between five pairs of driving and output windings disposed in opposite relationship at equal angular intervals on both sides of the disc-shaped portion respectively, with the driving windings continuously energized with an alternating current. At each angular position of the wheel selected two of the openings are always positioned between selected two pairs of opposite windings permitting their electromagnetic coupling. Thus the two output windings produce respective voltages indicating a corresponding coded digit in the form of a two out of five code.

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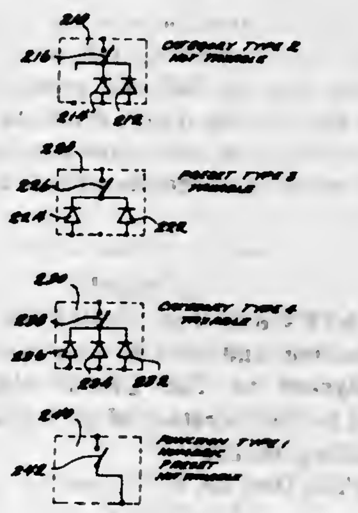
### 3,760,409
### PROGRAMMABLE KEYBOARD AND KEYS

**Murray A. Ruben, Belmont, and Robert F. Collings, Stow, both of Mass., assignors to Alan M. Voorhees, Montgomery County, Md.**

**Filed Nov. 17, 1971, Ser. No. 199,478**

**Int. Cl. H04q** *3/00*

**U.S. Cl. 340—365 S** **20 Claims**



A programmable keyboard and key set with a plurality of matrix locations each adapted for receiving a key and each having a number of terminals. In the embodiment described below, at least four types of keys can be used, each electrically connecting one of the terminals to a different combination of terminals so that the key board can be programed by the type of key inserted at each of the matrix locations. Each matrix location is scanned sequentially by two counters with the count stopped to identify the location whenever a manually operated key is encountered. Circuitry is also included to prevent stopping the count whenever two keys are simultaneously operated.

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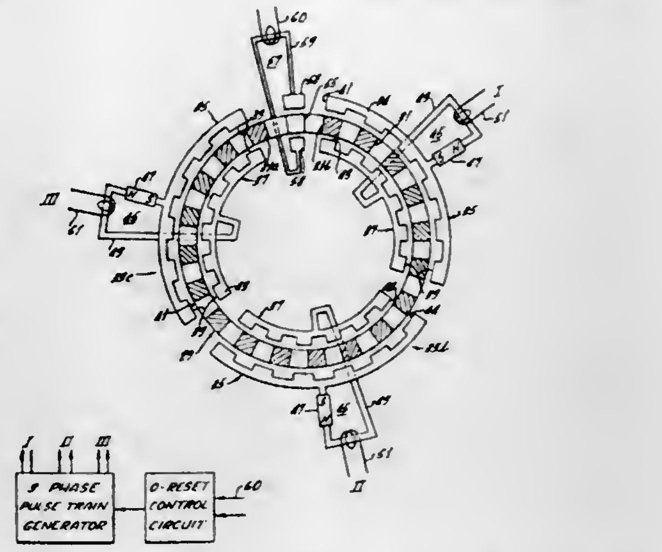
### 3,760,410
### THREE PHASE ROTATING RING DISPLAY WITH MULTI-STATOR WINDINGS

**Hans G. Dill, 2870 Tobago Pl., Costa Mesa, Calif.**

**Filed Jan. 26, 1972, Ser. No. 220,930**

**Int. Cl. G08b** *5/00*

**U.S. Cl. 340—378 R** **12 Claims**



A data display device which includes an indicia-carrying rotor driven by three multi-pole stators which extend collectively around the rotor. The rotor caries a plurality of equally spaced-apart magnetic domains upon which the three stators act in succession. Some of the stators are individually driven, each by a separate coil. Other stators share a common coil, resulting in a saving in cost, weight, and size. The use of a single permanent magnet to steadily magnetize several stators is also disclosed.

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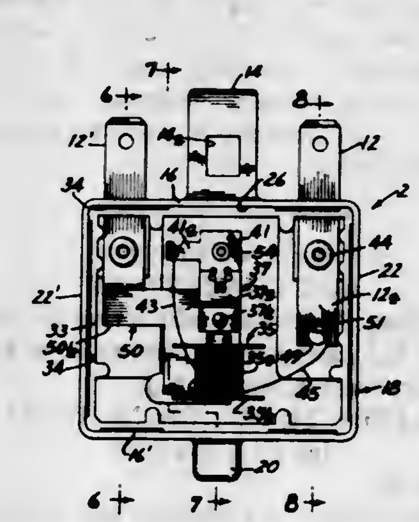
### 3,760,411
### AUDIO SIGNALLING DEVICE

**Lawrence A. Youhanaian, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.**

**Filed Sept. 10, 1971, Ser. No. 179,487**

**Int. Cl. G10k** *9/12*

**U.S. Cl. 340—388** **14 Claims**



An audio signalling unit including a housing body made of molded synthetic plastic material and having an end wall and transversely extending side walls defining an opening into the housing body. This housing body has various positioning shoulders and locator means molded integrally therewith for supporting and positioning a vibratable reed, contact carrying plates and a coil all forming a buzzer which vibrates the reed. The opening into said housing body is closed by a vibratable metal buzzer-forming diaphragm bridging the side walls of the housing body and coated on the outside thereof with an insulating material so that no electrical contact can be made with the metal body of the diaphragm from the outside of the housing and the outer surface thereof is insulated from the electrical conponents inside the housing.

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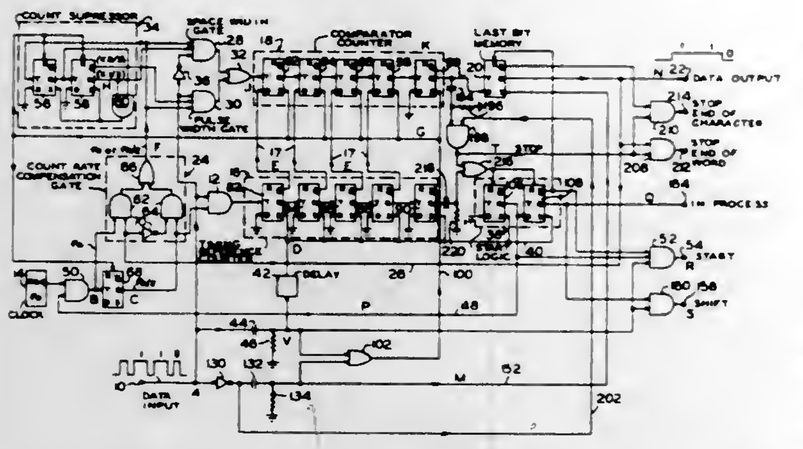
### 3,760,412
## RATE ADAPTIVE NONSYNCHRONOUS DEMODULATOR APPARATUS

**Roland O. Barnes, 834 S. 296th Pl., Federal Way, Wash.**

**Filed July 1, 1971, Ser. No. 158,799**

**Int. Cl. G06f** *5/00*

**U.S. Cl. 340—347 DD** **18 Claims**



A nonsynchronous binary demodulator apparatus is described in which a series pulse duration modulated binary input signal of varying pulse rate is demodulated to form series binary output signals of nonreturn to zero type and shift output pulses synchronized to the bits of such output signals which are suitable for application of binary data into the shift register of a computer. A dynamic reference technique is employed to compensate for the varying pulse rate of the input signal in which the width of an input pulse and the width of the space between successive input pulses are compared by a comparator counter with a time reference signal derived from the immediately preceeding input pulse by a timing reference counter. The zero bit and one bit binary input pulses have widths of one and two time units, respectively, while the time reference signal has an effective width of one and a half time units. Such reference signal is derived from both zero bit and one bit pulses by adjusting the counting rate of the comparator counter with a compensation gate that changes the frequency of the clock pulses applied to such counter according to the last output bit stored in a memory circuit. In one embodiment employing 16 stage binary counters, the demodulator operated over a nonsynchronous pulse rate range of 2.5 to 5,000 pulses per second.

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### 3,760,413
## ACTIVITY DISPLAY

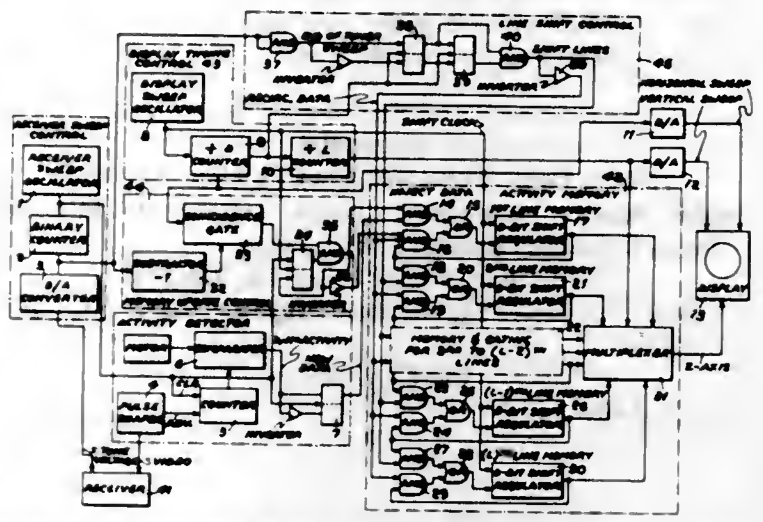
**Francis L. Fielding, Montclair, and Irving L. Fletcher, Fairlawn, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Mar. 24, 1971, Ser. No. 127,723**

**Int. Cl. G01s** *9/00*

**U.S. Cl. 343—5 SC** **11 Claims**

This invention relates to a method and apparatus for displaying the presence or absence of signal activity. Signal activity is stored at a slow rate optimum for the receiver and then read out at a fast rate (above that of the flicker rate), so that the operator has a visually constant display output and fast phosphors can be used with high light outputs. The display is in the form of a "falling raster" in which successive stored sweeps are vertically ordered; the newest at the top, the oldest at the bottom. In sequence, the oldest sweep is purged from storage and the newest activity added in a spatially ordered manner to the raster.



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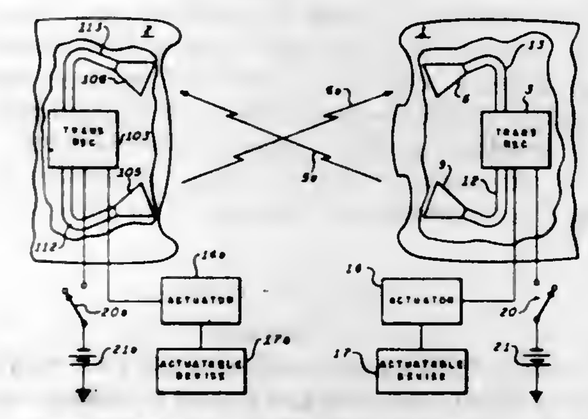
### 3,760,414
## BASE BAND VEHICLE SAFETY APPARATUS

**Alexander M. Nicolson, Concord, Mass., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Oct. 22, 1971, Ser. No. 191,675**

**Int. Cl. G01s** *9/56*

**U.S. Cl. 343—6.5 R** **20 Claims**



A vehicle safety apparatus includes directive radio means for the detection of an impending collision with another vehicle and for actuation of restraining or other safety devices for protecting occupants of both vehicles if a crash event actually occurs. Base-band radio pulse transmission and reception devices provide forward and rearward sensing of the relative locations of cooperating vehicles, each vehicle being equipped with a pair of similar and cooperating radio detector systems. In addition to the cooperative mode of operation, the forward viewing sensors provide fail-safe operation where an interrogated rearward viewing system does not respond, and otherwise provide operation with passively reflecting objects of various kinds which represent hazards to the vehicle or its passengers.

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### 3,760,415
## MICROWAVE CRASH SENSOR FOR AUTOMOBILES

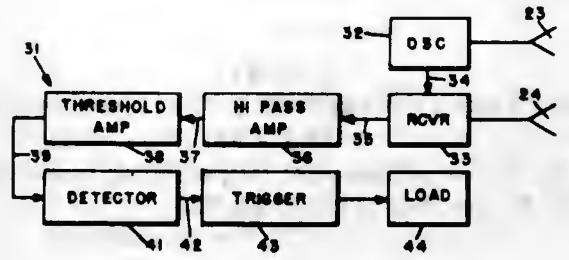
**F. Ross Holmstrom, and John B. Hopkins, both of Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.**

**Filed Dec. 23, 1971, Ser. No. 211,579**

**Int. Cl. G01s** *9/46*

**U.S. Cl. 343—7 ED** **6 Claims**

Disclosed is a vehicle safety system in which a bistatic Doppler system senses objects in the path of a subject vehicle and activates a passenger restraint device, such as an inflatable "air-bag" in response thereto. In another preferred embodiment, the Doppler system is combined with mechanical sensing apparatus to deploy the restraint device during lower speed collisions. In addition, a system is disclosed that deploys a passenger restraint device only in response to simultaneous signals from two Doppler systems.



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### 3,760,416
## RUNWAY TRAFFIC SURVEILLANCE DEVICE

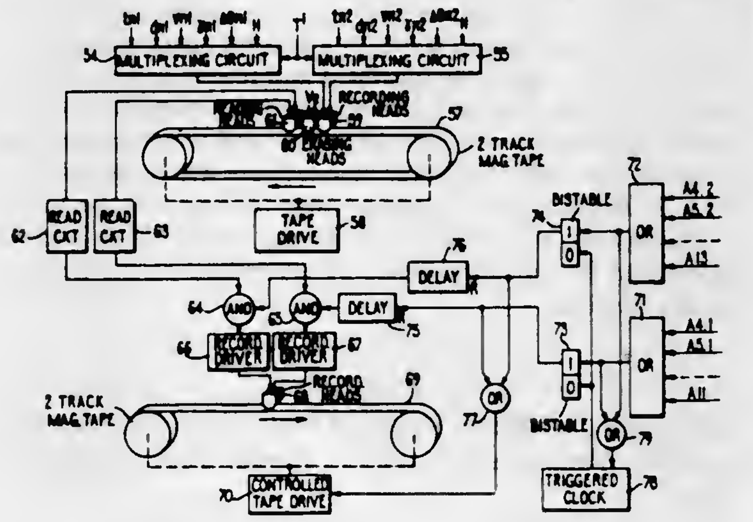
**Georges J. J. Barriere, Le Mesnil-Saint-Denis, and Michel Rene J. Dalbera, Chatillon-Sous-Bagneux, both of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Nov. 24, 1971, Ser. No. 201,748**

**Claims priority, application France, Nov. 30, 1970, 7042944**

**Int. Cl. G01s** *7/04, 9/42*

**U.S. Cl. 343—7 ED** **10 Claims**



A radar surveillance device particularly adapted for airport surface monitoring, including a fixed pointing monopulse radar and tracking circuits for selected targets. Radar derived data such as data on range, azimuth (bearing) angle, speed in analog or digital form are continuously recorded in a transient (repetitive) recording as, for example, in a continuous belt magnetic tape recorder. A continuous comparison of radar derived data with built-in limits produces an alarm signal whenever one or more of said data items reaches its build-in limit. The alarm signal can alert tower personnel but also activates a transfer of recorded data from the transient (first) to more permanent (second) recording means. In one embodiment, the time retention capacity of the first recording means is used to hold data for one such period preceding an alarm signal, the recording being shifted to the second recorder during the presence of an alarm signal. In another embodiment, a read-out from the first recorder is activated by the alarm signal and the data read-out is recorded in the second recorder so that a complete second recorder record is extant including the data in the holding period of the first recorder one predetermined holding period prior to the alarm.

A continuous record for accident investigations and airport traffic monitoring purposes is thus available.

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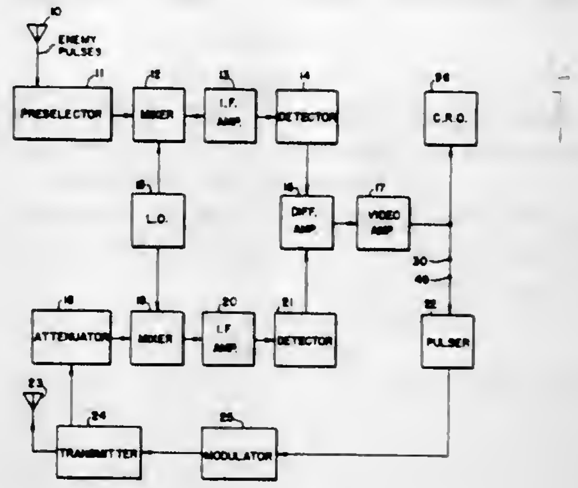
### 3,760,417
## SYNCHRONIZED PULSE JAMMER AND DECOY

**Andrew V. Haeff, Washington, D.C., and Franklin H. Harris, Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 15, 1946, Ser. No. 641,363**

**Int. Cl. H04k** *3/00*

**U.S. Cl. 343—18 E** **5 Claims**



1. A device for rendering enemy radio pulse echo location equipment ineffective comprising radio receiver means for receiving said enemy pulses, interference transmitting means, and delay pulser means connected between said receiving means and said transmitting means and triggered by said received pulses to pulse operate said transmitting means a predetermined time after receipt of an enemy pulse so that the transmitted interference pulse overlaps in time the reception of the next succeeding pulse signal from said pulse echo location equipment, said pulser means including control means responsive to changes which may occur in the repetition rate of said received pulses to automatically readjust said predetermined time.

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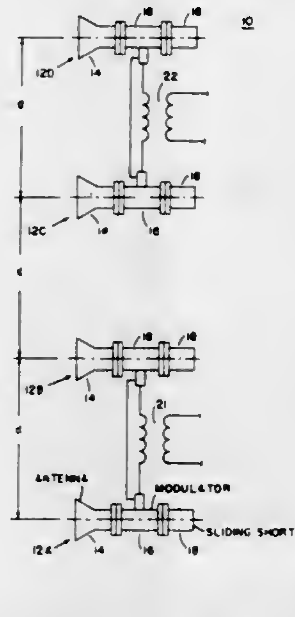
### 3,760,418
## N-ELEMENT GLINT SIMULATOR

**Carlton H. Cash, Hazel Green, and James J. Jernigan, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 17, 1972, Ser. No. 244,687**

**Int. Cl. G01s** *9/02*

**U.S. Cl. 343—18 E** **3 Claims**



A glint simulator is disclosed for receiving and reflecting impinging radar energy to simulate the results of a real target. This allows ready monitoring of a radar response to angle and amplitude scintillation error. A single point source of angle scintillation or glint from the simulator may comprise a microwave antenna, a modulator, a noise modulation source and a modulation phase adjustment. Several simulator point sources may be utilized with a single noise modulator to provide a variable multiple-point target. Simulator antennas receive the radar energy, couple it through respective modulators wherein noise modulation may be introduced to reduce or enhance the energy, and reflect it back to the radar.

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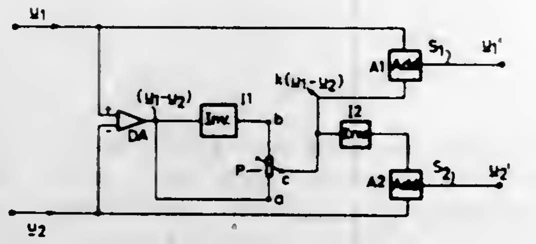
### 3,760,419
## METHOD OF AND ARRANGEMENT FOR VARYING THE RATIO OF CARRIER POWER TO SIDEBAND POWER IN ILS NAVIGATION SYSTEMS

**Werner Poschadel, and Gunter Hofgen, both of Kornwestheim, Germany, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Feb. 3, 1972, Ser. No. 223,071**
**Int. Cl. G01s *1/18***
**U.S. Cl. 343—109** **5 Claims**



A device for simply and inexpensively controlling the ratio of carrier to sideband power is an ILS ground transmitting station or the like. Two RF outputs are supplied, one providing center antenna excitation and the other providing sideband antenna excitation. The transmitter output stages are amplitude modulated by modified modulation signals which are produced by summing the original modulation tones with adjustable fractions of the difference thereof. A simple potentiometer control provides the adjustment, which controls beam pattern sharpness to accommodate different length runways.

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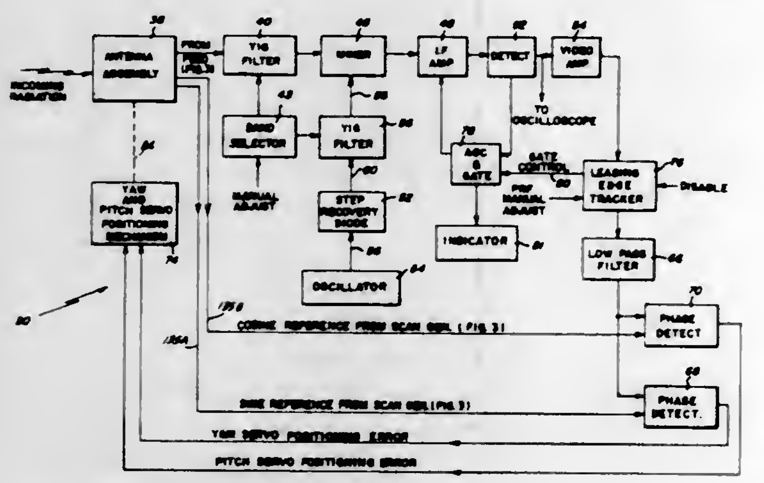
### 3,760,420
## RADIATION SEEKER

**Joseph D. Hadad, Andover; Troy E. Plunk, Bedford, and Donald S. Banks, Wellesley, all of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed Sept. 22, 1969, Ser. No. 862,636**
**Int. Cl. G01s *3/42***
**U.S. Cl. 343—117 R** **10 Claims**



A system for tracking the direction of a source of electromagnetic radiation. The system utilizes an antenna and a receiver responsive to the radiation at both its carrier frequency and at harmonics of the carrier. Tracking at the harmonic frequency can provide increased angular resolution due to the larger ratio of antenna dimension to harmonic wavelength than is provided by tracking at the carrier frequency. The accuracy is similarly increased because of the increased capability for excluding radiation, such as multipath reflected radiation, arriving from other directions.

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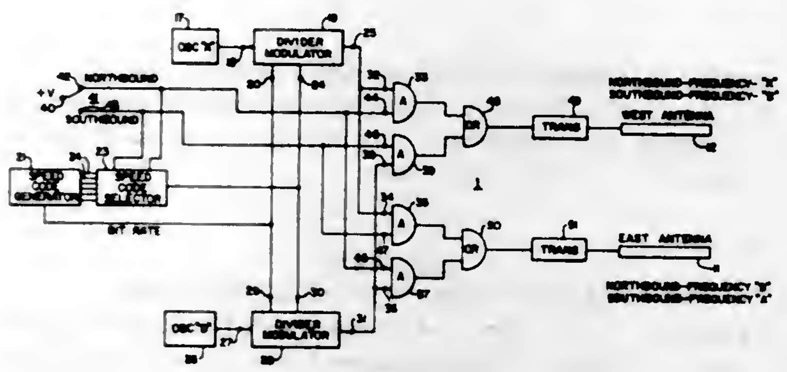
### 3,760,421
## DIRECTION CONTROL IN A VEHICLE CONTROL SYSTEM

**Robert C. Hoyler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Oct. 26, 1972, Ser. No. 301,018**
**Int. Cl. B61l *21/10*; H04b *7/00***
**U.S. Cl. 343—225** **7 Claims**



First and second antennas are situated adjacent first and second running surfaces respectively of a vehicle roadway. The first and second antennas provide first and second signal manifestations respectively if a vehicle is to travel in a first direction along the roadway, and the first and second antennas provide the second and the first signal manisfestations respectively if the vehicle is to travel in a second direction along the roadway. The vehicle carries third and fourth antennas which couple with the first and second antennas respectively when the vehicle faces in the first direction, and which couple with the second and first antennas respectively when the vehicle is facing in the second direction. Control logic on the vehicle determines the direction in which the vehicle is to travel in response to the signal manisfestations sensed by the third and fourth antennas.

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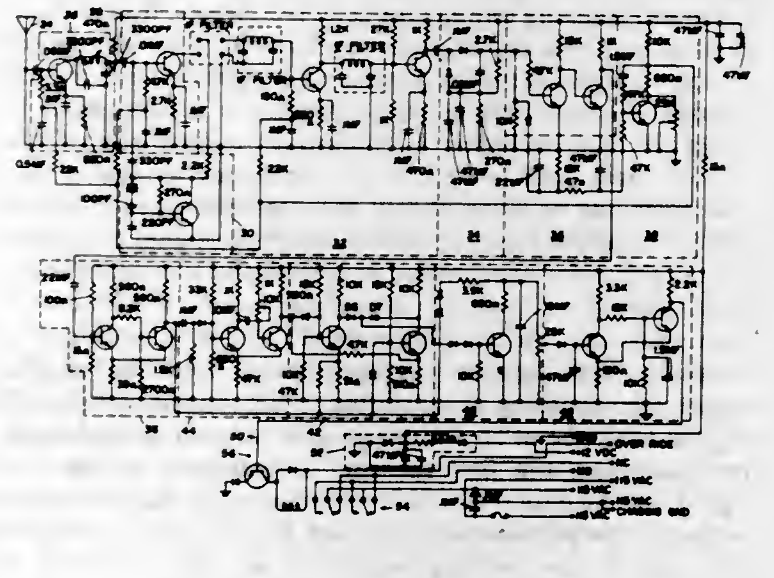
### 3,760,422
## REMOTE CONTROL SYSTEM FOR LOCKING DEVICE

**Russell D. Zimmer, and Marvin C. Kerber, both of Colchester, Ill.**

**Filed July 2, 1971, Ser. No. 159,105**
**Int. Cl. H04b *7/00***
**U.S. Cl. 343—225** **1 Claim**



A remote control system for automatically controlling actuation of a device, such as a lock, in response to the proximity of the operator to the device. A portable transmitter providing a coded output is carried by the operator and a receiver is located at the site of the device to be actuated. By utilizing the near radiation field, actuation of the device will occur only when the operator is within a predetermined distance from the receiver.

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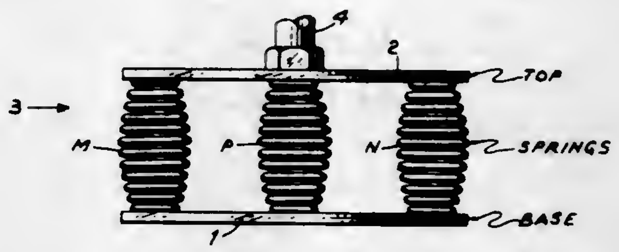
### 3,760,423
## MOBILE ANTENNA MOUNTING ASSEMBLY

**John A. Kuecken, Pittsford, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed May 19, 1972, Ser. No. 254,976**
**Int. Cl. H01q *1/32***
**U.S. Cl. 343—715** **8 Claims**

In this self-erecting antenna mounting assembly for mobile applications, the antenna mount/mount plate is attached to a base, which is fixed to or part of a vehicle, solely by a spring arrangement which provides that the antenna (typically a whip) may temporarily deflect aft beneath tree limbs, etc. without damage, while providing a far greater bias in the forward direction for preventing "whipping" from, for example, panic stops, and yet even greater bias for preventing movement to either side resulting from steep, fast turns or skids. The antenna mount is coupled to the base portion by way of three parallel springs arranged end-on threbetween at the apices of an isosceles triangle. The arrangement is such as to provide for a flexing of the two springs defining the base of the triangle and the stretching of the third, positioned forward of the other two, for an aft deflection, while a forward deflection would require the two springs to be stretched while the third is flexed, in giving rise to greater bias. The greatest bias is provided for sideways deflections, by maintaining a broad separation between the two similar acting springs defining the base of the triangle. Increasing the separation between the latter mentioned springs will further increase the spring bias against sideways deflection, while increasing the separation between the third spring and the base of the triangle as defined by the other two springs correspondingly increases the spring bias against forward deflection.

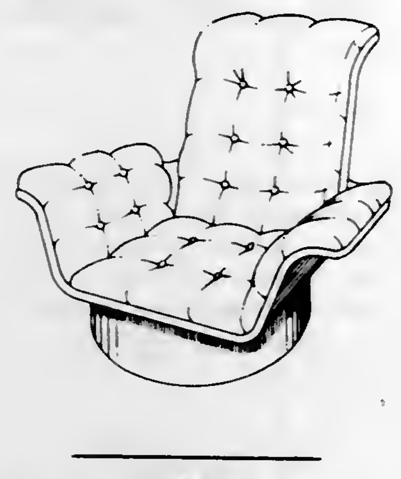


# DESIGNS

SEPTEMBER 18, 1973

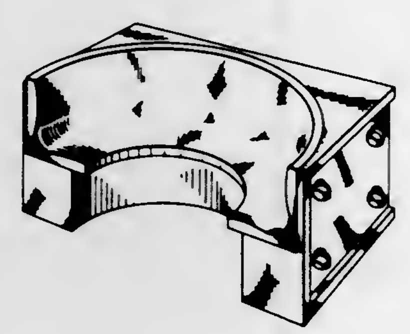
### 228,371
### CHAIR

Don Ray Gill, Sturgis, Mich., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 26, 1972, Ser. No. 221,126
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26



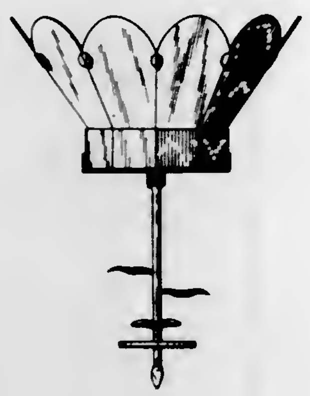
### 228,372
### MOBILE BOOTH

Richard C. Bue and Kermit H. Wilson, Minneapolis, Minn.; said Bue assignor to Sico Incorporated, Minneapolis, Minn.
Filed Jan. 31, 1972, Ser. No. 222,453
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—59



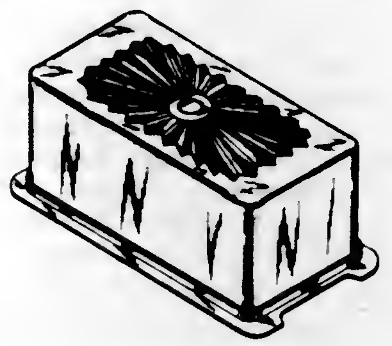
### 228,373
### SOLAR STOVE

Merton L. Clevett, 4685 S. Ogden St., Englewood, Colo. 80110
Filed July 11, 1972, Ser. No. 270,588
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—109



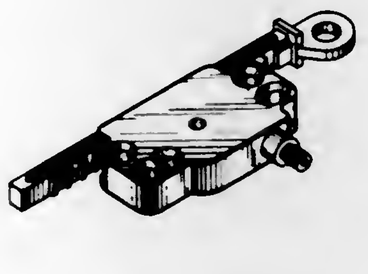
### 228,374
### CONTAINER CLOSURE OR THE LIKE

James B. Swett, 8 Devonshire Drive, Barrington, R.I. 02806, and Jack V. Croyle, 159 Spring St., Woonsocket, R.I. 02895
Filed Feb. 3, 1970, Ser. No. 21,253
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



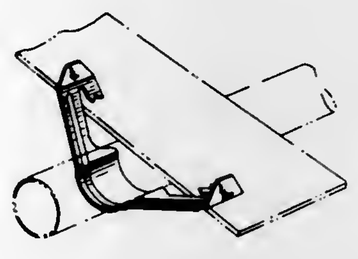
### 228,375
### WINDOW OPERATOR OR SIMILAR ARTICLE

Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc.
Filed May 4, 1972, Ser. No. 250,473
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—153



### 228,376
### CONDUIT CLIP

Raymond L. Martz, Palatine, Ill., assignor to Minerallac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,929
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



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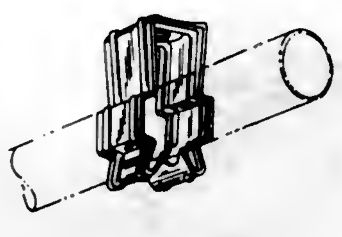
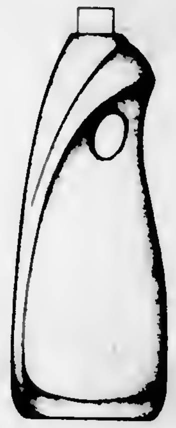
### 228,377
### CONDUIT CLIP

Raymond L. Martz, Palatine, Ill., assignor to Minerallac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,930
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



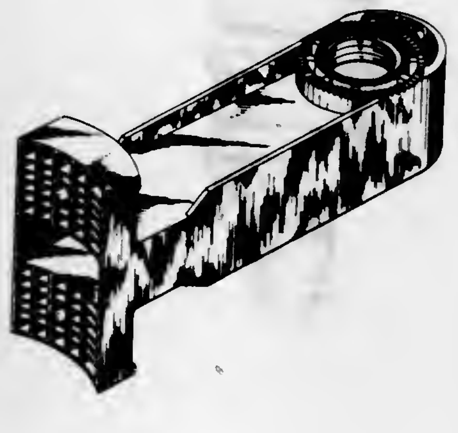
### 228,378
### BOTTLE

Alfred D. Sterges, Los Angeles, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Mar. 27, 1972, Ser. No. 238,727
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



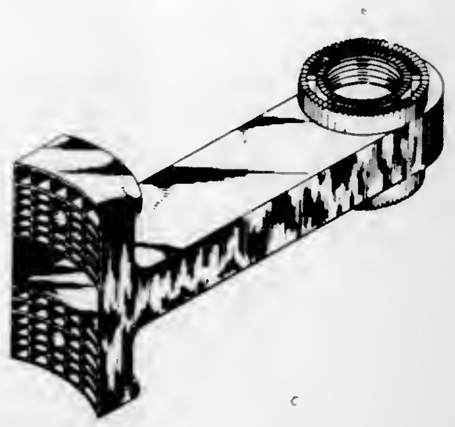
### 228,379
### BAND RETAINED STAND-OFF MOUNTING

Paul J. Gorishek, East Moline, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,245
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



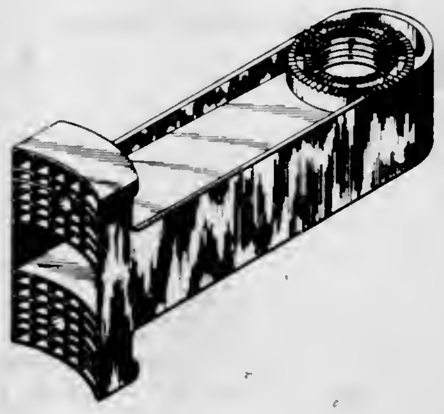
### 228,380
### BAND RETAINED STAND-OFF MOUNTING

Paul J. Gorishek, East Moline, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,280
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



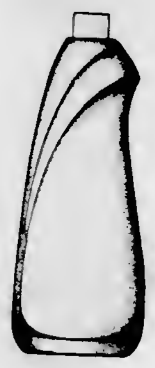
### 228,381
### BAND RETAINED STAND-OFF MOUNTING

Robert R. Snyder, Coal Valley, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,282
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



### 228,382
### BOTTLE

Alfred D. Sterges, Los Angeles, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Mar. 27, 1972, Ser. No. 238,726
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



**228,383**

**ADJUSTABLE SPRAY RATE ACTUATOR CAP FOR A PRESSURIZED CONTAINER**

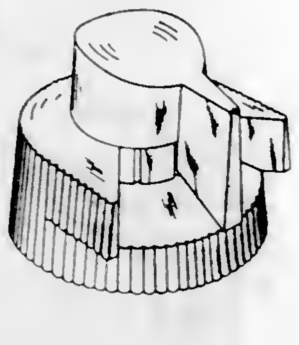
**Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Gillette Park, Mass.**

**Filed May 10, 1972, Ser. No. 252,157**

**Term of patent 14 years**

**Int. Cl. D9—*99***

**U.S. Cl. D9—258**



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**228,384**

**FISHING LURE**

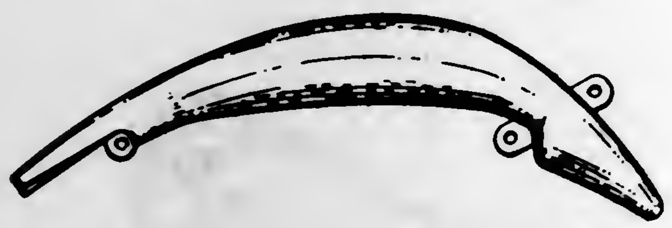
**Jack E. Davis, Crescent City, Fla., assignor to Victor Comptometer Corporation, Chicago, Ill.**

**Filed May 1, 1972, Ser. No. 249,482**

**Term of patent 14 years**

**Int. Cl. D22—*05***

**U.S. Cl. D22—29**



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**228,385**

**PLUMBING FITTING**

**Kenneth Alan Ogilvie, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England**

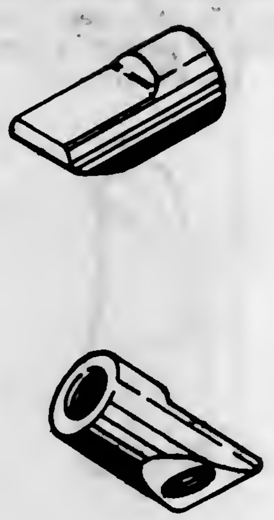
**Filed Aug. 26, 1971, Ser. No. 175,422**

**Claims priority, application Great Britain Mar. 20, 1971**

**Term of patent 14 years**

**Int. Cl. D23—*01***

**U.S. Cl. D23—40**



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**228,386**

**OIL TESTER**

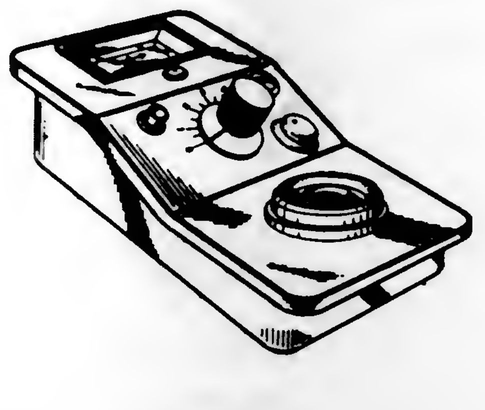
**Donald S. Stoakes and Kenneth D. Brock, Minneapolis, Minn., assignors to Thexton Manufacturing Company, St. Louis Park, Minn.**

**Filed Oct. 6, 1971, Ser. No. 187,213**

**Term of patent 14 years**

**Int. Cl. D10—*05***

**U.S. Cl. D26—1 Q**



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**228,387**

**DESK-TOP CALCULATOR**

**Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy**

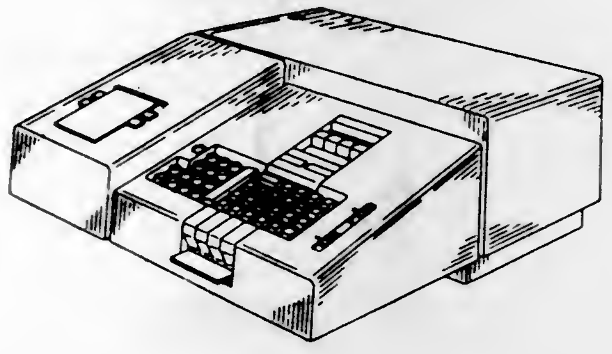
**Filed Oct. 14, 1971, Ser. No. 189,483**

**Claims priority, application Italy Apr. 21, 1971**

**Term of patent 14 years**

**Int. Cl. D14—*02***

**U.S. Cl. D26—5 C**



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**228,388**

**ELECTRIC LIGHT BULB**

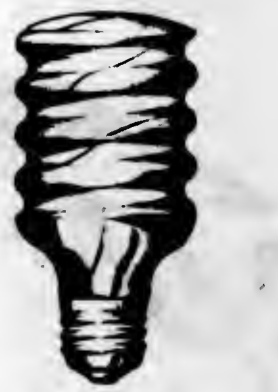
**Jack N. McCarthy, Meadowood Road, Tolland, Conn. 06084**

**Filed Oct. 4, 1971, Ser. No. 186,574**

**Term of patent 14 years**

**Int. Cl. D26—*04***

**U.S. Cl. D26—8**



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**228,389**

**UNIDIRECTIONAL SPEAKER**

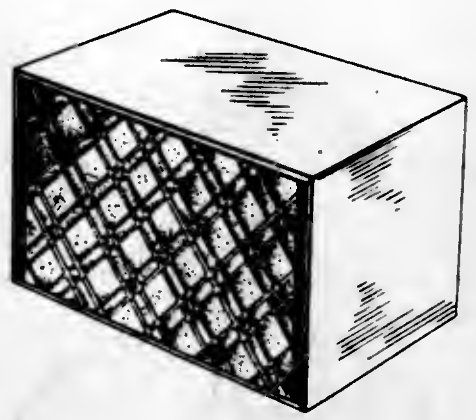
**Wilfried Schneider, 59 Perivale Crescent, Scarborough, Ontario, Canada**

**Filed Dec. 23, 1971, Ser. No. 211,850**

**Term of patent 7 years**

**Int. Cl. D14—*03***

**U.S. Cl. D26—14**



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**228,390**

**AMPLIFIER**

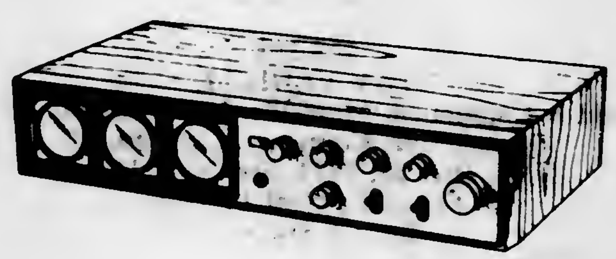
**Kikuo Ohta and Shuhei Taguchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Jan. 7, 1972, Ser. No. 216,329**

**Term of patent 14 years**

**Int. Cl. D14—*04***

**U.S. Cl. D26—14 L**



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**228,391**

**FISHING LURE**

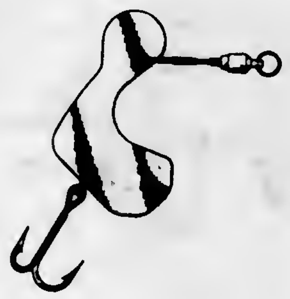
**John B. Barritt, Jr., 4349 NW. 13th, Oklahoma City, Okla. 73107**

**Filed July 12, 1972, Ser. No. 270,979**

**Term of patent 14 years**

**Int. Cl. D22—*05***

**U.S. Cl. D22—29**



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**228,392**

**FISH LURE**

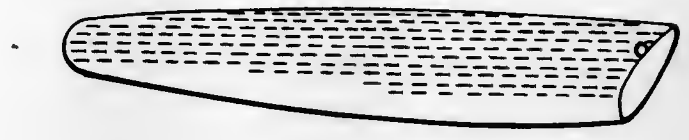
**James D. Maxwell, 11001 SE. 19th, Vancouver, Wash. 98664**

**Filed Sept. 5, 1972, Ser. No. 286,018**

**Term of patent 14 years**

**Int. Cl. D22—*05***

**U.S. Cl. D22—29**



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**228,393**

**SUSPENSION POST TRUSS**

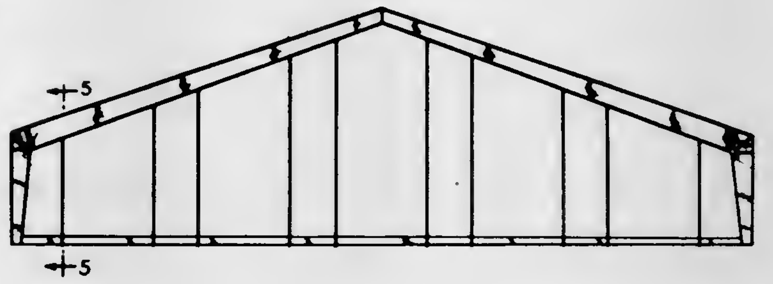
**George E. France, Rte. 2, Box 60, Oswego, Ill. 60542**

**Filed May 17, 1971, Ser. No. 144,375**

**Term of patent 14 years**

**Int. Cl. D25—*02;* D30—*02***

**U.S. Cl. D30—2**



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**228,394**

**GOLF BALL**

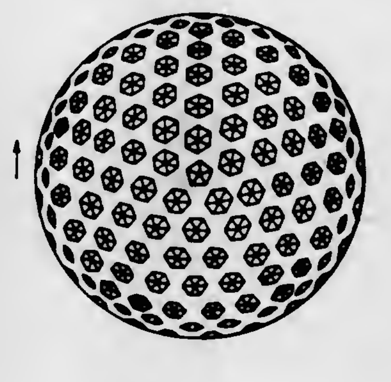
**Frank S. Martin, Cranston, and Thaddeus A. Pietraszek, Barrington, R.I., assignors to Uniroyal, Inc., New York, N.Y.**

**Filed June 25, 1971, Ser. No. 157,077**

**Term of patent 14 years**

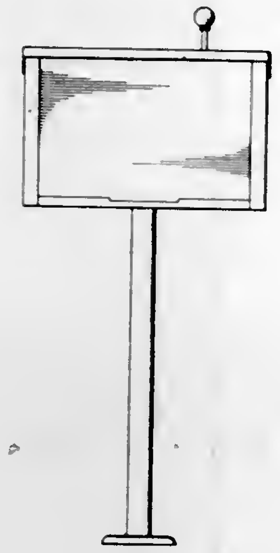
**Int. Cl. D21—*02***

**U.S. Cl. D34—5 QQ**



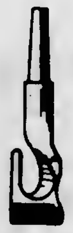
### 228,395
### GOLF BALL AND CLUB WASH STAND

Allyn G. Warren, 10902 Marian Drive, Garden Grove, Calif. 92640, and Douglas S. Warren, 27151 Mission Hills Drive, San Juan Capistrano, Calif. 92675
Filed July 9, 1971, Ser. No. 161,420
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ



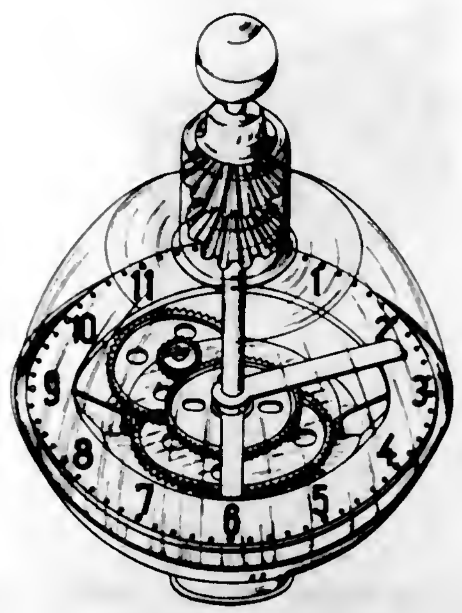
### 228,396
### GOLF PUTTER HEAD

Nicholas A. Cruger, Altamonte Springs, Fla. (205 W. Fairbanks Ave., Winter Park, Orange County, Fla. 32789)
Filed July 19, 1971, Ser. No. 164,185
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



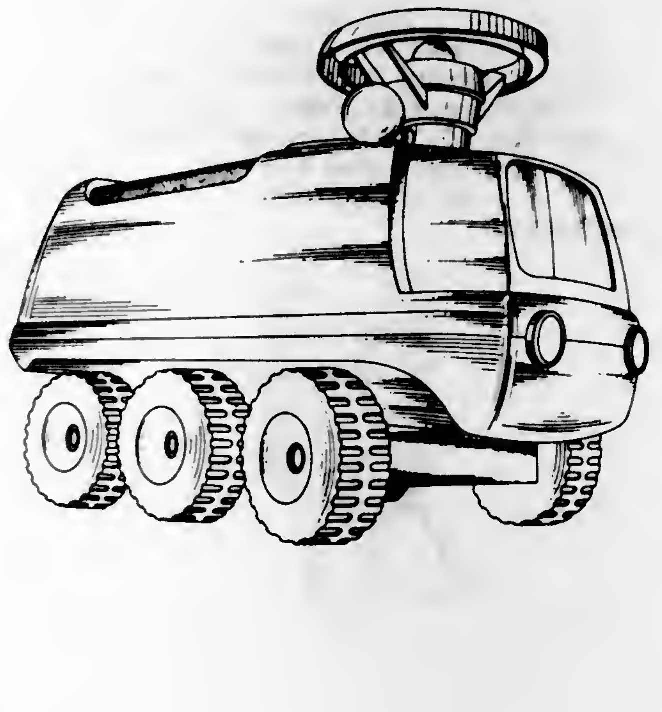
### 228,397
### TOY SPINNING TOP

Peter Balleis, 55 Hermann-Lons-Strasse, Zirndorf, near Nuremberg, Germany
Filed Sept. 24, 1971, Ser. No. 183,725
Claims priority, application Germany July 28, 1971
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 CC



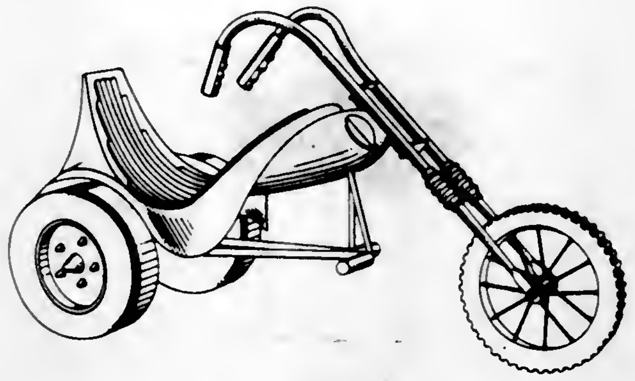
### 228,398
### TOY VEHICLE

Ronald J. Campenell, Martville, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 23, 1971, Ser. No. 211,845
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



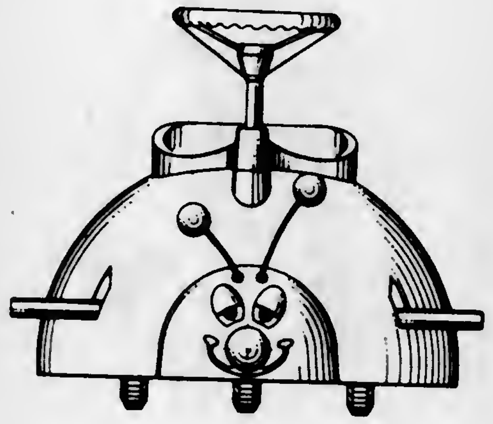
### 228,399
### THREE WHEEL JUVENILE VEHICLE

David K. Camfield, Olney, Ill., assignor to AMF Incorporated
Filed Mar. 6, 1972, Ser. No. 232,350
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AL



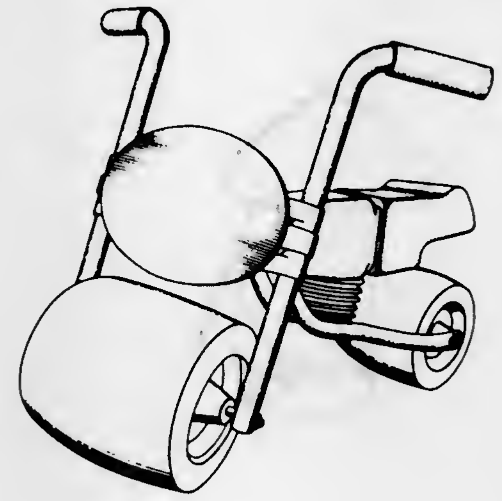
### 228,400
### JUVENILE RIDING VEHICLE

Stanley Martin Novak, Jr., Olney, Ill., assignor to AMF Incorporated
Filed Feb. 25, 1972, Ser. No. 229,617
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



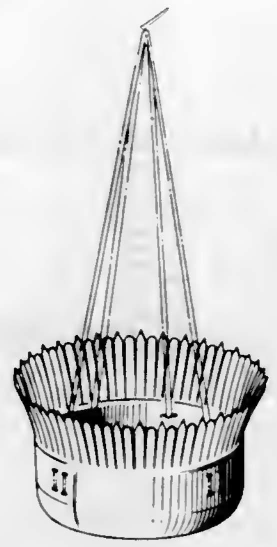
### 228,401
### CHILD'S RIDING VEHICLE

Cecil F. Adickes, Playa Del Rey, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Apr. 21, 1972, Ser. No. 246,504
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



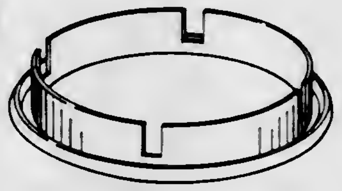
### 228,402
### FLOWER POT

Albert Meszaros, 81 Sleepy Hollow Road, North Tarrytown, N.Y. 10591
Filed Aug. 16, 1971, Ser. No. 172,365
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



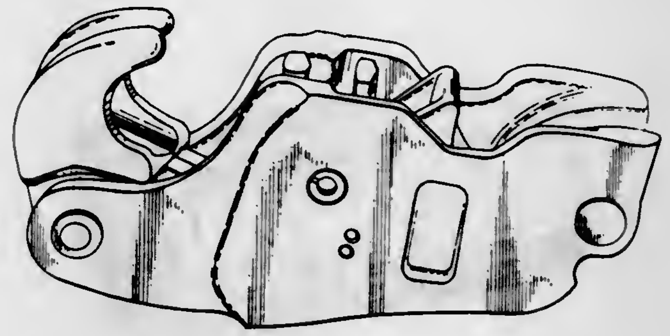
### 228,403
### SAFETY SHIELD FOR MOWERS AND OTHER GROUND TRAVERSING IMPLEMENTS AND THE LIKE

Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, South Minneapolis, Minn.
Filed Apr. 21, 1972, Ser. No. 246,501
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 A

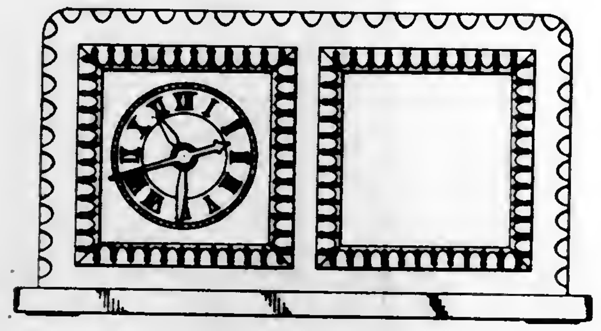


### 228,404
### QUICK RELEASE HOOK

Ian D. Smith, Gardeners Close Kidderminster, England, assignor to Parsons Chain Company Limited, Worcestershire, England
Filed June 19, 1972, Ser. No. 264,306
Claims priority, application Great Britain Dec. 21, 1971
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1 B



**228,405**
**COMBINED CLOCK AND PICTURE STAND**
**Leslie N. Pollard, 2050 S. Garnsey,**
**Santa Ana, Calif. 92707**
**Filed Mar. 30, 1972, Ser. No. 239,856**
**Term of patent 14 years**
**Int. Cl. D10—*01***
**U.S. Cl. D42—7 H**



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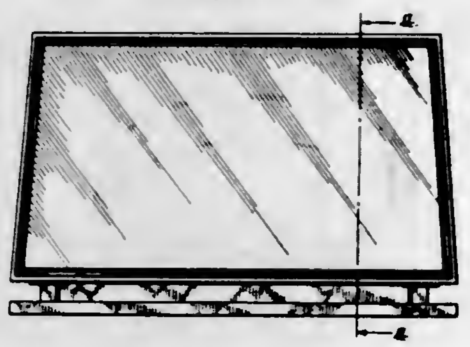
**228,406**
**CLOCK HOUSING**
**Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.**
**Filed Dec. 29, 1971, Ser. No. 213,797**
**Term of patent 14 years**
**Int. Cl. D10—*01***
**U.S. Cl. D42—7 R**



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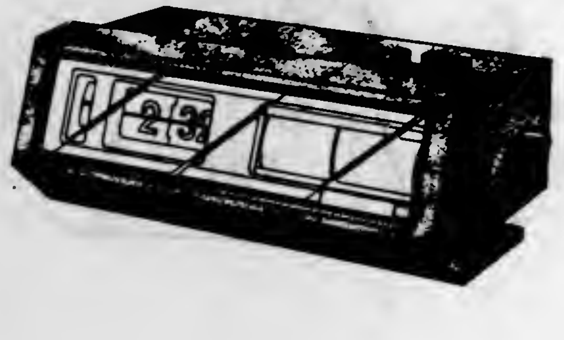
**228,407**
**DIGITAL CLOCK RADIO**
**Kikuo Ohta, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**
**Filed Aug. 2, 1972, Ser. No. 277,196**
**Claims priority, application Japan Feb. 4, 1972**
**Term of patent 14 years**
**Int. Cl. D10—*01***
**U.S. Cl. D42—7 H**



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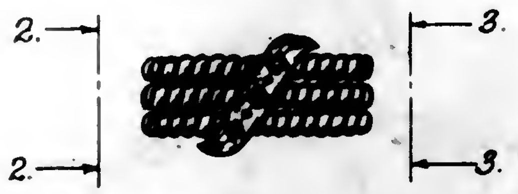
**228,408**
**FINGER RING**
**Bernard I. Mechanic, 2425 Oakton St.,**
**Evanston, Ill. 60202**
**Filed Nov. 8, 1971, Ser. No. 196,861**
**Term of patent 14 years**
**Int. Cl. D11—*01***
**U.S. Cl. D45—10 A**



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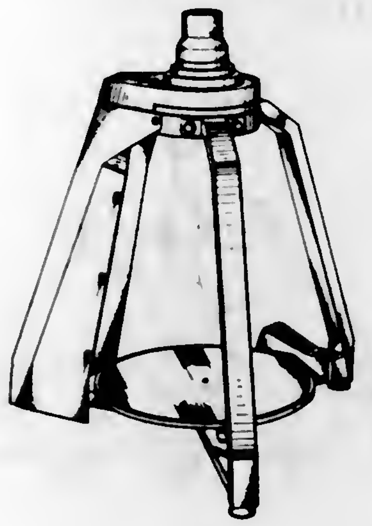
**228,409**
**SUPPORTING TRIPOD FOR A HOSIERY LINKING MACHINE**
**Cesare L. Conti, 18 via Varese, 20121 Milan, Italy**
**Filed Nov. 13, 1970, Ser. No. 25,971**
**Claims priority, application Italy May 18, 1970**
**Term of patent 14 years**
**Int. Cl. D15—*08***
**U.S. Cl. D47—5**



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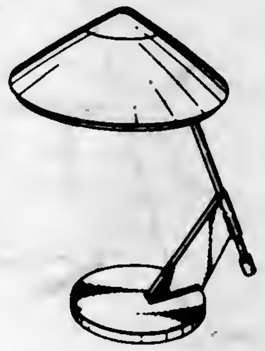
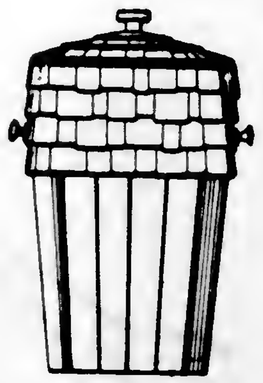
**228,410**
**DESK LAMP**
**Shoji Ishikawa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**
**Filed July 12, 1972, Ser. No. 271,327**
**Term of patent 14 years**
**Int. Cl. D26—*05***
**U.S. Cl. D48—20 F**



**228,411**
**WASTE RECEPTACLE**
**Lester Miller, St. Louis County, Mo., assignor to Contico International, Inc., St. Louis, Mo.**
**Filed Nov. 8, 1971, Ser. No. 196,860**
**Term of patent 14 years**
**Int. Cl. D7—*07***
**U.S. Cl. D49—35**



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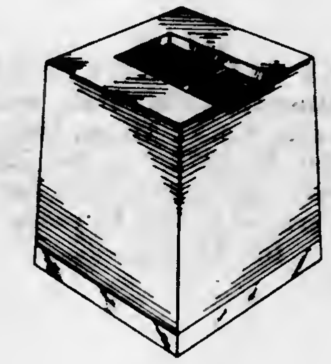
**228,412**
**STAMP DISPENSER**
**William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.**
**Filed May 19, 1972, Ser. No. 255,314**
**Term of patent 14 years**
**Int. Cl. D19—*02***
**U.S. Cl. D52—2 C**



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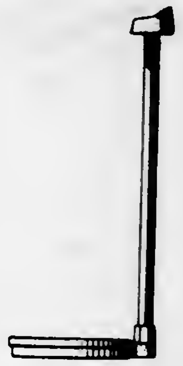
**228,413**
**WEIGHING SCALE**
**William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, Ill., assignors to Continental Scale Corporation, Chicago, Ill.**
**Filed Mar. 22, 1972, Ser. No. 237,233**
**Term of patent 14 years**
**Int. Cl. D10—*04***
**U.S. Cl. D52—10 R**



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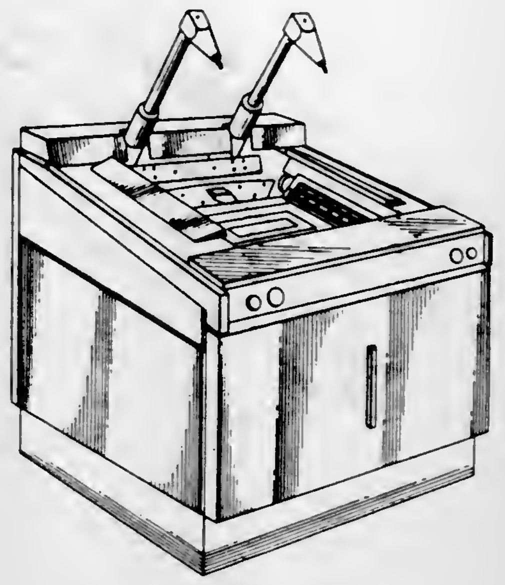
**228,414**
**PROCESSING MACHINE FOR PRINTING PLATE REGISTRATION**
**Hugh T. Greenlee, Gates Mills, Ohio, assignor to W. R. Grace & Co., New York, N.Y.**
**Filed Nov. 3, 1971, Ser. No. 195,535**
**Term of patent 14 years**
**Int. Cl. D15—*99***
**U.S. Cl. D55—1 R**



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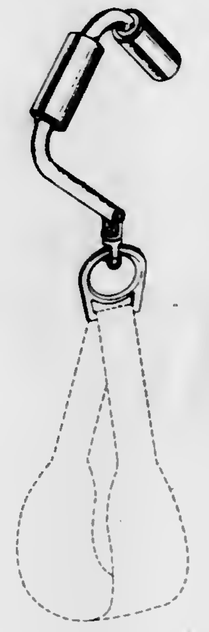
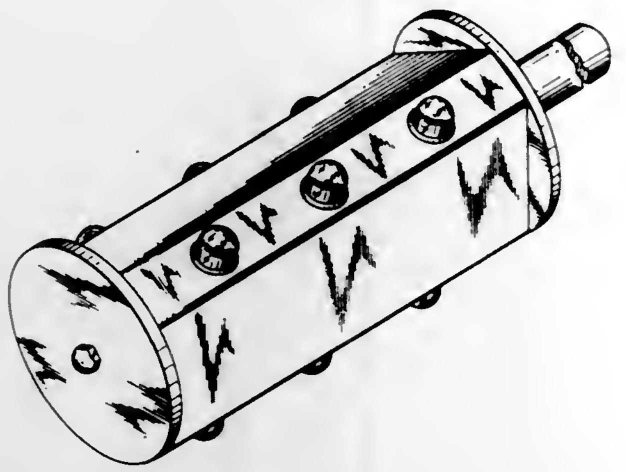
**228,415**
**TRAVERSING HANGER FOR PERSONNEL SLING**
**Frederick S. Blackall, 4 Vernon St.,**
**Hartford, Conn. 06106**
**Filed May 20, 1971, Ser. No. 145,600**
**Term of patent 14 years**
**Int. Cl. D12—*99***
**U.S. Cl. D71—1 S**



**228,416**

## LANTERN FOR INDICATING MACHINERY STATUS

Roland P. Heinrichs, Lindenhurst, N.Y., assignor to
Uniwave, Inc., Farmingdale, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,566
Term of patent 14 years
Int. Cl. D29—*99*; D26—*03*
U.S. Cl. D72—1 E



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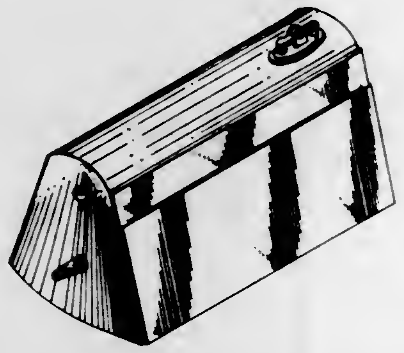
**228,417**

## MULTI-PURPOSE DESK ACCESSORY

Walter Riley, 7955 Riggs Road (No. 9),
Adelphi, Md. 20783
Filed July 23, 1971, Ser. No. 165,864
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



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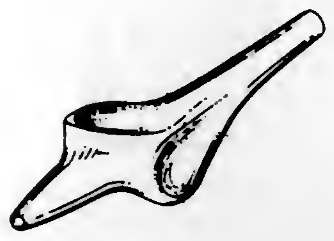
**228,418**

## HOLDER FOR A WRITING INSTRUMENT OR SIMILAR ARTICLE

John E. Locke, Las Vegas, Nev., assignor to Easyriter, Inc. (also known as Easy Graphic Systems, Inc.), Clinton, Ohio
Filed Apr. 1, 1971, Ser. No. 130,564
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B



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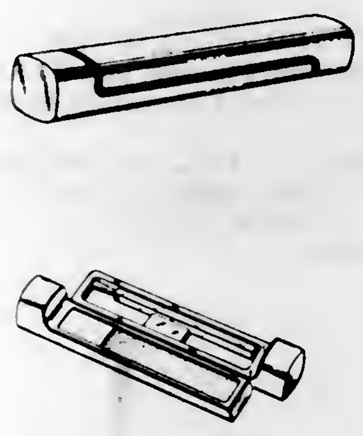
**228,419**

## COMPACT EYE-LINER CONTAINER

Franco Bettonica, Milan, Italy, assignor to
Perlier S.p.A., Milan, Italy
Filed May 30, 1972, Ser. No. 258,197
Claims priority, application Italy Jan. 17, 1972
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D86—10 N



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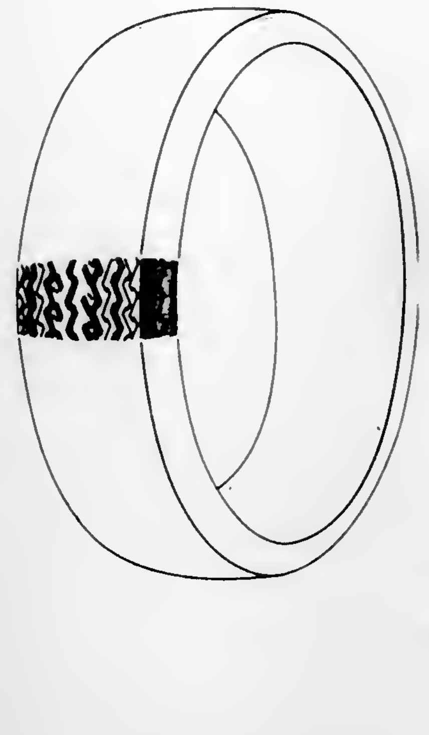
**228,420**

## PNEUMATIC TIRE TREAD AND BUTTRESS

Clarence H. Vizina, Jr., Ferndale, Mich., assignor to
Uniroyal, Inc., New York, N.Y.
Filed Feb. 23, 1972, Ser. No. 228,803
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



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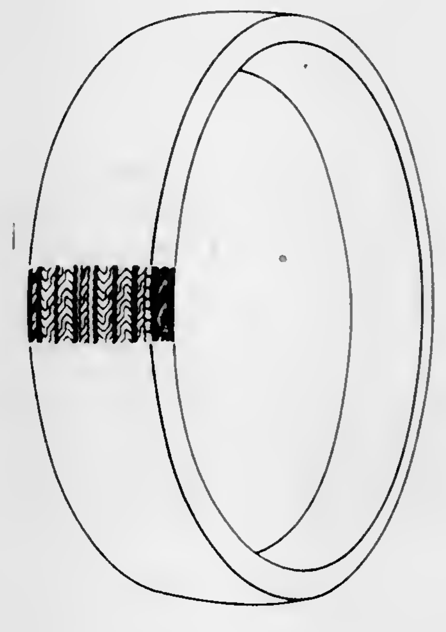
**228,421**

## PNEUMATIC TIRE TREAD AND BUTTRESS

Arthur C. Blankenship, Detroit, Mich., assignor to
Uniroyal, Inc., New York, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,608
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



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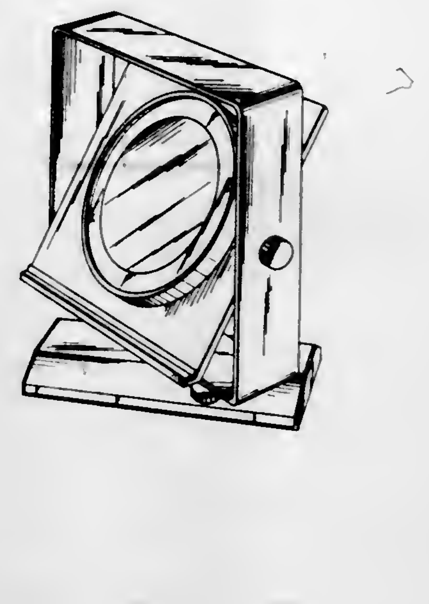
**228,422**

## ILLUMINATING COSMETIC MIRROR

Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunication Industries, Incorporated, Farmingdale, N.Y.
Filed Dec. 18, 1970, Ser. No. 26,566
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 H



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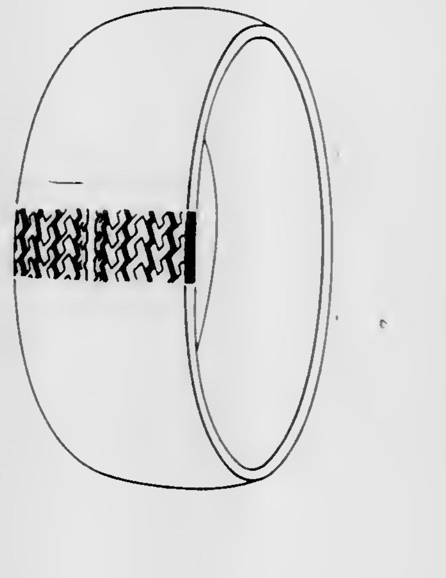
**228,423**

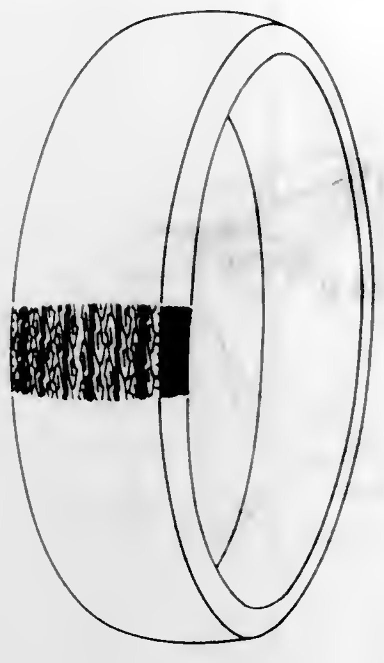
## PNEUMATIC TIRE TREAD AND BUTTRESS

Arthur C. Blankenship, Detroit, Mich., assignor to
Uniroyal, Inc., New York, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,567
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



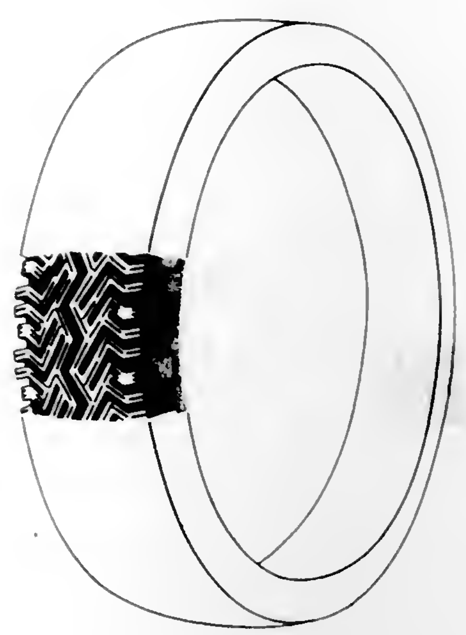
### 228,424
### PNEUMATIC TIRE TREAD AND BUTTRESS

**Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.**
**Filed Jan. 20, 1972, Ser. No. 219,605**
**Term of patent 14 years**
**Int. Cl. D12—*15***
**U.S. Cl. D90—20 R**



### 228,425
### PNEUMATIC TIRE TREAD AND BUTTRESS

**Orlin J. Melstrand, Detroit, and James F. Newman, St. Clair Shores, Mich., assignors to Uniroyal, Inc., New York, N.Y.**
**Filed July 12, 1972, Ser. No. 270,886**
**Term of patent 14 years**
**Int. Cl. D12—*15***
**U.S. Cl. D90—20 R**



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# LIST OF PATENTEES
## TO WHOM
## PATENTS WERE ISSUED ON THE 18TH DAY OF SEPTEMBER, 1973

**NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).**

- Aaron, Stuart W.; and Lemmers, Johannes W. F. M., to Shell Oil Company. Apparatus for contacting liquid and solid particles. 3,759,669, Cl. 23-288.00e.
- A.B. Electronics Components Limited: *See—*
  - Bridle, Kenneth Frederick, 3,760,334.
- AB Krima Maskinfabrik: *See—*
  - Lundmark, Lars-Erik; and Larsson, Evald, 3,759,304.
- Abate, Galileo, to Fiat Societa per Azioni. Mounting arrangement for an angular speed or position sensing device for a vehicle wheel. 3,760,210, Cl. 310-168.000.
- Abate-Daga, Giancarlo; and Amato, Ignazio, to Fait Societa per Azioni. Sintered nuclear fuel containing molybdenum coated gadolinium oxide microspheres. 3,659,786, Cl. 176-69.000.
- Abe, Tatuo: *See—*
  - Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.
- Abe, Yasuo: *See—*
  - Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, 3,759,911.
- Abodagga, Faisal: *See—*
  - Cherubim, Martin; and Abodagga, Faisal, 3,759,925.
- Abraham, Benjamin Ichak: *See—*
  - Landauer, Le Roy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,759,810.
- Abraham, Dennis G.; Dohanich, George J.; Doolittle, Frederick W.; and Mills, Stephen H., to International Business Machines Corporation. Stepping motor structure. 3,760,207, Cl. 310-49.000.
- Abramopoulos, John. Combined land and air vehicle. 3,759,629, Cl. 416-20.000.
- Acla, Inc.: *See—*
  - Levy, George D., 3,760,177.
- Adachi, Kiyoshi: *See—*
  - Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.
- Adams, Fred C. Knee aligning instrument. 3,759,251, Cl. 128-69.000.
- Adams, Gary A.: *See—*
  - Brown, Gaylord W.; and Adams, Gary A., 3,759,770.
- Adams, Jim Mills; and Grimmell, William Charles, to Hoffmann-La Roche Inc. Random flow counter. 3,760,166, Cl. 235-92.0pk.
- Adams, Phillip: *See—*
  - Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,759,995.
- Adank, Johannes Antonius Marie, to Stork Amsterdam A.V. Device for cutting into slabs a block of not yet entirely solidified cellular concrete or another plastic material. 3,759,366, Cl. 198-33.0ad.
- Addington, Conley R., Jr. Indirectly lighted panels for walls and ceilings. 3,760,179, Cl. 240-106.00r.
- Addressograph-Multigraph Corporation: *See—*
  - Conklin, Paul W., 3,759,172.
- Advanced Memory Systems: *See—*
  - Lutz, Rober Clare; and Bernacchi, Jerald R., 3,760,194.
- Aeronca, Inc.: *See—*
  - Logsdon, Hillard Glenn; and Werder, Ernest August, 3,759,098.
- Aerospace Research, Inc.: *See—*
  - Galvin, Aaron A.; and Shapiro, L. Dennis, 3,760,400.
- Agarwal, Jadgish C.: *See—*
  - Whitten, Charles M.; Mansfield, Vaughn; Petrovic, Louis J.; and Agarwal, Jadgish C., 3,759,673.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Bestenreiner, Friedrich; and Deml, Reinhold, 3,759,155.
  - Wagner, Karl, 3,759,150.
- Agfa-Gevaert N.V.: *See—*
  - Florens, Raymond Leopold; and Ghys, Theofiel Hubert, 3,759,713.
- Agridustrial Electronics, Inc.: *See—*
  - Williams, D. Michael, 3,760,267.
- Aguirre, Jose-Maria Sistiaga; Diaz, Marcelino Torralba; Arribas, Juan-Jose Regidor; and Caride, Miguel Abalie, to Patronato de Investigacion Cientifica Y Tecnica "Juan de la Cierva" Del Consejo Superior de Investigaciones. Process for increasing the mechnical resistance of elements manufactured in alloys of lead and antimony. 3,759,752, Cl. 148-3.000.
- Ahr, Robert L.: *See—*
  - Rhodes, Philip H.; and Ahr, Robert L., 3,759,856.
- Aichenegg, Paul C.: *See—*
  - Emerson, Carl D.; and Aichenegg, Paul C., 3,760,002.
- Aimo, Karl H.; and Baker, Philip G., to Polaroid Corporation. Lens shade. 3,759,153, Cl. 95-11.00r.
- Air-Frol Systems, Inc.: *See—*
  - Edes, Ferenc; and Gianatasio, Henry L., 3,759,457.
- Airco, Inc.: *See—*
  - Geiger, Lewis J., Jr.; and Estes, James W., 3,759,699.
  - Leeds, Morton W.; and Saur, Elex J., 3,760,086.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Kobashi, Uichiro, 3,759,288.
- Akatov, Alexandr Vasilievich: *See—*
  - Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.
- Akesson, Stellan: *See—*
  - Larkfeldt, Birger; Akesson, Stellan; and Josefson, Ingmar, 3,759,157.
- Akke, Vambola, to Reed-Lane, Inc. Packaging machine for packaging uniform articles such as pharmaceutical tablets. 3,759,011, Cl. 53-184.000.
- Aktiebolaget Bahso Ventilation: *See—*
  - Carlsson, Hilding Ake Gerry, 3,759,657.
- Aktiebolaget Gustavsbergs Fabriker: *See—*
  - Juhlin, Sven-Erik, 3,759,395.
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  - Larkfeldt, Birger; Akesson, Stellan; and Josefson, Ingmar, 3,759,157.
  - Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, 3,759,434.
- Aktiengesellschaft Brown, Boveri & Cie: *See—*
  - Hartmann, Hans, 3,760,315.
- Al, Jan J., to Shell Oil Company. Method for monitoring the forces in the mooring cable of a single-point mooring system. 3,759,094, Cl. 73-143.000.
- Albany International Corporation: *See—*
  - Draper, Ralph M., 3,759,461.
- Alburn, Harvey L.: *See—*
  - Grant, Norman H.; and Alburn, Harvey L., 3,759,950.
- Alexandre, Jacques. Window with rotating movable frame. 3,758,991, Cl. 49-257.000.
- Alfrey, Turner, Jr.: *See—*
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  - Boggs, Beryl Aaron, 3,759,010.
  - Formaini, Robert L.; and Kim, Young D., 3,759,853.
  - Gregg, Stanley J., 3,759,674.
  - Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., 3,759,883.
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  - Stich, Frederick A., 3,760,392.
- Allis-Chalmers Manufacturing Company: *See—*
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- Almaula, Bipin C.: *See—*
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- Alps Electric Co., Ltd.: *See—*
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- Alps Motorola, Inc.: *See—*
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- Alsop, Arthur Graham, to Strachan & Henshaw Limited. Dampening apparatus with rotor for printing tray. 3,759,175, Cl. 101-148.000.
- Amada Company Limited: *See—*
  - Ikeda, Hidekatsu, 3,759,144.
- Amato, Ignazio: *See—*
  - Abate-Daga, Giancarlo; and Amato, Ignazio, 3,659,786.
- Ambassador International, Inc.: *See—*
  - McIntyre, Donald E., 3,759,305.
- Amberg, Ralph G., to Owens-Illinois, Inc. Composite container. 3,759,437, Cl. 229-1.50b.
- American Air Filter Company, Inc.: *See—*
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  - Tate, John E.; and Schull, Howard O., 3,759,393.
  - Thomas, John, 3,759,486.
  - York, Jimmie D., Jr., 3,759,287.
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Anderson, William J., to United States of America, National Aeronautics and Space Administration. High speed hybrid bearing comprising a fluid bearing and a rolling bearing connected in series. 3,759,588, Cl. 308-35.000.
Andersson, Lars Marten, to Molnlycke AB. Method and apparatus for obtaining transverse mutual joining of superimposed continuous webs. 3,759,772, Cl. 156-270.000.
Andersson, Sven Gerhard: *See—*
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Anner, Georg; and Kalvoda, Jaroslav, to Ciba-Geigy Corporation. 6 Alpha-methyl-19-nor-progesterone and a process of its manufacture. 3,759,962, Cl. 260-397.400.
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Arbuckle, Kenneth Harold; and Lazarus, David Mendel, to Berger, Jenson & Nicholson Limited. Polyester resin compositions. 3,760,033, Cl. 260-872.000.
Ardito, Gerald J. Container. 3,759,413, Cl. 220-16.000.
Ardito, Gerald J.; Newman, Jerome S.; and Sarris, Samuel E., to Inventions Unlimited Incorporated. Push-pull cap and neck assembly. 3,759,429, Cl. 222-546.000.
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Arnaud, Jacques Alexis, to Bell Telephone Laboratories, Incorporated. Ray inverters for minimizing delay distortion in multimode optical fibers. 3,759,590, Cl. 350-96.0wb.
Arnold, Robert W.; and Galetto, Louis V., to International Business Machines Corporation. Data recovery system. 3,760,282, Cl. 328-116.000.
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Arribas, Juan-Jose Regidor: *See—*
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Attenborough, Christopher George, to National Research Development Corporation. Wire fixing device. 3,759,302, Cl. 140-119.000.
Attridge, Curtis C.; and Ayers, Joseph G., Jr., to International Business Machines Corporation. Histogram data processor. 3,760,377, Cl. 340-172.500.
Auberry, Horace Ray; and Liebscher, Anton I., to Ro-Search Incorporated. Method and apparatus for unit molding. 3,758,903, Cl. 12-142.0rs.
Auer, John H., Jr., to General Signal Corporation. Apparatus for controlling sonic energy distribution. 3,760,343, Cl. 340-1.00t.
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Badalich, Frank C., to Bell & Howell Company. Stacked mixed slide gate mechanism. 3,759,487, Cl. 353-104.000.
Bader, Erich; and Koert, Hubert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making structural parts of improved surface properties. 3,759,774, Cl. 156-284.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Baizer, Hans; Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Diepoxides, processes for their manufacture and use. 3,759,954, Cl. 260-340.700.
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Barnes, Roy J.; and Stroot, Donald H., to Caterpillar Tractor Company. Ejector-type refuse container. 3,759,561, Cl. 294-69.00r.
Barnett, Irvin. Extruded asbestos yarn for paper dryer felts. 3,759,027, Cl. 57-140.0by.
Barone, Frank J.; and Tolliver, Donald L., to Motorola, Inc. Method of forming integrated circuits utilizing low resistance values, low temperature deposited oxides and shallow junctions. 3,759,762, Cl. 148-187.000.
Barrett Electronics Corporation: *See—*
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Barry, Robert J. Method and apparatus for loading trucks. 3,759,405, Cl. 214-38.00d.
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- Beard, Walter C. Self-venting vessel. 3,759,414, Cl. 220-44.00r.
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- Beeman, Robert H.; and Tarr, Lloyd A., to GTE Automatic Electric Laboratories, Incorporated. Multi-frequency tone detector. 3,760,269, Cl. 324-78.00d.
- Beery, Jack, to Burroughs Corporation. Damping of a step servo motor using one step anticipation logic. 3,760,252, Cl. 318-611.000.
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- Boggs, Jesse K., to Esso Research and Engineering Company. Alkylation catalyst. 3,760,021, Cl. 260-671.00p.
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- Bone, Arnold R., to Dennison Manufacturing Company. Apparatus for dispensing fasteners. 3,759,435, Cl. 227-67.000.
- Borer, Albert; and Krogseng, Gerald P., to Minnesota Mining and Manufacturing Company. Method of firing dry spun refractory oxide fibers. 3,760,049, Cl. 264-57.000.
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- Boyle, John P. Occult illuminator system. 3,759,607, Cl. 350-293.000.
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- Brotherton, Cecil O., to Timesavers, Inc. Belt tensioner for wide belt sanding machines. 3,759,146, Cl. 92-13.600.
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- Buzzard, Robert J., to Coherent Radiation. Anode for a discharge tube. 3,760,213, Cl. 313-39.000.
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  - Jutz, Christian; and Mueller, Werner, 3,759,976.
- Caberlotto, Giovanni, to Calzaturificio Caber S.p.A. Ski boot. 3,758,965, Cl. 36-2.5al.
- Cagen, George, to Ideal Toy Corporation. Doll which tears only in horizontal position. 3,758,983, Cl. 46-135.00a.
- Calame, Jean Pierre: *See—*
  - Siddall, John B.; and Calame, Jean Pierre, 3,759,964.
- Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, to Societa' Italiana Resine S.p.A. Process for preparing aluminum trichloride. 3,760,066, Cl. 423-496.000.
- California Computer Products, Inc.: *See—*
  - McCune, Clarence G.; Vincer, John C.; and Graves, Kenneth E., 3,759,442.
- Callahan, Joseph R. Mounting jig for electrical outlet boxes. 3,759,505, Cl. 269-98.000.
- Callas, Donald C.: *See—*
  - Boehringer, Wilfred E.; and Callas, Donald C., 3,759,468.
- Calor: *See—*
  - Trouilhet, Maurice Marie Achille, 3,760,247.
- Calzaturificio Caber S.p.A.: *See—*
  - Caberlotto, Giovanni, 3,758,965.
- Cam Technology, Inc.: *See—*
  - Weber, Theodore, Jr., 3,760,170.
- Camiciottoli, Roberto; and Grossi, Giuseppe Telecommunicazioni, to Societa Italiana Telecommunicazioni S.p.A. System for the remote supervision of multichannel PCM repeaters. 3,760,127, Cl. 179-175.30r.
- Campbell, James K., to Dow Chemical Corporation. Process for binding pigments to glass fabrics. 3,759,740, Cl. 117-126.0gs.
- Canadian Wire Brush Co.: *See—*
  - Maltarp, Allan M., 3,758,908.
- Cannizzaro, Joseph R.; and Emery, Charles F., to International Business Machines Corporation. Multilayer circuit board. 3,760,091, Cl. 174-68.500.
- Canon Kabushiki Kaisha: *See—*
  - Saito, Takashi; and Iida, Toshihide, 3,759,220.
  - Saito, Takashi; and Ando, Yujiro, 3,760,152.
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- Caputo, William R.; and Ostrander, William M., to Westinghouse Electric Corporation. Elevator system. 3,759,350, Cl. 187-29.00r.
- Carborundum Company, The: *See—*
  - Economy, James; and Nowak, Bernard E., 3,759,870.
  - Good, Harper W., 3,759,451.
  - Marin, Glenn R., 3,759,353.
  - Miller, William A.; and Weiler, Henry R., Jr., 3,759,728.
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- Caris, Costa: *See—*
  - Kamborian, Jacob S.; and Caris, Costa, 3,758,904.
- Carl, Wolfgang; and Wandel, Martin, to Bayer Aktiengesellschaft. Flame-resistant textile fabrics. 3,759,851, Cl. 260-17.400.
- Carley, Jay L.: *See—*
  - Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.
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- Carlsson, Hilding Ake Gerry, to Aktiebolaget Bahso Ventilation. Automization burners. 3,759,657, Cl. 431-170.000.
- Carnes, James D., to Halliburton Company. Internally catalyzed well consolidation. 3,759,327, Cl. 166-295.000.
- Caron, Claude; and Hurtado, Jean, to Soletanche Societe Anonyme. Method of earth wall construction using cementitious betonitic mud. 3,759,044, Cl. 61-35.000.
- Carondelet Foundry Company: *See—*
  - Culling, John H., 3,759,704.

- Carson, Kenneth C., to Honeywell Inc. Thermoferrite switch with pic resistor temperature compensation. 3,760,310, Cl. 335-146.000.
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- Carter, James B., Limited: *See—*
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- Carter, Ned C.: *See—*
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  - Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.
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- Caruso, Richard. Hair curler. 3,759,271, Cl. 132-33.00g.
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- Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
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- Cavalla, John F.; Sandison, Gillian M.; and White, Alan C., to Wyeth, John, & Brother Limited. Acetylenically unsaturated diaryl nitriles and derivatives thereof. 3,759,906, Cl. 260-247.000.
- Celanese Corporation: *See—*
  - Forschirm, Alex S., 3,759,665.
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- Certain-Teed Saint Gobain Insulation Corporation: *See—*
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- Cerwin, James Joseph, to Bunker-Ramo Corporation, The. Miniature connector-modular. 3,760,336, Cl. 339-92.00m.
- Chalk, David L., to Armco Steel Corporation. Chromium-containing alloy steel and articles. 3,759,705, Cl. 75-124.000.
- Chalmers, Alexander Michael; and Randell, Donald Richard, to Ciba-Geigy Corporation. Piperidine derivatives as stabilizers. 3,759,926, Cl. 260-293.900.
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- Chang, Hsu; and Fan, George J., to International Business Machines Corporation. Magnetic bubble domain system using multiple magnetic sheets. 3,760,387, Cl. 340-174.0tf.
- Chang, Wen-Hsuan; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., to PPG Industries, Inc. Polyester powder coating compositions. 3,759,854, Cl. 260-21.000.
- Chapman, Dennis R.; and Paterson, William Crawford, to Courtaulds Limited. Electrolytic treatment of filamentary carbon material. 3,759,805, Cl. 204-130.000.
- Charamel, Pierre, to Gerin, Merlin. Electric current collecting system. 3,760,128, Cl. 191-49.000.
- Chase, Harold E., 5/50% to Cox, Marion, 5/50% to Dunigan, Walter C., 5/50% to Parker, Alfred Browning, 4/50% to Golson, Malcolm, 1/20% to McKeown, Robert R. and 1/20% to Preston, Elizabeth. Disposable refrigerated container that can be refilled, reused or ecycled. 3,759,060, Cl. 62-294.000.
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- Cherne, Lloyd G.: *See—*
  - Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., 3,759,495.
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- Chevron Research Company: *See—*
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  - McAuliffe, Clayton D., 3,759,086.
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  - Lemieux, Raymond Urgel; and Chin, Clinton Gordon, 3,759,905.
- Chisholm, Douglas S.: *See—*
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- Chong, Victor Manuel, to Sun Research and Development Co. Use of thermal regenerator pair in sodium recovery process. 3,759,703, Cl. 75-66.000.
- Chonin, Ito J., to Spectra-Mat, Inc. Thermionic cathode. 3,760,218, Cl. 313-346.00r.
- Chovanec, John J.; and Hildebrant, Floyd J., to United States of America, Army. Electrostatic spark ignition sensitivity test apparatus and method. 3,760,262, Cl. 324-32.000.
- Chow, Sui-Wu: *See—*
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- Christin, Georges Etienne, to Etablissements Bertrand Faure. Slides especially for vehicle seats. 3,759,587, Cl. 308-6.00r.
- Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., to Texaco Inc. Secondary oil recovery method. 3,759,326, Cl. 166-275.000.
- Christophers, John Roland: *See—*
  - Christophers, John Roland; and James, Derek (said James assor. to said), 3,759,528.
- Christophers, John Roland; and James, Derek, said James assor. to said Christophers, John Roland. Apparatus for simulating the playing of golf strokes. 3,759,528, Cl. 273-176.0fa.
- Christophersen, Clarence E.: *See—*
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- Chumenti, Vincent A.: *See—*
  - Scrivo, Leonard; La Plante, Lionel J.; Chumenti, Vincent A.; and Rubin, Gotthard George, 3,758,951.
- Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., to Gulf Research & Development Company. Method of preparing a calcined copper-iron supported catalyst and process utilizing the catalyst. 3,759,825, Cl. 208-191.000.
- Chung, Harold: *See—*
  - Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, 3,759,889.
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  - Beriger, Ernst; and Martin, Henry, 3,760,042.
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  - Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, 3,759,958.
  - Peter, Richard; Angliker, Hans-Joerg; and Casa, Angelo Della, 3,759,959.
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- Chalmers, Alexander Michael; and Randell, Donald Richard, 3,759,926.
- Hodel, Ernst; and Gatzi, Karl, 3,759,719.
- Huebner, Charles Ferdinand, 3,759,927.
- Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,759,899.
- Robison, Michael Mullen; and Finch, Neville, 3,759,933.
- Rutz, Hans; and Gubler, Kurt, 3,759,945.
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Ciraudon, Raymond, to Rhone-Poulenc S.A. Thiazolidine derivatives. 3,759,938, Cl. 260-300.700.

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Clifford, Joseph, to Robertshaw Controls Company. Thermal operator for ignition proving system. 3,759,654, Cl. 431-66.000.

Cloyd, Harold S., to Nosce Plastics, Incorporated. Pail. 3,759,415, Cl. 220-60.000.

Cluett, David G. Anchor. 3,759,212, Cl. 114-208.000.

CMI Corporation: *See—*
- Rosenbaum, Glenn P., 3,759,573.

Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Benzothiazolyl-azo-indole compounds. 3,759,895, Cl. 260-158.000.

Coats & Clark, Inc.: *See—*
- Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, 3,758,920.

Cobb, Jack M. Method and apparatus for storing cutting implements. 3,759,594, Cl. 312-31.000.

Cochran, Charles C. Reversible cycle ice maker. 3,759,048, Cl. 62-73.000.

Cochran, Michael D., to Tektronix, Inc., mesne. Calculator with a number processing system. 3,760,370, Cl. 340-172.500.

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Cohn, Seymour E., to United States of America, Army. Slot line. 3,760,302, Cl. 333-73.00r.

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Collins, Leland F.; Quinn, Robert C.; and Wilhelmsen, Paul G., to Shell Oil Company. Preparation of sulfur slurries for pipeline transportation. 3,759,836, Cl. 252-309.000.

Colton, Lewis Henry. Method of and apparatus for imparting twist to yarns. 3,759,024, Cl. 57-34.0hs.

Comer, Robert C., to Toro Company, The. Mower safety shield. 3,759,023, Cl 56-320.100.

Compact Industries, Inc.: *See—*
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Compagnia Italiana Westinghouse Freni e Segnali: *See—*
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Compagnie Generale des Etablissements Michelin: *See—*
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Compret N.V.: *See—*
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Computervision Corporation: *See—*
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Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Bidirectional storage crosspoint matrices for mirror image time division switching systems. 3,760,103, Cl. 179-15.0aq.

Conklin, Paul W., to Addressograph-Multigraph Corporation. Branding apparatus and method. 3,759,172, Cl. 101-7.000.

Conn, John B.; and Bollinger, Frederick W., to Merck & Co., Inc. Preparation of 5-fluoro-2-methyl-1-(p-methyl-sulfinylbenzylidene)-3-indenyl acetic acid. 3,759,987, Cl. 260-515-a.

Connelly, Eugene B., to United States Steel Corporation. Inside flash bead trimmer apparatus for welded metal pipe having alternately remotely positionable flash bead cutters. 3,759,140, Cl. 90-24.00b.

Connely, Ralph R., Jr. Mobile theater-type classroom. 3,758,995, Cl. 52-8.000.

Connors, John J., to Westinghouse Electric Corporation. Coarse-fine analog positioning system. 3,760,249, Cl. 318-592.000.

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Consolidated Papers, Inc.: *See—*
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Constantine, Neil V., to International Bakerage; a div. of International Consolidated, Inc. Container. 3,759,416, Cl. 220-97.00f.

Continental Can Company, Inc.: *See—*
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- Stanley, Thomas R.; and Mascia, Carmen T., 3,759,427.

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Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., to United States of America, Navy, mesne. 2,2-Bis(difluoramino)-5-fluoro-5,5-dinitrol-1-pentanol. 3,759,998, Cl. 260-584.00r.

Cooper Industries, Inc.: *See—*
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- Lee, Ronald Harvey David Frank, 3,759,425.

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- Werth, Elmer D., 3,759,378.

Coors Container Company: *See—*
- Maytag, John Hardy, 3,759,142.

Coover, Harry W., Jr.; and Fassett, David W., to Eastman Kodak Company. Surgical method. 3,759,264, Cl. 128-334.00r.

Cope, Geoffrey Wilton, to Dresser Industries, Inc. Housed draft gear. 3,759,400, Cl. 213-22.000.

Copland, George V.; and Gass, Edward W., to Halliburton Company. Oil field production automation method and apparatus. 3,760,362, Cl. 340-172.500.

Copper Range Company: *See—*
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Corey, Albert E.; and Donermeyer, Donald D., to Monsanto Company. Acid-modified poly(vinyl acetate-vinyl propionate) textile sizes. 3,759,858, Cl. 260-29.6ta.

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Cornelius Company, The, mesne: *See—*
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Cornella, Emanuel; and Cornella, Thomas E. Building construction of spaced panels with weather seals. 3,759,002, Cl. 52-270.000.

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Cotton, Herbert John Thomas, to Lucas, Joseph, (Industries) Limited. Wiring connection to a brush assembly in a dynamo electric machine. 3,760,211, Cl. 310-242.000.

Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. Exo-3-methyltricyclo(4.2.1.0,2,5)nona-3,7-dienes and their preparation from allene and a bicyclo (2.2.1)hepta-2,5-diene. 3,760,016, Cl. 260-666.0py.

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Courtaulds Limited: *See—*
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Covington, Morris T., to Taft Broadcasting Corporation, mesne. Method and apparatus for delaying an electrical signal. 3,760,280, Cl. 328-55.000.

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Cox, John William, to Compret N.V. Resilient push-pull exerciser. 3,759,514, Cl. 272-83.00r.

Cox, Lyndon S.; and Spyropoulos, Chris E., to United States of America, Army. Supersonic flow deflector and silencer. 3,759,134, Cl. 89-14.00d.

Cox, Marion: *See—*
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Coyne, James Christopher, to Bell Telephone Laboratories, Incorporated. Mule hammer-cycle control. 3,759,335, Cl. 173-91.000.

Crager Industries, Inc.: *See—*
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Crane Co., mesne: *See—*
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Crane, William B., Jr. Automatic plant watering device. 3,758,987, Cl. 47-38.100.

Crast, Leonard Bruce, Jr., to Bristol-Myers Company. 7-[D-(a-amino-a-phenyl-2,thienyl and 3-thienylacelamido-3-]s-(1,2,3-triazole-5-yl) thiomethyl[-3-cephenic-4-carboxylic acids and salts thereof. 3,759,904, Cl. 260-243.00c.

Cray, Charles A. Human male appliance. 3,759,253, Cl. 128-79.000.

Creators Limited: *See—*
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Creger, Paul E.; and Neuklis, Winifred A., to Parke, Davis & Company. Esters of 2,2-dimethyl-5-(aryloxy)-1-pentane. 3,759,986, Cl. 260-488.0cd.

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Critchfield, Frank E.; and Koleske, Joseph V., to Union Carbide Corporation. Graft copolymers of lactone polyesters. 3,760,034, Cl. 260-874.000.

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Croan, Kenneth F. Artificial honeycomb for collecting and recovering honey. 3,758,896, Cl. 6-10.000.

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- Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., 3,760,018.

Crone, John M., Jr.; and Arkell, Alfred, to Texaco Inc. Hydroalkylation catalyst and process. 3,760,019, Cl. 260-668.00f.

Crooks, Thomas E. Yieldable body jousting bags. 3,759,515, Cl. 273-1.00r.

Croon, Ingemar Liss-Albin: *See—*
- Samuelson, Hans Olof; and Croon, Ingemar Liss-Albin, 3,759,783.

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- Jullien-Davin, Jean, 3,760,129.

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Crown Zellerbach Corporation: *See—*
- Ott, Dale M.; and Rlba, Imants, 3,759,580.

Csanady, Michael, Jr.; Sloan, Joseph; and Goldsborough, Cornelius S., Jr., to Westinghouse Electric Corporation. Lubrication system. 3,759,347, Cl. 184-6.00r.

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Current, Wayne A., to Singer Company, The. Sewing machine cabinet. 3,759,595, Cl. 312-27.000.

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Curry, John D., to Procter & Gamble Company, The. Preparation of phosphine oxides by catalytic oxidation of tertiary phosphines. 3,760,000, Cl. 260-606.50p.

Curtis, George. Self-propelled bobber. 3,758,975, Cl. 43-26.100.

Cuscurida, Michael; and Kmiecik, James Edward, to Jefferson Chemical Company, Inc. Purification of isocyanates. 3,759,971, Cl. 260-453.0sp.

Cushing, Charles J.; and Schwind, Kurt C., to Philco-Ford Corporation. Flaw detection and marking apparatus. 3,759,620, Cl. 356-200.000.

Cushing, Vincent J. Electromagnetic water current meter. 3,759,097, Cl. 73-194.0em.

Cutter Laboratories, Inc.: *See—*
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Cutters Machine Company, Inc.: *See—*
- Pearsall, Samuel H.; and Witthauer, Norman E., Jr., 3,760,250.

Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., to GTE Automatic Electric Laboratories Incorporated. Electromechanical common control crosspoint telephone switching system. 3,760,117, Cl 179-18.0ge.

Czekay, Arno; Kramer, Bruno; and Weiden, Hans. Process for the manufacture of impact resistant thermoplastic moulding materials. 3,759,863, Cl. 260-33.6aq.

Czewski, Robert L.; and Gross, Robert S., to General Electric Company. Transformer core assembly. 3,760,316, Cl. 336-210.000.

Dagga, Faisal Abo: *See—*
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Dahlgren, Jan-Ake: *See—*
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Dailey, Jack R.; Kuntzleman, Harry C.; and Mitchell, George E., to International Business Machines Corporation. Vector information shifting array. 3,760;368, Cl. 340-172.500.

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Dainippon Ink & Chemicals, Inc.: *See—*
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Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, to Broken Hill Proprietary Company, Limited, The. Push-in easy-open closures. 3,759,206, Cl. 113-121.00c.

Daly, Patrick J.; Grogg, William E.; Layman, Stuart F.; Orlando, Harold J.; Perry, James E.; and Van Derlaske, Dennis P., to United States of America, Army. Universal viewer for far infrared. 3,760,181, Cl. 250-83.30h.

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D'Andrea, Robert A. Aquariums. 3,759,223, Cl. 119-5.000.

Danesi, Wilbert P.: *See—*
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Davenport, Lonnie Reynolds, to Pair-X Inc., mesne. Method and apparatus for mending knit fabric. 3,759,068, Cl. 66-1.000.

Davidson, William E., to General Electric Company. Fast start spray iron. 3,758,969, Cl. 38-77.500.

Davies, Evan Ellis; Elkins, John Stanley; and Pitkethly, Robert Chalmers, to British Petroleum Company, The. Hydrocarbon conversion with platinum-second-metal catalysts in proportions which form ordered alloys. 3,759,823, Cl. 208-138.000.

Davies, Robert Dillwyn; and Weston, Leslie Yarnall, Jr., to Du Pont de Nemours, E. I., and Company. Apparatus for perforating thermoplastic sheet materials with an electric arc. 3,760,153, Cl. 219-384.000.

Davis, Carl B. Electrical actuated chance device having chain-driven rotatable drums. 3,759,525, Cl. 273-143.00r.

Davis, Charles J., to Case, J. I., Company. Hydraulic angle dozer. 3,759,110, Cl. 74-99.000.

Davis, Harry T., to Hood Sailmakers, Inc. Sail guide system. 3,759,210, Cl. 114-105.000.

Davis, John Walter, to Dunlop Holdings Limited. Braking systems. 3,759,581, Cl. 303-13.000.

Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., to Bio-Logics, Products, Inc. Encoding and verifying information. 3,760,159, Cl. 235-61.60r.

Davis, Robert D.: *See—*
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De Carlo, Joseph P. Window cleaning apparatus. 3,759,621, Cl. 401-10.000.

De Castelet, Gaetan De Coye, to Regie Nationale des Usines Renault. Corrosion-resistant ornamental chromium plating. 3,759,802, Cl. 204-41.000.

De Cat, Arthur Henri; and Manssens, Leo Hypoliet, to Gevaert-Agfa N.V. Method for the preparation of 2-alkyl substituted thiazoles and selenazoles. 3,759,935, Cl. 260-298.000.

De Fossey, Bernard Mathieu, to Roussel-UCLAF. Novel treatment of wounds. 3,760,073, Cl. 424-243.000.

De Graffenreid, Howard T.; and May, Clifford H. Mandrel for winding thereon material. 3,759,459, Cl. 242-72.100.

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de Lavenne, Hubert; and Leger, Andre, to Automobiles Peugeot and Regie Nationale des Usines Renault. Window wiper in particular for a vehicle windscreen. 3,758,911, Cl. 15-250.230.
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Defour, Jean-Marie, to Angenuex-CIB S.A. Double-lever brake control for bicycles. 3,759,114, Cl. 74-489.000.
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DeSantis, Charles M.; and Gottfried, Arthur H., to United States of America, Army. Traveling wave device providing prebunched transverse-wave beam. 3,760,219, Cl. 315-3.500.
Desaulniers, Anthony T.; and Byars, James A. Apparatus for sensing slubs carried by yarn. 3,758,925, Cl. 28-64.000.
Desilets, Dennis W., to Standard Alliance Industries. Anti-back-up device for work carriers on power- and free-conveyor systems. 3,759,189, Cl. 104-172.00s.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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DeVos, Ferdinand Allard; and Steege, Jan Hendrik Terter, to N.V. Werkspoor-Amsterdam. Method and apparatus for the seamless engraving of half-tone printing plates. 3,760,098, Cl. 178-6.60b.
DeWall, Richard A. Perfusion safety valve. 3,759,289, Cl. 137-525.000.
Dewhirst, Kenneth C., to Shell Oil Company. Rhodium halide complex catalyst compositions. 3,759,838, Cl. 252-429.00r.
Dewhurst, Bert F. Meat slicing machine. 3,759,128, Cl. 83-411.00r.
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Dietz, Raymond Louis; and McFadden, Allan L., to Owens-Illinois, Inc. Coatings. 3,759,727, Cl. 106-49.000.
Dill, Hans G. Three phase rotating ring display with multistator windings. 3,760,410, Cl. 340-378.00r.
Dille, Roger M.; and Schlinger, Warren G., to Texaco Inc. Synthesis gas production by partial oxidation. 3,759,837, Cl. 252-373.000.
Dillenschneider, Jean-Paul, to Compagnie Generale des Etablissements Michelin. Copolymerization of a conjugated diene with a vinyl aromatic compound. 3,759,919, Cl. 260-83.700.
Dillinger, Lester L. Portable power driven surface finishing device. 3,758,994, Cl. 51-241.00s.
Dilo, Richard. Method of making a tubular needled web. 3,758,926, Cl. 28-72.20r.
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Dixon, Melvyn; and Kurtzig, Arjeh Jehuda, to Bell Telephone Laboratories, Incorporated. Hydrogen annealing of substituted magnetic garnets and materials so produced. 3,759,745, Cl. 117-237.000.
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Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, to Lever Brothers Company. Detergent compositions. 3,759,833, Cl. 252-95.000.
Eckl, Robert; and Janson, Klaus Walter, to Bowe Bohler & Weber KG, Firma. Device and method for forming an accordion pile from a continuous web using an air current parallel to the web. 3,759,506, Cl. 270-69.000.
Economy, James; and Nowak, Bernard E., to Carborundum Company, The. Polyesters based on hydroxybenzoic acids. 3,759,870, Cl. 260-47.00c.
Edes, Ferenc; and Gianatasio, Henry L., to Air-Frol Systems, Inc. Web-guiding apparatus and position-sensing and control unit therefor. 3,759,457, Cl. 242-57.100.
Edmore Tool and Ginding, Inc.: *See—*
  Hundey, Doran J.; and Naru, Robert B., 3,759,624.
Egermayer, George W. Billboard. 3,758,972, Cl. 40-125.00k.
Eggmatic Corporation: *See—*
  Walker, Harold L., 3,759,163.
Ehlers, Kenneth W.; Kunkel, Wulf B.; and Baker, William R., to United States of America, Atomic Energy Commission. High current plasma source. 3,760,225, Cl. 315-111.000.
Ehlinger, Arnold H., to Allis-Chalmers Corporation. Compressor assembly. 3,759,627, Cl. 415-178.000.
Einhorn, Ruediger: *See—*
  Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, 3,758,920.
Eirich, Gustav Josef: *See—*
  Eirich, Wilhelm Adolf; and Eirich, Gustav Josef, 3,760,051.
Eirich, Wilhelm Adolf; and Eirich, Gustav Josef. Method of forming granules. 3,760,051, Cl. 264-117.000.
Eiring, Karl: *See—*
  Vering, Antonius; Kluger, Alois; and Eiring, Karl, 3,759,369.
Eisenkramer, Arthur: *See—*
  Wolf, Edgar; Lau, Edward; and Eisenkramer, Arthur, 3,760,391.
Electronic Arrays Inc.: *See—*
  Nissim, Samuel, 3,760,121.
Elkins, John Stanley: *See—*
  Davies, Evan Ellis; Elkins, John Stanley; and Pitkethly, Robert Chalmers, 3,759,823.
Elliott, Eldon G. Magnetic article sorting apparatus. 3,759,367, Cl. 198-41.000.
Elliott, Herbert; and Simons, Frank A., to Dow Chemical Company, The. Apparatus for removal of coolant from metal surfaces. 3,758,913, Cl. 15-38.000.
Ellsworth, James P.; and Wallace, James B., to Westinghouse Electric Corporation. Enclosed device with cover interlock switch. 3,760,132, Cl. 200-50.00a.
Elmatic Corporation: *See—*
  Whitehead, George B., 3,760,327.
Eloranta, Vaito K.; and Ruggles, Benjamin C., to Polaroid Corporation. System for uniformly coating exposed motion picture film with processing fluid. 3,759,609, Cl. 352-72.000.
Emerson, Carl D.; and Aichenegg, Paul C., to Chemagro Corporation. Polyhalo disulfide alcohols and derivatives. 3,760,002, Cl. 260-608.000.
Emery, Charles F.: *See—*
  Cannizzaro, Joseph R.; and Emery, Charles F., 3,760,091.
Emery Industries, Inc.: *See—*
  Rhodes, Philip H.; and Ahr, Robert L., 3,759,856.
Emhart Corporation: *See—*
  Henry, James; and Macmaster, Malcolm, 3,759,158.
  Trahan, Albert J., 3,759,686.
Emmer, Gerhard; Vernaleken, Hugo; Weirauch, Kurt; and Schnell, Hermann, to Bayer Aktiengesellschaft. Process for the production of polycarbonate solutions. 3,759,865, Cl. 260-33.80r.
Emmett, John Colin: *See—*
  Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,759,944.
Encinas, Juan, to U.S. Philips Corporation. Prevention of autodoping during the manufacturing of a semiconductor device. 3,759,760, Cl. 148-175.000.
Endo, Kunio, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Electrical fuel injection control system for internal combustion engines. 3,759,231, Cl. 123-32.0ea.
Engebrecht, Ronald H.: *See—*
  Rauner, Frederick J.; and Engebrecht, Ronald H., 3,759,711.
Engineered Products, Inc. (EPI): *See—*
  Vance, Lawrence T., 3,758,997.
Engins Matra, mesne: *See—*
  Gayot, Jean, 3,759,187.
English, William A.; and Young, Robert R., to Westinghouse Electric Corporation. Room air conditioner having compressor with variable capacity and control therefor. 3,759,057, Cl. 62-196.000.
Entripose: *See—*
  Tamboise, Maurice Paul Jean Joseph, 3,759,006.
Entron, Inc.: *See—*
  Ross, Joseph I.; and Sears, Kay G. (said Sears assor. to said), 3,760,130.
Epoch Company Ltd.: *See—*
  Matsumoto, Teruo, 3,758,961.
Epple, Richard R., to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor device having a rectifying junction surrounded by a Schottky contact. 3,760,241, Cl. 317-235.00r.
Epstein, Philip L., to Quinder Electronics, Inc. Crystal controlled variable frequency oscillator. 3,760,290, Cl. 331-40.000.
Equitable Equipment Company, Inc.: *See—*
  Keeney, Cecil M., 3,759,208.
Erb Plastics, Inc.: *See—*

- Erb, William B., 3,758,889.
- Erb, William B., to Erb Plastics, Inc. Shock absorging safety helmet. 3,758,889, Cl. 2-3.00b.
- ERCO Industries Limited: *See—*
  - Rapson, William Howard, 3,760,065.
- Erdman, Donald C.: *See—*
  - McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.
- Erickson, Gerald L.; Jaszkowiak, David A.; and Kaveckis, Joseph E., to United States of America, Atomic Energy Commission. Sensing element response time measuring system. 3,759,083, Cl. 73-1.00f.
- Ermakov, Boris Nikolaevich; and Kurilenko, Viktor Georgievich. Ferrite material. 3,759,832, Cl. 252-62.630.
- Ertel, Hartmut; and Frisch, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the recovery of antimony pentachloride from catalyst solutions. 3,760,059, Cl. 423-87.000.
- Eschler, Hans, to Siemens Aktiengesellschaft. Acousto-optical light deflector having increased band width and short access time. 3,759,603, Cl. 350-161.000.
- Eskijian, Luther. Wet film thickness gauge. 3,758,957, Cl. 33-169.00r.
- Eskola, Kai; and Tyllinen, Yrjo, to Oy E. Sarlin AB. Method and device for protecting a pump motor intended to be immersed in liquid. 3,759,634, Cl. 417-32.000.
- Espana, Salvador; and Funt, Brunson Bert, to McCulloch Corporation. Method for applying hard facing to an object. 3,760,141, Cl. 219-77.000.
- Essex International, Inc.: *See—*
  - Prouty, Robert E.; and Bear, Herman G., 3,760,342.
- Esso Research and Engineering Company: *See—*
  - Boggs, Jesse K., 3,760,021.
  - Buckton, Keith Stewart; and Fraser, Ian Rowland, 3,759,234.
  - Iarossi, Frank J.; and Cowles, Walter C., 3,759,209.
  - Lahn, Gerard, 3,759,676.
  - Marks, Alfred F., 3,759,991.
  - Metrailer, William J.; and Welch, Robert C. W., 3,759,697.
- Estes, James W.: *See—*
  - Geiger, Lewis J., Jr.; and Estes, James W., 3,759,699.
- Estkowski, Michael H., to V-M Corporation. Record changer spindle. 3,759,531, Cl. 274-10.00s.
- Estvan, Charles, Jr. Game pieces selectively joinable along edges thereof to form letters or numerals. 3,759,526, Cl. 273-157.00r.
- Etablissements Bertrand Faure: *See—*
  - Christin, Georges Etienne, 3,759,587.
- Etablissements Proner: *See—*
  - Frisiani, Attilio, 3,758,936.
- Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale-Delegation Ministerielle pour l'Armement: *See—*
  - Hamon, Emile Francois Joseph, 3,760,208.
- Etes, Donald E.: *See—*
  - Nolan, John L.; and Etes, Donald E., 3,759,260.
- Ethicon, Inc.: *See—*
  - Lisowski, Borys, 3,759,376.
- Ettinger, Donald H.: *See—*
  - Rondeau, Herbert F.; and Ettinger, Donald H., 3,760,143.
- Euchs, Hans: *See—*
  - Rix, Albert; Werner, Georg; and Euchs, Hans, 3,759,360.
- Eue, Lludwig: *See—*
  - Dickore, Karlfried; and Eue, Lludwig, 3,759,910.
- Eue, Ludwig: *See—*
  - Metzger, Carl; Rucker, Dietrich; and Eue, Ludwig, 3,759,939.
  - Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.
- Eurenius, Jimmie Arne: *See—*
  - Nilsson, Nils Edvin Folke; and Eurenius, Jimmie Arne, 3,759,061.
- European Atomic Energy Community (Euratom): *See—*
  - Herzberger, Peter; and Di Piazza, Learco, 3,760,144.
- Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., to Rupert Manufacturing Company, Inc. One piece triangular signal device. 3,759,214, Cl. 116-63.00p.
- Evers, Harry G.: *See—*
  - Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.
- Evers-Euterneck, Ernst T., to United States of America, Army. Cruise control for non-ballistic missiles by a special arrangement of spoilers. 3,759,466, Cl. 244-3.210.
- EXI Erzeugung von Sportbekleidung Gesellschaft m.b.H.: *See—*
  - Selzer, Eric Georg, 3,758,890.
- Exner, Jurgen H.; Sheetz, David P.; and Steiner, Edwin C., to Dow Chemical Company, The. Cyclic polyethers as catalyst activators in the alkalicatalyzed reaction of alkylene oxides. 3,760,005, Cl. 260-615.000.
- Ezaki, Akira: *See—*
  - Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
- Fabiano, Anthony J. Garden kaddy. 3,759,538, Cl. 280-47.350.
- Fabregat, Manuel Punsola. Manufacture of a wiping or piston ring. 3,758,929, Cl. 29-156.600.
- Fabricius, John H.; and Maher, John P., to Sprague Electric Company. Concentric shaft encased variable electronic component. 3,760,321, Cl. 338-134.000.
- Factory Mutual Research Corporation: *See—*
  - Livingston, William L., 3,759,331.
- Fahn, Rudolf, to Sud-Chemie AG. Clay-mineral-bearing suspensions. 3,759,729, Cl. 106-90.000.
- Fair-Conn., Inc.: *See—*
  - Harvey, William K., 3,759,190.
- Fairchild Camera and Instrument Corporation: *See—*
  - Solomon, Raymond, 3,759,759.
- Fait Societa per Azioni: *See—*
  - Abate-Daga, Giancarlo; and Amato, Ignazio, 3,659,786.
- Falcuta, Persiu, to Grupul Industrial Pentru Foraj si Extractia Titeiului Bucuresti. Cementing float shoe. 3,759,281, Cl. 137-68.000.
- Falk, Mervin L.; and Denk, Joseph P., to Newell Industries Inc. Tape transport apparatus with end of tape sensing control. 3,759,462, Cl. 242-186.000.
- Falkum, Einar; and Brunborg, Ivar, to Norsk Hydro-Electrisk Kvaelstofaktieselskab. Method for the introduction of hydrocarbon oils into an electric submerged arc furnace. 3,759,696, Cl. 75-11.000.
- Fammler, Karl, to Rheinmetall G.m.b.H. Automatic firearm disposed in a gun turret and pivotable in the vertical direction. 3,759,136, Cl. 89-33.0bb.
- Fan, George J.: *See—*
  - Chang, Hsu; and Fan, George J., 3,760,387.
- Fancher, Llewellyn W.; and Kalbeeld, Jules, to Stauffer Chemical Company. Process of manufacturing organo-phosphorous derivatives. 3,759,949, Cl. 260-326.00e.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*
  - Langmesser, Paul Werner; Volz, Hans G.; and Kienast, Gerhard, 3,760,058.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
  - Ertel, Hartmut; and Frisch, Peter, 3,760,059.
  - Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,759,839.
  - Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, 3,759,731.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning: *See—*
  - Troster, Helmut, 3,759,953.
- Farmer, Alonzo: *See—*
  - Brzozowski, Stanley F.; Farmer, Alonzo; and Pefferman, William C., 3,760,071.
- Farr, Emory W. Linear load cell bridge including a non-linear strain sensitive element. 3,759,093, Cl. 73-141.00a.
- Farrington, Floyd G. Debeaking, vaccinating and culling wheel and panel for poultry. 3,759,229, Cl. 119-97.00r.
- Farrow, Vernon J. Dual propulsion tricycle. 3,759,339, Cl. 180-27.000.
- Fassett, David W.: *See—*
  - Coover, Harry W., Jr.; and Fassett, David W., 3,759,264.
- Fausel, Charles A.; and Lorenz, Allan C., to Teletype Corporation. Digitizer. 3,758,949, Cl. 33-1.00m.
- Fedorov, Viktor Viktorovich: *See—*
  - Axelrod, Lev Samuilovich; Akatov, Alexandr Vasilievich; Rudenko, Valery Mikhailovich; Fedorov, Viktor Viktorovich; Barashkov, Ruslan Yakovlevich; and Garbuzovsky, Boleslav Iosifovich, 3,759,494.
- Felicetta, Vincent F.; and King, Ellis Gray, to Georgia-Pacific Corporation. Fractionation by gel permeation. 3,759,826, Cl. 210-31.00c.
- Fenn, Lawrence E.; and Sperry, Charles R. Electric cigar lighter with thermostatic bimetallic current control. 3,760,150, Cl. 219-265.000.
- Ferneau, Richard H., to Weil, Burt. Multi-level one-man cart. 3,759,565, Cl. 296-20.000.
- Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of a palladium catalyst. 3,759,839, Cl. 252-431.00c.
- Fernstrom, Henry C., to Barrett Electronics Corporation. Storage system. 3,759,403, Cl. 214-16.40a.
- Ferrara, Peter J.: *See—*
  - Stier, Barrie J.; Ferrara, Peter J.; and Klobas, Ivan, 3,759,480.
- Ferro Corporation: *See—*
  - Borowski, Bernard J., 3,759,240.
  - Russell, Stanley K., 3,759,681.
- Fey, Maurice G.: *See—*
  - Wolf, Charles B.; and Fey, Maurice G., 3,760,145.
  - Wolf, Charles B.; Fey, Maurice G.; and Azinger, Frederick A., Jr., 3,760,151.
- Fiat Societa per Azioni: *See—*
  - Abate, Galileo, 3,760,210.
  - Peruglia, Marco, 3,759,583.
- Ficken, Geoffrey Ernest: *See—*
  - Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, 3,759,931.
- Field, Gregory A., to Sand R Associates, Inc. Sliding wedge cleat. 3,758,922, Cl. 221-115.00r.
- Fielding, Francis L.; and Fletcher, Irving L., to International Telephone and Telegraph Corporation. Activity display. 3,760,413, Cl. 343-5.0sc.
- Filper Corporation: *See—*
  - Lane, William A.; and Meissner, Konrad E., 3,759,122.
- Finch, Neville: *See—*
  - Robison, Michael Mullen; and Finch, Neville, 3,759,933.
- Finck Paint & Chemical Company: *See—*
  - Smith, Howard F., 3,759,751.
- Finley, Mary E. Chair-bath. 3,758,894, Cl. 4-185.00r.

- Finnegan, Joseph F., Jr., to York Stone & Supply Company. Masonry flute rake. 3,758,945, Cl. 30-172.000.
- Firestone Tire & Rubber Company, The: *See—*
  - Floros, John C., 3,759,879.
- First National City Bank, mesne: *See—*
  - Merkley, Joseph H., 3,760,025.
- Fischel, Edward, to Bodenseewerk Geratetechnik GmbH. Meridian gyroscopic instrument. 3,758,952, Cl. 33-324.000.
- Fischer, Artur: *See—*
  - Fischer, Artur; and Muller, Jean-Nicolas (said Muller assor. to said), 3,759,257.
- Fischer, Artur; and Muller, Jean-Nicolas, said Muller assor. to said Fischer, Artur. Connector for fractured tubular bones. 3,759,257, Cl. 128-92.0bc.
- Fishel, Kenneth R., to United States of America, Navy. Differential pressure transducer and readout for sensing claw grip force. 3,759,092, Cl. 73-141.00r.
- Flack, Bernard, to Swemco Limited. Impingement baffle plate assemblies. 3,759,497, Cl. 261-113.000.
- Flack, Frederick Colin; and James, Evan Douglas, to National Research Development Corporation. Incontinence measurement sensor. 3,759,246, Cl. 128-2.00r.
- Flagg, Frank D.: *See—*
  - Dobrjanskyj, Lew; Einhorn, Ruediger; Flagg, Frank D.; and Chasen, Lee Richard, 3,758,920.
- Fletcher, Irving L.: *See—*
  - Fielding, Francis L.; and Fletcher, Irving L., 3,760,413.
- Flier, Ronald Jacob: *See—*
  - Leopiktie, Stephanus F.; and Flier, Ronald Jacob, 3,759,715.
- Florens, Raymond Leopold; and Ghys, Theofiel Hubert, to Agfa-Gevaert N.V. Fogged, direct-positive silver halide emulsion supersensitized with a merocyanine dye and a carbocyanine dye. 3,759,713, Cl. 96-126.000.
- Floros, John C., to Firestone Tire & Rubber Company, The. Continuous bulk polymerization process for vinyl chloride copolymers. 3,759,879, Cl. 260-78.5cl.
- FMC Corporation: *See—*
  - Berkowitz, Sidney, 3,760,015.
  - Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., 3,759,399.
  - Goodley, George F., 3,759,169.
  - Gresham, John T., 3,759,874.
  - Kempf, Dennis D., 3,759,628.
  - Rose, Boyd W.; and Thornton, George W., 3,759,368.
  - Sullivan, James K.; and Howard, Richard I., 3,760,048.
- Foard, James E., to Kennecott Copper Corporation. Cyclonic smelting apparatus. 3,759,501, Cl. 266-10.000.
- Folkins, Hillis O., to Union Oil Company of California. Coking feedstock comprising a pyrolysis tar and a heavy cracked oil. 3,759,822, Cl. 208-131.000.
- Foote, Chauncey P.: *See—*
  - Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., 3,759,177.
- Forbes, F. Douglas: *See—*
  - Burroughs, Robert S.; and Forbes, F. Douglas, 3,760,097.
- Ford, Ernest C., Jr., to ICI America, Inc. Unsaturated esters, polyesters, and cross-linked polyesters. 3,760,032, Cl. 260-869.000.
- Ford, George L.: *See—*
  - Oliver, Robert K.; and Ford, George L., 3,759,795.
- Ford, Leroy H., Jr.: *See—*
  - Dibonaventura, Alfred R.; and Ford, Leroy H., Jr., 3,759,115.
- Ford, Robert Brough; and Lloyd, Martin Herbert, to International Standard Electric Corporation. 200/043.000. 3,760,131, Cl. .
- Forker, Ray B., Jr.; and Lawless, William N., to Corning Glass Works. Resistive device. 3,760,325, Cl. 338-262.000.
- Formaini, Robert L.; and Kim, Young D., to Allied Chemical Corporation. Oil modified alkyd compositions. 3,759,853, Cl. 260-21.000.
- Forschirm, Alex S., to Celanese Corporation. Increasing the cationic dyeability of acrylic shaped articles. 3,759,665, Cl. 8-172.000.
- Forte, Robert A.: *See—*
  - Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., 3,759,449.
- Foster, Paul E.; and Little, Rollie H., to General Electric Company. Solder shield for contacts on printed circuit boards. 3,759,436, Cl. 228-57.000.
- Fournel, Francis: *See—*
  - Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, 3,759,885.
- Fowler, William Lee, to Globe-Union Inc. Electronic circuit package and method for making same. 3,760,090, Cl. 174-52.00s.
- Fox, Stewart A.; and Magill, Robert J., to Searle, G. D., & Co. Ballistic injection for gas chromatography. 3,759,107, Cl. 73-422.0gc.
- Foxboro Company, The: *See—*
  - Nadi, Salem A., 3,760,374.
- Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, to Ransburg Electro-Coating Corporation. Fluid mixing and spraying apparatus. 3,759,450, Cl. 239-427.000.
- Franchinot, Paul G.; and Kresan, Lawrence J., to Pitney-Bowes, Inc. Inking roller assembly. 3,759,178, Cl. 101-349.000.
- Francis, James O., to Texaco Inc. Removing dialkyl sulfates from a hydrocarbon effluent with sulfuric acid from an alkylation settler. 3,760,028, Cl. 260-683.460.
- Franck, Heinz-Gerhard: *See—*
  - Omran, Jaafar; Franck, Heinz-Gerhard; and Zander, Maxmillian, 3,759,848.
- Frankenberg, Henry E., to Continental Can Company, Inc. Container shaping apparatus. 3,759,203, Cl. 113-1.00g.
- Franklin, Benjamin S.: *See—*
  - Nibby, Chester M., Jr.; Manton, John C.; Curley, John L.; and Franklin, Benjamin S., 3,760,379.
- Franz, William F.; and Hess, Howard V., to Texaco Inc. Production of methane-rich fuel gas. 3,759,679, Cl. 48-213.000.
- Fraser, Ian Rowland: *See—*
  - Buckton, Keith Stewart; and Fraser, Ian Rowland, 3,759,234.
- Fratta, Peter J. Tool holder assembly. 3,759,472, Cl. 248-201.000.
- Freeman, Craig: *See—*
  - Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, 3,759,450.
- Freeman, Dixon L., to Monitor Cabinents; a division of Comerico, Inc. Reversible cabinet shelf bracket. 3,759,191, Cl. 108-42.000.
- Freeman, Frank George, to Lucas, Joseph, (Industries) Limited. Rotary hydraulic machines. 3,758,899, Cl. 91-475.000.
- Freeman, Willard Anton; and Hartley, Donald Jean, to Wallace-Murray Corporation. Flexible bladed fan with improved reinforcing. 3,759,630, Cl. 416-132.000.
- Freggens, Robert Alfred: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,759,443.
- Frey, Laverne Lawrence: *See—*
  - Budych, Irvin; Frey, Laverne Lawrence; and Reefman, William Edward, 3,759,133.
- Freyschlag, Herwig; Stolp, Fritz; Reif, Werner; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of derivatives of omega-hydroxytiglaldehyde. 3,760,004, Cl. 260-615.00a.
- Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
  - Vortkamp, Klaus, 3,759,125.
- Friedmann, Evan B.: *See—*
  - McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.
- Friend, Lindsay C., to Du Pont de Nemours, E. I., and Company. Circuit board socket. 3,760,340, Cl. 339-262.00r.
- Frisch, Eldon E.: *See—*
  - Holmes, George W.; and Frisch, Eldon E., 3,759,775.
- Frisch, Peter: *See—*
  - Ertel, Hartmut; and Frisch, Peter, 3,760,059.
- Frisiani, Attilio, to Etablissements Proner. Machine for automatically fitting insulating caps on connecting clips. 3,758,936, Cl. 29-203.00d.
- Frohberger, Paul Ernst: *See—*
  - Buchel, Karl Heinz; Grewe, Ferdinand; Frohberger, Paul Ernst; and Kaspers, Helmut, 3,760,078.
- Frost, Charles C.; and Weis, Siegfried K., to Frost Engineered Products, Inc. Method of making hub or hearing housing, and pulley. 3,758,930, Cl. 29-159.00r.
- Frost Engineered Products, Inc.: *See—*
  - Frost, Charles C.; and Weis, Siegfried K., 3,758,930.
- Fuhring, Heinrich; and Sieber, Johannes Helmut, to Bowe, Bohler & Weber KG. System for dyeing textiles and the like. 3,759,071, Cl. 68-18.00c.
- Fuji Iron & Steel Co., Ltd.: *See—*
  - Omori, Kazuo; Hara, Yoshiaki; and Iguchi, Masaaki, 3,759,698.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, 3,759,796.
  - Nagae, Tadashi; Tsuji, Nobuo; and Miyazako, Takushi, 3,759,710.
- Fujii, Chiyuki; Hirata, Michimasa; and Ogasawara, Masao, to Denki Kagaku Kogyo K.K. Process for preparing succinic acid or derivative thereof. 3,759,984, Cl. 260-485.00r.
- Fujii, Mitsuru; and Narusawa, Izumi, to Dainippon Ink and Chemicals, Incorporated. Plastic pallet. 3,759,194, Cl. 108-58.000.
- Fujimura, Hiroshi: *See—*
  - Tokuzumi, Tadaichi; Fujimura, Hiroshi; and Kashiwa, Norio, 3,759,884.
- Fujitsu Limited: *See—*
  - Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.
  - Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, 3,760,364.
- Fukazawa, Nobuo: *See—*
  - Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.
- Fukui, Yukimasa; Kotani, Tsunehiro; and Ozeki, Toshitsugu. Lubricating oil composition. 3,759,862, Cl. 252-32.70e.
- Fukuma, Norboro; Chayamichi, Hiroshi; Okamoto, Toshio; and Henmi, Hiroshi, to Asahi Chemical Industry Company Limited. Manufacture of conjugated sheath-core type composite fibers. 3,760,052, Cl. 264-171.000.
- Fukumoto, Tetsuo: *See—*
  - Yamaguchi, Goru; Komatsu, Susumu; and Fukumoto, Tetsuo, 3,759,844.
- Funsher, Jeffrey A.: *See—*
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- Funt, Brunson Bert: *See—*
  - Espana, Salvador; and Funt, Brunson Bert, 3,760,141.
- Furuhashi, Michio; Kitani, Teruo; and Sasaki, Reiichi, to Matsushita Electric Industrial Co., Ltd. Color sub-carrier reference system for a color television receiver. 3,760,095, Cl. 178-5.4sy.

Fuzesi, Stephen: *See—*
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Gacek, Joseph A.; and Parker, Joseph E., to Tetrachord Corporation. Speech diagnostic and therapeutic apparatus including means for measuring the speech intensity and fundamental frequency. 3,760,108, Cl. 179-1.0sa.
Gadd, Ronald O. C.; and Smith, Frank K. Shoe lasting machine. 3,758,902, Cl. 12-8.300.
Gaeth, Rudolf; Schmitt, Bernhard; and Blum, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the manufacture of polymer foams containing esters of tertiary alcohols as side groups. 3,760,047, Cl. 264-54.000.
GAF Corporation: *See—*
  Rudoff, Stanley; and De Thomas, Waldo R., 3,759,845.
Gajewski, Henry Martin; and Growski, Clarence John, to Baxter Laboratories, Inc. Reducing blood clotting with antithrombogenic materials containing quaternary phosphonium salts. 3,759,788, Cl. 195-1.800.
Galbraith, Francis A. Batch operated milking apparatus. 3,759,225, Cl. 119-14.040.
Galetto, Louis V.: *See—*
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Gallegra, Pasquale: *See—*
  Pugin, Andre; Hopee, Heinrich; and Gallegra, Pasquale, 3,759,947.
Galvani, Giovanni. Method for repairing cracks in ingot molds, plates and similar cast iron elements for use in iron or steel casting. 3,758,939, Cl. 29-402.000.
Galvin, Aaron A.; and Shapiro, L. Dennis, to Aerospace Research, Inc. Intrusion detection system employing quadrature sampling. 3,760,400, Cl. 340-258.00a.
Gammill, Benny B.; Ladewig, Glen R.; and Ham, George E., to Dow Chemical Company, The. Ion exchange catalysts for the preparation of bisphenols. 3,760,006, Cl. 260-619.00a.
Ganellin, Charon Robin: *See—*
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Gavin, David F.; and Raymond, Maurice A., to Olin Corporation. Method for preparing mercaptopyridines using alkali metal polysulfides. 3,759,932, Cl. 260-294.086.
Gayot, Jean, to Engins Matra, mesne. Rail vehicle steering system. 3,759,187, Cl. 104-130.000.
Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., to American Bank Note Company. Printing press with sheet inspection station. 3,759,177, Cl. 101-232.000.
Gebauer, Adam George, to Parkson Corporation. Plate evaporator for removing volatiles from liquids. 3,759,308, Cl. 159-13.00r.
Gebr. Hennig GmbH: *See—*
  Schnidberger, Hans-Peter, 3,759,035.
Geffroy, Robert, to Sealfire. Piston and piston rings unit for an internal combustion engine. 3,759,148, Cl. 92-160.000.
Geiger, Lewis J., Jr.; and Estes, James W., to Airco, Inc. Process for melting scrap with a plurality of oppositely directed heating means. 3,759,699, Cl. 75-43.000.
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Gibbons, Edward J.; and Daigle, Norman O., said Daigle assor. to said Gissons, Edward J. Hollow stamp handle. 3,759,180, Cl. 101-405.000.
Gibson, Steve B.; Lyttle, William B.; and Repasy, Andy J., to United States of America, Army. Uncooled gallium-aluminum-arsenide laser illuminator. 3,760,175, Cl. 240-1.0el.
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., to Cincinnati Time Recorder Company, Inc. Automatic fee determining system for parking garage. 3,760,160, Cl. 235-61.70r.
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Gillett, Orval B. Set of hollow core shots. 3,759,513, Cl. 272-59.00b.
Gimenez, German Artigas, to Saint-Gobain. Apparatus for modifying molten glass by an additive. 3,759,684, Cl. 65-145.000.
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Glas, Dirk. Circular saw grinding attachment. 3,759,118, Cl. 76-43.000.
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Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., to FMC Corporation. Adjustable, self-locking load supporting mechanism for booms. 3,759,399, Cl. 212-55.000.
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Graber, Walter P., to Kysor Industrial Corporation. Shutter control system. 3,759,056, Cl. 62-183.000.
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Graeme, Jerald G., to Burr-Brown Research Corporation. FET zero temperature-coefficient bias. 3,760,199, Cl. 307-296.000.
Grafe, Hans; and Ullrich, Hans, to Siemens Aktiengesellschaft. Method of producing electrically insulated aluminum contacts. 3,759,798, Cl. 204-15.000.
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Granger, Joe, Jr. Walking-type concrete edger. 3,758,909, Cl. 15-235.800.
Grant, Norman H.; and Alburn, Harvey L., to American Home Products Corporation. 2-Phenoxyalkanoic acid esters. 3,759,950, Cl. 260-326.00a.
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Greene, Udell T., to Diamond Shamrock Corporation. Method of bleaching pulp with an aqueous chlorine solution while suppressing vaporization of liquid chlorine. 3,759,784, Cl. 162-87.000.
Gregg, Stanley J., to Allied Chemical Corporation. Gelled alcohols. 3,759,674, Cl. 44-7.00c.
Gregor, John S.; and Radlinsky, Raymond, to International Business Machines Corporation. Unprintable character recognition. 3,760,366, Cl. 340-172.500.
Greiner, Henri; Masson, Yves; and Olagnier, Jean, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tire having reinforcing with high modulus of elasticity. 3,759,306, Cl. 152-374.000.
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Grodinsky, Robert M. AC to DC converter circuit. 3,760,255, Cl. 321-8.00r.
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  Bennett, Joseph C.; and Wenzel, Anton, 3,760,330.
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Gunter, Kenneth H. Bed frame connector. 3,758,895, Cl. 5-304.000.
Guntersdorfer, Max, to Siemens Aktiengesellschaft and said Guntersdorfer assor. to Braun Aktiengesellschaft. Depolarization protection for ceramic piezoelectric motors. 3,760,203, Cl. 310-8.100.
Gurley, Grey Manning, to AMP Incorporated. Electrical connecting device for insulated wires. 3,760,331, Cl. 339-36.000.
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- Hadad, Joseph D.; Plunk, Troy E.; and Banks, Donald S., to Raytheon Company. Radiation seeker. 3,760,420, Cl. 343-117.00r.
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- Hageman, Howard, to Uniroyal, Inc. Fumaramic acid derivatives. 3,759,909, Cl. 260-247.20a.
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- Hager, Robert Bonner; and Walter, Gerald Joseph, to Pennwalt Corporation. Esters of perfluoroalkyl terminated alkylene thioalkanoic acids. 3,759,981, Cl. 260-481.00r.
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- Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr. Motion retarding system for trucks. 3,759,355, Cl. 188-290.000.
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  - Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,759,825.
- Hamilton, Richard J.; and McGough, Gerald B., to GTE Automatic Electric Laboratories Incorporated. Coin disposal apparatus. 3,759,440, Cl. 232-57.500.
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- Hanna, Michael F.: *See—*
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- Hannaford, Colin William, to International Business Machines Corporation. Non-current summing multiple input latching circuit. 3,760,190, Cl. 307-218.000.
- Hanninen, Clifford: *See—*
  - Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugen, 3,759,575.
- Hansel, William B., to Sun Oil Company of Pennsylvania, mesne. Contamination-preventing nozzle. 3,759,423, Cl. 222-153.000.
- Hansen, Erling J., mesne: *See—*
  - Anderson, Gordon R., 3,759,161.
- Hanson Limited: *See—*
  - Petersen, Svend A. H.; and Neary, Padraic E., 3,759,338.
- Hanssen, Nels S.: *See—*
  - Boler, Leonard J.; Hanssen, Nels S.; Beaulieu, Bryan J.; Cherne, Lloyd G.; and Halvorson, Halvor O., 3,759,495.
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- Hardway, Edward V., Jr., to Spearhead, Inc. Three-terminal capacitive servomechanism. 3,760,254, Cl. 318-662.000.
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  - Krasienko, Chester A.; and Harmeyer, Stanley G., 3,760,314.
- Harris, Cliff Andrew, to Bell Telephone Laboratories, Incorporated. Digitally controllable variable active RC filter. 3,760,287, Cl. 330-9.000.
- Harris, Franklin H.: *See—*
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  - Hitch, Thomas R.; and Wilson, William J., 3,759,402.
- Harrison, Henry R., to Texaco Inc. Soluble oil compositions. 3,759,828, Cl. 252-33.400.
- Harrison, William B., to Grace, W. R., & Co. Cutoff mechanism for container closure lining machines. 3,759,204, Cl. 113-114.0be.
- Harsanyi, Eugen. Cordless electric iron and current-supplying means therefor. 3,760,149, Cl. 219-247.000.
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  - Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, 3,759,374.
- Harter Corporation: *See—*
  - Koepke, Earl H., 3,759,572.
- Hartford Special Machinery Company, The: *See—*
  - Morton, Robert D., 3,758,900.
- Hartkopf, Heinz, to Kieserling, Th., & Albrecht. Method and apparatus for feeding elongated rotary workpieces in straightening machines or the like. 3,759,077, Cl. 72-99.000.
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  - Freeman, Willard Anton; and Hartley, Donald Jean, 3,759,630.
- Hartmann, Hans, to Aktiengesellschaft Brown, Boveri & Cie. Electrical coil with spacing bands. 3,760,315, Cl. 336-205.000.
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- Harvey, William K., to Fair-Conn., Inc. Trolley wheel. 3,759,190, Cl. 105-150.000.
- Harwick, Nathan Everette, III, to Bell Telephone Laboratories, Incorporated. Method of and apparatus for testing the quality of bonded connections of semiconductor devices. 3,759,088, Cl. 73-37.000.
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  - Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, 3,760,405.
- Haskett, Frank Barry, to Martin, Joan Hixon. Chlorination of hydrocarbons. 3,760,014, Cl. 260-650.00r.
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- Hasuo, Masayoshi: *See—*
  - Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, 3,759,918.
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- Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. Thiazolinyl and thiazinyl derivatives of indazoles. 3,759,903, Cl. 260-243.00r.
- Hauptmann, Karl Heinz: *See—*
  - Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
- Hauptmann, Maria: *See—*
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- Hausmann, Heinrich. Turning key for rolling-up the empty end of a tube, possible in combination with a squeezing device. 3,759,421, Cl. 222-99.000.
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  - Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, 3,760,200.
- Hayashi, Shigemi: *See—*
  - Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
- Hayashi, Yoshihiro: *See—*
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- Hayes, Thomas E.: *See—*

  - Wheeler, John B., III; Sonia, John; Hayes, Thomas E.; and Retrochko, Robert P., 3,760,055.
- Hazeltine Corporation: *See—*
  - Vasile, Carmine F., 3,760,299.
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  - Dowell, Frederick S.; and Healy, Benedict P., 3,759,354.
- Heim Universal Corporation: *See—*
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- Heisler, Alan W., 1/3 to Stidham, Melvin R. Discus toy. 3,758,985, Cl. 46-74.00d.
- Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, to Merck Patent Gesellschaft mit beschrankter Haftung. Cuvette. 3,759,374, Cl. 206-65.00r.
- Hellstrom, Nils E.: *See—*
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  - Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, 3,760,104.
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- Henderson, Ross, to Gould, Inc. High speed AC failure detector circuit. 3,760,230, Cl. 317-27.00r.
- Henmi, Hiroshi: *See—*
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- Herbst, Willy: *See—*
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- Hernqvist, Karl Gerhard, to RCA Corporation. Internally-modulated gas laser. 3,760,296, Cl. 331-94.500.
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- Herwig, William C.; and Westermann, Donald H., to Miller Brewing Company. Method of purifying acidic components of a hop extract. 3,759,999, Cl. 260-586.00r.
- Herzberger, Peter; and Di Piazza, Learco, to European Atomic Energy Community (Euratom). Optimum focusing in an electron beam welding machine. 3,760,144, Cl. 219-121.0eb.
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  - Lincoln, Lewis L.; and Heseltine, Donald W., 3,759,901.
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  - Duerdoth, Winston Theodore; Hughes, Charles Joseph; Hesketh, John Frederick; and Morton, William Desmond, 3,760,107.
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- Heter, Elmo W., Jr., to Sheridan Products Inc. Dispenser type box. 3,759,428, Cl. 222-480.000.
- Hetherington, Robert D.: *See—*
  - Fram, Morris; Hetherington, Robert D.; and Freeman, Craig, 3,759,450.
- Heuberger, Clarence A. Electric fence extender. 3,759,490, Cl. 256-10.000.
- Heuer-Leonidas S.A.: *See—*
  - Jeanmonod, Jacques, 3,759,033.
- Heyes, Alan: *See—*
  - Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, 3,759,723.
- Hickner, Richard A., to Dow Chemical Company, The. Polyether-polythiols, method of preparation and mixtures of polythioether-polythiols with epoxide resins. 3,759,871, Cl. 260-47.0ec.
- Hidalgo, John: *See—*
  - Thompson, Charles R.; and Hidalgo, John, 3,760,077.
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  - Provenzano, Joseph Charles; Hiestand, David F.; and Krabec, James A., 3,759,082.
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- Hildebrand, Klaus, to Wild Heerbrugg Aktiengesellschaft. Electro-optical distance measuring instrument. 3,759,616, Cl. 356-5.000.
- Hildebrand, Otto G. Quickly adjustable vise jaw with tool couple elements. 3,759,504, Cl. 269-87.000.
- Hildebrant, Floyd J.: *See—*
  - Chovanec, John J.; and Hildebrant, Floyd J., 3,760,262.
- Hildenbrand, Jerry L.; and Wagenaar, Loren B., to Westinghouse Electric Corporation. Electrical bushing assembly having resilient means enclosed within sealing means. 3,760,089, Cl. 174-12.0bh.
- Hilgers, Howard M., to Production Technology Inc. Chuck with individual jaw compensation. 3,759,535, Cl. 279-1.00j.
- Hill, Herbert N., Jr., to Union Carbide Corporation. Analytical process. 3,759,666, Cl. 23-230.00b.
- Hill, Marion E.: *See—*
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- Hillman, James George Edward: *See—*
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- Himics, Richard J., to Sun Chemical Corporation. Crosslinking nonomers containing the 1-aza-3,7-dioxabicyclo[3.3.0]octane structures. 3,759,942, Cl. 260-307.00f.
- Hinckley, John N.; and Stonehocker, Van Tassel, to Beloit College. Rotary engine valve means. 3,759,640, Cl. 418-249.000.
- Hinley, John James: *See—*
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- Hirakawa, Tamotsu: *See—*
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- Hirano, Takehisa, to Kabushiki Kaisha Keihinseiki Seishakusho. Fluid control device. 3,759,484, Cl. 251-67.000.
- Hirasawa, Yoshiro: *See—*
  - Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.
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- Hird, John, to Graphic Trend Associates Ltd. Display stands. 3,759,477, Cl. 248-459.000.
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  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
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  - Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, 3,760,200.
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  - Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,214.
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  - Yoda, Mikio; Ishida, Shinnosuke; and Ashizawa, Haluo, 3,759,560.
- Hitch, Thomas R.; and Wilson, William J., to Harris-Intertype Corporation. Counter ejector. 3,759,402, Cl. 214-6.00h.
- Hitrys, Paul; and Wainer, Joshua S. Protective enclosure. 3,759,195, Cl. 109-9.000.
- Hlasnicek, Richard S.; and Towne, Paula. Mobius band type amusement device. 3,758,981, Cl. 46-43.000.
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  - Walton, Richard S., 3,760,406.
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- Hockin, John; Lund, Carl H.; and Danesi, Wilbert P., to Martin-Marietta Corporation, mesne. Tungsten containing alloy. 3,759,707, Cl. 75-171.000.
- Hodan, Joseph E., III. Board game apparatus. 3,759,522, Cl. 273-135.0aa.
- Hodel, Ernst; and Gatzi, Karl, to Ciba-Geigy Corporation. Preservation of fruits with sulfate and dihydrogen phosphate salts of 5-acetyl-8-hydroxy-quinoline. 3,759,719, Cl. 99-154.000.

- Hoesch Aktiengesellschaft: *See—*
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- Hoff, Stephen J. High speed variable ratio pulley. 3,759,111, Cl. 74-230.17e.
- Hoffman, Charles R.; and Laitin, William W., to Motorola, Inc. Silicon gate complementary MOS dynamic ram. 3,760,380, Cl. 340-173.00r.
- Hoffman, Hans, to Telesco Brophey Limited. Handle for umbrella. 3,759,278, Cl. 135-46.00m.
- Hoffmann, Ernst; and Herrle, Karl, to Badische Aniline & Soda-Fabrik Aktiengesellschaft. Manufacture of insoluble and only slightly swellable poly-N-vinylpyrrolidone-2. 3,759,880, Cl. 260-80.300.
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- Hoftiezer, Wallace A.: *See—*
  - Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.
- Hogg, Walter R., to Coulter Electronics, Inc. Axial trajectory sensor having gating means controlled by pulse duration measuring for electronic particle study apparatus. 3,760,281, Cl. 328-91.000.
- Holaday Industries, Inc.: *See—*
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- Holaday, Reed E.: *See—*
  - Bach, Stanley Monrad, Jr.; Smith, Leonard S.; and Holaday, Reed E., 3,760,271.
- Holder, Charles B., to Texaco Inc. Polycrylate casting process. 3,759,881, Cl. 260-86.10e.
- Holdsbrough, Keith: *See—*
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- Hollins, Jesse R. Apparatus for automatically extinguishing light of a vehicle. 3,760,236, Cl. 317-142.0td.
- Hollister Incorporated: *See—*
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- Holm, William J., to Riggs & Lombard, Inc. Apparatus for shearing patterns on fabrics. 3,758,924, Cl. 26-16.000.
- Holmberg, Bo F.; Hellstrom, Nils E.; and Modin, Sigurd K. J. Apparatus for grading lumber. 3,759,384, Cl. 209-122.000.
- Holmes, George W.; and Frisch, Eldon E. Method for improving the adhesion between silicone elastomers. 3,759,775, Cl. 156-308.000.
- Holmstrom, F. Ross; and Hopkins, John B., to United States of America, Transportation. Microwave crash sensor for automobiles. 3,760,415, Cl. 343-7.0ed.
- Holscher, Ebo Jan; and Osinga, Theo Jan, to N.V. Internationale Octrooi Maatschappy "Octropa". Nickel catalysts. 3,759,843, Cl. 252-459.000.
- Holter, Godfrey George, to Smiths Industries Limited. Photoelectric readers. 3,760,162, Cl. 235-61.11e.
- Holtschmidt, Hans: *See—*
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- Hope, William K. Yarn breaker and switch for spinning frames. 3,759,026, Cl. 57-80.000.
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- Horak, Edwin M., to Chemetron Corporation. Method of melting aluminum. 3,759,702, Cl. 75-63.000.
- Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William. Switching system equipped for rotary line hunting. 3,760,118, Cl. 179-18.0ha.
- Hornberger, William P.: *See—*
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- Horstmann, Walter, to Bayer Aktiengesellschaft. Optical brightening agents. 3,759,900, Cl. 260-240.00b.
- Horvath, William. Safety closure cap and container for dry and liquid contents. 3,759,411, Cl. 215-9.000.
- Hotch, Frederick S., to Honeywell Inc. Open circuit detection apparatus for thermocouple circuits. 3,760,265, Cl. 324-51.000.
- Hottle, Dwight E. Tire supporting device. 3,759,394, Cl. 211-23.000.
- Hougendobler, Cleon W.: *See—*
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- Houlihan, William J., to Sandoz-Wander, Inc. 2,3 or 4-Pyridine methanol-alpha-substituted or unsubstituted phenyls-alpha-(2 or 3-alkoxy-1-naphthyls). 3,759,934, Cl. 260-297.00b.
- Howard, John, to Rotaflex Great Britain Limited. Electrical lighting installations. 3,760,133, Cl. 200-50.00b.
- Howard, Richard I.: *See—*
  - Sullivan, James K.; and Howard, Richard I., 3,760,048.
- Howell, Norbert C.; Tischuk, Walter; and Welsh, Thomas M., to Robertson, H. H., Company. Mold apparatus for making foamed-in-place double-skin building panel. 3,759,479, Cl. 249-95.000.
- Hoyler, Robert C., to Westinghouse Electric Corporation. Direction control in a vehicle control system. 3,760,421, Cl. 343-225.000.
- Hruby, Ronald J.: *See—*
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- Huck, Rainer F.: *See—*
  - Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.
- Hudak, Stephen F., to Ashland Oil, Inc. Water-dispersible polyurethanes based on polyesters prepared from carboxy-polyols. 3,759,873, Cl. 260-75.0nk.
- Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 8-Benzofurylmethyl-1,3,B-triazaspiro(4,5)decanes. 3,759,927, Cl. 260-293.580.
- Huffman Manufacturing Company, The: *See—*
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- Hughes, Charles Joseph: *See—*
  - Duerdoth, Winston Theodore; Hughes, Charles Joseph; Hesketh, John Frederick; and Morton, William Desmond, 3,760,107.
  - Duerdoth, Winston Theodore; and Hughes, Charles Joseph, 3,760,115.
- Hughes, William J., to United States of America, Navy. Adapting circular shading to a truncated array of square elements. 3,760,345, Cl. 340-6.00s.
- Hugon, Pierre: *See—*
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- Huhn, Helmut; and Hoppe, Lutz, to Wolff & Co. Shrinkable film forming copolyamides prepared by copolymerizing ωaminoundecanoic acid and the salt of a dicarboxylic acid and trimethylhexamethylene diamine. 3,759,877, Cl. 260-78.00a.
- Hull Corporation: *See—*
  - Wiegmann, Karl H., 3,759,217.
- Hult, David R., to Vernco Corporation. Split end bell for motor housing. 3,760,209, Cl. 310-91.000.
- Hundey, Doran J.; and Naru, Robert B., to Edmore Tool and Ginding, Inc. Trench compactor. 3,759,624, Cl. 404-133.000.
- Hunkar, Denes B., to Hunkar Instrument Development Laboratories, Inc. Extruder control system. 3,759,648, Cl. 425-140.000.
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  - Hunkar, Denes B., 3,759,648.
- Hurtado, Jean: *See—*
  - Caron, Claude; and Hurtado, Jean, 3,759,044.
- Hurtig, Gunnar, III, to Kinetic Technology, Inc. Active filter network having a variable center frequency. 3,760,289, Cl. 330-51.000.
- Huss Equipment Corporation: *See—*
  - Wallace, Charles H.; and Smith, Frank L., 3,759,105.
- Husz, Charles, to Transco Inc. Insulated expansion joint. 3,759,008, Cl. 52-573.000.
- Hutcheson, Guilford J.: *See—*
  - Roberts, Thomas G.; Hutcheson, Guilford J.; and Rust, Charles M., 3,760,294.
- Hutzenlaub, Armin S. P., to Kampf, Erwin, Maschinenfabrik. Web drive and web processing controls for web processing machines. 3,759,432, Cl. 226-42.000.
- Huxsoll, Charles C.; Graham, Robert P.; and Weaver, Merle L., to United States of America, Agriculture. Process for peeling potatoes. 3,759,160, Cl. 99-233.500.
- Hyde, Lawrence Edward: *See—*
  - Blee, Timothy John; Hyde, Lawrence Edward; and Noddings, John, 3,759,344.
- Ianaka, Saboro. Solenoid valve. 3,759,293, Cl. 137-598.000.
- Iarossi, Frank J.; and Cowles, Walter C., to Esso Research and Engineering Company. Grid system for external insulation tanker. 3,759,209, Cl. 114-74.000.
- ICI America, Inc.: *See—*
  - Ford, Ernest C., Jr., 3,760,032.
- ICI Australia Limited: *See—*
  - Baxlien, Asbjorn; and Koln, Jan, 3,759,937.
- Ide, Yoichi: *See—*
  - Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.

- Ideal Toy Corporation: *See—*
  - Cagen, George, 3,758,983.
- Iga, Atsushi: *See—*
  - Masuyama, Takeshi; Matsuura, Mikio; and Iga, Atsushi, 3,760,318.
- Iguchi, Masaaki: *See—*
  - Omori, Kazuo; Hara, Yoshiaki; and Iguchi, Masaaki, 3,759,698.
- Iida, Akira: *See—*
  - Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,760,037.
- Iida, Toshihide: *See—*
  - Saito, Takashi; and Iida, Toshihide, 3,759,220.
- Iio, Katumi: *See—*
  - Nose, Shinji; Tsujimura, Hideaki; Iio, Katumi; Ishihara, Hitoshi; and Yoshimoto, Hiroshi, 3,759,888.
- Ikeda, Hidekatsu, to Amada Company Limited. Hydraulic actuating system for hydraulically operated bending machine. 3,759,144, Cl. 91-436.000.
- Ikeda, Shojiro: *See—*
  - Nishi, Sunao; Ikeda, Shojiro; and Torii, Takayoshi, 3,759,724.
- Ikeda, Tsuneo: *See—*
  - Koga, Ikumi; Kobayashi, Akira; and Ikeda, Tsuneo, 3,759,694.
- Ilford Limited: *See—*
  - Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, 3,759,931.
- Illinois Tool Works Inc.: *See—*
  - McClelland, Roland Hill, Jr., 3,760,244.
- Imbrecht, Jules, to Intissel. Machines for the continuous manufacture of cloth by superposing several layers of a textile web. 3,759,507, Cl. 270-69.000.
- Immel, Richard H., to Sinclair-Koppers Company. Process and apparatus for pre-expanding polymer particles. 3,759,641, Cl. 425-4.000.
- Imperial Chemical Industries Limited: *See—*
  - Baranyovits, Francis Leslie Charles; and Masters, Joan Irene, 3,760,076.
  - Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, 3,759,439.
  - Nicks, Peter Francis, 3,759,864.
- Imperial Metal Industries (Kynoch) Limited: *See—*
  - Woolcock, Alan; McDougall, Ian Leitch; and Barber, Anthony Clifford, 3,760,092.
- Imris, Pavel. Variable-reluctance electrical generator. 3,760,205, Cl. 310-168.000.
- Inaba, Shigeho: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
- Industrial & Merchandising Services S.A.: *See—*
  - Wainman, Roger, 3,758,901.
- Ingalls, Edgar J. Crawfish peeler. 3,758,921, Cl. 17-71.000.
- Ingenieurburs fur Angewandte Physik und Chemie: *See—*
  - Lang, Ludwig G., 3,759,499.
- Ingersoll-Rand Company: *See—*
  - Lindeboom, Herman, 3,759,532.
- Ingwalson, Raymond W., to Velsicol Chemical Company. Process for the production of elemental halogen. 3,760,067, Cl. 423-502.000.
- Inmont Corporation: *See—*
  - Lehman, Donald Gregory, 3,759,850.
- Inose, Fumiyuki; and Kita, Yuzo, to Hitachi, Ltd. Two-dimensional pattern normalizer. 3,760,357, Cl. 340-146.30h.
- Inoue, Kiyoshi. Apparatus for making abrasive articles. 3,759,383, Cl. 209-111.500.
- Inoue, Toshitsugu: *See—*
  - Takano, Hirotugu; and Inoue, Toshitsugu, 3,760,163.
- Inoue, Wahei, to Kabushiki Kaisha Maekawa Seisakusho. Method of controlling high stage and low stage compressors. 3,759,052, Cl. 62-115.000.
- Inoue, Yoshinori: *See—*
  - Shimanuki, Takashi; and Inoue, Yoshinori, 3,759,055.
- Inouye, Ken: *See—*
  - Otsuka, Hideo; and Inouye, Ken, 3,759,891.
- Institutul de Cercetari Energetice Industriale si Proiectari Utilaje Energetice: *See—*
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- Interconsult S.p.A.: *See—*
  - Nastasic, Vladimir, 3,759,045.
- International Bakerage; a div. of International Consolidated, Inc.: *See—*
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- International Business Machines Corporation: *See—*
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  - Arnold, Robert W.; and Galetto, Louis V., 3,760,282.
  - Attridge, Curtis C.; and Ayers, Joseph G., Jr., 3,760,377.
  - Bartz, Maurice R., 3,760,373.
  - Cannizzaro, Joseph R.; and Emery, Charles F., 3,760,091.
  - Castle, William Harold; Jacobs, Harry Michael; and Sloan, Thomas, 3,759,363.
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  - Dreyfus, Russell W.; and Hornberger, William P., 3,760,063.
  - Duffy, Michael C.; Riseman, Jacob; and Wu, Bevan P. F., 3,760,242.
  - Gregor, John S.; and Radlinsky, Raymond, 3,760,366.
  - Hannaford, Colin William, 3,760,190.
  - Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.
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  - Kippenhan, B. William, 3,760,403.
  - Kurtzberg, Jerome M.; Rosenfeld, Jack L.; and Villani, Raymond D., 3,760,365.
  - Lankard, John R.; and Sorokin, Peter P., 3,760,295.
  - Moneagle, Otto F.; and Svatek, Karl, 3,759,456.
  - Tanner, Howard C., 3,760,376.
  - Yao, Ying Loh, 3,760,381.
- International Standard Electric Corporation: *See—*
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  - Bouchet, Claude; Meliani, Roger; and Tomasovitch, Vladimir, 3,760,113.
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- International Telephone and Telegraph Corporation: *See—*
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- Inventions Unlimited Incorporated: *See—*
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- Iomec, Inc.: *See—*
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- Irgens, Finn T., to Outboard Marine Corporation. Balancing system. 3,759,238, Cl. 123-192.00b.
- Irikura, Tsutomu; Abe, Yasuo; Okamura, Kyuya; Higo, Kyoichi; Maeda, Akitoshi; and Morinaca, Fumihiko, to Kyorin Seiyaku Kabushiki Kaisha. Triazine derivatives. 3,759,911, Cl. 260-249.600.
- Irvin, James Ledson, to Redifon Limited. Circuit arrangements for measuring the instantaneous phase difference between two signals. 3,760,270, Cl. 324-83.00d.
- Irwin, Samuel N.; and Levine, Michael R., to Sycor, Inc. Source data entry terminal. 3,760,375, Cl. 340-172.500.
- Iseli, Ernst: *See—*
  - Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,759,899.
- Iseli, Hans, to Vereinigte Drahtwerke A.G. Apparatus for separating and individually dispensing small elongate parts. 3,759,419, Cl. 221-168.000.
- Ishida, Shinnosuke: *See—*
  - Yoda, Mikio; Ishida, Shinnosuke; and Ashizawa, Haluo, 3,759,560.
- Ishigoro, Keiichiro: *See—*
  - Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, 3,759,814.
- Ishihara, Hitoshi: *See—*
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- Ishii, Akira: *See—*
  - Mifune, Hideo; Ishii, Akira; Kokoyama, Masanori; and Yamazoe, Toshihiro, 3,759,658.
- Ishii, Atsushi; Murakami, Masayuki; Hagiwara, Yoichi; Ono, Tomio; Adachi, Kiyoshi; and Hashimoto, Shuji, to Fujitsu Limited. Character display system utilizing circulating memories. 3,760,405, Cl. 340-324.0ad.
- Ishizawa, Kazutomo; Nagata, Yasunori; and Uematsu, Yoshiaki. Apparatus for controlling the operating temperature of a continuous flat press. 3,758,968, Cl. 38-15.000.
- Ishizumi, Kikuo: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
- Isii, Sigeki; and Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Latching selector for selectively drawing out a single signal from among a plurality thereof. 3,760,358, Cl. 340-147.01p.
- Ithaca Gun Company: *See—*
  - Tollinger, James, 3,759,135.
- Ito, Isao: *See—*
  - Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, 3,759,918.
- Ito, Isaû, to Nippondenso Kabushiki Kaisha. Structure of ball- and socket-joint used for coupling link members for driving a windshield wiper for vehicles. 3,759,555, Cl. 287-90.00d.
- Itoh, Takayuki, to Takachiho Koeki Kabushiki Kaisha. Series-parallel shift register memory. 3,760,382, Cl. 340-173.0rc.
- Iversen, Norman H. Cutting tool. 3,759,625, Cl. 408-188.000.
- Iwakura, Makoto: *See—*
  - Shimizu, Tetsuji; Iwakura, Makoto; and Tanaka, Hiroshi, 3,760,224.
- Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, to Nippon Steel Corporation. Sampling apparatus for analyzing gas. 3,759,087, Cl. 73-23.000.

Iwata, Haruo, to Waskino Kikai Kabushiki Kaisha. Cyclic motion control device for multicycle profiling machines. 3,759,120, Cl. 82-14.000.

Iwatsu Electric Co., Ltd.: *See—*
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Jackson, Harold S., to Allegheny Ludlum Steel Corporation. Arc slag meeting. 3,759,311, Cl. 164-52.000.

Jackson, James S.; and Lempio, Paul S., to Caterpillar Tractor Company. Swing motor mounting arrangement and method of disassembly. 3,758,941, Cl. 29-464.000.

Jackson, James W., Jr. Exercise garment. 3,759,510, Cl. 272-57.00r.

Jacobs, Harry Michael: *See—*
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Jacobs, James W., to General Motors Corporation. Compressor shaft seal heater. 3,759,058, Cl. 62-228.000.

Jacobs, Max Le Roy; and Higdon, Buster Watson, to Celanese Corporation. Process for inhibiting diketene polymerization. 3,759,955, Cl. 260-343.900.

Jaffe, Mary S., to General Electric Company. Solid state lamp assembly having conical light director. 3,760,237, Cl. 317-234.00r.

James, Daniel Shaw, to Du Pont de Nemours, E. I., and Company. Biscationic monoazo dyes for acid-modified nylons. 3,759,893, Cl. 260-149.000.

James, Derek: *See—*
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James, Evan Douglas: *See—*
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Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, to International Business Machines Corporation. Tape containing cassettes, each with a removable wall. 3,759,465, Cl. 242-199.000.

Jasper, Louis J., Jr., to United States of America, Army. Single conductor multi-coil multi-beam microwave device. 3,760,223, Cl. 315-3.600.

Jaszkowiak, David A.: *See—*
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Jaworek, Dieter: *See—*
Bergmeyer, Hans Ulrich; Beaucamp, Klaus; Jaworek, Dieter; and Nelboeck-Hochstetter, Michael, 3,759,596.

Jean-Blanc, Ferdinand H. Self-centering foot for sewing machines. 3,759,202, Cl. 112-239.000.

Jeanmart, Claude; Messer, Mayer Naoum; and Simon, Pierre, to Rhone-Poulenc S.A. 1-Amino-3(or 4)-phenyl-3,4-dehydroisoquinolines. 3,759,924, Cl. 260-286.00r.

Jeanmonod, Jacques, to Heuer-Leonidas S.A. Timepiece. 3,759,033, Cl. 58-74.000.

Jefferson Chemical Company, Inc.: *See—*
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Jenaer Glaswerk Schott & Gen.: *See—*
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Jenkins, Stuart McEwen: *See—*
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Jennison, Rolland N.: *See—*
Bell, Clarence A.; Gwinn, Ralph; Jennison, Rolland N.; Jones, Bryon; and Strauss, Philip W., 3,759,049.

Jenny, Hanns; and Troesch, Juerg, to Sandoz Ltd.; a/k/a Sandoz AG. Process for the production of nonwovens containing binders. 3,759,736, Cl. 117-33.50t.

Jensen, Billy M.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.

Jeppsson, Sven Torsten. Apparatus and method for feeding blanks. 3,759,508, Cl. 271-69.000.

Jernigan, James J.: *See—*
Cash, Carlton H.; Green Hazel; and Jernigan, James J., 3,760,418.

Jervis, James E.: *See—*
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Jezic, Zdravko, to Dow Chemical Company, The. Bis(p-phenoxyphenyl)iodonium salts. 3,759,989, Cl. 260-539.00a.

Joel, Amos Edward, Jr., to Bell Telephone Laboratories, Incorporated. Traffic recording system. 3,760,110, Cl. 179-8.00a.

Johnson, David R.: *See—*
Bon, Charles K.; and Johnson, David R., 3,759,660.

Johnson, Erlon Fitch, to AMP Incorporated. Connector for display tube anode button. 3,760,337, Cl. 339-94.00r.

Johnson, Eugene L. Pneumatic tire pressure sensor. 3,760,350, Cl. 340-58.000.

Johnson, Louis W. Rock crusher. 3,759,453, Cl. 241-207.000.

Johnson, Lyman A.: *See—*
Borom, Marcus P.; and Johnson, Lyman A., 3,759,101.
Borom, Marcus P.; and Johnson, Lyman A., 3,759,108.

Johnson, Lyman A.; and Borom, Marcus P., to General Electric Company. Multi-time constant pneumatic analogue decompression instruments. 3,759,109, Cl. 73-423.00r.

Johnson, Marvin F. L., to Atlantic Richfield Company. Method for determinaing decrease in hydrogenation dehydrogenation activity and acidic activity of reforming catalyst. 3,759,824, Cl. 208-139.000.

Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., to Sunkist Growers, Inc. Fruit slicer. 3,759,168, Cl. 99-545.000.

Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., to Sunkist Growers, Inc. Fruit slicer. 3,859,168, Cl. 99-545.000.

Johnson, Quentin S. Method and apparatus for housing underwater optical instruments. 3,759,605, Cl. 350-179.000.

Johnson, S. C., & Son, Inc.: *See—*
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Johnsson, Carl E.; and Swander, Kenneth D., Jr., to Certain-Teed Saint Gobain Insulation Corporation. Diaphragm brake actuator. 3,759,147, Cl. 92-19.000.

Johnston, Ronald R. Method and apparatus for dispensing pharmaceutical doses. 3,759,597, Cl. 312-234.500.

Johnston, William F., to Rex Chainbelt Inc. Air conveyor deck. 3,759,579, Cl. 302-31.000.

Joice, Brian James; and Mallinson, Richard Frederick Niven. Manufacture of copper oxide. 3,760,070, Cl. 423-604.000.

Jones & Laughlin Steel Corporation: *See—*
Mizikar, Eugene A.; and Rehmus, Frederick H., 3,759,312.

Jones, Bryon: *See—*
Bell, Clarence A.; Gwinn, Ralph; Jennison, Rolland N.; Jones, Bryon; and Strauss, Philip W., 3,759,049.

Jones, Clarence O., Jr., to Niagara Machine & Tool Works. Motion detecting apparatus. 3,760,189, Cl. 307-120.000.

Jones, Harry G., to Pat & Chuck Oil Well Equipment, Inc. Apparatus for automatically controlling weight-on-bit. 3,759,489, Cl. 254-173.00r.

Jones, James J. Ramp generator for producing ramp current during controlled rate discharge of stored capacitance. 3,760,191, Cl. 307-228.000.

Jones, John Leslie, Sr. Integral strap tissue napkin. 3,759,262, Cl. 128-290.00r.

Jones, Richard Sterling; and Stevenson, George Michael. Underground distribution system for utilities with meter pullbox. 3,760,234, Cl. 317-111.000.

Jones, William George Tilston: *See—*
Morton, William Desmond; and Jones, William George Tilston, 3,760,114.

Jordan, William I., to Performance Equipment Inc. Wheel aligning apparatus. 3,758,958, Cl. 33-336.000.

Jorn, Raoul; and Reichardt, Peter. Composite flexible coupling for interconnecting two shafts. 3,759,064, Cl. 64-13.000.

Josefson, Ingmar: *See—*
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Joseph, Joseph Peter: *See—*
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Marsico, Joseph William, Jr.; Joseph, Joseph Peter; and Goldman, Leon, 3,760,084.

Judkins, Thomas E.; and Roles, David Jack, to Eastern Products Corporation. Demountable wall construction. 3,759,001, Cl. 52-241.000.

Juhlin, Sven-Erik, to Aktiebolaget Gustavsbergs Fabriker. Stand for supporting phonograph records. 3,759,395, Cl. 211-40.000.

Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, to Ciba-Geigy Corporation. Process for introducing a delta 5,6-double bond into a steroid. 3,759,899, Cl. 260-239.550.

Jullien-Davin, Jean, to Crouzet. Means for supporting and printing on ticket strip material. 3,759,173, Cl. 101-66.000.

Jullien-Davin, Jean, to Crouzet. Programmer for household electric machines with improved cam operating mechanism. 3,760,129, Cl. 200-38.00r.

Jutz, Christian; and Mueller, Werner, to Byk-Gulden Lomberg Chemische Fabrik GmbH. Nitrile compounds. 3,759,976, Cl. 260-465.000.

Kaarsemaker, Sjoerd: *See—*
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Kabushiki Kaisha Daini Seikosha: *See—*
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Kabushiki Kaisha Keihinseiki Seishakusho: *See—*
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Kabushiki Kaisha Maefava Seisakusho: *See—*
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Kabushiki Kaisha Takai Rika Denki Seisakusho: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
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Kaji, Tadao: *See—*
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Kaldenback, Kenneth H.; Kovals, John; and Pollard, John H., to United States of America, Army. Ultra-high vacuum isolation valve for volatile materials. 3,759,282, Cl. 137-68.000.

Kalopissis, Gregoire: *See—*
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Kaltenbach & Voigt: *See—*
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Kalvoda, Jaroslav: *See—*
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Kamasuka, Teruo: *See—*
Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keltaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.

Kamborian, Jacob S.: *See—*
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Kamborian, Jacob S.; and Caris, Costa, 3,758,904.

Kamborian, Jacob S.; deceased (by Godley, Lisbeth N.; Backa, Michael M.; and Kamborian, Jacob S., Jr.; executors); and Caris, Costa, to Kamborian, Jacob S. Method and mechanism for applying cement in the corner between an upper margin and an insole. 3,758,04, Cl. 12-142.00r.

Kamborian, Jacob S., Jr.: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,758,904.

Kammerer, William J.; and MacNeil, Robert L., to United States of America, Army, mesne. Photographic processing method. 3,759,712, Cl. 96-50.00r.

Kampf, Erwin, Maschinenfabrik: *See—*
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Kanai, Hiromi: *See—*
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Yamazaki, Eiichi; and Kanai, Hiromi, 3,760,220.

Kane, Edward Michael, to General Cable Corporation. Continuous anneal of wire on pulp insulating process. 3,759,755, Cl. 148-11.50r.

Kane, Neil G.; deceased (by Kane, Virginia L.; administratrix). Manually-operated liquid dispenser. 3,759,426, Cl. 222-385.000.

Kane, Virginia L.: *See—*
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Karita, Michiaki: *See—*
Ohsawa, Takashi; and Karita, Michiaki, 3,760,275.

Karkanen, Uno O. Foolproof dispenser of medical pills. 3,759,420, Cl. 221-288.000.

Karklys, Joseph, to Whirlpool Corporation. Dryer control system using moisture sensor and semiconductors to control cycle. 3,758,959, Cl. 34-45.000.

Karlsson, Ingemar: *See—*
Lindstrom, Bengt; Citron, Bengt; Nelenius, Erik; Karlsson, Ingemar; and Rosby, Sven-Olof, 3,759,434.

Kasahara, Keisuke; and Kabushiki Kaisha Maefava Seisakusho. Method of compressing chlorine gas. 3,759,348, Cl. 184-6.230.

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Kaspers, Helmut: *See—*
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Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.

Kaufman, Herman S.: *See—*
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Kaufmann, Reinhard: *See—*
Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, 3,759,683.

Kaufmann, Werner, to Staubli Ltd. Heddle frame lift mechanism. 3,759,298, Cl. 139-82.000.

Kaveckis, Joseph E.: *See—*
Erickson, Gerald L.; Jaszkowiak, David A.; and Kaveckis, Joseph E., 3,759,083.

Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, to Kawasaki Steel Corporation. Method and a device for slag-removal. 3,759,701, Cl. 75-61.000.

Kawano, Toru, to Toyo Kogyo Company, Limited. Rock drill supporting device for controlling the drilling direction. 3,759,470, Cl. 248-2.000.

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Terai, Kiyoshi, 3,759,207.

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Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, 3,759,796.

Kawazoe, Toshinobu. Temperature detecting wire structure. 3,760,319, Cl. 338-26.000.

Kayaba Kogyo Kabushiki Kaisha: *See—*
Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, 3,759,042.

Keedy, David E.: *See—*
Dawson, Harry J.; Hoftiezer, Wallace A.; Keedy, David E.; Mangus, Ervin E.; Patton, Eugene K.; and Grandfield, Joseph P., 3,759,323.

Keen, Rodway W. Pet watering apparatus. 3,759,228, Cl. 119-79.000.

Keenan, James P.: *See—*
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Keeney, Cecil M., to Equitable Equipment Company, Inc. Multi-cargo barge. 3,759,208, Cl. 114-73.000.

Kehl, Lawrence Joseph; Triner, Irvin Richard; and Janis, Robert Gerald, to Bunker-Ramo Corporation, The. Detachable electrical heating griddle. 3,760,156, Cl. 219-447.000.

Keich, John D.; and Laliberte, George A., to United States of America, Army, mesne. Cable actuator. 3,759,562, Cl. 295-83.00a.

Keim, Wilhelm: *See—*
Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, 3,759,889.

Keister, Douglas W.; and Leibfreid, Russel B. Emergency warning system. 3,760,349, Cl. 340-33.000.

Kelley, Philip C., to Goodrich, B. F., Company, The. Rubber-resin network blends and method of making same. 3,760,035, Cl. 260-876.00r.

Kellogg, Frank: *See—*
Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.

Kellogg, Frank, to GTE Automatic Electric Laboratories Incorporated. Crosspoint switch allotter release detection circuit. 3,760,119, Cl. 179-18.0ge.

Kelly, John G., to United States of America, Atomic Energy Commission. Electron beam generator. 3,760,286, Cl. 328-228.000.

KemaNord AB: *See—*
Larsson, Karl-Georg, 3,759,815.

Kemp, John Curtis, to International Business Machines Corporation. Distributed microprogram control in an information handling system. 3,760,369, Cl. 340-172.500.

Kempf, Dennis D., to FMC Corporation. Vortex pumps. 3,759,628, Cl. 415-213.00a.

Kendall Company, The: *See—*
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Kennecott Copper Corporation: *See—*
Foard, James E., 3,759,501.
Van Byken, Harold B., II; and Brandt, Denard A., 3,759,014.

Kent, Cecil, to Creators Limited. Glazing window or windscreen openings, particularly in vehicle bodies. 3,759,004, Cl. 52-400.000.

Kenyon, Andre J., to Schaefer Corporation. Refrigerated display cabinet. 3,759,059, Cl. 62-246.000.

Kerber, Marvin C.: *See—*
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Kesling, Peter C. Elastomeric orthodontic device. 3,758,947, Cl. 32-14.00a.

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Khlebutin, Gleb Sergeevich. Chess game progress demonstration device. 3,760,404, Cl. 340-323.000.

Khrichev, Vladimir Andreevich: *See—*
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Kiefer, Edward J.; and Rogers, Dale W., to Halophane Company, Incorporated, mesne. Electric system. 3,760,226, Cl. 315-227.000.

Kienast, Gerhard: *See—*
Langmesser, Paul Werner; Volz, Hans G.; and Kienast, Gerhard, 3,760,058.

Kieser, Robert J.; Bass, John R.; and Donovan, John E., to United States of America, Navy. High-power underwater electroacoustic transducer for the infrasonic and low audio-frequency range. 3,760,346, Cl. 340-8.00r.

Kieser, Robert J.; and Tims, Allan C., to United States of America, Navy. $H_{52}$ standard reference hydrophone. 3,760,348, Cl. 340-10.000.

Kieserling, Th., & Albrecht: *See—*
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Kikumoto, Syoichi: *See—*
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Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. Preparation of pyrimido(5,4-C) (1,5) benzoxazepin-5(11H)-ones and intermediates. 3,759,922, Cl. 260-256.0yf.

Kim, Young D.: *See—*
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Kimura, Keitaro: *See—*
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Kinetic Technology, Inc.: *See—*
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- King, Cary Judson, III; Kumar, Romesh; and Lynn, Scott, to University of California, The Regents of the. Vapor condensation system and method. 3,759,047, Cl. 62-66.000.
- King, Ellis Gray: *See—*
  - Felicetta, Vincent F.; and King, Ellis Gray, 3,759,826.
- King, Robert W. Flexible fitting for lawn sprinkler systems. 3,759,445, Cl. 239-201.000.
- Kingsley, William: *See—*
  - O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, 3,759,611.
- Kinney, A. M., Inc.: *See—*
  - Spaite, Paul W., 3,759,196.
- Kippenhan, B. William, to International Business Machines Corporation. Gas panel display having monogram type characters with matrix addressable strokes. 3,760,403, Cl. 340-336.000.
- Kirtz, Douglas H., to Nicholas Equipment Co. Grinding machine. 3,758,993, Cl. 51-80.0bs.
- Kiscaden, Roy W., to Westinghouse Electric Corporation. Over temperature protection system for a gas turbine. 3,759,037, Cl. 60-39.140.
- Kishino, Shigeo: *See—*
  - Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,760,044.
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- Kita, Yuzo: *See—*
  - Inose, Fumiyuki; and Kita, Yuzo, 3,760,357.
- Kitamoto, Tatsuji; Aonuma, Masashi; and Kawaziri, Kazuhiro, to Fuji Photo Film Co., Ltd. Method of reproducing magnetization pattern. 3,759,796, Cl. 204-12.000.
- Kitamura, Hiroshi: *See—*
  - Sato, Koichi; Nikl, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, 3,760,031.
- Kitamura, Masaji: *See—*
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- Kitamura, Sadao: *See—*
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- Kitamura, Yoshiaki, to Kabushiki Kaisha Daini Seikosha. Manipulator device for use with industrial robots. 3,759,563, Cl. 294-88.000.
- Kitani, Teruo: *See—*
  - Furuhashi, Michio; Kitani, Teruo; and Sasaki, Reiichi, 3,760,095.
- Kittke, Roger H., to Rohm & Haas Company. Caulking composition comprising polymer having addition polymerized backbone having carboxyl groups esterified with drying oil fatty acid hydroxyamide. 3,759,915, Cl. 260-41.00r.
- Kitz, Norbert: *See—*
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- Kleimeyer, Vernon T.: *See—*
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- Kleist, Dale; and Buchanan, Carl S., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fibers from glass. 3,759,680, Cl. 65-6.000.
- Klemenhagen, Dale A.: *See—*
  - Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., 3,759,022.
- Klimek, Boleslaw, to Berg Manufacturing Company, The. Parking brake control valve. 3,759,584, Cl. 303-71.000.
- Klipfontein Organic Products Corporation, Limited: *See—*
  - Droste, Theodore Carl, 3,760,064.
- KLM Company, The: *See—*
  - Childs, Edmund; and Ostrowski, Raymond, 3,759,652.
- Klobas, Ivan: *See—*
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- Klotmann, Georg; and Mueller, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of β-hydroxy carbonyl compounds and/or α-unsaturated carbonyl compounds. 3,759,929, Cl. 260-293.880.
- Kluger, Alois: *See—*
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- Kmecak, Ronald A.: *See—*
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- Kmiecik, James Edward: *See—*
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- Knaus, Heimo A. Dental floss holder. 3,759,273, Cl. 132-92.00r.
- Kneen, Eric, to Kurth Malting Corporation. Method of malting. 3,759,792, Cl. 195-20.000.
- Knight, Rex, 40% to Lee, Raymond, Organization, Inc., The. Snake bite preventing device. 3,758,963, Cl. 36-2.00r.
- Knobelsdorff Instruments Incorporated: *See—*
  - Green, Aaron F., 3,760,185.
- Knoll A.G. Chemische Fabriken: *See—*
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- Kobashi, Uichiro, to Aisin Seiki Kabushiki Kaisha. Safety valve assembly. 3,759,288, Cl. 137-498.000.
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- Kobayashi, Nobuo: *See—*
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  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
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- Kobe Steel, Ltd.: *See—*
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- Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Photographic camera provided with electrically controlled shutter. 3,759,156, Cl. 95-31.0ac.
- Koch, Paul, to Olympia Werke AG. Apparatus for transporting a type support. carriage in typewriters or similar office machines. 3,759,362, Cl. 197-82.000.
- Koch, Ronald N.: *See—*
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- Koehring Company: *See—*
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- Koenig, Kenneth W.: *See—*
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  - Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.
- Koepke, Earl H., to Harter Corporation. Segmented sling seat frame with stabilizing connection means having concealed adjustment for facilitating coverage thereof. 3,759,572, Cl. 297-452.000.
- Koert, Hubert: *See—*
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- Koga, Ikumi; Kobayashi, Akira; and Ikeda, Tsuneo, to Nippon Steel Corporation. Method for sintering to-be-sintered material. 3,759,694, Cl. 75-5.000.
- Koga, Yoshiro: *See—*
  - Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, 3,760,235.
- Kogo, Hiroshi; and Tanabe, Kuniyuki, to Nissan Motor Company. Time division multiplex transmission system. 3,760,109, Cl. 179-15.0ba.
- Kogo, Masanori; and Honda, Hisashi, to Nippon Electric Company, Limited. Variable resistor. 3,760,322, Cl. 338-137.000.
- Kokoyama, Masanori: *See—*
  - Mifune, Hideo; Ishii, Akira; Kokoyama, Masanori; and Yamazoe, Toshihiro, 3,759,658.
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- Koleske, Joseph V.: *See—*
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- Komaki, Shojiro. Electronic timepiece with a time signalling device. 3,759,029, Cl. 58-38.000.
- Komatsu, Koichi, to Atsugi Motor Parts Co. Ltd. Fluid shock absorbing bumper. 3,759,558, Cl. 293-30.000.
- Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi. Process for manufacture of polysaccharides with antitumor action. 3,759,896, Cl. 260-209.000.
- Komatsu, Susumu: *See—*
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- Konet, Henry, to Neilford Leasing, Inc. Vehicle heater. 3,759,244, Cl. 126-110.00r.
- Konev, Vyacheslav Alexandrovich; and Ryaboi, Vladimir Ilich. Methods for flotation of ores. 3,759,386, Cl. 209-167.000.
- Kong, Victor, to Tektronix, Inc. Video amplifier for a color television apparatus. 3,760,099, Cl. 178-5.40r.
- Kongelka, Robert M., to Superior Valve Company. Pressure regulator. 3,759,294, Cl. 137-612.100.
- Konger, Alfred P., to Signode Corporation. Apparatus for heat-shrinking a plastic film on a load. 3,760,154, Cl. 219-388.000.
- Koninklijke Fabriek Inventum N.V.: *See—*
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- Koplow, Harold Stanley: *See—*
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- Korch, Benning, to Burris Industries, Incorporated. Seat construction. 3,759,571, Cl. 297-445.000.
- Kornylak, Andrew T. Loading conveyor for elevator. 3,759,364, Cl. 198-20.000.
- Korobeinikov, Jury Mikhailovich: *See—*
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- Korpela, Viejo Gunnar, to Oy Suomen Vanutehdas-Finnwad Ltd. Wheel chair with pivoted hand bar. 3,759,544, Cl. 280-289.000.
- Korstvedt, Harald O. Breading apparatus. 3,759,218, Cl. 118-18.000.
- Kortenhaus, Dieter, to NSM Apparatebau GmbH. Selective retrieval and memory system. 3,760,367, Cl. 340-172.500.
- Kosonocky, Walter Frank, to RCA Corporation. Input circuits for charged-coupled circuits. 3,760,202, Cl. 307-304.000.
- Kotani, Tsunehiro: *See—*
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- Kothmann, Gilbert C. Safety trailer hitch. 3,759,548, Cl. 280-511.000.
- Kovach, Stephen M.: *See—*
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- Kovals, John: *See—*
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- Koziol, Konrad; and Zenk, Baptist, to Conradty, C. Anode construction for amalgam high load cells. 3,759,812, Cl. 204-250.000.
- Krabec, James A.: *See—*
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- Kral, Fred G., to Bell & Howell Company. Magnetically striped cards for use in a speed machine. 3,760,164, Cl. 235-61.12n.
- Krambrock, Wolfgang: *See—*
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- Krasnobaev, Anna Nikolaevn: *See—*
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- Krenzer, John, to Velsicol Chemical Corporation. Dialkyl acetals of heterocyclic ureidoacetalidehyde. 3,759,940, Cl. 260-306.800.
- Kresan, Lawrence J.: *See—*
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- Kressin, Ivan K., to United States of America, Atomic Energy Commission. Separation of mercury from aqueous solution. 3,760,057, Cl. 423-463.000.
- Kretschmer, Ingo; and Mursic, Marjan, to Messer Griesheim G.m.b.H. Submerged-arc welding with strip electrode and foamed flux of .4-.8 Kg/l. 3,760,140, Cl. 219-73.000.
- Krogseng, Gerald P.: *See—*
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- Krolikowski, Walter F.; and Lund, Donald F., to Cogar Corporation. FET memory chip including FET devices therefor and fabrication method. 3,760,384, Cl. 340-173.00r.
- Krouzian, Kersan K. Dental ejector equipment. 3,758,950, Cl. 32-33.000.
- Kubota, Masatoshi: *See—*
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- Kudamatsu, Akio: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
- Kuecken, John A., to International Telephone and Telegraph Corporation. Mobile antenna mounting assembly. 3,760,423, Cl. 343-715.000.
- Kugelnik, Herwig Werner; and Shank, Charles Vernon, to Bell Telephone Laboratories, Incorporated. Integrated feedback laser. 3,760,292, Cl. 331-94.50c.
- Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, to Bayer Aktiengesellschaft. Methine dyestuffs. 3,759,902, Cl. 260-240.800.
- Kuhne, Rudolf; Hamal, Heinrich; Geissler, Georg; Herbst, Willy; and Ribka, Joachim, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Pigment mixture of polar and nonpolar symmetrical/asymmetrical disazo dyestuffs. 3,759,731, Cl. 10-288.00q.
- Kumagai, Seiji: *See—*
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- Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, to Kobe Steel, Ltd. Method of producing reduced iron ore pellets. 3,759,693, Cl. 75-3.000.
- Kunkel, Wulf B.: *See—*
  - Ehlers, Kenneth W.; Kunkel, Wulf B.; and Baker, William R., 3,760,225.
- Kunstle, Gerhard; and Spes, Hellmuth, to Wacker-Chemie G.m.b.H. Process for continuously producing sorbic acid by converting ketene with crotonaldehyde. 3,759,988, Cl. 260-526.00n.
- Kuntz, Francis A., Jr., to Global Marine, Inc. Controllable pitch tunnel thruster for ship positioning. 3,759,211, Cl. 114-148.000.
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- Kurtzberg, Jerome M.; Rosenfeld, Jack L.; and Villani, Raymond D., to International Business Machines Corporation. Multiprocessing computing system with task assignment at the instruction level. 3,760,365, Cl. 340-172.500.
- Kurtzig, Arjeh Jehuda: *See—*
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  - Nevett, Leslie James, 3,760,135.
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Oka, Shunzo; and Nishioka, Matsuo, 3,760,320.

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Burkett, Wilford B.; and Carlsen, George D., II, 3,760,273.

Espana, Salvador; and Funt, Brunson Bert, 3,760,141.

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McFaul, Howard J.; Erdman, Donald C.; and Friedmann, Evan B., 3,759,090.

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McRay, Ferris B., to Allis-Chalmers Manufacturing Company. Fluid control system for earthworking apparatus including automatic pressure regulating means. 3,759,143, Cl. 91-414.000.

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Medcor, Inc.: *See*—

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Mehalchick, Emil J., to GTE Sylvania Incorporated. Process for producing rare earth oxide phosphors. 3,759,835, Cl. 252-301.40r.

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- Miller, Richard K. Game device. 3,759,516, Cl. 273-1.00r.
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  - Dwyer, James L.; Paine, Richard A.; and Souza, Charles W., 3,759,773.
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- Mills, Donald N., to Union Carbide Canada Limited. Iris type cut off knife. 3,759,127, Cl. 83-318.000.
- Mills, Francis Duncan, to Baker Equipment Engineering Co., Inc. Manual override apparatus for electrohydraulic valve control station. 3,759,485, Cl. 251-130.000.
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  - Smart, Horace Stanley, 3,759,315.
- Mills, Stephen H.: *See*—
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  - Borer, Albert; and Krogseng, Gerald P., 3,760,049.
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  - Cattanach, John, 3,760,024.
  - Downing, Charles, 3,759,688.
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  - Freeman, Dixon L., 3,759,191.
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- Montefiore, Herbert Ralph; deceased (by the National Westminster Bank, Limited). Keyed joint. 3,759,065, Cl. 64-23.000.
- Montgomery, John R.: *See*—
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- Moore, Cecil L.; and McCarthy, Roger L., to McDonald, A. Y., Mfg. Co. Valve fitting for bottles. 3,759,291, Cl. 137-588.000.
- Moore, John J.: *See*—
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- Moore, John Russell Crompton. Resilient mounting arrangement. 3,759,503, Cl. 267-58.000.
- Moore, Robert E., to Sun Oil Company of Pennsylvania. Bis-(dialkyladamantyl)benzenes. 3,760,020, Cl. 260-668.00f.
- Moorehead, Thomas J., to GTE Automatic Electric Laboratories Incorporated. Lockout selection circuit. 3,760,120, Cl. 179-19.000.
- Morgan, Kenneth A., to Universal Oil Products Company. Solvent extraction of germanium from alum solution. 3,760,060, Cl. 423-89.000.
- Morgan Refractories, Limited: *See*—
  - Steen, William John, 3,759,725.
- Mori, Hiroshi; Wakasa, Yutaka; and Uchiike, Hisayuki, to Yokogawa Electric Works, Ltd. Circuitry for transmitting pulses with ground isolation but without pulse waveform distortion. 3,760,198, Cl. 307-268.000.
- Mori, Kazuo: *See*—
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
- Mori, Takaaki; Higuchi, Hisayuki; and Uehara, Keijiro, to Hitachi, Ltd. Washed emitter method for improving passivation of a transister. 3,759,761, Cl. 148-187.000.
- Morimoto, Masanobu: *See*—
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- Morton, Paul Daniel; and Buchholz, Bernard, to Pennwalt Corporation. Polymeric tin mercaptides. 3,759,966, Cl. 260-429.700.
- Morton, Robert D., to Hartford Special Machinery Company, The. Combination point former and thread roller machine. 3,758,900, Cl. 10-4.000.
- Morton, William Desmond: *See*—
  - Duerdoth, Winston Theodore; Hughes, Charles Joseph; Hesketh, John Frederick; and Morton, William Desmond, 3,760,107.
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- Motorola, Inc.: *See*—
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  - Bruckert, Eugene J., 3,760,355.
  - Hoffman, Charles R.; and Laitin, William W., 3,760,380.
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  - Yester, Francis R., Jr., 3,760,204.
- Moulds, Gordon M., to Du Pont de Nemours, E. I., and Company. Process for preparing porous aromatic polyamide fibers. 3,760,054, Cl. 264-210.00f.
- Mravic, Brian; and Porter, Lew F., to United States of America, Navy. High-toughness alloy steel with improved weldability. 3,759,706, Cl. 75-124.000.

- Mruz, John M. Foot impellent toy. 3,759,518, Cl. 273-106.00b.
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- Mueller, Herbert: *See*—
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- Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., to Allied Chemical Corporation. Cold flow resistant homogeneous copolymers of tetrafluoroethylene and chlorotrifluoroethylene and process for preparing them. 3,759,883, Cl. 260-37.50a.
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- Muize, Heinz; Barth, Gerhard; and Pfuller, Kurt, to VEB Wirkmaschinenbau Karl-Marx-Stadt. Full-fashioned knot fabric and method and apparatus for the production thereof. 3,759,070, Cl. 66-189.000.
- Muller, Alfred, to Siemens Aktienegesellschaft. Superconductive alloy and method for its production. 3,759,750, Cl. 148-2.000.
- Muller, Jean-Nicolas: *See*—
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- Munchbach, Curt, to Ungerer, Irma. Gear for driving flying shears. 3,759,117, Cl. 74-681.000.
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- Murakami, Hiroshi, to Nippon Electric Company, Limited. Cylindrical domain associative memory apparatus. 3,760,390, Cl. 340-174.0ga.
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- Murray, Thomas P., to United States Steel Corporation. Apparatus for determining correct pyrometer readings with steam interference present. 3,759,102, Cl. 73-355.00r.
- Mursic, Marjan: *See*—
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- Nadi, Salem A., to Foxboro Company, The. Process control system. 3,760,374, Cl. 340-172.500.
- Nagae, Tadashi; Tsuji, Nobuo; and Miyazako, Takushi, to Fuji Photo Film Co., Ltd. Process for improving color developability of reversal photographic films. 3,759,710, Cl. 96-22.000.
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- Nagano, Kentaro; and Saoyama, Yoshihito, to Asahi Glass Co., Ltd. Steel wire for reinforcing glass and method or production. 3,759,754, Cl. 148-6.160.
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- Nakada, Akira, to Nippon Gakki Seigo Kabushiki Kaisha. Automatic rhythm playing apparatus. 3,760,088, Cl. 84-1.030.
- Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Electrolytic apparatus for producing hydrated iron oxide. 3,759,814, Cl. 204-275.000.
- Nakajo, Toshihiko: *See*—
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- Nakata, Kiyohiro, to Numata, Yehan. Micrometer comprising a digital counter. 3,758,956, Cl. 33-166.000.
- Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-phenylalanine. 3,759,790, Cl. 195-29.000.
- Napolitano, John P. Dealkylation of N-alkyl aromatic amines. 3,759,997, Cl. 260-578.000.
- Nappi, John J. Disposable swab-type applicator package. 3,759,375, Cl. 206-63.20r.
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- Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, to Thomson-CSF. Limited range radiocommunication system. 3,760,278, Cl. 325-51.000.
- Narkie, Walter E. Ladder jack. 3,759,474, Cl. 248-238.000.
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- Nasser, Gamal El Din; and Waldmann, Hans, to Linde Aktiengesellschaft. Heat exchanger. 3,759,322, Cl. 165-166.000.
- Nastasic, Vladimir, to Interconsult S.p.A. Monomooring sea platform. 3,759,045, Cl. 61-46.000.
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- New Nippon Electric Company, Ltd.: *See*—
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- Newman, Irvin; and Strengholt, Roy, to Thermoseal Glass Corporation. Electrically heated window with a connector block and a circuit breaker. 3,760,157, Cl. 219-522.000.
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- Nicolson, Alexander M., to Sperry Rand Corporation. Base band vehicle safety apparatus. 3,760,414, Cl. 343-6.50r.
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- Nola, Frank J.; Currie, James R.; and Reid, Harry, Jr., to United States of America, National Aeronautics and Space Administration. Induction motor control system with voltage controlled oscillator circuit. 3,760,248, Cl. 318-230.000.
- Nolan, John L.; and Etes, Donald E., to Hollister Incorporated. Postsurgical drainage collection pouch. 3,759,260, Cl. 128-283.000.
- Nolte, Robert K., to Metalwash Machinery Corporation. Drawer type pan washing machine. 3,759,276, Cl. 134-57.0dl.
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- Nudenberg, Walter; and Delaney, Edward A., to Uniroyal, Inc. Process for preparing random high cis-SBR. 3,759,882, Cl. 260-84.100.
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- Nurina, Shogo; Hayashi, Yoshihiro; and Yamada, Kyohei, to Sanyo Chemical Industries, Ltd. Method for preparing salts of sulfoalkyl esters. 3,759,985, Cl. 260-486.00r.
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- Ocasio, Gerardo; and Tuman, Edwin, to Noma-World Wide Inc. Circuit tester for Christmas tree light sets. 3,760,266, Cl. 324-51.000.
- O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, to Xerox Corporation. Microimage ransom access and retrieval printer. 3,759,611, Cl. 355-43.000.
- O'Connor, Donald T.; Rosauer, Peter J.; and Lorenzi, Donald E., to Magnaflux Corporation. Flaw detector for square billets using magnetic tape helically moved about said billets. 3,760,263, Cl. 324-37.000.
- O'Connor, Ward F., to Lummus Company, The. Control device. 3,759,296, Cl. 137-805.000.
- Oda Gosen Kogyo Kabushiki Kaisha: *See—*
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  - Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.
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- Okamoto, Shinya: *See—*
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- Okamoto, Toshio: *See—*
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- Okamura, Kyuya: *See—*
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  - Gavin, David F.; and Raymond, Maurice A., 3,759,932.
  - Pitts, James J.; and Babiec, John S., Jr., 3,759,916.
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  - Rix, Albert; Werner, Georg; and Euchs, Hans, 3,759,360.
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  - Nishimura, Kazuyoshi, 3,758,964.
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- Onsager, Olav T., to Halcon International, Inc. Coupling of organic compounds. 3,759,983, Cl. 260-485.00r.
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- Palmer, Nigel I., to Leesona Corporation. Electrically recharged metal/air cell. 3,759,748, Cl. 136-86.00a.
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- Parke, John Pedlow; and Wilde, Raymond John, to Lever Brothers Company. Detergent composition. 3,759,834, Cl. 252-110.000.
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- Patterson, Clinton E., to Mate Punch and Die Company. Replaceable tip shear proof punch. 3,759,130, Cl. 83-637.000.
- Patterson, Richard A., to Huffman Manufacturing Company, The. Wheel assembly method and apparatus. 3,758,931, Cl. 29-159.020.
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  - Morton, Paul Daniel; and Buchholz, Bernard, 3,759,966.
- Perazzella, Frank W., to North American Philips Corporation. Shaft coupling with sliding plate. 3,759,067, Cl. 64-31.000.
- Percorini, Marcello; DiNunzio, Vittorio; and Careglio, Giuseppe, to Compagnia Italiana Westinghouse Freni e Segnali. Static inverter. 3,760,258, Cl. 321-11.000.
- Peress, Joseph S. Flexible joints. 3,759,550, Cl. 285-11.000.
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- Peroutky, Donald C., to General Electric Company. Capacitive keyswitch. 3,760,243, Cl. 317-249.00r.
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- Perry, James E.: *See—*
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- Peterson, John Allan, to Honeywell Information Systems Inc. Document loader. 3,759,509, Cl. 271-150.000.
- Peterson, Robert A., to Caterpillar Tractor Company. Stabilizer for articulated wheel loaders. 3,759,541, Cl. 280-112.00r.
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- Pfeuffer, Anton. Dissolver for solid and liquid materials. 3,759,491, Cl. 259-4.000.
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  - Short, James N., 3,759,764.
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- Plewka, Anna B. Headlamps of vehicles. 3,759,084, Cl. 240-7.10r.
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- Polansky, Maurice I., to Quebec Vending Machine Co., Inc. Heating cabinet for treating nut meats. 3,760,155, Cl. 219-399.000.
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- Portnoy, Samuel. Elastic power transmitting element. 3,759,066, Cl. 64-27.00s.
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  - Duerdoth, Winston Theodore; and Hughes, Charles Joseph, 3,760,115.
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  - Matthews, Stephen B., 3,760,036.
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- Rubin, Gotthard George: *See*—
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  - Webb, Allen N.; and Lippens, Bernardus Cornelis, 3,759,990.
- Saarup, Gary C. Ingot mold separator. 3,759,316, Cl. 164-405.000.
- Sach, Gary M., to United States of America, Navy. Low-reflection filter for cathode ray tube face plate. 3,760,215, Cl. 313-92.00r.
- Saegusa, Makoto: *See*—
  - Kawana, Masashi; Saegusa, Makoto; Ohsugi, Kenzo; and Nohara, Naohiro, 3,759,701.
- Saiko, Otto: *See*—
  - Schorre, Gustav; Nowak, Herbert; and Saiko, Otto, 3,759,930.
- Saint-Gobain: *See*—
  - Gimenez, German Artigas, 3,759,684.
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- Saito, Takashi; and Ando, Yujiro, to Canon Kabushiki Kaisha. Corona discharge device for removing dielectric liquid. 3,760,152, Cl. 219-384.000.
- Sakai, Sumio: *See*—
  - Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
- Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Apex seal for rotary piston engine. 3,759,534, Cl. 277-235.00r.
- Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Voltage memory apparatus. 3,760,193, Cl. 307-233.000.
- Sakler, Stephen Allen: *See*—
  - Mattia, Francis Joseph; and Sakler, Stephen Allen, 3,760,069.

- Salamon, Manfred; Hagebaum, Hans-Jurgen; Wandel, Martin; Muhlhausen, Cornelius; Bau, Werner; and Reinecke, Gerd-Konrad, to Bayer Aktiengesellschaft. Textile floor covering. 3,759,742, Cl. 117-161.0kp.
- Salata, Dominic R. Massaging device. 3,759,250, Cl. 128-57.000.
- Salatiello, Peter P.: *See—*
  - Mueller, Max B.; Salatiello, Peter P.; and Kaufman, Herman S., 3,759,883.
- Sale, Anthony John Hanson: *See—*
  - Gunson, Sam; Heyes, Alan; and Sale, Anthony John Hanson, 3,759,723.
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  - Linder, Jerome; Mattner, Paul G.; and Salmond, William G., 3,759,920.
- Samour, Carlos M., to Kendall Company, The. Anionic complexes of monomeric emulsion stabilizers. 3,759,982, Cl. 260-485.00j.
- Sampei, Kazuf, to Alps Motorola, Inc. Record mechanism for cartridge tape player-recorder. 3,759,530, Cl. 274-4.00b.
- Sampei, Nobyoshi; Tomita, Kazuo; and Tsuji, Hideakira, to Sankyo Company Limited. Insecticidal isoxazole derivatives. 3,759,941, Cl. 260-307.00h.
- Sampson, Peter Steer, to Ronson Corporation. Lighter. 3,759,656, Cl. 431-142.000.
- Samuel, John Raymond: *See—*
  - Robb, Derek John Mac Donald; and Samuel, John Raymond, 3,759,846.
- Samuelson, Hans Olof; and Croon, Ingemar Liss-Albin, to Mo och Domsjo Aktiebolag. Process for bleaching cellulose pulp with alkali and oxygen gas utilizing waste bleaching liquor from an alkaline oxygen gas bleaching stage. 3,759,783, Cl. 162-40.000.
- Sand, Leonard B.; and Sand, Michael L., to Zoechem Corporation. Synthetic zeolite. 3,760,062, Cl. 423-329.000.
- Sand, Michael L.: *See—*
  - Sand, Leonard B.; and Sand, Michael L., 3,760,062.
- Sand R Associates, Inc.: *See—*
  - Field, Gregory A., 3,758,922.
- Sanders, Nellie M.: *See—*
  - Sanders, Victor M.; and Scotchie, Andrew A., 3,759,216.
- Sanders, Victor M.; deceased (by Sanders, Nellie M.; executrix); and Scotchie, Andrew A., to Northrop Carolina, Inc. Smoke flare signalling and marking device. 3,759,216, Cl. 116-124.00b.
- Sandison, Gillian M.: *See—*
  - Cavalla, John F.; Sandison, Gillian M.; and White, Alan C., 3,759,906.
- Sandoz Ltd.: *See—*
  - Wicki, Heinz, 3,759,892.
- Sandoz Ltd.; a/k/a Sandoz AG: *See—*
  - Jenny, Hanns; and Troesch, Juerg, 3,759,736.
  - Leber, Jean-Pierre, 3,760,039.
- Sandoz-Wander, Inc.: *See—*
  - Houlihan, William J., 3,759,934.
  - Linder, Jerome; Mattner, Paul G.; and Salmond, William G., 3,759,920.
- Sanko Kagaku Kogyo Kabushiki Kaisha: *See—*
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- Sankyo Company Limited: *See—*
  - Sampei, Nobyoshi; Tomita, Kazuo; and Tsuji, Hideakira, 3,759,941.
- Santilli, Arthur A.: *See—*
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- Sanyo Chemical Industries, Ltd.: *See—*
  - Nurina, Shogo; Hayashi, Yoshihiro; and Yamada, Kyohei, 3,759,985.
- Saoyama, Yoshihito: *See—*
  - Nagano, Kentaro; and Saoyama, Yoshihito, 3,759,754.
- Sarris, Samuel E.: *See—*
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- Sasaki, Mamoru: *See—*
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- Sasaki, Reiichi: *See—*
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- Sato, Koichi; Nikl, Akira; Kitamura, Hiroshi; and Morimoto, Masanobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Adhesive compositions from epoxide and ethylene vinyl acetate copolymer having unsaturated carboxylic acid grafted thereto. 3,760,031, Cl. 260-836.00.
- Sato, Manabu, to Victor Company of Japan, Limited. Automatic tape running reversing apparatus for use in a tape recorder. 3,759,464, Cl. 242-188.000.
- Savin Business Machines Corporation: *See—*
  - Shenier, Richard S., 3,760,276.
- Savla, Manilal: *See—*
  - Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.
- Sawada, Hiroshi: *See—*
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- Sawafuji Denki Kabushiki Kaisha: *See—*
  - Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, 3,759,237.
- Sawai, Akira, to Nippon Electric Company Limited. Pulse regenerative repeater for a multilevel pulse communication system. 3,760,111, Cl. 179-16.00e.
- Sax, Sylvan M.; Moore, John J.; and Bridgwater, Anna B. Method for determination of amylase activity. 3,759,794, Cl. 195-103.50r.
- Saxby, Richard M., to Holley Carburetor Division. Positive crankcase ventilation air filter body. 3,759,015, Cl. 55-350.000.
- Scalzo, Augustine J.; and McLaurin, Leroy D., to Westinghouse Electric Corporation. Self aligning combustor and transition structure for a gas turbine. 3,759,038, Cl. 60-39.320.
- Scarbrough, Alfred D., to Bunker-Ramo Corporation. Batch fabricated magnetic wire memory. 3,760,389, Cl. 340-174.0ma.
- Schaefer Corporation: *See—*
  - Kenyon, Andre J., 3,759,059.
- Schaefer, Donald D.; and North, James R., Sr., to Dunham-Bush, Inc. Composite variable oil pressure relief and compressor unload valve assembly. 3,759,636, Cl. 417-281.000.
- Schaer, Glenn R., to United States of America, Administrator of the National Aeronautics and Space Administration. Method of making porous conductive supports for electrodes. 3,759,747, Cl. 136-36.000.
- Scheffler, Holger; Bannehr, Konrad; and Ziprian, Ingo, to VEB Wirkmaschinenbau. Control apparatus for the pattern drum of a knitting machine. 3,759,069, Cl. 66-50.00b.
- Scherbatskoy, Serge A. Servo-programmed cable railway. 3,759,185, Cl. 104-112.000.
- Schering A.G.: *See—*
  - Wieske, Reinhold; and Schulze, Paul-Eberhard, 3,759,961.
- Schering Corporation: *See—*
  - Steinman, Martin, 3,760,007.
- Schilter, Thomas, to Maschinenfabrik Schilter & Co. Automotive vehicle with front power take-off for power-driven implements. 3,759,340, Cl. 180-53.0fe.
- Schindler, Hans, to Braun Aktiengesellschaft. Electromagnetic lighter with an apertured metal casing. 3,760,231, Cl. 317-92.000.
- Schindler, Hans, to Braun Aktiengesellschaft. Permanent magnetic flux circuit and an actuating member for igniter. 3,760,313, Cl. 335-229.000.
- Schinner, Thomas J.: *See—*
  - Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.
- Schlaffer, Edward J.; and Wilder, Stevens E., to Caterpillar Tractor Company. Engine cooling system. 3,759,233, Cl. 123-41.100.
- Schliesman, Leonard J., to Consolidated Papers, Inc. Electrostatic recording paper and method of making. 3,759,744, Cl. 117-218.000.
- Schlinger, Warren G.: *See—*
  - Dille, Roger M.; and Schlinger, Warren G., 3,759,837.
- Schlumberger Technology Corporation: *See—*
  - Schuster, Nick A., 3,760,260.
- Schmerling, Louis, to Universal Oil Products Company. Alkylation of aromatic hydrocarbons. 3,760,022, Cl. 260-671.00r.
- Schmidt, Edward W.: *See—*
  - Glass, Clifford A.; Kraft, Robert E.; and Schmidt, Edward W., 3,759,399.
- Schmidt, Felix Helmut: *See—*
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- Schmidt, Hans-Joachim: *See—*
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- Schmidt, Peter Jurgen: *See—*
  - Wahl, Josef; and Schmidt, Peter Jurgen, 3,759,232.
- Schmitt, Bernhard: *See—*
  - Gaeth, Rudolf; Schmitt, Bernhard; and Blum, Dieter, 3,760,047.
- Schmitt, Hugh A.; and Schmitt, Maxine F. Candle mold. 3,759,478, Cl. 249-93.000.
- Schmitt, Maxine F.: *See—*
  - Schmitt, Hugh A.; and Schmitt, Maxine F., 3,759,478.
- Schmitz, Lawrence S.; Lambright, John E.; and Lewis, Arthur M., to Westinghouse Electric Corporation. Audio waveform for digital recording. 3,760,388, Cl. 340-174.10h.
- Schnegg, Robert; Pelousek, Herbert; and Dippelhofer, Robert, to Bayer Aktiengesellschaft. Polyester having improved stretchability and dyeability properties. 3,759,855, Cl. 260-22.00r.
- Schneider, Jos., & Co. Optische Werke: *See—*
  - Hess, Karl-Gunter, 3,760,253.
- Schnell, Hermann: *See—*
  - Emmer, Gerhard; Vernaleken, Hugo; Weirauch, Kurt; and Schnell, Hermann, 3,759,865.
- Schnidberger, Hans-Peter, to Gebr. Hennig GmbH. Self-supporting articulated chain. 3,759,035, Cl. 59-78.100.
- Schoenthaler, David, to Western Electric Company, Incorporated. Soldering apparatus having a non-uniform heat transfer distribution. 3,760,142, Cl. 219-85.000.
- Scholl, Howard O., to American Air Filter Company, Inc. U-shaped fluid treating filter. 3,759,018, Cl. 55-487.000.
- Schorre, Gustav; Nowak, Herbert; and Saiko, Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. Certain 8-methyl-4-hydroxy-5-methylthiomethyl-4H-m dioxino [4,5-c]pyridines. 3,759,930, Cl. 260-294.80c.
- Schrader, Gerhard: *See—*
  - Grewe, Ferdinand; Schrader, Gerhard; Kaspers, Helmut; and Meiser, Werner, 3,760,085.
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- Schrage, Frederick S., to United States of America, Army. Adjustable pivoting cradle for large caliber guns. 3,759,138, Cl. 89-37.00r.

- Schraven, Eckhard: *See—*
  - Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.
- Schreiber, Anthony J., to Standard Oil Company. Extrusion die with arched choke bar. 3,759,653, Cl. 425-461.000.
- Schreiber, Hermann. Vehicle, in particular for training in the coordination of several controls. 3,759,537, Cl. 280-16.000.
- Schreiner, Lester Dale; and Shindelar, John Joseph. Gear drive and support for corn harvesting unit. 3,759,021, Cl. 56-106.000.
- Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Alfrey, Turner, Jr., to Dow Chemical Company, The. Apparatus for the preparation of multilayer plastic articles. 3,759,647, Cl. 425-131.000.
- Schrimshaw, Rex A., to Honeywell Information Systems, Inc. Phase jitter special purpose computer. 3,760,167, Cl. 235-151.000.
- Schroder, Walter. Drive for converters, rotary trommels, plate conveyors and the like. 3,759,116, Cl. 74-606.00r.
- Schroer, Gary J., to Schroer Manufacturing Company, Inc. Caster and mounting structure. 3,758,917, Cl. 16-36.000.
- Schroer Manufacturing Company, Inc.: *See—*
  - Schroer, Gary J., 3,758,917.
- Schueler, Claus: *See—*
  - Loitzl, Rozica; and Schueler, Claus, 3,759,691.
- Schull, Howard O.: *See—*
  - Tate, John E.; and Schull, Howard O., 3,759,393.
- Schulman, Marvin; Pitchon, Esra; and Anderson, Charles D., to General Foods Corporation. Production of fish protein. 3,759,716, Cl. 99-18.000.
- Schulze, Paul-Eberhard: *See—*
  - Wieske, Reinhold; and Schulze, Paul-Eberhard, 3,759,961.
- Schuster, Nick A., to Schlumberger Technology Corporation. Method and apparatus for investigating earth formations by emitting survey and auxiliary currents from the same electrode. 3,760,260, Cl. 324-10.000.
- Schwandt, Theodore F., to Minnesota Mining and Manufacturing Company. Method of intaglio printing on tacky sheet material. 3,759,176, Cl. 101-170.000.
- Schwartz, Harold A.; and Port, Morton I., to Avisun Corporation, mesne. Process for producing a composite yarn which is bulky slip-resistant and of high strength. 3,760,046, Cl. 264-47.000.
- Schwartz, Martin: *See—*
  - Rainey, Thomas Milton; and Schwartz, Martin, 3,759,330.
- Schwarz, Frank, to Barnes Engineering Company. Intrusion detector. 3,760,399, Cl. 340-256.00d.
- Schweezerische Industrie Gesellschaft: *See—*
  - Steiner, Daniel; and Blochlinger, Ernst, 3,759,567.
- Schwind, Kurt C.: *See—*
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- Science Union et Cie: *See—*
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- Scientific Anglers, Inc.: *See—*
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- Scotchie, Andrew A.: *See—*
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- Scott, Sam C. Multiple use concrete form liner. 3,759,481, Cl. 249-189.000.
- Screen Printing Systems, Inc.: *See—*
  - Reinke, George W., 3,759,799.
  - Reinke, George W., 3,759,800.
- Scrivo, Leonard; La Plante, Lionel J.; Chumenti, Vincent A.; and Rubin, Gotthard George, to Vicon Products Corporation. Dental fiber optic illumination system. 3,758,951, Cl. 32-27.000.
- Seaberg, Richard D., to Pierce-Pacific Manufacturing, Inc. Grapple. 3,759,564, Cl. 294-88.000.
- Sealfire: *See—*
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- Searle, G. D., & Co.: *See—*
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  - Marsheck, William J.; and Kraychy, Stephen, 3,759,791.
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- Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Conductance-loaded transmission line resonator. 3,760,303, Cl. 333-73.00r.
- Selin, Terry G.: *See—*
  - Berger, Abe; and Selin, Terry G., 3,759,968.
- Selivanov, Anatoly Grigorievich; Makachev, Nikolai Ivanovich; and Parshina, Maria Kuzminichna. Warp tension device for looms. 3,759,299, Cl. 139-97.000.
- Selzer, Eric Georg, to EXI Erzeugung von Sportbekleidung Gesellschaft m.b.H. Arrangement for connecting a ski pants leg to a ski boot. 3,758,890, Cl. 2-232.000.
- Semiconductor Research Foundation: *See—*
  - Nishizawa, Jun-Ichi; and Takahashi, Kaoru, 3,760,201.
- Serang, Abdulgafoor M.: *See—*
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- Sevcon Engineering Limited: *See—*
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- Sharabash, Moustafa M., to Lilly, Eli, and Company. Test method for film-forming materials. 3,759,089, Cl. 73-64.100.
- Shaw, Robert H. Amphibious camper. 3,758,897, Cl. 9-1.00r.
- Shay, Edward Griffin: *See—*
  - Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,759,995.
- Sheetz, David P.: *See—*
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- Shell Oil Company: *See—*
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  - Al, Jan J., 3,759,094.
  - Bauer, Ronald; Chung, Harold; Keim, Wilhelm; and Van Zwet, Henry, 3,759,889.
  - Beard, Thomas N., 3,759,574.
  - Collins, Leland F.; Quinn, Robert C.; and Wilhelmsen, Paul G., 3,759,836.
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  - Doelman, Jan; and Van Meurs, Hubrecht C. A., 3,759,818.
- Shell Oil Company shale: *See—*
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- Shen, Tsung-Ying; Witzel, Bruce E.; Walford, Gordon L.; and Ruyle, William V., to Merck & Co., Inc. Non-steroid anti-inflammatory compounds. 3,759,948, Cl. 260-315.000.
- Shenier, Richard S., to Savin Business Machines Corporation. Digital transmission system. 3,760,276, Cl. 325-38.00b.
- Sheridan Products Inc.: *See—*
  - Heter, Elmo W., Jr., 3,759,428.
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- Shibata, Keizo, to Tokyo Shibawa Electric Co., Ltd. Method for manufacturing semiconductor device. 3,758,943, Cl. 29-578.000.
- Shibuya, Iku: *See—*
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- Shibuya, Moritada; and Shibuya, Iku. Ball cleaning device. 3,758,912, Cl. 15-302.000.
- Shimanuki, Takashi; and Inoue, Yoshinori, to Kabushiki Kaisha Takenaka Komuten. Reversibly heat-recovering type heat pump through air heat source. 3,759,055, Cl. 62-160.000.
- Shimizu, Shogo: *See—*
  - Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
- Shimizu, Tetsuji; Iwakura, Makoto; and Tanaka, Hiroshi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Discharge lamp igniting circuit. 3,760,224, Cl. 315-94.000.
- Shimokawa, Wataru. Polymer complex of a carboxy-containing polymer and a nonionic, cationic or amproteric surface. 3,759,861, Cl. 260-31.40r.
- Shimomura, Takayoshi: *See—*
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- Shimujo, Takemi; and Yamaga, Makoto, to Alps Electric Co., Ltd. Matrix push-button switch. 3,760,137, Cl. 200-166.00c.
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- Shindelar, John Joseph: *See—*
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- Shino, Goro; Okamoto, Katsuyuki; and Shimura, Katsumi, to Sawafuji Denki Kabushiki Kaisha. Igniter for two-cycle multi-cylinder engine. 3,759,237, Cl. 123-148.00e.
- Shinohara, Hiroshi: *See—*
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- Shinto Kogyo Kabushiki Kaisha: *See—*
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- Shioda, Shigeru; Ogasahara, Fumio; and Otomo, Minoru, to Kayaba Kogyo Kabushiki Kaisha. Liquid pressure driving device. 3,759,042, Cl. 60-483.000.
- Shionogi & Co., Ltd.: *See—*
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Sholtes, George T., to General Electric Company. Quick-release support member attachment means. 3,759,471, Cl. 248-119.00r.

Short, James N., to Phillips Petroleum Company. Composite propellant containing atiridinyl curing agent. 3,759,764, Cl. 149-19.000.

Short, Ray L., Jr.; Bowen, Howard; and Henderson, David L., to Research Technology, Incorporated. Strip detection apparatus. 3,759,095, Cl. 73-157.000.

Showa Denka Kabushiki Kaisha: *See—*
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Sieffert, Joseph Edward, to Otis Elevator Company. Elevator system with temporary hoistway structor and method for use thereof. 3,759,349, Cl. 187-2.000.

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Simmons, Frank A., to Burgess Vibrocrafters, Inc. Grass clipper. 3,759,020, Cl. 56-17.500.

Simmons, Roger Cleary; Boyd, Horace Edward; and Kuchling, Peter Mathis, to Cooper Industries, Inc. Tool for applying and locking threaded fasteners. 3,758,938, Cl. 29-400.000.

Simms, John A.; and Tremper, Henry S., III, to Du Pont de Nemours, E. I., and Company. Curing compositions for epoxy resins comprising latent amine curing agent and accelerator. 3,759,914, Cl. 260-37.0ep.

Simon, Pierre: *See—*
Jeanmart, Claude; Messer, Mayer Naoum; and Simon, Pierre, 3,759,924.

Simon, Selwyn, to Union Carbide Corporation. Method for evacuating packages. 3,759,722, Cl. 99-174.000.

Simons, Frank A.: *See—*
Elliott, Herbert; and Simons, Frank A., 3,758,913.

Sinclair, Alex H.: *See—*
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargarder, Robert F., 3,759,586.

Sinclair-Koppers Company: *See—*
Immel, Richard H., 3,759,641.

Singer Company, The: *See—*
Current, Wayne A., 3,759,595.

Singer Company, The, mesne: *See—*
Ares, Roland A., 3,759,321.
Bullard, Russell H., 3,759,320.

Singer, Paul A.: *See—*
Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.

Sink, Larry W.: *See—*
Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., 3,759,310.

Sipe, Nelson E.: *See—*
Werth, Elmer D.; Sipe, Nelson E.; and Carlson, Clarence J., 3,759,373.

Skaletzky, Louis L., to Upjohn Company, The. Method of treatment. 3,760,081, Cl. 424-273.000.

Skeen, Barton B.: *See—*
Smolinski, William H.; and Skeen, Barton B., 3,758,893.

Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, to Skeist Laboratories, Inc. Silane substituted polydienes. 3,759,869, Cl. 260-41.50r.

Skeist Laboratories, Inc.: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Skerlos, Peter C., to Zenith Radio Corporation. Automatic fine tuning with phase-locked loop and synchronous detection. 3,760,094, Cl. 178-5.4sd.

Skoyles, Derek R., to U.S. Philips Corporation. Anti-lock brake systems. 3,759,585, Cl. 303-21.0af.

Slaasted, Raymond S.; and Dudley, Jack C., to Modine Manufacturing Company. Method of cooling a gas and removing moisture therefrom. 3,759,050, Cl. 62-93.000.

Slaven, John Greenwood. Fifth wheel coupler assembly. 3,759,546, Cl. 280-434.000.

Sloan, Joseph: *See—*
Csanady, Michael, Jr.; Sloan, Joseph; and Goldsborough, Cornelius S., Jr., 3,759,347.

Sloan, Thomas: *See—*
Castle, William Harold; Jacobs, Harry Michael; and Sloan, Thomas, 3,759,363.

Smaller, Philip. Direct contact transfer of long wavelength signals efficient. 3,760,123, Cl. 179-100.20e.

Smart, Horace Stanley, 1/2 to Mills, Reginald Richard. Injection molding apparatus. 3,759,315, Cl. 164-120.000.

Smith, Allen, to Reyrolle Parsons Limited. Centrifugal separators. 3,759,016, Cl. 55-452.000.

Smith, Frank K.: *See—*
Gadd, Ronald O. C.; and Smith, Frank K., 3,758,902.

Smith, Frank L.: *See—*
Wallace, Charles H.; and Smith, Frank L., 3,759,105.

Smith, Howard F., to Finck Paint & Chemical Company. Corrosion-resisting wash primer composition and corrosion-protected metal surface. 3,759,751, Cl. 148-6.200.

Smith, Irwin M., to Kidde, Walter, & Company, Inc. Panel edge and seal structure. 3,759,005, Cl. 52-403.000.

Smith, James D. B.: *See—*
Mendelsohn, Morris A.; and Smith, James D. B., 3,759,734.
Rogers, Don A., Jr.; and Smith, James D. B., 3,759,866.

Smith Kline & French Laboratories, Limited: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,759,944.

Smith, Lawrence Edward, to RCA Corporation. Pincushion corrected vertical deflection circuit. 3,760,222, Cl. 315-27.0gd.

Smith, Leonard S.: *See—*
Bach, Stanley Monrad, Jr.; Smith, Leonard S.; and Holaday, Reed E., 3,760,271.

Smith, Matthew F.: *See—*
Barrow, Robert B.; Smith, Matthew F.; and Sink, Larry W., 3,759,310.

Smith, Ora E.: *See—*
Wilson, David G.; and Smith, Ora E., 3,759,085.

Smith, Wade O.; and Toft, Albert R., to United States of America, National Aeronautics and Space Administration. Star tracking reticles. 3,759,672, Cl. 29-195.00y.

Smith, William C., Jr. Method, apparatus and system for transporting, converting and unloading dry sugar. 3,759,279, Cl. 137-1.000.

Smith, William L.: *See—*
Ruthman, Jerome E.; Smith, William L.; and Forte, Robert A., 3,759,449.

Smith-Vaniz, William R.: *See—*
Lohne, William E.; Montgomery, John R.; Carley, Jay L.; Darling, Richard; and Smith-Vaniz, William R., 3,760,161.

Smiths Industries Limited: *See—*
Holter, Godfrey George, 3,760,162.

Smolinski, William H.; and Skeen, Barton B. Water saver toilet bowl flush system. 3,758,893, Cl. 4-67.00a.

Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., to Toro Manufacturing Corporation. Mower comb. 3,759,022, Cl. 56-252.000.

Sobey, Albert J.; McQueen, Norman; and Larsen, Robert R., to Transportation Technology, Inc., mesne. Vehicle body construction. 3,759,566, Cl. 296-28.00r.

Societa' Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; Piccolo, Luigi; and Ghirga, Marcello, 3,760,066.

Societa Italiana Telecommunicazioni S.p.A.: *See—*
Camiciottoli, Roberto; and Grossi, Giuseppe Telecommunicazioni, 3,760,127.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Monti, Giancarlo, 3,760,106.

Societe ALPIA: *See—*
Bruneau, Alain, 3,758,953.

Societe Anonyme Cribla: *See—*
Pouillon, Emile R. J., 3,759,385.

Societe Anonyme des Anciens Etablissements Paul Wurth: *See—*
Mahr, Rene, 3,759,404.

Societe Anonyme dite: Systemes et Procedes Industriels Modernes: *See—*
Mercadie, Claude; and Taussac, Pierre, 3,759,381.

Societe d'Etude du Transport et de la Valorisation des Gaz Naturels du Sahara S. E. G. A. N. S.: *See—*
Lamy, Jacques Edouard Jean, 3,758,940.

Societe d'Exploitation des Brevets NEIMAN: *See—*
Lipschutz, Paul, 3,759,075.

Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A.: *See—*
Vauille, Andre, 3,759,235.
Vuaille, Andre, 3,759,637.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Tournere, Marcel Joseph, 3,759,633.

Societe Nationate d'Etude et de Construction de Moteurs d'Aviation: *See—*
Roudil, Maurice Jean Clement, 3,759,467.

Societe Nouvelle Baele Gangloff: *See—*
Pagay, Roger Francois Mathieu, 3,759,012.

Soehnges, Wilhelm P.: *See—*

Thiele, Heinrich; and Soehnges, Wilhelm P., 3,760,045.

Soletanche Societe Anonyme: *See—*
Caron, Claude; and Hurtado, Jean, 3,759,044.

Sollott, Gilbert P.; and Peterson, William R., Jr., to United States of America, Army. Silicon derivatives of ferrocene. 3,759,967, Cl. 260-439.0cy.

Solomon, Raymond, to Fairchild Camera and Instrument Corporation. Push-pull method for solution epitaxial growth of III-V compounds. 3,759,759, Cl. 148-171.000.

Sonab Development AB: *See—*
Goransson, Kjell; and Dahlgren, Jan-Ake, 3,760,301.

Sonia, John: *See—*
Wheeler, John B., III; Sonia, John; Hayes, Thomas E.; and Retrochko, Robert P., 3,760,055.

Sorokin, Peter P.: *See—*
Lankard, John R.; and Sorokin, Peter P., 3,760,295.

Sosaya, Dolores P.: *See—*
Sosaya, Frank F., 3,759,473.

Sosaya, Frank F.; deceased (by Sosaya, Dolores P.; executrix). Clamp for wall mounting of bathroom accessories. 3,759,473, Cl. 248-205.00r.

Soussan, Lyon: *See—*
Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, 3,759,885.

Southwire Company: *See—*
Murphy, John H., 3,759,314.

Souza, Charles W.: *See—*
Dwyer, James L.; Paine, Richard A.; and Souza, Charles W., 3,759,773.

Spacelabs, Inc.: *See—*
Valiquette, Donley J., 3,759,248.

Spaite, Paul W., to Kinney, A. M., Inc. Refuse disposal and heat recovery in steam boilers. 3,759,196, Cl. 110-8.00r.

Spearhead, Inc.: *See—*
Hardway, Edward V., Jr., 3,760,254.

Spectra-Mat, Inc.: *See—*
Chonin, Ito J., 3,760,218.

Sperry, Charles R.: *See—*
Fenn, Lawrence E.; and Sperry, Charles R., 3,760,150.

Sperry Rand Corporation: *See—*
Brown, Ralph A., 3,759,475.
Nicolson, Alexander M., 3,760,414.
Warwick, James S., 3,760,233.

Spes, Hellmuth: *See—*
Kunstle, Gerhard; and Spes, Hellmuth, 3,759,988.

Spinner, Georg; and Pitschi, Frank. Dielectric support for high frequency coaxial lines. 3,760,306, Cl. 333-97.00r.

Sprague Electric Company: *See—*
Fabricius, John H.; and Maher, John P., 3,760,321.

Spransy, Brower C.; and Spransy, George Brower. Amusement and exercise device. 3,758,984, Cl. 46-220.000.

Spransy, George Brower: *See—*
Spransy, Brower C.; and Spransy, George Brower, 3,758,984.

Sprenger, Gerhard E.: *See—*
Caplick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., 3,759,809.

Spyropoulos, Chris E.: *See—*
Cox, Lyndon S.; and Spyropoulos, Chris E., 3,759,134.

Squibb, E. R., & Sons, Inc.: *See—*
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,759,903.
Yale, Harry Louis; and Petigara, Ramesh B., 3,759,923.

Srivastava, Keshava, to Honeywell Information Systems Inc. Technique for determining the extreme binary number from a set of binary numbers. 3,760,356, Cl. 340-146.30y.

Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharina; widow); Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, said Beyerle, Nitz and Schraven assors. to Cassella Farbwerke Mainkur Aktiengesellschaft. 3-Gamma-substituted aino-beta-alkoxybenzoxy-propyl) -6,7,8-alkoxy-1,2,3-benzotriazine-4(3H)-ones. 3,759,907, Cl. 260-248.0as.

Stachel, Ingeburg Lydia Katharina: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,759,907.

Staendeke, Horst, to Knapsack Aktiengesellschaft. Production of trialkylphosphines. 3,760,001, Cl. 260-606.50p.

Stahlberg, Eugene G.: *See—*
Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.

Staib, Philippe G. Device for determining the energy of charged particles. 3,760,186, Cl. 250-305.000.

STAL Refrigeration AB: *See—*
Nilsson, Nils Edvin Folke; and Eurenius, Jimmie Arne, 3,759,061.

Stamicarbon N.V.: *See—*
Rang, Hendrik J.; and Kaarsemaker, Sjoerd, 3,759,887.

Standard Alliance Industries: *See—*
Desilets, Dennis W., 3,759,189.

Standard Oil Company: *See—*
Schreiber, Anthony J., 3,759,653.

Stanley, Thomas R.; and Mascia, Carmen T., to Continental Can Company, Inc. Dispensing valve assembly for pressurized container. 3,759,427, Cl. 222-402.200.

Stapp, Paul R., to Phillips Petroleum Company. Bis-tetrahydrofyranyl sulfones and sulfoxides. 3,759,956, Cl. 260-345.900.

Staubli Ltd.: *See—*
Kaufmann, Werner, 3,759,298.

Staudt, Heinrich; and Ritter, Ernst, to Bosch, Robert, G.m.b.H. Centrifugal governor for regulating the RPM of internal combustion engines. 3,759,236, Cl. 123-140.00r.

Stauffer Chemical Company: *See—*
Decker, Donald L., 3,759,776.
Fancher, Llewellyn W.; and Kalbeeld, Jules, 3,759,949.
Gutman, Arnold D., 3,760,040.
Gutman, Arnold D., 3,760,072.
Teach, Eugene G., 3,759,951.
Teach, Eugene G., 3,759,952.

Steege, Jan Hendrik Terter: *See—*
DeVos, Ferdinand Allard; and Steege, Jan Hendrik Terter, 3,760,098.

Steel, Margaret Lilian: *See—*
Cross, William Telford; Steel, Margaret Lilian; and Trueman, Stephen Edward, 3,759,439.

Steen, William John, to Morgan Refractories, Limited. Refractory articles for use with molten ferrous metals. 3,759,725, Cl. 106-44.000.

Stein, Alfred: *See—*
Helger, Roland; Hartel, Arnold; Stein, Alfred; and Baumer, Wilhelm, 3,759,374.

Stein, William B., to Warner & Swasey Company, The. Cutoff tool. 3,758,927, Cl. 29-96.000.

Steiner, Daniel; and Blochlinger, Ernst, to Schweezerische Industrie Gesellschaft. Vehicle with passenger seats. 3,759,567, Cl. 296-63.000.

Steiner, Edwin C.: *See—*
Exner, Jurgen H.; Sheetz, David P.; and Steiner, Edwin C., 3,760,005.

Steinfink, Murray: *See—*
Skeist, Irving; Miron, Jerry; Steinfink, Murray; Savla, Manilal; Robles, Joseph; and Bhatt, Pradip, 3,759,869.

Steinke, Theodore D.: *See—*
Carter, Melvin A.; and Steinke, Theodore D., 3,759,635.

Steinman, Martin, to Schering Corporation. Bicyclic benzhydrylidene derivatives. 3,760,007, Cl. 260-619.00r.

Steinwand, Paul J., to Union Oil Company of California. Emulsion copolymerization. 3,759,859, Cl. 260-29.70t.

Stellmach, Dieter, to Walther Buromaschinen GmbH. Wire matrix printer heads. 3,759,359, Cl. 197-1.00r.

Stendel, Wilhelm: *See—*
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 3,760,041.

Stepan, William E., to GTE Automatic Electric Laboratories, Incorporated. Mated connector apparatus for printed wiring boards. 3,760,329, Cl. 339-18.00c.

Stephens, Noel William Frank: *See—*
Rogers, Gordon Leonard; and Stephens, Noel William Frank, 3,759,618.

Stern, Robert L.: *See—*
DuRose, Arthur H.; and Stern, Robert L., 3,759,803.

Stevenson, George Michael: *See—*
Jones, Richard Sterling; and Stevenson, George Michael, 3,760,234.

Stich, Frederick A., to Allis-Chalmers Corporation. Capacitive position sensor. 3,760,392, Cl. 340-200.000.

Stidham, Melvin R.: *See—*
Heisler, Alan W., 3,758,985.

Stieglitz, Henry Gilbert: *See—*
Landauer, Le Roy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,759,810.

Stieler, Alfred Otto H., to Bunker-Ramo Corporation, The. Electric plug connection. 3,760,333, Cl. 339-91.00r.

Stier, Barrie J.; Ferrara, Peter J.; and Klobas, Ivan, said Ferrara assor. to said Catalano, Antoinette. Two-piece plug for rotational casting process for forming suction cup integral with the molded article. 3,759,480, Cl. 249-142.000.

Stiles, Thomas M.: *See—*
Evans, Rubert V.; Stiles, Thomas M.; and Ploeger, Kenneth C., 3,759,214.

Stockton Chemicals, Inc., mesne: *See—*
Rosen, William E.; and Berke, Philip A., 3,759,980.

Stolp, Fritz: *See—*
Freyschlag, Herwig; Stolp, Fritz; Reif, Werner; and Pommer, Horst, 3,760,004.

Stonehocker, Van Tassel: *See—*
Hinckley, John N.; and Stonehocker, Van Tassel, 3,759,640.

Storer, Christopher Charles: *See—*
Easton, Donald Bannerman James; Rennie, George Kerr; and Storer, Christopher Charles, 3,759,833.

Stork Amsterdam A.V.: *See—*
Adank, Johannes Antonius Marie, 3,759,366.

Stork, Harald; and Schmidt, Felix Helmut, to Boehringer Mannheim G.m.b.H. Process for thc quantitative determination of tri-, di- and monoglycerides. 3,759,793, Cl. 195-103.50r.

Storrs, Bertrand L.; and Hoag, Eric J., to Du Pont de Nemours, E. I., and Company. Reformer catalyst. 3,759,678, Cl. 48-214.000.

Strachan & Henshaw Limited: *See—*
Alsop, Arthur Graham, 3,759,175.

Straitwell, Harold L., Jr. Board game apparatus. 3,759,520, Cl. 273-134.0ad.

Stratford Engineering Corporation: *See—*
Putney, David H.; Lindau, John H.; and West, Charles L., 3,759,318.

- Strauss, Philip W.: *See—*
  - Bell, Clarence A.; Gwinn, Ralph; Jennison, Rolland N.; Jones, Bryon; and Strauss, Philip W., 3,759,049.
- Strengholt, Roy: *See—*
  - Newman, Irvin; and Strengholt, Roy, 3,760,157.
- Striebel, Kurt: *See—*
  - Rudle, August; and Striebel, Kurt, 3,759,226.
- Stroot, Donald H.: *See—*
  - Barnes, Roy J.; and Stroot, Donald H., 3,759,561.
- Stumph, Stephen L.: *See—*
  - Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,760,159.
- Sud-Chemie AG: *See—*
  - Fahn, Rudolf, 3,759,729.
- Sugahara, Norio; and Oguri, Tomiji, to Kabushiki Kaisha Takai Rika Denki Seisakusho. Cold forcing method and apparatus for producing a terminal. 3,759,080, Cl. 72-356.000.
- Sugalski, Raymond K.: *See—*
  - Voyentzie, Peter R.; Ziemba, Richard T.; and Sugalski, Raymond K., 3,759,749.
- Sugayama, Sunichi: *See—*
  - Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
- Suggitt, Robert M.: *See—*
  - Arkell, Alfred; Crone, John M., Jr.; and Suggitt, Robert M., 3,760,017.
- Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., to Texaco Inc. Hydroalkylation catalyst and process. 3,760,018, Cl. 260-668.00f.
- Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, to Riken Vitamin Oil Co., Ltd. Process for preparation of ikura (salmon egg). 3,759,718, Cl. 426-47.000.
- Sugimoto, Minoru. Monorail railway transportation system. 3,759,186, Cl. 104-120.000.
- Sugiura, Akio: *See—*
  - Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.
- Suhonen, Tapani: *See—*
  - Levamaki, Reiji; Vehvilainen, Mikko; and Suhonen, Tapani, 3,759,182.
- Sullivan, James D., to Monsanto Company. Functional fluid compositions. 3,759,829, Cl. 252-47.500.
- Sullivan, James K.; and Howard, Richard I., to FMC Corporation. Briquetting calcining crushed mine run western phosphate shale ore. 3,760,048, Cl. 264-56.000.
- Sullivan, Ronald D.: *See—*
  - Baldwin, Kenneth B.; and Sullivan, Ronald D., 3,760,324.
- Sulzer Brothers Limited: *See—*
  - Pearrwaller, Erwin, 3,759,300.
- Sumi, Shozo: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
- Sumitomo Chemical Co., Ltd.: *See—*
  - Hatano, Ikuo; Oida, Kyuya; Abe, Tatuo; Kumagai, Seiji; Ojima, Sueo; and Nagaeda, Hiroshi, 3,759,758.
- Sumitomo Chemical Company, Ltd.: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
- Sun Chemical Corporation: *See—*
  - Caplick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., 3,759,809.
  - Himics, Richard J., 3,759,942.
- Sun Oil Company of Pennsylvania: *See—*
  - Mills, Ivor W.; and Dimeler, Glenn R., 3,759,817.
  - Moore, Robert E., 3,760,020.
- Sun Oil Company of Pennsylvania, mesne: *See—*
  - Hansel, William B., 3,759,423.
- Sun Research and Development Co.: *See—*
  - Chong, Victor Manuel, 3,759,703.
- Sunbeam Lighting: *See—*
  - Miller, Jack V., 3,760,178.
- Sundberg, Bertil J.; and Luksch, Andreas, to Brunswick Corporation. Method of making metal fibril mats and reinforced metal fibril mats. 3,759,708, Cl. 75-208.00r.
- Sunkist Growers, Inc.: *See—*
  - Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,759,168.
  - Johnson, Maurice V., Jr.; Carter, Ned C.; and Koenig, Kenneth W., 3,859,168.
- Superior Valve Company: *See—*
  - Kongelka, Robert M., 3,759,294.
- Suzuki, Shigeto, to Chevron Research Company. Resorcinol process. 3,760,008, Cl. 260-621.00r.
- Suzuki, Shigeto, to Chevron Research Company. Hydroquinone process. 3,760,009, Cl. 260-621.00r.
- Svatek, Karl: *See—*
  - Moneagle, Otto F.; and Svatek, Karl, 3,759,456.
- Swander, Kenneth D., Jr.: *See—*
  - Johnsson, Carl E.; and Swander, Kenneth D., Jr., 3,759,147.
- Swaneck, Anthony J., Jr., to Westinghouse Electric Corporation. Air control for fresh food compartment quick chill operation. 3,759,053, Cl. 62-157.000.
- Swanson, Harold V., to Interpace Corporation. Pipe to manhole seal. 3,759,280, Cl. 137-363.000.
- Swemco Limited: *See—*
  - Flack, Bernard, 3,759,497.
- Swick, George E., Jr., to Cornelius Company, The, mesne. Collapsible storage assembly. 3,759,599, Cl. 312-262.000.
- Swift & Company: *See—*
  - Lewis, Morton, 3,760,038.
- Swihart, Terence J.: *See—*
  - Groenhof, Eugene D.; and Swihart, Terence J., 3,759,827.
- Swindell, E. LeRoy. Switchrack for electric motor starters and controls. 3,760,232, Cl. 317-99.000.
- Sycor, Inc.: *See—*
  - Irwin, Samuel N.; and Levine, Michael R., 3,760,375.
- Sykalo, Evgeny Petrovich: *See—*
  - Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich, 3,759,166.
- Sylvania Electric Products, Inc.: *See—*
  - Bonazoli, Robert P.; and Keenan, James P., 3,759,601.
- Syrjanen, Ahti, to Yhtyneet Paperitehtaat Osakeyhtio Jylhavaara. Pressure straining device. 3,759,392, Cl. 210-415.000.
- Szpakowski, Bronislaw Tadeusz, to Bell Canada-Northern Electric Research Limited. Trigger comparator circuit. 3,760,195, Cl. 307-235.000.
- Szur, Elex J.: *See—*
  - Leeds, Morton W.; and Szur, Elex J., 3,760,086.
- Szwolkon, Henry E. Fish hook and lure assembly. 3,758,976, Cl. 43-42.240.
- Tachikawa Blind Kogyo Kabushiki Kaisha: *See—*
  - Tachikawa, Takeyoshi, 3,758,988.
- Tachikawa, Takeyoshi, to Tachikawa Blind Kogyo Kabushiki Kaisha. Blind. 3,758,988, Cl. 49-85.000.
- Taft Broadcasting Corporation, mesne: *See—*
  - Covington, Morris T., 3,760,280.
- Taggart, Josh B. Alarm system. 3,760,397, Cl. 340-258.00b.
- Tagh, Inc.: *See—*
  - Cooksley, Ralph D., 3,759,230.
- Takachiho Koeki Kabushiki Kaisha: *See—*
  - Itoh, Takayuki, 3,760,382.
- Takada, Shoichi: *See—*
  - Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
- Takahashi, Kaoru: *See—*
  - Nishizawa, Jun-Ichi; and Takahashi, Kaoru, 3,760,201.
- Takai, Isao; and Ogura, Junshiro, to Oda Gosen Kogyo Kabushiki Kaisha and Ogura Hoseki Seiki Kogyo Kabushiki Kaisha. False twister device for producing crimps in filament yarn. 3,759,025, Cl. 57-77.300.
- Takami, Kazushi; Koga, Yoshiro; Ide, Yoichi; Kubota, Masatoshi; Hirasawa, Yoshiro; Matsumoto, Noriki; and Miyake, Takao, to Onkyo Kabushiki Kaisha. Amplifier unit casing having recessed connector terminal surface. 3,760,235, Cl. 317-118.000.
- Takano, Hirotugu; and Inoue, Toshitsugu, to Matsushita Electric Industrial Co., Ltd. Programming device. 3,760,163, Cl. 235-61.12n.
- Takeda, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. Support apparatus for a power unit in a motor vehicle. 3,759,341, Cl. 180-64.00r.
- Takeda, Kunihiko: *See—*
  - Misumi, Teruyuki; Miyauchi, Hirotsugu; Tsushima, Sakae; Takeda, Kunihiko; and Miyaji, Toshio, 3,759,738.
- Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Car washing apparatus. 3,758,906, Cl. 15-21.00e.
- Takeuchi Tekko Kabushiki Kaisha: *See—*
  - Takeuchi, Shigeo, 3,758,906.
- Tallon, Harry. Crane operated rotation monitor. 3,760,401, Cl. 340-267.00c.
- Tamboise, Maurice Paul Jean Joseph, to Entripose. Metallic framework and floor resulting therefrom. 3,759,006, Cl. 52-406.000.
- Tamura, Hideo: *See—*
  - Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
- Tamura, Tatsuo: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
- Tanabe, Kuniyuki: *See—*
  - Kogo, Hiroshi; and Tanabe, Kuniyuki, 3,760,109.
- Tanaka, Hiroshi: *See—*
  - Shimizu, Tetsuji; Iwakura, Makoto; and Tanaka, Hiroshi, 3,760,224.
- Tanaka, Seizo, to Showa Denka Kabushiki Kaisha and Sanko Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for the production of aerosols. 3,759,444, Cl. 239-138.000.
- Tanaka, Tutomo: *See—*
  - Watanabe, Kiyoshi; Tanaka, Tutomo; Hirakawa, Tamotsu; and Sasaki, Mamoru, 3,759,789.
- Tanigawa, Hironari: *See—*
  - Nakagawa, Akito; Ueda, Jenji; Tanigawa, Hironari; and Ishigoro, Keiichiro, 3,759,814.
- Taniguchi, Kenji; Hayasaka, Akio; Masaki, Akira; Chiba, Tsuneyo; and Kaji, Tadao, to Hitachi, Ltd. Semiconductor integrated circuit. 3,760,200, Cl. 307-303.000.

- Tanimura, Thoru: *See—*
  - Kunii, Kazuo; Nishida, Reijiro; Tanimura, Thoru; Kitamura, Masaji; and Okamoto, Shinya, 3,759,693.
- Tanka, Keihachiro: *See—*
  - Iwao, Norito; Ezaki, Akira; Hayashi, Shigemi; Nakamori, Yukio; Tanka, Keihachiro; Nakano, Nobukuni; and Morita, Toshihito, 3,759,087.
- Tanner, Howard C., to International Business Machines Corporation. System for controlling output lines with limited storage capacity. 3,760,376, Cl. 340-172.500.
- Tarr, Lloyd A.: *See—*
  - Beeman, Robert H.; and Tarr, Lloyd A., 3,760,269.
- Tarrant, Donald R. Sequence identification apparatus. 3,758,971, Cl. 40-64.00r.
- Tate, John E.; and Schull, Howard O., to American Air Filter Company, Inc. Fluid treating filter. 3,759,393, Cl. 210-491.000.
- Taussac, Pierre: *See—*
  - Mercadie, Claude; and Taussac, Pierre, 3,759,381.
- Taylor, Duane F. Tracheal cutting and dialating surgical device. 3,759,263, Cl. 128-305.000.
- Taylor, Eric William. Spinal traction apparatus. 3,759,255, Cl. 128-75.000.
- Taylor, George William: *See—*
  - Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William, 3,760,118.
- Taylor, William W. Servomechanism. 3,759,145, Cl. 91-459.000.
- Teach, Eugene G., to Stauffer Chemical Company. Carbanilate dithiolanes and dithianes. 3,759,951, Cl. 260-327.00m.
- Teach, Eugene G., to Stauffer Chemical Company. Ureido dithiolanes and dithianes. 3,759,952, Cl. 260-327.00m.
- Teikoku Hormone Mfg. Co., Ltd.: *See—*
  - Osawa, Yoshio; and Ueno, Koitiro, 3,759,946.
- Tektronix, Inc.: *See—*
  - Kong, Victor, 3,760,099.
  - Lockwood, Larry R., 3,760,283.
- Tektronix, Inc., mesne: *See—*
  - Cochran, Michael D., 3,760,370.
- Telesco Brophey Limited: *See—*
  - Hoffman, Hans, 3,759,278.
- Teletype Corporation: *See—*
  - Fausel, Charles A.; and Lorenz, Allan C., 3,758,949.
- Teller, Aaron J., to Teller Environmental Systems, Inc. Process for cooling liquids by cross current contact with gases. 3,759,496, Cl. 261-94.000.
- Teller Environmental Systems, Inc.: *See—*
  - Teller, Aaron J., 3,759,496.
- Teplitz, Alfred, to United States Steel Corporation. Apparatus for measuring lengths of linear material. 3,758,954, Cl. 33-141.00f.
- Terai, Kiyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for assembling curved skin block frames of a hull and a method therefor. 3,759,207, Cl. 114-65.00r.
- Terry, John Brian, to Marconi Company Limited, The. P.C.M. coders. 3,760,407, Cl. 340-347.0nt.
- Tetrachord Corporation: *See—*
  - Gacek, Joseph A.; and Parker, Joseph E., 3,760,108.
- Tetsuji, Yoshii, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 3,759,529, Cl. 274-4.00c.
- Texaco Inc.: *See—*
  - Arkell, Alfred; Crone, John M., Jr.; and Suggitt, Robert M., 3,760,017.
  - Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,759,326.
  - Crone, John M., Jr.; and Arkell, Alfred, 3,760,019.
  - Dille, Roger M.; and Schlinger, Warren G., 3,759,837.
  - Francis, James O., 3,760,028.
  - Franz, William F.; and Hess, Howard V., 3,759,679.
  - Harrison, Henry R., 3,759,828.
  - Holder, Charles B., 3,759,881.
  - Larkin, John M., 3,760,012.
  - Suggitt, Robert M.; Arkell, Alfred; and Crone, John M., Jr., 3,760,018.
  - Treybig, James Alva, 3,760,347.
- Texas Instruments, Incorporated: *See—*
  - Marcoux, Leo, 3,760,352.
- Thaler, Sherwood S.; and Berkovits, Barough V., to American Optical Corporation. Pulse-width controlled heartbeat stimulating apparatus monitoring system. 3,759,265, Cl. 128-419.00p.
- Tharman, Paul A., to Briggs & Stratton Corporation. Rectifier-regulator module for alternator-battery electrical systems. 3,760,259, Cl. 322-28.000.
- Thelen, Alfred, to Balzers Patent- und Bateiligungs-Aktiengesellschaft. Interference filter reflecting a certain wave length band within a given wave length range while letting pass other wave length bands of the range. 3,759,604, Cl. 350-166.000.
- Theodore, Paris. Grips for handguns. 3,758,978, Cl. 42-71.00p.
- Thermoseal Glass Corporation: *See—*
  - Newman, Irvin; and Strengholt, Roy, 3,760,157.
- Theurer, Josef, to Plasser, Franz, Bahnbaumaschinen Industriegesellschaft m.b.H. Impact socket wrench tool. 3,759,334, Cl. 173-22.000.
- Thiele, Heinrich: *See—*
  - Thiele, Heinrich; and Soehnges, Wilhelm P. (said Soehnges assor. to said), 3,760,045.
- Thiele, Heinrich; and Soehnges, Wilhelm P., said Soehnges assor. to said Thiele, Heinrich. Process of preparing shaped optical bodies useful as aids to vision. 3,760,045, Cl. 264-1.000.
- Thiele, Robert E., to United States Steel Corporation. Panel joint assembly with drainage cavity. 3,759,007, Cl. 52-533.000.
- Thiokol Chemical Corporation: *See—*
  - Williams, Allan E., 3,759,039.
- Thomas, Hermann, to Maschinenfabrik Goebel G.m.b.H. Winding machine. 3,759,458, Cl. 242-67.10r.
- Thomas, Jean Claude; Fournel, Francis; and Soussan, Lyon, to Produits Chimiques Pechiney-Saint-Gobain. Vinyl chloride polymers and methods of preparing them. 3,759,885, Cl. 260-92.80r.
- Thomas, John, to American Air Filter Company, Inc. Damper seal system. 3,759,486, Cl. 251-330.000.
- Thomas, Stephen Edward. Apparatus and process for developing electromagnetic energy from tire flexure. 3,760,351, Cl. 340-58.000.
- Thomason, Gary. Filtering system for deep fat cooking vessel. 3,759,388, Cl. 210-167.000.
- Thompson, Charles R.; and Hidalgo, John, to Cutter Laboratories, Inc. Injectable compositions of the (plus)-optical insomer of the alpha racemate of 2-(2-ethyl-2-phenyl-1,-dioxolan-4-yl) piperidine and their use. 3,760,077, Cl. 424-267.000.
- Thompson, David R., to Rental Equipment Manufacturing Co. Yard maintenance apparatus. 3,758,967, Cl. 37-43.00e.
- Thompson, George H. B., to International Standard Electric Corporation. Laser to optical fiber coupling. 3,760,297, Cl. 331-94.500.
- Thompson, I. L.: *See—*
  - Vocker, Harold R.; Marcovitz, David L.; Thompson, I. L.; and Wallace, Woodrow, 3,759,171.
- Thompson, Joseph; Hemming, Raymond Charles; Critchley, John Edward; and Morrell, Ronald Joseph, to Northern Electric Company Limited. Post pay telephone paystation circuit. 3,760,104, Cl. 179-6.30r.
- Thomson-CSF: *See—*
  - Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, 3,760,278.
- Thone-Poulenc S.A.: *See—*
  - Monier, Paulin, 3,759,936.
- Thornton, George W.: *See—*
  - Rose, Boyd W.; and Thornton, George W., 3,759,368.
- Thornton, Raymond E., to Brown & Williamson Tobacco Corporation. Smoking articles. 3,759,267, Cl. 131-8.00r.
- Thorpe, Richard S.: *See—*
  - Lubowitz, Hyman R.; Thorpe, Richard S.; and Vaughan, Robert W., 3,759,777.
- Tiao, Shui-Li: *See—*
  - Janssen, Donovan M.; Kollar, Ernest P.; Stahlberg, Eugene G.; and Tiao, Shui-Li, 3,759,465.
- Tiley, John Wayne, to AMP Incorporated. Method of and system for threading glass connectors and connector. 3,759,682, Cl. 65-109.000.
- Timber Research and Development Association: *See—*
  - Ollis, William John Bernard; Long, Clive Beech Ansley; and Levin, Ezra, 3,758,998.
- Timesavers, Inc.: *See—*
  - Brotherton, Cecil O., 3,759,146.
- Tims, Allan C.: *See—*
  - Kieser, Robert J.; and Tims, Allan C., 3,760,348.
- Tischuk, Walter: *See—*
  - Howell, Norbert C.; Tischuk, Walter; and Welsh, Thomas M., 3,759,479.
- Tiskovich, Natalya Lvovna: *See—*
  - Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich, 3,759,034.
- Titarenko, Alexandr Timofeevich: *See—*
  - Polshikov, Ivan Vasilievich; Kuruin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich, 3,759,112.
- Toft, Albert R.: *See—*
  - Smith, Wade O.; and Toft, Albert R., 3,759,672.
- Tokunaga, Kazumi. Molds for use in manufacturing energy dissipating concrete blocks for river and marine works. 3,759,043, Cl. 61-4.000.
- Tokuzumi, Tadaichi; Fujimura, Hiroshi; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Process for the polymerisation or copolymerisation of ethylene with the use of a catalyst supported by a carrier. 3,759,884, Cl. 260-88.20r.
- Tokyo Shibaura Electric Co.: *See—*
  - Ohnishi, Hiroshi, 3,759,051.
- Tokyo Shibawa Electric Co., Ltd.: *See—*
  - Shibata, Keizo, 3,758,943.
- Tollinger, James, to Ithaca Gun Company. Semi-automatic shotgun. 3,759,135, Cl. 89-33.00b.
- Tolliver, Donald L.: *See—*
  - Barone, Frank J.; and Tolliver, Donald L., 3,759,762.
- Tomasovitch, Vladimir: *See—*
  - Bouchet, Claude; Meliani, Roger; and Tomasovitch, Vladimir, 3,760,113.
- Tomita, Akira: *See—*
  - Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.
- Tomita, Kazuo: *See—*
  - Sampei, Nohyoshi; Tomita, Kazuo; and Tsuji, Hideakira, 3,759,941.
- Tongas, Robert J.: *See—*

Luedke, Donald M.; and Tongas, Robert J., 3,759,337.
Toplis, John Geoffrey, to Raleigh Industries Limited. Cycle brake having brake adjusting mechanism. 3,759,352, Cl. 188-24.000.
Torii, Takayoshi: *See—*
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Toro Company, The: *See—*
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Toro Manufacturing Corporation: *See—*
Snyder, Marion F.; Lindquist, William C.; and Klemenhagen, Dale A., 3,759,022.
Tournere, Marcel Joseph, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for locking blades or other slidingly mounted parts in position on a rotor or other rotating support means. 3,759,633, Cl. 416-220.000.
Towne, Paula: *See—*
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Toyo Boseki Kabushiki Kaisha: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,759,849.
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Masunaga, Kunihiko; and Shinohara, Hiroshi, 3,759,797.
Ohta, Jun; Okamoto, Atsutoshi; and Sugiura, Akio, 3,759,582.
Yamada, Mitsumasa; and Sawada, Hiroshi, 3,759,668.
Trahan, Albert J., to Emhart Corporation. Neck ring arms for glassware forming machine. 3,759,686, Cl. 65-167.000.
Trandin, Georgy Gavrilovich; Khrichev, Vladimir Andreevich; Sykalo, Evgeny Petrovich; Burakov, Valery Petrovich; and Krasnobaev, Vasily Iliich; deceased (by Krasnobaev, Anna Nikolaevn; administrator). Apparatus for peeling fruits and vegetables. 3,759,166,Cl. 99-472.000.
Transco Inc.: *See—*
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Transportation Technology, Inc., mesne: *See—*
Sobey, Albert J.; McQueen, Norman; and Larsen, Robert R., 3,759,566.
Trecker, David John: *See—*
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Treherne, Elizabeth Joan: *See—*
Brown, David Sydney; Ficken, Geoffrey Ernest; and Treherne, Elizabeth Joan, 3,759,931.
Treiber, Hans-Joerg; and Zimmermann, Frank, to Knoll A.G. Chemische Fabriken. Substituted 4-cyano-4-phenylaminocyclohexanes. 3,759,974, Cl. 260-465.00e.
Tremper, Henry S., III: *See—*
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Treybig, James Alva, to Texaco Inc. High resolution reflection shooting. 3,760,347, Cl. 340-15.5mc.
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D'Alea, Anthony R., 3,759,290.
Trief, Leon-Jules. Process for utilizing coal residues. 3,759,730, Cl. 106-103.000.
Triner, Irvin Richard: *See—*
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Triumph Werke Nuernberg A.G.: *See—*
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Trofimov, Igor Dmitrievich; Korobeinikov, Jury Mikhailovich; Pavlov, Vadim Alexandro; and Shevyakov, Lev Nikolaevich; deceased (by Shevyakova, Vera Stepanovna; Tiskovich, Natalya Lvovna; and Shevyakova, Klavdia Andreevna; administrators). Device to form chin links of various shapes from round wire. 3,759,034, Cl. 59-27.000.
Trop, Lawrence B. Light machine. 3,760,176, Cl. 240-10.100.
Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning. Benzoxanthene and benzothioxanthene. 3,759,953, Cl. 260-328.000.
Trouilhet, Maurice Marie Achille, to Calor. Single-phase motor with auxiliary coils selectively short-circuited by a solid state switch element. 3,760,247, Cl. 318-223.000.
Tru-Lok Metal Fabricating Company, Inc.: *See—*
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Trueman, Stephen Edward: *See—*
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Truhan, Andrew. Medicator with frangible seal. 3,759,259, Cl. 128-269.000.
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Leonard, Paul L., 3,760,288.
Lubowitz, Hyman R.; Thorpe, Richard S.; and Vaughan, Robert W., 3,759,777.
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Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Electronic watch. 3,759,028, Cl. 58-28.00a.
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Turner, Robert K.: *See—*
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Tveten, Kjell Wallim: *See—*
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Twist, Walter; Holdsbrough, Keith; and Hinley, John James, to British Titan Limited. Process for the manufacture of a pigment. 3,759,732, Cl. 106-300.000.
Tyler, Claude T., to Tyler Machinery Co., Inc. Multiple-section molding press. 3,759,649, Cl. 425-145.000.
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U-Cart Concrete Systems Inc.: *See—*
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Uchida, Kozo, to Iwatsu Electric Co., Ltd. Protecting circuit. 3,760,228, Cl. 317-31.000.
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Ueno, Ryuzo; Watanabe, Shota; and Ota, Sotoyuki, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Method for protecting chickens and hogs from pasteurella. 3,760,079, Cl. 424-272.000.
Uhlig, Albert R., to Ownes-Illinois, Inc. Pressure resistant plastic container. 3,759,410, Cl. 215-1.00c.
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United Kingdom of Great Britain and Northern Ireland, Minister of Aviation in Her Britannic Majesty's Government of the: *See—*
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United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
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- Wakabayashi, Yasuo. Digital clock. 3,759,030, Cl. 58-50.00r.
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- Walker, Harold L., to Eggmatic Corporation. Combination egg holder and timer. 3,759,163, Cl. 99-336.000.
- Walkley, James A.; Piotroski, Peter N.; and O'Gara, George W., to Pitney-Bowes, Inc. Method, apparatus and system for fitness sorting and count verifying straps of currency. 3,759,382, Cl. 209-111.700.
- Wallace, Charles H.; and Smith, Frank L., to Huss Equipment Corporation. Method and apparatus for sampling ground meat. 3,759,105, Cl. 73-421.00a.
- Wallace, David C. Device for holding tortilla during the cooking thereof. 3,759,165, Cl. 99-427.000.
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- Walter, Glennon P. Rack for bottles and cans. 3,759,593, Cl. 312-312.000.
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- Walters, John C. Car wash installation. 3,759,275, Cl. 134-45.000.
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- Walton, Richard S., to HMW Industries, Inc. Liquid crystal display circuit. 3,760,406, Cl. 340-336.000.
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- Warner, C. Edward. Dental instrument. 3,759,274, Cl. 132-92.00r.
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- Weimer, Robert R., to Paramount Industries, Inc. Storage device for rubber O-rings. 3,759,377, Cl. 206-65.00r.
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- West, Charles L.: *See—*
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- Whang, Sang Y., to Milgo Electronic Corporation. Coding and decoding system with multi-level format. 3,760,277, Cl. 325-38.00a.
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- Wilhelm, Frederick C., to Universal Oil Products Company. Method of manufacturing a supported catalyst containing platinum group metal rhenium or group IVA metal. 3,759,841, Cl. 252-441.000.
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- Williams, D. Michael, to Agridustrial Electronics, Inc. Moisture tester for continually flowing granular materials. 3,760,267, Cl. 324-61.00r.
- Willis, James E.: *See—*
  - Boster, Everett E.; and Willis, James E., 3,759,407.
- Willson, Elmer E.; and Pouch, Thomas M., to Multifastener Corporation. Part orienting device. 3,759,418, Cl. 221-157.000.
- Wilson, David G.; and Smith, Ora E., to Massachusetts Institute of Technology. Impact sensor and coder apparatus. 3,759,085, Cl. 73-12.000.
- Wilson, Donald Victor, to Hoffmann-La Roche Inc. Imidazolyl derivatives of proteins and polysaccharides. 3,759,890, Cl. 260-112.00r.
- Wilson, John C. Pinned joint. 3,759,003, Cl. 52-285.000.
- Wilson, William J.: *See—*
  - Hitch, Thomas R.; and Wilson, William J., 3,759,402.
- Windsor, Lynne E., to Carter, James B., Limited. Three wire electrical plug. 3,760,326, Cl. 339-14.00r.
- Wing, George S. Internally reactive structural joinder system. 3,759,119, Cl. 81-57.390.
- Winter, Gerhard; Zirngibl, Hans; and Mansmann, Manfred, to Bayer Aktiengesellschaft. Production of fibrous alkali metal hexatitanates. 3,760,068, Cl. 423-598.000.
- Wismer, Marco: *See—*
  - Parker, Earl E.; and Wismer, Marco, 3,759,808.
- Wittels, William. Kaolin based ceramic tile containing granite, feldspar and alumina particles. 3,759,726, Cl. 106-45.000.
- Witthauer, Norman E., Jr.: *See—*
  - Pearsall, Samuel H.; and Witthauer, Norman E., Jr., 3,760,250.
- Witzel, Bruce E.: *See—*
  - Shen, Tsung-Ying; Witzel, Bruce E.; Walford, Gordon L.; and Ruyle, William V., 3,759,948.
- Wojtasinski, Ronald J.: *See—*

- United States of America, National Aeronautics and Space Administration, 3,759,152.
- Wolf, Charles B.; and Fey, Maurice G., to Panelera International Inc. Short gap electric arc heater with opposing gas swirl. 3,760,145, Cl. 219-121.00p.
- Wolf, Charles B.; Fey, Maurice G.; and Azinger, Frederick A., Jr., to Westinghouse Electric Corporation. Arc detecting material admission apparatus for use in combination with an electric arc heater. 3,760,151, Cl. 219-383.000.
- Wolf, Edgar; Lau, Edward; and Eisenkramer, Arthur, to Redactron Corporation. Data card transport and scanning apparatus. 3,760,391, Cl. 340-174.10c.
- Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., to General Electric Company. Storage system with collimated electron beam for minimal spherical aberration. 3,760,383, Cl. 340-173.0cr.
- Wolfe, Walter W.; Messner, Jack D.; and Rambo, Eivind M., to Van Dusin & Co., Inc. Belt type cattle feeder. 3,759,227, Cl. 119-52.00b.
- Wolff & Co.: *See—*
  - Huhn, Helmut; and Hoppe, Lutz, 3,759,877.
- Woods, Harry E., to Goodyear Tire & Rubber Company, The. Variable speed conveyor. 3,759,188, Cl. 104-168.000.
- Woodward, John W.: *See—*
  - Czarnecki, Stephen J.; Evers, Harry G.; Kellogg, Frank; Newcum, William W.; Vogel, Richard F.; and Woodward, John W., 3,760,117.
- Woolcock, Alan; McDougall, Ian Leitch; and Barber, Anthony Clifford, to Imperial Metal Industries (Kynoch) Limited. Superconducting composite. 3,760,092, Cl. 174-126.0cs.
- Wrede, Leroy E., to Packaging Laminators, Inc. Flexible halogen package. 3,759,379, Cl. 206-84.000.
- Wrenn, George T.; and Mann, H. William, to Virginia Chemicals Inc. Receiver drier housing for automobile air conditioning systems. 3,759,062, Cl. 62-474.000.
- Wright, Arthur G., to Unitek, Inc., mesne. Emergency releasing-safety apparatus. 3,759,556, Cl. 292-33.000.
- Wright, Earl R. Adjustable easel construction. 3,759,482, Cl. 248-449.000.
- Wright, Edward A.: *See—*
  - Ragsdale, Charles W.; and Wright, Edward A., 3,760,100.
- Wright, Herschel E.; and Cassingham, William J., to Beckman Instruments, Inc. Centrifuge seal assembly and method. 3,759,591, Cl. 308-189.00r.
- Wright, James: *See—*
  - Gorwicz, David; Battye, Edwin Amitage; and Wright, James, 3,760,246.
- Wright, Marjorie E. Multi-piece filter for smoking device. 3,759,270, Cl. 131-261.00b.
- Wu, Bevan P. F.: *See—*
  - Duffy, Michael C.; Riseman, Jacob; and Wu, Bevan P. F., 3,760,242.
- Wunder, Friedrich: *See—*
  - Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,759,839.
- Wyeth, John, & Brother Limited: *See—*
  - Cavalla, John F.; Sandison, Gillian M.; and White, Alan C., 3,759,906.
- Xerox Corporation: *See—*
  - Maksymiak, John; and Lewis, Richard B., 3,759,222.
  - Mason, Lawrence J., 3,759,149.
  - McGuire, John V., 3,759,781.
  - O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, 3,759,611.
  - Silverberg, Morton, 3,760,229.
  - Wharton, Armistead, 3,759,612.
- Yale, Harry Louis; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. Quinobenzoxa(or thia)zepin-3-ones. 3,759,923, Cl. 260-283.00s.
- Yamada, Kyohei: *See—*
  - Nurina, Shogo; Hayashi, Yoshihiro; and Yamada, Kyohei, 3,759,985.
- Yamada, Mitsumasa; and Sawada, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. After-burner for re-combustion of exhaust gases of internal combustion engines. 3,759,668, Cl. 23-277.00c.
- Yamada, Yasuo: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Higashikawa, Shizuo; Kudamatsu, Akio; Tamura, Tatsuo; Sumi, Shozo; and Katsumata, Osamu, 3,760,043.
- Yamaga, Makoto: *See—*
  - Shimujo, Takemi; and Yamaga, Makoto, 3,760,137.
- Yamaguchi, Goru; Komatsu, Susumu; and Fukumoto, Tetsuo. Catalyst for catalytic cracking of hydrocarbons. 3,759,844, Cl. 252-465.000.
- Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, to Mitsubishi Chimical Industries, Ltd. Process for preparing ethylene copolymer. 3,759,918, Cl. 260-80.700.
- Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Nomiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, to Toyo Boseki Kabushiki Kaisha. Cross-linked acrylic fibers or films prepared by copolymerizing acrylonitrile, unsaturated monomer containing halogented S-triazinyl groups, and protein. 3,759,849, Cl. 260-8.000.
- Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, to Sumitomo Chemical Company, Ltd. Certain 1-oxamoyl-1,4-benzodiazepines. 3,759,897, Cl. 20-239.0bd.
- Yamamoto, Michihiro: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,759,897.
- Yamamoto, Toshiyuki: *See—*
  - Komatsu, Nobuhiko; Kikumoto, Syoichi; Kimura, Keitaro; Sakai, Sumio; Kamasuka, Teruo; Momoki, Yoshio; Takada, Shoichi; Yamamoto, Toshiyuki; and Sugayama, Sunichi, 3,759,896.
- Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Device for automatically firing flash bulbs in camera. 3,759,154, Cl. 95-11.50r.
- Yamauchi, Masaya; Shirasu, Hirotoshi; Hirose, Koji; and Nakajo, Toshihiko, to Nippon Telegraph & Telephone Public Corporation, Nippon Electric Co., Ltd., Hitachi, Ltd., Oki Electric Industry Co., Ltd. and Fujitsu Limited. Electronic switching system. 3,760364, Cl. 340-172.500.
- Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Shadow masks for use in colour picture tubes. 3,760,214, Cl. 313-85.00s.
- Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Post focusing type colour picture tubes. 3,760,220, Cl. 315-17.000.
- Yamazoe, Toshihiro: *See—*
  - Mifune, Hideo; Ishii, Akira; Kokoyama, Masanori; and Yamazoe, Toshihiro, 3,759,658.
- Yao, Ying Loh, to International Business Machines Corporation. Stored charge memory detection circuit. 3,760,381, Cl. 340-173.00r.
- Yashima, Chiyoshi: *See—*
  - Sugihara, Takashi; Yashima, Chiyoshi; Tamura, Hideo; Kawasaki, Mitsuyasu; and Shimizu, Shogo, 3,759,718.
- Yeaman, George A.: *See—*
  - McIntosh, Harold A.; and Yeaman, George A., 3,760,309.
- Yester, Francis R., Jr., to Motorola, Inc. Acoustic surface wave resonator. 3,760,204, Cl. 310-8.200.
- Yhtyneet Paperitehtaat Osakeyhtio Jylhavaara: *See—*
  - Syrjanen, Ahti, 3,759,392.
- Yoakum, Ronald E. Pre-cast base and method for manholds and the like. 3,759,285, Cl. 137-363.000.
- Yoda, Mikio; Ishida, Shinnosuke; and Ashizawa, Haluo, to Hitachi, Ltd. Conveying apparatus having vacuum type holding means. 3,759,560, Cl. 294-64.00r.
- Yokogawa Electric Works, Ltd.: *See—*
  - Mori, Hiroshi; Wakasa, Yutaka; and Uchiike, Hisayuki, 3,760,198.
- York, Jimmie D., Jr., to American Air Filter Company, Inc. Two-way pressure relief assembly. 3,759,287, Cl. 137-493.900.
- York Stone & Supply Company: *See—*
  - Finnegan, Joseph F., Jr., 3,758,945.
- Yoshii, Tetsuji, to Matsushita Electric Industries Co., Ltd. Device for detecting stoppage of rotation. 3,759,463, Cl. 242-186.000.
- Yoshikawa, Sadayoshi; and Arita, Mitsuo, to New Nippon Electric Company, Ltd. Deflection and picture position adjusting apparatus. 3,760,221, Cl. 315-27.0td.
- Yoshimoto, Hiroshi: *See—*
  - Nose, Shinji; Tsujimura, Hideaki; Iio, Katumi; Ishihara, Hitoshi; and Yoshimoto, Hiroshi, 3,759,888.
- Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, to Dainippon Ink & Chemicals, Inc. and Dainippon Ink Institute of Chemical Research. Method of preparing phosphorous containing oligomers or polymers. 3,760,037, Cl. 260-931.000.
- Youhanaian, Lawrence A., to Littelfuse, Inc. Audio signalling device. 3,760,411, Cl. 340-388.000.
- Young, Gar. Food packaging system and temperature-resistant insert thereof. 3,759,720, Cl. 99-171.00h.
- Young, Gar, to Ralston Purina Company. Method of heating a packaged foodstuff in a toaster. 3,759,721, Cl. 99-171.00h.
- Young, George Harold Sidney, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation in Her Britannic Majesty's Government of the. Gas-producing compositions. 3,759,765, Cl. 149-19.910.
- Young, George W., to American Air Filter Company, Inc. Latch for a filter apparatus. 3,759,017, Cl. 55-481.000.
- Young, Robert R.: *See—*
  - English, William A.; and Young, Robert R., 3,759,057.
- Yount, Amos W.; and Wells, Shellie D. Exercise machine. 3,759,512, Cl. 272-58.000.
- Yuska, Leonard J., to United States of America, Navy. Universal extractor tool. 3,759,559, Cl. 294-15.000.
- Zaklad Doswiadczalny Pras Automatycznych HYDOMAT przy Zakladach Mechanicznych "Tarnow": *See—*
  - Nowak, Edmund, 3,759,079.
- Zander, Maxmillian: *See—*
  - Omran, Jaafar; Franck, Heinz-Gerhard; and Zander, Maxmillian, 3,759,848.
- Zanella, Dominic A.: *See—*
  - Renfrew, Edgar E.; and Zanella, Dominic A., 3,759,663.
- Zeile, Karl: *See—*
  - Weber, Karl Heinz; Zeile, Karl; Dannesberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,760,074.
- Zelahy, John W., to General Electric Company. Nickel base bonding powder. 3,759,692, Cl. 75-.5ba.
- Zenith Radio Corporation: *See—*
  - Pekosh, Raymond J., 3,759,735.
  - Skerlos, Peter C., 3,760,094.

- Zenk, Baptist: *See—*
  - Koziol, Konrad; and Zenk, Baptist, 3,759,812.
- Zeski, Stephen J.; and Carter, Earl J. Roller for combing shag rugs. 3,758,915, Cl. 15-366.000.
- Zibrun, Joseph. Steam engine. 3,759,141, Cl. 91-20.000.
- Ziemba, Richard T.: *See—*
  - Voyentzie, Peter R.; Ziemba, Richard T.; and Sugalski, Raymond K., 3,759,749.
- Zimet, Robert A.; and Bain, James B., to Datron Systems, Inc. Reed relay. 3,760,311, Cl. 335-152.000.
- Zimmer, Ernest B.: *See—*
  - Gieringer, Carl K.; Kleimeyer, Vernon T.; Schinner, Thomas J.; Singer, Paul A.; and Zimmer, Ernest B., 3,760,160.
- Zimmer, Russell D.; and Kerber, Marvin C. Remote control system for locking device. 3,760,422, Cl. 343-225.000.
- Zimmermann, Frank: *See—*
  - Treiber, Hans-Joerg; and Zimmermann, Frank, 3,759,974.
- Zimmermann, Guenter. Closure apparatus. 3,759,013, Cl. 53-329.000.
- Zinkin, De Wayne; Coker, Cliff J.; and Gustafson, Kenneth A. Adjustable friction type exercising device. 3,759,511, Cl. 272-58.000.
- Ziprian, Ingo: *See—*
  - Scheffler, Holger; Bannehr, Konrad; and Ziprian, Ingo, 3,759,069.
- Zirngibl, Hans: *See—*
  - Winter, Gerhard; Zirngibl, Hans; and Mansmann, Manfred, 3,760,068.
- Zivkovic, Dusan, to U. C. B., Societe Anonyme. Diphenyl-methylene-N-benzyl-piperidines. 3,759,928, Cl. 260-293.720.
- Zoechem Corporation: *See—*
  - Sand, Leonard B.; and Sand, Michael L., 3,760,062.
- Zoecon Corporation: *See—*
  - Siddall, John B.; and Calame, Jean Pierre, 3,759,964.
- Zucker, Edwin: *See—*
  - O'Connell, Richard P.; Kingsley, William; and Zucker, Edwin, 3,759,611.
- Zumbach, Bruno. Method and device for measuring minima or maxima of the thickness of a dielectric layer on an electric conductor. 3,760,264, Cl. 324-34.0tk.

# LIST OF REISSUE PATENTEES
## TO WHOM
## PATENTS WERE ISSUED ON THE 18TH DAY OF SEPTEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Attaway, Julian J., to Miscellaneous Mfg. Corp. Conjoint facia and water dam. Re. 27,761, 9–18–73, Cl. 52—60.
- Clary Corp.: *See—*
  - Mayo, George L. Re. 27,760.
- Fauchere, Jean, to Societe Richier. Telescopic jib with a telescopic inclinable end member for cranes. Re. 27,763, 9–18–73, Cl. 212—55.
- Leimert, John. Method and apparatus for sealing film with high frequency electrical energy using a tapered edge sealing jaw. Re. 27,759, 9–18–73, Cl. 156—273.
- Mayo, George L., by Clary Corp. Door finishing machine. Re. 27,760, 9–18–73, Cl. 144—3.
- Miscellaneous Mfg. Corp.: *See—*
  - Attaway, Julian J. Re. 27,761.
- O. K. Partnership: *See—*
  - Parry, Robert D. Re. 27,762.
- Parry, Margaret G.: *See—*
  - Parry, Robert D. Re. 27,762.
- Parry, Robert D., deceased, by Parry, Margaret G., executrix, to O. K. Partnership. Article selection system. Re. 27,762, 9–18–73, Cl. 209—80.5.
- Societe Richier: *See—*
  - Fauchere, Jean: Re. 27,763.

# LIST OF PLANT PATENTEES

- Flemer, William III, to Treesearch. Korean mountain ash tree. 3,400, 9–18–73, Cl. 51.
- Framptons Nurseries Ltd.: *See—*
  - Machin, Barrie, J. 3,401.
- Hill, E. G., Co. Inc.: *See—*
  - Jelly, Robert G. 3,402.
- Jelly, Robert G., to E. G. Hill Co. Inc. White rose plant. 3,402, 9–18–73, Cl. 23.
- Klehm, Carl G. Peony plant. 3,395, 9–18–73, Cl. 68.
- Machin, Barrie J., to Framptons Nurseries Ltd. Chrysanthemum plant. 3,401, 9–18–73, Cl. 77.
- McColley, Robert H. Distinct variety of philodendron plant. 3,396, 9–18–73, Cl. 88.
- McColley, Robert H. Distinct variety of philodendron plant. 3,397, 9–18–73, Cl. 88.
- McColley, Robert H. Distinct variety of philodendron plant. 3,398, 9–18–73, Cl. 88.
- McColley, Robert H. Distinct variety of aglaonema plant. 3,399, 9–18–73, Cl. 88.
- Merholz, Siegfried, to Mikkelsens Inc. Begonia plant. 3,403, 9–18–73, Cl. 68.
- Mikkelsens Inc.: *See—*
  - Merholz, Siegfried. 3,403.
- Treesearch: *See—*
  - Flemer, William III. 3,400.

# LIST OF DESIGN PATENTEES

- AMF Inc.: *See—*
  - Camfield, David K. 228,399.
  - Novak, Stanley M. 228,400.
- Adickes, Cecil F., to Samsonite Corp. Child's riding vehicle. 228,401, 9–18–73, Cl. D34—15.
- Ballets, Peter. Toy spinning top. 228,397, 9–18–73, Cl. D34—15.
- Barriti, John B., Jr. Fishing lure. 228,391, 9–18–73, D26—29.
- Bellini, Mario, to Olivetti, Ing. C., & Co., S.p.A. Desk-top calculator. 228,387, 9–18–73, Cl. D26—5.
- Bettonica, Franco, to Perlier S.p.A. Compac eye-liner container. 228,419, 9–18–73, Cl. D86—10.
- Blackall, Frederick S. Traversing hanger for personnel sling. 228,415, 9–18–73, Cl. D71—1.
- Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,421, 9–18–73, Cl. D90—20.
- Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,423, 9–18–73, Cl. D90—20.
- Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,424, 9–18–73, Cl. D90—20.
- Brock, Donald D.: *See—*
  - Stoakes, Donald S., and Brock. 228,386.
- Bue, Richard C., and K. H. Wilson, said Bue assor. to Sico Inc. Mobile booth. 228,372, 9–18–73, Cl. D6—39.
- Camfield, David K., to AMF Inc. Three wheel juvenile vehicle. 228,399, 9–18–73, Cl. D34—15.
- Campenell, Ronald J., to The Quaker Oats Co. Toy vehicle. 228,398, 9–18–73, Cl. D34—15.
- Clevett, Merton L. Solar stove. 228,373, 9–18–73. Cl. D7—109.
- Comer, Robert C., to The Toro Co. Safety shield for mowers and other ground traversing implements and the like. 228,403, 9–18–73, Cl. D40—1.
- Conti, Cesare L. Supporting tripod for a hoisery linking machine. 228,409, 9–18–73, Cl. D47—5.
- Contico International, Inc.: *See—*
  - Miller, Lester. 228,411.
- Continental Scale Corp.: *See—*
  - Hutchinson, William Y., and Kushmuk. 228,413.
- Croyle, Jack V.: *See—*
  - Swett, James B., and Croyle. 228,374.
- Cruger, Nicholas A. Golf putter head. 228,396, 9–18–73, Cl. D34—5.
- Davis, Jack E., to Victor Comptometer Corp. Fishing lure. 228,384, 9–18–73, Cl. D22—29.
- Easyriter, Inc.: *See—*
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- France, George E. Suspension post truss. 228,393, 9–18–73, Cl. D30—2.
- Gill, Don R., to Mohacco Industries, Inc. Chair. 228,371, 9–18–73, Cl. D6—26.
- Gillette Co., The: *See—*
  - Nigro, Louis V. 228,383.
- Gorishek, Paul J., to Gulf and Western Industries, Inc. Band retained stand-off mounting. 228,379, 9–18–73, Cl. D8—234.
- Gorishek, Paul J., to Gulf and Western Industries, Inc. Band retained stand-off mounting. 228,380, 9–18–73, Cl. D8—234.
- Greenlee, Hugh T., to W. R. Grace, & Co. Processing machine for printing plate registration. 228,414, 9–18–73, Cl. D55—1.
- Grace, W. R. & Co.: *See—*
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  - Gorishek, Paul J. 228,380.
  - Snyder, Robert R. 228,381.
- Heinrichs, Roland P., to Uniwave, Inc. Lantern for indication machinery status. 228,416, 9–18–73, Cl. D72—1.
- Hutchinson, William Y., and W. F. Kushmuk, to Continental Scale Corp. Weighing scale. 228,413, 9–18–73, Cl. D52—10.
- Ishikawa, Shoji, to Matsushita Electric Industrial Co. Ltd. Desk lamp. 228,410, 9–18–73, Cl. D48—20.
- Ketcham & McDougall, Inc.: *See—*
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- Locke, John E., to Easyriter, Inc. Holder for a writing instrument or similar article. 228,418, 9–18–73, Cl. D74—17.
- Lynor Engineering, Inc.: *See—*
  - Northrup, Lyle M. 228,375.
- Macowski, William, to Ketcham & McDougall, Inc. Stamp dispenser. 228,412, 9–18–73, Cl. D52—2.
- Martin, Frank S., and T. Pietraszek, to Uniroyal, Inc. Golf ball. 228,394, 9–28–73, Cl. D34—5.
- Martz, Raymond L., to Minerallac Electric Co. Conduit clip. 228,376, 9–18–73, Cl. D8—235.
- Martz, Raymond L., to Minerallac Electric Co. Conduit clip. 228,377, 9–18–73, Cl. D8—235.
- Matsushita Electric Industrial Co., Ltd.: *See—*
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  - Ohta, Kikuo, and Taouchi. 228,390.
  - Ohta, Kikuo. 228,407.
- Maxwell, James D. Fish lure. 228,392, 9–18–73, Cl. D22—29.
- McCarthy, Jack N. Electric light bulb. 228,388, 9–18–73, Cl. D26—8.
- Mechanic, Bernard I. Finger ring. 228,408, 9–18–73, Cl. D45—10.
- Melstrand, Orlin J., and J. F. Newman, to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,425, 9–18–73, Cl. D90—20.
- Meszaros, Albert. Flower pot. 228,402, 9–18–73, Cl. D35—3.
- Miller, Lester, to Contico International, Inc. Waste receptacle. 228,411, 9–18–73, Cl. D49—35.
- Minerallac Electric Co.: *See—*
  - Martz, Raymond L. 228,376.
  - Martz, Raymond L. 228,377.

- Mohacco Industries, Inc.: *See—*
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- Newman, James F.: *See—*
  - Melstrand, Orlin J., and Newman. 228,425.
- Nigro, Louis V., to The Gillette Co. Adjustable spray rate actuator cap for a pressurized container. 228,383, 9–18–73, Cl. D9—258.
- Northrup, Lyle M., to Lynor Engineering, Inc. Window operator or similar article. 228,375, 9–18–73, Cl. D8—153.
- Novak, Stanley M., Jr., to AMF Inc. Juvenile riding vehicle. 228,400, 9–18–73, Cl. D34—15.
- Ogilvie, Kenneth Alan, to Walker Crosweller & Co., Ltd. Plumbing fitting. 228,385, 9–18–73, Cl. D23—40.
- Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Digital clock radio. 228,407, 9–18–73, Cl. D42—7.
- Ohta, Kikuo, and S. Taouchi, to Matsushita Electric Industrial Co., Ltd. Amplifier. 228,390, 9–18–73, Cl. D26—14.
- Olivetti, Ing. C., & Co., S.p.A.: *See—*
  - Bellini, Mario. 228,387.
- Parsons Chair Co.: *See—*
  - Smith, Ian D. 228,404.
- Perlier S.p.A.: *See—*
  - Bettonica, Franco. 228,419.
- Pietraszek, Thaddeus: *See—*
  - Martin, Frank S., and Pietraszek. 228,394.
- Pollard, Leslie N. Combined clock and picture stand. 228,405, 9–18–73, Cl. D42—7.
- Purex Corp. Ltd.: *See—*
  - Sterges, Alfred D. 228,378.
  - Sterges, Alfred D. 228,382.
- Quaker Oats Co., The: *See—*
  - Campenell, Ronald J. 228,398.
- Riley, Walter. Multi-purpose desk accessory. 228,417, 9–18–73, Cl. D74—5.
- Samsonite Corp.: *See—*
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- Schneider, Wilfred. Unidirectional speaker. 228,389, 9–18–73, Cl. D26—14.
- Sico Inc.: *See—*
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- Smith, Ian D., to Parsons Chair Co. Quick release hook. 228,404, 9–18–73, Cl. D41—1.
- Snyder, Robert R., to Gulf and Western Industries, Inc. Band retained stand-off mounting. 228,381, 9–18–73, Cl. D8—234.
- Stahl, Donald P., to Telecommunication Industries Inc. Illuminating cosmetic mirror. 228,422, 9–18–73, Cl. D86—10.
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  - Thomas, Richard K. 228,406.
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  - Ohta, Kikuo, and Taouchi. 228,390.
- Telecommunication Industries Inc.: *See—*
  - Stahl, Donald P. 228,422.
- Thexton Mfg. Co.: *See—*
  - Stoakes, Donald S., and Brock. 228,386.
- Thomas, Richard K., to Sunbeam Corp. Clock housing. 228,406, 9–18–73, Cl. D42—7.
- Toro Co., The: *See—*
  - Comer, Robert C. 228,403.
- Uniroyal, Inc.: *See—*
  - Blankenship, Arthur C. 228,421.
  - Blankenship, Arthur C. 228,423.
  - Blankenship, Arthur C. 228,424.
  - Martin, Frank S., and Pietraszek. 228,394.
  - Melstrand, Orlin J., and Newman. 228,425.
  - Vizina, Clarence H., Jr. 228,420.
- Uniwave, Inc.: *See—*
  - Heinrichs, Roland P. 228,416.
- Victor Comptometer Corp.: *See—*
  - Davis, Jack E. 228,384.
- Vizina, Clarence H. Jr., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,420, 9–18–73, Cl. D90—20.
- Walker Crosweller & Co., Ltd.: *See—*
  - Ogilvie, Kenneth A. 228,385.
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  - Warren, Allyn G., and D. S. 228,395.
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  - Bue, Richard C., and Wilson. 228,372.

# CLASSIFICATION OF PATENTS

## ISSUED SEPTEMBER 18, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

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| **CLASS 2** | |
| 3B | 3,758,889 |
| 232 | 3,758,890 |
| **CLASS 3** | |
| 5 | 3,758,891 |
| **CLASS 4** | |
| 18 | 3,758,892 |
| 67A | 3,758,893 |
| 185R | 3,758,894 |
| **CLASS 5** | |
| 304 | 3,758,895 |
| **CLASS 6** | |
| 10 | 3,758,896 |
| **CLASS 8** | |
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| 115.6 | 3,759,664 |
| 172 | 3,759,665 |
| **CLASS 9** | |
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| 310D | 3,758,898 |
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| 29 | 3,758,901 |
| **CLASS 12** | |
| 8.3 | 3,758,902 |
| 142RS | 3,758,903 |
| 142R | 3,758,904 |
| **CLASS 14** | |
| 19 | 3,758,905 |
| **CLASS 15** | |
| 21E | 3,758,906 |
| 31 | 3,758,907 |
| 93A | 3,758,910 |
| 180 | 3,758,908 |
| 235.8 | 3,758,909 |
| 250.23 | 3,758,911 |
| 302 | 3,758,912 |
| 308 | 3,758,913 |
| 329 | 3,758,914 |
| 366 | 3,758,915 |
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| 2 | 3,758,916 |
| 36 | 3,758,917 |
| 44 | 3,758,918 |
| 121 | 3,758,920 |
| 163 | 3,758,919 |
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| 259 | 3,759,667 |
| 277C | 3,759,668 |
| 288E | 3,759,669 |
| 301SP | 3,759,670 |
| | 3,759,671 |
| **CLASS 24** | |
| 115R | 3,758,922 |
| 256 | 3,758,923 |
| **CLASS 26** | |
| 16 | 3,758,924 |
| **CLASS 28** | |
| 64 | 3,758,925 |
| 72.2R | 3,758,926 |
| **CLASS 29** | |
| 96 | 3,758,927 |
| 105A | 3,758,928 |
| 156.6 | 3,758,929 |
| 159R | 3,758,930 |
| 159.02 | 3,758,931 |
| 195Y | 3,759,672 |
| 200B | 3,758,932 |
| 200D | 3,758,934 |
| 200P | 3,758,933 |
| 203MW | 3,758,935 |
| 203D | 3,758,936 |
| 205E | 3,758,937 |
| 400 | 3,758,938 |
| 402 | 3,758,939 |
| 460 | 3,758,940 |
| 464 | 3,758,941 |
| 475 | 3,758,942 |
| 578 | 3,758,943 |
| 630 | 3,758,944 |
| **CLASS 30** | |
| 172 | 3,758,945 |
| 257 | 3,758,946 |
| **CLASS 32** | |
| 14A | 3,758,947 |
| 26 | 3,758,948 |
| 27 | 3,758,951 |
| 33 | 3,758,950 |
| **CLASS 33** | |
| 1M | 3,758,949 |
| 79R | 3,758,953 |
| 141F | 3,758,954 |
| 166 | 3,758,956 |
| 169F | 3,758,957 |
| 169 | 3,758,955 |
| 324 | 3,758,952 |
| 336 | 3,758,958 |
| **CLASS 34** | |
| 45 | 3,758,959 |
| 156 | 3,758,960 |
| **CLASS 35** | |
| 9A | 3,758,961 |
| 31R | 3,758,962 |
| **CLASS 36** | |
| 2R | 3,758,963 |
| 2.5AL | 3,758,964 |
| | 3,758,965 |
| **CLASS 37** | |
| 8 | 3,758,966 |
| 43E | 3,758,967 |
| **CLASS 38** | |
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| 77.5 | 3,758,969 |
| **CLASS 40** | |
| 2.2 | 3,758,970 |
| 64R | 3,758,971 |
| 125K | 3,758,972 |
| 130E | 3,758,973 |
| 322 | 3,758,974 |
| **CLASS 42** | |
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| **CLASS 43** | |
| 26.1 | 3,758,975 |
| 42.24 | 3,758,976 |
| 44.98 | 3,758,979 |
| 57.5R | 3,758,977 |
| 112 | 3,758,980 |
| **CLASS 44** | |
| 1R | 3,759,673 |
| 7C | 3,759,674 |
| 38 | 3,759,675 |
| **CLASS 46** | |
| 43 | 3,758,981 |
| 74D | 3,758,985 |
| 119 | 3,758,982 |
| 135A | 3,758,983 |
| 220 | 3,758,984 |
| **CLASS 47** | |
| 38 | 3,758,986 |
| 38.1 | 3,758,987 |
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| 209 | 3,759,677 |
| 213 | 3,759,679 |
| 214 | 3,759,678 |
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| 85 | 3,758,988 |
| 120 | 3,758,989 |
| 153 | 3,758,990 |
| 257 | 3,758,991 |
| 489 | 3,758,992 |
| **CLASS 51** | |
| 80BS | 3,758,993 |
| 241S | 3,758,994 |
| **CLASS 52** | |
| 8 | 3,758,995 |
| 60 | Re.27,761 |
| 79 | 3,758,998 |
| 97 | 3,758,997 |
| 103 | 3,758,999 |
| 172 | 3,758,996 |
| 179 | 3,759,000 |
| 241 | 3,759,001 |
| 270 | 3,759,002 |
| 285 | 3,759,003 |
| 400 | 3,759,004 |
| 403 | 3,759,005 |
| 406 | 3,759,006 |
| 533 | 3,759,007 |
| 573 | 3,759,008 |
| 598 | 3,759,009 |
| **CLASS 53** | |
| 24 | 3,759,010 |
| 184 | 3,759,011 |
| 306 | 3,759,012 |
| 329 | 3,759,013 |
| **CLASS 55** | |
| 96 | 3,759,014 |
| 350 | 3,759,015 |
| 452 | 3,759,016 |
| 481 | 3,759,017 |
| 487 | 3,759,018 |
| **CLASS 56** | |
| 10.5 | 3,759,019 |
| 17.5 | 3,759,020 |
| 106 | 3,759,021 |
| 252 | 3,759,022 |
| 320.1 | 3,759,023 |
| **CLASS 57** | |
| 34HS | 3,759,024 |
| 77.3 | 3,759,025 |
| 80 | 3,759,026 |
| 140BY | 3,759,027 |
| **CLASS 58** | |
| 28A | 3,759,028 |
| 38 | 3,759,029 |
| 50R | 3,759,030 |
| | 3,759,031 |
| 55 | 3,759,032 |
| 74 | 3,759,033 |
| **CLASS 59** | |
| 27 | 3,759,034 |
| 78.1 | 3,759,035 |
| **CLASS 60** | |
| 39.05 | 3,759,036 |
| 39.14 | 3,759,037 |
| 39.32 | 3,759,038 |
| 231 | 3,759,039 |
| 305 | 3,759,040 |
| 310 | 3,759,041 |
| 483 | 3,759,042 |
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| 35 | 3,759,044 |
| 46 | 3,759,045 |
| 46.5 | 3,759,046 |
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| 66 | 3,759,047 |
| 73 | 3,759,048 |
| 80 | 3,759,049 |
| 93 | 3,759,050 |
| 115 | 3,759,052 |
| 157 | 3,759,053 |
| 160 | 3,759,055 |
| 180 | 3,759,051 |
| 183 | 3,759,054 |
| | 3,759,056 |
| 196 | 3,759,057 |
| 228 | 3,759,058 |
| 246 | 3,759,059 |
| 294 | 3,759,060 |
| 352 | 3,759,061 |
| 474 | 3,759,062 |
| **CLASS 64** | |
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| 13 | 3,759,064 |
| 23 | 3,759,065 |
| 27S | 3,759,066 |
| 31 | 3,759,067 |
| **CLASS 65** | |
| 6 | 3,759,680 |
| 12 | 3,759,681 |
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| 134 | 3,759,683 |
| 145 | 3,759,684 |
| 156 | 3,759,685 |
| 167 | 3,759,686 |
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| 50B | 3,759,069 |
| 189 | 3,759,070 |
| **CLASS 68** | |
| 18C | 3,759,071 |
| **CLASS 70** | |
| 59 | 3,759,072 |
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| 143 | 3,759,074 |
| 159 | 3,759,075 |
| 232 | 3,759,076 |
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| 28 | 3,759,687 |
| 71 | 3,759,688 |
| 76 | 3,759,689 |
| 93 | 3,759,690 |
| **CLASS 72** | |
| 99 | 3,759,077 |
| 238 | 3,759,078 |
| 330 | 3,759,079 |
| 356 | 3,759,080 |
| 364 | 3,759,081 |
| **CLASS 73** | |
| 1B | 3,759,082 |
| 1F | 3,759,083 |
| 12 | 3,759,085 |
| 19 | 3,759,086 |
| 23 | 3,759,087 |
| 37 | 3,759,088 |
| 64.1 | 3,759,089 |
| 67.6 | 3,759,090 |
| 116 | 3,759,091 |
| 141A | 3,759,093 |
| 141R | 3,759,092 |
| 143 | 3,759,094 |
| 157 | 3,759,095 |
| 194EM | 3,759,097 |
| 194B | 3,759,096 |
| 205R | 3,759,098 |
| 207 | 3,759,099 |
| 230 | 3,759,100 |
| 291 | 3,759,101 |
| 355R | 3,759,102 |
| 358 | 3,759,103 |
| 362R | 3,759,104 |
| 421A | 3,759,105 |
| 421.5R | 3,759,106 |
| 422GC | 3,759,107 |
| 432R | 3,759,109 |
| 432 | 3,759,108 |
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| 99 | 3,759,110 |
| 230.17E | 3,759,111 |
| 231 | 3,759,112 |
| 424.8 | 3,759,113 |
| 489 | 3,759,114 |
| 512 | 3,759,115 |
| 606R | 3,759,116 |
| 681 | 3,759,117 |
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| 42 | 3,759,698 |
| 43 | 3,759,699 |
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| 66 | 3,759,703 |
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| 124 | 3,759,705 |
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| 171 | 3,759,707 |
| 208R | 3,759,708 |
| 211 | 3,759,709 |
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| 57.39 | 3,759,119 |
| **CLASS 82** | |
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| 20R | 3,759,121 |
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| 54 | 3,759,123 |
| 81 | 3,759,124 |
| 90 | 3,759,125 |
| 112 | 3,759,126 |
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| 411R | 3,759,128 |
| 444 | 3,759,129 |
| 637 | 3,759,130 |
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| 383 | 3,759,132 |
| 457 | 3,759,133 |
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| 33B | 3,759,135 |
| 35R | 3,759,137 |
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| 396 | 3,759,142 |
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| 459 | 3,759,145 |
| 475 | 3,758,899 |
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| 19 | 3,759,147 |
| 160 | 3,759,148 |
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| 11 | 3,759,151 |
| | 3,759,152 |
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| 31AC | 3,759,156 |
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| 36 | 3,759,711 |
| 50R | 3,759,712 |
| 126 | 3,759,713 |
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| 37 | 3,759,157 |
| 40C | 3,759,159 |
| **CLASS 99** | |
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| 92 | 3,759,717 |
| 154 | 3,759,719 |
| 171H | 3,759,720 |
| | 3,759,721 |
| 174 | 3,759,722 |
| 208 | 3,759,723 |
| 233.5 | 3,759,160 |
| 282 | 3,759,161 |
| 289 | 3,759,162 |
| 336 | 3,759,163 |
| 413 | 3,759,164 |
| 427 | 3,759,165 |
| 472 | 3,759,166 |
| 485 | 3,759,167 |
| 545 | 3,759,168 |
| **CLASS 100** | |
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| 42 | 3,759,170 |
| 100 | 3,759,171 |
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| 66 | 3,759,173 |
| 93C | 3,759,174 |
| 148 | 3,759,175 |
| 170 | 3,759,176 |
| 232 | 3,759,177 |
| 349 | 3,759,178 |
| 368 | 3,759,179 |
| 405 | 3,759,180 |
| **CLASS 102** | |
| 8 | 3,759,181 |
| 23 | 3,759,182 |
| 28R | 3,759,183 |
| 38 | 3,759,184 |
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| 120 | 3,759,186 |
| 130 | 3,759,187 |
| 168 | 3,759,188 |
| 172S | 3,759,189 |
| **CLASS 105** | |
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| 44 | 3,759,725 |
| 45 | 3,759,726 |
| 49 | 3,759,727 |
| 59 | 3,759,728 |
| 90 | 3,759,729 |
| 103 | 3,759,730 |
| 288Q | 3,759,731 |
| 300 | 3,759,732 |
| 309 | 3,759,733 |
| **CLASS 108** | |
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| **CLASS 110** | |
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| 239 | 3,759,202 |
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| 114BE | 3,759,204 |
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| 121C | 3,759,206 |
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| 148 | 3,759,211 |
| 208 | 3,759,212 |
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| 76 | 3,759,215 |
| 124B | 3,759,216 |
| **CLASS 117** | |
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| 33.5T | 3,759,736 |
| 54 | 3,759,737 |
| 93.31 | 3,759,738 |
| 105.2 | 3,759,739 |
| 126GS | 3,759,740 |
| 136 | 3,759,741 |
| 161KP | 3,759,742 |
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| 218 | 3,759,744 |
| 237 | 3,759,745 |
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| 18 | 3,759,218 |
| 261 | 3,759,219 |
| | 3,759,220 |
| 504 | 3,759,221 |
| 637 | 3,759,222 |
| **CLASS 119** | |
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| | 3,759,224 |
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| 32G | 3,759,239 |
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| 136 | 3,759,234 |
| 139DP | 3,759,235 |
| 140R | 3,759,236 |
| 148E | 3,759,237 |
| 192B | 3,759,238 |
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| 25 | 3,759,242 |
| 110R | 3,759,244 |
| 406 | 3,759,245 |
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| 2.06A | 3,759,248 |
| 2.08 | 3,759,249 |
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| 69 | 3,759,251 |
| 70 | 3,759,252 |
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| 79 | 3,759,253 |
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| 269 | 3,759,259 |
| 283 | 3,759,260 |
| 287 | 3,759,261 |
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| 334R | 3,759,264 |
| 419P | 3,759,265 |
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| 9 | 3,759,268 |
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| 92R | 3,759,272 |
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| 57DL | 3,759,276 |
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| 46M | 3,759,278 |
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| 86A | 3,759,748 |
| 175 | 3,759,749 |
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| 106 | 3,759,283 |
| 268 | 3,759,284 |
| 363 | 3,759,280 |
| | 3,759,285 |
| 392 | 3,759,286 |
| 493.9 | 3,759,287 |
| 498 | 3,759,288 |
| 525 | 3,759,289 |
| 565 | 3,759,290 |
| 588 | 3,759,291 |
| 596 | 3,759,292 |
| 598 | 3,759,293 |
| 612.1 | 3,759,294 |
| 625.47 | 3,759,295 |
| 805 | 3,759,296 |
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| 97 | 3,759,299 |
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| 281 | 3,759,301 |
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| **CLASS 141** | |
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| 3R | Re.27,760 |
| 180 | 3,759,304 |
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| 3 | 3,759,752 |
| 6.16 | 3,759,754 |
| 6.2 | 3,759,751 |
| 6.3 | 3,759,753 |
| 11.5R | 3,759,755 |
| 22 | 3,759,756 |
| 38 | 3,759,757 |
| 159 | 3,759,758 |
| 171 | 3,759,759 |
| 175 | 3,759,760 |
| 187 | 3,759,761 |
| | 3,759,762 |
| 188 | 3,759,763 |
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| 19.91 | 3,759,765 |
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| 396 | 3,759,307 |
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| 61 | 3,759,769 |
| 73 | 3,759,770 |
| 78 | 3,759,775 |
| 109 | 3,759,771 |
| 270 | 3,759,772 |
| 273 | Re.27,759 |
| 280 | 3,759,773 |
| 284 | 3,759,774 |
| 309 | 3,759,776 |
| 330 | 3,759,777 |
| 331 | 3,759,778 |
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| 335 | 3,759,780 |
| 521 | 3,759,781 |
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| 13R | 3,759,308 |
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| 57 | 3,759,782 |
| **CLASS 162** | |
| 40 | 3,759,783 |
| 87 | 3,759,784 |
| 142 | 3,759,785 |
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| 52 | 3,759,310 |
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| 64 | 3,759,312 |
| 87 | 3,759,313 |
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| 120 | 3,759,315 |
| 177F | 3,760,053 |
| 405 | 3,759,316 |
| **CLASS 165** | |
| 19 | 3,759,317 |
| 108 | 3,759,318 |
| 111 | 3,759,319 |
| 122 | 3,759,320 |
| 125 | 3,759,321 |
| 166 | 3,759,322 |
| | 3,759,323 |
| **CLASS 166** | |
| 75 | 3,759,324 |
| 273 | 3,759,325 |
| 275 | 3,759,326 |
| 295 | 3,759,327 |
| 303 | 3,759,328 |
| 308 | 3,759,329 |
| **CLASS 169** | |
| 2R | 3,759,330 |
| 17 | 3,759,331 |
| **CLASS 172** | |
| 239 | 3,759,332 |
| 781 | 3,759,333 |
| **CLASS 173** | |
| 22 | 3,759,334 |
| 91 | 3,759,335 |
| 163 | 3,759,336 |
| **CLASS 174** | |
| 12BH | 3,760,089 |
| 52S | 3,760,090 |
| 68.5 | 3,760,091 |
| 126CS | 3,760,092 |
| 128 | 3,760,093 |
| **CLASS 176** | |
| 15BA | 3,760,106 |
| 68 | 3,759,243 |
| 69 | 3,759,786 |
| 169 | 3,759,787 |
| **CLASS 177** | |
| 100.2E | 3,760,123 |
| 172 | 3,759,337 |
| 173 | 3,759,338 |
| **CLASS 178** | |
| 5.1 | 3,760,097 |
| 5.4ES | 3,760,096 |
| 5.4SD | 3,760,094 |
| 5.4SY | 3,760,095 |
| 5.4R | 3,760,099 |
| 6.6B | 3,760,098 |
| **CLASS 179** | |
| 15A | 3,760,108 |
| 1R | 3,760,100 |
| | 3,760,102 |
| 6.3R | 3,760,101 |
| | 3,760,104 |
| 8A | 3,760,105 |
| | 3,760,110 |
| 15AQ | 3,760,103 |
| 15BA | 3,760,109 |
| 15BF | 3,760,107 |
| 16E | 3,760,111 |
| 17A | 3,760,112 |
| 18EB | 3,760,114 |
| 18FG | 3,760,113 |
| 18GE | 3,760,117 |
| | 3,760,119 |
| 18GF | 3,760,115 |
| 18HA | 3,760,118 |
| 18J | 3,760,116 |
| 19 | 3,760,120 |
| 90K | 3,760,121 |
| 99 | 3,760,122 |
| 100.2Z | 3,760,124 |
| 100.41B | 3,760,126 |
| 100.41K | 3,760,125 |
| 175.31R | 3,760,127 |
| **CLASS 180** | |
| 27 | 3,759,339 |
| 53FE | 3,759,340 |
| 64R | 3,759,341 |
| 70R | 3,759,342 |
| 91 | 3,759,343 |
| 105E | 3,759,344 |
| **CLASS 181** | |
| 31B | 3,759,345 |
| **CLASS 182** | |
| 7 | 3,759,346 |
| **CLASS 184** | |
| 6R | 3,759,347 |
| 6.23 | 3,759,348 |
| **CLASS 187** | |
| 2 | 3,759,349 |
| 29R | 3,759,350 |
| **CLASS 188** | |
| 1C | 3,759,351 |
| 24 | 3,759,352 |
| 71.5 | 3,759,353 |
| 218XL | 3,759,354 |
| 290 | 3,759,355 |
| **CLASS 190** | |
| 42 | 3,759,356 |
| **CLASS 191** | |
| 49 | 3,760,128 |
| **CLASS 192** | |
| 3R | 3,759,357 |
| 8C | 3,759,358 |
| **CLASS 195** | |
| 1.8 | 3,759,788 |
| 28R | 3,759,789 |
| 29 | 3,759,790 |
| 51G | 3,759,791 |
| 70 | 3,759,792 |
| 103.5R | 3,759,793 |
| | 3,759,794 |
| **CLASS 197** | |
| 1R | 3,759,359 |
| 17 | 3,759,360 |
| 65 | 3,759,361 |
| 82 | 3,759,362 |
| 84R | 3,759,363 |
| **CLASS 198** | |
| 20 | 3,759,364 |
| 33AD | 3,759,365 |
| | 3,759,366 |
| 41 | 3,759,367 |
| 76 | 3,759,368 |
| 140 | 3,759,369 |
| **CLASS 200** | |
| 38R | 3,760,129 |
| 42R | 3,760,130 |
| 43 | 3,760,131 |
| 50A | 3,760,132 |
| 50B | 3,760,133 |
| 52R | 3,760,134 |
| 61.13 | 3,760,136 |
| 61.58B | 3,760,135 |
| 166C | 3,760,137 |
| 835A | 3,760,138 |
| **CLASS 201** | |
| 25 | 3,759,795 |
| **CLASS 204** | |
| 12 | 3,759,796 |
| 14N | 3,759,797 |
| 15 | 3,759,798 |
| 16 | 3,759,799 |
| | 3,759,800 |
| 35N | 3,759,801 |
| 41 | 3,759,802 |
| 49 | 3,759,803 |
| 93 | 3,759,804 |
| 130 | 3,759,805 |
| 159.23 | 3,759,807 |
| | 3,759,808 |
| | 3,759,809 |
| 181 | 3,759,810 |
| 193 | 3,759,811 |
| 250 | 3,759,812 |
| 256 | 3,759,813 |
| 268 | 3,759,815 |
| 275 | 3,759,814 |
| 299 | 3,759,816 |
| **CLASS 206** | |
| 16.5 | 3,759,370 |
| 42 | 3,759,371 |
| 57R | 3,759,372 |
| 63.2R | 3,759,375 |
| 63.3 | 3,759,376 |
| 65C | 3,759,373 |
| | 3,759,378 |
| 65R | 3,759,374 |
| | 3,759,377 |
| 84 | 3,759,379 |
| **CLASS 208** | |
| 14 | 3,759,817 |
| 25 | 3,759,818 |
| 57 | 3,759,819 |
| 64 | 3,759,820 |
| 93 | 3,759,821 |
| 131 | 3,759,822 |
| 138 | 3,759,823 |
| 139 | 3,759,824 |
| 191 | 3,759,825 |
| **CLASS 209** | |
| 22 | 3,759,380 |
| 73 | 3,759,381 |
| 80.5 | Re.27,762 |
| 111.5 | 3,759,383 |
| 111.7 | 3,759,382 |
| 122 | 3,759,384 |
| 165 | 3,759,385 |
| 167 | 3,759,386 |
| **CLASS 210** | |
| 98 | 3,759,387 |
| 167 | 3,759,388 |
| 169 | 3,759,389 |
| 242 | 3,759,390 |
| 415 | 3,759,392 |
| 491 | 3,759,393 |
| 494 | 3,759,391 |
| **CLASS 211** | |
| 23 | 3,759,394 |
| 40 | 3,759,395 |
| 46 | 3,759,398 |
| 47 | 3,759,396 |
| 50 | 3,759,397 |
| **CLASS 212** | |
| 55 | Re.27,763 |
| | 3,759,399 |
| **CLASS 214** | |
| 10G | 3,759,401 |
| 6H | 3,759,402 |
| 16.4A | 3,759,403 |
| 37 | 3,759,404 |
| 38D | 3,759,405 |
| 83.3 | 3,759,406 |
| 86A | 3,759,407 |
| 302 | 3,759,408 |
| 394 | 3,759,409 |
| **CLASS 215** | |
| 1C | 3,759,410 |
| 9 | 3,759,411 |
| **CLASS 219** | |
| 10.65 | 3,760,139 |
| 73 | 3,760,140 |
| 77 | 3,760,141 |
| 85 | 3,760,142 |
| 98 | 3,760,143 |
| 121EB | 3,760,144 |
| 121P | 3,760,145 |
| 146 | 3,760,146 |
| 217 | 3,760,147 |
| 222 | 3,760,148 |
| 247 | 3,760,149 |
| 265 | 3,760,150 |
| 383 | 3,760,151 |
| | 3,760,152 |
| 384 | 3,760,153 |
| 388 | 3,760,154 |
| 399 | 3,760,155 |
| 447 | 3,760,156 |
| 522 | 3,760,157 |
| **CLASS 220** | |
| 7 | 3,759,412 |
| 16 | 3,759,413 |
| 44R | 3,759,414 |
| 60 | 3,759,415 |
| 97F | 3,759,416 |
| **CLASS 221** | |
| 85 | 3,759,417 |
| 157 | 3,759,418 |
| 168 | 3,759,419 |
| 288 | 3,759,420 |
| **CLASS 222** | |
| 99 | 3,759,421 |
| 129.4 | 3,759,422 |
| 153 | 3,759,423 |
| 309 | 3,759,424 |
| | 3,759,425 |
| 385 | 3,759,426 |
| 402.21 | 3,759,431 |
| 402.23 | 3,759,427 |
| 480 | 3,759,428 |
| 546 | 3,759,429 |
| **CLASS 224** | |
| 45T | 3,759,430 |
| **CLASS 225** | |
| 3.4 | 3,759,828 |
| **CLASS 226** | |
| 42 | 3,759,432 |
| 54 | 3,759,433 |
| 91 | 3,759,434 |
| **CLASS 227** | |
| 67 | 3,759,435 |
| **CLASS 228** | |
| 57 | 3,759,436 |
| **CLASS 229** | |
| 1.5B | 3,759,437 |
| 65 | 3,759,438 |
| 66 | 3,759,439 |
| **CLASS 231** | |
| 22 | 3,759,400 |
| **CLASS 232** | |
| 57.5 | 3,759,440 |
| | 3,759,441 |
| **CLASS 234** | |
| 1 | 3,759,442 |
| **CLASS 235** | |
| 61.11C | 3,760,163 |
| 61.11E | 3,760,161 |
| | 3,760,162 |
| 61.12N | 3,760,164 |
| 61.4R | 3,760,158 |
| 61.6R | 3,760,159 |
| 61.7R | 3,760,160 |
| 89R | 3,760,165 |
| 92PK | 3,760,166 |
| 151 | 3,760,167 |
| 151.012 | 3,760,168 |
| 151.1 | 3,760,169 |
| 151.11 | 3,760,170 |
| 156 | 3,760,171 |
| 181 | 3,760,172 |
| 184 | 3,760,173 |
| **CLASS 239** | |
| 127.1 | 3,759,443 |
| 138 | 3,759,444 |
| 201 | 3,759,445 |
| 265.35 | 3,759,446 |
| | 3,759,447 |
| 416.2 | 3,759,449 |
| 419.5 | 3,759,448 |
| 427 | 3,759,450 |
| **CLASS 240** | |
| 1EL | 3,760,175 |
| 1R | 3,760,174 |
| 7.1R | 3,759,084 |
| 10.1 | 3,760,176 |
| 81BS | 3,760,177 |
| 106R | 3,760,178 |
| | 3,760,179 |
| **CLASS 241** | |
| 77 | 3,759,451 |
| 82 | 3,759,452 |
| 207 | 3,759,453 |
| **CLASS 242** | |
| 7.06 | 3,759,454 |
| 47.12 | 3,759,455 |
| 57.1 | 3,759,456 |
| | 3,759,457 |
| 67.1R | 3,759,458 |
| 72.1 | 3,759,459 |
| 118.1 | 3,759,460 |
| 118.11 | 3,759,461 |
| 186 | 3,759,462 |
| | 3,759,463 |
| 188 | 3,759,464 |
| 199 | 3,759,465 |
| **CLASS 244** | |
| 3.21 | 3,759,466 |
| 53R | 3,759,467 |
| 102R | 3,759,468 |
| 149 | 3,759,469 |
| **CLASS 248** | |
| 2 | 3,759,470 |
| 119R | 3,759,471 |
| 201 | 3,759,472 |
| 205R | 3,759,473 |
| 238 | 3,759,474 |
| 277 | 3,759,475 |
| 361R | 3,759,476 |
| 449 | 3,759,482 |
| 459 | 3,759,477 |
| **CLASS 249** | |
| 93 | 3,759,478 |
| 95 | 3,759,479 |
| 142 | 3,759,480 |
| 189 | 3,759,481 |
| **CLASS 250** | |
| 219S | 3,760,184 |
| 226 | 3,760,185 |
| 252 | 3,760,183 |
| 305 | 3,760,180 |
| | 3,760,186 |
| 332 | 3,760,181 |
| 349 | 3,760,187 |
| 492 | 3,760,182 |
| 557 | 3,760,188 |
| **CLASS 251** | |
| 5 | 3,759,483 |
| 67 | 3,759,484 |
| 130 | 3,759,485 |
| 330 | 3,759,486 |
| **CLASS 252** | |
| 29 | 3,759,827 |
| 32.7E | 3,759,862 |
| 47.5 | 3,759,829 |
| 51.5A | 3,759,830 |
| 52R | 3,759,831 |
| 62.63 | 3,759,832 |
| 95 | 3,759,833 |
| 110 | 3,759,834 |
| 301.4R | 3,759,835 |
| 309 | 3,759,836 |
| 373 | 3,759,837 |
| 429R | 3,759,838 |
| 431C | 3,759,839 |
| 432 | 3,759,840 |
| 441 | 3,759,841 |
| 447 | 3,759,842 |
| 459 | 3,759,843 |
| 465 | 3,759,844 |
| 466J | 3,759,845 |
| 527 | 3,759,846 |
| 544 | 3,759,847 |
| **CLASS 254** | |
| 8R | 3,759,488 |
| 173R | 3,759,489 |
| **CLASS 256** | |
| 10 | 3,759,490 |
| **CLASS 259** | |
| 4 | 3,759,491 |
| 169 | 3,759,492 |
| **CLASS 260** | |
| 2.5F | 3,759,848 |
| 8 | 3,759,849 |
| 17.4ST | 3,759,850 |
| 17.4 | 3,759,851 |
| 18EP | 3,759,852 |
| 21 | 3,759,853 |
| | 3,759,854 |
| 22R | 3,759,855 |
| 23XA | 3,759,856 |
| 29.6TA | 3,759,858 |
| 29.6H | 3,759,857 |
| 29.7SQ | 3,759,860 |
| 29.7T | 3,759,859 |
| 31C | 3,759,826 |
| 31.4R | 3,759,861 |
| 33.4P | 3,759,913 |
| 33.6AQ | 3,759,863 |
| 33.6EP | 3,759,864 |
| 33.8R | 3,759,865 |
| 37EP | 3,759,866 |
| | 3,759,914 |
| 41R | 3,759,915 |
| 41.5R | 3,759,868 |
| | 3,759,869 |
| 47EC | 3,759,871 |
| | 3,759,872 |
| 47C | 3,759,870 |
| 75NK | 3,759,873 |
| 76 | 3,759,875 |
| 77.5AP | 3,759,874 |
| 77.5NC | 3,759,916 |
| 78A | 3,759,877 |
| 78L | 3,759,876 |
| 78.4E | 3,759,878 |
| 78.5CL | 3,759,879 |
| 79.5PR | 3,759,917 |
| 80.3R | 3,759,880 |
| 80.7 | 3,759,918 |
| 83.7 | 3,759,919 |
| 84.1 | 3,759,882 |
| 86.1E | 3,759,881 |
| 87.5A | 3,759,883 |
| 88.2R | 3,759,884 |
| 92.3 | 3,759,886 |
| 92.8R | 3,759,885 |
| 94.9C | 3,759,889 |
| 94.9H | 3,759,888 |
| 94.9R | 3,759,887 |
| 112R | 3,759,890 |
| 112.5 | 3,759,891 |
| 145C | 3,759,892 |
| 149 | 3,759,893 |

| | |
|---|---|
| 158 | 3,759,894 |
| | 3,759,895 |
| 209R | 3,759,896 |
| 239BD | 3,759,897 |
| 239.1 | 3,759,898 |
| 239.55D | 3,759,899 |
| 240B | 3,759,900 |
| 240G | 3,759,901 |
| 240.8 | 3,759,902 |
| 243C | 3,759,904 |
| | 3,759,905 |
| 243R | 3,759,903 |
| 247 | 3,759,906 |
| 247.2A | 3,759,909 |
| 248AS | 3,759,907 |
| 249.5 | 3,759,910 |
| 249.6 | 3,759,911 |
| 250R | 3,759,912 |
| 251QB | 3,759,920 |
| 251A | 3,759,908 |
| 256.4F | 3,759,922 |
| 283S | 3,759,923 |
| 286R | 3,759,924 |
| 293.55 | 3,759,925 |
| 293.58 | 3,759,927 |
| 293.72 | 3,759,928 |
| 293.88 | 3,759,929 |
| 293.9 | 3,759,926 |
| 294.8C | 3,759,930 |
| 294.8D | 3,759,931 |
| 294.8G | 3,759,932 |
| 295K | 3,759,933 |
| 297B | 3,759,934 |
| 298 | 3,759,935 |
| 301 | 3,759,936 |
| 306.7 | 3,759,937 |
| | 3,759,938 |
| 306.8D | 3,759,939 |
| | 3,759,940 |
| 307F | 3,759,942 |
| 307H | 3,759,941 |
| 308R | 3,759,943 |
| 309 | 3,759,944 |
| | 3,759,945 |
| | 3,759,946 |
| 314.5 | 3,759,947 |
| 315 | 3,759,948 |
| 326A | 3,759,950 |
| 326E | 3,759,949 |
| 327M | 3,759,951 |
| | 3,759,952 |
| 328 | 3,759,953 |
| 340.7 | 3,759,954 |
| 343.9 | 3,759,955 |
| 345.9 | 3,759,956 |
| 368 | 3,759,957 |
| 372 | 3,759,958 |
| 376 | 3,759,959 |
| 377 | 3,759,963 |
| 379B | 3,759,867 |
| 397.4 | 3,759,960 |
| | 3,759,961 |
| | 3,759,962 |
| 408 | 3,759,964 |
| 429.7 | 3,759,966 |
| 439CY | 3,759,967 |
| 448.2N | 3,759,969 |
| 448.2Q | 3,759,968 |
| 448.2R | 3,759,970 |
| 452 | 3,759,990 |
| 453SP | 3,759,971 |
| 463 | 3,759,972 |
| 464 | 3,759,973 |
| 465D | 3,759,975 |
| 465E | 3,759,974 |
| | 3,759,976 |
| 467 | 3,759,977 |
| 468D | 3,759,965 |
| | 3,759,978 |
| 471A | 3,759,979 |
| 480 | 3,759,980 |
| 481R | 3,759,981 |
| 485J | 3,759,982 |
| 485R | 3,759,983 |
| | 3,759,984 |
| 486R | 3,759,985 |
| 488CD | 3,759,986 |
| 515A | 3,759,987 |
| 526N | 3,759,988 |
| 539A | 3,759,989 |
| 552R | 3,759,991 |
| 555A | 3,759,992 |
| 556A | 3,759,993 |
| 565 | 3,759,994 |
| 570.5P | 3,759,995 |
| 576 | 3,759,996 |
| 578 | 3,759,997 |
| 584R | 3,759,998 |
| 586R | 3,759,999 |
| 606.5P | 3,760,000 |
| | 3,760,001 |
| 608 | 3,760,002 |
| 613R | 3,760,003 |
| 615A | 3,760,004 |
| 615B | 3,760,005 |
| 619A | 3,760,006 |
| 619R | 3,760,007 |
| 621R | 3,760,008 |
| | 3,760,009 |
| 623R | 3,760,010 |
| 635E | 3,760,011 |
| 644 | 3,760,012 |
| 646 | 3,760,013 |
| 650R | 3,760,014 |
| 658R | 3,760,015 |
| 666PY | 3,760,016 |
| 668F | 3,760,017 |
| | 3,760,018 |
| | 3,760,019 |
| | 3,760,020 |
| 671P | 3,760,021 |
| 671R | 3,760,022 |
| 672R | 3,760,023 |
| 673 | 3,760,024 |
| 680B | 3,760,025 |
| 683D | 3,760,026 |
| 683.15D | 3,760,027 |
| 683.46 | 3,760,028 |
| 683.68 | 3,760,029 |
| 827 | 3,760,030 |
| 836 | 3,760,031 |
| 869 | 3,760,032 |
| 872 | 3,760,033 |
| 874 | 3,760,034 |
| 876R | 3,760,035 |
| 899 | 3,760,036 |
| 931 | 3,760,037 |
| 932 | 3,760,038 |
| 941 | 3,760,039 |
| | 3,760,040 |
| 944 | 3,760,041 |
| 950 | 3,760,042 |
| 951 | 3,760,043 |
| 954 | 3,760,044 |
| **CLASS 261** | |
| 23A | 3,759,493 |
| 41D | 3,759,499 |
| 79A | 3,759,494 |
| 92 | 3,759,495 |
| 94 | 3,759,496 |
| 113 | 3,759,497 |
| 114JP | 3,759,498 |
| **CLASS 264** | |
| 1 | 3,760,045 |
| 47 | 3,760,046 |
| 54 | 3,760,047 |
| 56 | 3,760,048 |
| 57 | 3,760,049 |
| 82 | 3,760,050 |
| 117 | 3,760,051 |
| 171 | 3,760,052 |
| 210F | 3,760,054 |
| 220 | 3,760,055 |
| 299 | 3,760,056 |
| **CLASS 266** | |
| 9 | 3,759,500 |
| 10 | 3,759,501 |
| 23E | 3,759,502 |
| **CLASS 267** | |
| 58 | 3,759,503 |
| **CLASS 269** | |
| 87 | 3,759,504 |
| 98 | 3,759,505 |
| **CLASS 270** | |
| 60 | 3,759,507 |
| 69 | 3,759,506 |
| **CLASS 271** | |
| | 3,759,508 |
| 150 | 3,759,509 |
| **CLASS 272** | |
| 57R | 3,759,510 |
| 58 | 3,759,511 |
| | 3,759,512 |
| 59B | 3,759,513 |
| 83R | 3,759,514 |
| **CLASS 273** | |
| 1R | 3,759,515 |
| | 3,759,516 |
| 80.7 | 3,759,517 |
| 106B | 3,759,518 |
| 106.5R | 3,759,519 |
| 134AD | 3,759,520 |
| 134B | 3,759,521 |
| 135AA | 3,759,522 |
| 137R | 3,759,523 |
| 142A | 3,759,524 |
| 143R | 3,759,525 |
| 157R | 3,759,526 |
| 171 | 3,759,527 |
| 176FA | 3,759,528 |
| **CLASS 274** | |
| 4B | 3,759,530 |
| 4C | 3,759,529 |
| 10S | 3,759,531 |
| **CLASS 277** | |
| 27 | 3,759,532 |
| 130 | 3,759,533 |
| 235R | 3,759,534 |
| **CLASS 279** | |
| 1J | 3,759,535 |
| 89 | 3,759,536 |
| **CLASS 280** | |
| 16 | 3,759,537 |
| 47.35 | 3,759,538 |
| 87.03 | 3,759,539 |
| 106R | 3,759,540 |
| 112R | 3,759,541 |
| 124A | 3,759,542 |
| 236 | 3,759,543 |
| 289 | 3,759,544 |
| 423R | 3,759,545 |
| 434 | 3,759,546 |
| 491E | 3,759,547 |
| 511 | 3,759,548 |
| 512 | 3,759,549 |
| **CLASS 285** | |
| 11 | 3,759,550 |
| 18 | 3,759,551 |
| 175 | 3,759,552 |
| 260 | 3,759,553 |
| | 3,759,554 |
| **CLASS 287** | |
| 90D | 3,759,555 |
| **CLASS 292** | |
| 33 | 3,759,556 |
| 281 | 3,759,557 |
| **CLASS 293** | |
| 30 | 3,759,558 |
| **CLASS 294** | |
| 15 | 3,759,559 |
| 64R | 3,759,560 |
| 69R | 3,759,561 |
| 83A | 3,759,562 |
| 88 | 3,759,563 |
| | 3,759,564 |
| **CLASS 296** | |
| 20 | 3,759,565 |
| 28R | 3,759,566 |
| 63 | 3,759,567 |
| 98 | 3,759,568 |
| **CLASS 297** | |
| 194 | 3,759,569 |
| 236 | 3,759,570 |
| 445 | 3,759,571 |
| 452 | 3,759,572 |
| **CLASS 298** | |
| 29 | 3,759,573 |
| **CLASS 299** | |
| 4 | 3,759,574 |
| 14 | 3,759,575 |
| **CLASS 301** | |
| 9DN | 3,759,576 |
| **CLASS 302** | |
| 2R | 3,759,577 |
| 29 | 3,759,578 |
| 31 | 3,759,579 |
| 64 | 3,759,580 |
| **CLASS 303** | |
| 13 | 3,759,581 |
| 21AF | 3,759,582 |
| | 3,759,585 |
| 21F | 3,759,583 |
| 71 | 3,759,584 |
| **CLASS 304** | |
| 158R | 3,759,806 |
| **CLASS 305** | |
| 11 | 3,759,586 |
| **CLASS 307** | |
| 120 | 3,760,189 |
| 218 | 3,760,190 |
| 228 | 3,760,191 |
| 233 | 3,760,193 |
| 235R | 3,760,192 |
| | 3,760,194 |
| 235 | 3,760,195 |
| 237 | 3,760,196 |
| | 3,760,197 |
| 268 | 3,760,198 |
| 296 | 3,760,199 |
| 303 | 3,760,200 |
| 304 | 3,760,202 |
| 312 | 3,760,201 |
| **CLASS 308** | |
| 6R | 3,759,587 |
| 35 | 3,759,588 |
| 72 | 3,759,589 |
| 187 | 3,759,592 |
| 189R | 3,759,591 |
| **CLASS 310** | |
| 8.1 | 3,760,203 |
| 8.2 | 3,760,204 |
| 13 | 3,760,206 |
| 49 | 3,760,207 |
| | 3,760,208 |
| 91 | 3,760,209 |
| 168 | 3,760,205 |
| | 3,760,210 |
| 242 | 3,760,211 |
| **CLASS 312** | |
| 27 | 3,759,595 |
| 31 | 3,759,594 |
| 108 | 3,759,596 |
| 227 | 3,760,226 |
| 234.5 | 3,759,597 |
| 257A | 3,759,598 |
| 262 | 3,759,599 |
| 312 | 3,759,593 |
| 330 | 3,759,600 |
| **CLASS 313** | |
| 7 | 3,760,212 |
| 39 | 3,760,213 |
| 85S | 3,760,214 |
| 92R | 3,760,215 |
| 94 | 3,760,216 |
| 276 | 3,760,217 |
| 346R | 3,760,218 |
| **CLASS 315** | |
| 3.5 | 3,760,219 |
| 3.6 | 3,760,223 |
| 17 | 3,760,220 |
| 27GD | 3,760,222 |
| 27TD | 3,760,221 |
| 94 | 3,760,224 |
| 111 | 3,760,225 |
| **CLASS 316** | |
| 19 | 3,759,601 |
| 20 | 3,759,602 |
| **CLASS 317** | |
| 2F | 3,760,229 |
| 16 | 3,760,227 |
| 27R | 3,760,230 |
| 31 | 3,760,228 |
| 92 | 3,760,231 |
| 99 | 3,760,232 |
| 101DH | 3,760,233 |
| 111 | 3,760,234 |
| 118 | 3,760,235 |
| 142TD | 3,760,236 |
| 234R | 3,760,237 |
| | 3,760,238 |
| 235R | 3,760,239 |
| | 3,760,240 |
| | 3,760,241 |
| | 3,760,242 |
| 249R | 3,760,243 |
| 258 | 3,760,244 |
| **CLASS 318** | |
| 38 | 3,760,245 |
| 52 | 3,760,246 |
| 221E | 3,760,247 |
| 230 | 3,760,248 |
| 282 | 3,760,250 |
| 592 | 3,760,249 |
| 601 | 3,760,251 |
| 611 | 3,760,252 |
| 618 | 3,760,253 |
| 662 | 3,760,254 |
| **CLASS 321** | |
| 1.5 | 3,760,257 |
| 8R | 3,760,255 |
| 9R | 3,760,256 |
| 11 | 3,760,258 |
| **CLASS 322** | |
| 28 | 3,760,259 |
| **CLASS 324** | |
| 10 | 3,760,260 |
| 32 | 3,760,262 |
| 34TK | 3,760,264 |
| 37 | 3,760,263 |
| 51 | 3,760,265 |
| | 3,760,266 |
| 61R | 3,760,267 |
| 72 | 3,760,268 |
| 73R | 3,760,261 |
| 78D | 3,760,269 |
| 83D | 3,760,270 |
| 95 | 3,760,271 |
| 111 | 3,760,272 |
| 142 | 3,760,273 |
| **CLASS 325** | |
| 26 | 3,760,274 |
| 31 | 3,760,275 |
| 38A | 3,760,277 |
| 38B | 3,760,276 |
| 51 | 3,760,278 |
| **CLASS 328** | |
| 8 | 3,760,279 |
| 55 | 3,760,280 |
| 91 | 3,760,281 |
| 116 | 3,760,282 |
| 151 | 3,760,283 |
| 158 | 3,760,284 |
| 228 | 3,760,286 |
| 232 | 3,760,285 |
| **CLASS 330** | |
| 9 | 3,760,287 |
| 30D | 3,760,288 |
| 51 | 3,760,289 |
| **CLASS 331** | |
| 40 | 3,760,290 |
| 86 | 3,760,291 |
| 94.5C | 3,760,292 |
| 94.5M | 3,760,296 |
| 94.5 | 3,760,293 |
| | 3,760,294 |
| | 3,760,295 |
| | 3,760,297 |
| **CLASS 333** | |
| 12 | 3,760,298 |
| 30R | 3,760,299 |
| 31A | 3,760,300 |
| 70R | 3,760,301 |
| 73R | 3,760,302 |
| | 3,760,303 |
| | 3,760,304 |
| 95R | 3,760,305 |
| 97R | 3,760,306 |
| **CLASS 335** | |
| 1 | 3,760,309 |
| 13 | 3,760,307 |
| 35 | 3,760,308 |
| 146 | 3,760,310 |
| 152 | 3,760,311 |
| 205 | 3,760,312 |
| 229 | 3,760,313 |
| **CLASS 336** | |
| 18C | 3,760,329 |
| 192 | 3,760,314 |
| 205 | 3,760,315 |
| 210 | 3,760,316 |
| **CLASS 337** | |
| 103 | 3,760,317 |
| **CLASS 338** | |
| 20 | 3,760,318 |
| 26 | 3,760,319 |
| 128 | 3,760,320 |
| 134 | 3,760,321 |
| 137 | 3,760,322 |
| 174 | 3,760,323 |
| | 3,760,324 |
| 262 | 3,760,325 |
| **CLASS 339** | |
| 14R | 3,760,326 |
| | 3,760,327 |
| 18R | 3,760,328 |
| | 3,760,330 |
| 36 | 3,760,331 |
| 66R | 3,760,332 |
| 91R | 3,760,333 |
| 92M | 3,760,336 |
| 94R | 3,760,337 |
| 99R | 3,760,334 |
| | 3,760,335 |
| 196M | 3,760,338 |
| 221 | 3,760,339 |
| 262R | 3,760,340 |
| 265F | 3,760,341 |
| 272R | 3,760,342 |
| **CLASS 340** | |
| 1T | 3,760,343 |
| 5H | 3,760,344 |
| 6S | 3,760,345 |
| 8R | 3,760,346 |
| 10 | 3,760,348 |
| 15.5MC | 3,760,347 |
| 33 | 3,760,349 |
| 58 | 3,760,350 |
| | 3,760,351 |
| 59 | 3,760,352 |
| 72 | 3,760,353 |
| 146.1E | 3,760,354 |
| 146.2 | 3,760,355 |
| 146.3H | 3,760,357 |
| 146.3Y | 3,760,356 |
| 147LP | 3,760,358 |
| 164R | 3,760,359 |
| 166R | 3,760,360 |
| | 3,760,361 |
| 172.5 | 3,760,362 |
| | 3,760,363 |
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| | 3,760,366 |
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| 173CR | 3,760,383 |
| 173R | 3,760,378 |
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| | 3,760,384 |
| 174TF | 3,760,386 |
| | 3,760,387 |
| 174YC | 3,760,385 |
| 174.1C | 3,760,391 |
| 200 | 3,760,392 |
| 223 | 3,760,394 |
| 228.1 | 3,760,398 |
| 229 | 3,760,393 |
| 237S | 3,760,395 |
| 240 | 3,760,396 |
| 256D | 3,760,399 |
| 258A | 3,760,400 |
| 258B | 3,760,397 |
| 267C | 3,760,401 |
| 280 | 3,760,402 |
| 323 | 3,760,404 |
| 324AD | 3,760,405 |
| 336 | 3,760,403 |
| | 3,760,406 |
| 347DD | 3,760,412 |
| 347NT | 3,760,407 |
| 347P | 3,760,408 |
| 365S | 3,760,409 |
| 378R | 3,760,410 |
| 388 | 3,760,411 |
| **CLASS 341** | |
| 172.5 | 3,760,373 |
| | 3,760,375 |
| 173RC | 3,760,382 |
| 173R | 3,760,380 |
| 174GA | 3,760,390 |
| 174MA | 3,760,389 |
| 174.1H | 3,760,388 |
| **CLASS 343** | |
| 5SC | 3,760,413 |
| 6.5R | 3,760,414 |
| 7ED | 3,760,415 |
| | 3,760,416 |
| 18E | 3,760,417 |
| | 3,760,418 |
| 109 | 3,760,419 |
| 117R | 3,760,420 |
| 225 | 3,760,421 |
| | 3,760,422 |
| 715 | 3,760,423 |
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| 96WG | 3,759,590 |
| 161 | 3,759,603 |
| 166 | 3,759,604 |
| 179 | 3,759,605 |
| 214 | 3,759,606 |
| 293 | 3,759,607 |
| **CLASS 351** | |
| 113 | 3,759,608 |
| **CLASS 352** | |
| 72 | 3,759,609 |
| **CLASS 353** | |
| 104 | 3,759,487 |
| **CLASS 355** | |
| 17 | 3,759,610 |
| 43 | 3,759,611 |
| 46 | 3,759,612 |
| 73 | 3,759,613 |
| **CLASS 356** | |
| 4 | 3,759,614 |
| | 3,759,615 |
| 5 | 3,759,616 |
| 36 | 3,759,617 |
| 156 | 3,759,618 |
| 173 | 3,759,619 |
| 200 | 3,759,620 |
| **CLASS 401** | |
| 10 | 3,759,621 |
| 104 | 3,759,622 |
| **CLASS 403** | |
| 298 | 3,759,623 |
| **CLASS 404** | |
| 133 | 3,759,624 |
| **CLASS 408** | |
| 188 | 3,759,625 |
| **CLASS 415** | |
| 90 | 3,759,626 |
| 178 | 3,759,627 |
| 213A | 3,759,628 |
| **CLASS 416** | |
| 20 | 3,759,629 |
| 132 | 3,759,630 |
| 134 | 3,759,631 |
| | 3,759,632 |
| 220 | 3,759,633 |
| **CLASS 417** | |
| 32 | 3,759,634 |
| 50 | 3,759,635 |
| 281 | 3,759,636 |
| 499 | 3,759,637 |
| **CLASS 418** | |
| 128 | 3,759,638 |
| 170 | 3,759,639 |
| 249 | 3,759,640 |
| **CLASS 423** | |
| 85 | 3,760,058 |
| 87 | 3,760,059 |
| 89 | 3,760,060 |
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| 474 | 3,760,064 |

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| 598 | 3,760,068 |
| 604 | 3,760,070 |
| 613 | 3,760,071 |
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| 210 | 3,760,072 |
| 243 | 3,760,073 |
| 244 | 3,760,074 |
| 245 | 3,760,075 |
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| 251 | 3,759,921 |
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| | 3,760,084 |
| 274 | 3,760,085 |
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| 365 | 3,760,087 |
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| 4 | 3,759,641 |
| 72 | 3,759,642 |
| 109 | 3,759,643 |
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| 343 | 3,759,651 |
| 388 | 3,759,652 |
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| 351 | 3,759,715 |
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| 66 | 3,759,654 |
| 142 | 3,759,656 |
| 150 | 3,759,655 |
| 170 | 3,759,657 |
| 255 | 3,759,658 |
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| 24 | 3,759,659 |
| 58 | 3,759,660 |
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| 242 | 3,759,662 |

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| | 59 | 228,372 |
| D07— | 109 | 228,373 |
| | 131 | 228,374 |
| D08— | 153 | 228,375 |
| | 234 | 228,379 |
| | | 228,380 |
| | | 228,381 |
| | 235 | 228,376 |
| | | 228,377 |
| D09— | 42 | 228,378 |
| | 60 | 228,382 |
| | 258 | 228,383 |
| D22— | 29 | 228,384 |
| | | 228,391 |
| | | 228,392 |
| D23— | 40 | 228,385 |
| D26— | 1 | 228,386 |
| | 5 | 228,387 |
| | 8 | 228,388 |
| | 14 | 228,389 |
| | | 228,390 |
| D30— | 2 | 228,393 |
| D34— | 5 | 228,394 |
| | | 228,395 |
| | | 228,396 |
| | 15 | 228,397 |
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| | | 228,399 |
| | | 228,400 |
| | | 228,401 |
| D35— | 3 | 228,402 |
| D40— | 1 | 228,403 |
| D41— | | 228,404 |
| D42— | 7 | 228,405 |
| | | 228,406 |
| | | 228,407 |
| D45— | 10 | 228,408 |
| D47— | 5 | 228,409 |
| D48— | 20 | 228,410 |
| D49— | 35 | 228,411 |
| D52— | 2 | 228,412 |
| | 10 | 228,413 |
| D55— | 1 | 228,414 |
| D71— | | 228,415 |
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| D74— | 5 | 228,417 |
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| D86— | 10 | 228,419 |
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| D90— | 20 | 228,420 |
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# PATENT OFFICE NOTICES

## Paris Convention for the Protection of Industrial Property

*Entry Into Force of Articles 1–12*

The Director General of the World Intellectual Property Organisation announced on May 25, 1973, the deposit by the United States of letters of ratification of Articles 1–12 of the Paris Convention for the Protection of Industrial Property of 1883, as revised at Stockholm on July 14, 1967, with the declaration of applicability to all territories and possessions of the United States, including the Commonwealth of Puerto Rico. By operation of the Convention, Articles 1–12 will enter into force with respect to the United States on August 25, 1973, three months after the date of the above notification by the Director.

To carry into effect provisions of the Stockholm Revision of the Paris Convention, the United States has enacted Public Law 92–358, July 28, 1972, which in Section (1) amends 35 U.S.C. 119 to accord under certain circumstances rights of priority to a U.S. patent application based on an earlier filed application for an inventor's certificate and in Section (2) amends 35 U.S.C. 102(d) to provide that under certain circumstances an inventor's certificate becomes a statutory bar to the grant of a U.S. patent.

By the terms of this statutory enactment, Section (1) will enter into force with respect to the United States on the date when Articles 1–12 of the Stockholm Revision of the Paris Convention of March 20, 1883 come into force with respect to the United States, which will be August 25, 1973. A Patent Office rule change implementing this section of the public law by the addition of a new paragraph (c) to § 1.55 (37 CFR 1.55(c)) has been adopted and has been published in the FEDERAL REGISTER, Vol. 38, No. 71, on April 13, 1973.

This statutory enactment also provides that Section (2) will take effect six months from the date when Articles 1–12 of the Stockholm Revision of the Paris Convention come into force with respect to the United States. Accordingly, this date will be February 25, 1974.

The full text of Public Law 92–358, dated July 28, 1972 together with the implementing Patent Office regulation, are reproduced below:

### PUBLIC LAW 92–358, JULY 28, 1972

To carry into effect a provision of the Convention of Paris for the Protection of Industrial Property, as revised at Stockholm, Sweden, July 14, 1967.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 119 of title 35 of the United States Code, entitled "Patents" is amended by adding at the end thereof the following paragraph:

"Applications for inventors' certificates filed in a foreign country in which applicants have a right to apply, at their discretion, either for a patent or for an inventor's certificate shall be treated in this country in the same manner and have the same effect for purpose of the right of priority under this section as applications for patents, provided such applicants are entitled to the benefits of the Stockholm Revision of the Paris Convention at the time of such filing."

Sec. 2. Subsection 102(d) of title 35 of the United States Code is amended to read as follows:

"(d) the invention was first patented or caused to be patented; or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or."

Sec. 3. (a) Section 1 of this Act shall take effect on the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply only to applications thereafter filed in the United States.

(b) Section 2 of this Act shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications thereafter filed in the United States.

## Title 37—Patents, Trademarks and Copyrights

## CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

### PART 1—RULES OF PRACTICE IN PATENT CASES

§ 1.55 *Serial number and filing date of application.* * * *

(c) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

Dated: August 20, 1973.

RENE D. TEGTMEYER,  
*Acting Commissioner of Patents.*

Approved: August 22, 1973.  
BETSY ANCKER-JOHNSON,  
*Assistant Secretary for*  
*Science and Technology.*

[FR Doc. 73–18260; Filed 8–28–73; 8:45 a.m.]

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## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**2,463,280**, Kaehni and Kaehni, SPECTROSCOPE GRATING HAVING SPACED ZONES OF DIFFRACTON LINES, **filed** July 24, 1972, C.A. Fourth Circuit, Virginia (Richmond), Doc. 72–1891, *Frank J. Kaehni and Marie Kaehni* v. *Diffraction Company.*

**2,647,590**, C. A. Anderson, Jr., HYDRAULIC ELEVATOR, **filed** Oct. 2, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2456, *Advance Hydraulics, Inc.* v. *Eaton Corp.*

**2,755,623**, Ferri and Schwartz, ROTATING FLOW COMBUSTOR, **filed** Sept. 26, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1534–C–JLK, *Antonio Ferri et al.* v. *United Aircraft Corp. et al.*

**2,770,501**, H. Coanda, MEANS FOR THE ATOMIZATION OF LIQUIDS, **filed** Sept. 14, 1971, D.C. S. Dak. (Sioux Falls), Doc. C–71–708, *Sebac Nouvelle S.A.* v. *Brookota, Inc.*

**2,796,098**, R. C. Dreier, HAND-SAW CONSTRUCTION, **filed** Aug. 24, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2109, *Raymond C. Dreier and Dreier Brothers, Inc.* v. *Mathias Klein and Sons, Inc.*

**2,811,069**, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c136, *Alfred H. Faulkner* v. *Baldwin Piano and Organ Co.* **Same, filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c138, *Alfred H. Faulkner* v. *Gulbransen Industries, Inc.* **Same, filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c139, *Alfred H. Faulkner, etc.* v. *Lowrey Organ Co. et al.* **Same, filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c140, *Alfred H. Faulkner* v. *The Wurlitzer Co. et al.*

**2,826,760**, E. G. Rice, COMBINATION STOCKINGS AND PANTY; **Re. 25,360**, same, **filed** Nov. 2, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–256, *Tights, Inc.* v. *Monarch Knitting Machinery Corporation.*

**2,900,150**, Hirt and Martino, EJECTION SEAT CATAPULT; **3,115,320**, G. E. Hirt, same, **filed** Mar. 9, 1973, D.C. Del. (Wilmington), Doc. 4604, *Talley Industries, Inc.* v. *United States of America.*

**2,909,384**, M. F. Saxton, MAGNETIC DOOR CATCH, **filed** Feb. 26, 1973, D.C., E.D. Mich. (Flint), Doc. 623, *The Engineered Products Co.* v. *Montgomery Ward et al.*

**2,925,719**, Robbins and Linn, REFRIGERATING PACKAGE; **3,175,558**, Caillouette and Worley, THERMAL THERAPEUTIC PACK, **filed** Feb. 28, 1973, D.C., S.D. Fla. (Miami), Doc. 73–337–C–CA, *Kay Laboratories, Inc.* v. *Veriam Distributors, Inc. et al.*

**2,931,383**, H. E. Handley, CURB BOX HAVING LOCATING MAGNET THEREIN, **filed** Dec. 16, 1968, D.C.N.J. (Newark), Doc. C–1336–68, *Handley Industries, Inc.* v. *Valvco, Inc.* Settlement agreement and consent order of dismissal of complaint and counterclaim, Jan. 3, 1973.

**2,966,900**, J. Ehrlich, PORT-CONTROLLED TWO-STROKE INTERNAL COMBUSTION ENGINES, **filed** Feb. 26, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–210, *Ehrlich Engineering Limited* v. *Rupp Industries, Inc.*

**2,976,257**, Dawe and Youse, RE-DISPERSIBLE DISPERSION OF POLYTETRAFLUOROETHYLENE, **filed** Dec. 28, 1971, D.C., S.D.N.Y., Doc. 71–C–5655, *Wallace, Clark & Company, Inc.* v. *Acheson Industries, Inc.*

**3,115,320.** (See 2,900,150.)

**3,175,558.** (See 2,925,719.)

**3,217,609**, R. H. Royster, FLUID PRESSURE ACTUATOR AND LOCKING MEANS; **3,342,111**, same, **filed** Dec. 21, 1971, D.C. Md. (Baltimore), Doc. 71–1394–B, *Robert H. Royster* v. *United Airlines, Inc.* Plaintiff's motion to dismiss with prejudice to any further litigation by plaintiff against defendant granted by the Court, upon that condition, Mar. 13, 1973.

**3,297,003**, Schmitt and Polistina, SURGICAL SUTURES, **filed** Mar. 12, 1973, D.C.N.J., (Newark), Doc. C–344–73, *Ethicon, Inc.* v. *American Cyanamid Company.*

**3,306,437**, R. L. Nelson, CODED SHIPPING AND DISPENSING CARTON ASSEMBLY, **filed** Mar. 11, 1969, D.C. Del. (Wilmington), Doc. 3681, *Diamond Crystal Salt Company* v. *Package Masters, Inc.* Stipulation and order: Complaint and counterclaim are dismissed without prejudice, Mar. 14, 1973.

**3,342,111.** (See 3,217,609.)

**3,404,580**, P. Valenti, BALLSCREW ACTUATOR, **filed** Mar. 9, 1973, D.C., N.D. Ill. (Freeport), Doc. 73–C–17, *Sargent Industries, Inc.* v. *Sundstrand Corporation.*

**3,486,127**, Beck and Garelick, INSTRUMENTATION CIRCUIT WITH D-C AMPLIFIER HAVING TEMPERATURE STABILIZATION, **filed** Dec. 29, 1970, D.C., N.D. Ohio (Cleveland), Doc. C70–1199, *Acromag Incorporated* v. *Transmation, Inc.* Consent judgment; patent valid, infringed upon by Acromag. Parties have entered into a license agreement re: future manufacture and sale; re: past infringement, no damages awarded, no injunction to issue, Nov. 23, 1971.

**3,515,979**, M. J. E. Golay, MAGNETIC FIELD CONTROL APPARATUS, **filed** Sept. 1, 1972, D.C.N.J. (Newark), Doc. C–1495–72, *The Perkin-Elmer Corporation* v. *Nihon Denshi Kabushiki Kaisha and Jeolco (U.S.A.), Inc.*

**3,552,469**, L. M. Corless, TIRE BEAD SEATER, **filed** Aug. 25, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–834, *B & J Manufacturing Co.* v. *Akron Tire Supply and Robert J. Singiser.* Consent judgment, patent valid, defendants have infringed, Mar. 12, 1973.

**3,701,451**, Schindler and McEachron, MOLDED ELECTRICAL JUNCTION BOX, **filed** Mar. 9, 1973, D.C., N.D. Tex (Dallas), Doc. CA–3–6927–E, *Nelco Corporation* v. *Slater Electric, Inc. et al.*

**Re. 25,360**, E. G. Rice, COMBINATION STOCKINGS AND PANTY, **filed** Feb. 26, 1973, D.C., M.D.N.C. (Greensboro), Doc. C–82–G–73, *Sew Special, Inc.* v. *Tights, Inc.*

**Re. 25,360.** (See 2,826,760.)

## Certificates of Correction for the Week of Sept. 25, 1973

P.P. 3,191
Re. 27,662
3,545,946
3,556,942
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3,612,063
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3,739,255
3,739,265
3,739,459

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# PATENT EXAMINING CORPS

**WILLIAM FELDMAN, Acting Assistant Commissioner**

## CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 1, 1973

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director<br>Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 7-20-72 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director<br>Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 8-01-72 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director<br>Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 7-11-72 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director<br>Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesiva Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 6-01-72 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director<br>Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 4-19-72 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director<br>Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 1-24-73 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director<br>Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 12-07-72 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director<br>Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 10-02-72 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.<br>Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 5-15-72 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director<br>Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 11-27-72 |
| DESIGNS, GROUP 290—R. L. CAMPBELL, Director<br>Industrial Arts; Household, Personal and Fine Arts. | 1-03-72 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director<br>Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 11-20-72 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director<br>Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 8-01-72 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director<br>Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 10-24-72 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director<br>Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 9-25-72 |
| MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director<br>Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 9-05-72 |

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**Expiration of patents:** The patents within the range of numbers indicated below expire during September 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.................... Numbers 2,761,142 to 2,764,757, inclusive
Plant Patents.................... Numbers 1,509 to 1,521, inclusive

# PATENTS

## GRANTED SEPTEMBER 25, 1973

# GENERAL AND MECHANICAL

### 3,760,424

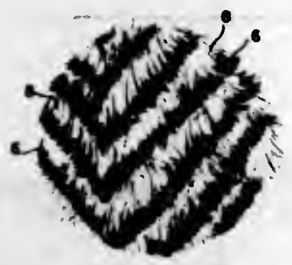
### COMPOSITE FUR PELT AND METHOD OF MAKING SAME AND FUR COAT

**David Leinoff, 71 Park Ave., New York, N.Y.**

**Filed July 24, 1972, Ser. No. 274,196**

**Int. Cl. A41d** *5/00*; **C14b** *1/00*

**U.S. Cl. 2—65** **8 Claims**



A novel fur pelt and method of manufacturing same, and fur coats and the like made from long-haired furs. The pelt has a very attractive feathery and stripe effect, and the bulk of the fur is reduced. Also, each fur pelt covers a much larger area than its original size, and it is wider and longer than the original pelt.

### 3,760,425

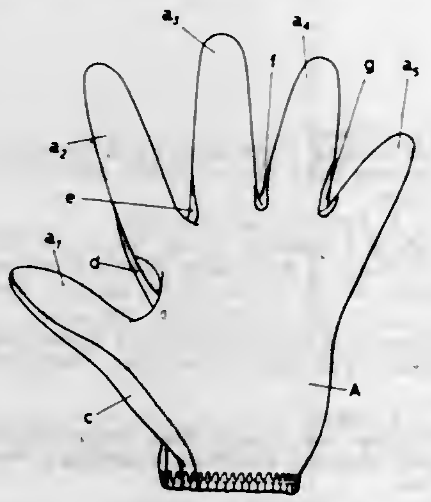
### METHOD OF MAKING LEATHER GLOVES

**Noriyuki Komatsu, 25-27, 1-chome, Kamiochiai, Shinjuku-ku, Tokyo, Japan**

**Filed Sept. 14, 1971, Ser. No. 180,263**

**Int. Cl. A41d** *19/02*

**U.S. Cl. 2—169** **3 Claims**



A method of making leather gloves with no seams visible on the palm side of the gloves. This is accomplished by first cutting the following leather pieces: a single piece of leather for the palm and for each of the five fingers, the finger pieces being wider than one half the circumference of the fingers; a piece of leather for the back side comprising the four fingers, foreginger to little finger, and fourchettes having a side of each finger being formed with adjustments.

### 3,760,426

### ARTICLE OF APPAREL

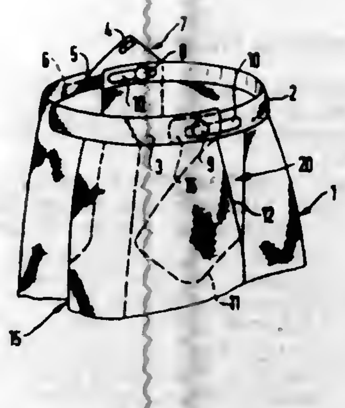
**Oscar Jacob, Gundelsheim, Germany, assignor to Greiff-Werke Gustav Winkler KG, Bamberg, Germany**

**Filed Nov. 8, 1971, Ser. No. 196,564**

**Claims priority, application Germany, Nov. 6, 1970, P 20 54 714.2**

**Int. Cl. A41f** *9/00*

**U.S. Cl. 2—237** **17 Claims**



A trouser or an analogous article of apparel has a rear waistband portion whose two forwardly directed terminal sections are overlapped or entirely embraced by corresponding portions of a discrete front waistband portion. The forwardly directed portions of the rear waistband portion are provided with slots which may be reinforced by suitable inserts and extend in circumferential direction of the waistband portions, and studs on the front waistband portion are each arrestably received in one of the slots so that the amount of overlap can be adjusted.

### 3,760,427

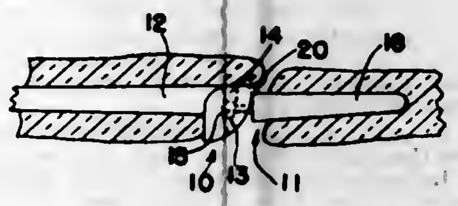
### SURGICALLY IMPLANTABLE PROSTHETIC JOINT

**Robert Jordan Schultz, 64 Little Brook Rd., Wilton, Conn.**

**Filed Mar. 24, 1972, Ser. No. 237,856**

**Int. Cl. A61f** *1/24*

**U.S. Cl. 3—1** **4 Claims**



A prosthetic joint for the replacement of the metacarpophalangeal and the interphalangeal joints of the hand, and for the knee. The joint includes a ball secured to the distal bone by an intramedullary stem and cylindrical cavity element to receive the ball secured to the proximal bone, also by an intramedullary stem. The cylindrical cavity element is provided with an entrance means so that the joint may be assembled and the stems secured to the two bones.

### 3,760,428

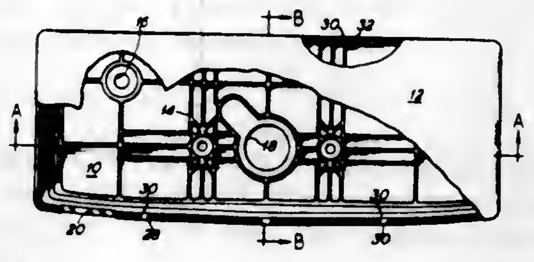
### WATER CLOSET TANK

**Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.**

**Filed Oct. 29, 1971, Ser. No. 193,879**

**Int. Cl. E03d** *1/01*, *1/012*

**U.S. Cl. 4—18** **4 Claims**



A flush tank and lid formed of molded plastic, are interlocked by means of one or more keys or tabs formed as part of the lid which engage complementary shaped grooves in the tank.

### 3,760,429

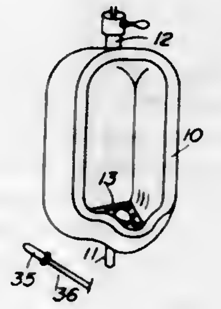
### DISPOSABLE URINAL STRAINER WITH SUPPORTING AND POSITIONING MEANS FOR HOLDING A SOLID CHEMICAL MATERIAL

**Henry J. Brownstein, Chicago, Ill., assignor to Hyson Corporation, Chicago, Ill.**

**Filed June 11, 1971, Ser. No. 152,282**

**Int. Cl. E03d** *13/00*

**U.S. Cl. 4—109** **10 Claims**



A solid block of deodorant chemical material is snugly fitted inside a collar projecting away from a plastic plate having a plurality of drainage holes therein. A post in the center of the collar projects away from the plate by a distance equal to or greater than the projection distance of the collar. This gives an erosion pattern whereby substantially all of the chemical is used before it erodes to a degree where it is no longer supported and positioned by the collar.

### 3,760,430

### ADAPTER APPARATUS FOR A PORTABLE SEWAGE DISPOSAL SYSTEM

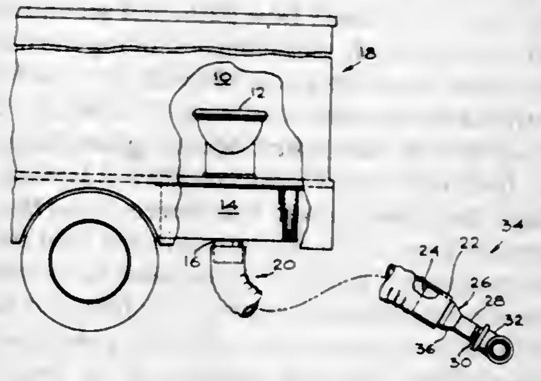
**Donald Wilford Breaden, 1362 W. 26 St., San Pedro, Calif.**

**Filed May 4, 1971, Ser. No. 140,378**

**Int. Cl. B60r** *15/04*

**U.S. Cl. 4—114** **3 Claims**

The improved portable sewage disposal system of the invention includes a portable toilet, a sewage holding tank therefor, a tank drainage pipe, a tubular, preferably flexible, conduit connected to the drainage pipe and an adapter, preferably of molded plastic or rubber, inserted at one end in the conduit with the other reduced end thereof being externally threaded for releasable threaded engagement with a fixed sewage drain cleanout tee. The adapter system includes the conduit and adapter releasably inter-connected. Gripping means may be provided for releasably securing the conduit and adapter in gas-tight, liquid-tight relation, and the adapter may have a shoulder which aids in positioning the conduit over the insert end thereof. The gripping means may include unidirectional serrations on the exterior surface of the insert end or a flexible collar or a releasable ring clamp. The described systems permit liquid- and gas-tight removal of sewage wastes from the portable holding tank into a fixed disposal drain cleanout tee in a rapid, simple and efficient manner.



### 3,760,431

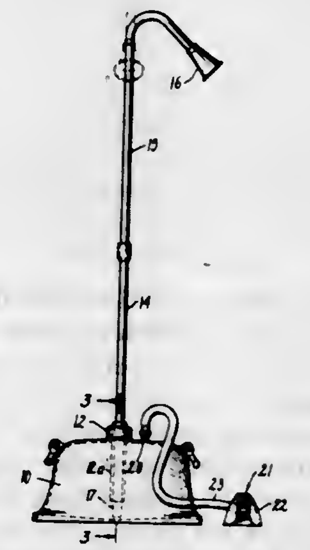
### PORTABLE SHOWER

**Barry H. Schwibner, 3411 Wayne Ave., Bronx, N.Y.**

**Filed Dec. 10, 1970, Ser. No. 96,745**

**Int. Cl. A47k** *3/22*

**U.S. Cl. 4—156** **6 Claims**



A portable shower assembled from a standard, conventional water container. A kit for converting standard containers into a portable shower. A connector is provided in the kit for mounting a conduit and shower head. The connector replaces the filler cap of the water container and provision is made for connecting a deformable air foot pump thereto.

### 3,760,432

### SAFETY SYSTEM FOR SWIMMING POOL

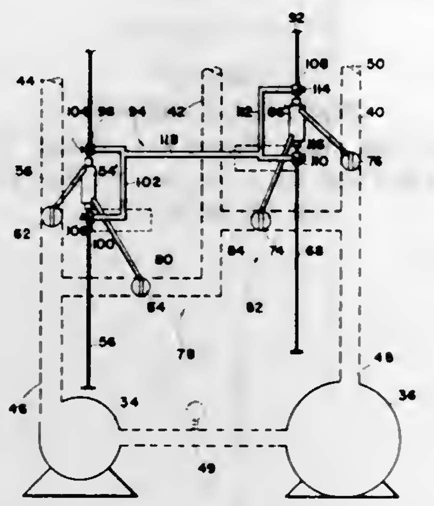
**Frank Glorisi, 607 Remsen Ave., North Brunswick, N.J.**

**Filed June 8, 1972, Ser. No. 260,765**

**Int. Cl. E04h** *3/16*, *3/18*

**U.S. Cl. 4—172.13** **12 Claims**

A safety system for a swimming pool is disclosed which includes a platform guided for vertical movement in the pool; a ballast system attached to the platform; a pump; an inlet flow path for the pump, one end of the inlet flow path in communication with the pump and the other end of the inlet flow path in communication with the water in the pool; an outlet flow path for the pump, one end of the outlet flow path in communication with the pump, and the other end of the outlet flow path in communication with the water in the pool; a first diversionary flow path communicating at one end thereof with the inlet flow path and at a second end thereof with the ballast system; a second diversionary flow path communicating at one end thereof with the outlet flow path and at a second end thereof with the ballast system; and control means operable to control the flow of water in the inlet flow path, the outlet flow path, the first diversionary flow path, and second diversionary flow path for selectively emptying and filling the ballast system with the water from the pool, whereby the platform may be selectively caused to rise and sink. Preferably, the control means includes: at least a first operating mechanism movable between first and second position when it is desired to draw water from the ballast system and thereby raise the platform; a first normally open valve positioned in the inlet flow path and movable to a closed position in response to movement of the first operating mechanism between its first and second position, and a second normally closed valve positioned in the first diversionary flow path and movable to an open position in response to the movement of the first operating mechanism between its first and second position. Additionally, the control means further includes a follower system responsive to the movement of the platform for returning the aforementioned operating mechanism to its first position (and the valves controlled thereby to their normal positions) when the platform reaches a first predetermined level such as the top of the pool. In this manner, water will circulate from the inlet flow path to the outlet flow path in the normal filtering process once the platform has reached its predetermined position.



Similar control mechanism and follower mechanism are provided to temporarily divert water flow into the ballast system when it is desired to sink the platform and to automatically return the system to the normal filtering operation, once the platform has reached the bottom of the pool.

As a further feature of the invention, level selection means are provided and cooperate with the aforementioned control means for maintaining the safety platform at a predetermined, desired level in the pool.

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**3,760,433**

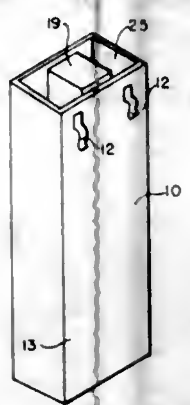
### AIR DISPLACEMENT DEODORIZER FOR TOILET TANKS AND THE LIKE

**Sidney Mallin, 236 Kingston Row, Winnipeg, Manitoba, Canada**

**Filed Nov. 9, 1970, Ser. No. 88,074**
**Int. Cl. E03d** *9/02;* **A47k** *4/00*

**U.S. Cl. 4—228** **1 Claim**

A canister hangs in the toilet tank with the lower open end below the water level when the tank is full. A reservoir is situated at the upper end of the canister and as the water in the tank empties and refills, a column of air is displaced within the container which bubbles through the liquid in the reservoir and evaporates same.



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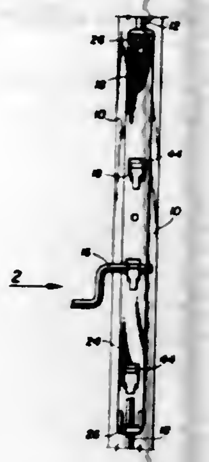
**3,760,434**

### BRACKET FOR ADJUSTABLY SUPPORTING A MATTRESS SPRING FRAME

**Herbert W. Neunherz, and Robert G. Bryant, both of Gardner, Mass., assignors to Gem Industries, Inc., Gardner, Mass.**

**Filed Dec. 27, 1971, Ser. No. 211,988**
**Int. Cl. A47c** *17/14*

**U.S. Cl. 5—11** **5 Claims**



A molded plastic bracket including an elongated base for vertical disposition e.g., on a crib post, a series of spaced hooks on the base, each hook having a bight greater than the entrance thereinto, and in some cases apertured lips at one or both ends of the base integral therewith. The brackets are molded on a curve to fit more snugly against the post, and may be made in several different versions for accepting the mattress hangers from different aspects.

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**3,760,435**

### STRETCHERS

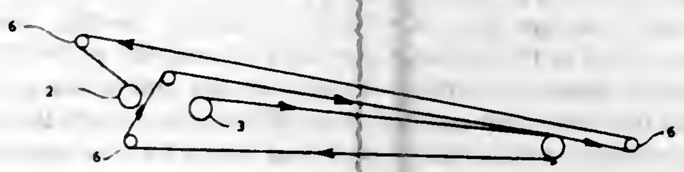
**Robert William Jardine, Cheadle, Hulme, England, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 25, 1971, Ser. No. 118,760**

**Claims priority, application Great Britain, Mar. 2, 1970, 9,815/70**

**Int. Cl. B66f** *11/00;* **A61g** *7/10*

**U.S. Cl. 5—81 R** **7 Claims**



A stretcher for supporting injured persons having a movable belt carried between two drums rotatably mounted between a pair of side frames. Guide means are arranged along the upper portion of the frame to guide the movable belt thereover and support a person. Another portion of the belt is guided along the bottom of the frame so that it is in contact with the ground. Manual means are provided for causing rotation of at least one of the drums so as to wind the belt thereabout. When the drum is rotated the belt will travel from one drum to the other being guided over the upper portion and lower portion of the frame in the same direction so that the frame will travel along the ground in the opposite direction.

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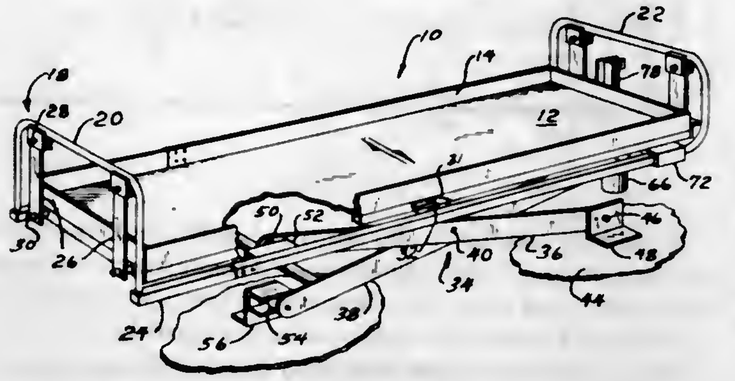
**3,760,436**

### SUSPENSION SYSTEM FOR VEHICLE MOUNTED BED

**Donald J. Zach, and Martin T. Pilachowski, both of Greendale, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 5, 1971, Ser. No. 195,954**
**Int. Cl. A47c** *19/00*

**U.S. Cl. 5—118** **10 Claims**



Suspension system for vehicle-mounted beds provides both fore and aft isolation and vertical isolation from pitch and vertical vibrations of the vehicle. The main frame of the suspension is mounted for vertical isolation movement relative to the frame of the vehicle by means of an air spring biased scissor-type linkage. Fore and aft isolation movement is provided by pendulously suspending the mattress support frame from pivoted links attached to the main suspension frame. The system provides especially good shock isolation for short wheel-base truck cabs of the cab over engine type where the bed is usually located at a considerable distance above the vehicle frame.

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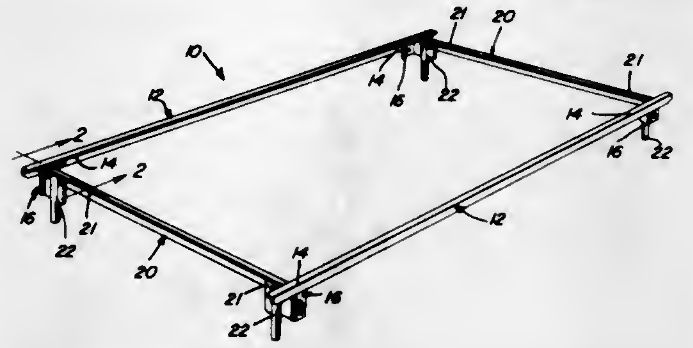
**3,760,437**

### BED FRAME WITH DETACHABLE SIDE RAILS

**Emerson F. Hooker, P.O. Box 140, Lexington, N.C.**

**Filed Mar. 21, 1972, Ser. No. 236,750**
**Int. Cl. A47c** *19/00*

**U.S. Cl. 5—201** **14 Claims**



A bed frame having longitudinal side rails with spaced end portions. Each end portion is provided with a normally downwardly extending bracket member having means thereon for detachable but rigid connection with cooperating means on a bracket member on each end portion of a pair of longitudinal end rails. The cooperating means on the bracket members is in the form of vertically engageable keyhole slots and headed pins and vertically extending flange surfaces engaged with each other for forming a rigid connection between the side rails and end rails.

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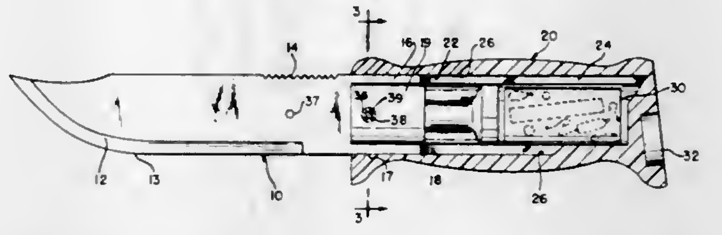
**3,760,438**

### SURVIVAL KNIFE

**James F. White, Rt. 2, Box 182 A, Anacortes, Wash.**

**Filed July 14, 1971, Ser. No. 162,538**
**Int. Cl. B25f** *1/00;* **B26b** *11/00, 3/06*

**U.S. Cl. 7—1 B** **4 Claims**



A knife blade is provided with a sharpened end and an attachment end having a spool or reel for a fishing line attached thereto. A knife handle is provided with a blade receiving compartment and a storage compartment for carrying fishing gear. The handle may be placed on either end so that in one position the fishing reel is exposed with the sharpened end of the blade covered and in a second position the fishing reel is received in the handle with the sharpened blade protruding.

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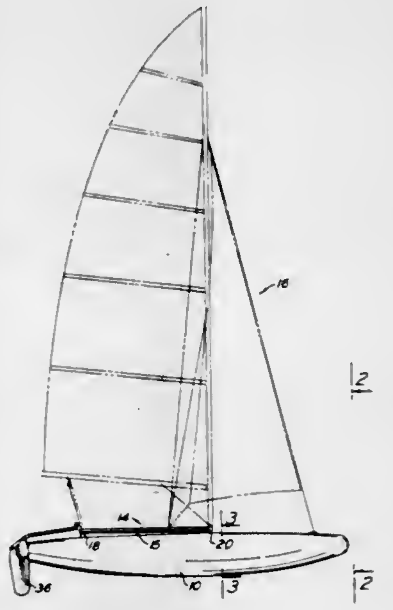
**3,760,439**

### BOAT AND METHOD OF FORMING SAME

**Paul F. Swenson, Sr., Cleveland, Ohio, assignor to Great Lakes Sports Mfg. Co., Cleveland, Ohio**

**Filed Aug. 31, 1971, Ser. No. 176,518**
**Int. Cl. B63b** *3/08*

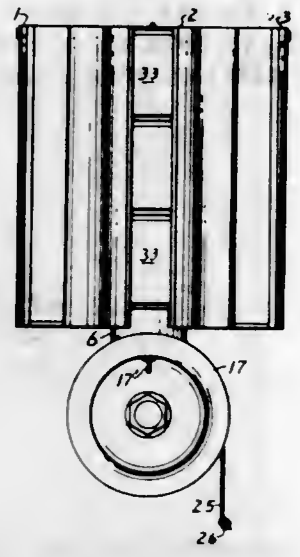
**U.S. Cl. 9—6** **5 Claims**



The specification and drawings disclose a load bearing structure and method for forming the same. In particular, the drawings show a catamaran-type sailboat including a pair of hulls having thin aluminum outer skin. The rigging, sails and deck are supported from rigid frame or load distributing members positioned within the hulls and spaced from their outer skin. Plastic is foamed in place in the hulls and encloses the frame members. The plastic foam bonds the frame to the skin of the hulls and serves as the primary media for transmitting the reaction loads from the deck and sails.

### 3,760,440
### DIVER SIGNAL AND/OR MARKER

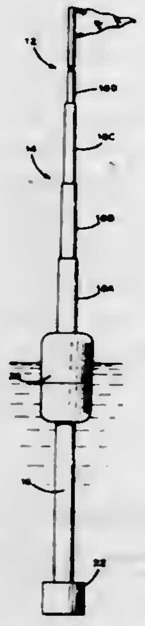
**Frederick M. Casciano, 811 Olomehani St., Honolulu, Hawaii**
**Filed Feb. 24, 1971, Ser. No. 118,330**
**Int. Cl. B63b** *5/02, 21/52*
**U.S. Cl. 9—8 R** **11 Claims**



This invention is a device for divers and especially divers in ocean work and exploration. The diver wears a container having means to accommodate one or more capsules in which is stored a flexible bag which is to be inflated. When the bag is inflated, it rises to the surface of the water and becomes a signal or a marker buoy.

### 3,760,441
### POSITION INDICATING TEMPORARY BUOY CONSISTING OF A TELESCOPIC COLLAPSIBLE POLE

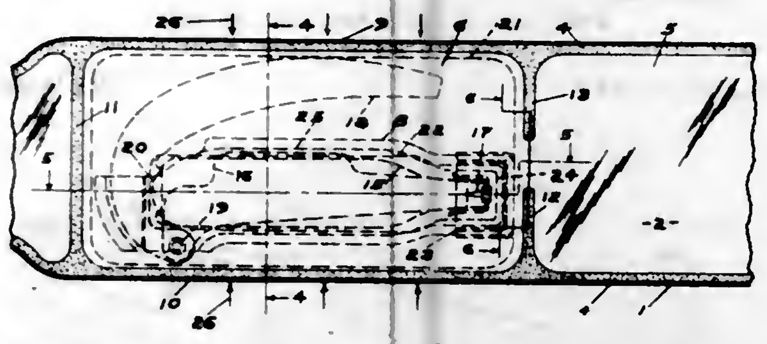
**Philip Handelman, 360 Lexington Ave., New York, N.Y.**
**Continuation-in-part of Ser. No. 123,617, March 12, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,639**
**Int. Cl. B63c** *9/00*
**U.S. Cl. 9—8 R** **2 Claims**



A telescopic extensible pole to enable the pole to serve as a temporary buoy or marker, normally collapsed to about 4 feet for minimum space storage on a sailboat, and extensible to full length of about 18 feet to be thrown overboard to mark the location of a crew member, fallen overboard from a boat, so that the boat can return directly to the location to find and pick up the fallen crew member. The extensible pole, preferably of fibre-glass telescoping sections, has an intermediate float ring, preferably light weight cork, a top pennant, and a weight at the bottom end of the pole, to hold the pole erect as a buoy when thrown into the water. The float ring is secured near the top of the outer cylindrical telescopic section to permit the lower part to be grasped by two hands to swing the collapsed pole, to generate a centrifugal force to centrifuge the telescoped sections to fully extended position against minimum friction between the sections, which is sufficient, however, to hold the sections in place against gravity, when the pole is in vertical position in the water.

### 3,760,442
### LIFE BELT

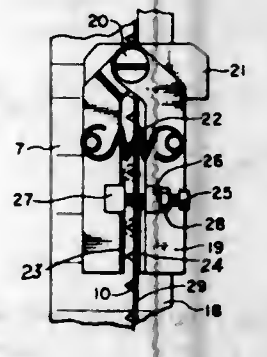
**Mariano P. Diforte, Jr., 3510 Northwind Rd., Baltimore, Md.**
**Filed Jan. 24, 1972, Ser. No. 220,035**
**Int. Cl. B63c** *9/18*
**U.S. Cl. 9—316** **3 Claims**



A life belt adapted to be worn securely about the waist of the user, having a hermetically sealed floatastructure comprising primary and secondary floatation chambers. The secondary chamber having a $CO_2$ lever actuated cartridge mounted on a blister type card in a substantially fixed position therein. The outside dimensions of the edges of the card being substantially the same as the inside dimensions of the secondary chamber as to the height and length of the chamber for purposes of maintaining the cartridge and its actuating lever and supporting card in a relatively fixed position in relation to the life belt structure. Upon squeezing the top and bottom edges of the secondary chamber the card is flexed and the lever actuated, releasing gas to the primary floatation chamber through an interconnecting passage between the chambers. As the belt is made sufficiently large to cover many sizes, the punched end is provided with means for guiding the trimming off of the belt to a given size. The belt may be made of a suitable plastic such as vinyl or the like.

### 3,760,443
### HEX-HEAD ALIGNER FOR SCREW SLOTTING MACHINES

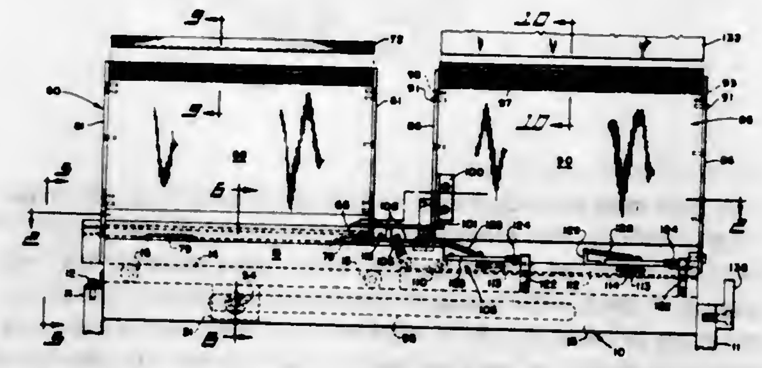
**Warren M. Jackson, 5013 Sovereign Blvd., Rockford, Ill.**
**Division of Ser. No. 836,245, June 25, 1969, Pat. No. 3,585,665. This application Apr. 6, 1971, Ser. No. 131,732**
**Int. Cl. B23g** *9/00*
**U.S. Cl. 10—6** **10 Claims**



This aligning device is designed to insure slotting the heads the long dimension from point to point diametrically of the head using opposed flats on the heads for such alignment. Two legs pivotally connected together at one end are disposed in straddling relationship to the space between the dial and a fixed slide plate in substantially tangential relationship to the dial and are spring pressed toward one another to provide sliding aligning contact of a longitudinally extending rib on one leg, first with a flat on one side of each head and later similar engagement of another rib on the inner side of the other leg with a flat on the opposite side of the head shortly before the blank arrives at the first of two spaced coplanar saw blades for the slotting of the head diametrically thereof in the turning of the dial. Means is provided for adjusting the spacing of the legs to suit different sizes of heads.

### 3,760,444
### LOOSE LEAF PAPER BINDING MACHINE

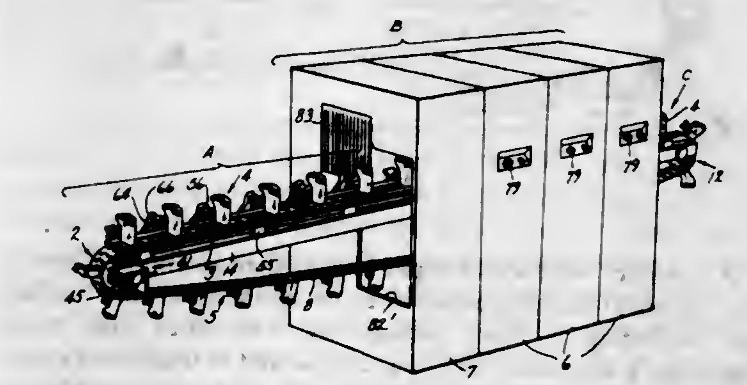
**David H. McNichol, 1325 S. Belvoir Blvd., South Euclid, Ohio**
**Filed Nov. 18, 1971, Ser. No. 199,939**
**Int. Cl. B42c** *19/00;* **B42f** *1/02*
**U.S. Cl. 11—1 R** **35 Claims**



A binding machine is provided for positioning an elongated plastic spine type binder embracingly about one edge of a loose-leaf paper stack. Such machine in the two basic embodiments disclosed includes a holder rigidly for positioning the paper stack with the binding edge thereof in precise axial alignment with the binder feed path and a spreading mechanism for separating the legs of the binder as it initially passes about the binding edge, whereby the binder may axially be drawn past the spreading mechanism to separate the legs for initial entry of the paper therebetween and then along such edge until the binder is located about and contracted against such edge substantially coincidentally with the longitudinal extent thereof.

### 3,760,445
### APPARATUS FOR PREPARING SHOES FOR A LASTING OPERATION

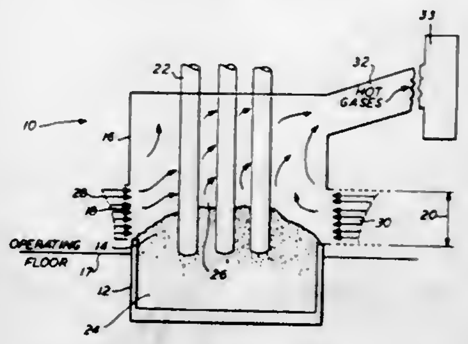
**Peter L. Stapleton; George Millar; Frank Hartshorn, and George C. Barton, all of Leicester, England, assignors to USM Corporation, Boston, Mass.**
**Filed Dec. 1, 1972, Ser. No. 311,267**
**Claims priority, application Great Britain, June 27, 1972, 29,928/72**
**Int. Cl. A43d** *9/00*
**U.S. Cl. 12—142 R** **7 Claims**



Mechanism and method for successively conditioning shoe uppers preceding their lasting. A conveyorized series of shoe carriers is moved stepwise through a shoe loading zone, a plurality of cabinets providing controlled non-drying, heated atmosphere, and a shoe unloading zone adjacent to a lasting machine, each shoe carrier pivotally supporting a last in a manner such that the weight of the last effects lengthwise pretensioning of an upper thereon to be lasted in the machine.

### 3,760,446
### GAS CURTAIN VENTILATION CONTROL FOR OPEN HOODED FERROALLOY FURNACE

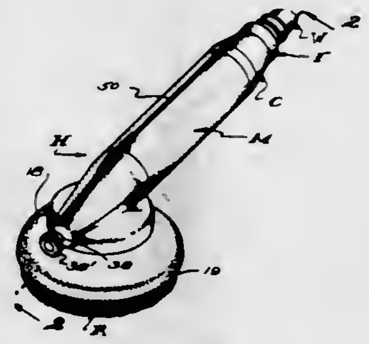
**Richard N. Payton, Youngstown, N.Y., assignor to Airco, Inc., New York, N.Y.**
**Filed Apr. 11, 1972, Ser. No. 242,985**
**Int. Cl. F27d** *17/00;* **H05b** *7/00*
**U.S. Cl. 13—9** **7 Claims**



An open electric smelting furnace system including an open top electric furnace, a hood above the furnace pot for collecting gaseous furnace products containing entrained solid particles and induced air derived from the atmosphere surrounding the furnace and admitted through the unobstructed access zone above the furnace, a solid particle collection system of limited volumetric capacity connected to the collecting hood, for cleaning the gaseous products prior to discharge into atmosphere, and means for projecting a curtain of gas partially across the unobstructed access area between the furnace pot top and hood to thereby minimize the volume of air induced into the hood from surrounding atmosphere to an amount sufficient to effect substantially complete combustion while simultaneously maintaining the flow and temperature at the collecting system below preselected limits and maintaining the volumetric flow below the allowable limit.

### 3,760,447
### FLUID DRIVEN ROTARY HAND TOOL

**Lee E. Vivion, 58 E. 55th St., Long Beach, Calif.**
**Filed Sept. 15, 1971, Ser. No. 180,791**
**Int. Cl. A46b** *13/06*
**U.S. Cl. 15—29** **10 Claims**



A fluid pressure driven rotary hand tool comprising an elongate helicoidal fluid motor within a manually engageable barrel, fluid inlet means at one end of the barrel and having fluid supply coupling means, a housing at the other end of the barrel with a chamber communicating with the discharge end of the motor, an outlet opening in the housing on an axis angularly related to the motor, a rotary work engaging member at the exterior of the housing in axial alignment with the outlet, power transmitting shafts in the housing related to the motor and the member and manually adjustable reduction gear means related to said shafts, said structure including chemical dispensing means related to the motor to meter and dispense chemicals into the motive fluid flowing through the motor, chamber and outlet opening.

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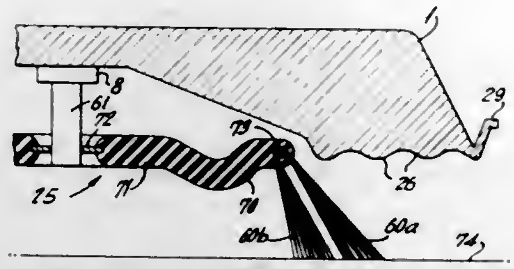
### 3,760,448
### ROTATABLE CLEANING BRUSHES

**John Scott, Pinner, England, and Russell Edward Winn, Kilbrittain Castle, Ireland, assignors to Esso Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 55,153, July 15, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,200**

**Int. Cl. A46b** *7/08*

**U.S. Cl. 15—180** **9 Claims**



A brush for use in cleaning the hull of a ship, comprising circulary arranged substantially metal bristles located at or near the brush periphery. The bristles are sufficiently stiff so that when the brush is in use the ends of the bristles will be inclined to the surface to be cleaned. The brush is mounted for rotation and has a certain amount of flexibility such that when the brush is pressed against the surface to be cleaned the mounting will deflect so that the bristles will slice the material to be removed. A plurality of holes may be provided in the mounting to create a water flow that will facilitate keeping the bristles free of fouling matter and debris.

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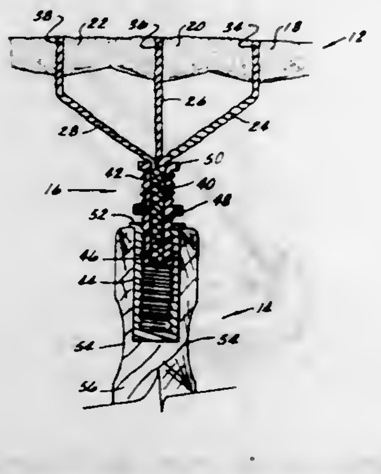
### 3,760,449
### BRUSH

**Alta S. Swanson, 1975 McLean Blvd., N.W., Wichita, Kans.**

**Filed Dec. 27, 1971, Ser. No. 211,947**

**Int. Cl. A46b** *15/00*

**U.S. Cl. 15—206** **2 Claims**



**A brush structure includes a handle mounting cleaning elements attached to the handle by a single shank. Preferably the brush structure has elongated and substantially axially parallel cleaning elements each having a single shank which is joined to a main shank and which is mountable with the handle.**

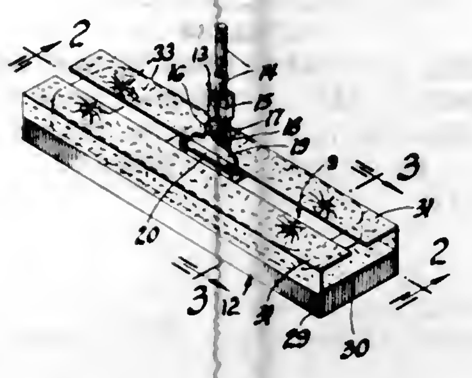
### 3,760,450
### DUST MOP WITH THROW AWAY MOPPING ELEMENT

**Dana K. Griffin, 24714 Madison Ct., Apt. 296, Farmington, Mich., and John R. Wilson, 3203 E. Bradford Dr., Birmingham, Mich.**

**Filed Jan. 10, 1972, Ser. No. 216,356**

**Int. Cl. A47l** *13/255, 13/46*

**U.S. Cl. 15—229 B** **2 Claims**



A dust mop provided with a throwaway mop head. The dust mop includes an elongated carrier member to which is swivelly mounted a mop handle. The carrier member includes an upper rigid portion and a lower cushion portion. A disposable mop head is mounted against the lower cushion portion and it includes a mop element made from an absorbent material and which is attached to a non-woven fiber cloth backing material that is folded upwardly and over the carrier member upper rigid portion and secured thereto by releasable retainer means.

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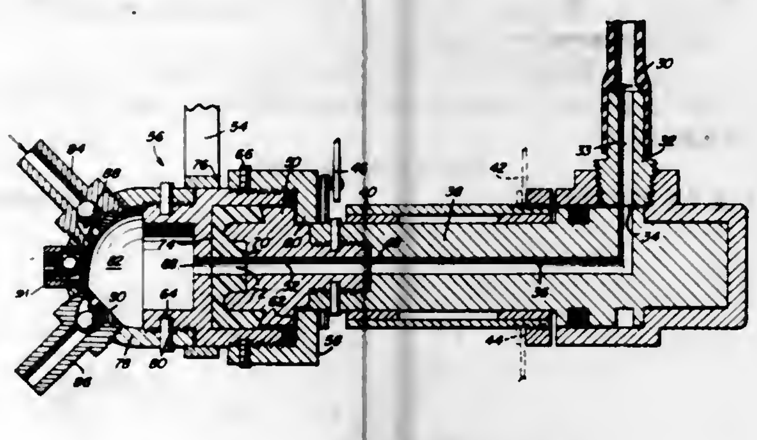
### 3,760,451
### COMBINATION WINDSHIELD WIPER AND WASHER

**Marvin D. Steed, 2530 Adams Ave., S.W., Camden, Ark.**

**Filed Nov. 30, 1971, Ser. No. 203,153**

**Int. Cl. B60s** *1/60*

**U.S. Cl. 15—250.02** **13 Claims**



A compact windshield wiper and washer assembly comprising a support bushing adapted to be mounted in said bushing and including a fluid passageway with inlet and outlet openings, a stationary chamber connected to water and detergent sources and communicating with said inlet opening by way of a rotatable seal, the outlet opening in said shaft communicating with a wiper arm dispensing tube with spray holes for squirting the liquid over the associated windshield area.

### 3,760,452
### WINDSHIELD WIPER MOUNTING ARM CONSTRUCTION FOR MOTOR VEHICLES

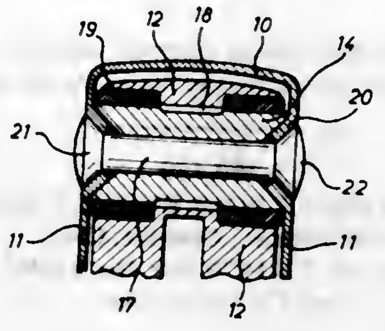
**Reinhard Edele, Bietigheim-Metterzimmern, Germany, assignor to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany**

**Filed Aug. 27, 1971, Ser. No. 175,544**

**Claims priority, application Germany, Oct. 24, 1970, P 20 52 354.0**

**Int. Cl. B60s** *1/34*

**U.S. Cl. 15—250.35** **1 Claim**



A windshield wiper arm includes a headpiece with a receiving bore which is adapted to be positioned over the wiper bearing and to be rotatably engaged therewith. A hinge part is pivotally connected to the outer end of the headpiece by means of a hinge rivet construction and the hinge part is urged in a direction toward the windshield by a pressure spring which extends from a wiper arm rod portion under the hinge part to a fixed bolt on the headpiece and below the hinge rivet. The hinge part includes inwardly tapering frustoconcial bearing flange recesses which include walls engaged around the heads at the respective opposite ends of the hinge rivet. The rivet has a shank portion which passes through openings at the inner end of the recesses. The frusto-conical bearing flanges, which are inclined in respect to the longitudinal pivot axis of the rivet, are locked between inclined surfaces of a bearing bush which is attached to the hinge rivet and which rotates in surrounding bushes carried in the headpiece.

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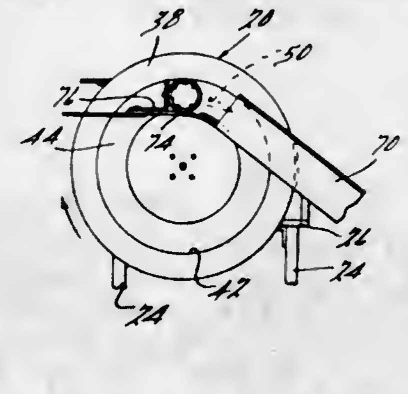
### 3,760,453
### CONTAINER TRANSFER MECHANISM

**John W. Neumann, Birmingham, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.**

**Filed Apr. 23, 1971, Ser. No. 136,723**

**Int. Cl. B65g** *47/91*

**U.S. Cl. 15—304** **9 Claims**



An apparatus for handling workpieces and particularly cup-shaped articles, such as containers or the like, which travel at spaced intervals at high speed along a processing path. The transfer mechanism includes a movable member interposed in the path of travel of the workpieces and is movable laterally thereof for transferring the intercepted workpieces to an alternate path in which they may undergo additional processing. The movable member of the transfer device includes cushioning means thereon for decelerating and absorbing the momentum of the workpieces impacting thereagainst and further includes suction means for releasably retaining the workpieces in transporting engagement on the movable member for at least a portion of their lateral transfer movement.

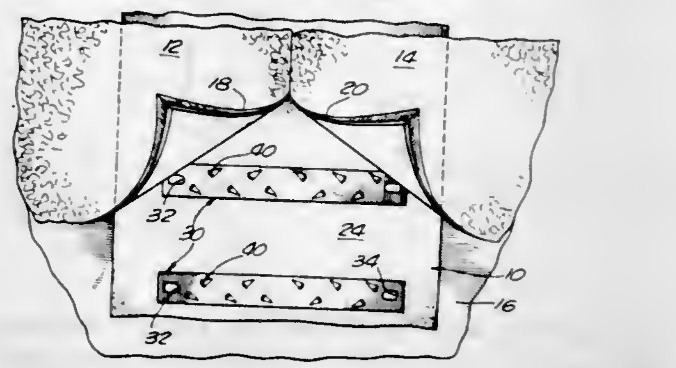
### 3,760,454
### SEAMING TAPE FOR FLOOR AND GROUND COVERINGS

**Paul H. Heinzel, 18830 E. Leadora, Glendora, and Alexander Winkler, 5507 Simpson Ave., North Hollywood, both of Calif.**

**Filed Apr. 22, 1971, Ser. No. 136,418**

**Int. Cl. A47g** *27/04*

**U.S. Cl. 16—16** **7 Claims**



A seaming tape for floor or ground coverings formed from a single lamination of backing material which may be a thin metal foil. Attached to the backing material and spaced along it at intervals are cleats directly clamped to the backing without scrim or adhesive. The cleats have upwardly extending prongs formed from cutouts in the material of the cleats and the prongs on opposite sides of a midpoint of a cleat being bent inwardly and being adapted to directly engage with and securely hold and clamp adjacent edges of a covering to be seamed.

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### 3,760,455
### DOOR CHECK

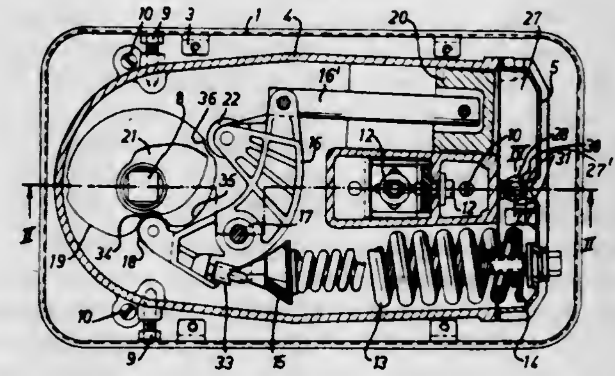
**Pierre Rene Berry, and Roman Fernandez, both of Chalon-sur-Saone, France, assignors to Societe d'Etudes Verrieres Appliquees, Neuilly-sur-Seine, France**

**Filed June 3, 1970, Ser. No. 43,613**

**Claims priority, application France, June 4, 1969, 6918375**

**Int. Cl. E05f** *3/10*

**U.S. Cl. 16—53** **1 Claim**



A door check includes a cam coupled to the door and having opposite profiles against which a follower on one end of a lever is stressed by a spring, the other end of the lever actuating a damping cylinder. Particular shapes for the cam and for the orifice for escape from the cylinder are shown.

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### 3,760,456
### FOLDING GAME BOARD HINGE ASSEMBLY

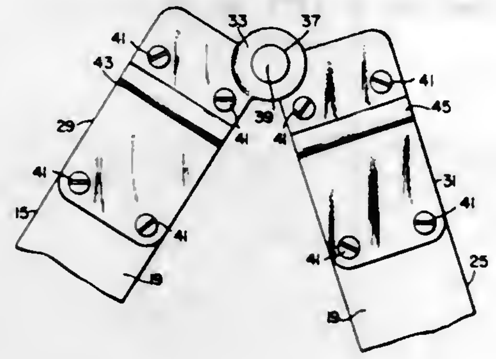
**Morris Mark, 4147 Mantova Dr., Los Angeles, Calif.**

**Filed July 31, 1972, Ser. No. 276,829**

**Int. Cl. E05d** *11/10;* **A63b** *61/02*

**U.S. Cl. 16—137** **10 Claims**

An assembly located at opposite sides of a folding game board or table for allowing the table to be folded along an axis and for supporting a net stretched therebetween, each of the assemblies including table edge mounted hinge plates, each plate having a socket portion adapted to receive different ones of a pair of spaced downwardly extending arms of a net support and hinge locking member, the member including an upstanding net supporting rod portion, the hinge plates being locked in an open or playing position when the arms of the net support and hinge locking member are positioned in the hinge plate sockets.

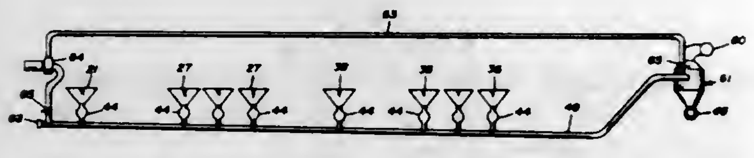


### 3,760,457
### EVISCERATE WASTE HANDLING SYSTEM

**Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.**

**Filed Nov. 26, 1971, Ser. No. 202,203**
**Int. Cl. A22b** ***3/08***

**U.S. Cl. 17—11** **10 Claims**



A system for handling eviscerate wastes removed during processing from animal food products, such as poultry. A plurality of handling hoppers are arranged in a processing line in which various parts of the poultry are removed. Each hopper in the line includes a system for periodically flushing the sides of the hopper with water. A continuous suction line is common to all of the hoppers and individually attached to the bottom of each one through a suction valve. The valve comprises a flexible synthetic sleeve having the center thereof normally pinched to a generally closed configuration, except for a pair of small apertures which allow passage of some air and liquid into the suction manifold at all times. When the hopper bottom contains a substantial amount of eviscerate material, the apertures are covered and the suction action from the manifold combined with gravity causes the pinched sleeve to open so that the eviscerate material is drawn down into the vacuum disposal system to be collected at a central reservoir.

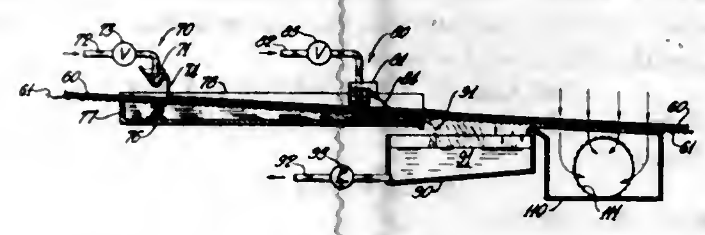
### 3,760,458
### METHOD AND MEANS FOR STRAND FILAMENT DISPERSAL

**Richard E. Pitt, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Continuation of Ser. No. 869,951, Oct. 27, 1969, abandoned, which is a continuation of Ser. No. 531,992, March 4, 1966, abandoned. This application Nov. 22, 1971, Ser. No. 201,002**
**Int. Cl. D01d** ***11/02***

**U.S. Cl. 19—66 T** **13 Claims**

A method and means for the production of fibrous strand mats by collecting multi-filament strands in mat-like form, flooding the mat with a liquid to overcome forces holding filaments together in a strand, retaining the mat in the flooded condition for a predetermined interval, and removing excess liquid from the collection after the filaments are dispersed.

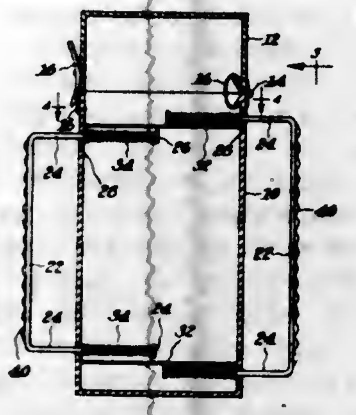


### 3,760,459
### LOSS-PROOF POCKET SIZE CASE

**Joseph T. Miles, 1436 18th St., Oroville, Calif.**

**Filed Oct. 22, 1970, Ser. No. 82,903**
**Int. Cl. A44b** ***21/00***

**U.S. Cl. 24—3 H** **3 Claims**



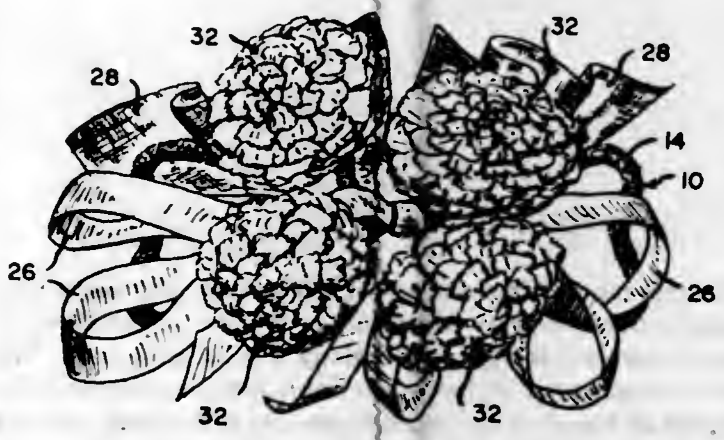
A generally flat hollow case with a hinged cap is provided with squeeze type means which expands when not squeezed whereby when the cap is in a pocket the clip will expand to wedge the cap into the pocket whereby it cannot be accidentally dislodged.

### 3,760,460
### FLOWER CORSAGE FRAME

**Robert Gale Myers, 955 W. Ohio Ave., Sebring, Ohio**

**Filed May 4, 1972, Ser. No. 250,387**
**Int. Cl. A45f** ***5/08***

**U.S. Cl. 24—5** **2 Claims**



A corsage frame having a continuous wire forming a loop with a neck having a plurality of protruding ends. A ribbon and a swatch of cloth material are attached to the neck. Flowers are then inserted onto the protruding ends of the wire material.

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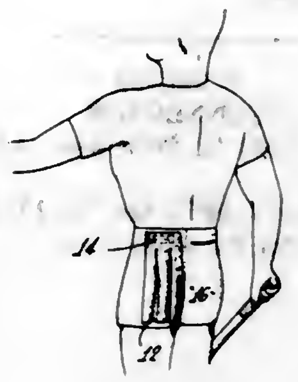
### 3,760,461
### TOWEL ATTACHMENT

**John R. Wright, 5544 San Patricia Dr., Santa Barbara, Calif.**

**Filed Feb. 23, 1972, Ser. No. 228,608**
**Int. Cl. A44b** ***21/00***

**U.S. Cl. 24—7** **2 Claims**



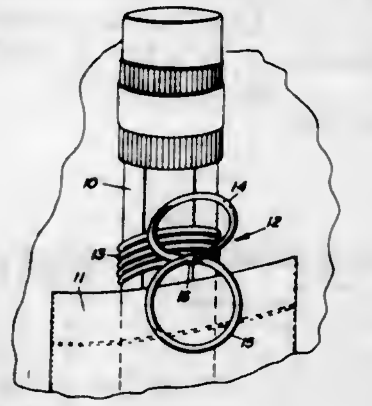
A towel or other absorbent cloth is provided at one end thereof with a strip having gripping means for quick attachment to, and easy disengagement from, a receiving strip accommodated on an article of clothing.

### 3,760,462
### POCKET CLIP FOR PENCILS OR THE LIKE FORMED FROM A WIRE COIL

**Calvin Eugene Osborne, Rt. 6, Cookeville, Tenn.**

**Filed Jan. 25, 1972, Ser. No. 220,614**
**Int. Cl. B43k** ***25/00***

**U.S. Cl. 24—11 C** **6 Claims**



A pocket clip for pencils, or similar articles, is formed from a helical coil of spring wire by twisting two or more end turns of the coil about a common location on the helix so that they comprise respective actuator and clipping elements when the main portion of the helix is positioned on the pencil body.

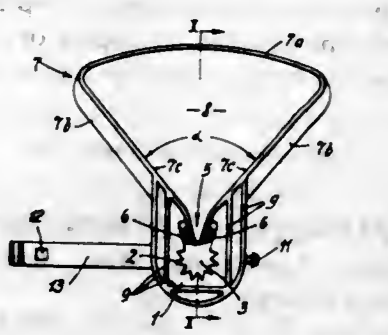
### 3,760,463
### DEVICE FOR CLOSING FILLED SACKS AND BAGS

**Walter Schneider, 8135 Langnau am Abis, Zurich, Switzerland**

**Filed Mar. 13, 1972, Ser. No. 234,148**
**Claims priority, application Switzerland, July 8, 1971, 10035/71**
**Int. Cl. B65d** ***77/10***

**U.S. Cl. 24—30.5** **3 Claims**

A device for closing filled sacks and bags, such as refuse sacks, has a flat clamping plate with an opening to accommodate the gathered or twisted neck of the sack and accessible from the outside via resiliently spreadable gap in the plate.



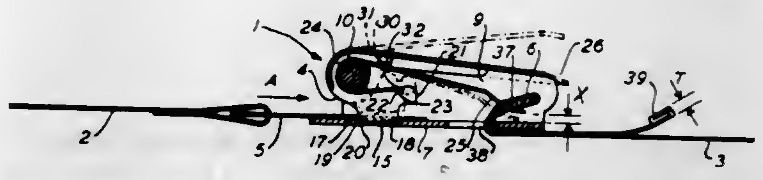
A carrying grip is formed by the web of a stirrup and two legs of the latter converge towards the sides of the grip in the direction of the plate.

### 3,760,464
### SAFETY BUCKLE

**Nori Higuchi, Flushing, N.Y., assignor to Davis Aircraft Products Company, Inc., Northport, Conn.**

**Filed Jan. 2, 1970, Ser. No. 49**
**Int. Cl. A44b** ***11/25***

**U.S. Cl. 24—77 R** **2 Claims**



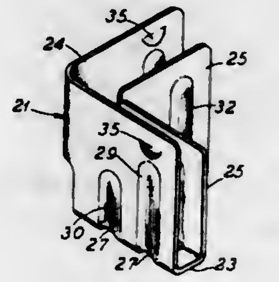
A buckle for safety belts including latch means for releasably connecting the buckle to a first webbing, adjustment means for adjustably securing the buckle to a second webbing thereby allowing the webbing to be cinched, and spring means which cooperates with both the latch and adjustment means. The spring means cooperates with the latch means to spring bias the latch means so as to releasably secure an end plate of the first webbing to the buckle. The spring means cooperates with the adjustment means so as to releasably secure it to the buckle. In a modified embodiment of the present invention, the spring means is replaced by a diverse functional member which, firstly, cooperates with the adjustment means so as to releasably secure it to the buckle, secondly, functions as an ejector device to positively eject the end plate of the first webbing from the buckle when the end plate is unlatched, thirdly, prevents inadvertent movement and rattle of the end plate of the first webbing when the latter is in its latched position, and fourthly, supports the latch lever.

### 3,760,465
### BOX AND CORNER CLAMP RETAINING BOX TO FORM

**Francis P. Brennan, 1057 Rolling Drive, Lisle, Ill.**

**Filed Mar. 30, 1971, Ser. No. 129,452**
**Int. Cl. A44b** ***21/00***

**U.S. Cl. 24—81 BF** **3 Claims**



Heavy-duty box formed by corner clamps fitting along the corners of a folded box blank and locked thereto, to lock the side walls into a rectangular tray-like form without stapling or stitching. A set of four corner clamps is provided for a bottom tray of the box. A rectangular sleeve may fit into the bottom tray. A set of four corner clamps forms a top tray of the box closing the sleeve when loaded. Strapping or other fastening means may retain the trays and sleeve into a closed box-like form.

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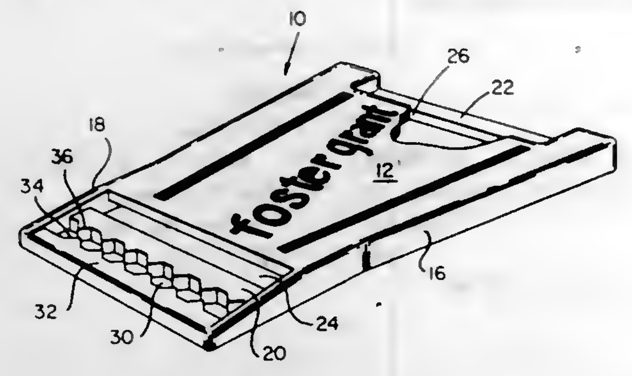
### 3,760,466
### STRAP LENGTH ADJUSTMENT DEVICE

**Conrad L. Leblanc, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.**

**Filed Aug. 14, 1972, Ser. No. 280,298**

**Int. Cl. A61f** *9/02;* **A44b** *11/00*

**U.S. Cl. 24—200** **2 Claims**



A one-piece integrally molded plastic strap length adjusting device for threading on the head strap of a pair of sport goggles. The device has a pair of easily threadable openings on either side of a cover plate and another opening with gripping means to receive and hold the end of the doubled back strap in its correctly adjusted position.

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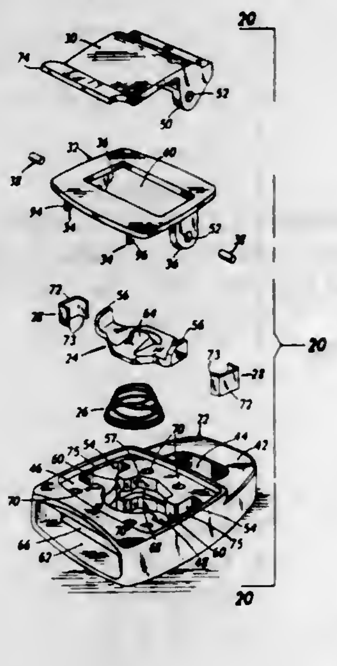
### 3,760,467
### SAFETY BELT BUCKLE

**Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 113,867, Feb. 8, 1971. This application June 8, 1971, Ser. No. 151,039**

**Int. Cl. A44b** *19/00*

**U.S. Cl. 24—230 AL** **14 Claims**



A seat belt buckle which can be readily assembled by serially arranging its component parts in an open-faced buckle housing, then pressing a cover plate into locking engagement with the buckle housing to complete the assembly. An apertured tongue inserted into a slot in the buckle housing depresses a biased latching member having a wedge shaped latch until said latch coincides with the aperture and is urged into it by the biasing means, thus locking the tongue in place. Release of the tongue is achieved by means of a manually actuated member which depresses the latching member freeing the tongue for withdrawal.

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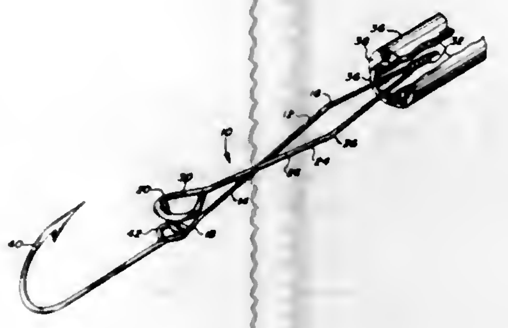
### 3,760,468
### CONNECTOR

**Creath W. Linville, 3601 N. Fifth Ave., Apt. 211, Phoenix, Ariz.**

**Filed Mar. 9, 1972, Ser. No. 233,161**

**Int. Cl. A44b** *21/00*

**U.S. Cl. 24—261 C** **4 Claims**



A connector includes a loop and a locking member disposed generally perpendicular to the plane of the loop with a portion of the locking member disposed within and biased against the loop.

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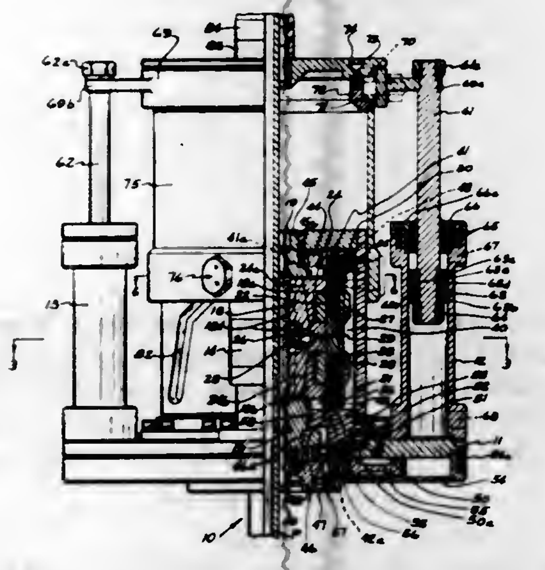
### 3,760,469
### AUTOMATED PIPE-HANDLING SLIPS

**Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.**

**Filed Dec. 9, 1971, Ser. No. 206,259**

**Int. Cl. F16l** *7/00*

**U.S. Cl. 24—263 DQ** **38 Claims**



A power drive is employed to move wedge shaped slip members radially into gripping engagement with a pipe which extends axially through a slip assembly. Friction teeth on the slip members engage the pipe and subsequent axial movement of the pipe pulls the slips against inclined seating surfaces to increase the grip on the pipe. A power drive acting through the slip assembly is also provided for rotating the gripped pipe.

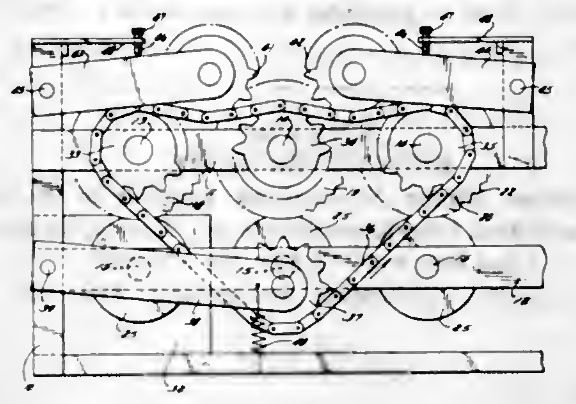
### 3,760,470
### APPARATUS AND METHOD FOR PRODUCING EXPANDED METAL

**Robert M. Felsenthal, Westport, Conn., assignor to Exmet Corporation, Bridgeport, Conn.**

**Filed Feb. 8, 1971, Ser. No. 113,402**

**Int. Cl. B21d** *31/04*

**U.S. Cl. 29—6.1** **8 Claims**



An elongated metal sheet is continuously advanced in a longitudinal direction past a plurality of toothed cutting and deforming wheels rotated about axes perpendicular to the direction of sheet advancement. The teeth of each wheel both shear and deform the sheet, to produce a line of spaced apart openings. The wheels are staggered laterally, to produce laterally spaced apart lines of openings in the sheet. Each wheel is one half tooth pitch out of phase with the wheels immediately preceding and succeeding it, so that each opening in the sheet is located between two successive openings in an adjacent line. The wheels are rotated by a transmission including a sprocket rotatable with each wheel and a chain meshing with all the sprockets. An idler sprocket adjustable toward and away from the plane containing the axes of rotation of the wheels, and meshing with the chain between each two successive sprockets, permits the phase relationship between each two successive wheels to be adjusted without affecting the phase relationship between any other pair of successive wheels. Two sets of wheels may be provided to produce two longitudinally extending areas in the sheet, furnished with openings, separated by a longitudinally extending imperforate area.

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### 3,760,471
### METHOD OF MAKING AN ELECTROMECHANICAL FILTER

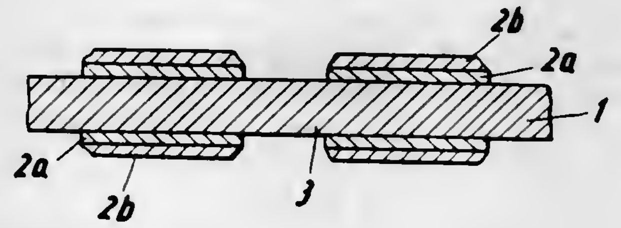
**Manfred Borner, Sylvanerweg 4, 79 Ulm, Germany**

**Continuation of Ser. No. 754,583, Aug. 22, 1968, abandoned. This application Oct. 26, 1971, Ser. No. 192,330**

**Claims priority, application Germany, Aug. 26, 1967, P 15 66 009.0**

**Int. Cl. B01j** *17/00;* **H04r** *17/00*

**U.S. Cl. 29—25.35** **7 Claims**



A method of making an electromechanical filter of the type having a plate-shaped crystal and a plurality of metal coatings arranged on portions of the major surfaces of the crystal. The metal coatings are produced by applying first layers of metal, having accurately determined boundaries, to the major surfaces of the crystal and then applying additional overlays of metal to the surface or surfaces of the first layers in such quantity that the resonant frequency of the filter will equal a desired frequency.

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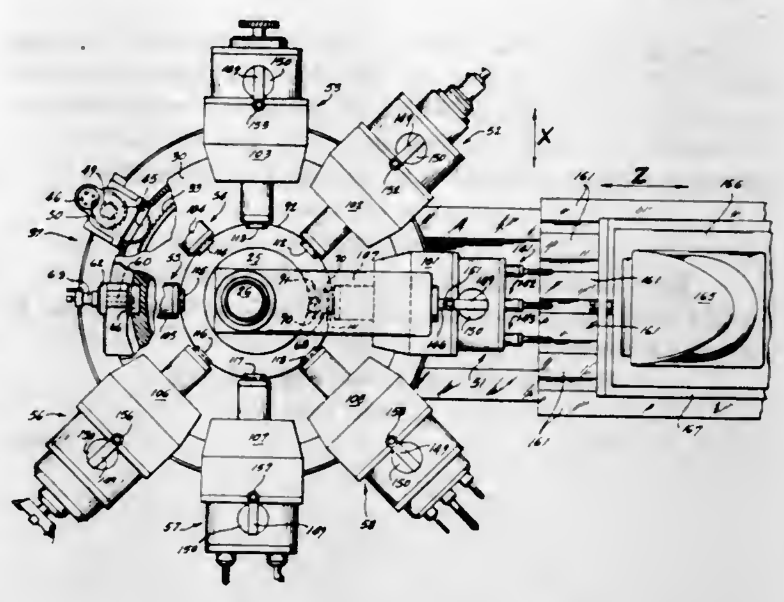
### 3,760,472
### SPINDLE CHANGE MECHANISM FOR A MULTIPLE SPINDLE HEAD MACHINE

**Ervin J. Kielma, and Albin J. Schabowski, both of Milwaukee, Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.**

**Filed Feb. 17, 1972, Ser. No. 227,108**

**Int. Cl. B23b** *7/04*

**U.S. Cl. 29—40** **21 Claims**



This invention relates to a spindle changer mechanism adapted to selectively interchange a plurality of spindle heads between a single power receiving operating station and a spaced apart storage station. Each spindle head is provided with a single rotatable, power receiving input driver continuously engaged at one end to drive a plurality of tool spindles journalled in a preset group in the associated spindle head. To accomplish this, each preset spindle head and its associated input driver is radially secured to a common index table for indexable positioning about a central column defining a single operating station. To provide an operating station, a single power driven output driver is horizontally journalled in the column in parallelism above the indexable table carrying the multiple spindle heads respectively presenting the coacting radial input drivers. To transmit power, the output driver in the column is provided with a transverse output key indexably positionable therewith into spaced parallelism with the indexable multiple spindle head table. Upon such positioning, the rotatable output drive key is moved into parallel alignment with the opposite ends of a continuous positioning key encircling the central column. Prior to effecting a spindle head interchange, an input keyway presented by the input driver then in the operating station is indexably positioned in parallel alignment with the spaced apart input keyways of the respective input drivers then engaging the continuous positioning key encircling the column. Coded identifying means are associated with each of the indexable spindle heads for identifying a preselected stored spindle head that is to be interchanged with the spindle head then operatively engaged in the operating station.

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### 3,760,473
### PLIERS WITH CUTTING SURFACES

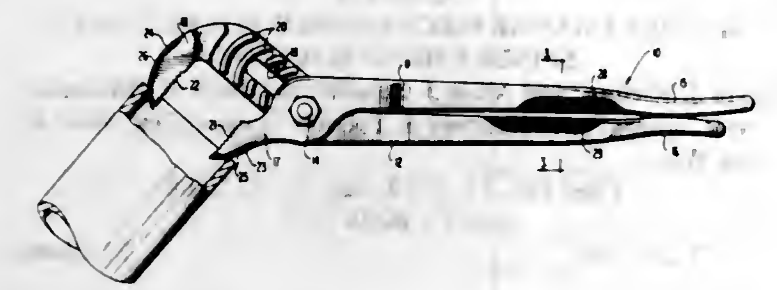
**James T. Studdard, 232 Dorris Dr., Marietta, Ga.**

**Filed Nov. 5, 1971, Ser. No. 195,938**

**Int. Cl. B23d** *71/00*

**U.S. Cl. 29—78** **6 Claims**

Pliers which include cutting surfaces on the convex, rounded outer portions of its jaws and in facing elongated concave grooves of its handles. The cutting surfaces of the jaws are file teeth in one embodiment of the invention and reaming blades or edges in the other embodiment of the invention. The jaws are adjustable with respect to each other to enlarge the space between the jaws and the distance between the file teeth or reaming edges of the jaws so that the jaws can be enlarged or reduced in size to fit into the open end of a pipe and rotated to cut away the rough end edges of the pipe. The file teeth of the handles are urged against the outer end surfaces of the open end of pipe to file away the rough edges of the pipe.



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3,760,474

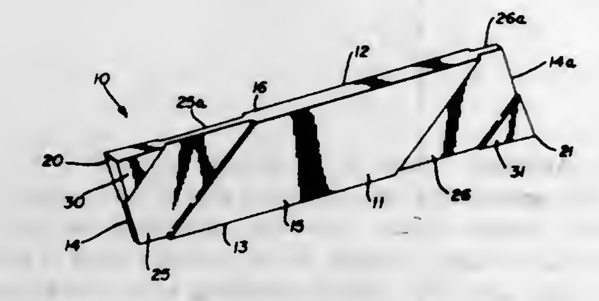
### REVERSIBLE BLADE-LIKE CUTOFF TOOL

**William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio**

**Filed Nov. 4, 1971, Ser. No. 195,560**

**Int. Cl. B26d** *1/00*

**U.S. Cl. 29—95 R** **6 Claims**



A blade-like cutoff insert blank that consists of a thin, flat unitary body portion that is of rhomboidal configuration in side elevation in the preferred form. The opposed sides of the blade are provided with diagonally extending undercut areas that define triangular cutting edges, with the undercut areas permitting grinding of the requisite side clearance on the cutting edges. The use of the rhomboidal configuration automatically builds in the requisite front clearance angles and eliminates the need for individually grinding the same.

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3,760,475

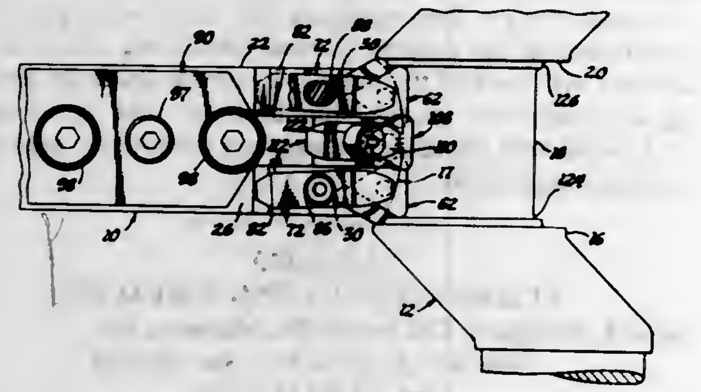
### CUTTING TOOL ASSEMBLY

**Patrick J. Gleason, Lum, Mich., assignor to Lumco Manufacturing Company, Lum, Mich.**

**Filed Aug. 14, 1972, Ser. No. 280,600**

**Int. Cl. B26d** *1/00*

**U.S. Cl. 29—97** **10 Claims**



A cutting tool assembly comprising a cutter body which mounts at each of its opposite sides on one end and at the proper cutting angles a relatively narrow rectangular shaped cutter blade and a triangular shaped cutter blade. These cutter blades are maintained in an operative position in engagement with each other by a clamping element that is releasably joined to the cutter body at an angle that is related to the cutter cutting angles. Support and locking provisions further facilitate maintaining this operative position. Between these cutter blades a holder for another cutter blade is supported on the cutter body. This latter cutter blade and the triangular shaped blades are aligned along with the rectangular shaped cutter blades so as to machine a plural surface profile on a work piece.

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3,760,476

### END CUTTER HEAD

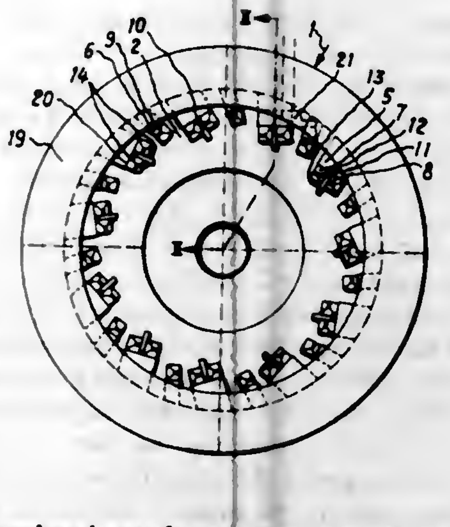
**Erich Kotthaus, Kloten, Switzerland, assignor to Werkzeugmaschinenfabrik Oberlikon-Buhrle AG, Zurich, Switzerland**

**Filed Feb. 8, 1972, Ser. No. 224,486**

**Claims priority, application Switzerland, Feb. 12, 1971, 2135/71**

**Int. Cl. B26d**

**U.S. Cl. 29—105 A** **1 Claim**



An end cutter head, e.g. for gear cutting machines, comprising bar tool bits two of which are located together in a common tool receiving slot of the cutter head, and a spacing shim interposed in the cutting direction between the said two bar tool bits.

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3,760,477

### ROLLER-TYPE PRESS

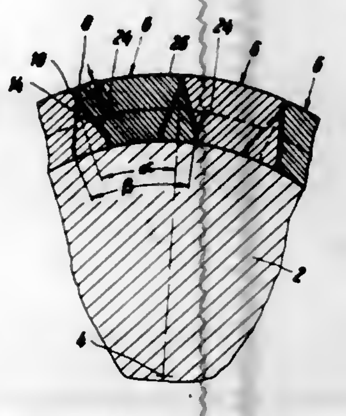
**Friedhelm Koch, Hattingen-Blankenstein, Germany, assignor to Maschinenfabrik Koppern & Co. KG, Hattingen/Ruhr, Germany**

**Filed Nov. 10, 1971, Ser. No. 197,270**

**Claims priority, application Germany, Nov. 10, 1970, P 20 55 147.7**

**Int. Cl. B21b** *27/02*

**U.S. Cl. 29—124** **12 Claims**



A roller-type press including rollers having a roller core on which segments are secured to form a complete annulus. Each of the segments are provided at their longitudinal edges with supporting projections and recesses arranged therebetween to receive the supporting projections of adjacent segments. The segments may be fixed to the roller core by means of bolts, screws or cooled shrunk rings overlapping projections on each of the segments.

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3,760,478

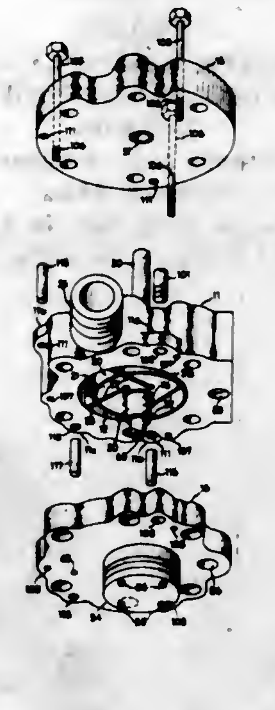
### METHOD FOR ASSEMBLING A ROTARY SLIDING VANE COMPRESSOR

**Lester E. Harlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.**

**Filed Oct. 4, 1971, Ser. No. 185,994**

**Int. Cl. B23p** *15/00*

**U.S. Cl. 29—156.4 R** **8 Claims**



An optimum clearance is established at the contact point of the compressor's rotor and cylinder, within which cylinder the rotor is eccentrically rotated to provide a crescent-shaped compression chamber, to minimize friction at that point while at the same time minimizing leakage therethrough from the high to the low pressure side of the compression chamber. This is achieved by initially coating the rotor's cylindrical surface with a self-lubricating material, such as TEFLON. Thereafter, when assembling the compressor, the cylinder is pivoted relative to the rear bearing plate until it engages the rotor and provides a contact point with zero clearance. To maintain this precise alignment, holes are then drilled and reamed through the front plate and into the cylinder and through the cylinder and into the rear plate, after which dowel pins are driven into the holes. When the compressor subsequently operates in its intended environment and under normal operating conditions, thermal diferentials between the rotor and cylinder may cause expansion of at least one of those elements as a result of which the self-lubricating material wears until a desired very close sealing fit, with minimum friction, is established at the contact point thereby optimizing the clearance thereat.

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3,760,479

### METHOD OF FABRICATING A VENTURI IN THE PASSAGE OF A TUBE

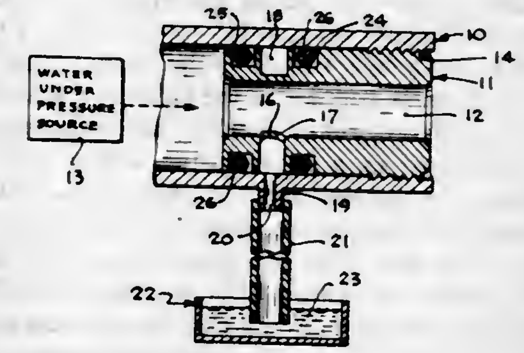
**Frank A. Simmons, Hato Rey, P.R., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.**

**Filed Mar. 17, 1971, Ser. No. 125,129**

**Int. Cl. B23p** *17/00*

**U.S. Cl. 29—157 C** **6 Claims**

A Venturi is formed in a portion of the passage of a metal tube by drilling an opening in the downstream part of the tube wall at that portion and deforming the metal at the upstream part of the wall inwardly by a cold flow of the metal so as to define a step in that portion with the opening at the downstream end of that step.



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3,760,480

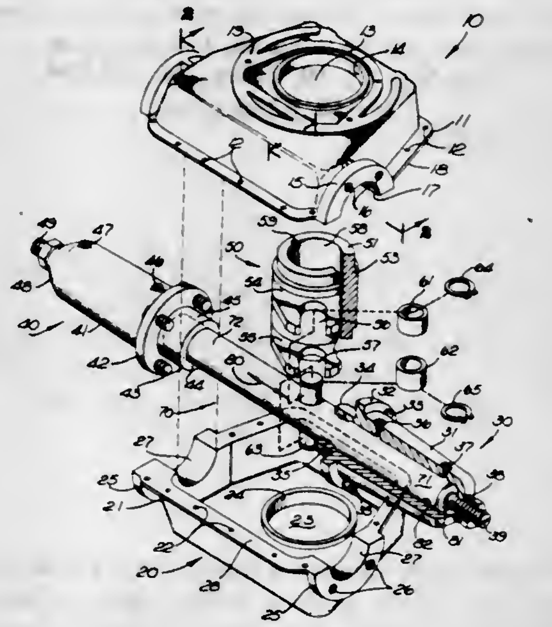
### VALVE OPERATOR AND METHOD OF MAKING THE SAME

**Willem E. Tupker, Sepulveda, Calif., assignor to Ledeen Flow Control Systems, Inc., Oakland, Calif.**

**Division of Ser. No. 819,231, April 25, 1969, Pat. No. 3,570,373. This application Feb. 16, 1971, Ser. No. 116,720**

**Int. Cl. B23p** *15/00*

**U.S. Cl. 29—157.1 R** **3 Claims**



The valve operator disclosed includes a housing constructed of substantially identical housing halves joined together at mating surfaces. Cylinder means is secured to the housing and bridges the housing halves.

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3,760,481

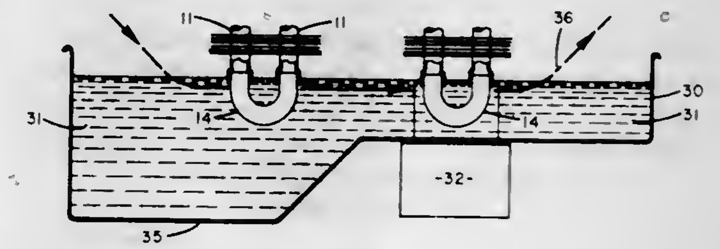
### METHOD OF MAKING SOLDERED JOINTS

**James E. Greever, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.**

**Filed Aug. 8, 1972, Ser. No. 278,846**

**Int. Cl. B21d** *53/02;* **B23p** *15/26*

**U.S. Cl. 29—157.3 R** **12 Claims**



A process for making a soldered joint between two members, one of which may comprise aluminum. The ends of the members to be joined are formed with sufficient clearance so that they can easily be telescoped, but preferably so that telescoping of the members forms a tight fit at a tapered neck to temporarily, frictionally retain the members in assembled relation. Prior to telescoping, either one or both of the members is coated with a layer of zinc solder so that after telescoping a layer of solder is disposed in the clearance space between the members in the region of overlap. The members are then partially submerged in a molten zinc solder bath and ultrasonic energy is applied only to the molten solder. The solder between the members is heated to its melting temperature which causes it to flow and break the surface tension at the interface with the solder bath so that solder from the solder bath flows into and completely fills the clearance space between the joint members. The ultrasonic energy can then penetrate into the region between the two members to clean the surfaces of the members without any direct contact between the ultrasonic transducer and the members being joined. When the members are withdrawn from the molten solder, the solder solidifies between them to form a permanent joint. The porcess is especially adapted for joining return bends of multi-row heat exchangers because the ends of the heat exchangers can be moved through the molten solder bath without direct contact with the ultrasonic transducers.

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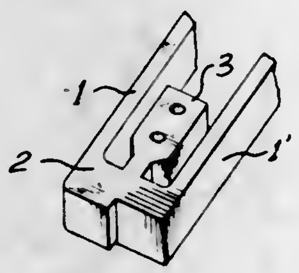
### 3,760,482
### METHOD OF ADJUSTING FREQUENCY OF TUNING FORK TYPE VIBRATOR

**Yoshikazu Kawamura, Simosuwa-machi, Japan, assignor to Kabushiki Kaisha Suwa Sukosha, Tokyo, Japan**
**Filed May 18, 1972, Ser. No. 254,599**
**Int. Cl. B29d** *17/00*
**U.S. Cl. 29—169.5** **3 Claims**



A tuning fork type vibrator is formed with a root portion not more than three times as thick as the region of the tines adjacent said root portion. Frequency balance is achieved by cutting off portions of the root portion in the region adjacent the tine having the higher frequency. The frequency of the vibrator as a whole is adjusted by cutting off symmetrical portions of said root portion.

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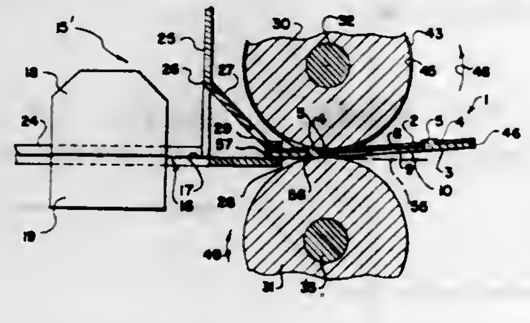
### 3,760,483
### MOUNT SEALING APPARATUS

**Gordon P. Brown, 36 Solmar Dr., Rochester, N.Y.**
**Filed Nov. 10, 1971, Ser. No. 197,427**
**Int. Cl. B23p** *19/00, 11/00*
**U.S. Cl. 29—200 B** **9 Claims**



Apparatus for sealing a mount for an information bearing medium, is adapted for use with a mount blank of the kind provided with (a) first and second mount sections constructed to be arranged in overlying relation, (b) several openings in the first mount section and (c) several pins projecting from the second mount section and constructed to respectively extend through the several openings upon arranging the first and second mount sections in overlying relation. The apparatus includes a mount folding assembly for arranging the first and second sections of such a mount blank in overlying relation so that the several pins respectively extend through the several openings. Moreover, a roller member and a mount back-up member of the apparatus are supported in spaced opposed relation for enabling the first and second overlying mount sections to be moved therebetween in a manner such that the second mount section will be disposed in abutment against the mount back-up member and the several pins will be deformed respectively over the several openings by the roller member to seal the mount.

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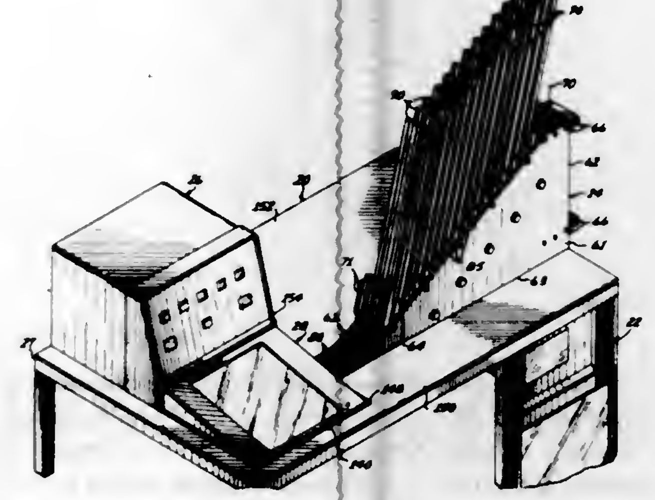
### 3,760,484
### SEMIAUTOMATIC ASSEMBLY SYSTEM FOR MOUNTING ELECTRONIC COMPONENTS ON CIRCUIT BOARDS

**John L. Kowalski, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.**
**Filed Oct. 6, 1971, Ser. No. 186,875**
**Int. Cl. H05k** *13/04;* **B65g** *59/06*
**U.S. Cl. 29—203 B** **5 Claims**



A system for aiding an assembler with the installation of electronic parts on a circuit board. The system is a programmed apparatus in which the assembler advances the program one step at a time. Each of the program steps causes the apparatus to deliver one specific part from a storage station to an assembly station and indicates the positioning of the part to the assembler.

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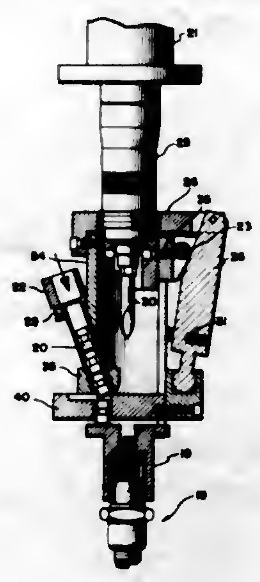
### 3,760,485
### THREADED FASTENER FEED DRIVE AND MECHANISM

**Floyd E. Smith, 5704 Brewster La., Erie, Pa.**
**Filed May 19, 1972, Ser. No. 255,138**
**Int. Cl. B23q** *7/10*
**U.S. Cl. 29—212 D** **11 Claims**

A threaded fastener feed and drive mechanism is disclosed of the character which is fed by a feeder to a magazine and a nut runner hand moved to position over the work piece. Thereafter the nut runner is pressed downwardly, the action of which is translated through an actuator and housing to a selector, which in turn moves an escapement thereby removing a single threaded fastener from the magazine and positioning the same for actuation by the nut runner. Upon the stalling of the driver motor, or completion of the tightening of the nut, the nut runner is removed and the escapement returns to its original position in open communication with the magazine to receive another nut.

In one embodiment the escapement is a rotated member, rotating approximately 30° to position the nut for engagement by the nut runner. In another embodiment disclosed, the escapement is a sliding block having a nut receiving chamber which is reciprocated by the selector, the selector having a cammed face which moves relative to a cam follower on the actuator.



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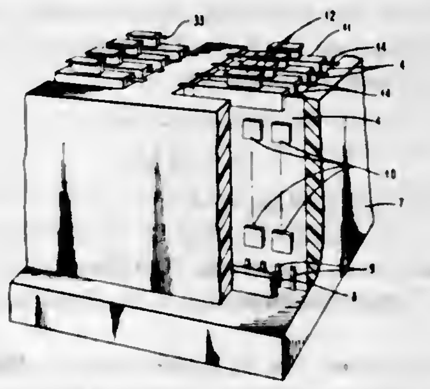
### 3,760,486
### INTEGRAL STORAGE CONTAINER, SHIPPING CARTON AND EXTRACTION/INSERTION MECHANISM FOR MULTI-CHIP CIRCUIT MODULES

**Alfred A. Rifkin, and Andrew M. Simon, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Apr. 6, 1970, Ser. No. 25,806**
**Int. Cl. H01r** *13/54*
**U.S. Cl. 29—278** **14 Claims**



A storage case also useful as a shipping carton contains an integral actuator assembly for safely manipulating plug-in type circuit modules between a plug-in connection assembly and the storage compartment formed by the case. Fragile module components and other sub-structures are fully isolated from physical contact with surfaces of the case. The modules are transferred by relative manipulation of the case, actuator assembly and module. The case and actuator assembly form a plural pivot linkage for engaging and forcibly releasing a module from an in-service position in a plug-in connection within an electronic equipment frame. The actuator assembly is mounted for linear as well as pivotal displacement relative to the case so that a module can be unplugged and manipulated into an out-of-service/home position within the case with module sub-structures isolated from physical contact throughout such manipulation.

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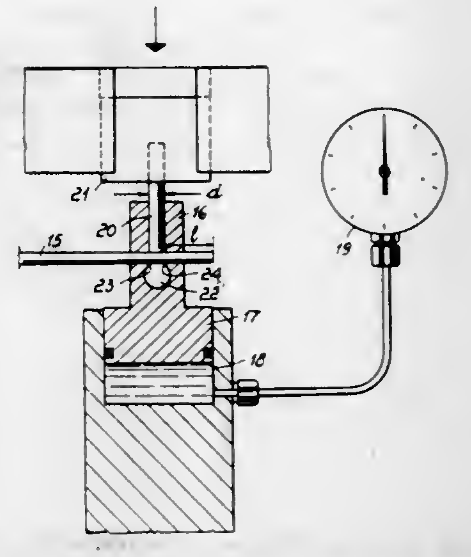
### 3,760,487
### METHOD AND APPARATUS FOR PRODUCING SHEAR PINS FOR USE IN A HARDNESS TESTING APPARATUS

**Alfred Ernst, Via del Cairo 37, Varese, Italy**
**Filed June 7, 1971, Ser. No. 150,674**
**Claims priority, application Italy, June 9, 1970, 25710 A/70; Apr. 10, 1971, 23017 A/71**
**Int. Cl. B23d** *15/14;* **B23q** *15/00*
**U.S. Cl. 29—407** **5 Claims**



A method and apparatus for producing shear pins for use in a hardness testing apparatus according to which the shear pins are sheared off from an elongated bar substantially under the same condition as they are sheared in the testing apparatus, while the force necessary for shearing off the pins from the bar is measured.

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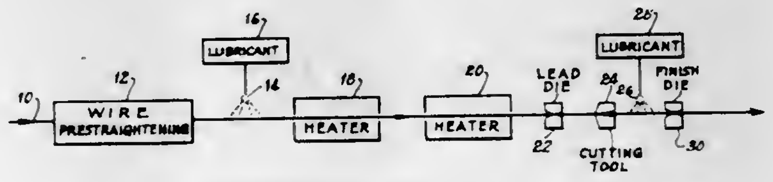
### 3,760,488
### PROCESS FOR SURFACE FINISHING OF METALS

**Ranko Cucuz, Griffith, Ind.; Miguel A. Verduzco, Chicago, and George Zavodny, Jr., Palos Hills, both of Ill., assignors to La Salle Steel Company, Hammond, Ind.**
**Filed Mar. 23, 1972, Ser. No. 237,375**
**Int. Cl. B23p** *13/04*
**U.S. Cl. 29—557** **14 Claims**



A process for the surface finishing of metal in which a metal workpiece of repeating cross-section coated with a lubricant and heated at an elevated temperature is passed through a tandem assembly of a lead die, a cutting tool to remove surface metal, and a finish die to provide a finished workpiece having improved surface characteristics and improved mechanical and physical properties.

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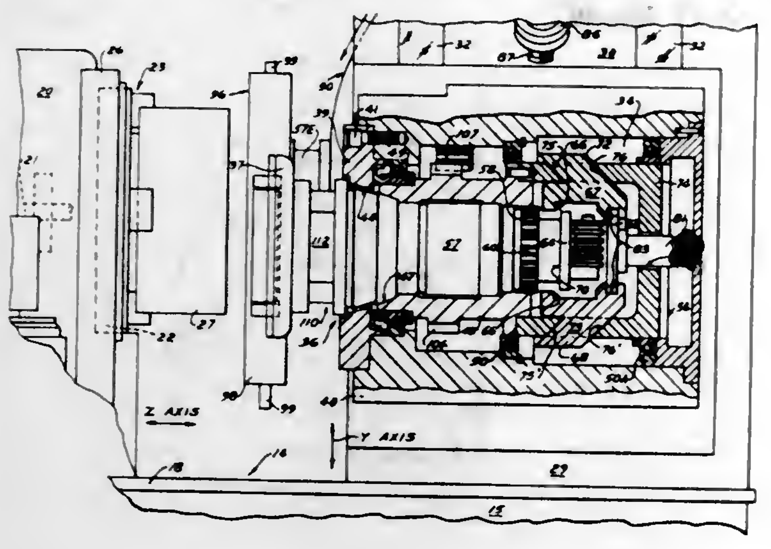
### 3,760,489
### TOOL STORAGE AND IDENTIFICATION SYSTEM

**Edward G. Griffith, West Allis, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.**
**Division of Ser. No. 797,812, Feb. 10, 1969. This application Apr. 29, 1971, Ser. No. 138,668**
**Int. Cl. B23q** *3/157*
**U.S. Cl. 29—568** **5 Claims**

This invention relates to tool storage and identifying means including an improved storage magazine journalled to rotate about a horizontal support axis and provided with radially disposed tool sockets adapted to receive an intermixed combination of rearwardly coded tools. Power actuated means are provided to releasably urge latches in one direction to prevent accidental withdrawal of a tool from its socket, and to retain each rearwardly coded tool releasably latched in a code identifying position relative to a resiliently operable switch identifier carried by the magazine support. After identification of a tool, power actuated means retract a particular latch for releasing and transferring the selected tool to the tool operator.



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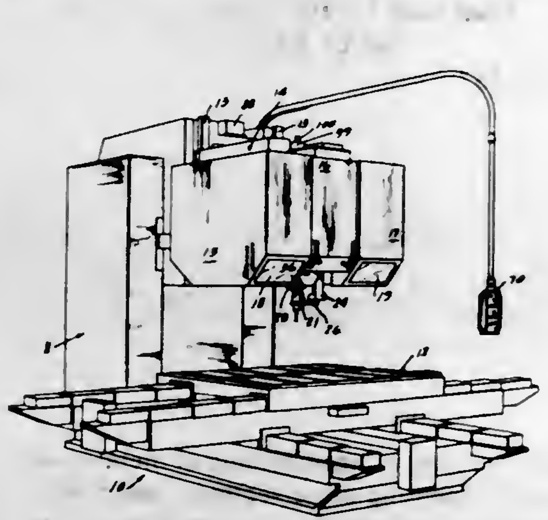
### 3,760,490
### MACHINE TOOL HAVING TOOL CHANGER

**Fred G. Burg, Los Angeles, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.**

**Filed July 13, 1971, Ser. No. 162,226**
**Int. Cl. B23q** *3/157*
**U.S. Cl. 29—568 38 Claims**



A machine tool includes a head which supports a vertically movable quill within which there is disposed a rotatable spindle to which various kinds of cutting tools may be attached. A pair of tool storage magazines are respectively disposed at opposite sides of the quill for rotation about a common horizontal axis. A pair of tool transfer arms are independently supported on the head, and each has gripping means that are movable between a first position where a tool held thereby is aligned with the spindle, and a second position where a tool can be transferred to or from one of the storage magazines. The spindle is driven through a two-ratio gear train that includes clutches for respectively selecting one of the speed ratios. On energization of both clutches, they jointly serve as a spindle brake. The quill is driven vertically by means that are concentric with the rotational axis of the spindle.

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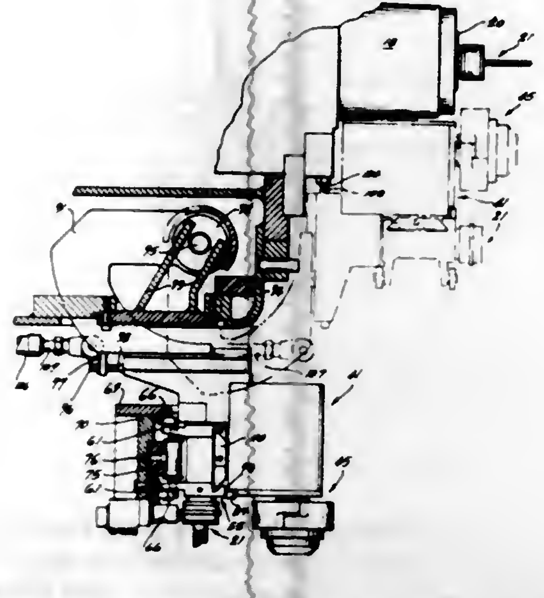
### 3,760,491
### TOOL CHANGE MECHANISM

**Frank Zankl, and Earl R. Lohneis, both of Milwaukee, Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.**

**Filed May 22, 1972, Ser. No. 255,408**
**Int. Cl. B23q** *3/157*
**U.S. Cl. 29—568 14 Claims**



A tool storage magazine containing a plurality of movable tool receptacles or cartridges that are movable to a tool change station. The cartridge and its associated tool at the tool change station is removable from the magazine by a pivotal carrier that is provided with a clamp which clamps the cartridge containing the selected tool to the pivotal carrier. The pivotal carrier then swings 90° to move the clamped cartridge with it for the purpose of positioning the axis of the selected tool in the cartridge parallel with the machine tool spindle. The pivotal carrier also carries a tool change arm movable to interchange the tool in the cartridge with the tool in the machine tool spindle. Upon completion of the 90° pivotal movement by the pivotal carrier, the tool change arm is actuated in its tool change cycle to insert the new tool from the cartridge into the spindle and the previously used tool from the spindle into the cartridge. The cartridge with the old tool in it is then returned to the tool storage magazine by a reverse pivotal movement of the carrier.

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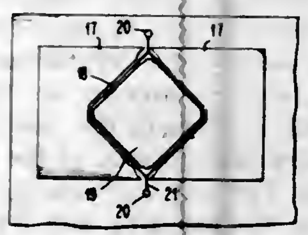
### 3,760,492
### PROCEDURE FOR MAKING SEMICONDUCTOR DEVICES OF SMALL DIMENSIONS

**Simon Middelhoek, Eggstrasse 9, Adliswil/Zurich, and Giovanni Sasso, Mutschellenstrasse 179, Zurich, both of Switzerland**

**Division of Ser. No. 827,495, May 22, 1969, Pat. No. 3,669,732. This application Jan. 8, 1971, Ser. No. 105,073**
**Int. Cl. B01j** *17/00*
**U.S. Cl. 29—571 16 Claims**



A method for making a high speed field effect transistor of the planar type with Schottky-barrier or junction contacts, in which all apertures required for production of electrodes in an insulating layer covering the semiconductor body are produced simultaneously. A field effect transistor in which the gate electrode surrounds the drain electrode in a loop while the source electrode is subdivided and its parts essentially surround the gate electrode. The contact lands of the gate electrode are arranged essentially outside the region of capacitive influence of the source electrode.

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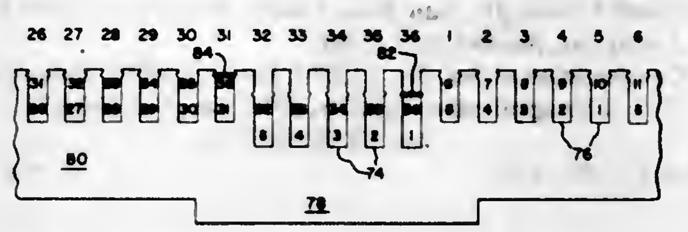
### 3,760,493
### METHOD OF WINDING A DYNAMOELECTRIC MACHINE WITH REDUCED COIL DISTORTION

**Howard Donald Saively, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Division of Ser. No. 30,047, April 20, 1970, Pat. No. 3,631,278. This application Oct. 13, 1971, Ser. No. 188,937**
**Int. Cl. H02k** *15/00, 15/14, 15/16*
**U.S. Cl. 29—596 2 Claims**



An axially slotted dynamoelectric machine member to be wound with two preformed coil sides per slot is provided with a plurality of circumferentially adjacent slots having a depth equal to approximately three times the radial dimension of one coil side. The number of such deep slots is selected to be at least equal to the number of slots in one coil span. In this way, first, second and third slot positions are provided in such slots. A first group of coils are formed having the coil sides in one circumferential direction adapted to be the radially inner coil sides and the other coil sides adapted to be the radially outer coil sides. A second group of coils are formed oppositely to the first group (i.e. with the coil sides in the particular one circumferential direction adapted to be the radially outer coil sides and the other coil sides adapted to be the radially inner coil sides). The coils of one group are sequentially placed in overlapping relation in the slots in the second and third slot positions proceeding in one circumferential direction and the coils of the other group are thereafter placed in the slots in the first and second slot positions proceeding in the other circumferential direction. In this way, a winding is completed without distorting coils by raising any previously placed coil sides from their slots as required in completing corresponding windings of form coils heretofore.

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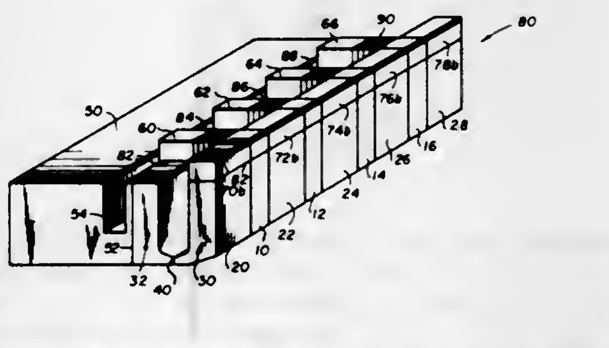
### 3,760,494
### MAGNETIC HEAD ASSEMBLY

**Alphonse Gregory Lang, Jr., West Caldwell, N.J., assignor to Ceramic Magnetics, Inc., Fairfield, N.J.**

**Division of Ser. No. 7,698, Feb. 2, 1970, Pat. No. 3,655,923. This application Sept. 8, 1971, Ser. No. 178,742**
**Int. Cl. G11b** *5/42;* **H01f** *7/06*
**U.S. Cl. 29—603 1 Claim**



A method of manufacturing a magnetic head assembly wherein a pair of unitary body members, each made up of a plurality of alternating layers of magnetic material and spacer material, are joined along two surfaces by means of a gapping material, and a third unitary body member is applied to said pair of body members. The third body member has layers of magnetic material registering with the layers of magnetic material of the other body members to provide a plurality of separate paths for magnetic flux.

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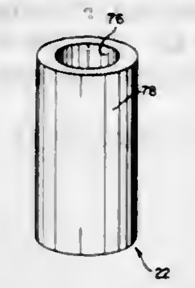
### 3,760,495
### PROCESS FOR MAKING CONDUCTIVE POLYMERS

**John V. Meyer, Brighton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Continuation-in-part of Ser, No. 6,086, Jan. 27, 1970, Pat. No. 3,673,121. This application Dec. 22, 1971, Ser. No. 210,648**
**Int. Cl. H01c** *17/00*
**U.S. Cl. 29—610 9 Claims**



Conductive polymer having a steeply-sloped positive temperature coefficient (PTC) of resistance with a sharply defined anomaly temperature is provided by selecting a polymer having crystalline structure at room temperature, a glass transition of approximately 13°F. or lower and a narrow molecular weight distribution as measured by a flow ratio of less than 9 or a melting point range of 30° C. or less. The polymer is filled with conductive particles and may include additional additives such as stabilizing agents and flame retardants. The ingredients are mixed, subjected to shearing forces and then formed into the desired configuration. The maximum permissible processing temperature is identified for the specific polymers employed.

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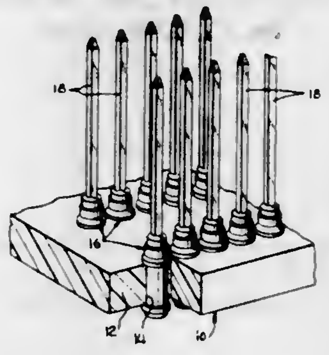
### 3,760,496
### PANEL MOUNTED ELECTRICAL TERMINAL

**Frank Irvin Douglass, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**

**Division of Ser. No. 756,809, Sept. 3, 1968, abandoned. This application July 17, 1970, Ser. No. 62,770**
**Int. Cl. H01r** *9/00*
**U.S. Cl. 29—629 7 Claims**



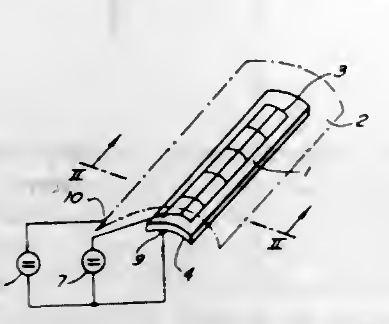
A method and article for mounting electrical contacts in a panel is disclosed which features a headed metal tubular element carrying a spring contact adapted to be inserted in an aperture of a panel. The tubular portion of the element is dimensioned to be symmetrically compressed longitudinally by tooling to develop an outward annular bulge capable of locking the element tightly into panels of different thicknesses. Bulging of the contact element is controlled to permit large numbers of contacts to be mounted in a plastic panel without causing panel growth and incident misalignment of elements. The tubular element is of a configuration to assure adequate deformation without damage to a preassembled spring contact carried therewithin.

### ERRATUM

For Class 29—160.6 see:
Patent No. 3,761,728

### 3,760,497
### DRYSHAVER WITH A CATCH ELECTRODE FOR ATTRACTING BEARD STUBBLE

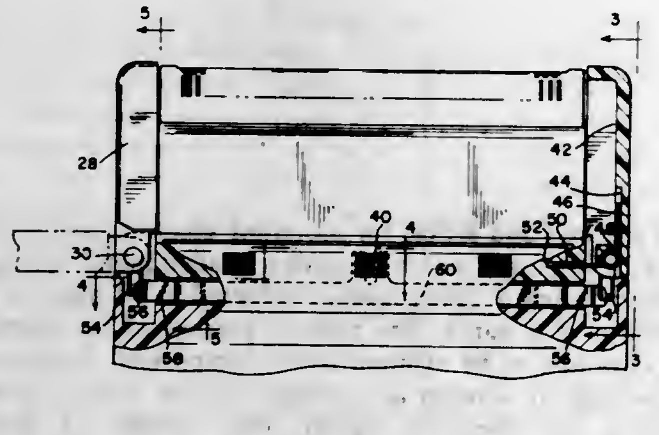
**Adolf Kuhl, Hannover; Hans Dieter Huber, Niederhochstadt, and Helmut Bollmann, Frankfurt, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany**
**Filed June 23, 1972, Ser. No. 265,775**
**Claims priority, application Germany, July 2, 1971, P 21 33 113.5**
**Int. Cl. B26b** *19/38, 19/42*
**U.S. Cl. 30—41.6** **6 Claims**



In a dryshaver there is provided a catch electrode for attracting beard stubble and the like, having a carrier of electrically non-conductive material and provided on opposite sides with a grid-shaped electrically conductive first layer and an continuous electrically conductive second layer. A counter-electrode is juxtaposed with but spaced from the first layer, and the counter-electrode and the second layer are connected to respective poles of a source of electrical energy, whereas the first layer is connected to a second source of electrical energy whose potential is no greater than that of the first source.

### 3,760,498
### ELECTRIC SHAVER WITH IMPROVED END COVER ASSEMBLY

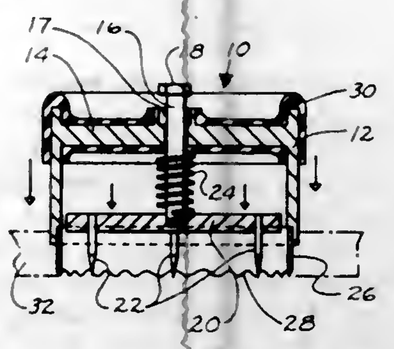
**Donald L. Shortlidge, Lancaster, Pa.; James Christensen, Dover, Del., and James H. Foard, Jr., Lancaster, Pa., assignors to Schick Electric Inc., Lancaster, Pa.**
**Filed Aug. 18, 1971, Ser. No. 172,785**
**Int. Cl. B26b** *19/38*
**U.S. Cl. 30—43.1** **7 Claims**



An end cover arrangement for an electric razor including a pair of oppositely disposed, pivotally mounted end caps having two individual springs for each cap, with one spring biasing the cap into an open position and the other acting to maintain it in a closed position, and with an actuator button and yoke arrangement adapted to release the spring holding the cap closed to permit opening the end covers for cutting head cleaning. In the preferred construction, the end cap units are urged to an open or generally horizontal position by a coiled wire spring unit while movement thereof is resisted by engagement between a second or leaf spring unit and a projection extending beneath the pivot axis of each end cap. The actuator button operates a slidable yoke which pushes the leaf spring end portions away from a position of engagement with the cap extension, thereby freeing the cover for opening movement. Once open, the covers may be individually closed and will remain closed until the button is again actuated.

### 3,760,499
### APPARATUS FOR CUTTING PLUGS FROM CARPETS

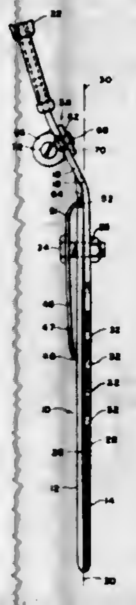
**Millard Crain, Jr., San Jose, Calif., assignor to Crain Cutter Company, Santa Clara, Calif.**
**Continuation of Ser. No. 11,274, Feb. 13, 1970, abandoned. This application Oct. 20, 1971, Ser. No. 190,824**
**Int. Cl. B26b** *3/08*
**U.S. Cl. 30—130** **9 Claims**



An apparatus for repairing carpets and similar materials wherein a segment of the damaged carpet to be replaced is anchored in place and held stationary, a cutter is then rotated about the outer periphery of said anchored damaged segment and simultaneously urged through the carpet along the longitudinal axis of the cutter cutting said carpet about the periphery of the anchored segment.

### 3,760,500
### HEDGE SHEARS

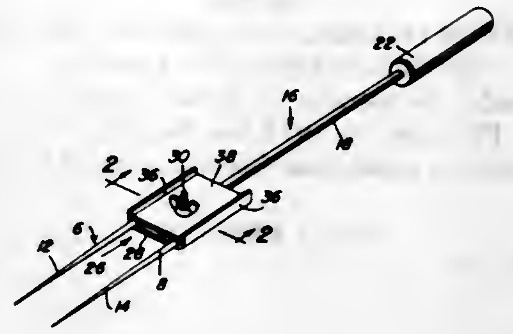
**Harold O. Eads, Parkersburg, W. Va., and James W. Robison, Belpre, Ohio, assignors to Ames Division of McDonough Company**
**Division of Ser. No. 55,691, July 17, 1970, Pat. No. 3,676,930. This application July 18, 1972, Ser. No. 272,955**
**Int. Cl. B26b** *13/28*
**U.S. Cl. 30—268** **15 Claims**



A hedge shears having pivotal shearing and work holding blades. A pivot mounted tensioning spring resilient biases the blades together for pressured, adherent action from the pivot to the tips. Resilient stop means are rigidly supported on the blades and to compressively engage upon their closing fully together. Work holding notches are formed in the holding blade, shaped or oriented to receive varying size work and firmly hold that in compressing and slicing by the shearing blade.

### 3,760,501
### EXTENSION TYPE HOLDER FOR FOOD HANDLING IMPLEMENTS

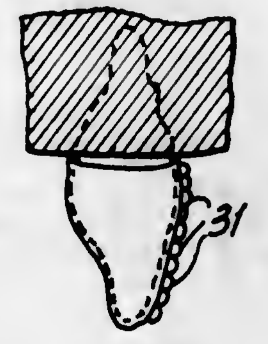
**Leroy I. Johnston, R. R. 2, Lake Crystal, Minn.**
**Filed Sept. 10, 1971, Ser. No. 179,410**
**Int. Cl. A47j** *43/28*
**U.S. Cl. 30—322** **2 Claims**



For use at a picnic area, campsite, or backyard cookout, a safeguarding extension-type holder for weiner and marshmallow impaling forks, prepackaged popcorn and similar wire handled implements comprising an elongated handle having an implement mounting and clamping adapter at one end and a convenient handgrip at its other end. The adapter comprises a channel-shaped open-ended base plate and a companion clamping plate bolted atop the base plate in a manner that a U-shaped end portion of the wire implement can be sandwiched in place and clampingly held.

### 3,760,502
### DENTAL VENEER STRUCTURES

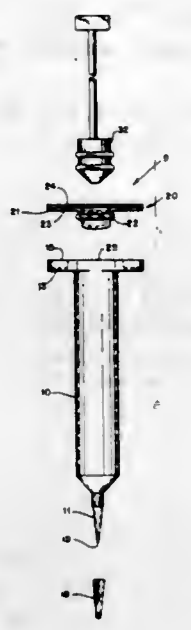
**Arnold J. Hirsch, 211 N. Harrison St., Princeton, N.J.**
**Filed Dec. 20, 1971, Ser. No. 209,588**
**Int. Cl. A61c** *13/00*
**U.S. Cl. 32—8** **14 Claims**



There is disclosed precolored veneer structures adapted to be emplaced upon the appropriate surface of a crown accommodating a tooth. The veneers employ appropriate fastening means on a back surface whereas the crown has corresponding coacting means on the veneer accommodating surface to enable easy emplacement and removal of such veneers.

### 3,760,503
### DISPOSABLE MIXING SYRINGE

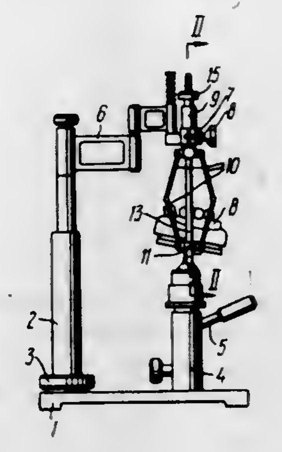
**Morris J. Baskas, New Rochelle, N.Y., assignor to Dentipressions Inc., New York, N.Y.**
**Filed May 18, 1972, Ser. No. 254,558**
**Int. Cl. A61c** *9/00*
**U.S. Cl. 32—17** **7 Claims**



A disposable mixing syringe especially adapted for dental use is described. It comprises a barrel for receiving one component of a mixture to be formed and terminating in a flexible nozzle having a small orifice. The opposite barrel end is open and adapted to receive a sealed removable insert package constituted of puncturable material and containing a second component of the mixture to be formed. Inserting a mixing tool through the insert allows rapid mixing of the constituents, after which a suitable plunger is provided to expel the contents through the orifice.

### 3,760,504
### PARALLELOMETER

**Efim Matveevich Ljubarsky, ulitsa Udaltsova 45, kv. 6; Nikolai Vasilievich Igonkin, prospekt Mira, 200, korpus 2, kv. 47, and Sergei Matveevich Eidinov, ulitsa Nizhne-Pervomaiskaya, 24, kv. 104, all of Moscow, U.S.S.R.**
**Filed Feb. 22, 1972, Ser. No. 228,159**
**Int. Cl. A61c** *5/12*
**U.S. Cl. 32—63** **3 Claims**



A parallelometer comprising a platen for a jaw pattern and a support with a chuck for a working tool, secured on a common base. To set the platen with the jaw pattern to such a position relative to the working tool axis which is required for marking the topographical line on the teeth while determining the path of prosthetic device introduction by the bisectrix of the tooth inclination angle, the parallelometer has a sleeve with a socket for the working tool secured in the chuck, said sleeve being provided with a system of articulated rods intended to be aligned with the tooth axes and forming a rhomboid structure with changeable angles, one of the structure diagonals being directed along the axis of the working tool secured in the sleeve.

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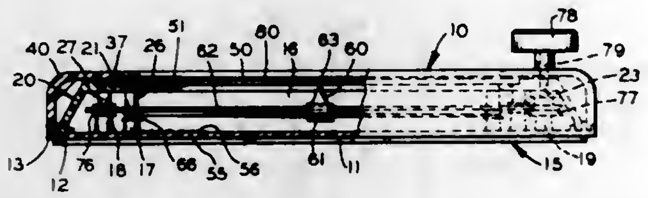
### 3,760,505
### TRACING DEVICE

**Earl D. Clark, Bryan, Ohio, assignor to The Ohio Art Company, Bryan, Ohio**

**Filed Nov. 17, 1971, Ser. No. 199,493**

**Int. Cl. B43l** *13/00*

**U.S. Cl. 33—18 R** **1 Claim**



An improved case for the tracing device shown in Grandjean U.S. Pat. No. 3,055,113 issued Sept. 25, 1962, including a protective plastic sheet covering its glass tracing surface, a non-hardening adhesive between the glass surface and the inner liner or side wall support therefor including a groove for said adhesive to prevent leakage of powder from inside the device, integral inwardly extending bosses on said inner liner for holding the axles of the pulleys for operating the tracing mechanism in their proper locations, and annular recesses or seats for washers around the apertures in said inner liner through which the knobs extend for operating the pulleys to further seal the escape of powder from inside the device.

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### 3,760,506
### CARD GAUGE

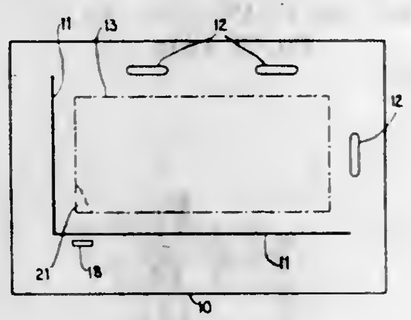
**Ronald Owen Tudberry, Knebworth, England, assignor to International Computers Limited, London, England**

**Filed Nov. 19, 1971, Ser. No. 200,361**

**Claims priority, application Great Britain, Mar. 26, 1971, 8,723/71**

**Int. Cl. G01b** *5/16*

**U.S. Cl. 33—174 R** **4 Claims**



A punched card gauge has at each possible hole position marks defining at least two boundaries one within the other. Sight of the inner boundary but none of the outer one is required on making a hole sight of the whole of the inner boundary indicates a hole is satisfactory for sensing.

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### 3,760,507
### WHEEL ALIGNMENT GAUGING APPARATUS

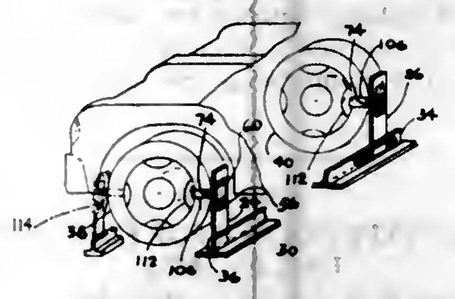
**Michael A. LaRocca, 167 Davis Ave., Pittsburgh, Pa.**

**Filed July 12, 1971, Ser. No. 161,641**

**Int. Cl. G01b** *5/255*

**U.S. Cl. 33—203.17** **16 Claims**

The wheel alignment gauging apparatus comprises a base member, a first upright affixed to the base member, a second upright adjustably secured to the base member, and index means mounted on each of the uprights. Each of the index means cooperate with marking means on wheels for which the guage structure is used. Means are provided for moving each of said index means longitudinally of its associated upright.



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### 3,760,508
### METHOD FOR LOADING AND DRYING OF CERAMIC PRODUCTS PRIOR TO BAKING

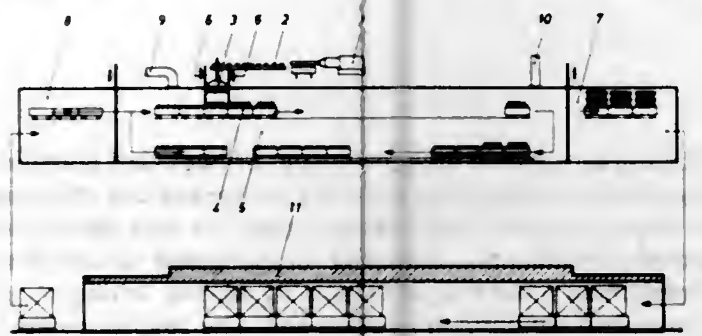
**Andreas Hassler, Jahnstrasse 45, Erbach, Germany**

**Filed Jan. 10, 1972, Ser. No. 216,640**

**Claims priority, application Germany, Jan. 12, 1971, P 21 01 073.1**

**Int. Cl. F26b** *3/00*

**U.S. Cl. 34—38** **6 Claims**



A method of loading a plurality of formed ceramic products preparatory to baking thereof comprises positioning the products adjacent to one another in a plurality of superposed layers. The layers are formed in a plurality of successive loading steps, each of which is followed by a drying step operative to dry the uppermost layer, and to further dry previously formed underlying layers, to an extent sufficient to permit placement of a further layer on the uppermost layer without deformation of the uppermost layer or toppling of the stacked layers.

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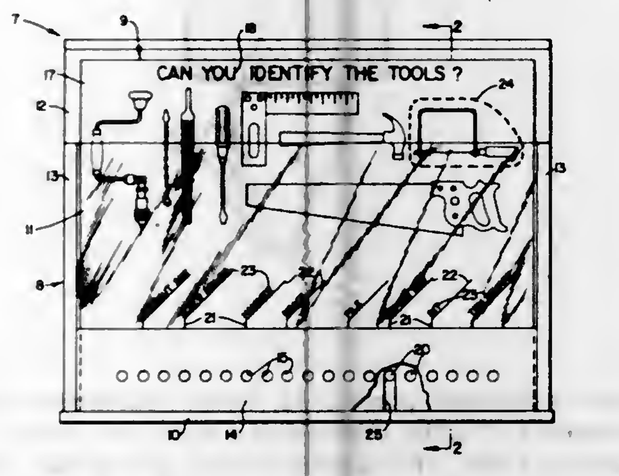
### 3,760,509
### RESPONSE UNIT

**John R. Miles, 111 Hampton Rd., Williamsport, Md.**

**Filed Nov. 7, 1972, Ser. No. 304,507**

**Int. Cl. G09b** *3/08*

**U.S. Cl. 35—9 R** **6 Claims**



A teaching aid which is especially useful for individualized learning, and which makes possible adequate practice of an exercise involving, for example, fact-type learning materials which may be utilized repeatedly by the student without supervision, to obtain proficiency prior to actual testing and scoring by the instructor or teacher. By using the response unit, a student knows immediately whether a response is correct or incorrect. Indicia bearing cards, different sets of which are used in the response unit, may be removed individually only as a correct response is made by the pupil, and means is provided to score the number of attempts required to correctly respond to the questions posed by a set of cards.

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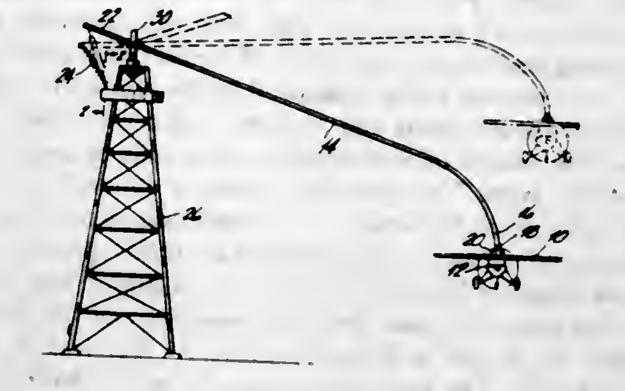
### 3,760,510
### FLYING AIRPLANE TRAINER

**Arnold Anderson, Jr., 509 Northwest Ave., Ardmore, Okla.**

**Filed Aug. 14, 1970, Ser. No. 63,775**

**Int. Cl. G09b** *9/08;* **B64g** *7/00*

**U.S. Cl. 35—12 P** **3 Claims**



An airplane adapted to be flown as a trainer and secured by linkages and a spring to a roller moving on a track ring attached to a derrick whereby the airplane will not crash and will automatically descend in proper manner if trouble arises during flight.

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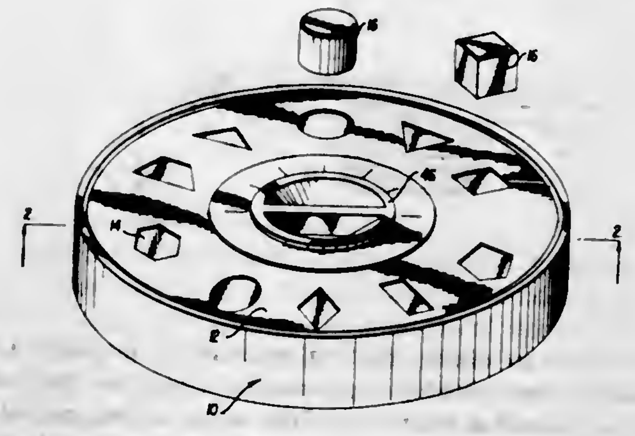
### 3,760,511
### EDUCATIONAL DEVICE

**Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan**

**Filed May 26, 1972, Ser. No. 257,224**

**Int. Cl. G09b** *19/00*

**U.S. Cl. 35—22 A** **4 Claims**



An educational device featuring a housing provided with a plurality of openings of different configuration and blocks of corresponding configuration to be matched with the openings and inserted therein. The housing is provided with means for closing and inserted openings within which blocks have not been inserted after a predetermined period of time signalling the end of the game.

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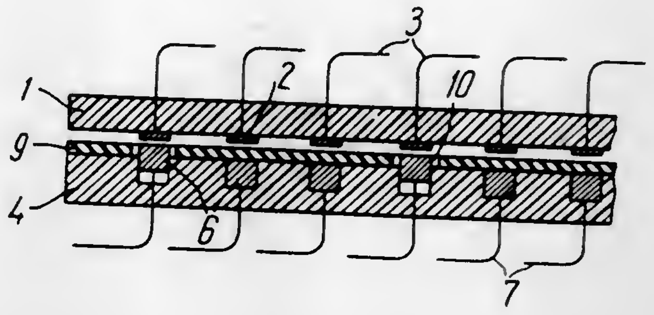
### 3,760,512
### ENCODER FOR A TEACHING MACHINE

**Igor Rafailovich Tarnopolsky, ulitsa Zavodskaya, 33, kv. 27, and Gennady Vasilievich Akimtsev, ulitsa Furmanova, 23, both of Frunze, U.S.S.R.**

**Filed Sept. 22, 1971, Ser. No. 182,655**

**Int. Cl. G09b**

**U.S. Cl. 35—48 R** **1 Claim**



An encoder for a teaching machine comprising: a contact-bearing board connected to the graphic answer input device of the teaching machine, and an encoder board with contacts arranged coaxially with respect to the contacts of the contact-bearing board, the encoder board being made as a plate of an insulation material while the contacts of said boards being separated by an expendable punched card serving as a programme carrier. According to the invention the encoder board is provided with sockets in which its contacts are housed, the contacts being spring-loaded and able to shift in the vertical direction.

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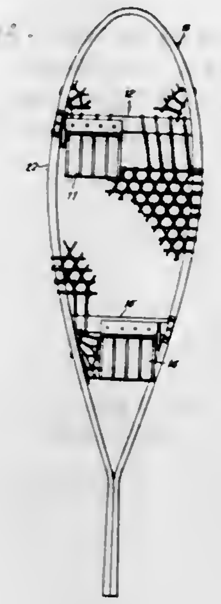
### 3,760,513
### ANTISLIP ATTACHMENTS FOR SNOW FOOTGEAR

**Philip R. Corneliusen, Hillsboro Upper Village, Hillsboro, N.H.**

**Filed Nov. 15, 1971, Ser. No. 198,753**

**Int. Cl. A43b** *00/00;* **A43c** *15/00*

**U.S. Cl. 36—2.5 AB** **7 Claims**



A traction device to be fastened to the tread face of snowshoes, skis or other snow footgear, including an articulated transverse rigid flap or claw which may be provided with a number of longitudinal fins. The claw in a retracted position extends in a rearward direction lying flush against the tread face. It is freely biased in a downward direction as by a spring when the footgear is raised from the snow or by a backward movement in order to dig into the snow to prevent backsliding and readily retracts when the footgear is moved forwardly. The claw is securable in an upward retracted position when not in use.

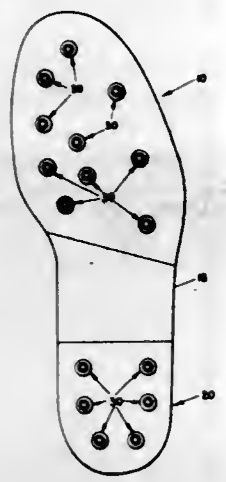
### 3,760,514
### RIVET SPIKE FOR A SHOE

**Robert B. Egtvedt, Comstock Park, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.**

**Filed Nov. 9, 1971, Ser. No. 197,037**

**Int. Cl. A43c** *15/00*

**U.S. Cl. 36—67 R** **7 Claims**



A shoe sole spike having a frustrum-shaped steel rivet with a flared bottom and a shank extending from the flared bottom The end of the steel shank includes a tungsten carbide insert. The sole of a shoe is injection molded around an array of these spikes. The bottom of the rivet spike is firmly seated in the sole material with the tungsten carbide insert extending outwardly to provide a highly wear-resistant spiked shoe sole suitable for use, for example, on golf shoes. The sole can be integrally molded with a heel, the rivet spikes being in both areas.

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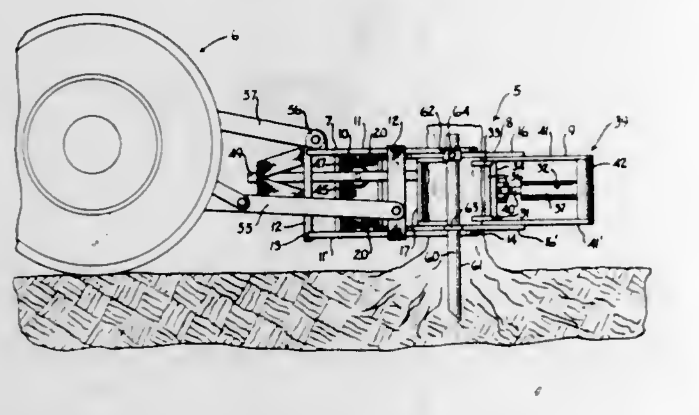
### 3,760,515
### TREESTUMP REMOVING MACHINE

**Robert H. Morgan, 3224 W. Lakefield Dr., Milwaukee, Wis.**

**Filed Sept. 7, 1971, Ser. No. 178,316**

**Int. Cl. A01g** *23/06*

**U.S. Cl. 37—2 R** **13 Claims**



A tree stump removing machine consisting of a main frame which is attached to a conventional tractor and has a turret mounted therein to be rotated about a vertical axis by a hydraulic motor that reacts between the main frame and the turret and is powered by fluid pressure derived from the tractor. Both the main frame and the turret have U-shaped openings to receive the trunk of a tree stump to be removed, and the turret has a hinged jaw which is actuated to clamp the trunk to the turret so that upon powered rotation of the turret the trunk is twisted tearing the stump from the ground.

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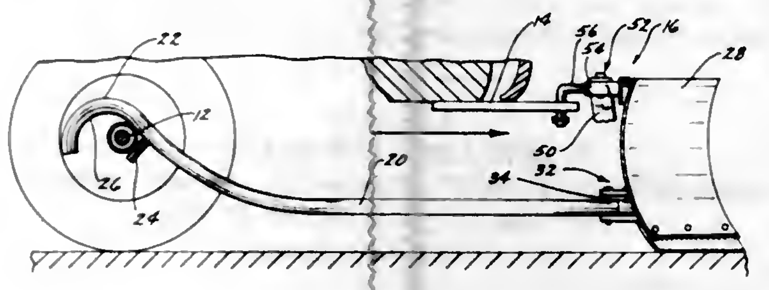
### 3,760,516
### VEHICLE SNOWPLOW WITH THREE-POINT QUICK CONNECT HITCH

**James E. Billingsley, P.O. Box 72, Prairie, Iowa**

**Filed Mar. 16, 1971, Ser. No. 124,833**

**Int. Cl. E01h** *5/00*

**U.S. Cl. 37—42 R** **9 Claims**



A snowplow for use on the rear axle of a vehicle comprising first and second arms having the forward ends thereof detachably secured to the rear axle with the rearward ends thereof being positioned rearwardly of the rearward end of the vehicle. A snowplow blade is secured to the rearward ends of the first and second arms and may be angled with respect to the vehicle by means of an extension which may be secured to either of the arms. The snowplow blade is connected to the vehicle trailer hitch by means of a connection means which is also connected to the extension means for reinforcement. The snowplow blade is hingedly secured at its upper end to the connection means so that forward movement of the vehicle will cause the blade to hingedly pivot so that less snow is pulled forwardly. The snowplow is used by simply backing the vehicle from its garage so that a path is cleared behind the vehicle.

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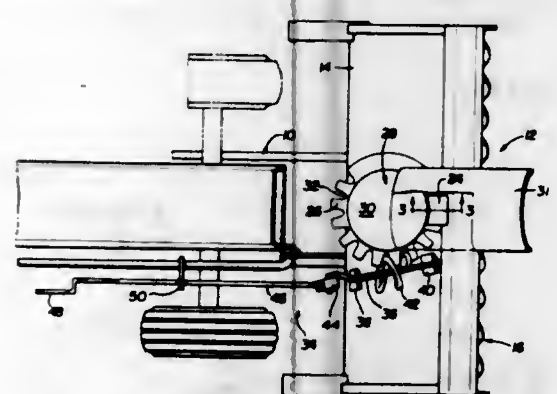
### 3,760,517
### SPRING FORMED WORM GEAR FOR SNOW BLOWER SPOUT DRIVE

**Andrew Blaauw, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.**

**Filed May 21, 1970, Ser. No. 39,376**

**Int. Cl. E01h** *5/09*

**U.S. Cl. 37—43 R** **3 Claims**



A snow caster chute rotating mechanism includes a wire form worm screw which is supported on a wire rod shaft which in turn is retained at each end of the worm within spaced support bearings; the wire form screw is adapted to threadedly engage spaced notches provided circumferentially around a flange of the rotating chute so that, upon rotation of the wire form worm screw by means of a crank or handle connected to the wire rod shaft, the rotating chute can be turned to any desired angularly adjusted snow-throwing position; the wire form screw comprises a helically coiled spring wound around a wire rod shaft and having both of its ends attached thereto and its coils spaced a distance corresponding to the spacing of the notches around the flange of the rotating chute; the coil

spring worm screw is of a larger cylindrical inner diameter than the wire rod shaft to provide sufficient resiliency as a spring in order to store potential energy in case the mechanism becomes jammed and to be self-cleaning so as to prevent the accummulation of rust or ice between helical threads of the coil spring worm screw.

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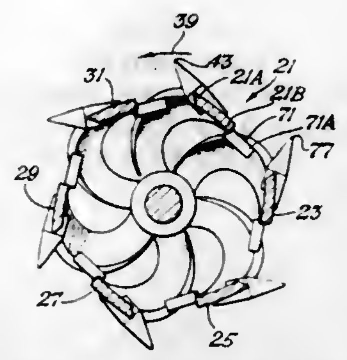
### 3,760,518
### ROTARY DREDGE CUTTER-HEAD HAVING SPACED GUARD MEMBERS

**Alton B. Hamm, P.O. Box 13444, Fort Worth, Tex.**

**Filed Feb. 3, 1972, Ser. No. 223,229**

**Int. Cl. E02f** *3/92, 3/94*

**U.S. Cl. 37—57** **12 Claims**



Cutter-head for use in a dredging system for dredging sand and gravel which has a plurality of spaced guard members extending from the trailing edge of each support member toward an adjacent support member but spaced therefrom. The guard members are located inward of cutting teeth coupled to the leading edge of each support member. The guard members block the passage of large rocks into the interior of the head but to allow the passage of roots and clay along with the sought after sand and gravel thereby preventing the roots and clay from blocking the openings of the cutter-head.

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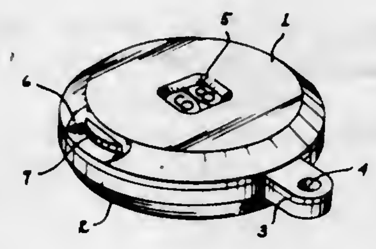
### 3,760,519
### GOLF SCORE COUNTER

**Mary G. Niven, 2120 W. Van Buren, Phoenix, Ariz.**

**Filed Jan. 3, 1972, Ser. No. 214,908**

**Int. Cl. G09f** *11/04*

**U.S. Cl. 40—70 R** **11 Claims**



A mechanical hand-held thumb-operated counter is disclosed. The counter is a scoring device intended for use by golfers to separately display the number of strokes and putts made during a round of golf. Each pair of two pairs of dissimilar discs is mounted on a common axle. Each pair includes a thumb-operated driver disc and a driven disc. The thumb-operated driver disc of one pair of discs, accessible through a recess in the counter casing, drives the driven disc of the other pair of discs through a geneva mechanism. The driver disc and driven disc define a set of discs. The driver disc has disposed thereon the units digits and the driven disc has disposed thereon the tens digits. The digits disposed on one set of discs are viewable through a display window and indicate the number of strokes and the numerals disposed on the other set of discs are viewable through another display window and indicate the number of putts.

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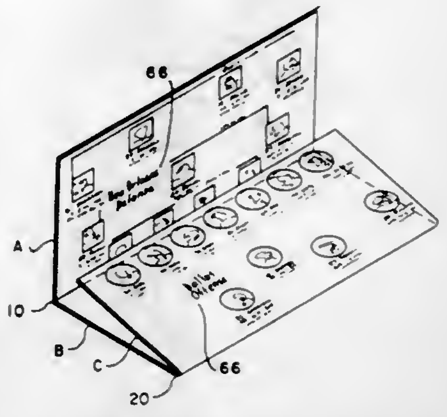
### 3,760,520
### FIELD FORMATION DISPLAY DEVICE

**John M. Hamilton, 4320 Cole Ave., Dallas, Tex.**

**Filed Sept. 27, 1971, Ser. No. 183,867**

**Int. Cl. G09f** *19/00*

**U.S. Cl. 40—102** **3 Claims**



Disclosed is a device for aligning diagrammatic illustrations of football team formations in juxtaposed relationships. The device may be formed of a sheet of paper foldable along parallel lines dividing the sheet into three panels of approximately identical dimensions. Basic field formations of the opposing teams are illustrated on the faces of the panels.

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### 3,760,521
### SHOWCASE

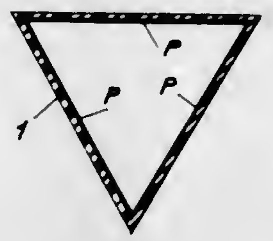
**Pierre Charles Henri Barraya, 78, rue Vanlau, Paris, France**

**Filed Feb. 26, 1971, Ser. No. 119,219**

**Claims priority, application France, Feb. 27, 1970, 700774**

**Int. Cl. G09f** *1/12*

**U.S. Cl. 40—152** **6 Claims**



A showcase for documents, photographs and the like is formed by a straight sided transparent prismatic case with triangular bases formed by triangles whose three angles are acute and at least one base of which case is open, but may be closed by a removable cover to permit the positioning against the inner lateral faces of said case of photographs, engravings or other documents, rigid or rendered rigid, of a format adapted to the surface of said faces and with the holding in position of each such document against its respective case face being assured by the other two adjacent faces of the case forming acute angles therewith.

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### 3,760,522
### BREECH MECHANISM FOR A HAND FIREARM

**Manfred Guhring, Oberndorf, Germany, assignor to Heckler & Koch GmbH, Oberndorf, Germany**

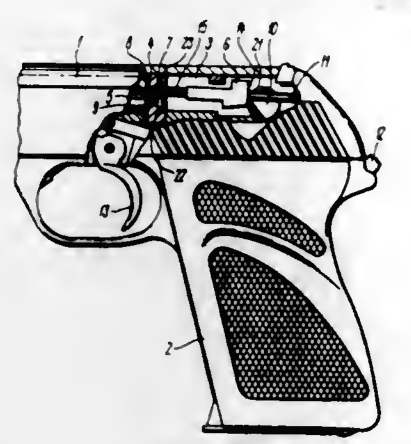
**Filed July 31, 1972, Ser. No. 276,894**

**Claims priority, application Germany, July 31, 1971, P 21 38 498.5**

**Int. Cl. F41c** *11/00, 17/04*

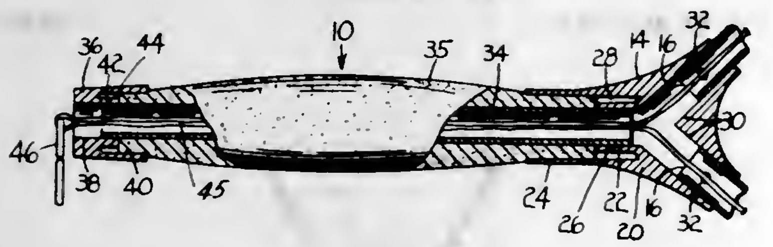
**U.S. Cl. 42—69 B** **7 Claims**

A breech mechanism for a hand firearm such as a pistol which can be converted for use of cartridges of different calibres. The pistol has a striker pin which extends through a cavity in the breech block and through an impact plate closing this cavity forwardly, and which can be displaced selectively into the one or the other of two different positions in which the point of the striker is directed either towards the center or the edge of the bottom of a cartridge located in the cartridge chamber. The striker pin is surrounded with play by a guide member which is displaceable in the adjustment direction relatively to the breech block. Two detent positions are provided for the guide member in which the guide member retains the striker pin either in the one or in the other position.



### 3,760,523
### FISH NET

James D. Maxwell, P.O. Box 649, Vancouver, Wash.
Filed July 13, 1971, Ser. No. 162,193
Int. Cl. A01k *77/00*
U.S. Cl. 43—11 3 Claims

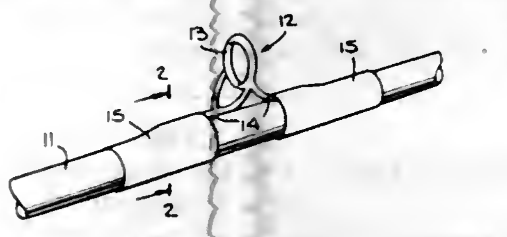


A fish net having a yoke with a rearwardly opening socket for interconnection with a handle and a pair of forwardly opening sockets for interconnection with end portions of a hoop. The two forwardly opening sockets extend at about 90° relative to each other and have a non-rotatable connection with respective end portions of the hoop. The rearwardly opening socket of the yoke includes an inner sleeve portion securely receiving an elongated tubular handle part and also includes an outer sleeve portion for receiving another handle part such as a cork covering. The handle has an end cap provided with an inner sleeve portion for securement to the tubular handle part and an outer sleeve portion for receiving the rearward end of the cork covering. A passageway extends through the handle, through the yoke, and through the hoop for receiving an elastic cord for attachment of the net to a fisherman's body.

### 3,760,524
### FISHING LINE GUIDE FASTENING AND METHOD OF SECURING A FISHING LINE GUIDE

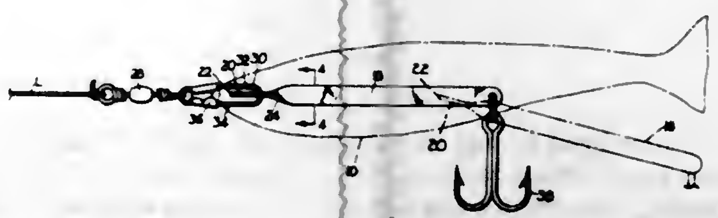
James Oscar Butler, Jr., Columbia, and Bob G. Shepherd, West Columbia, both of S.C., assignors to Columbia Products Company, Columbia, S.C.
Filed Mar. 7, 1972, Ser. No. 232,431
Int. Cl. A01k *87/04*
U.S. Cl. 43—24 19 Claims

A strip of resinated tape is disposed about each foot of the fishing line guide along with an overlying plastic film strip. The tape and film strip are tightly wrapped about each foot and the fishing rod blank as the ends are held by a clamp. The resinated tape is then cured. Thereafter the plastic film is removed and the ends of the tape are trimmed to leave a joint where the ends of the tape join together. The resintated tape can be provided with a decorative representation such as stripes.



### 3,760,525
### BAIT-FISH RIG

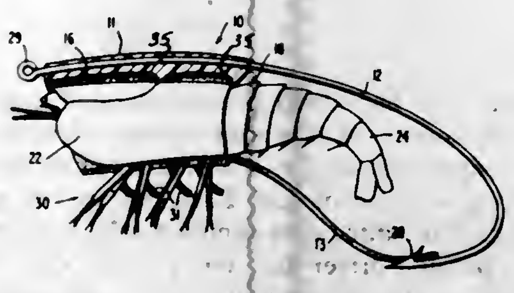
Albert E. Daughtry, 700 Wilkes Dr., Eugene, Oreg.
Filed July 9, 1971, Ser. No. 161,135
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.2 1 Claim



A rig for bait fish including a body portion arranged to pierce a bait fish longitudinally and having a forward sharpened head arranged to terminate in the fish's mouth. Such head has a horizontal portion provided with an aperture. Forming a part of the rig is a swivel and a catch having a portion arranged to extend through both the upper and lower jaws of the bait fish and also through the aperture in the head. The catch when closed holds the fish's mouth closed. The rearward end of the body portion supports a fish hook. The body portion is bendable laterally to provide a wobbling motion as the fish is trolled.

### 3,760,526
### HOLDER FOR LIVE SHRIMP OR THE LIKE

Thomas W. Hicks, 3121 Maple Dr., N.E., Suite 23, Atlanta, Ga.
Continuation-in-part of Ser. No. 169,636, Aug. 6, 1971. This application Oct. 18, 1971, Ser. No. 190,102
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.4 11 Claims

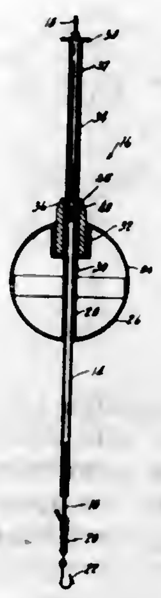


A holder for live shrimp or similar bait fish having a flexible shell defining a cavity sized and shaped to receive the forward body portion of the shrimp. The shell defines tail and head openings and may have a slot in its lower portion extending along its length which joins the tail and head openings. The lower appendages of the shrimp normally protrude from the cavity of the shell through the lower slot, and fork means may be movably connected to the shell and arranged to extend

from the sides of the shell and curve laterally across the lower slot and between the lower appendages of the shrimp to hold the shrimp in the shell. A hook has its shank connected to the upper portion of the shell, and the bend in the hook extends downwardly with respect to the shell and is spaced behind the shell a distance sufficient to allow the free motion of the tail of the shrimp in the shell. The shell includes a plurality of protrusions along its length which extend from the inside of shell into the cavity. The protrusions include flexible tips.

### 3,760,527
### FLIP TYPE CASTING FLOAT

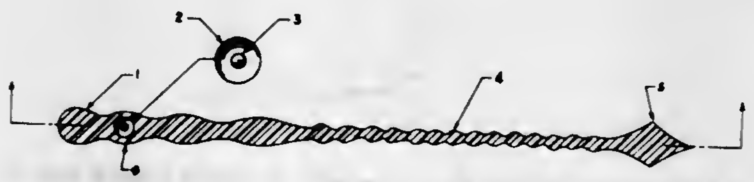
Glen C. Hamren, 3159 N. 86th St., Milwaukee, Wis.
Filed Mar. 2, 1972, Ser. No. 231,150
Int. Cl. A01k *93/00*
U.S. Cl. 43—44.88 11 Claims



A fishing float having a buoyant body with a line guide for a fishing line passing through the body and a weighted line locking assembly mounted on one side of said body. The weight of a sinker and bait on the fishing line counterbalance the weight of the locking assembly when the float hits the water and the weight of the locking assembly flips the body over when the sinker and bait rest on the bottom of the lake, the locking assembly shifting to a locking position and locking the line from movement in the line guide when the bait and sinker are raised off the bottom of the lake.

### 3,760,528
### PLASTIC FISHING WORM

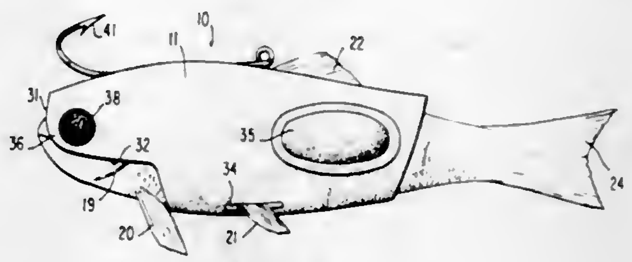
Ray D. Moore, Goodlettsville, Tenn.
Filed Apr. 8, 1971, Ser. No. 132,389
Int. Cl. A01k *85/04*
U.S. Cl. 43—42.24 1 Claim



A plastic fishing lure in the general shape of a worm having head and tail portions. The head portion of the lure contains a metallic hollow chamber about a freely movable ball which produces a fish-attracting noise when the lure is pulled through the water.

### 3,760,529
### LIVE BAIT HOLDER

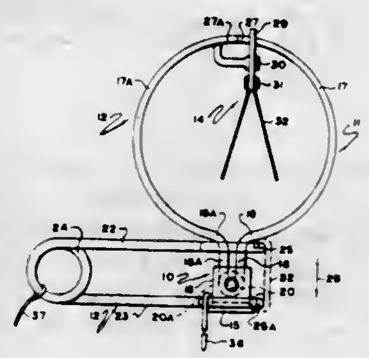
Thomas W. Hicks, 3121 Maple Dr., N.E. Suite 23, Atlanta, Ga.
Filed Aug. 6, 1971, Ser. No. 169,636
Int. Cl. A01k *97/08*
U.S. Cl. 43—41 16 Claims



A holder for live bait having a flexible shell defining a cavity sized and shaped to receive the forward two-thirds portion of a bait fish such as a minnow or the like. The opening at the rear portion of the holder is oblong, and a slot extends from the opening along the top or back of the holder. The bait is inserted into the holder by compressing the top portion of a holder towards its bottom portion to widen the rear opening and slot so that the thicker forward body portion of the bait can pass into the shell. Openings are provided in the shell for the fins or other appendages of the bait, serving to confine the bait in the holder and allowing the bait to swim while confined in the holder.

### 3,760,530
### ANIMAL TRAP

Wallace L. Dahlgren, 183 Cullen Dr., Winnipeg, Manitoba, Canada
Filed Sept. 28, 1972, Ser. No. 292,976
Int. Cl. F41c *25/00*
U.S. Cl. 43—88 4 Claims

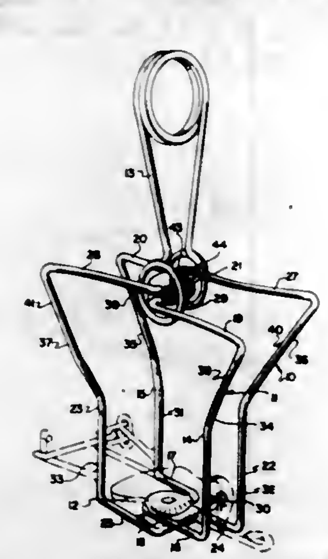


A pair of semi-circular jaws are pivotally mounted by one end thereof on a base to form substantially a circle when set. A hairpin spring reacts between the jaws and forces the other ends of the jaws in contact with one another when set. A trigger mechanism extends down into the circle defined by the jaws and if this is pivoted in either direction by an animal entering the circle, the ends are displaced thus allowing the jaws to be overlapped with a snapping action thereby trapping the animal therebetween, usually by the neck which is broken by the jaws.

### 3,760,531
### FRAME FOR ANIMAL TRAP

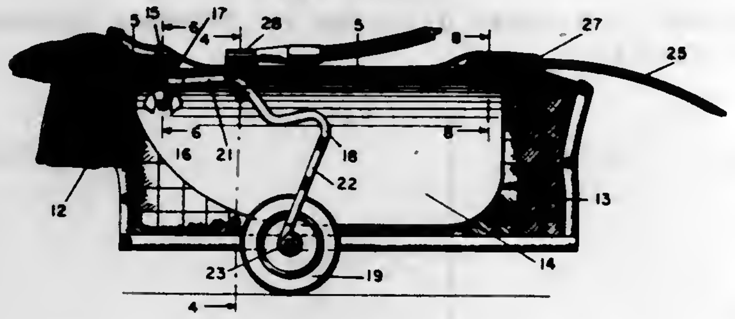
Frank Conibear 2170 Evergreen Place, Victoria, British Columbia, Canada
Filed Dec. 15, 1971, Ser. No. 208,372
Int. Cl. A01m *23/26*
U.S. Cl. 43—90 7 Claims

An improved frame for a rotating frame animal trap, wherein the upper frame ends are of substantially greater length than the lower ends, permitting more leverage or squeezing power on the jaws of the trap. The sides of each of the frames may be flared away from the axis of rotation, and a downwardly pointing, wedge-shaped space may be incorporated between at least upper portions of co-acting jaws, when closed, to provide a more effective and versatile trap.



### 3,760,532
### ANIMATED TOY ANIMAL

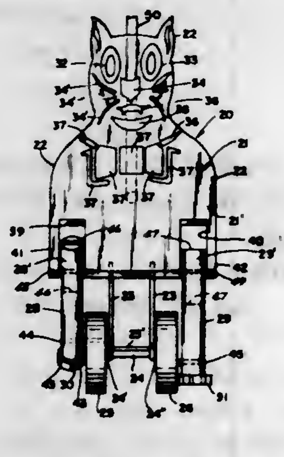
**Edward G. Campion, 303 Martingale Ave., Baltimore, Md.**
**Continuation-in-part of Ser. No. 833,368, June 16, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,478**
**Int. Cl. A63h** *11/10*
U.S. Cl. 46—104 **2 Claims**



A push type animal toy having an animal figure supported on a single wheel, and a handle attached to the back of the figure and extending upwardly and rearwardly therefrom in a wide ogee curve to simulate a slack leash, the handle composed of relatively stiff material whereby the toy may be pushed forwardly imitating the walking or trotting of the animal figure.

### 3,760,533
### TWO WHEELED TOY DEVICE

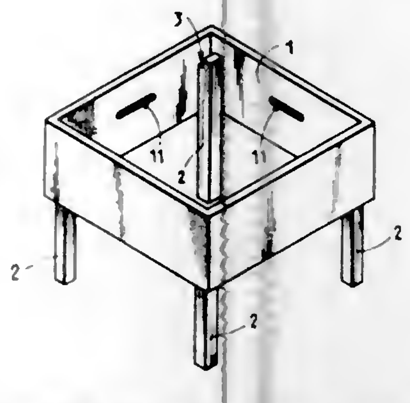
**Edward N. Zopf, Cass Lake, Minn.**
**Filed Aug. 17, 1971, Ser. No. 172,425**
**Int. Cl. A63h** *11/04*
U.S. Cl. 46—105 **3 Claims**



The invention comprises a toy having wheels with a stick projecting rearward therefrom for the operator to grasp to push the toy forward. The toy has a flat front face panel with the silhouette of the upper portion of an animal, and with artistic material on the front face panel portraying the upper portion of an animal. Legs are mounted to the bottom of the panel which ar pumped up and down by the movement of the wheels as the toy is pushed forward.

### 3,760,534
### FLOWER STAND FOR HOLDING POTS IN ONE OF TWO ALTERNATIVE POSITIONS

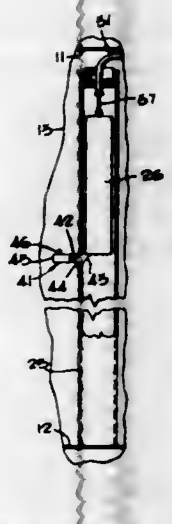
**Antoine E. Choux, Rue du Midi 61, and Pierre Gaudard, Rue d'Orpond 50, both of Canton of Bern, Bienne, Switzerland**
**Filed June 3, 1971, Ser. No. 149,610**
**Int. Cl. A47g** *7/02*
U.S. Cl. 47—39 **5 Claims**



A flower stand for supporting a plurality of flower pots. The stand includes a frame with detachable cover having pot-receiving apertures, the cover being adapted for positioning alternatively flush with the upper edge of the frame or recessed from said edge, the latter position permissive of admitting soil or decorative material to the stand surrounding the pots retained in the apertures.

### 3,760,535
### SELF-CLOSING, SLIDING DOOR ASSEMBLY

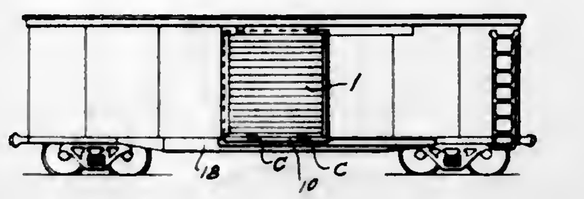
**Arthur W. Trulaske, Frontenac, Mo., assignor to True Manufacturing Company, Inc., St. Louis, Mo.**
**Filed Oct. 20, 1971, Ser. No. 190,992**
**Int. Cl. B05f** *1/00*
U.S. Cl. 49—379 **5 Claims**



A self-closing, sliding door assembly in which a latch arm is pivotally mounted for selective movement into engagement with a counterweight that is connected to a sliding door movable between open and closed limits, the counterweight tending to move the door to the closed limit and the latch arm selectively holding the door in the open limit. The latch arm is weighted to move automatically out of engagement with the counterweight as the counterweight load is removed from the latch arm as the door is moved a further distance in the direction of the open limit, thereby releasing the counterweight to move the door toward the closed limit. More particularly, the latch arm has one end selectively movable under the counterweight while a stop limits rotation of the latch arm so that the latch arm can support the counterweight. The other end of the latch arm is weighted relative to the one end engageable with the counterweight so that the latch arm will pivot automatically under gravity to a position in which the one end is disengaged from the counterweight when the counterweight load is removed from the arm.

### 3,760,536
### SLIDING DOOR WHEEL MOUNTING STRUCTURE

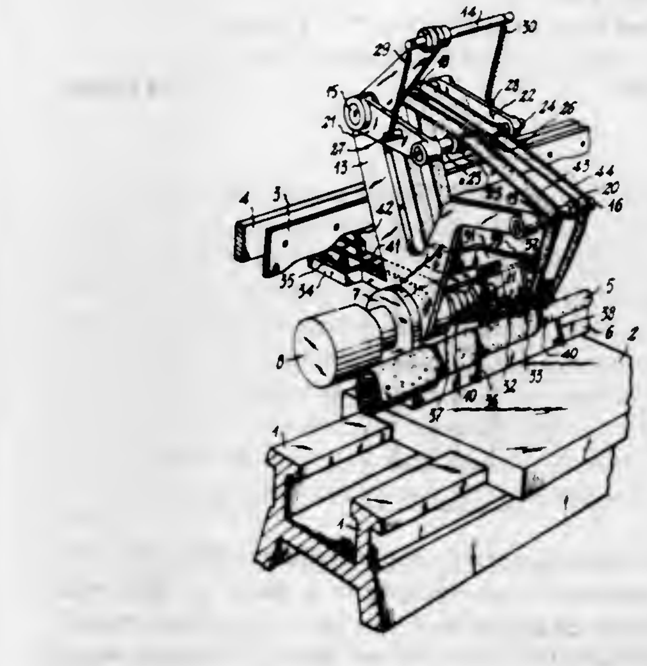
**Thomas J. Wolak, Cicero, Ill., assignor to Evans Products Company, Plymouth, Mich.**
**Filed Jan. 31, 1972, Ser. No. 221,965**
**Int. Cl. E05d** *13/00*
U.S. Cl. 49—426 **3 Claims**



A wheel mounting for a sliding door on an elongated track which facilitates initial installation, and later replacement, of the mounting without removal of the door from the car or disassembly of door elements or of wheel mounting elements.

### 3,760,537
### DEVICE FOR SMOOTHING THE SURFACE OF TURNED WOOD ELEMENTS

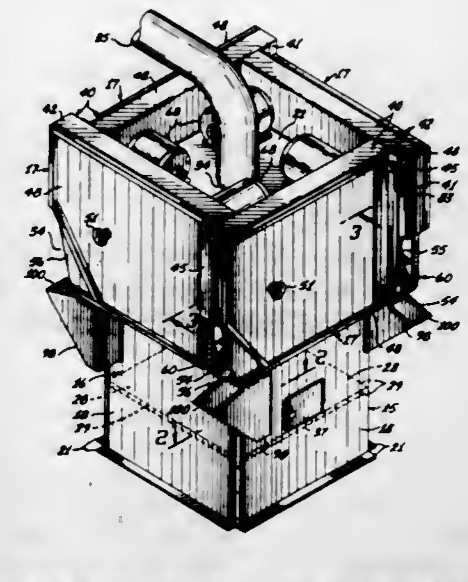
**Costantino Bovati, Bergamo, Italy, assignor to Officine Meccaniche Di Alme'S.p.A., Bergamo, Italy**
**Filed Mar. 25, 1970, Ser. No. 24,042**
**Claims priority, application Italy, Mar. 31, 1969, 1323 A/69**
**Int. Cl. B24b** *21/02*
U.S. Cl. 51—145 R **3 Claims**



Device applicable to the carriage of lathes provided with copying template, the device comprising rollers which are rotated by a motor and on which two looped tapes are wound up, the outward facing surface thereof being coated with abrasive material. The rollers are mounted on two rocking arms, the rocking movement of which is controlled by extensions fast with said arms and engaging the shaped profile of the lathe template as the carriage moves. Two pairs of the rollers are positioned at the surface of a wood piece mounted on the lathe. This wood piece is turned by tools mounted on the carriage and controlled by the template and just after turning is rough-shaped and smoothed by the tapes.

### 3,760,538
### SANDING APPARATUS

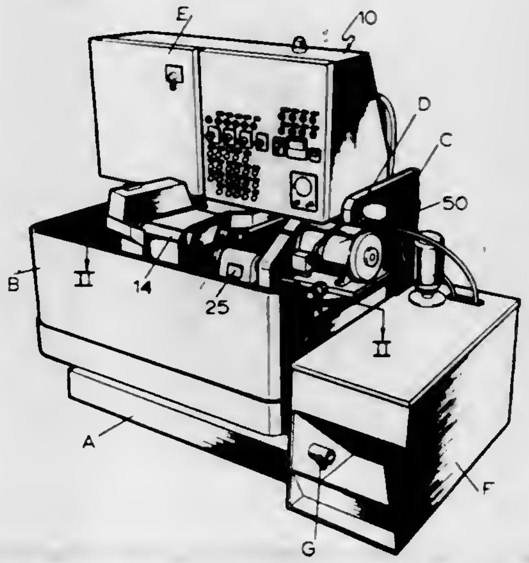
**Karsten Solheim, 10412 North 37th St., Phoenix, Ariz.**
**Filed Nov. 18, 1971, Ser. No. 200,005**
**Int. Cl. B24b** *21/04, 55/06*
U.S. Cl. 51—148 **22 Claims**



A sanding apparatus is disclosed that includes a multi-panel thin-wall cabinet in the interior of which is formed a dust-settling chamber and the sides of which provide supporting structure for at least one enclosed sander assembly. An air passage is formed between the dust-settling chamber and the sander assembly so that exhaust air coupled to the dust-settling chamber will draw the sanding dust from the sander assembly into the settling chamber.

### 3,760,539
### WHEEL DULLING SENSING CIRCUIT

**Edward G. Robillard, Cherry Valley, and Herbert P. Uhtenwoldt, Worcester, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.**
**Filed Jan. 31, 1972, Ser. No. 222,058**
**Int. Cl. B24b** *49/18*
U.S. Cl. 51—165 R **8 Claims**



A grinding machine which dresses the abrasive wheel only when the wheel dullness reaches a predetermined point as controlled when a determination of stack removal reaches a predetermined amount.

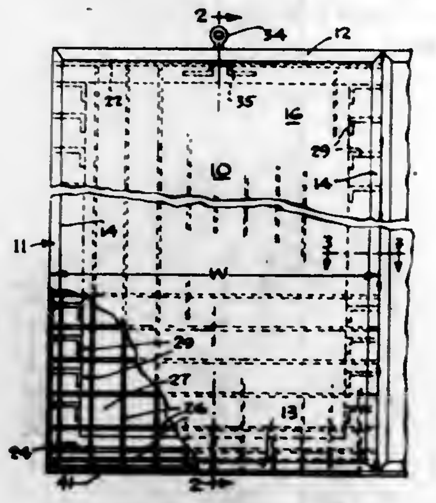
### 3,760,540
### PRE-CAST CONCRETE BUILDING PANELS

**Phillip J. Latoria, 3750 Hawthorne St., Schiller Park, Ill., and Joseph Latoria, 3104 Sarah, Franklin Park, Ill.**

**Filed Sept. 8, 1971, Ser. No. 178,652**

**Int. Cl. E04c** *2/06*

U.S. Cl. 52—125 **11 Claims**



A pre-cast concrete building panel, adapted for use in even a load-bearing wall without additional framing, comprising a continuous peripheral metal channel frame, a concrete mass poured in situ in the frame, with the frame serving as the form, a slab of insulation embedded in the concrete but spaced at its edges from the metal frame, relatively heavy upper and lower shear bars welded to the frame and extending across the panel through the upper and lower edge portions of the concrete, and a lighter wire fabric reinforcement embedded in at least one face of the concrete mass. A plurality of short cantilever re-bars, welded to and projecting inwardly of the vertical sides of the frame, reinforce the vertical edges of the concrete mass.

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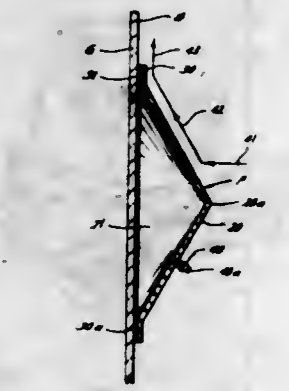
### 3,760,541
### STORM PROTECTOR FOR EXPOSED GLASS AND THE LIKE

**Junius H. Fulcher, 3501 Allen Pky., Houston, Tex.**

**Filed Feb. 2, 1972, Ser. No. 222,843**

**Int. Cl. E06b** *3/28, 3/30*

U.S. Cl. 52—203 **7 Claims**



A storm protector for exposed glass and the like such as glass windows and doors, wherein the protector is releasably mounted on the glass or other sheet material to deflect wind forces and to distribute wind loads to reduce breakage of the glass or other material even when the wind forces are of hurricane intensity.

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### 3,760,542
### DEVICE FOR MOUNTING WALL PLATES

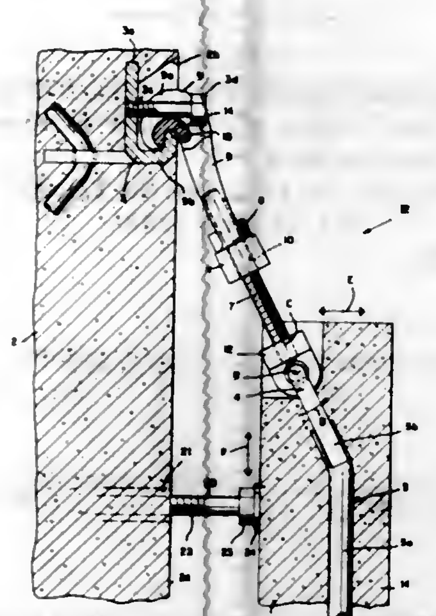
**Ernst Haeussler, Grashofstr. 47, Essen-Bredeney, Germany**

**Filed Oct. 26, 1971, Ser. No. 192,474**

**Claims priority, application Germany, Oct. 24, 1970, P 20 52 338.0; Mar. 31, 1971, P 21 15 672.9**

**Int. Cl. E04b** *2/88*

U.S. Cl. 52—235 **13 Claims**



An assembly for mounting a plate upon a support structure, comprises a first anchor member formed on said support structure; a second anchor member formed on the plate; and adjustable suspension means interconnecting said anchor members, the adjustable suspension means including a bolt connected with one of the anchor members and deflectible relative thereto. A hook-forming element of U-shaped adjustably receives the bolt and has a pair of shanks formed with hooks engaging the other of the members, and a nut threaded onto said bolt and bearing upon the hooking-forming element.

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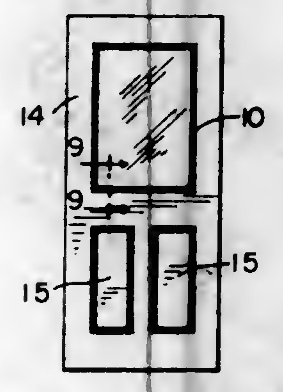
### 3,760,543
### DOOR LIGHT UNIT

**Owen E. McAllister, Oshkosh, Wis., assignor to Morgan Company, Oshkosh, Wis.**

**Filed Nov. 17, 1971, Ser. No. 199,623**

**Int. Cl. E04f** *19/06*; **E06b** *3/62*

U.S. Cl. 52—397 **14 Claims**



A light unit frame assembly for installing a glass or other type glazing member in an opening in a door, or other wall structure, which is characterized by a pair of identical mounting frame members for receivint the glazing member which frame members are shaped of rigid plastic material and constructed for insertion in the opening in the door from opposite sides thereof with fastener elements for locking the frame members together so as to support the glass when they are in proper position. Several basic configurations of the frame members may be provided which may be cut and pieced for different size openings and combinations of configurations, with the help of a special connector clip arrangement for joining the cut sections.

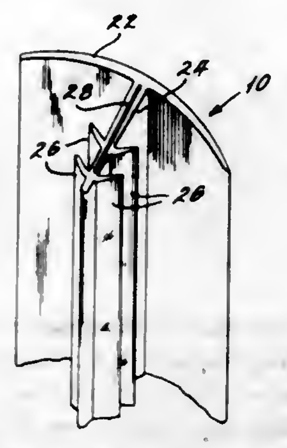
### 3,760,544
### SEALING GASKET WITH ELONGATED INTERNAL STIFFNER

**Frederick L. Hawes, Ladue, and Michael A. Kubat, Oakland, both of Mo., assignors to Tetra Plastics, Incorporated, Chesterfield, Mo.**

**Filed May 27, 1971, Ser. No. 147,348**

**Int. Cl. E04b** *1/68*

U.S. Cl. 52—468 **11 Claims**



An extruded sealing gasket for installing between adjacent panel sections of wall structures and the like to seal and insulate therebetween, said gasket being constructed to facilitate its installation and to resist working loose and coming out after it has been installed.

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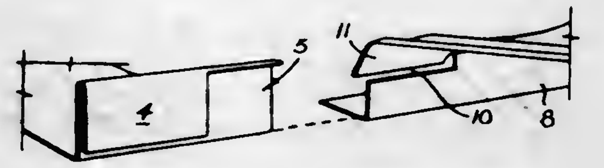
### 3,760,545
### TILING OF ROOFS

**Thomas R. Pearse, Urrbrae, and John S. Allison, Victoria, both of Australia, assignors to Rooftilers (Vic) Pty. Ltd., Adelaide, Australia**

**Filed June 7, 1971, Ser. No. 150,463**

**Int. Cl. E04d** *3/364*

U.S. Cl. 52—529 **4 Claims**



A method and means for tiling sloping roofs in which complementary interengaging shaping on the upper and lower contiguous edges of adjacent tiles are used to allow a first tile to be fitted in position on a tile support and secured at the lower edge, and the upper edge of the next tile is then engaged on the lower edge of the already fixed tile to clip the second tile to the first tile, which then has its lower edge secured to the support, and so on until the roof is completed, the upper edge of each tile having a longitudinal socket which forms part of the interengaging means and forms a water shedding overhang.

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### 3,760,546
### MODULAR ROOF CONSTRUCTION

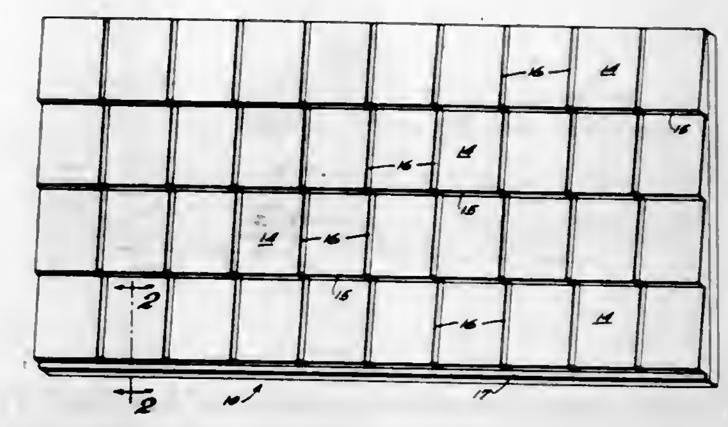
**Gerald Martin, Miami Beach; James A. Baccus, North Miami, and Marvin Gurman, North Miami Beach, all of Fla., assignors to Holiday Recreation Products, Inc., North Miami, Fla.**

**Filed Aug. 24, 1971, Ser. No. 174,477**

**Int. Cl. E04d** *1/28, 1/36, 3/18*

U.S. Cl. 52—555 **8 Claims**

Prefabricated roof modules and associated prefabricated joining and trim members are described for completing on-the-job roofing from the joists out in a single carpentry operation. The modules each comprise a sheet-metal upper layer, a foamed synthetic plastic interior insulation layer, and a plywood sheathing lower layer. The sheet-metal upper layer is embossed or pressed-formed to simulate any desired roof deck construction, and is coated with a protective layer of vinyl resin of any desired color. The various module joining and trim members are provided with resilient wedge portions adapted to be compressed between the abutting edges of adjacent modules; and coated, power driven nails are used to secure the joining and trim members, together with their modular roof units, directly to the roof joists of a building under construction. The side-to-side length of the roof modules is a multiple of the conventional spacing between roofing joists or trusses in ordinary building construction, so that module junctures will overlie central portions of the trusses for nailing.



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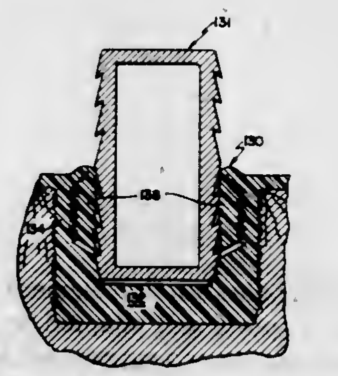
### 3,760,547
### SPLINE AND SEAT CONNECTOR ASSEMBLIES

**John H. Brenneman, 389 Prospect Ave., Princeton, N.J.**

**Division of Ser. Nos. 837,495, Sept. 1, 1959, abandoned, and Ser. No. , , Division of Ser. No. 859,230, Aug. 13, 1969, Pat. No. 3,627,362, which is a continuation-in-part of Ser. No. 514,573, Dec. 17, 1965, abandoned, which is a continuation-in-part of Ser. No. 513,652, Nov. 26, 1965, abandoned, which is a continuation-in-part of Ser. No. 174,554, Feb., 1962, abandoned. This application July 2, 1971, Ser. No. 159,342**

**Int. Cl. E04c** *1/10*

U.S. Cl. 52—586 **27 Claims**

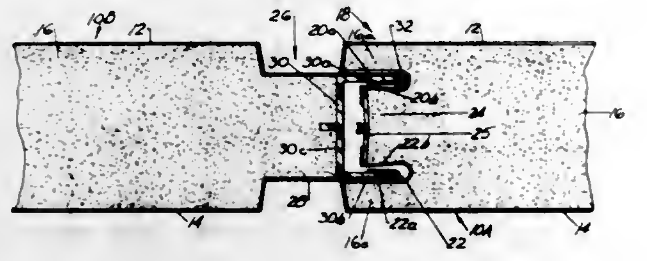


A continuous spline and seat connector assembly that is adapted for use in the construction of buildings such as houses. The spline may be inserted into a seat member in the direction of the depth of the seat member and its removal opposed by a locking action which occurs after the insertion of the spline.

### 3,760,548
## BUILDING PANEL WITH ADJUSTABLE TELESCOPING INTERLOCKING JOINTS

**Gilbert F. Sauer, Franklin, Ohio, and Peter E. Helgesen, Dallas, Tex., assignors to Armco Steel Corporation, Middletown, Ohio**

**Filed Oct. 14, 1971, Ser. No. 189,428**
**Int. Cl. E04c** *2/34;* **E04b** *2/32*
**U.S. Cl. 52—593** **10 Claims**



A building panel construction made up of a plurality of interlocked side-by-side panels. Each panel comprises spaced, parallel front and rear sheets having therebetween an insulating, rigid core element bonded under pressure to the inside surface of the sheets. One edge of each panel is provided with a pair of spaced grooves having a recessed male member therebetween. The other edge of each panel is provided with an edge portion of reduced thickness and an end formed by a channel to form a female member into which a recessed male member of an adjoining panel may project, the outwardly projecting flanges of the channel being received by the spaced grooves on either side of the recessed male member of the adjoining panel.

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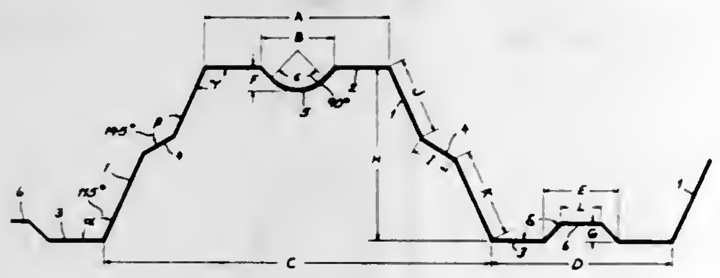
### 3,760,549
## CONSTRUCTION ELEMENT

**Wilhelm Johannes Silberkuhl, and Horst Manthey, both of Essen, Germany, assignors to Wilhelm Johannes Silberkuhl, Essen, Germany**

**Filed Nov. 19, 1971, Ser. No. 200,347**
**Claims priority, application Germany, Nov. 21, 1970, P 20 57 372.2**
**Int. Cl. E04d** *3/361, 13/04*
**U.S. Cl. 52—630** **7 Claims**



A load-supporting construction element, for spanning a pair of spaced-apart supports and adapted to form a wall, floor, deck or roofing structure or a support for a wall, floor, deck or roofing surface which consists of a sheet-metal plate of generally rectangular-plan configuration and a plurality of troughs and crests in alternating relationship and of trapezoidal cross-section. The apices of the troughs and/or crests are provided with integral (unitary) ridges concave in the direction in which the corrugation bulges and of trapezoidal or arcuate cross-section. The flanks of the trapezoidal corrugations are stepped.

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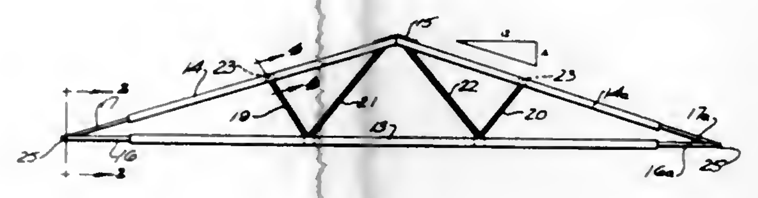
### 3,760,550
## COLLAPSIBLE TRUSS STRUCTURE

**Warren E. Mueller, and David C. Yocom, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio**

**Filed Jan. 20, 1972, Ser. No. 219,254**
**Int. Cl. E04b** *7/16*
**U.S. Cl. 52—641** **17 Claims**



A metal truss structure is disclosed which is prefabricated and capable of being shipped in a collapsed condition in which it occupies a space on the order of four inches by four inches by twenty-eight feet, and which can be erected easily at the site into a roof truss capable of spanning all widths common in residential structures and some commercial structures, while maintaining a desired and predetermined roof pitch, as for example 4:12. A half truss suitable for panelized construction or for modular construction, and having many of the features of the basic truss structure, is also disclosed.

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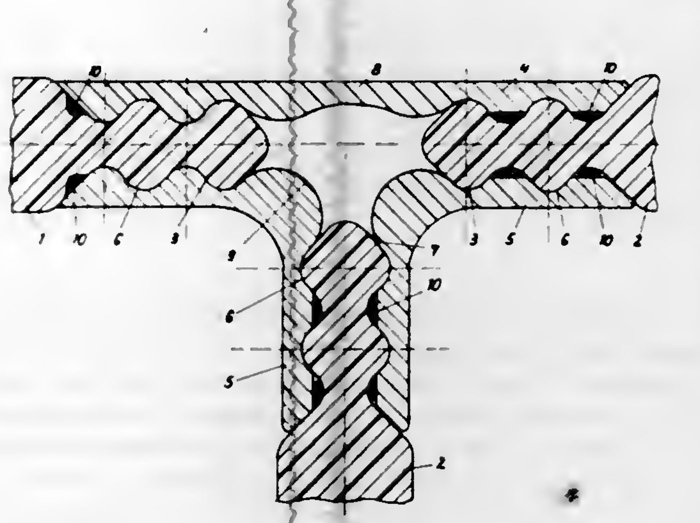
### 3,760,551
## STRUCTURAL ASSEMBLY

**Gustav Konig, Raiffeisnstrasse, Bonlanden, Stuttgart, Germany**

**Filed Jan. 22, 1971, Ser. No. 108,781**
**Claims priority, application Germany, Jan. 23, 1970, P 20 03 010.8**
**Int. Cl. F16b** *5/00*
**U.S. Cl. 52—758 D** **9 Claims**



Each of a plurality of platelike elements comprises at least one undulated edge portion, which is undulated on opposite sides and is connected by connecting elements comprising a plurality of undulated connecting portions which are complementary to and mate with undulated edge portions of respective ones of the platelike elements on opposite sides thereof, interconnecting portions connecting the undulated connecting portions, and fastening elements holding the undulated connecting portions in mating engagement with the undulated edge portions. Each of the undulated edge portions and of the undulated connecting portions comprises at least one high portion, at least one low portion adjacent to the high portion, and a flat surface between the high and low portion. The flat surface of each of the undulated connecting portions mates with the flat surface of the respective undulating edge portion.

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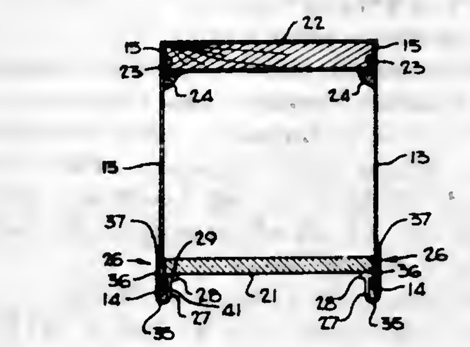
### 3,760,552
## SIGN LETTER CONSTRUCTION

**Paul B. S. Skoetsch, 1428 N. Madison, Stockton, Calif.**

**Filed June 5, 1972, Ser. No. 259,976**
**Int. Cl. F16b** *5/00;* **G09f** *13/00*
**U.S. Cl. 52—758 D** **4 Claims**



A sign letter includes spaced parallel side walls having front edges and back edges. Spanning at least the front edge portions is a decorative cover plate customarily of translucent "-plastic" sheet material. Adhesively holding the cover plate in position is a spaced pair of substantially J-shaped in section lock strips secured to the front edges of the side walls. Preferably, the lateral margins of the lock strips engaging the subjacent surfaces of the cover plate are enlarged to afford a substantial interfacial area for the adhesive. By making each of the enlarged margins in the form of a serif-shaped projection, the lock strips can be locked in place by protuberances adjacent the front edges of the side walls in a one-way interfering relation with the marginal enlargements on the lock strips.

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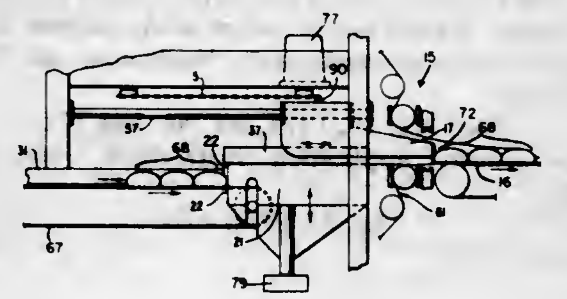
### 3,760,553
## PRODUCT HANDLING EQUIPMENT

**Albert S. Schmidt, Sr., Wormleysburg; Frank M. Irving, Jr., York; Ronald G. Andrus, Wrightsville, and Sherwood F. Amy, York, all of Pa., assignors to Alto Corporation, York, Pa.**

**Continuation of Ser. No. 124,143, March 15, 1971, abandoned. This application Feb. 3, 1972, Ser. No. 223,225**
**Int. Cl. B65b** *5/06, 57/10, 57/12*
**U.S. Cl. 53—26** **5 Claims**



Apparatus for presenting a marshalled product group (bakery rolls, meat patties, auto mirrors, records and the like) to a film packaging system which maintains the predetermined marshalling or corrects problems therein and which involves an elevator which accepts and established the final marshalling and elevates the group to a pusher, and a reciprocating pusher which moves the marshalled group into the film packaging system and the method therefor. A single pusher control chain with sensor and timing systems responsive thereto is also provided.

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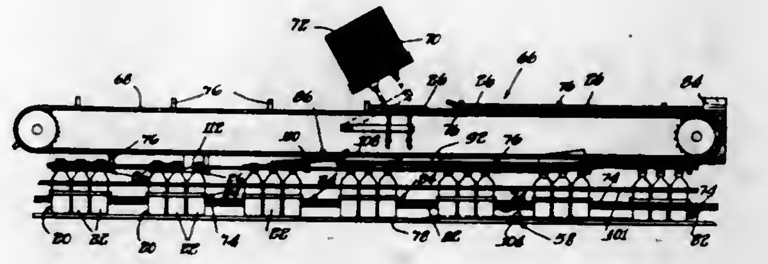
### 3,760,554
## METHOD AND APPARATUS FOR ASSEMBLING A CONTAINER PACKAGE

**Lawrence E. Arneson, 141 W. Jackson Blvd., Morris, Ill.**

**Division of Ser. No. 839,284, July 7, 1969, Pat. No. 3,643,796. This application Jan. 5, 1972, Ser. No. 215,613**
**Int. Cl. B65b** *11/38, 21/02*
**U.S. Cl. 53—32** **8 Claims**



A six-pack of bottles is provided by encircling mid portions of the bottles with a retainer and engaging a paper board carrier and retainer beneath the bottle caps. The paper board carrier has rows of apertures formed therein for receiving the upper ends of the bottles, and is assembled with the bottles by conveyor and guide means which advance the bottles and carrier continuously along a path of travel, initially fold sections of the carrier along lines intersecting the apertures for opening the apertures to receive the upper ends of the bottles and then reversely fold the portions of the carriers for closing the apertures and securing the carrier with respect to the bottles.

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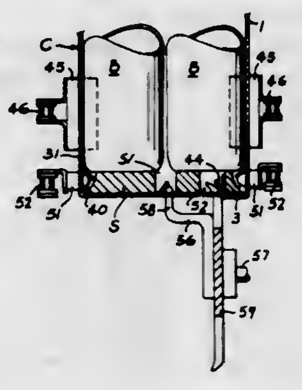
### 3,760,555
## PACKAGING MACHINE

**Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio**

**Filed Nov. 5, 1971, Ser. No. 196,140**
**Int. Cl. B65b** *21/00, 61/00*
**U.S. Cl. 53—48** **5 Claims**



A machine for aligning the side walls of a continuously moving carton disposed in enveloping relationship about a continuously moving group of articles and having an open bottom wall panel and for positioning the bottom wall panel relative to the side walls comprises side registering means movable in synchronism with the carton and articles and provided with registering probes disposed to enter registering apertures formed in each side wall of the carton together with synchronous rotatable bottom registering means arranged to enter a registering aperture formed in a bottom wall panel of the carton to hold that panel in position relative to the carton side walls. Following the desired orientation of the side and bottom walls relative to each other, the bottom wall panel is secured in closed position by suitable locking means.

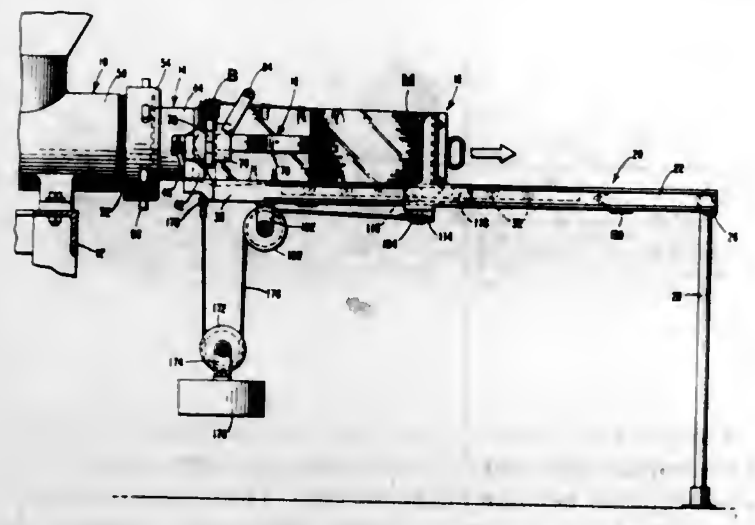
### 3,760,556
## APPARATUS FOR AUTOMATICALLY FORMING SQUARE MEAT LOAVES

**Ervin E. Morris, Madison, Wis., assignor to Jean Neesvig Manchester, Madison, Wis., a part interest**

**Filed July 1, 1971, Ser. No. 158,901**

**Int. Cl. B65b** *63/02*

**U.S. Cl. 53—122** **8 Claims**



Apparatus for extruding and packaging a ground meat product wherein the open end of the bag to be filled is clamped around the discharge end of a horn assembly mounted on the meat grinder. A longitudinally movable carriage resiliently engages the closed end of the bag to provide, in combination with the extruder, a loaf of uniform density. Means are provided for latching the carriage and shutting off the grinder when the carriage has traversed a predetermined position along the frame during the bag filling operation. The filled bag can then be closed and removed from the machine and an empty bag placed over the horn assembly for a subsequent filling operation.

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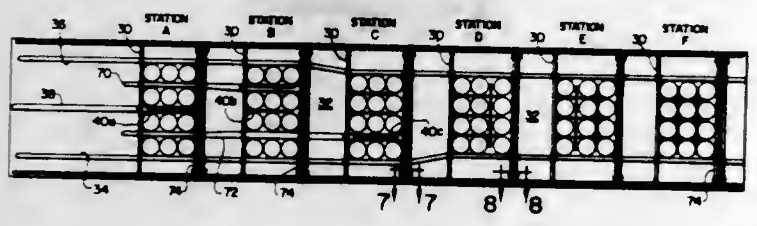
### 3,760,557
## CARTON PARTITION FORMING AND ARTICLE HANDLING MACHINE

**Daniel McIntyre, Portland, Conn., assignor to Emhart Corporation, Bloomfield, Conn.**

**Filed Oct. 13, 1971, Ser. No. 188,820**

**Int. Cl. B65b** *35/44, 61/00*

**U.S. Cl. 53—159** **7 Claims**



Pregrouped slugs of articles are fed onto a deadplate table, where each slug is successively advanced by a primary flight bar through several machine stations. The columns of articles in each slug are spread laterally by lane dividers, and unique column partition elements, or separators, are fed from fixed magazines at several successive machine stations between the columns as they are so spread. The primary flight bars are driven through a lost motion mechanism to slow the slug at these machine stations, and the adjacent rows of articles in each slug are tilted at other machine stations to allow row separators to be fed between the adjacent rows, and to mate with the column separators to form a partition which is held in place by the articles themselves. A secondary flight bar provided ahead of each of the slug of articles serves to restrain the front row of articles in each slug as the slug is decelerated and accelerated at the various machine stations. This secondary flight bar is carried by the flight bar chains on cam operated devices which permit the secondary flight bar to be moved ahead during the lost motion referred to above.

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### 3,760,558
## APPARATUS FOR MANUFACTURING SACKS FROM A HOSE OF THERMALLY-JOINED MATERIAL

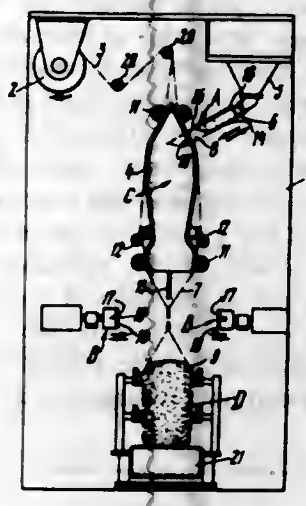
**Igor Vasilievich Kaminsky, ulitsa Lenina, 51, kv. 12; Anatoly Mikhailovich Romanenko, ulitsa Parizhskoi Kommuny, 9a, kv. 7; Viktor Alexeevich Pimenov, ulitsa Donetskaya, 35, kv. 57; Grigory Fedorovich Markovsky, ulitsa Dontskaya, 52, kv. 53; Anatoly Afanasievich Sinichenko, ulitsa Gargarina, 54, kv. 24, and Nikolai Ivanovich Levchenko, ulitsa Pervomaiskaya, 32, kv. 13, all of Severodonetsk, Voroshilovgradskoi Oblasti, U.S.S.R.**

**Filed Sept. 9, 1971, Ser. No. 179,046**

**Claims priority, application U.S.S.R., Jan. 4, 1971, 16 028 20**

**Int. Cl. B65b** *9/12*

**U.S. Cl. 53—183** **2 Claims**



A guide mandrel adapted for positioning and intermittently positively moving a tube, mounted on a common frame of the apparatus, is hollow and has a port on the side of a charging pipe telescopically connected with a means adapted for cutting through the tube wall, with such means being a movable continuation of the charging pipe and connecting the latter via the cut in the tube wall and the port with the hollow of the mandrel in the course of filling a sack.

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### 3,760,559
## METHOD AND MACHINE FOR PACKING SIMILAR ARTICLES INTO TUBULAR WRAPPINGS

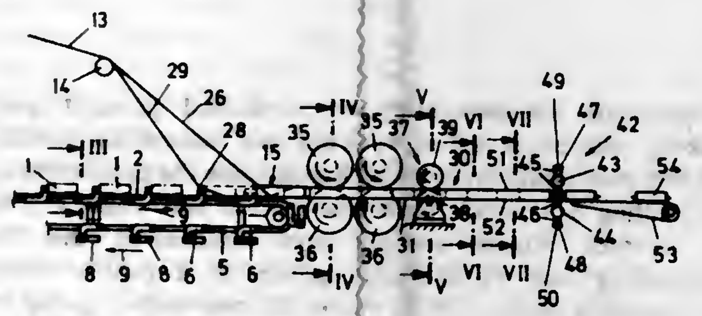
**Hans Heinzer, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland**

**Filed May 19, 1971, Ser. No. 144,772**

**Claims priority, application Switzerland, June 3, 1970, 8304/70**

**Int. Cl. B65b** *9/06*

**U.S. Cl. 53—178** **7 Claims**



The invention provides a method and a machine for packing similar articles into tubular wrappings in which a foil band is continuously fed into and drawn through a folding box which produces at the same time from a single band of foil two lengthwise adhering parallel tubes into which the articles are introduced while the double tube is being formed. A single transverse seam forming device produces transverse seams simultaneously in both parallel tubes between the articles therein. A cutting device separates the two parallel tubes from each other by cutting along a center seam formed by the longitudinally sealed overlapping edges of the foil band. Finally, the two longitudinally separated tubes are simultaneously transversely cut along the center of their transverse seams.

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### 3,760,560
## PACKING MACHINE

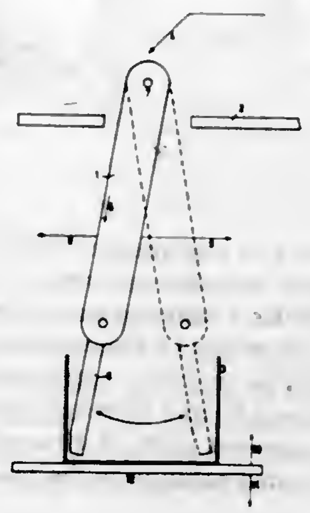
**Wichert Elmert Keizer, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands**

**Filed Nov. 10, 1971, Ser. No. 197,287**

**Claims priority, application Netherlands, Nov. 17, 1970, 7016799**

**Int. Cl. B65b** *5/10*

**U.S. Cl. 53—162** **4 Claims**



A packing machine is provided with a transport system by means of which articles to be packed are transferred from a higher location to an available receptacle. A chute is connected to the transport system at its lower end and is suspended to a shaft located above the receptacle at its upper end. The transport system is further provided with attachment devices by means of which the transport system with chute can perform a swinging movement about the shaft. The possible motion of the transport system with chute in the horizontal direction, corresponds to the size of the layer of articles to be placed into the receptacle and is in such a way that the articles conveyed by the transport system and dropped through the chute are uniformly placed into the receptacle.

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### 3,760,561
## CAPPING MACHINE AND METHOD

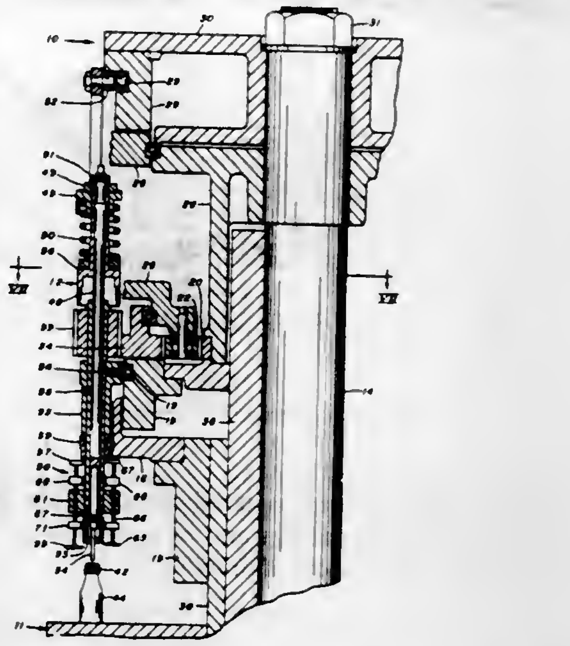
**David J. Over, Richmond; William L. Denhart, Hagerstown, and Thomas J. McKee, Centerville, all of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.**

**Filed Mar. 1, 1971, Ser. No. 119,466**

**Int. Cl. B65b** *7/28*

**U.S. Cl. 53—201** **1 Claim**

A capping machine is provided which includes a rotatable turret with outwardly open vertical slots around its perimeter and a plurality of spindles secured in the slots for applying swage-on closures to containers wherein such swage-on spindles can be easily removed and replaced by spindles for applying roll-on closures. The turret includes two cams, with the upper cam being adapted to vertically reciprocate either swage-on spindles or roll-on spindles, and the lower cam being adapted to move rollers on spinning headsets on roll-on spindles against the skirts of closures on containers, and further includes drive means adapted to rotate such spinning headsets to roll threads in closures' skirts, wherein such drive means is in non-obstructing position with respect to swage-on spindles when they are mounted in the turret. A method is also provided for applying swage-on closures to containers by means of such a machine.



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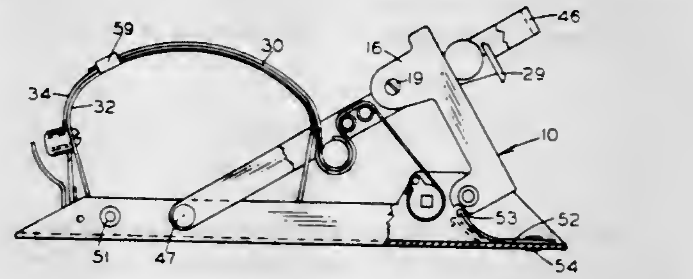
### 3,760,562
## COIN WRAPPING MACHINE

**Carroll H. Walsh, 20002 Cherry St., Pine Bluff, Ark.**

**Filed June 5, 1972, Ser. No. 259,644**

**Int. Cl. B65b** *11/56*

**U.S. Cl. 53—212** **17 Claims**



A machine for concurrently stacking, counting and subsequently wrapping coins has a manually movable coin carriage for delivering the coins to an apron of a manually operable rolling table, on which a flat sheet wrapper is rolled around the delivered coin stack and the ends of the rolled wrapper crimped on the rolled coins.

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### 3,760,563
## DRAWING APPARATUS FOR SEALING CONTAINERS

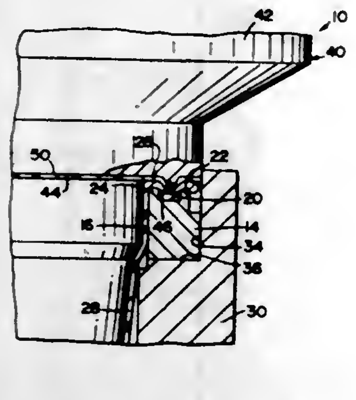
**Guenter Zimmermann, 600 Caster Ave., Clearwater, Fla.**

**Filed Dec. 13, 1971, Ser. No. 207,191**

**Int. Cl. B65b** *7/28*

**U.S. Cl. 53—329** **4 Claims**

A device for sealing aluminum lids to aluminum containers comprising an annular cup retaining anvil including a centrally disposed cup receiving orifice. The upper horizontal face of the anvil comprises a cup rim support having an annular drawing channel formed therein. A reciprocating heat sealing head is arranged immediately above and in concentric alignment with the anvil having its lower horizontal sealing face parallel to the cup rim support. The sealing face includes an annular drawing bead of a diameter substantially equal to that of the drawing channel. To seal, a container is placed in the cup receiving orifice with its rim resting on the cup rim support. After a lid is placed over the cup opening the heat sealing heat is moved downward engaging the upper surface of the lid, compressing the lid and cup rim between the heat sealing face and cup rim support. At the same time, the drawing bead passes downward into the drawing channel drawing the cup rim downward under its force. The strength and malleableness of the aluminum rim in combination with the compression forces, heat seal coatings and heat applied to the lid and rim form a seal at the point of drawing.



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### 3,760,564
## PROCESS FOR THE REMOVAL OF ACIDIC GASES FROM A GAS MIXTURE

**Lucas Alders, Amsterdam, Netherlands, and Pieter Zaal, deceased, late of Heiloo, Netherlands (by Gijsberdina M. Zaal nee Weverling), assignors to Shell Oil Company, New York, N.Y.**

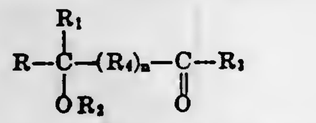
**Filed Mar. 20, 1972, Ser. No. 236,161**

**Claims priority, application Netherlands, Mar. 24, 1971, 7103928**

**Int. Cl. B01d** *53/00*

**U.S. Cl. 55—48** **9 Claims**

Acidic gases such as carbon dioxide and hydrogen sulfide are selectively absorbed from gaseous mixtures with the use of a branched chain aliphatic mono-ketone of the formula



$$R-\underset{OR_2}{\overset{R_1}{C}}-(R_4)_n-\underset{O}{\overset{}{C}}-R_3$$

wherein R, $R_1$ and $R_3$ are alkyl groups, $R_2$ is hydrogen or alkyl, $R_4$ is an alkylene radical and *n* is an integer from 0 to 1.

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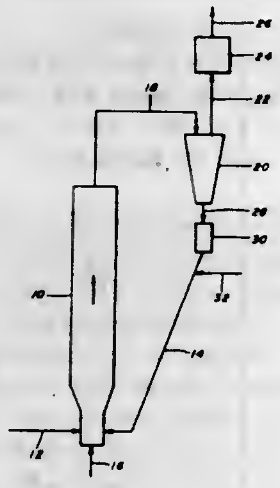
### 3,760,565
## ANTI-POLLUTION METHOD

**William M. Fish, Des Peres, Mo., assignor to Aluminum Company of America, Pittsburgh, Pa.**

**Filed July 19, 1971, Ser. No. 163,715**

**Int. Cl. B01d** *53/06;* **C22d** *3/12;* **C01b** *7/00*

**U.S. Cl. 55—71** **7 Claims**



Removal of fluoride from a stream of gas contaminated therewith by sorption on alumina moving in the same direction and in contact therewith for not exceeding 20 seconds.

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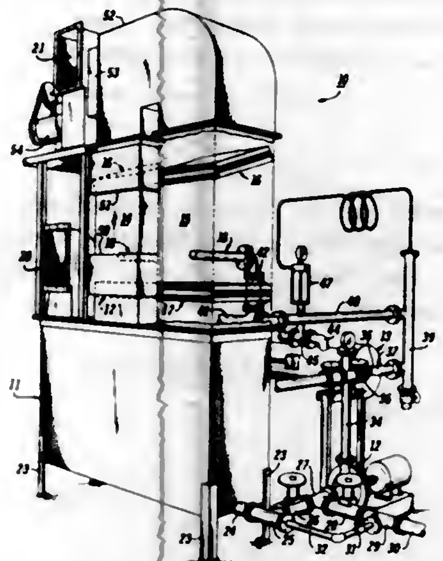
### 3,760,566
## EVAPORATOR AND ENTRAINMENT SEPARATOR

**James F. Zievers, and Clay W. Riley, both of La Grange, Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.**

**Filed Mar. 24, 1971, Ser. No. 127,470**

**Int. Cl. B01d** *47/02*

**U.S. Cl. 55—223** **7 Claims**



An evaporator and entrainment separator for evaporating water from a toxic solution and releasing water vapor to the atmosphere includes a tank for containing the toxic solution, one or more vertical stacks mounted over the tank and containing a plurality of moisture entrainment grids and a spray nozzle which directs heated solution from the tank down onto one of the entrainment grids. A blower draws air across the surface of the heated solution in the tank and up through the stacks.

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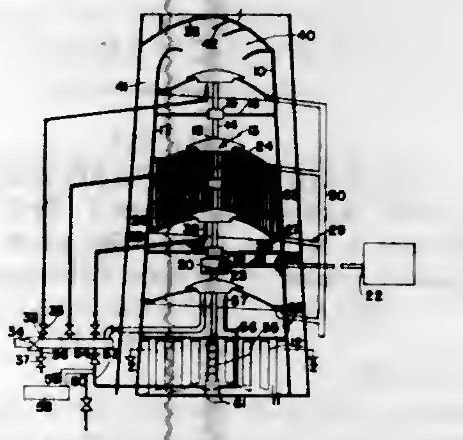
### 3,760,567
## SMOKE AND AIR CLEANER ASSEMBLY

**William Stalker, 516 14th Ave. S.E., Calgary, Alberta, Canada**

**Filed Aug. 13, 1971, Ser. No. 171,518**

**Int. Cl. B01d** *47/16*

**U.S. Cl. 55—222** **1 Claim**



A fan assembly is provided with a smoke stack upon which is sprayed water so that the smoke is thoroughly washed. The water is then collected and then discharged externally of the smoke stack unit for further processing. The clean smoke passing through the stack may be further processed by recirculating same through a drier thus controlling the moisture content of the resultant discharging air.

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### 3,760,568
## OVERHEAD AIR FILTER

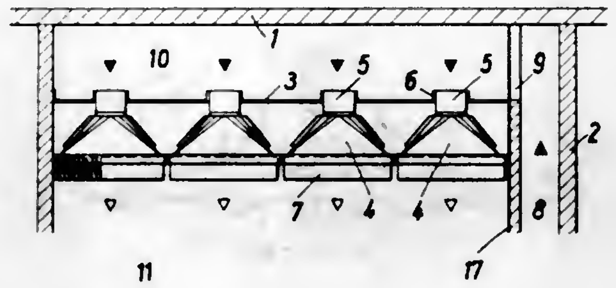
**Gerhard Max Neumann, and Hans-Joachim Wittemeier, both of Berlin, Germany, assignors to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, Berlin, Germany**

**Filed Apr. 24, 1970, Ser. No. 31,674**

**Claims priority, application Germany, Apr. 29, 1969, P 19 22 268.5**

**Int. Cl. B01d** *27/08*

**U.S. Cl. 55—473** **7 Claims**



Incoming filtered air is discharged as a uniform down-current into a room from an array of horizontal filter units of generally pyramidal shape with a filter cell across the larger end, these units being either fitted individually into or out apertures in a false ceiling by connecting pieces at their apex, or connected side-by-side as a common duct by connecting pieces on their sloping sides.

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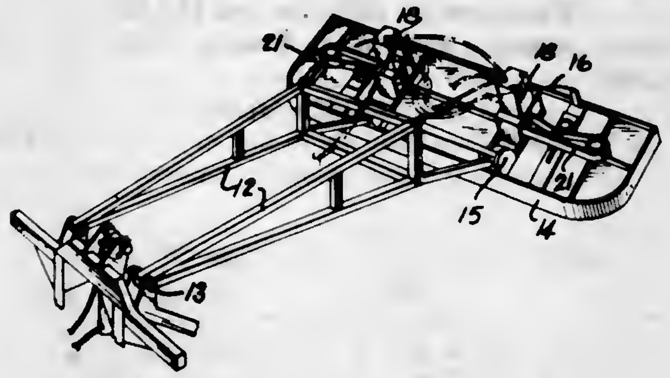
### 3,760,569
## SUGAR CANE TOPPER FOR V-CUTTER HARVESTER

**Harold A. Willett, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.**

**Filed May 8, 1972, Ser. No. 251,142**

**Int. Cl. A01d** *45/10*

**U.S. Cl. 56—10.7** **8 Claims**



The present disclosure is directed to a cane topping device for simultaneously topping two rows of cane being cut by a V-cutter harvester wherein overlapping cutters are raised and lowered to compensate for varying cane stalk height and the angle of attack of the cutting blades of the topper may be varied.

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### 3,760,570
## CENTRIFUGALLY RESPONSIVE BRAKE FOR ROTARY TOOL

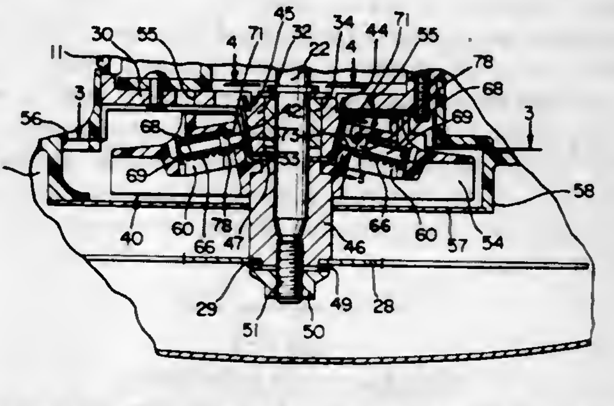
**Stephen J. Ehrlich, Randallstown; John R. Dwyer, Jr., Timonium, and Henry Klein, Baltimore, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Sept. 5, 1972, Ser. No. 286,589**

**Int. Cl. A01g** *3/06*

**U.S. Cl. 56—10.8** **13 Claims**

An edger-trimmer including a housing supported for movement over the ground and having an upstanding handle. A motor within the housing drives a shaft having a cooling fan and a centrifugal brake means associated therewith, the brake including means normally biased into braking engagement with a stator about which the fan is circumposed, and releasable therefrom during operation of the edger-trimmer.



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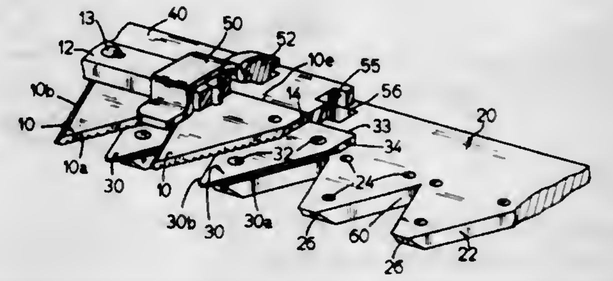
### 3,760,571
## RECIPROCATING SICKLE ASSEMBLY

**Douglas E. Foster, Racine, Wis., assignor to Wm. Didier Mfg. Co., Racine, Wis.**

**Filed Nov. 6, 1972, Ser. No. 304,019**

**Int. Cl. A01d** *55/02*

**U.S. Cl. 56—298** **9 Claims**



A sickle assembly of the type having a plurality of knife blades which reciprocate against corresponding shear plates to provide a cutting action for the assembly as it moves over a crop, such as grass. The shear plates are fully supported on a single support bar having forwardly projecting and generally triangularly shaped portions, one for firmly supporting each of the shear plates rigidly mounted thereto.

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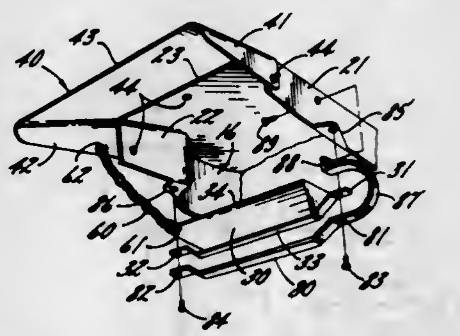
### 3,760,572
## MISSILE DEFLECTOR SYSTEM FOR ROTARY MOWER

**James E. Marion, and Joseph E. Scanland, both of Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.**

**Filed Dec. 30, 1971, Ser. No. 214,190**

**Int. Cl. A01d** *35/26*

**U.S. Cl. 56—320.2** **1 Claim**



A missile deflector system for a rotary mower of the type having a blade and inverted housing providing a throat for lateral discharge of clippings which includes a deflector plate extending transversely across the lower portion of the throat in the plane of the blade for intercepting missiles ejected by the blade and for causing the missiles to be deflected upwardly at an angle. An inverted chute or intercepting shield is arranged in the upper portion of the chute and in the path of movement of the deflected missiles so that the missiles ricochet downwardly at a sharp angle toward the ground while the clippings pass through unimpeded. Means are provided for inhibiting removal of the intercepting shield from its missile-intercepting position as long as the deflector plate is in place thereby guarding against the possible hazard of high trajectory missiles being ejected from the mower. In the preferred embodiment the latter function is accomplished by interconnecting the deflector plate and the shield, or chute, with a short length of chain.

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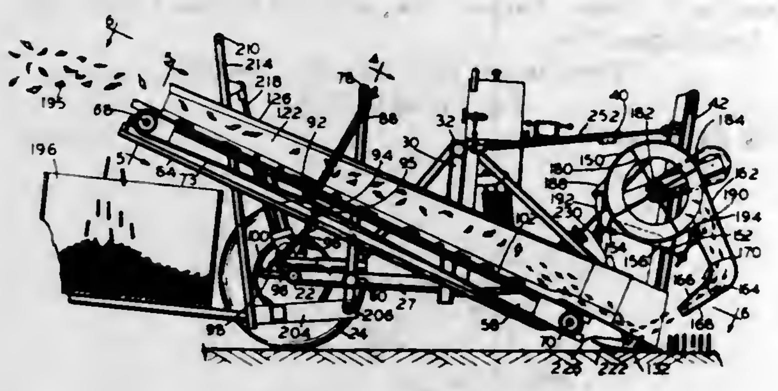
### 3,760,573
### ASPARAGUS HARVESTER

**Wellington W. Porter, R.D. No. 2, Dublin Rd., Waterloo, N.Y.**
**Continuation of Ser. No. 853,451, Aug. 27, 1969, abandoned.**
**This application Aug. 4, 1971, Ser. No. 176,375**
**Int. Cl. A01d** *45/00*
**U.S. Cl. 56–327 A** **6 Claims**



Asparagus harvester having a reciprocating cutter assembly, means for moving the cutter assembly over an asparagus bed at substantially ground level, an inclined ramp extending upwardly and rearwardly from the cutter assembly having a rectangular sectioned downwardly and rearwardly directed nozzle directing air blast toward the cutter assembly from a location forward and above the assembly to move cut asparagus up the ramp, to an impervious inclined belt conveyor having side walls for guiding the blast along and above the conveyor, and a pallet box support disposed below the upper end of the conveyor that can be raised from ground level to a position above ground level to carry the pallet box below the upper end of the conveyor.

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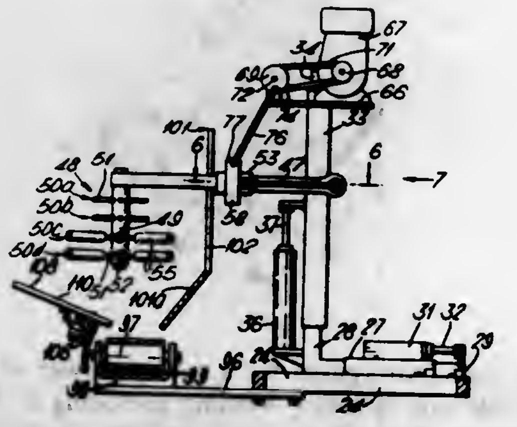
### 3,760,574
### HARVESTER

**Frank Tassone, Box 10, Gol Gol 2379, New South Wales, Australia**
**Filed Dec. 17, 1971, Ser. No. 209,086**
**Int. Cl. A01g** *19/04*
**U.S. Cl. 56–330** **8 Claims**



Harvester for harvesting grapes growing on vines entwined with trellis wires by striking the vine with a vertically oscillating and freely rotatable head structure having projecting arms thereon the harvester having means for positioning the head vertically.

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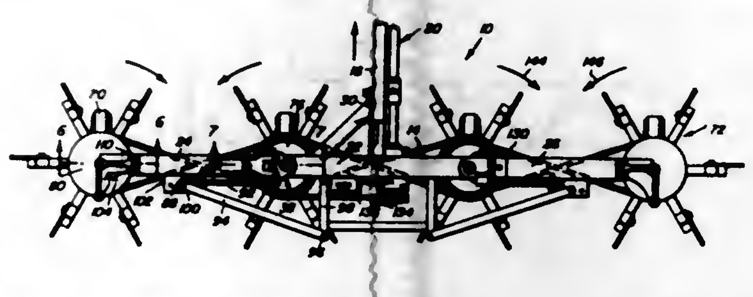
### 3,760,575
### HAY TEDDING MACHINE

**Robert F. Moore, Rutland, Vt., assignor to G.H. Grimm Co., Inc., Rutland, Vt.**
**Filed Apr. 18, 1972, Ser. No. 245,165**
**Int. Cl. A01d** *79/00*
**U.S. Cl. 56–370** **21 Claims**



Rotary raking implements of a hay tedding machine are mounted at the ends of a central beam and at the ends of a pair of outer support beams pivotally extended from the central beam. Endless drive belts drivingly interconnect the outer raking implements with those at the ends of the central beam and are supported substantially in planes common with the horizontal axes about which the outer support beams are vertically displaceable relative to the central beam, establishing a continuous and yieldable drive for all of the rotary raking implements in all positions of the outer beams relative to the central beam.

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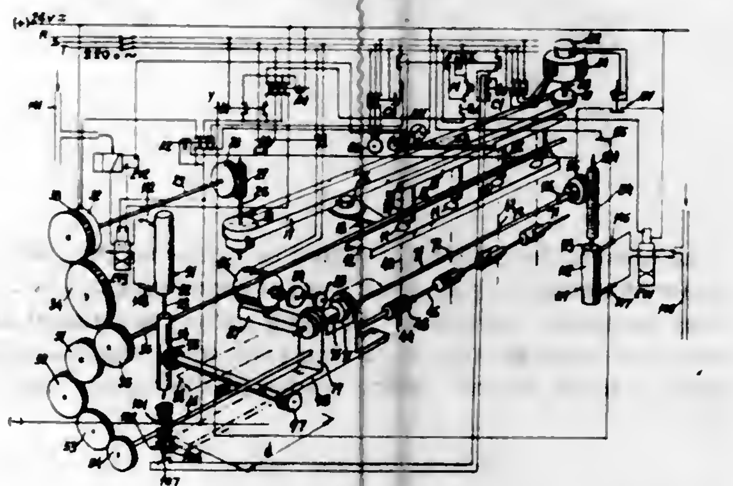
### 3,760,576
### SPINNING FRAME HAVING BOWL SPINDLES

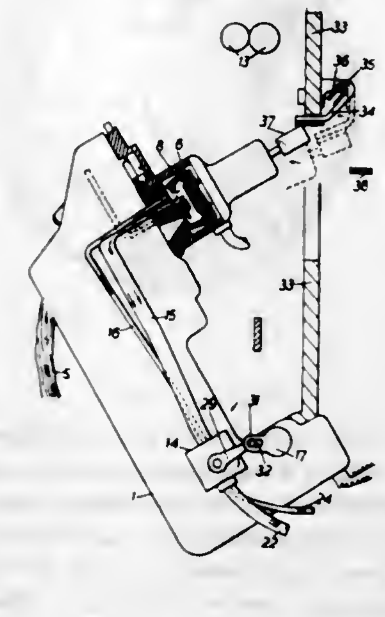
**Jacques Le Chatelier, Riedisheim, and Regis LaFlaquiere, Mulhouse, both of France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse societe francaise, Mulhouse, France**
**Filed June 17, 1971, Ser. No. 153,933**
**Claims priority, application France, June 17, 1970, 7022248**
**Int. Cl. D01h** *13/14*
**U.S. Cl. 57–34 R** **13 Claims**



In a spinning frame having open end spinning spindles, the spinning process is to be prevented from becoming unprimed, if the frame stops, by a notched rod which may slide and turn in front of the outlets of the spindles. A tachometric device causes the rod to slide into a position for forming reserve loops in the threads, and ensures stoppage of the feed to the spindles and of the withdrawal of the threads when, through inertia, the spindles, ceasing to be driven, pass through a pre-determined spinning speed. On restarting, when passing through the same speed, the rod turns and the notches free the previously-formed reserve loops of thread.

### 3,760,577
### METHOD AND APPARATUS FOR CLEANING SPINNING CHAMBER IN RINGLESS SPINNING MACHINE

**Hidetoshi Kihara; Tohoru Urifu; Osamu Yuasa, and Satoki Ejiri, all of Fukui, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Higashi-ku, Osaka and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of Japan**
**Filed Oct. 5, 1971, Ser. No. 186,728**
**Claims priority, application Japan, Oct. 8, 1970, 45/88429; Mar. 22, 1971, 46/16411**
**Int. Cl. D01h** *11/00*
**U.S. Cl. 57–56** **2 Claims**



A system for cleaning a spinning chamber of a ringless spinning machine having spinning units each provided with a body, a feed roller, a combing roller and a rotary spinning chamber and adapted to control the feed roller by the actuation of a yarn breakage sensing feeler. The body which holds the spinning chamber of the spinning unit is tilted to stop the rotation of the spinning chamber when a yarn breakage occurs. A suction is first applied to the spinning chamber to discharge the fibers remaining therein. Then compressed air is charged into the spinning chamber to loosen the residual material adhering to the inner wall surface of the spinning chamber, this loosened material being then discharged by the suction.

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### 3,760,578
### NYLON TIRE CORDS

**Richard W. Kibler, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio**
**Continuation of Ser. No. 388,417, Aug. 10, 1964, abandoned.**
**This application Sept. 23, 1968, Ser. No. 784,970**
**Int. Cl. D02g** *3/02;* **C08g** *20/38*
**U.S. Cl. 57–140 C** **18 Claims**

Flatspotting of automobile tires made with nylon tire cord has significantly hampered the use of nylon tire cord for this purpose. It has been found that the introduction into a crystallized and oriented nylon tire cord of various treating agents greatly reduces the problems associated with flatspotting. The flat spot tends to run out in a very short period of time after beginning operation of a vehicle, thereby quickly eliminating the undesirable thumping or slapping sound associated with the flat spot. The treating agents contemplated for the above purpose include a number of polyhydroxy compounds of specific characteristics and/or nitrogen-containing hydroxy compounds.

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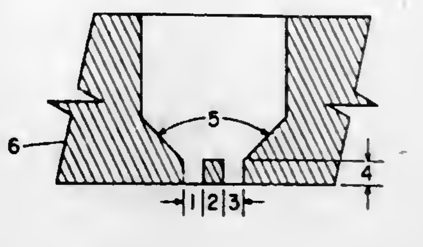
### 3,760,579
### HIGH SHEEN BIFILAMENT YARN AND ELASTIC TEXTILE ARTICLE THEREFROM

**Ralph W. Schuettler, 12800 Percival St., Chester; Garland L. Turner, Rt. 1, Box 158-A, Chesterfield, and George H. Collingwood, 3202 Clay St., Hopewell, all of Va.**
**Division of Ser. No. 733,557, May 31, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,631**
**Int. Cl. D02g** *3/22*
**U.S. Cl. 57–140 J** **7 Claims**



A bifilament yarn comprising two symmetrical lobes fused so that the concave sides intercept at angle $\theta$ ranging from 41° to 54°. The yarn has a broad concave area and a narrow edge area of convex shape and preferably a modification ratio of between 1.65 and 2.05. This bifilament yarn, textured and non-textured, semidull and bright, when converted to plain knit hosiery has a luster in the range of 6.6 to 21 (K/S × 100) units. The textured and non-textured plain knit textile articles consisting of the bifilament yarns of this invention after repetitive elongations of 25 percent have 150–300 percent greater work of recovery and equal improvement in resistance to sagging and wrinkling than other cross-sectional configurations. The bifilament yarns are prepared by melt spinning thermoplastic homopolymers having a relative formic acid viscosity of 25 to 60 at a temperature of 250°–280°C through twin orifices separated from each other for a distance of 0.05 to 3.0 mils.

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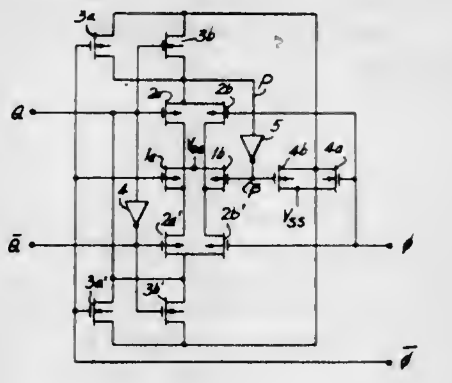
### 3,760,580
### BINARY DIVIDER CIRCUIT FOR ELECTRONIC WATCH

**Kinji Fujita, Suwa-gun, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**
**Filed Feb. 2, 1972, Ser. No. 222,963**
**Claims priority, application Japan, Feb. 10, 1971, 46/5220**
**Int. Cl. G04b** *1/00*
**U.S. Cl. 58–23 A** **3 Claims**



A binary divider circuit for an electronic watch including dual OR-NAND gates and two inverters. The watch includes a time standard oscillator which oscillates at a relatively high frequency, a chain of said binary dividers for dividing said high frequency to a low frequency timing signal, and time display devices for displaying time in response to said low frequency timing signal.

### 3,760,581

### ELECTRO-MECHANICAL DIGITAL WORLD CLOCK

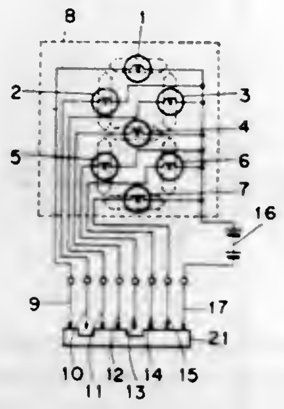
**Yasuo Wakabayashi, Hairando, No. 1362-293, Hisaki-machi, F-191 Kamakura-Fushi-City, Kanagawa Prefecture, Japan**

**Filed Oct. 17, 1972, Ser. No. 298,346**

**Claims priority, application Japan, Oct. 18, 1971, 46/81560**

**Int. Cl. G04b** *19/22, 19/30*

**U.S. Cl. 58—42.5** **5 Claims**



An electro-mechanical digital world clock capable of indicating time of different places of the world by electrically illuminated figures. The clock comprises a first mechanism for indicating minute unit time by a figure of 0 to 9, a second mechanism for indicating ten minute unit time by a figure of 0 to 5, and a third mechanism for selectively indicating hour unit time of a selected place. The third mechanism includes a two-figured digital indicator consisting of a plurality of electric bulbs, a cylindrical rotary body making a one twenty-fourth revolution at every 1 hour, a first switching means arranged on said rotary body for selectively illuminating the electric bulbs of the two-figured digital indicator for indicating hour unit time of one place, and additional switching means arranged also on the rotary body for selectively illuminating said electric bulbs of the two-figured digital indicator for indicating hour unit time of another place.

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### 3,760,582

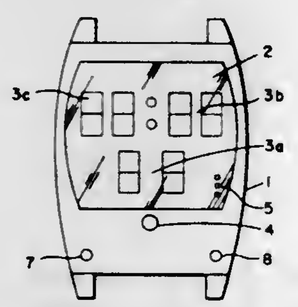
### ELECTRONIC TIMEPIECE WITH POWER CONSERVING FEATURES

**George H. Thiess, and Willie A. Carbtree, both of Dallas, Tex., assignors to HMW Industries, Inc. (formerly Hamilton Watch Company), Lancaster, Pa.**

**Filed Nov. 23, 1970, Ser. No. 92,027**

**Int. Cl. G04c** *3/00;* **G04b** *19/00*

**U.S. Cl. 58—50 R** **17 Claims**



An electronic timepiece including an integral energy source. The circuitry of the timepiece is implemented using solid state devices arranged to maximize the useful life of the energy source by conserving energy.

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### 3,760,583

### ELECTRONIC WRIST WATCH WITH ALARM

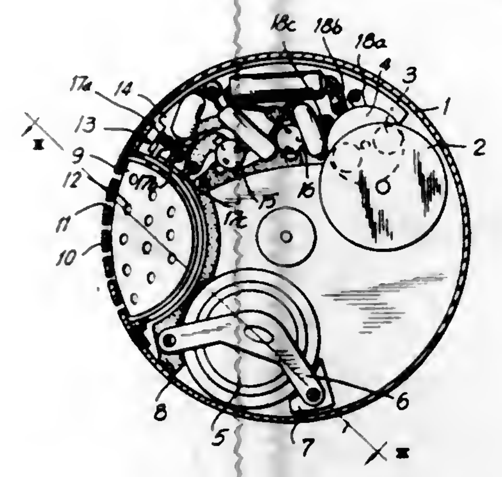
**Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

**Filed Feb. 17, 1972, Ser. No. 227,107**

**Claims priority, application Japan, Feb. 18, 1971, 46/7159**

**Int. Cl. G04b** *23/12;* **G04c** *21/34*

**U.S. Cl. 58—57.5** **2 Claims**



An electronic wrist watch with an alarm has a buzzer provided on the outside of a watch case, a perforated cover which covers said buzzer, an excitation circuit which drives said buzzer, apparatus for operating the excitation circuit at some predetermined time, and a small-size dry cell battery for supplying the oscillating power of said buzzer. The cover is coextensive with the watch case.

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### 3,760,584

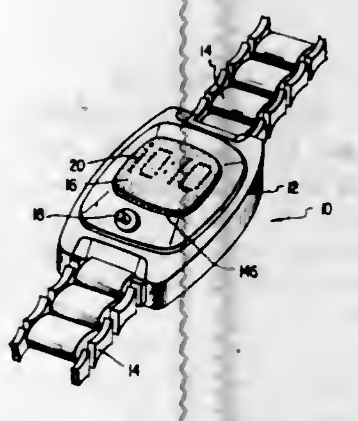
### INTEGRATED CIRCUIT SOLID STATE WATCH

**Bruno M. Dargent, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.**

**Continuation-in-part of Ser. No. 138,547, April 29, 1971, Pat. No. 3,714,867. This application May 14, 1971, Ser. No. 143,492**

**Int. Cl. G04b** *19/30, 19/24;* **G04c** *9/00*

**U.S. Cl. 58—50 R** **18 Claims**



Disclosed is a solid state electronic wristwatch with no moving parts. A crystal oscillator supplies a timing signal through a binary divider and display actuator to an electro-optical display in the form of a digital array of light-emitting diodes. The same display is used for both minutes and seconds and all displays are driven from the same decoder. The vast majority of the electrical components of the watch are incorporated in one or more large-scale integrated circuits.

### 3,760,585

### TIMEPIECE

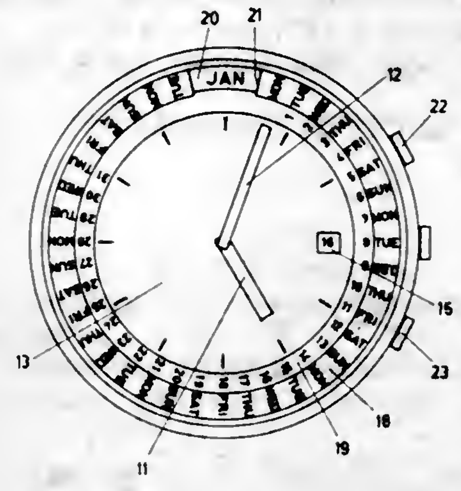
**Irving L. Wein, Chicago, Ill., assignor to Clinton Watch Company, Chicago, Ill.**

**Filed Sept. 13, 1971, Ser. No. 179,988**

**Claims priority, application Switzerland, July 27, 1971, 11024/71**

**Int. Cl. G04b** *19/24*

**U.S. Cl. 58—58** **2 Claims**



A timepiece, comprising indicating means driven by a movement for indicating the hours and minutes and also the date, characterized in that there are disposed around the said indicating means a first annular surface carrying indications of the dates of a month of 31 days, and a second annular surface concentric with the first one and carrying indications of the consecutive days of the week of at least five consecutive weeks, at least one of said annular surfaces being disposed on a turning ring which can be rotated manually for radially aligning the indications of the dates and the indications of the days of the week to form a complete calendar of a month.

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### 3,760,586

### AUTOMATIC CHAIN CUTTING MACHINE

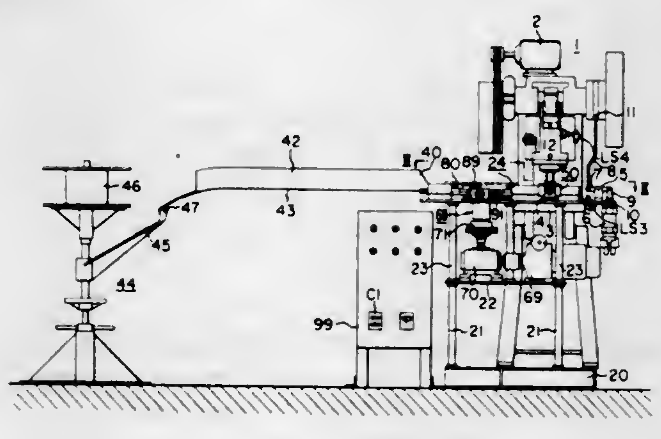
**Kaoru Onishi, Higashi, Osaka-shi, Osaka-fu, Japan, assignor to Tsubakimoto Chain Co., Ltd., Osaka-shi, Japan**

**Filed June 27, 1971, Ser. No. 157,239**

**Claims priority, application Japan, July 3, 1970, 45/57799**

**Int. Cl. B21l** *21/00*

**U.S. Cl. 59—11** **3 Claims**



An automatic chain cutting machine which divides a chain made in a longer length into chains having a required number of links. The machine includes a chain guiding means which guides a long-length chain to the working portion of the press, a means for feeding the chain and a pressing machine which pushes out a connecting pin from the chain. The chain feeding means incorporates a sprocket for feeding a chain and a means that gives a signal at each time a certain even number of teeth on said sprocket rotatively move, which are designed in such a mechanism as to stop the sprocket when the number of signals thus given reaches the predetermined one, thereby holding the portion of the chain at which it should be separated at a predetermined working position so that the press punch may push out the connecting pin from the portion to be separated in order to thus enable an automatic production of a chain with a required number of links.

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### 3,760,587

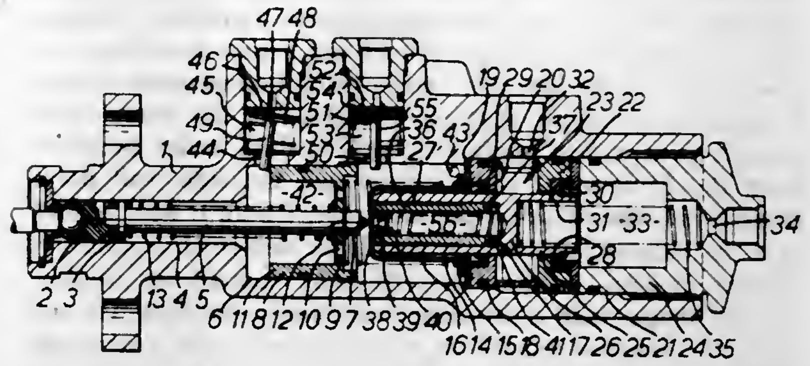
### HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

**Brian Ingram, Barsall Common, England, assignor to Girling Limited, Birmingham, England**

**Filed July 2, 1971, Ser. No. 159,344**

**Int. Cl. F15b** *7/00*

**U.S. Cl. 60—54.6 E** **2 Claims**



In a master cylinder for an hydraulic braking system a piston works through first and second axially spaced seals fixed in a bore in a cylinder body. A space between the seals for connection through an inlet port to a reservoir for hydraulic fluid is normally in communication with a pressure space in the bore in advance of the piston through a recuperation port in the piston. When the piston is advanced into the pressure space the recuperation port is closed by one of the seals and thereafter further movement of the piston in the same direction pressurises hydraulic fluid in the pressure space.

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### 3,760,588

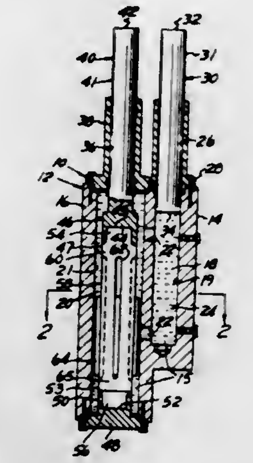
### HYDROMECHANICAL ELASTOMERIC FORCE AMPLIFIER

**Paul W. Kustusch, 666 Parker Ave. Apt. 312, Detroit, Mich.**

**Filed Jan. 3, 1972, Ser. No. 214,843**

**Int. Cl. F15b** *7/00*

**U.S. Cl. 60—54.5 R** **7 Claims**



This hydromechanical elastomeric force amplifier has a casing containing two elongated preferably cylindrical force input and output chambers connected to one another by ports. Both chambers contain a hydraulic working fluid, such as a hydraulic oil. The force-input chamber has a reciprocable force-input or energizing plunger slidably mounted therein. The force-output chamber contains a reciprocable force-output or load-bearing plunger slidably mounted therein and this preferably is of the same diameter as the force-input plunger. Interposed between a socket in the inner end of the force-output plunger and a corresponding socket in a boss in the opposite cylinder head of the force-output chamber is an elongated approximately cylindrical force-transforming actuator of an elastic deformable material compatible with the working fluid and vice versa, and preferably provided with slide guide bearings. This elastomeric actuator in its relaxed condition is spaced radially away from the side wall or cylinder bore of the force-output chamber, and is so connected to the force-output cylinder head and the force-output or load-bearing plunger that its opposite ends and the adjacent end portions of the plunger and cylinder head are not exposed to contact with the hydraulic working fluid, with the result that only the side surfaces thereof are so exposed and thereby subjected to the action of the hydraulic working fluid in the force-output chamber.

In operation, let it be assumed that before operating the force-input plunger, a sufficiently heavy load is imposed upon the force-output or load-bearing plunger to cause the resulting descent of the force-output plunger and in turn to deform the elastic deformable actuator axially, with a consequent lateral expansion or bulging thereof. Actuation of the force-input plunger now moves hydraulic working fluid under pressure from the force-input chamber through the side wall ports thereof into the force-output chamber, where it acts against only the bulging side walls of the elastic deformable actuator, causing inward yeilding thereof back toward its original relaxed shape, with a resulting reduction in its diameter and with a consequent axial elongation thereof by the rearrangement of the molecules of its elastic deformable material. This elongation produces a consequent outward sliding motion of the force-output or load-bearing plunger, with an amplification of the force applied to the force-input plunger. Thus, in a test of the actual device, a 40-pound weight placed on top of the force-output or load-bearing plunger has been lifted thereby a certain distance by means of the operator's finger depressing the force input plunger of the same diameter the same distance. It is not necessary, however, for both plungers to be of the same diameters.

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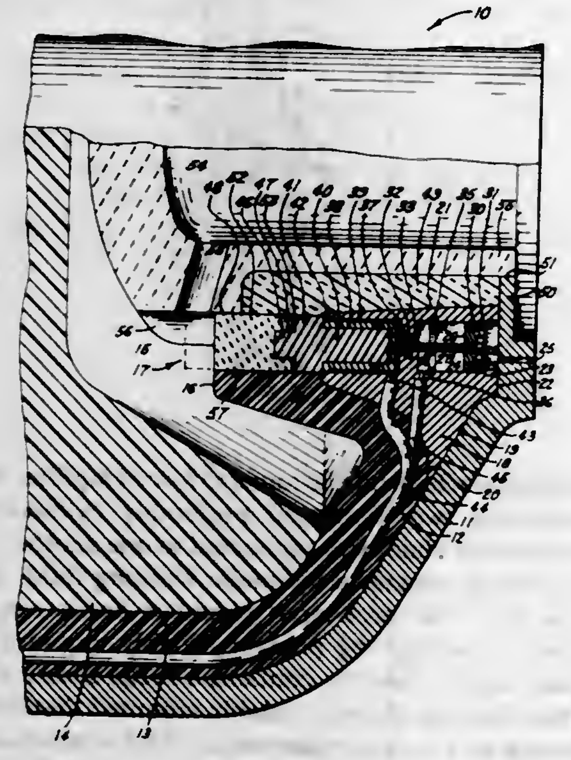
## 3,760,589
## THROTTLING MECHANISM FOR CONTROLLING THE THRUST LEVEL OF A SOLID PROPELLANT ROCKET MOTOR

**William R. Puckett, Trinity; John H. Kelly, Hartselle; Robert E. Overall, and John J. De Haye, both of Huntsville, all of Ala., assignors to Thiokol Chemical Corporation, Bristol, Pa.**

**Filed Mar. 24, 1969, Ser. No. 809,715**

**Int. Cl. F02k** *9/04*

**U.S. Cl. 60—253** **1 Claim**



A throttling mechanism for the nozzle of a solid propellant rocket motor that is capable of selectively controlling the effective area of the discharge orifices of the nozzle whereby the magnitude of the thrust of the solid propellant rocket motor may be varied.

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## 3,760,590
## DEVICE FOR METERING IGNITION FUEL TO THE IGNITION UNIT OF AN AFTERBURNER ASSOCIATED WITH A TURBOJET ENGINE

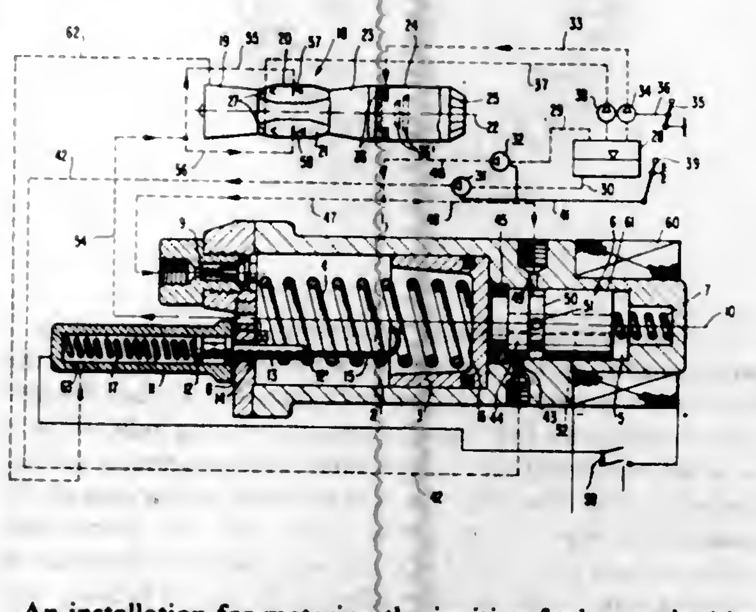
**Eberhard Bader, Munich, Germany, assignor to Motoren-und Turbinen Union Muenchen GmbH, Munich, Germany**

**Filed Apr. 6, 1971, Ser. No. 131,713**

**Claims priority, application Germany, Apr. 9, 1970, P 20 16 927.1**

**Int. Cl. F02k** *3/10;* **F02c** *7/26*

**U.S. Cl. 60—261** **13 Claims**



An installation for metering the ignition fuel to an ignition unit of an afterburner forming part of a jet engine, which utilizes a control device for regulating the injection period and/or the quantity of the ignition fuel as a function of engine parameters which vary with varying ambient conditions.

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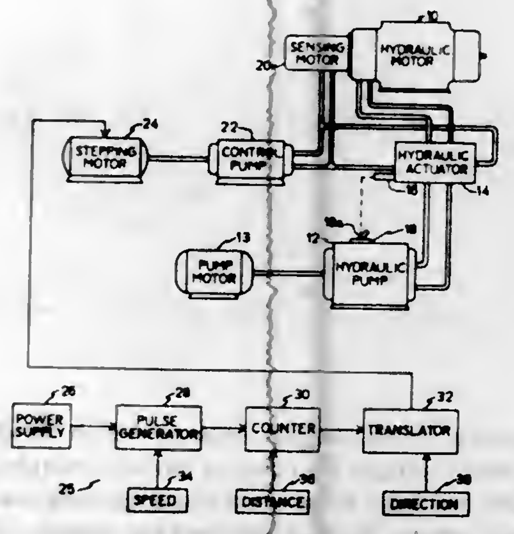
## 3,760,591
## HYDRAULIC-ELECTRIC CONTROL SYSTEM FOR HYDRAULIC MOTOR

**Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.**

**Filed Dec. 27, 1971, Ser. No. 212,519**

**Int. Cl. F15b** *39/46*

**U.S. Cl. 60—444** **7 Claims**



A hydraulic motor is driven by hydraulic fluid supplied by a hydraulic pump. The pump has a servo-stem control thereon which regulates fluid flow to the motor and thereby controls motor speed and direction of rotation. The servo-stem control is operated by a movable spring-centered piston of a hydraulic actuator. The actuator piston is movable in response to fluid flow conditions in a rotary servo-system which comprises a hydraulic sensing motor (driven by the hydraulic motor) and a control pump which supplies fluid to the sensing motor. The direction, speed and degree of rotation of the control pump regulates the direction, speed and degree of rotation of the hydraulic motor. The control pump is driven by an electric stepping motor and the latter is operated by electric control means. The electric control means comprise variable frequency pulse generating means to establish stepping motor speed and pulse counting means to establish the extent of stepping motor rotation. The electric control means also includes selector switches for presetting a predetermined direction, speed and degree of rotation for the stepping motor. The hydraulic motor is used to drive a movable bridge member of an overhead crane.

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## 3,760,592
## HOT-GAS ENGINE

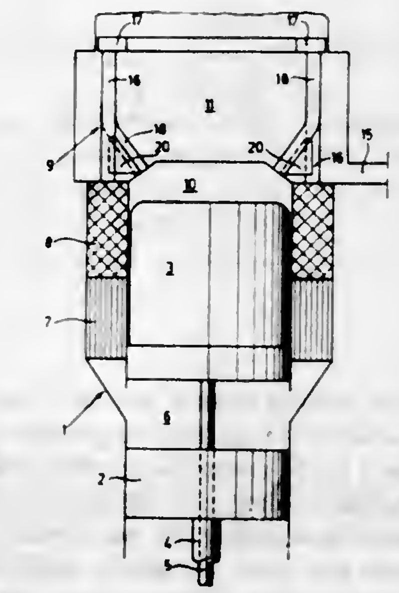
**Gregorius Theodorus Maria Neelen, Emmasingel, Eindhoven, Netherlands**

**Filed Mar. 22, 1971, Ser. No. 126,591**

**Claims priority, application Netherlands, Apr. 20, 1970, 7005791**

**Int. Cl. F02g** *1/04*

**U.S. Cl. 60—517** **4 Claims**



A hot-gas engine with a heater formed by a number of pipes extending in a cylinder form around a space for gases of combustion. An annular element extending at right angles to the cylinder axis is provided between selected pipes, the element comprising a number of recesses which at least partially surround portions of the pipes with slit-shaped ducts for gases of combustion to flow between the walls of the recesses and the relative pipe parts.

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## 3,760,593
## SLIDE GATE

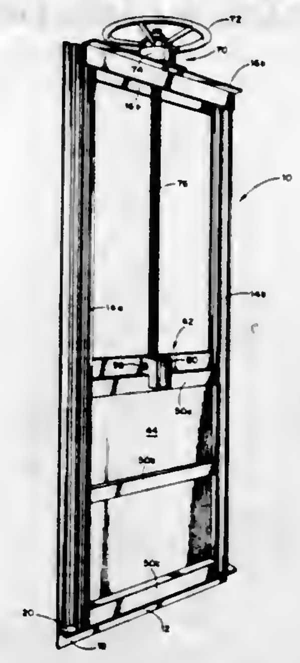
**George E. Whipps, Athol, Mass., assignor to Rodney Hunt Company, Orange, Mass.**

**Filed Sept. 14, 1972, Ser. No. 289,176**

**Int. Cl. E02b** *7/28*

**U.S. Cl. 61—28** **10 Claims**

A slide gate for mounting over a wall opening or in a channel. The gate includes a frame assembly which surrounds the wall opening, or which is fixed in the channel, a slide assembly mounted within the frame assembly for vertical movement between an open and a closed position, and operating means carried by the frame assembly. The operating means, which is connected to the slide assembly by a stem, operates to impart vertical movement to the slide assembly. The slide assembly includes a flat plate or disc reinforced by vertically spaced horizontal ribs. At least the lowermost rib is specially adapted to hold a resilient seal, the latter cooperating with the bottom member of the frame assembly when the slide assembly is closed. The side members of the frame assembly each provide parallel grooves into which the side edges of the flat plate or disc and the ends of the horizontal reinforcing ribs protrude. The upper ends of the frame side members are permanently interconnected by yoke members which are adapted to support the operating means, and which are laterally spaced to permit the slide assembly and its connecting stem to be removed from the frame assembly as a single unit.



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## 3,760,594
## BUILDING OF UNDERGROUND PARTITION WALLS

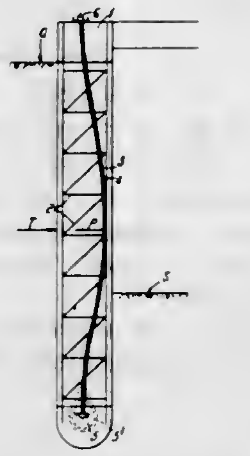
**Nicolo Jurina, Milan, Italy, assignor to I.C.O.S. Impresa Costruzioni Opere Specializzata S.p.A, Milan, Italy**

**Continuation-in-part of Ser. No. 850,101, Aug. 14, 1969, abandoned. This application Mar. 3, 1972, Ser. No. 231,752**

**Claims priority, application Italy, June 11, 1969, 18059 A/69**

**Int. Cl. E02d** *5/20*

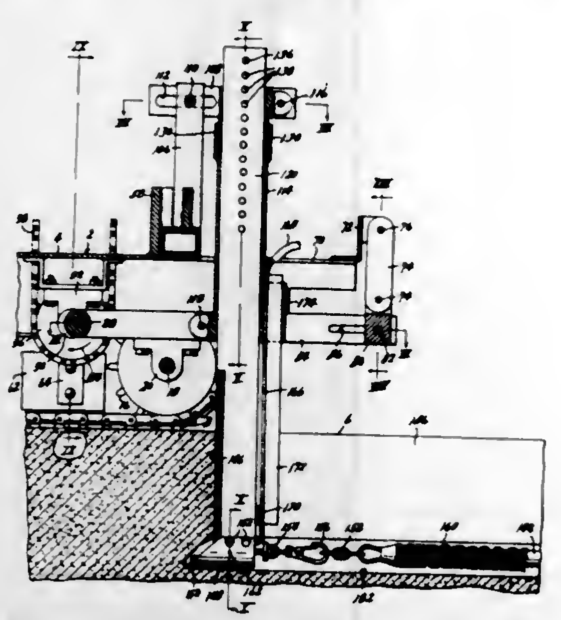
**U.S. Cl. 61—39** **7 Claims**



A method for the construction of subterranean partitions or diaphragm walls in concrete, of the type in which a trench is excavated in the ground by known means so that when the casting concrete is effected, the walls of the trench assume directly the function of moulding boxes. Prior to pouring the concrete, a set of metal stressing members, such as high tensile strength steel, is inserted into the trench according to a predetermined profile. After the concrete has set, the said stressing members are subjected to a traction force to induce a prestress adapted to give the wall pre-inflection in a selected direction and amount. Since the concrete is in the trench and in intimate contact with the walls thereof, the traction force applied is of such a degree that, if the same force were applied to a similar wall element outside the earth, such a wall element would fail and crack.

### 3,760,595
### PIPE PULLING MACHINE

**Edward T. Stewart, 107 Plaza Ter., Dodge City, Kans., and Jerald W. Bishop, 1506 Highway 56, Dodge City, Kans.**
**Filed Aug. 9, 1971, Ser. No. 169,995**
**Int. Cl. A01b** *3/64, 11/00;* **F16l** *1/00*
**U.S. Cl. 61—72.5** **6 Claims**



A machine for installing flexible pipe underground for use in lawn sprinkling systems and the like, said machine consisting of carriage powered for movement over the ground surface, a generally vertical blade mounted on the carriage and adapted to project into the ground, a digging "mole" carried at the lower end of the blade and having a forwardly projecting spade point, mechanism mounted on the carriage and powered to impart to the blade and mole an orbital motion in a vertical plane aligned with the direction of movement of the carriage, whereby said mole digs a tunnel in the ground, a connector for joining a pipe to the rearward end of the mole, whereby the pipe is pulled into the tunnel, and apparatus for ejecting water from the mole, whereby the digging action of the mole is facilitated and the passage of the pipe through the tunnel is lubricated. The machine may also be used for the subterranean installation of flexible cables or other conduits.

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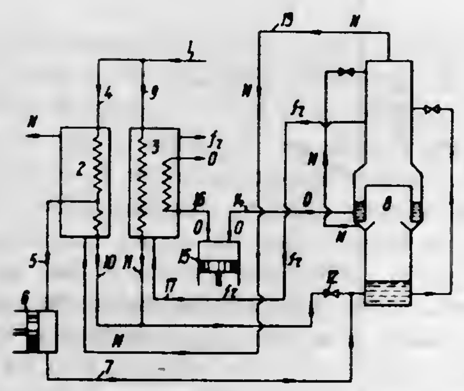
### 3,760,596
### METHOD OF LIBERATION OF PURE NITROGEN AND OXYGEN FROM AIR

**Genrikh Maxovich Basin, Ilya Vladimirovich Gorenshtein, Mark Eleazarovich Lemberg, Semen Grigorievich Linetsky, Anatoly Eliseevich Myasoed, Yakov Benediktovich Zanis, all of Odessa, U.S.S.R.**
**Continuation-in-part of application Ser. No. 770,027, Oct. 23, 1968. This application Nov. 3, 1971, Ser. No. 195,421**
U.S. Cl. 62—29 3 Claims



A method of liberation of pure nitrogen and oxygen from air by way of liquefaction of said air on the cycle of average or high pressure and subsequent fractionation, according to which method air is divided prior to fractionation into two flows, of which one is cooled by heat exchange with the nitrogen fractionation product, while the other flow is cooled by compressed oxygen and an argon fraction which are likewise fractionation products.

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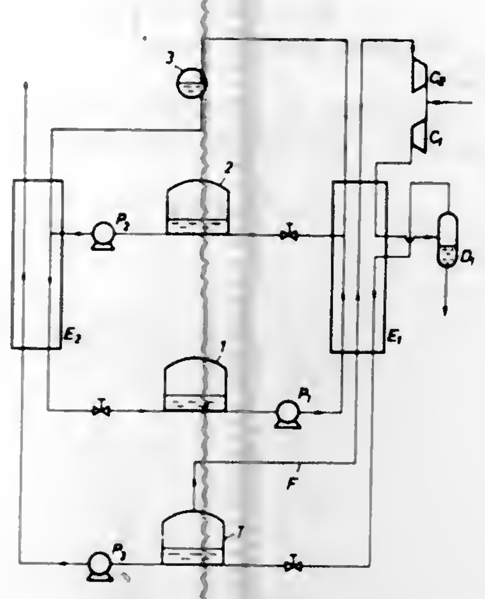
### 3,760,597
### SHORT TERM STORAGE OF NATURAL GAS

**Rudolf Becker, Munich, Germany, assignor to Linde A.G., Hollriegelskreuth, Germany**
**Filed Oct. 18, 1971, Ser. No. 189,912**
**Claims priority, application Germany, Aug. 6, 1971, P 21 39 586.8**
**Int. Cl. F17c** *3/00*
U.S. Cl. 62—47 **16 Claims**



In a process of storing natural gas on a short term basis, comprising liquefaction of the natural gas during low demand periods, wherein a liquid cryophore is employed to store heat liberated during the cooling and liquefaction of the natural gas, and to release heat during the vaporization and warming up of the natural gas, said cryophore being present in the liquid state in every phase of the process, the improvement comprising employing said liquid cryophore in a given amount below a median temperature level during the cooling and liquefaction, and during the vaporization and warming of the natural gas; at above said median temperature level, median temperature said liquid cryophore in substantially less than said given amount, and at above said median temperature optionally employing a solid cryophore, said median temperature being approximately that temperature at which said natural gas commences to liquefy.

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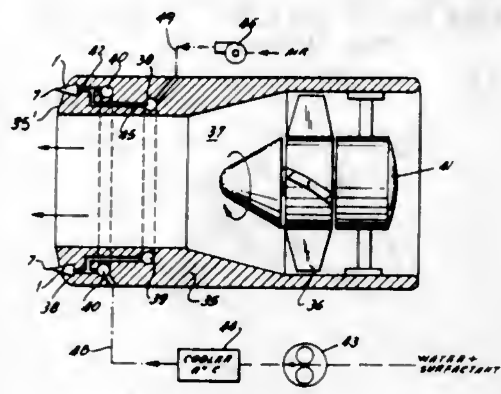
### 3,760,598
### PROCESS FOR MAKING ARTIFICIAL SNOW

**Fritz Jakob, Wolfratshausen; Gerold Tesar, Pullach/Isarital, and Karl-Heinz Kuhnlenz, Eurasburg, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany**
**Continuation-in-part of Ser. No. 810,711, March 26, 1969, Pat. No. 3,596,476. This application Aug. 2, 1971, Ser. No. 168,440**
**Claims priority, application Austria, Apr. 8, 1968, A 3459/68**
**Int. Cl. F25c** *3/04*
**U.S. Cl. 62—74** **11 Claims**

Water under high pressure and at a low temperature is fed to a set of nozzles, after it has been mixed with a high-pressure air flow. On leaving the nozzles the water is atomized into fine droplets and is rapidly depressurized on being discharged into a low-pressure air stream of subfreezing temperature generated by a fan. The weight ratio of high-pressure air and water, ahead of the nozzle orifices, is on the order of 1 : 400.



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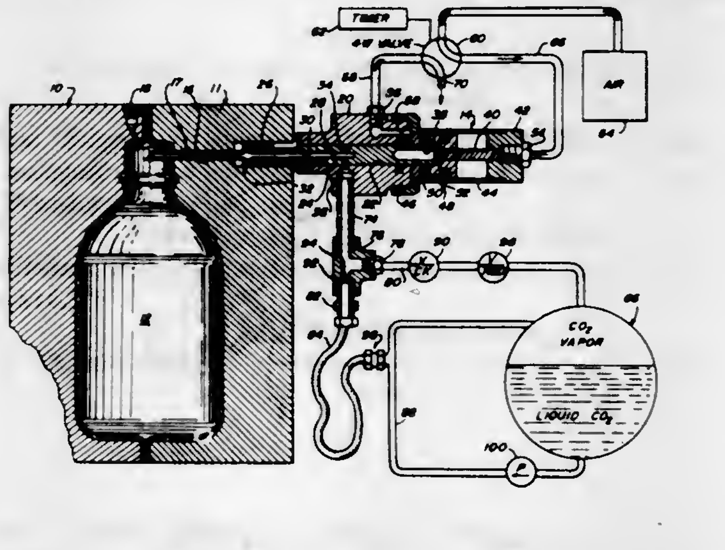
### 3,760,599
### METHOD AND APPARATUS FOR CONTROLLING THE FLOWLIQUID

**Robert N. Bose, 1015 Naperville Rd., Wheaton, Ill.**
**Division of Ser. No. 848,625, Aug. 8, 1969, Pat. No. 3,661,483. This application Aug. 2, 1971, Ser. No. 165,805**
**Int. Cl. F17c** *13/02*
**U.S. Cl. 62—49** **8 Claims**



The intermittent flow of carbon dioxide liquid from a high pressure reservoir to a low pressure use area is controlled by a flow restricting orifice disposed in the supply line and a simple control valve located in the line downstream of the orifice. An additional source of pressurized fluid maintains the pressure between the orifice and the valve above the triple point of carbon dioxide to prevent solidification of the carbon dioxide upstream of the valve.

In a cyclical blow molding operation wherein liquid carbon dioxide is used to chill the freshly molded parts, the pressure of the fluid used to expand the parison is maintained above the triple point of carbon dioxide to prevent solidification of the carbon dioxide. Additionally, a predetermined amount of carbon dioxide is permitted to vaporize in the line upstream of the orifice during the off cycle in the molding operation thereby providing the necessary time delay between the application of the parison expending gas and the injection of the liquid carbon dioxide into the molded part.

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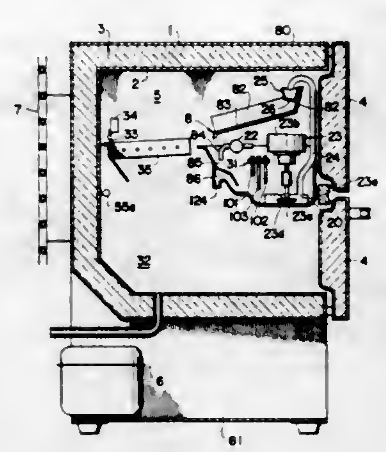
### 3,760,600
### ICE-MAKING APPARATUS

**Kiyoshi Matsui; Hiroichi Osiyama, both of Shimotsuga-gun, Tochigi-ken, and Hiroshi Kobayashi, Kanuma-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**
**Continuation-in-part of Ser. No. 92,463, Nov. 24, 1970, abandoned. This application Jan. 13, 1972, Ser. No. 217,474**
**Claims priority, application Japan, Nov. 28, 1969, 44/112566**
**Int. Cl. F25c** *1/12*
U.S. Cl. 62—137 11 Claims



Improved ice-making apparatus in which water stored in a water pan is cyclically sent onto the surface of an evaporator to make an ice plate while at the same time detecting the water level in the water pan to switch the evaporator to a high-temperature operation, a very small current being made to flow between a plurality of electrodes immersed in the water in said water pan, which current is amplified to energize a detector relay for accurate water-level detection, a switch being provided which puts said evaporator into a cooling operation immediately after detection of a removal of ice.

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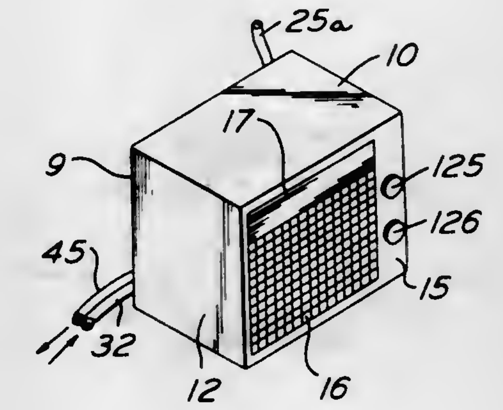
### 3,760,601
### AIR COOLING APPARATUS

**Paul H. Bunten, c/o Repco Products Corporation, 7400 State Rd., Rydal, Pa.**
**Continuation-in-part of Ser. No. 1,587, Jan. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 793,799, Jan. 24, 1969, Pat. No. 3,540,229. This application Dec. 6, 1971, Ser. No. 204,935**
**Int. Cl. B63b** *25/26*
U.S. Cl. 62—240 4 Claims



Air cooling apparatus for use in boats which is resistant to corrosion, and comprises a unit having a compressor, condenser, evaporator, a positive condensate removal system and a cool air circulating fan and cooling water pump preferably driven by the same motor. The unit is mounted entirely within the boat, and uses the external water for cooling the condenser.

### 3,760,602

### TILTABLE AIR-COOLED ABSORPTION REFRIGERATION APPARATUS OF THE INERT GAS TYPE

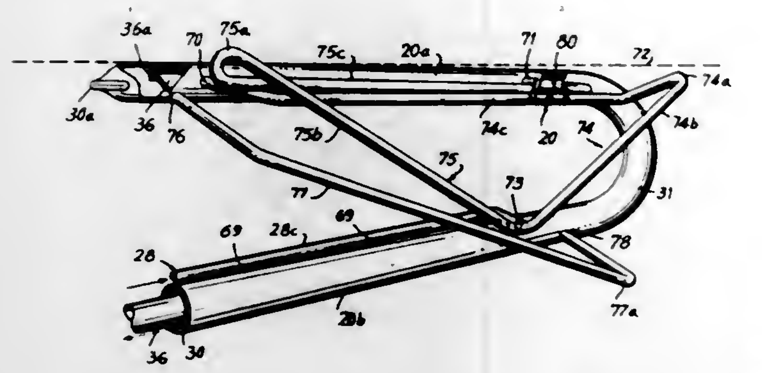
**Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden**

**Filed July 5, 1972, Ser. No. 269,158**

**Claims priority, application Sweden, July 6, 1971, 8334/71**

**Int. Cl. F25b** *15/10*

**U.S. Cl. 62—490** **15 Claims**



Absorption refrigeration apparatus of the inert gas type which, when it is operating to produce useful refrigeration, can be inclined to the vertical. This is accomplished by employing an evaporator having a part providing a horizontally extending passageway and conducting liquid refrigerant to the opposing ends of such evaporator part from a condenser through conduit means. The conduit means is so constructed and arranged that liquid refrigerant will flow therethrough from the condenser to whichever end of the evaporator part that is at the higher level when the apparatus is inclined to the vertical.

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### 3,760,603

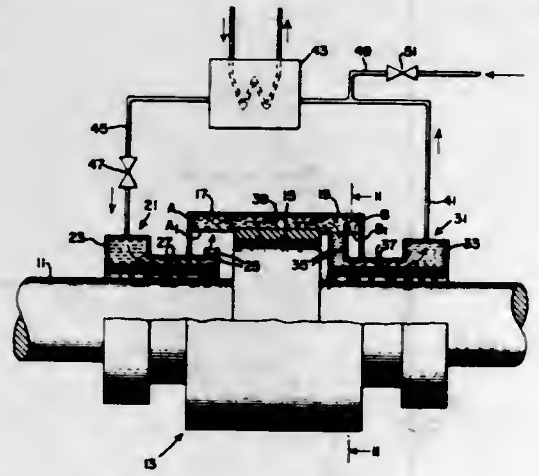
### LIQUID COOLING SYSTEM FOR A ROTATING MEMBER

**Zoran Dicic, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Apr. 7, 1971, Ser. No. 131,951**

**Int. Cl. F25b** *31/00*

**U.S. Cl. 62—505** **4 Claims**



A self-pumping, liquid coolant system for a rotating member having a passageway therethrough; and a pair of rotating cups, one on either side of the rotating member and in communication with the passageway. An inlet means out of contact with the liquid level of one rotating cup and an outlet means submerged within the liquid level of the other rotating cup create a pressure differential effecting the self-pumping action.

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### 3,760,604

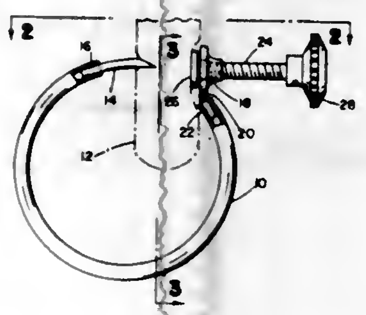
### EARRING WITH THREADEDLY ADJUSTABLE MEANS FOR GRADUAL PIERCING OF LOBE

**Vincent DiStefano, Johnston, R.I., assignor to Alice Jewelry Co., Providence, R.I.**

**Filed July 18, 1972, Ser. No. 272,742**

**Int. Cl. A44c** *7/00*

**U.S. Cl. 63—12** **1 Claim**



A self-piercing earring wherein a precious metal-piercing element is held stationary by a rigid mounting on one side of the earlobe while a cup is adjustably mounted on the rigid mounting on the other side of the earlobe. The cup is adjusted toward the piercing element by manipulating a screw-threaded element so that any desired penetrating pressure is produced to achieve complete penetration in a few days by daily increase of pressure.

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### 3,760,605

### TOOTHED DISK COUPLING OF A SHAFT TO A HUB

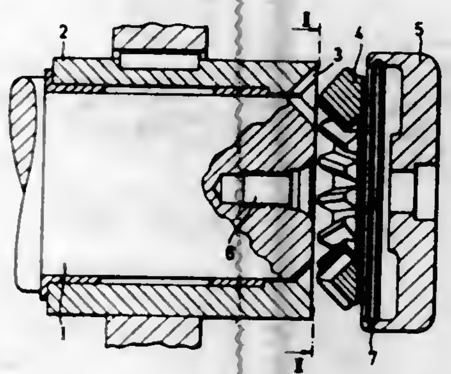
**Walter Schroder, Stemmannsfeld, Germany, assignor to WGW Westdeutsche Getriebewerke GmbH, Herne, Germany**

**Filed Apr. 17, 1972, Ser. No. 244,814**

**Claims priority, application Germany, Apr. 21, 1971, P 21 19 325.9**

**Int. Cl. F16d** *3/18*

**U.S. Cl. 64—9** **8 Claims**



In a positive releasable coupling comprising a shaft, a hub on said shaft, the shaft and hub having end faces lying in substantially the same plane and being provided with aligned slots cut into their end faces, a coupling disk provided with teeth complementing and engaging the slots of said shaft and said hub and thereby coupling said shaft to said hub, and means for securing said disk to at least one of said shaft and said hub, the improvement which comprises forming said disk as an annulus held against the ends of the shaft and hub by a cap secured to the shaft by a bolt. The disk is provided with radially directed wedge shaped teeth, the faces of the teeth in radial cross-section making about 45° angles with the plane defining the ends of the shaft and hub with the apex being located in the vicinity of the outside surface of the shaft; in cross-section tangenial to the shaft the teeth are tapered toward the shaft. The ends of the shaft and hub are slotted so as to mate with the teeth of the disk and are thereby coupled. Advantageously the disk is deformable between the teeth and is provided on its face adjacent the cap with spaced projections which constitute the points of contact therebetween.

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### 3,760,606

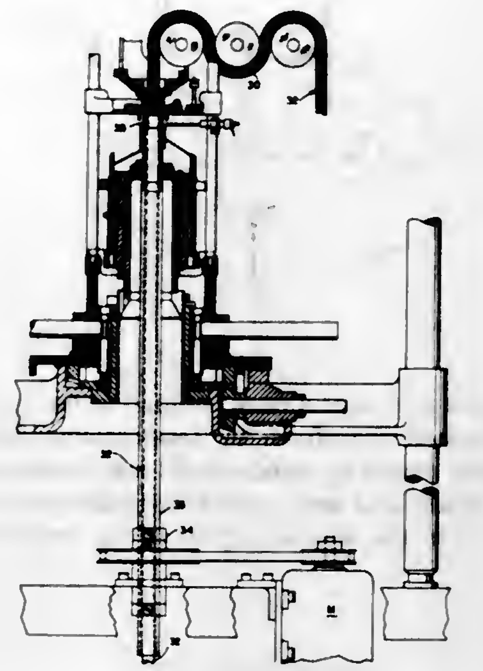
### CIRCULAR KNITTING MACHINE AND METHOD OF KNITTING A TUBULAR ENVELOPE OVER A FLEXIBLE HOSE

**John J. Greczin, 7312 School Ln., Philadelphia, Pa.**

**Filed Mar. 31, 1972, Ser. No. 240,123**

**Int. Cl. D04b** *9/44*

**U.S. Cl. 66—9 A** **2 Claims**



A circular knitting machine including means for neutralizing the torque normally imparted to the hose due to the unidirectional knitting of yarns under tension directly on to the hose.

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### 3,760,607

### APPARATUS FOR PRODUCING STITCH BONDED FABRIC

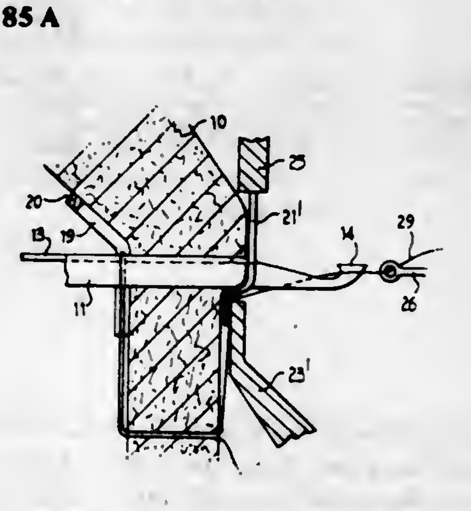
**Arno Edgar Wildeman, Altrincham, Cheshire, England, assignor to Cosmopolitan Textile Company Limited, Winsford, Cheshire, England**

**Filed Aug. 16, 1971, Ser. No. 172,032**

**Claims priority, application Great Britain, June 30, 1971, 30,616/71**

**Int. Cl. D04b** *23/10*

**U.S. Cl. 66—85 A** **1 Claim**



Apparatus for producing stitch bonded fabric and having needles which penetrate a fleece and receives threads which are controlled by thread guides and also including wires which enter but do not completely penetrate the fleece whereby a loop of fibers are formed around a hook of the needle and retained thereby. The threads lock the interengaged stitch loops and means are provided to permit a thread to be passed over the hook formation of the needle to form a tricot-stitch seam to the fleece.

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### 3,760,608

### THREAD CUTTING AND RETAINING DEVICE FOR CIRCULAR KNITTING MACHINES

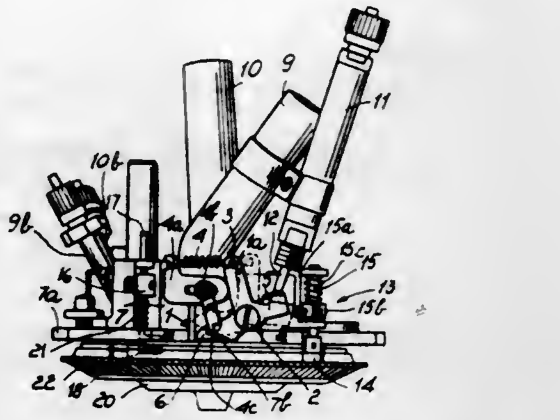
**Francesco Lonati, Brescia, Italy, assignor to Construzioni Meccaniche Lonati di Lonati Francesco, Brecia, Italy**

**Filed May 28, 1971, Ser. No. 147,981**

**Claims priority, application Italy, June 16, 1970, 26041 A/70**

**Int. Cl. D04b** *15/61*

**U.S. Cl. 66 – 140 S** **3 Claims**



A thread cutting and retaining device for circular knitting machines for the manufacture of stockings and the like, suitable for employing stretch, elastic and normal type yarns, comprising at least one thread suction nozzle on a fixed structure above the dial of the circular knitting machine, at least one cutting element near said nozzle and at least one feed. The device further comprises a mechanical thread retaining unit on the periphery of said fixed structure formed from a clamp-like element with fluid control means for said clamp-like element in the open position and clamp-like element return means in the closed position.

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### 3,760,609

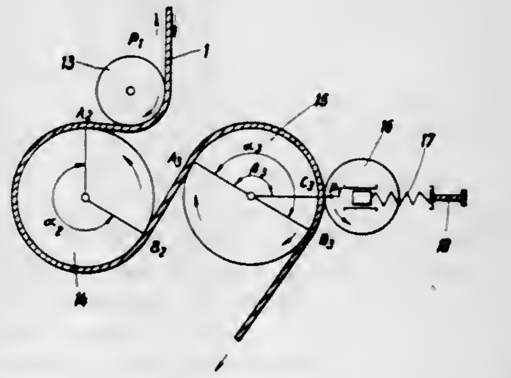
### FABRIC PULL-OFF MECHANISM, PARTICULARLY FOR CIRCULAR KNITTING MACHINES

**Antal Poocza, and Hans Muller, both of Rottenburg, Germany, assignors to Fouquet-Werk Frauz & Planck, Rottenburg am Neckar, Germany**

**Filed Sept. 28, 1971, Ser. No. 184,340**

**Int. Cl. D04b** *15/88, 27/34*

**U.S. Cl. 66—149 R** **9 Claims**



To provide for reliable engagement of the fabric with the pull-off mechanism, and to provide a greater area of contact than a line contact between a pair of rollers, a rotary pull-off means is provided in which the fabric is guided in a path over at least half of the circumference of a roller, or between a pair of endless bands, travelling a parallel path with the fabrics squeezed therebetween. To provide for uniformity of pull-off when the mechanism is intermittently operated, for example by a ratchet or the like, intermittent motion is transferred to a shaft concentric with a pull-off roller, the shaft being connected to the roller over a spiral spring. The tightness of engagement of the intermittently operating mechanism with the pull-off cam track of the machine is adjustable, simultaneous adjustment at both sides of the rollers being provided.

### 3,760,610
### METHOD AND APPARATUS FOR DATA TRANSMISSION IN KNITTING MACHINES

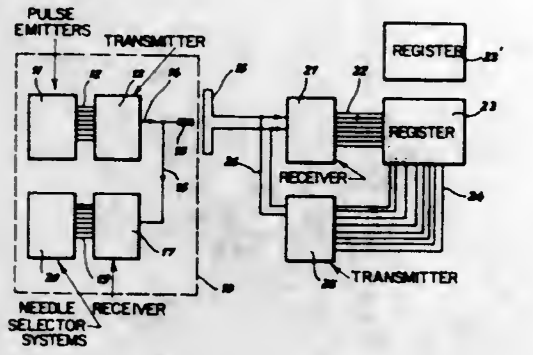
**Wilhelm Hadam, Reutlingen, and Gunter Bauknecht, Eningen, both of Germany, assignors to H. Stoll and Company, Reutlingen, Germany**

**Filed Dec. 10, 1971, Ser. No. 206,648**

**Claims priority, application Germany, Dec. 11, 1970, P 20 60 942.1**

**Int. Cl. D04b** *15/66*

**U.S. Cl. 66—154 A** **14 Claims**



A method and apparatus for transmitting data relating to needle selection between a fixed part and the movable carriage of a flat bed knitting machine by a modulated carrier frequency without conducting wires. For each of a plurality of needle selection systems on the carriage there is provided a separate data channel through which synchronizing emitter pulses are transmitted from the carriage to a data memory on the fixed body which then transmits needle selection information back to the needle selection system on the carriage.

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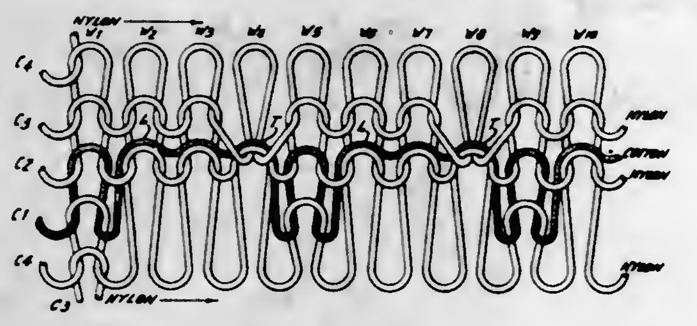
### 3,760,611
### PANTY HOSE GARMENT HAVING ANTISTATIC PROPERTIES

**Lenoward K. Duckworth, Morganton, N.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.**

**Filed May 3, 1971, Ser. No. 139,429**

**Int. Cl. D04b** *1/24, 9/12*

**U.S. Cl. 66—177** **10 Claims**



An improved panty hose garment is prepared having a panty portion containing cotton yarn in non-consecutive courses and yarn of synthetic resin such as nylon in the intervening courses. The course of cotton yarn is formed so that loops of the cotton yarn protrude from the inner surface of the hosiery fabric. The presence of the cotton yarn eliminates or reduces static electricity and thereby prevents outer garments from clinging to the wearer.

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### 3,760,612
### ADDITIVE DISPENSING SYSTEM

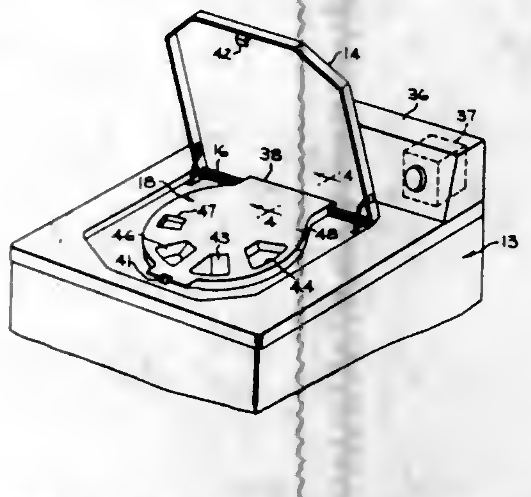
**John Bochan; Alvin Akers, and Everett D. Morey, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.**

**Filed Aug. 10, 1971, Ser. No. 170,613**

**Int. Cl. D06f** *39/02*

**U.S. Cl. 68—17 R** **9 Claims**

A system for sequentially dispensing a plurality of treating agents into the wash tub of an automatic fabric washing machine at predetermined times during the washing cycle. The dispenser is hingedly mounted above the wash tub and so located that in its operative position a liquid supply means is in cooperative relationship with a plurality of liquid inlets in the dispenser. Additives to be dispensed are placed selectively by the housewife into appropriate compartments in the dispenser and are flushed therefrom by sequentially controlling the liquid supply means to direct liquid into preselected ones of the liquid inlets and appropriate compartments at predetermined times in the washing cycle of the automatic washing machine.



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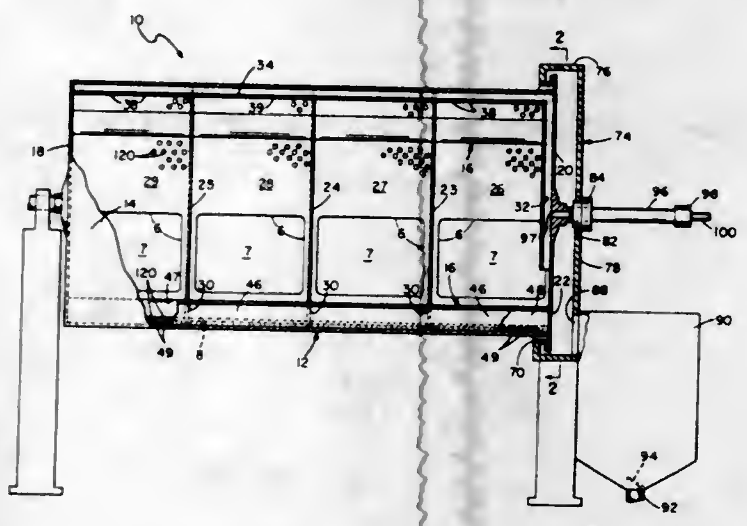
### 3,760,613
### LIQUID SUPPLY AND RECIRCULATION MEANS FOR PARTITIONED CLOTHES DRUM

**Raymond G. Henderson, Mount Prospect, Ill., assignor to A-T-O Inc., Willoughby, Ohio**

**Filed Apr. 10, 1972, Ser. No. 242,432**

**Int. Cl. D06f** *37/06, 37/08*

**U.S. Cl. 68—143** **20 Claims**



A washing machine of the type including a cylindrical drum rotatable in at least one direction about a horizontal axis, a pair of circumferentially spaced inlet conduits extending generally axially along the peripheral wall of the drum and including spaced therealong radially inwardly directed spray jets, a plurality of radially spaced, hollow in transverse cross-section ribs extending generally axially of and projecting radially inwardly from the wall, each rib being divided into two longitudinally-extending passages by a flexible and extensible interior partition extending the height and width of the rib, and a rib extension extending outwardly and generally circumferentially of the drum peripheral wall from intermediate the height of each side of each rib.

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### 3,760,614
### APPARATUS FOR TREATING TEXTILE MATERIAL WITH A CIRCULATING LIQUID

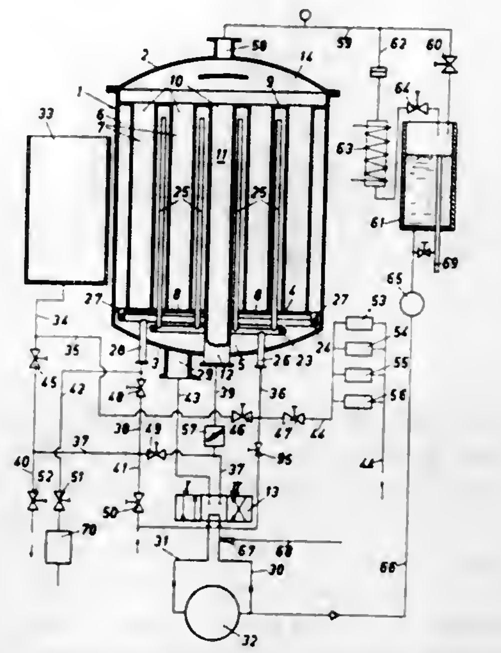
**Niels Rudolf Bergholtz, Uinna, Sweden, assignor to AB Ludvig Svensson, Kinna, Sweden**

**Division of Ser. No. 612, Jan. 5, 1970, Pat. No. 3,650,676. This application Oct. 13, 1971, Ser. No. 188,817**

**Claims priority, application Sweden, Jan. 14, 1969, 392/69**

**Int. Cl. B05c** *8/02*

**U.S. Cl. 68—189** **19 Claims**



Apparatus for treating material comprising a container including a plurality of enclosed separate chambers for receiving bodies of material and in which a relatively small clearance will be provided by adjacent surfaces of the chambers and the material therein; the chambers comprising a portion of a heat-exchanger and including means for supplying either heating or cooling fluid in controlled quantities and at a controlled temperature within the container along the chambers, and including means for circulating a treatment liquid in a conduit system to effect circulation and recirculation of the treating liquid through the individual chambers to attain uniformity of treatment and minimizing apparatus space while affording an effective material treatment in a minimum amount of time through accurate and empirical temperature control.

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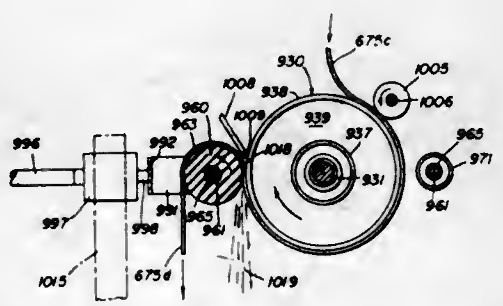
### 3,760,615
### LIQUID EXPRESSING APPARATUS

**Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah**

**Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214. This application Sept. 28, 1971, Ser. No. 184,573**

**Int. Cl. D06f** *45/00*

**U.S. Cl. 68—248** **19 Claims**



Apparatus wherein liquids are expressed from cloth articles by feeding the articles onto the side of a freely rotatable cylinder and therearound and upwardly between the cylinder and an associated roller, the cylinder and the roller are urged toward each other to press the articles therebetween to express the liquid therefrom.

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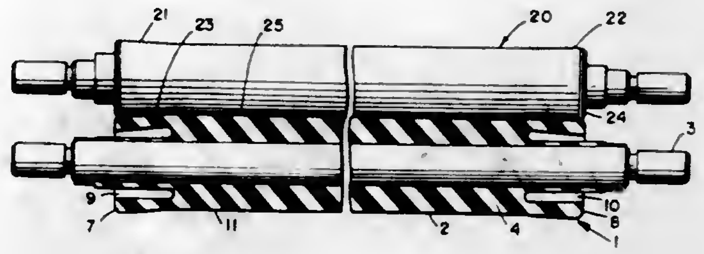
### 3,760,616
### ROLLERS

**Alfred M. Hyosaka, Morton Grove, Ill., assignor to Speed-O-Print Business Machines Corporation, Chicago, Ill.**

**Filed Oct. 21, 1971, Ser. No. 190,794**

**Int. Cl. D06f** *45/00*

**U.S. Cl. 68—248** **7 Claims**



A roller having a yieldable body portion with annular recesses in the ends thereof.

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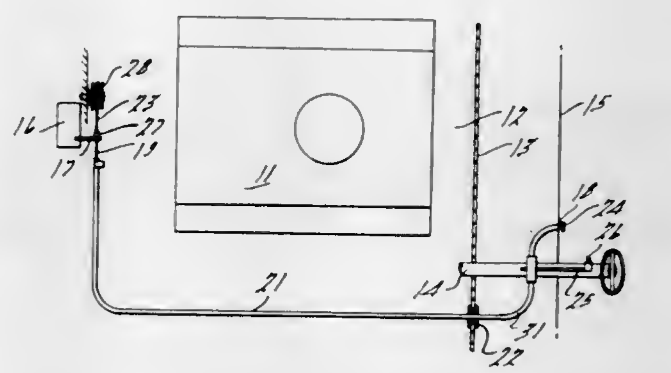
### 3,760,617
### ANTI-THEFT CABLE RETRACTOR FOR HOOD LATCH RELEASE

**Paul A. Westerdale, Riverview, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed May 8, 1972, Ser. No. 251,312**

**Int. Cl. E05b** *65/19*

**U.S. Cl. 70—1.5** **6 Claims**

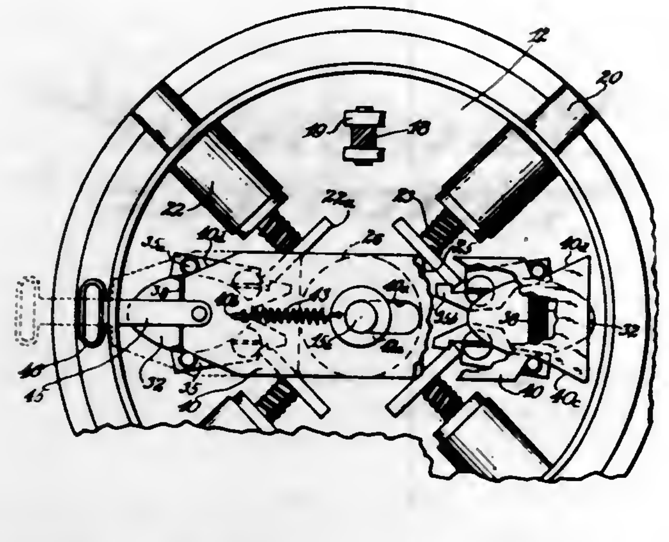


In combination, a latch mechanism adapted to be mounted interiorly of a compartment for latching engagement with a closure. A Bowden cable coupled to the latch mechanism and extending exteriorly of the compartment through a wall of the latter is coupled to an operating means, such as a handle or the like. The operating means is operable to actuate the cable means in latch mechanism release direction and to limit movement of the cable means in a direction opposite to the latch release direction. A key-operated locking means is engaged with the cable means between the compartment wall and the operating means for selectively blocking actuation of the cable means.

The combination is characterized in that a biasing means is coupled to the cable means contiguous to the latch mechanism. The biasing means normally urges the cable means in the direction opposite to latch mechanism release direction. If this cable is severed between the compartment wall and the key-operated locking mans, as by someone attempting to bypass the lock, the biasing means then becomes effective to draw the movable element of the Bowden cable through the compartment wall into the compartment thereby rendering the cable means inaccessible for latch mechanism release manipulation.

### 3,760,618
### DOOR MECHANISMS FOR SAFES

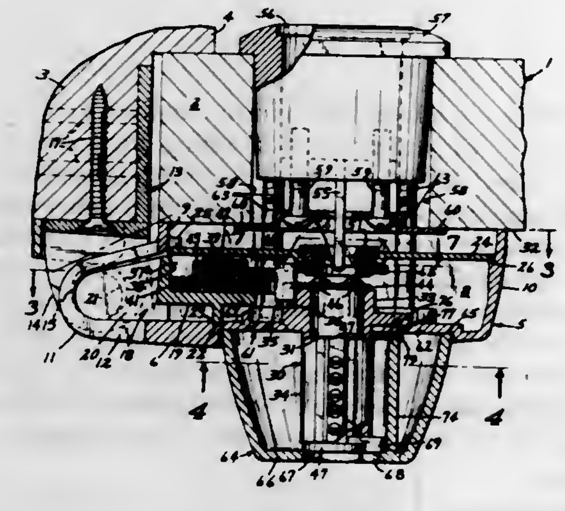
**Max Wiczer, c/o Wico Corporation, 6400 W. Gross Point, Niles, Ill.**
**Filed June 28, 1971, Ser. No. 157,499**
**Int. Cl. E05b** *65/10, 55/06, 35/12*
**U.S. Cl. 70—92** **14 Claims**



A door for a safe, the door carrying an outer medial knob extended with handles. On the inner side the door carries two laterally-arranged sets of bolts, all with inner ends urged toward the center by springs; and the knob carries a square cam on the inner side of the door effective to impinge on the said inner ends, this advancing the bolts — when the door is closed — into locking engagement with the safe. A key-lock on the door for each set of bolts operates a lever mechanism on the inner side of the door to check the return of the bolts from the advanced positions.

### 3,760,619
### CROSS BOLT DEADLOCK

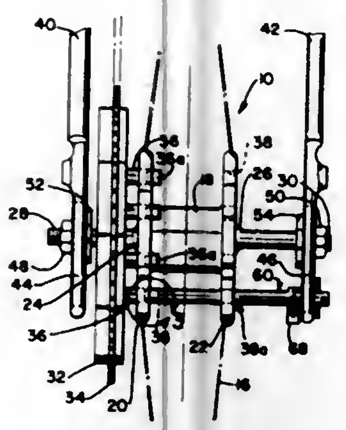
**Gregory R. Colombo, Stillwater, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.**
**Filed Oct. 14, 1971, Ser. No. 189,169**
**Int. Cl. E05b** *9/06*
**U.S. Cl. 70—104** **6 Claims**



A cross bolt deadlock housing adapted to be mounted on the inside of the door hinged in a door frame and having a cross bolt for reception in the aperture of the cooperating strike lug on the door frame, when the door is closed. The cross bolt is operable only by means of a key from inside or outside of the door. Means is provided to prevent removal of the lock from the door unless a key is used together with other tools.

### 3,760,620
### WHEEL LOCKING DEVICE

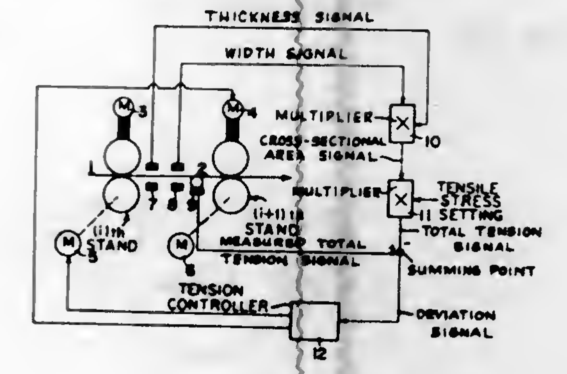
**Henry Robles, 509 Stanford Ave., Redwood City, Calif.**
**Filed Sept. 23, 1971, Ser. No. 183,126**
**Int. Cl. E05b** *71/00*
**U.S. Cl. 70—226** **7 Claims**



A solid bolt lock for securing the rear wheel of a motorcycle against rotation while the vehicle is left unattended. The lock has an elongate cylindrical shank of case-hardened steel provided with a number of radially projecting dowels at one end. A bore extends transversely through the bolt shank at a spaced axial distance from the dowels. In operation, the bolt is inserted through the unoccupied portion of the chain-tension adjustment slot in one of the rear frame braces and thereafter through an aligned eccentrically positioned aperture in the adjacent wheel hub flange. A conventional padlock is inserted through the bore capturing the frame between itself and the dowels thereby preventing removal of the lock.

### 3,760,621
### CONTROL METHOD OF TENSION IN ROLLING MILLS (1)

**Seiji Fujii; Hiroshi Kuwamoto; Masamoto Kamata, and Masayoki Ishida, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**
**Filed Aug. 20, 1971, Ser. No. 176,766**
**Claims priority, application Japan, Aug. 26, 1970, 45/74281**
**Int. Cl. B21b** *37/06, 37/02*
**U.S. Cl. 72—9** **10 Claims**



In a cold tandem mill of the endless type, means are provided to maintain the strip tension constant while the cross-section of the strip undergoes a change in size, that is, as the thickness, the width or the desired finished thickness of the strip is changed.

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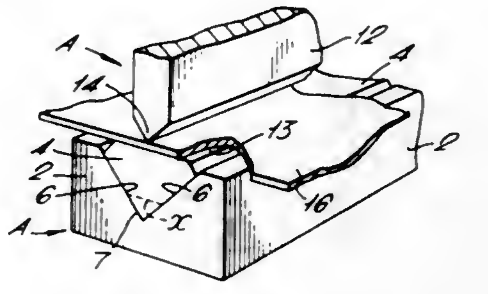
### 3,760,622
### ELASTOMERIC FORMING DIE

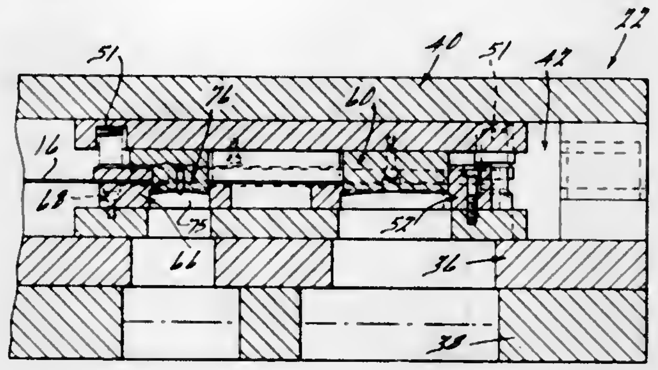
**Ivor Mansell, 242 Chartwell Rd., Oakville, Ontario, Canada**
**Filed Feb. 1, 1972, Ser. No. 222,537**
**Int. Cl. B21d** *5/00*
**U.S. Cl. 72—57** **1 Claim**



A solid die pad of elastomeric die material and a holder for the die pad having converging sides; the die pad being conformingly shaped to fit between and be supported on said converging sides.

### 3,760,623
### WORKSTOCK BLANKING APPARATUS

**Heinz J. Hempelmann, Warren, Mich., assignor to Richard & Trute Tool & Die Corporation, Warren, Mich.**
**Filed Aug. 30, 1971, Ser. No. 176,086**
**Int. Cl. B21d** *28/00*
**U.S. Cl. 72—336** **37 Claims**

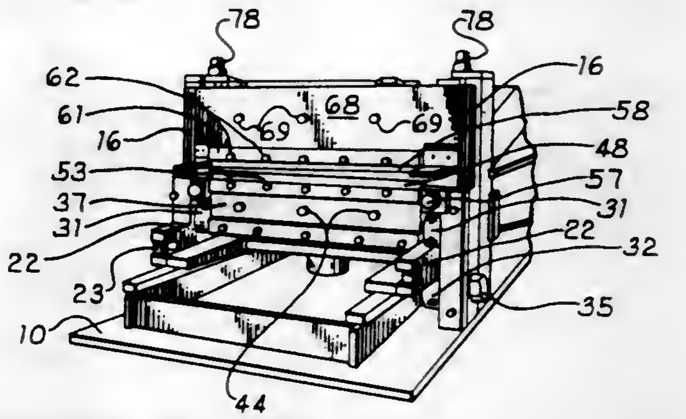


A method and apparatus for blanking workpieces from strip or coil workstock and adapted to be operatively associated with a workpiece forming machine, the apparatus comprising first and second means for partially blanking workpieces from the workstock, and means for progressively feeding the strip workstock to the first and second blanking means and for thereafter transferring the blanked workpieces to the forming machine, whereby the workpieces may be partially blanked from the strip stock by the first means and may thereafter be further partially blanked by the second means, and may be finally transferred to the forming machine where a drawing or other forming operation may be performed thereon.

### 3,760,624
### SELF FEEDING CONTINUOUS FORMING DEVICE

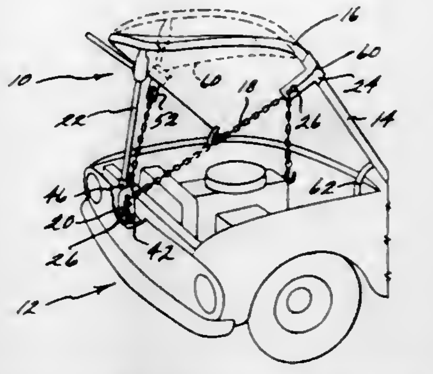
**James J. Robinson, 5305 Bevedere Dr., Indianapolis, Ind.**
**Continuation-in-part of Ser. No. 111,375, Feb. 1, 1971, abandoned. This application May 8, 1972, Ser. No. 251,478**
**Int. Cl. B21d** *11/07*
**U.S. Cl. 72—385** **12 Claims**

Disclosed is a device for continuously forming a metal sheet into sinuous or corrugated configuration by using two opposed, metal-engaging dies, each movable toward and away from the other in a vertical forming stroke, and one of the dies also being movable in a limited stroke transverse to its vertical forming stroke. Slides, moving horizontally in reciprocating fashion, have inclined surfaces which cause the vertical motion of the dies. A latching and latch-releasing means, actuated by the slides during the terminal increment of their horizontal motion at each end of their stroke, provide the horizontal die stroke only when the dies have completed their vertical stroke.



### 3,760,625
### METHOD AND APPARATUS FOR STRAIGHTENING HOODS

**Clayton Archambault, 760 S. Vrain, Denver, Colo.**
**Filed Apr. 28, 1972, Ser. No. 248,575**
**Int. Cl. B21d** *9/05*
**U.S. Cl. 72—389** **12 Claims**

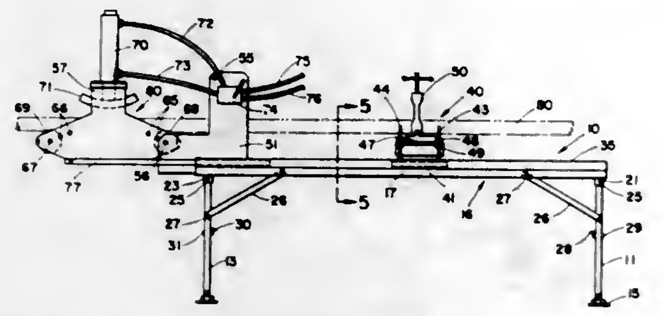


This invention relates to an apparatus for use with a jack for straightening automobile hoods that comprises a bracket attachable to the front of the car in the vicinity of the hood latch, a length of chain and a pair of hooks. The bracket and hooks all include key slots within which the chain can be adjustably locked. The bracket serves as a support for the lower end of the jack and the means through which the chain is directed as the opposite ends thereof pass upwardly in divergent relation to their points of attachment to the hooks which hook over opposite side margins of the hood adjacent the bend therein and function to hold same in fixed position while the jack is operated to raise the downwardly bent portion. The apparatus also preferably includes means for interconnecting the hooks across the top of the hood so that they will not fall off onto the fenders. In addition, the invention encompasses the method of straightening downwardly bent automobile hoods which comprises gripping the side margins thereof alongside the bend and holding same in fixed position while returning the bent portion to its former position by lifting same at a point ahead of said bend.

### 3,760,626
### PIPE BENDER

**Donald R. Sharar, Moline, Ill., assignor to Baer Electric Company, Inc., Moline, Ill.**
**Filed Mar. 24, 1971, Ser. No. 127,658**
**Int. Cl. B21d** *7/04*
**U.S. Cl. 72—389** **4 Claims**

A pipe bending device composed of an elongated frame having an upper platform and longitudinally extending tracks on the platform supporting a pipe carrier for longitudinal movement along the track. At one end of the platform is a pipe bending assembly composed of an upright structure having longitudinally spaced pulleys that underlie a pipe to be bent and a vertical cylinder having a lower shoe that engages the upper side of the pipe and bends it in conjunction with the two pulleys. The frame supporting the pipe bender on the main longitudinal frame is pivotally connected thereto to swing about a transverse horizontal axis.



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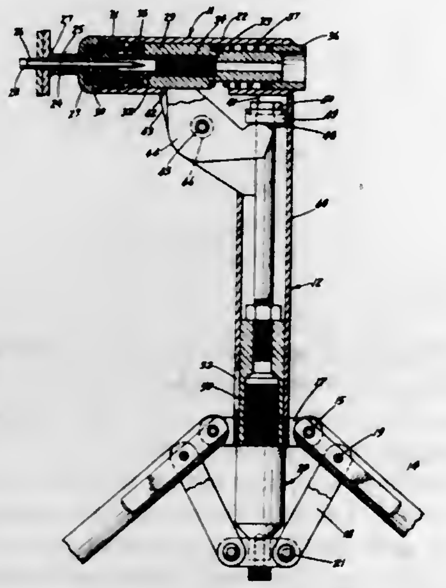
### 3,760,627
### RIVET GUN

**Russell F. Richardson, and Gregory A. Richardson, both of St. Paul, Minn., assignors to The Richline Company, Incorporated, St. Paul, Minn.**

**Filed Dec. 13, 1971, Ser. No. 207,406**

**Int. Cl. B21j** *15/16*

**U.S. Cl. 72—391** **9 Claims**



A rivet gun for the setting of blind rivets characterized by a 90° angle head to permit use of the gun in otherwise inaccessible places. The longitudinal axis of the rivet setting head is disposed at a 90° angle relative to the longitudinal axis of the force applying mechanism by which the head is operated. The 90° angle head may be swiveled through 360° to further facilitate use of the gun for setting rivets in otherwise inaccessible locations. The rivet gun may be operated manually or from a power source.

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### 3,760,628
### CASTER AND CAMBER ADJUSTMENT TOOL

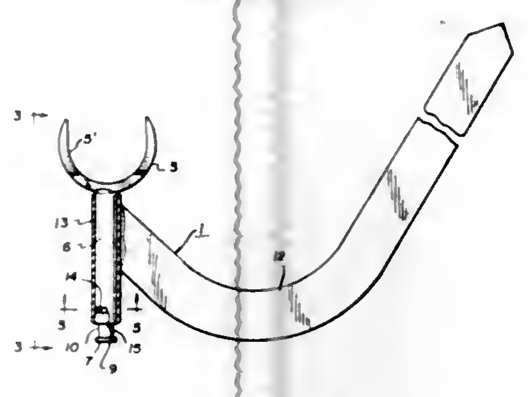
**John H. Castoe, Sunland, Calif., assignor to Applied Power Industries, Inc., Milwaukee, Wis.**

**Filed Jan. 19, 1972, Ser. No. 218,923**

**Int. Cl. B21j** *13/08*

**U.S. Cl. 72—458** **10 Claims**

A caster and camber adjustment tool including a saddle or yoke member for contacting the upper inner arm or shaft of a wheel assembly. The saddle member is affixed to one end of an elongated rod wherein the other end of the rod includes an insertion projection which affixes the end of the rod to an automobile body. An elongated curved handle is swivelly attached to the rod in a manner that the desired camber and caster adjustment of the wheel may be performed by manually moving the handle.



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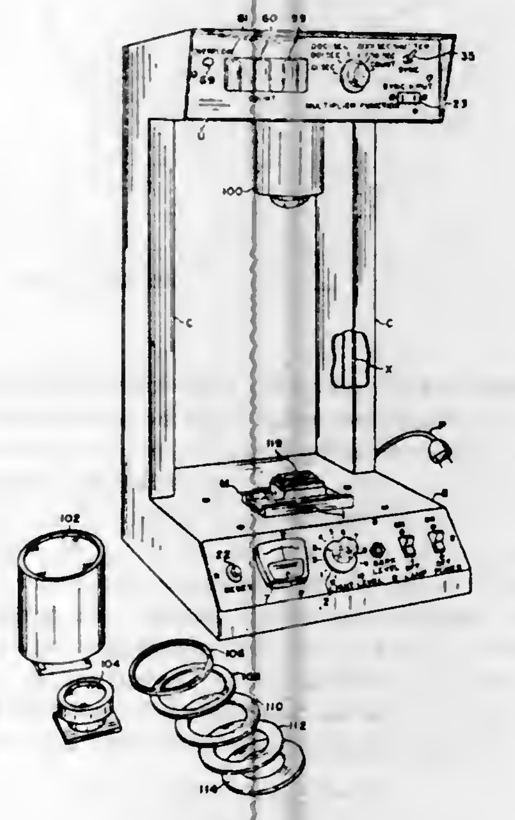
### 3,760,629
### CAMERA SHUTTER TIMING DEVICE

**Lawrence A. Westhaver, 13001 Old Stagecoach Rd., Laurel, Md.**

**Continuation-in-part of Ser. No. 865,391, Oct. 10, 1969, Pat. No. 3,603,133. This application June 1, 1971, Ser. No. 148,469**

**Int. Cl. G03b** *43/02;* **G04f** *11/08*

**U.S. Cl. 73—5** **5 Claims**



A device for timing photographic shutters, functions related thereto (i.e., sync advance or delay), or any occurrence that can be translated into a pulse of light within the timing range of the device. The device comprises a base casing the top wall of which forms an unobstructed platform to support various types of camera shutters in overlying relation to a photocell. An upper casing, supported by hollow columns in elevated relation from the base casing, carries on its bottom wall a downwardly directed lamp vertically above the photocell. The forward wall of the upper casing has a window for eye-level readout of shutter time. The two casings individually contain electronic means jointly necessary to obtain the readout time, power and signals from the lower to the upper casing being delivered by a cable through one of the hollow columns.

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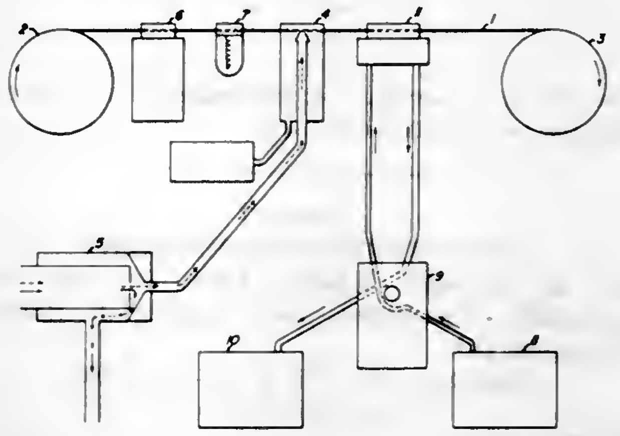
### 3,760,630
### AUTOMATED SELECTIVE WASH METHOD AND APPARATUS

**Allen D. Brumbaugh, Frederick, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 26, 1972, Ser. No. 247,658**

**Int. Cl. G01n** *31/00*

**U.S. Cl. 73—28** **7 Claims**



An automated and selective wash method and apparatus for separating desired material from atmospheric particles after deposition on an adhesive coated surface.

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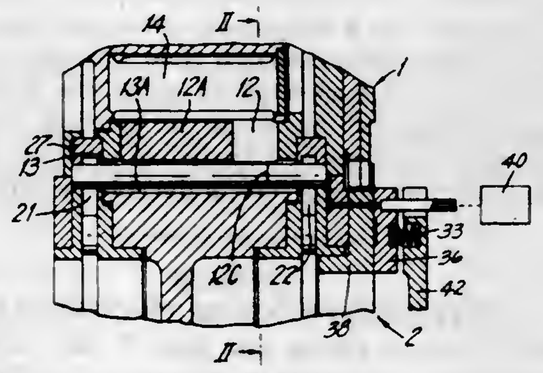
### 3,760,631
### TESTING OF CIGARETTES AND OTHER SIMILAR ROD-LIKE ARTICLES

**Eryk Stefan Doerman, Deptford, London, S.E. 8, England, assignor to Molins Limited, London, England**

**Filed Jan. 22, 1971, Ser. No. 108,734**

**Int. Cl. G01m** *3/26*

**U.S. Cl. 73—45.1** **8 Claims**



A cigarette testing device comprises means producing a pressure differential between the inside and outside of the wrapper of each cigarette in turn to induce an air flow through the wrapper to detect any leaks in the wrapper, characterised by means for reducing the pressure differential along part of the wrapper so as to reduce the air flow through the wrapper in that region.

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### 3,760,632
### PRESSURE TESTING MACHINES FOR TUBES

**Sandor Illyes, and Otto Kapas, both of Budapest, Hungary, assignors to Csepeli Tervezo Intezet, Budapest, Hungary**

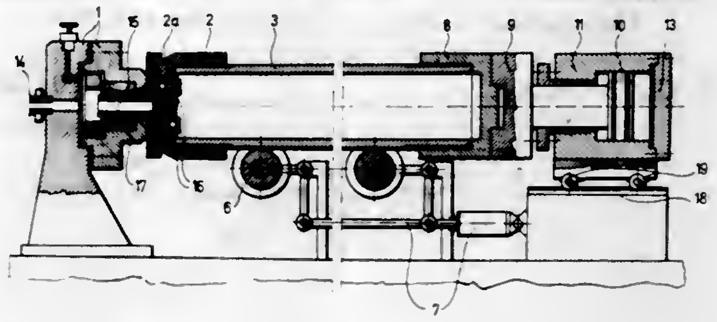
**Filed Dec. 1, 1971, Ser. No. 203,741**

**Claims priority, application Hungary, Dec. 4, 1970, CE-800**

**Int. Cl. G01m** *3/04*

**U.S. Cl. 73—49.6** **9 Claims**

In a machine for testing tubes by the application of high pressure liquid to its interior, one tube end is secured to a first cap connected to a stationary sealing head by a permanent seal. The other tube is secured to a second cap in turn connected to a ram mounted in a second sealing head displaceable longitudinally of the tube being tested. The first cap has a liquid inlet connectable to the high pressure supply, and two back pressure valves of opposite opening directions.



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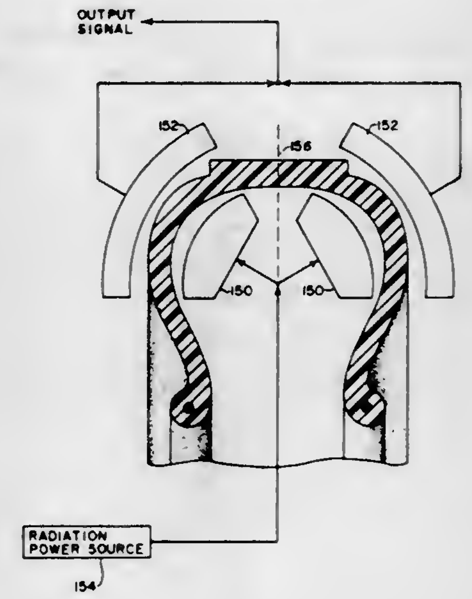
### 3,760,633
### METHOD AND APPARATUS FOR BALANCING PNEUMATIC TIRE AND SUPPORT

**Frank O. Skidmore, 2513 Third St., Cuyahoga Falls, Ohio**

**Continuation-in-part of Ser. No. 667,573, Sept. 13, 1967, abandoned, and a continuation-in-part of Ser. No. 761,360, June 26, 1968, Pat. No. 3,595,068. This application July 14, 1971, Ser. No. 162,552**

**Int. Cl. G01m** *1/12*

**U.S. Cl. 73—66** **1 Claim**



The method of substantially dynamically and statically balancing a pneumatic tire and its support wheel or rim which includes the steps of

1. measuring the distance that sidewall and/or tread portions of the tire extend axially from the support to determine any differences in these distances.
2. compensating for any differences in the distances by securing a compensating weight on the support diametrically opposite to the greatest difference distance to thereby balance statically with a compensating weight, positioned on the opposite side of the tire support in alignment in an axial direction.

The apparatus for substantially dynamically and statically balancing a pneumatic tire and its support wheel or rim includes a plurality of radically extending arms, roller means on certain of the arms and adapted to engage with the tire support to rotatably support the hub and arms thereon, and gage means mounted on at least one arm to measure the distance that sidewall and/or tread portions of the tire extend axially from the support to determine any difference in these distances.

3,760,634

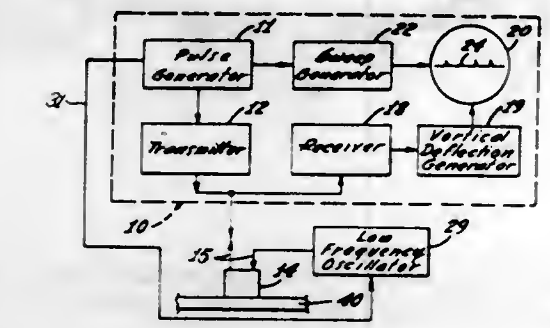
### ULTRASONIC NONDESTRUCTIVE MATERIAL TESTER

**Albert S. Birks, Longmont, Colo., assignor to Automation Industries, Inc., Century City, Calif.**

**Continuation of Ser. No. 790,308, Jan. 10, 1969, abandoned. This application Aug. 3, 1971, Ser. No. 168,778**

**Int. Cl. G01n** *29/04*

**U.S. Cl. 73—67.8 R** **10 Claims**



A nondestructive test system is described which includes a search unit with a first crystal transducer which radiates ultrasonic energy into a workpiece for testing purposes. A second crystal transducer is included which provides a low frequency ultrasonic energy to agitate liquid couplants used with the search unit in order to eliminate or diminish the formation of a vapor phase at the inner face of the liquid couplant and the workpiece when testing a hot workpiece.

3,760,635

### DUROMETER

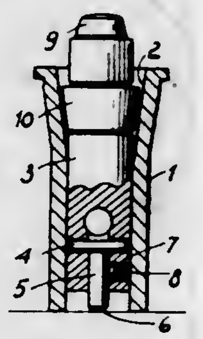
**Alfred Ernst, Via del Cairo 37, Varese, Italy**

**Filed Oct. 26, 1971, Ser. No. 192,498**

**Claims priority, application Italy, Nov. 24, 1970, 32112 A/70**

**Int. Cl. G01n** *3/48*

**U.S. Cl. 73—82** **8 Claims**



A durometer for measuring the hardness of materials, and a method of using such a durometer. An uncontrolled impact force applied to a shearing member causes an accurately dimensioned control bar to shear and thus applies a controlled force to a pin of low mass. The pin has a penetrating tip which makes an impression in the material, the size of the impression being dependant upon the material hardness. After shearing of the control bar, movement of the shearing member is damped to avoid rebound and subsequent deformation of the impression.

3,760,636

### TESTING AND GRADING OF TIMBER

**Victor Serry, London, S.E. 3, England, assignor to Measuring & Process Control Limited, Essex, England**

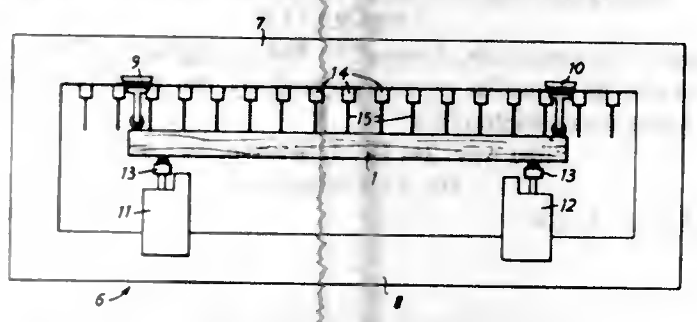
**Filed Nov. 29, 1971, Ser. No. 202,895**

**Claims priority, application Great Britain, Nov. 27, 1970, 56,534/70**

**Int. Cl. G01n** *3/20*

**U.S. Cl. 73—100** **7 Claims**

A method of testing timber in which a length of timber is bent by applying equal bending couples at two spaced points. The magnitude or directions of each couple is then changed and the change in curvature so produced all along the length between the two points is measured.



3,760,637

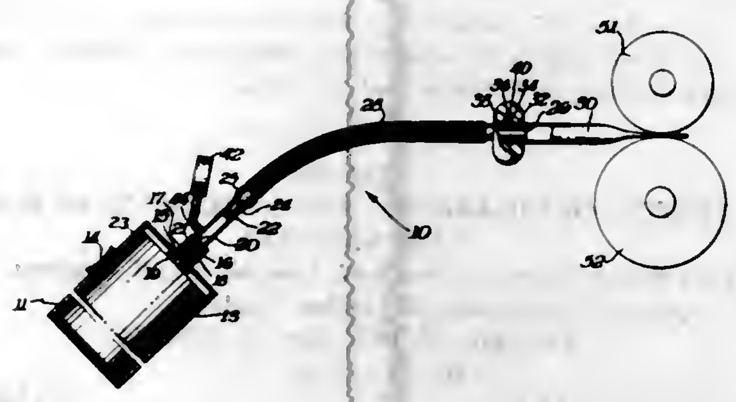
### NIP PRESSURE MEASUREMENT

**William D. Budinger, Chadds Ford, Pa., and Paul F. McLaughlin, Wilmington, Del., assignors to Rodel, Inc., Wilmington, Del.**

**Filed Feb. 26, 1971, Ser. No. 119,295**

**Int. Cl. G01l** *5/00*

**U.S. Cl. 73—141 R** **22 Claims**



Nip pressures such as between two rolls are measured by inserting into the nip a thin-walled non-rigid tube, passing a restricted stream of pressurized fluid through a conduit to which the tube is connected to cause the fluid to move through the tube, and measuring the pressure of the fluid in the tube when it is balanced by the nip pressure. The restriction can restrict the rate of flow or the volume of flow.

3,760,638

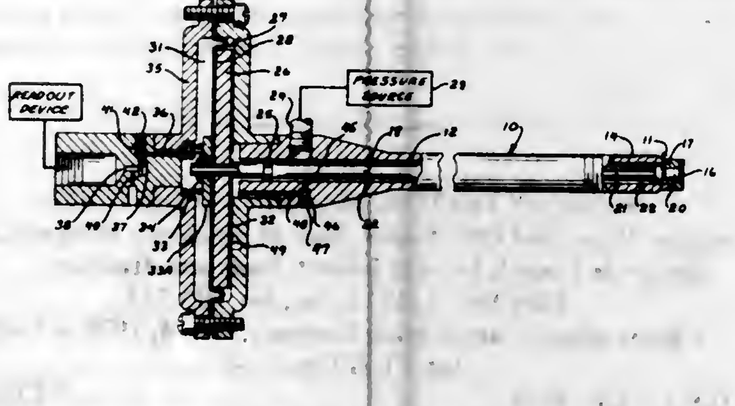
### EXTRUDER PRESSURE TRANSMITTER

**Gerald P. Lawson, Blaine, and John T. M. Carlson, Edina, both of Minn., assignors to Rosemont Inc., Eden Prairie, Minn.**

**Filed Nov. 1, 1971, Ser. No. 194,393**

**Int. Cl. G01l** *7/08*

**U.S. Cl. 73—395** **14 Claims**



A force rebalance type pressure transmitter for use with high pressure extruders wherein a pressure sensitive first diaphragm controls flow of a fluid from a source of fluid under pressure to a chamber. The fluid pressure acts on a second diaphragm to rebalance the force on the first diaphragm through a mechanical force rebalance rod. A series combination of two orifices at least one of which is variable is used in the input fluid conduit, and another combination of orifices is placed in the line leading to the readout equipment to provide pneumatic span and zero adjustment of the device.

3,760,639

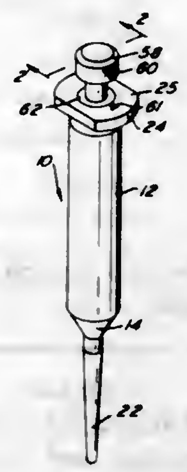
### PIPETTE ASSEMBLY

**Michael Sokol, Abington, and Frederick M. Kent, Warrington, both of Pa., assignors to Bio/Data Corporation, Hatboro, Pa.**

**Filed Oct. 20, 1972, Ser. No. 299,552**

**Int. Cl. B01l** *3/02*

**U.S. Cl. 73—425.6** **10 Claims**



A pipette assembly for accurate aspiration and discharge of fixed amounts from a pipette tip is disclosed. A spring-biased cylinder is mounted for rotation about its longitudinal axis for selecting the desired volume of liquid to be discharged. A variable volume control chamber is defined between the ID of the cylinder and the OD of a stationary piston rod. Reciprocation of the cylinder varies the volume of the control chamber.

3,760,640

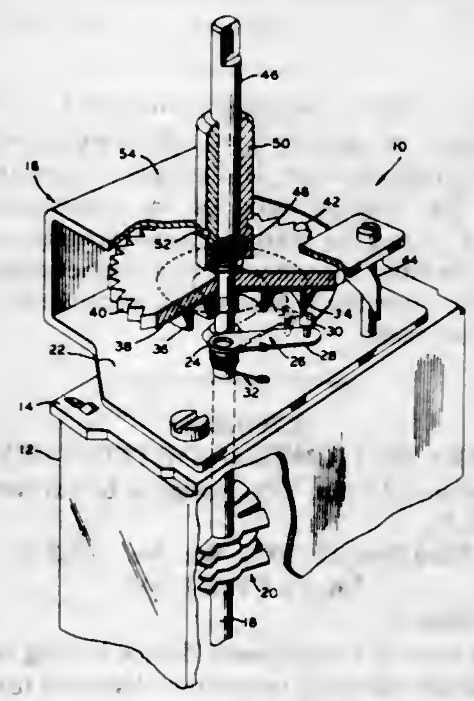
### UHF TUNER HAVING 70 DETENT POSITIONS WITH FINE TUNING AT ALL POSITIONS

**Rudolf Mayer, Rottweil, and Bernhard Mueller, Hereenzimmern, both of Germany, assignors to Hopt Electronic GmbH**

**Filed June 26, 1972, Ser. No. 266,324**

**Int. Cl. F16h** *35/18*

**U.S. Cl. 74—10.6** **4 Claims**



A UHF tuner having 70 detent positions with fine tuning capability at all locations. Coarse tuning is accomplished via a toothed, detented disk and a spirally-extending rim having a follower lever operable therewith. The rim has an oblique flank and axial movement of the rim secures fine tuning.

3,760,641

### DEVICE FOR IMPARTING RECIPROCATORY MOTION TO A MOVING ELEMENT

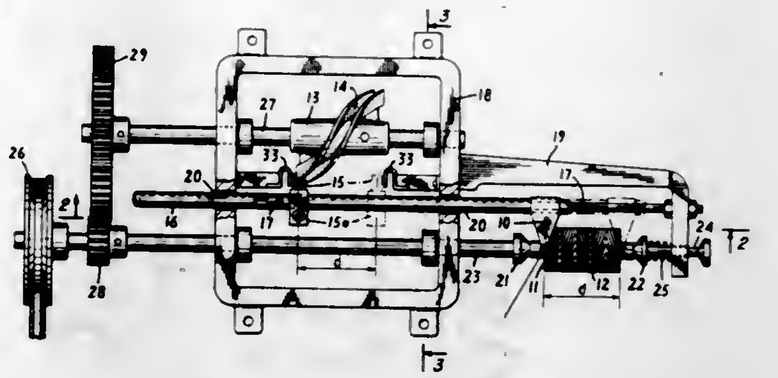
**Arcadio Espasa, Calle Peligro 40, Barcelona, Spain**

**Filed Aug. 5, 1971, Ser. No. 169,342**

**Claims priority, application Spain, Aug. 28, 1970, 383161**

**Int. Cl. F16h** *25/12*

**U.S. Cl. 74—57** **2 Claims**



A device for imparting reciprocatory motion to a moving element by means of a driven rotor having a channel formed around the outer periphery, a channel follower driven by the rotor and an impact absorbing means acting on the channel follower to decelerate it as it completes its movement in one direction and accelerate it during its initial movement in the opposite direction.

3,760,642

### CLUTCH-PINION FOR TIMEPIECES AND THE METHOD OF MAKING SUCH CLUTCH-PINIONS, INCLUDING A MILLING CUTTER USED IN THE METHOD

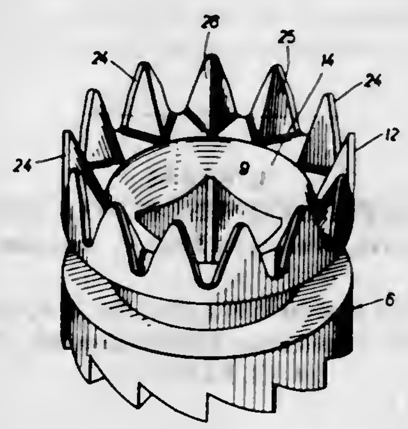
**Heinrich Stamm, Grenchen, (Canton of Soleure), Switzerland, assignor to Eta A.G. Ebauches-Fabrik, Grenchen, Switzerland**

**Filed Apr. 25, 1972, Ser. No. 247,370**

**Claims priority, application Switzerland, Apr. 28, 1971, 6242/71**

**Int. Cl. F16h** *55/00, 1/14*

**U.S. Cl. 74—432** **5 Claims**



Clutch-pinions for timepieces, which are generally cylindrical and include crown toothing in an annular crown on one end, are made in a process including hobbing the crown toothing in an unfinished clutch-pinion blank using a milling-cutter which has one or more revolutions of helical cutting teeth, and rotating the milling cutter about an axis which is substantially perpendicular to the axis of the unfinished blank, thereby providing the clutch-pinion with crown teeth whose profiles match the profile of the spacing between the milling-cutter teeth.

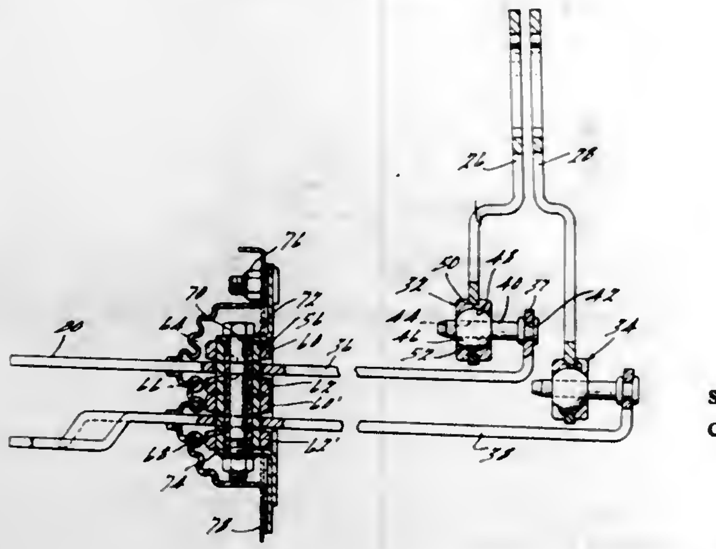
### 3,760,643
### TRANSMISSION GEARSHIFT LINKAGE

**William D. Allison, Grosse Pointe Farms, and Ernest W. Kitzner, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Dec. 22, 1971, Ser. No. 210,849**

**Int. Cl. G05g** *9/00*

**U.S. Cl. 74—473 SW** **2 Claims**



A transmission gearshift linkage for use with a foreshortened steering column in an automotive vehicle comprising a gearshift lever supported by the steering column in the vehicle passenger compartment and shift linkage elements at the base of the column adapted to be connected to a shift controlling shaft through an engageable selector clutch, and a motion transmitting linkage connecting the shift linkage elements to the ratio controlling elements of the vehicle transmission mechanism comprising compound motion transmitting members, one end of each being connected to a shift linkage element, the other end being connected to a ratio controlling element, an intermediate portion of said members being mounted for compound motion on a stationary portion of said mechanism and a universal connection between said one end of said members and said shift linkage elements, said universal connection being adapted to be disassembled from said shift linkage elements as said motion transmitting linkage and said column become displaced due to an impact loading.

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### 3,760,644
### VARIABLE SPEED STEPWISE POWER FEED DEVICE

**Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France**

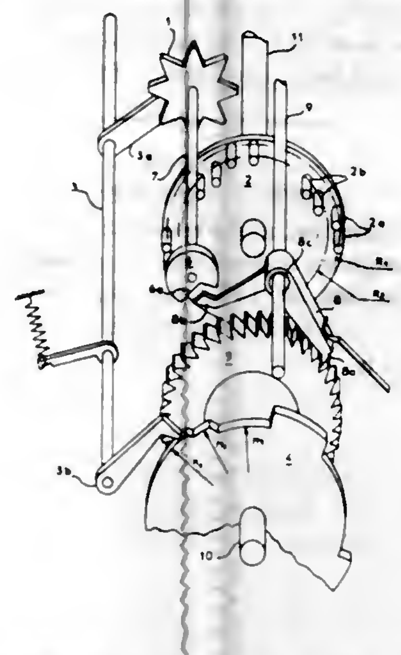
**Filed Jan. 10, 1972, Ser. No. 216,453**

**Claims priority, application France, Jan. 19, 1971, 7101879**

**Int. Cl. F16h** *27/00*

**U.S. Cl. 74—112** **2 Claims**

Variable speed stepwise power feed device for a programmer of the class comprising motor means, a cam unit integral with a ratchet iron wheel on which a feed pawl can act which is actuated by an eccentric from said motor means, the engagement of said pawl with said ratchet iron wheel being controlled by a disengaging cam, the improvement which consists in that said disengaging cam is integral in rotation with a star wheel wedged on an axis turning freely in a bearing, said axis being free to move, from a non-meshing position, so as to bring the star wheel more or less near a plate driven into continuous rotation from said motor means and comprising two sets of wedges arranged concentrically on said plate so that the star wheel depending on the degree of approach with respect to said plate, meshes with the nearest set of wedges or simultaneously with the two nearest sets of wedges and is driven at different speeds.



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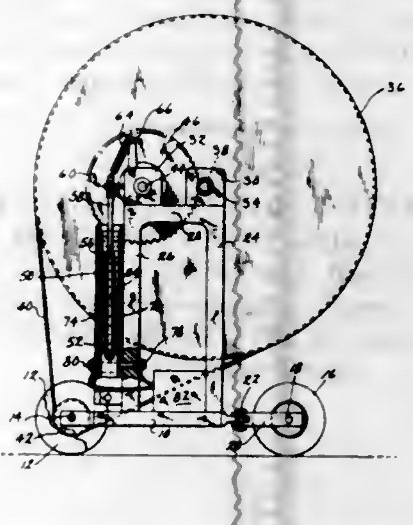
### 3,760,645
### CHEMICAL TO MECHANICAL ENERGY CONVERTER

**Ricardo J. Soto, Milwaukee, and Robert T. Balmer, Shorewood, both of Wis.**

**Filed Aug. 3, 1972, Ser. No. 277,844**

**Int. Cl. F16h** *27/02*

**U.S. Cl. 74—128** **19 Claims**



A contractile polymer member is immersed in a denaturing medium. Means is provided to alternately increase and decrease the concentration of that portion of the medium which is in the neighborhood of the contractile polymer member. This causes the member to alternately contract and expand. The member is connected to a ratchet driven shaft for translating the member's reciprocal contractile movement into rotary movement.

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### 3,760,646
### ROTARY MOTION TRANSMITTING DEVICE

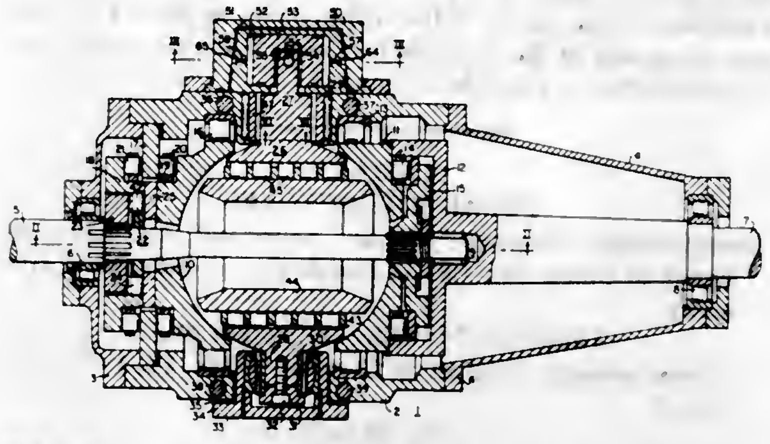
**Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Pittsburgh, Pa.**

**Filed Feb. 22, 1972, Ser. No. 227,776**

**Int. Cl. F16h** *15/08*

**U.S. Cl. 74—200** **16 Claims**

In a rotary motion transmission device having coaxial input and output shafts carrying oppositely disposed toric elements and having a rotary motion transmitting hollow spool disposed between and frictionally engaging the toric elements, one of the toric elements is mounted for rotation with one of the shafts but axially supported by the other shaft extending through the hollow spool such that the forces required to engage the toric elements with the motion-transmitting means are transmitted through the other shaft only.



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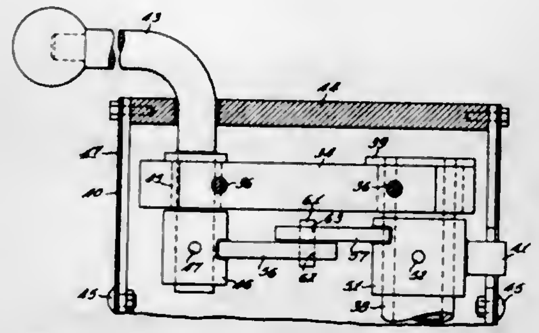
### 3,760,647
### TRANSMISSION SHIFT CONTROL

**Benonie C. Ehrhardt, Park Forest, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed Nov. 28, 1972, Ser. No. 310,159**

**Int. Cl. G05g** *7/02*

**U.S. Cl. 74—485** **4 Claims**



A manual shift handle for a vehicle transmission is pivotally mounted on the steering column and extends to the left side thereof for operation by the left hand of the operator. This arrangement frees the operator's right hand for manipulation of hydraulic valve levers and the like. Fore and aft pivotal movement of the left hand shift handle will select the same transmission speeds or directions as would be selected by corresponding fore and aft movement of a standard right hand lever installed on the transmission control rod. This is achieved by a motion reversing mechanism between the left hand shift handle and the transmission control rod.

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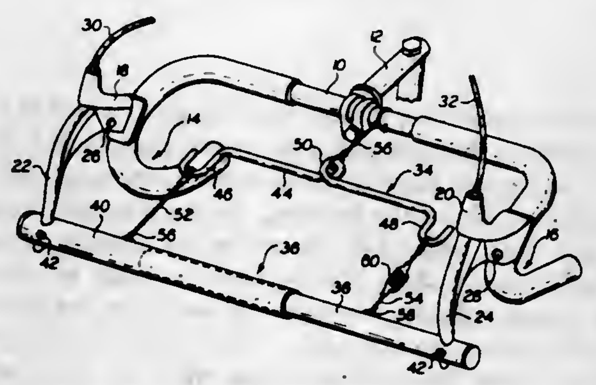
### 3,760,648
### AUXILIARY BICYCLE BRAKE HANDLE

**William B. Hoffman, 67 Ships Point Ln., Oyster Bay, N.Y.**

**Filed Dec. 18, 1972, Ser. No. 316,234**

**Int. Cl. B62k** *23/06*; **B62l** *3/02*; **G05g** *9/00*

**U.S. Cl. 74—489** **10 Claims**



A braking device for use on a bicycle handle of the type used on a racing bicycle. The device includes a rigid bar or tube which connects the usual brake handle levers. This connecting bar or tube is attached to a handle extending generally toward the top of the bicycle handle bar so that the handle may be grasped by a bicycle rider while having his hands on the top of the bicycle handle bar.

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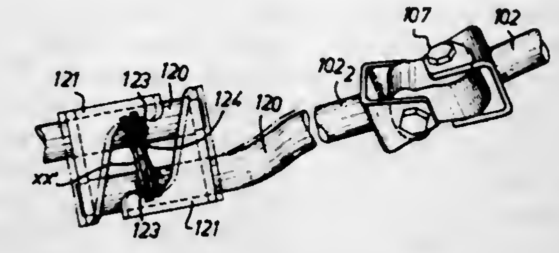
### 3,760,649
### AUTOMOTIVE SAFETY STEERING SYSTEMS

**Georges Decouzon; Marcel Misseri, and Andre Chalesle, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of France**

**Filed June 24, 1971, Ser. No. 156,416**

**Int. Cl. B62d** *1/18*

**U.S. Cl. 74—492** **5 Claims**



This safety device, adapted to permit the separation of two sections of a steering column assembled by means of one or more universal joints and a connecting joint comprising two separable elements having a common axis of rotation, is characterized in that at least one of the separable elements of the transmission joint comprises an aperture of which the walls are adapted to co-act with a driving member rigid with the other element, said last-named element being kept in engagement with the walls of said aperture by means of a tension device.

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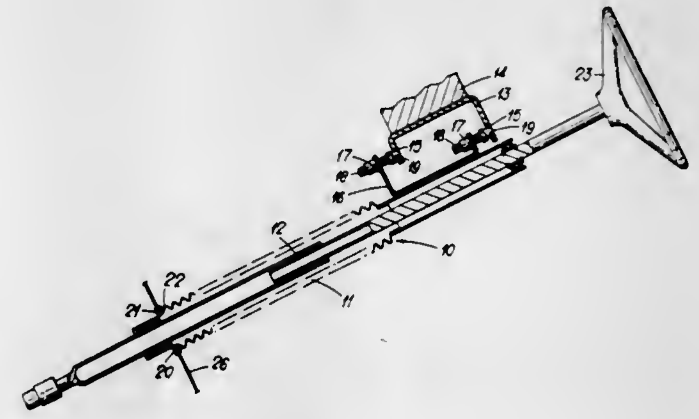
### 3,760,650
### ENERGY ABSORBING STEERING COLUMN

**Ronald Peter Pardy, Hockley, England, assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Sept. 19, 1972, Ser. No. 290,305**

**Int. Cl. B62d** *1/18*

**U.S. Cl. 74—492** **11 Claims**



An energy absorbing steering column is mounted in a motor vehicle between spaced apart portions of body structure. One end of the steering column abuts the toe board of the floor pan and threadedly adjustable release means connected to the other end of the column engages a body supported bracket. An intermediate portion of the column is constructed to plastically collapse under an impact load with the adjustable means freely disengaging from its support bracket.

**3,760,651**

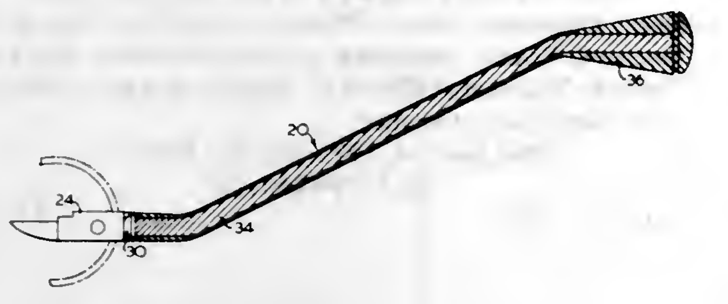
## GEAR SHIFT LEVER

**Maurice Roseby, Ann Arbor, Mich., assignor to Tamco Limited, Ontario, Canada**

**Continuation-in-part of Ser. No. 877,790, Nov. 18, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,632**

**Int. Cl. G05g** *1/04*

**U.S. Cl. 74—523** **1 Claim**



A gear shift lever for mounting on the steering column of an automobile which will bend under a severe impact while having adequate strength for all normal operations. The lever is made by using a length of round steel bar stock to provide a round stem and subsequently inertia welding it to an enlarged end portion which is square in cross-section. The end portion is then machined as is necessary to provide a conventional shape for mounting in the steering column. Thereafter, a plastic sheath of organic plastic material is injection molded onto the stem and over the weld joint to provide a sheath with an enlarged head on the remote end of the stem. The sheath diminishes in wall thickness from the enlarged end portion to the remote end of the stem.

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**3,760,652**

## INDEXING ARRANGEMENT

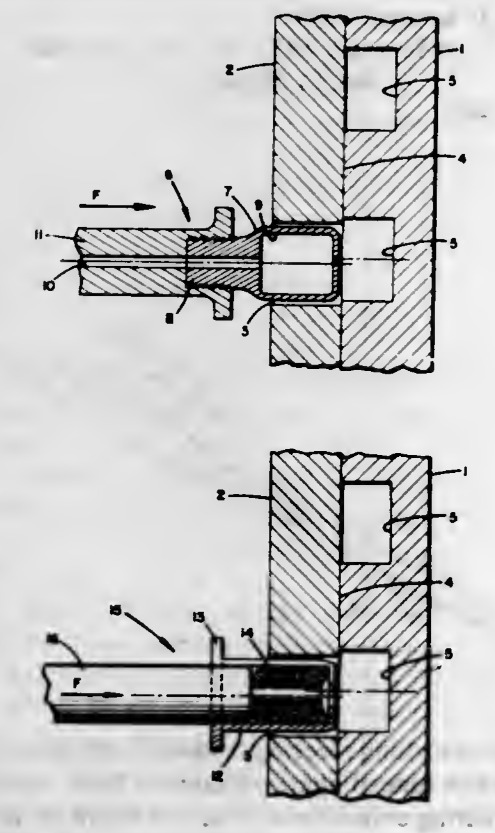
**Maurice L. Joyard, Rioz, and Jean Latapie, Tarbes, both of France, assignors to Etat Francais, Paris, France**

**Filed Jan. 18, 1972, Ser. No. 218,674**

**Claims priority, application France, Jan. 18, 1971, 7101519**

**Int. Cl. G05g** *5/06*

**U.S. Cl. 74—527** **7 Claims**



An indexing arrangement for repetitive, accurate positioning of a movable part relative to a fixed one which comprises a cylindrical cavity in the fixed part, terminating at the intended plane of movement at least one cylindrical cavity in the movable part also terminating at said plane and having a diameter as near equal to that of the diameter of the cavity of the fixed part as is possible and a cylindrical pin able to slide with clearance in the cavity of the fixed part. The pin is projected into the cavity of the movable part and is then expanded radially accurately to align the two parts.

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**3,760,653**

## PEDAL FOR BICYCLES

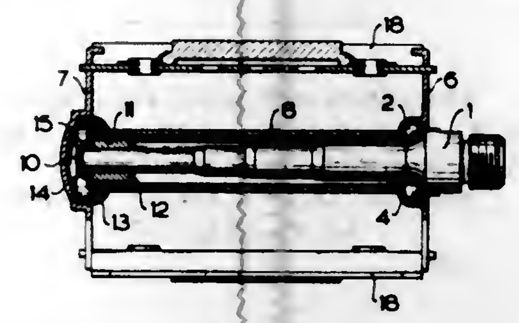
**Hans-Gerhard Hagenah, Menden Sauerland, Germany, assignor to Union Sils, van de Loo & Co., Frondenberg, Germany**

**Filed Mar. 3, 1972, Ser. No. 231,683**

**Claims priority, application Germany, Mar. 12, 1971, P 21 11 891.2**

**Int. Cl. B62m** *3/08*

**U.S. Cl. 74—594.4** **8 Claims**



A pedal for bicycles and similar vehicles in which the frame means carrying the tread part is journalled on the pedal axle by friction and or antifriction bearings, in which the pedal axle is so designed as to be able selectively to mount antifriction and/or friction bearing means.

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**3,760,654**

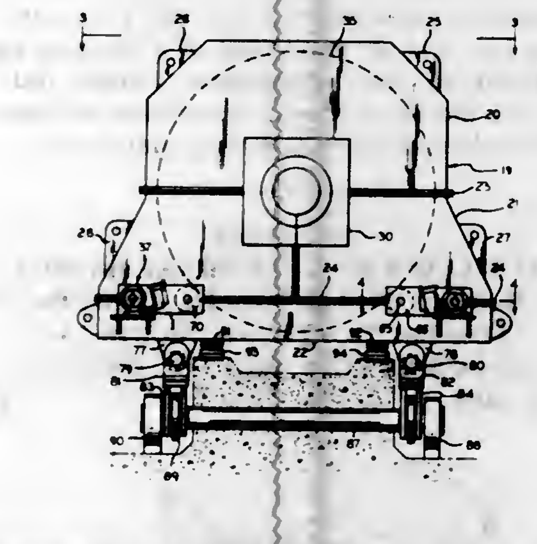
## METALLURGICAL VESSEL DRIVE

**Howard M. Fisher, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.**

**Filed Jan. 17, 1972, Ser. No. 218,427**

**Int. Cl. F16h** *37/06, 57/00*

**U.S. Cl. 74—661** **20 Claims**



The driven gear of a tiltable metallurgical wheel is fastened to the trunnion shaft on which the vessel is journaled. The gear is in a housing and pairs of drive motors are supported on axially opposite sides of the housing and are coaxially coupled to a common shaft which extends across the interior of the housing. The common shaft has dual pinion gears which are the first in a gear reduction system that operates the driven gear when the motors are energized. The housing is split horizontally into at least two sections so that when the upper section is removed, the gears in the speed reduction train are exposed for maintenance.

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**3,760,655**

## TURRET FOR ASSEMBLY ON A MACHINE TOOL AS A MACHINING UNIT

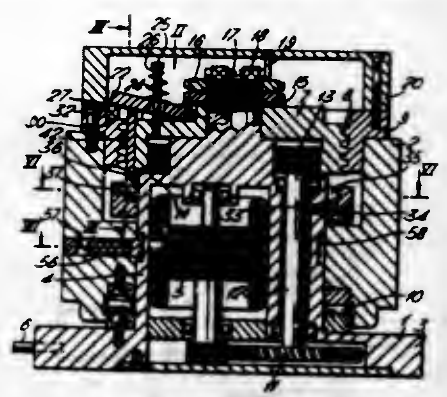
**Heinz Buchmeier, Halstenbeker Weg 46a, Hamburg, Germany**

**Filed Oct. 15, 1971, Ser. No. 189,651**

**Claims priority, application Germany, Dec. 17, 1970, P 20 62 133.4**

**Int. Cl. B23b** *29/32*

**U.S. Cl. 74—826** **14 Claims**



A turret which can be remote-controlled and which is designed for attachment as a machining unit to a machine tool, in which the turret comprises a stationary part adapted to be detachably mounted on a machine tool and a movable part rotatably mounted on the stationary part by means of a one-way coupling, which can be engaged in one direction of rotation of the movable part to unlock and pivot said movable part and disengaged in the other direction of rotation to lock the movable part, and an interlocking coupling, capable of axial movement from a locked to an unlocked position and vice versa in response to axial movement of the movable part; a screw-threaded portion arranged to be driven by a motor being rotatably mounted on the stationary part and connected by a screw-threaded connection to a portion of the movable part, a further rigid coupling being provided for the screw-threaded connection and the motor being arranged to rotate the movable part through a number of stations and by a predetermined angle past a selected station in the said other direction whereby the rigid coupling is disengaged before the drive motor is reversed to rotate the movable part in said one direction to lock said interlocking coupling.

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**3,760,656**

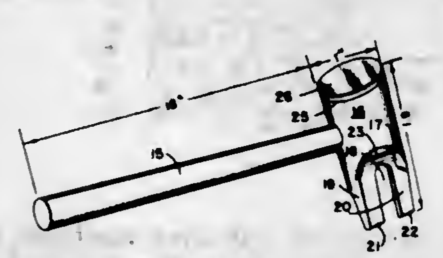
## AUTOMOBILE CAR DOOR LOCK OPENER AND CLOSER

**Carlos W. Veach, 8921 Ashcroft Ave., Los Angeles, Calif.**

**Continuation of Ser. No. 757,039, Sept. 3, 1968, abandoned. This application Dec. 15, 1970, Ser. No. 98,460**

**Int. Cl. B25f** *1/00*

**U.S. Cl. 81—3** **4 Claims**



A device adaptable for use by the driver of an automobile for lifting and depressing the lock buttons found on automobile doors from the operator's seat, involving a slide device movable along the window sill by a handle under directivity of the hand of the driver and functioning to enter beneath the lock buttons and elevate the same and also having a mallet, preferably with cushioned striking surface, for driving the buttons down to cause locking of the locking mechanism. In the unlocking function the tool has the capacity to perform camming and levering operations.

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**3,760,657**

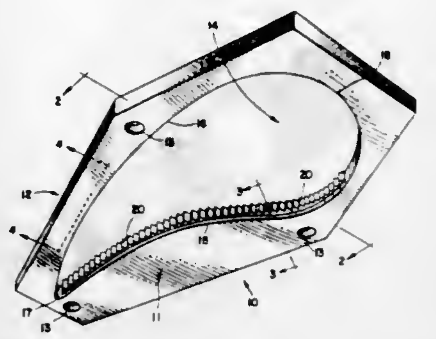
## JAR CAP REMOVER

**Eric Thomas Muir, Toronto; Jack Smith Hamnett, Thornhill, and Ronald Alfred Majury, Willowdale, all of Ontario, Canada, assignors to Trixco Inc., Rochester, N.Y.**

**Filed June 28, 1971, Ser. No. 157,427**

**Int. Cl. B67b** *7/18*

**U.S. Cl. 81—3.4** **8 Claims**



A cap removing device consisting essentially of a base member formed of thermo-plastic material, and having an opening, the opening being more or less of tear-drop shape, with one side having in part, a convex curve, and with the other side having a concave curve, and with a metallic strip member embedded in the thermo-plastic material along-side the convex side with one edge of the metallic strip member exposed and extending into the opening, there being saw-toothed formations along such exposed edge.

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**3,760,658**

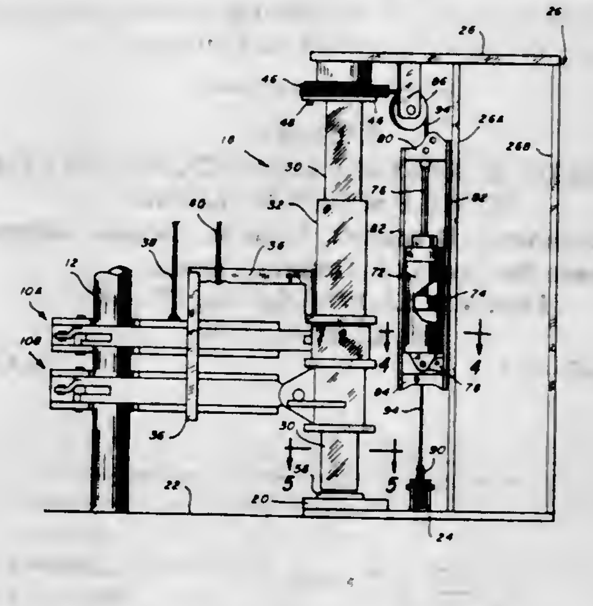
## APPARATUS FOR SUPPORTING PIPE TONGS

**William Guier, 3100 E. 71 St., Tulsa, Okla.**

**Continuation-in-part of Ser. No. 104,865, Jan. 8, 1971, Pat. No. 3,703,111. This application Feb. 10, 1972, Ser. No. 225,163**

**Int. Cl. B25b** *13/50*

**U.S. Cl. 81—57.34** **5 Claims**



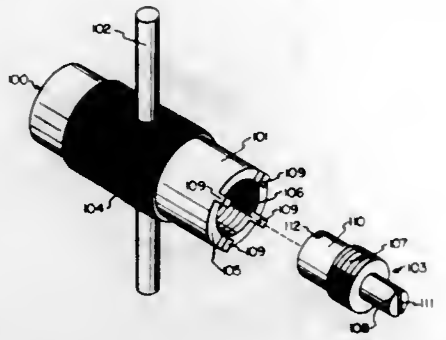
An apparatus for supporting pipe tongs above a derrick floor including a pivot pad positioned on the derrick floor, a vertical support frame supported on the derrick floor having an upper horizontal arm portion extending above the pivot pad, a vertical pivot post rotatably supported between the pivot pad and the frame horizontal portion, the pipe tongs being affixed to and extending from the pivot post, and means of rotating the pivot post to thereby rotate the pipe tongs.

### 3,760,659
### PLUG JACK NUT TOOL

**Alvin Edward Campbell, Spring Arbor, Mich., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Dec. 30, 1971, Ser. No. 213,864**
**Int. Cl. B25b** *13/48*

**U.S. Cl. 81—90 C** **1 Claim**



A tool for removing and inserting telephone plug jack nuts of more than a single type of jack, where the jacks have different bore diameters. The tool consists of a plurality of spanner type lugs on a circumferential ring with a double ended central guide pin. Each end of the guide pin is of a diameter to fit into a different particular size of bore.

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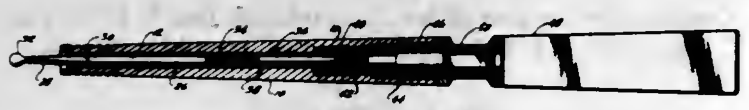
### 3,760,660
### BURNISHING TOOL

**Donald E. Van Arnam, Surfside, and Frank A. Marovich, Hacienda Heights, both of Calif., assignors to Avery Products Corporation, San Marino, Calif.**

**Filed Sept. 1, 1971, Ser. No. 176,829**
**Int. Cl. B41b** *1/00*

**U.S. Cl. 81—9.2** **6 Claims**



A burnishing tool includes a spring-loaded plunger which projects from a barrel, the plunger having a tip for providing a spring-loaded burnishing surface. The plunger provides a constant burnishing force for transferring indicia from a carrier sheet to a receiving surface when the tool is used.

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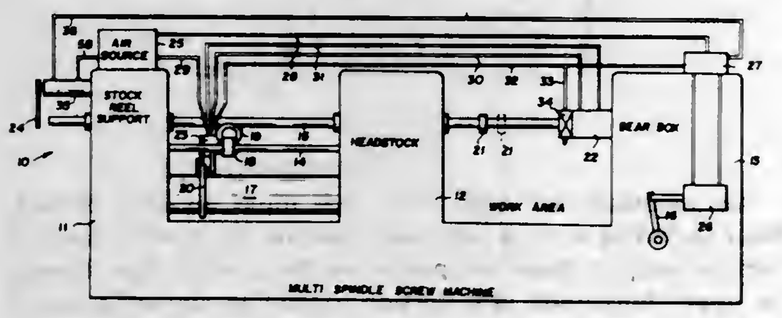
### 3,760,661
### PNEUMATIC BAR FEEDER CONTROL FOR MULTIPLE SPINDLE SCREW MACHINES

**Josef Eichenhofer, Brampton, Ontario, Canada, assignor to Automatic Bar Feed Ltd., Ontario, Canada**

**Filed Aug. 13, 1971, Ser. No. 171,447**
**Int. Cl. B23b** *13/00*

**U.S. Cl. 82—2.7** **11 Claims**



A pneumatic system controls the bar feeding in a multi-spindle screw machine using a drive roller to feed bars. The system includes a pneumatic push back stop controlled by a valve operated by the same cam system that controls the drive roller. The system also includes safety shutoffs for stock depletion and failure to push the stock back completely.

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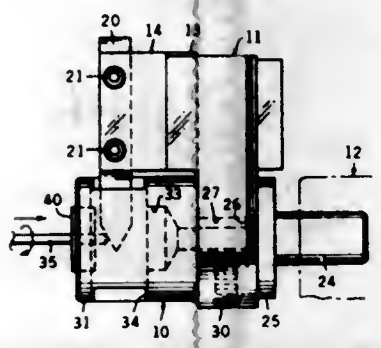
### 3,760,662
### TOOL HOLDER ADAPTOR

**Ivan R. Brock, 401 W. Main, Crothersville, Ind.**

**Filed Aug. 20, 1971, Ser. No. 173,448**
**Int. Cl. B23b** *29/16*

**U.S. Cl. 82—35** **4 Claims**



This adaptor is used in conjunction with lathe attachment such as a knee type tool holder and includes a body having a stem which is received by the bushing aperture of the tool holder. The adaptor body includes axial and transverse openings. The axial opening is aligned with the lathe center to receive a bushing provided with a support aperture which receives the end of relatively slender stock for pointing. The transverse opening is oversize and is adapted to receive the tool in adjustable relation to the stock.

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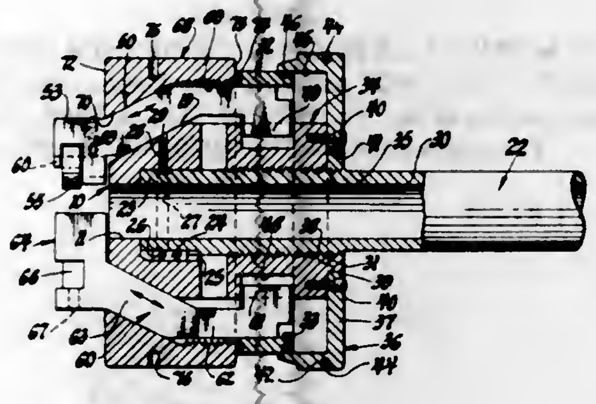
### 3,760,663
### UNIVERSALLY ADJUSTABLE BOX TOOL

**Robert J. Kirsch, 18501 Biltmore, Detroit, Mich.**

**Filed June 12, 1972, Ser. No. 261,699**
**Int. Cl. B23b** *29/20*

**U.S. Cl. 82—35** **5 Claims**



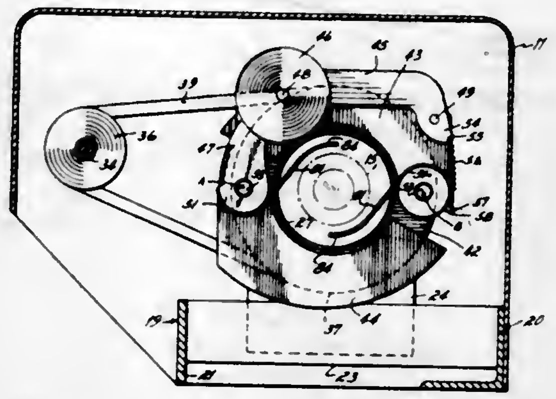
A roller box tool for use with screw machines, turret lathes and other turning machine tools. The box tool comprises a body member having a pair of rollers which are carried on roller carrier arms that are slidably mounted in angular slots for inward and outward adjustments movements. A cutting tool is adjustably mounted on a tool carrier arm which is slidably mounted in an angular slot for adjustment inwardly and outwardly. The tool includes a rotatable adjusting spool which carries a barrel dial, whereby the carrier arms carrying the rollers and cutting tool may be adjusted inwardly and outwardly for adjusting the rollers and cutting tool to a pre-set size. A clamping sleeve is threadably mounted on the body member for retaining the roller carrier arms and tool carrier arms in desired adjusted positions.

### 3,760,664
### WINDOW SHADE CUTTER

**Robert C. Goessling, Cincinnati, Ohio, assignor to Clopay Corporation, Cincinnati, Ohio**

**Filed Oct. 6, 1971, Ser. No. 187,057**
**Int. Cl. B23b** *3/04, 5/14*

**U.S. Cl. 82—63 R** **7 Claims**



A window shade cutter in which the shade is immovably clamped in rolled up condition and then cut to pre-determined length by a motor driven cutting head that revolves around the shade. Centrifugal force acting upon components of the rotating cutting head insures that optimum cutting pressure is applied to the shade during the cutting operation.

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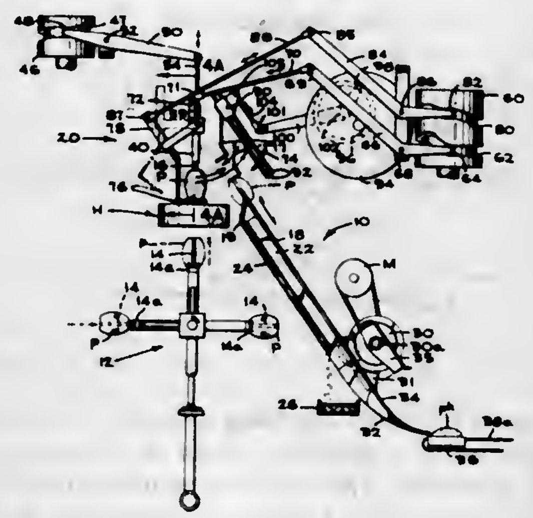
### 3,760,665
### PINEAPPLE SLITTING AND CONVEYING

**Leslie Vadas, Los Gatos, Calif., assignor to Castle & Cooke, Inc., Honolulu, Hawaii**

**Filed Mar. 9, 1972, Ser. No. 233,130**
**Int. Cl. B26d** *3/08, 4/76*

**U.S. Cl. 83—9** **8 Claims**



Precored pineapples are contour peeled in a row of contour peeling heads. The precored and peeled pineapples from each peeling head are transferred to a downwardly inclined slide rod having a depending slitter knife and a slit guide flange for slitting and guiding the lower side of the fruit. The partially slit pineapples slide down the guide rod and pass beneath an upper slitter which completes the halving operation. The halved pineapples progress on the chutes that are progressively twisted from a vertical plane at the second slitter to a horizontal plane while the chutes gradually diverge. A juice trough is suspended from the lower edge of the slit guide flange and flexible flaps at the second slitter assist in retaining the pineapples on the twisted chutes.

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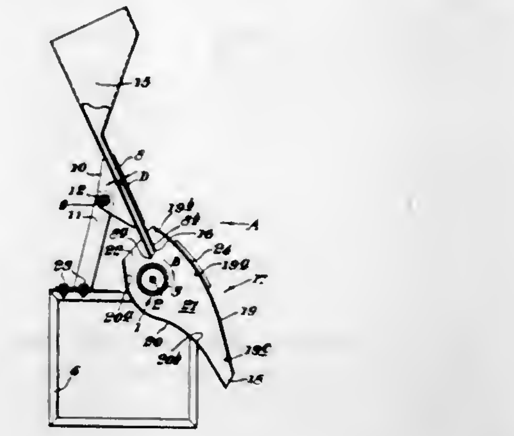
### 3,760,666
### APPARATUS FOR SCARIFYING PULSES SUCH AS FRESH PEAS

**Eamonn Power, c/o Erin Foods Ltd., Thurles, and Padraic O'-Brolchain, c/o Research and Development Comhlucht Siuicre Eireann, Teo., Carlow, both of Ireland**

**Filed Dec. 21, 1971, Ser. No. 210,478**
**Claims priority, application Ireland, Dec. 23, 1970, 1633/70**
**Int. Cl. B26d** *3/08;* **A23n** *15/02*

**U.S. Cl. 83—11** **5 Claims**



A machine for puncturing the skins of small pulses, particularly fresh peas which are to be air or freeze dried. The machine has a series of co-axial circular knife blades which are revolved at high speed while the peas are dropped through a gravity feed chute onto the edges of the blades, from which they rebound with their skins nicked by the blades. The feed chute is angularly adjustable relative to the blades to allow for variations in the size and quality of the peas or other pulses requiring slitting.

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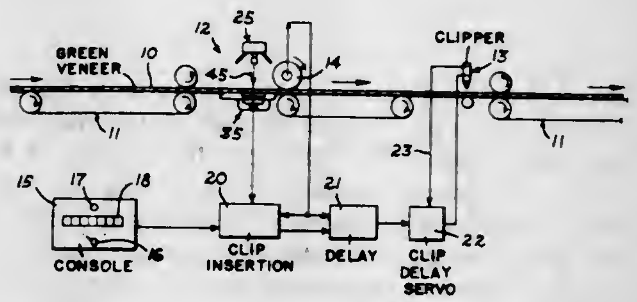
### 3,760,667
### VENEER DEFECT DETECTOR AND CLIPPER CONTROL

**Carl W. Maxey; Grant R. Montague; Warren L. Leyde, and Eugene L. Bryan, all of Arcata, Wash., assignors to The Black Clawson Company, Hamilton, Ohio**

**Continuation of Ser. No. 78,082, Oct. 5, 1970, abandoned, Division of Ser. No. 800,324, Jan. 15, 1969, Pat. No. 3,552,252, which is a continuation of Ser. No. 552,940, May 25, 1966, abandoned. This application Aug. 3, 1972, Ser. No. 277,791**
**Int. Cl. B26d** *5/38*

**U.S. Cl. 83—13** **4 Claims**

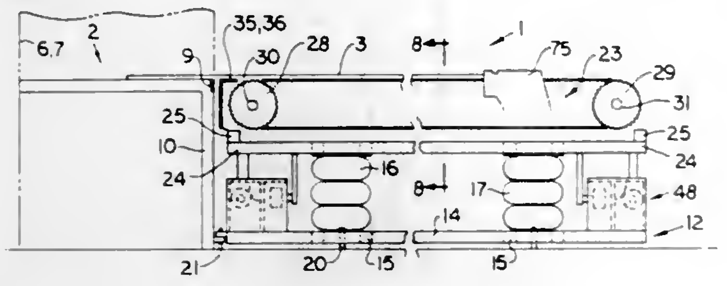


Method of providing actuating signals to a cutting device having assymetrical actuation response characteristics in such a way that material is cut precisely at preselected locations includes manual or electronic means for generating cutting command signals, either as a result of a defect in the material or after predetermined lengths of material have moved through the cutting device, and means for introducing a time delay between the cutting command signals and those signals which actuate the cutting device. The magnitude of the time delay is determined by the speed at which the material moves through the cutting device and by the response characteristics of the cutting device to the actuating signals. If no defects are found in the material, the material will be cut automatically into predetermined standard lengths.

### 3,760,668
### WORKPIECE SUPPORT/APPARATUS AND METHOD FOR SHEARING

**Ronald L. Spaulding, Milan, Ind., assignor to Spaulding, Inc., Cincinnati, Ohio**

**Filed Aug. 3, 1972, Ser. No. 277,806**
**Int. Cl. B26d** *7/06*
**U.S. Cl. 83—13** **14 Claims**



Heavy metal plate is sheared using a workpiece support combining a conveyor supported on a pneumatic suspension so that the support can tip and move while supporting the plate during shearing.

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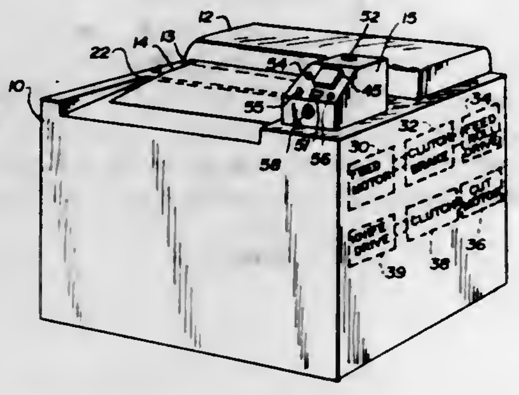
### 3,760,669
### SHEET MATERIAL FEEDING AND CUTTING APPARATUS AND CONTROL SYSTEM THEREFOR

**Ben J. Rosenthal, Skokie, and Earl Matsouka, Park Ridge, both of Ill., assignors to Rosenthal Manufacturing Company, Inc., Chicago, Ill.**

**Filed Feb. 23, 1972, Ser. No. 228,669**
**Int. Cl. B26d** *5/40*
**U.S. Cl. 83—63** **12 Claims**



Sheet material feeding and cutting device including feed roll for material driven by a motor through clutch and brake, for feeding sheet material such as paper from a roll. A knife is provided with driving means for operating the same in response to an electrical signal. The extent of movement of the feed roll is measured to thereby measure the amount of material fed. This may be provided by a shaft encoder which produces pulses for increments of movement of the feed roll, and a counter coupled to the encoder for counting the pulses. The counter can be manually preset to a particular number of pulses corresponding to a particular length of material, to operate a control circit in response to the preset number of pulses. The control circuit operates the electrically operated clutch and brake to disengage the drive and to stop the movement of the feed roll. The control circuit also applies a signal to the drive for the knife to operate the same. Alternatively, a mechanical device coupled to the feed roll can move therewith and cooperate with a switch which is adjustably positioned in accordance with a preset length of sheet material. The switch operates the control circuit to actuate the clutch and brake, and the drive for the knife, in the same manner as when the shaft encoder and counter are used.

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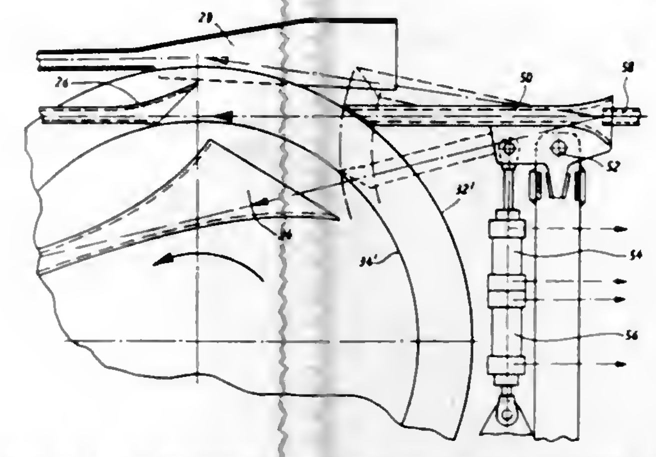
### 3,760,670
### ROTARY SHEAR

**Michael Poran, New York, N.Y., assignor to Danieli & C.S.p.A., Buttrio, Italy**

**Filed Sept. 10, 1971, Ser. No. 179,492**
**Claims priority, application Germany, June 28, 1971, P 21 32 124.4**
**Int. Cl. B23d** *19/04;* **B26d** *3/16*
**U.S. Cl. 83—102** **10 Claims**



A pair of discs mounted on mutually inclined shafts each have a pair of concentric cutting edges on opposed faces so that the cutting edges closely oppose each other at one peripheral location to form a cutting zone. Stock to be cut is fed generally tangentially into the area of this zone, the path of travel of the stock being movable radially outwardly to cause the stock to be moved through the cutting zone and hence cut by the cutting edges.

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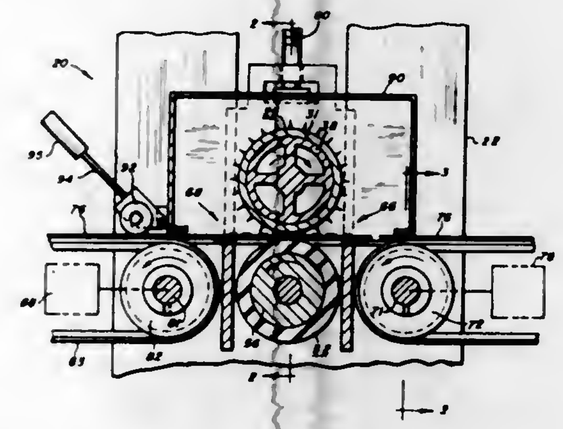
### 3,760,671
### PUNCHING APPARATUS

**Henry H. Jenkins, 864 Hacienda Dr., Corona, Calif.**

**Filed June 1, 1972, Ser. No. 258,864**
**Int. Cl. B26f** *1/24*
**U.S. Cl. 83—155** **3 Claims**



The present invention discloses a machine for continuously punching holes in a substrate which is to be used in a skin packaging operation. The machine includes a frame which has a punching roll, which is rotatively mounted by the frame and the punching roll includes a cylindrical shell and a cylindrical center roll. The cylindrical shell is provided with a plurality of openings and fitted in these openings are a plurality of punching pins and these pins are backed up on one end by the cylindrical center roll which prevents them from inward movement. The outer surface of the cylindrical shell is swedged tightly around each of the pins where it exits its respective opening and this prevents outward movement of the pins during normal operation of the machine. The outward end of each pin is pointed to perform a punching function. A rubber backup roll is mounted preferably below and parallel to the punching roll. Means are provided for raising and lowering the punching roll relative to the rubber backup roll so that the outward end of the pins may be positioned relative to the rubber backup roll and preferably are at least in contact with the rubber backup roll. Means are provided for rotatively driving the punching roll and the rubber backup roll. Pieces of substrate are fed into the entrance end of the machine and are removed from the exit end of the machine by means of a plurality of belts which are mounted generally horizontal and parallel with each other. The belts are driven by means of first-drive axles which in turn rotatively carry sheaves which in turn carry the belts. The same construction is provided at the exit end to remove the substrate after they have had the holes punched in them by the aforementioned pins. Ejection rollers are mounted at the exit end of the machine and are adapted to engage the upper surface of the increments of substrate to aid in removing the substrate from between the punching roll and the backup roll. Weights are provided for varying the pressure of the ejection rollers on the increments of substrate. This prevents the punching roll from its normal tendency of pulling the pieces of substrate which are trying to exit the machine around the punching roll.

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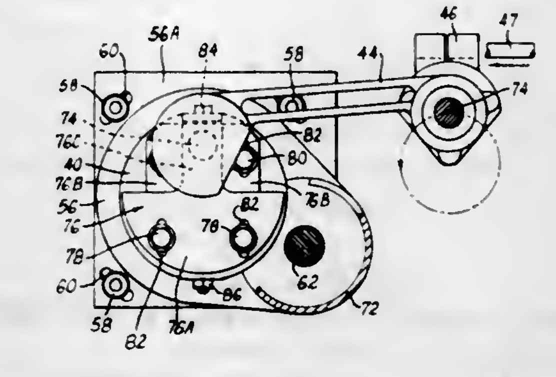
### 3,760,672
### ROD-MAKING MACHINES

**Francis A. M. Labee, Neuilly-Sur-Seine, France; Edward George Preston, London, England; Paul Dingli, London, England; Ivan Y. Hirsh, London, England, and Derek Henry Dyett, London, England, assignors to Molins Limited, London, England**

**Filed Oct. 19, 1971, Ser. No. 190,495**
**Int. Cl. B26d** *1/56*
**U.S. Cl. 83—310** **10 Claims**



A ledger for a rod-making machine, especially a cigarette or filter making machine, comprises two rotary members arranged to rotate at the same speed about parallel axes and a connecting member which is pivotally connected to both of the rotary members and carries a rod support which supports the rod during each cutting stroke.

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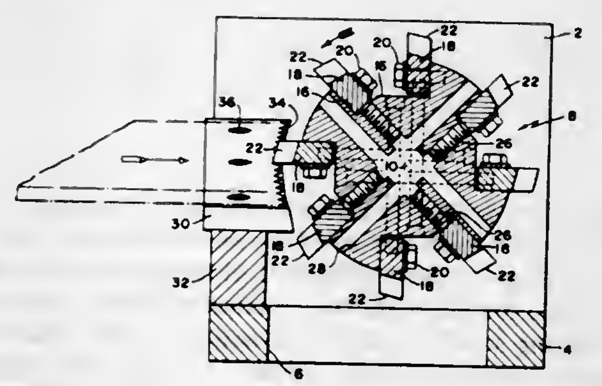
### 3,760,673
### PLASTIC CUTTING MACHINE

**Russell I. Peterson, Jr., Seekonk, Mass., assignor to Cumberland Engineering Company, Inc., Pawtucket, R.I.**

**Filed Nov. 19, 1971, Ser. No. 200,356**
**Int. Cl. B23d** *25/02*
**U.S. Cl. 83—349** **9 Claims**



A machine for dicing plastic sheet material, in which a horizontal rotor has teeth on the periphery thereof which are in cutting relationship to the teeth on a stationary bed knife, the latter being tilted at an angle to the axis of the rotor. The construction permits the use of a plurality of straight knives having teeth on the rotor, instead of helical knives, permits the cutting of thin sheet material, and has a relatively low noise level in operation.

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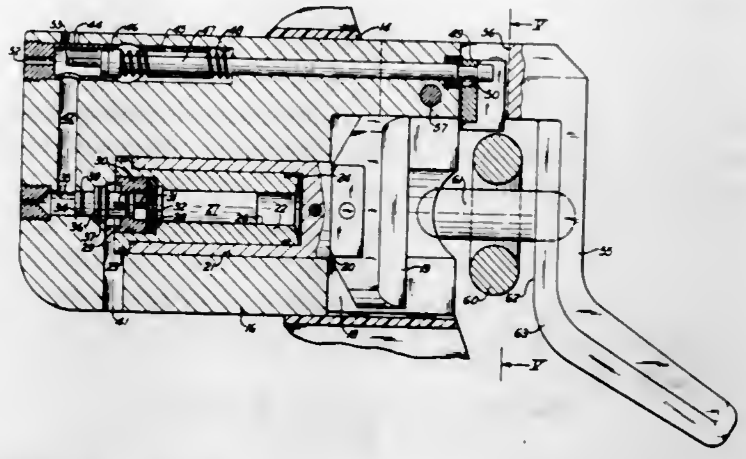
### 3,760,674
### EXPLOSIVELY ACTUATED UNDERWATER ANCHOR LINE CUTTER

**Ernest E. Temple, Murrysville, and Joseph L. Giebel, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.**

**Filed Oct. 28, 1971, Ser. No. 193,381**
**Int. Cl. B26d** *5/38*
**U.S. Cl. 83—370** **6 Claims**



The frame of a chain cutter is mounted in a housing on a stabilizing fin. The housing and usually the fin are formed of material that will tear apart when the cutter is fired. The fin is held on a sweep line by a pair of pivoted lugs that can be released from the line by pulling back on a spring between the lugs. Attached to the front of the cutter frame is an anvil forming with the frame a chain-receiving recess that is only wide enough to receive a chain link lying broadside to the axis of a barrel in the frame. The barrel contains a piston for driving a chisel forward through the chain link in the recess. The piston is hollow and contains a cartridge holder provided with an axial passage having a breech block in its rear end. A plunger, slidably mounted in the breech block and in an opening in the frame behind it, carries a firing pin on its front end. The plunger is encircled by a collar joined to it between a pair of sealing rings. The frame has passages connecting the front and rear sides of the collar with the outside of the frame to hydraulically balance the plunger. The frame is provided with means, actuated by a mine anchor line in the chain-receiving recess, for suddenly increasing water pressure in the rear passage to drive the plunger and firing pin ahead.

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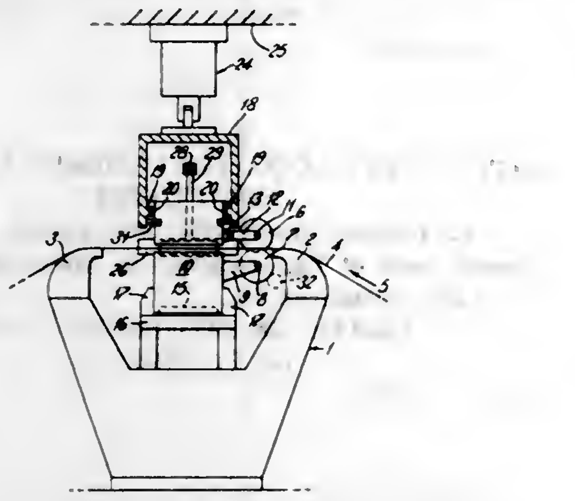
### 3,760,675
### WEB SLITTING APPARATUS

**Colin George Langworthy, and Edwin James Webb, both of Bristol, England, assignors to Masson Scott Thrissell Engineering Limited, London, England**

**Filed Apr. 21, 1971, Ser. No. 135,833**
**Claims priority, application Great Britain, Apr. 23, 1970, 19,595/70**
**Int. Cl. B26d** *1/22, 5/02*
**U.S. Cl. 83—482** **14 Claims**

Apparatus for slitting a web of paper longitudinally consists of a slitting knife, mounted on a carrier member above the web, and a counter member, against which the knife cuts, on carrier member below the web which is fed between the carrier members during the slitting operation. To enable the position of the knife and counter-member to be changed so as to slit the web in a different position the confronting faces of the two carrier members are provided with rollers, or belts, and the carrier members are provided with rollers, or belts, and the carrier members are urged towards each other, so that the rollers, or belts interengage. When one of the carrier members is moved horizontally across the path of the web, the interengagement of the rollers or belts causes the other carrier member to move also and the two carrier members will remain in the same relative positions.



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### 3,760,676

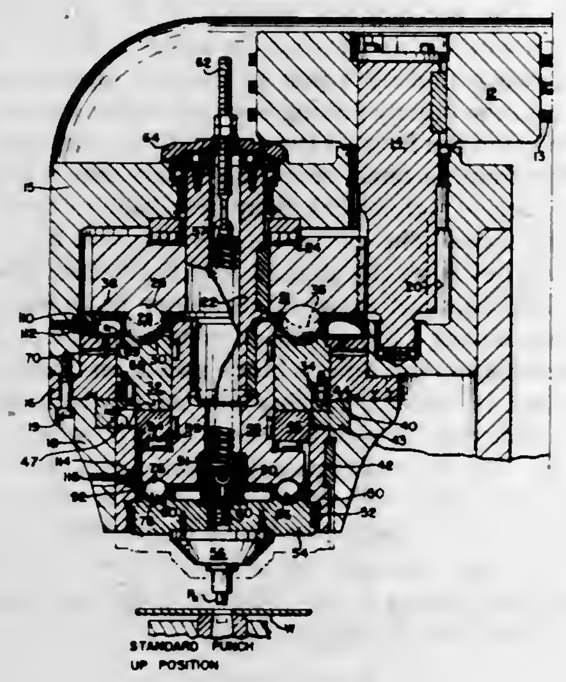
### UNITIZED RAM DRIVE FOR A PUNCH PRESS

**Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., Seattle, Wash.**

**Filed May 5, 1972, Ser. No. 250,780**

**Int. Cl. B23d** *27/00*

**U.S. Cl. 83—590** **12 Claims**



A punch drive converts rotary motion from a power source in one embodiment into one-speed reciprocation or in another embodiment into selective two-speed reciprocation of a punch. In the latter embodiment the slower speed of reciprocation is provided by rolling a plurality of primary thrust balls between a rotating gear and a reciprocating primary wave thrust ring. The wave thrust ring has three cam waves which cause the thrust ring to be reciprocated downwardly as the balls roll thereover. The thrust ring is coupled through a clutch mechanism to the punch. The second speed is provided by a rotatable nibbling drive collar and a reciprocating nibbling wave thrust ring having a plurality of nibbling thrust balls therebetween. The nibbling wave thrust ring is provided with nine cam waves which cause reciprocation of the nibbling wave thrust ring as the thrust balls are rolled thereover. The nibbling wave thrust ring is also coupled to the punch. The rate of downward movement of the thrust rings is determined by the slope angles of the forward surfaces of the cam waves.

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### 3,760,677

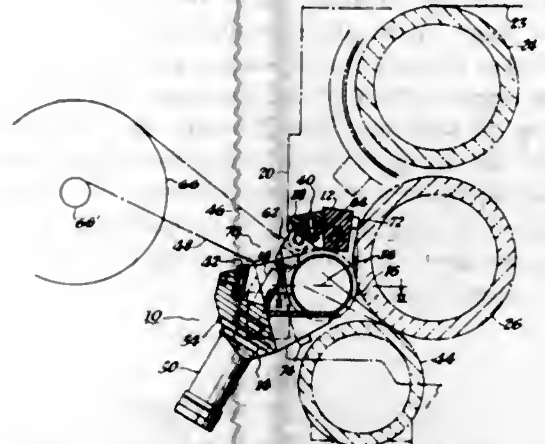
### SHEAR FOR STEEL STRIP AND THE LIKE

**Allen B. Campbell, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.**

**Filed May 19, 1972, Ser. No. 255,004**

**Int. Cl. B26d** *1/34*

**U.S. Cl. 83—600** **8 Claims**



A floating shear arrangement comprises a first knife assembly mounted for movement toward a variable path of material to be cut, and a second knife assembly mounted for movement toward the material path and toward the first knife assembly. An arrangement is coupled to the knife assemblies for drawing the knife assemblies toward one another and toward the material path. The arrangement and the knife assemblies are disposed, such that one of the knife assemblies is moved initially into engagement with the material to establish a shearing location within a range of such shearing locations, and thereafter the other knife assembly is moved into shearing engagement with the material and the one knife assembly.

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### 3,760,678

### BOW SAW MACHINE

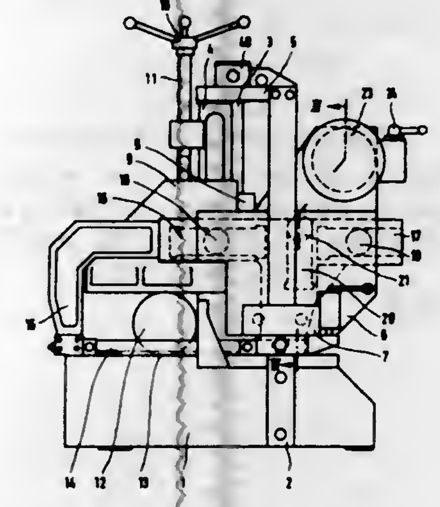
**Paul Stolzer, Achern, Germany, assignor to Anna Stolzer d.b.a. Firma Karl Stolzer, Achern, Germany**

**Filed June 15, 1972, Ser. No. 263,101**

**Claims priority, application Germany, June 29, 1971, P 21 32 238.3**

**Int. Cl. B23d** *49/02, 51/20*

**U.S. Cl. 83—776** **14 Claims**



A hydraulic system in a bow saw machine, operating in conjunction with a carriage carrying the bow for the saw blade, and providing for the application of the saw blade to a workpiece in the machine, the application of sawing pressure during a cutting stroke, and the retraction of the blade from the workpiece during a return stroke. A crank drive and guide structure disposed between the carriage and the bow provide for reciprocal, rectilinear guided movement of the blade with respect to the workpiece clamped on a pedestal of the machine. The hydraulic system has a cylinder-piston assembly wite the cylinder connected to the carriage and with the piston connected, through a piston rod, to the pedestal. A pump and a charging piston in the system are in hydraulic communication with a first chamber in the cylinder of one side of the piston and are operated by actuating elements associated with the crank drive. Hydraulic fluid under pressure, as supplied by the charging piston and pump, acts to apply and retract the saw blade with respect to the workpiece. In addition, a fluid under pressure, supplied from a reservoir, constantly acting within a second chamber on the other side of the piston provides an arrangement to compensate for the weight of the carriage and the components carried on it.

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### 3,760,679

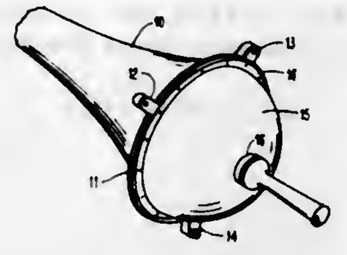
### NON-TRANSPOSING MUTE

**Benjamin R. Gossick, and Karl A. Schneider, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.**

**Filed Sept. 6, 1972, Ser. No. 286,666**

**Int. Cl. G10d** *9/06*

**U.S. Cl. 84—400** **5 Claims**



A non-transposing mute having a metallic hemispherical resonator with a hollow acoustic filter attached thereto is provided for detachably fitting upon the rim of a brass musical instrument. A variety of tonal quality is available by choice of the particular filter selected by the musician.

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### 3,760,680

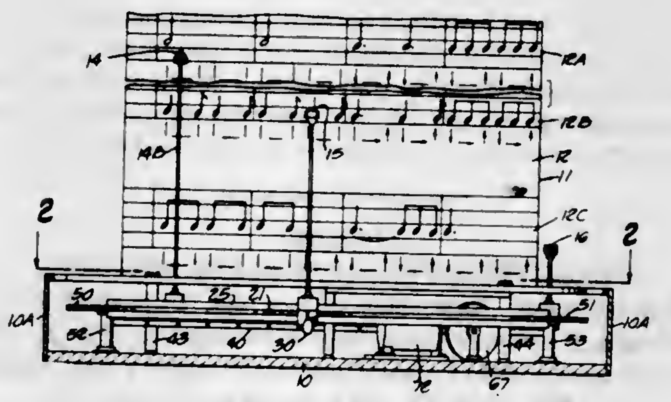
### DEVICE FOR TEACHING TIME AND RHYTHM

**Philip D. Moore, 6726 Pacific, Huntington Beach, Calif.**

**Filed Nov. 19, 1971, Ser. No. 200,383**

**Int. Cl. G10b** *15/00*

**U.S. Cl. 84—483** **2 Claims**



A device for teaching time and rhythm in music incorporates an endless chain on which pointers cooperating with sheet music are mounted for both horizontal and vertical movement. During horizontal movement, the speed of which may be adjusted by positioning of the frame of a driving motor, the pointer is caused to bob up and down in accordance with the desired beat of the music. The time interval between bobs of the pointer is adjustable by positioning alternate series of pins in the path of movement of a cam which serves to a raise the pointer on contact with one of such pins.

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### 3,760,681

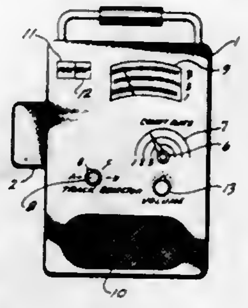
### AUDIBLE TIME MEASURING WITH DISCRIMINATING SOUND FOR BEATS WITHIN A GROUP

**Mervyn R. Kennedy, Sierra Madre, Calif., assignor to Relton Corporation, Arcadia, Calif.**

**Filed Sept. 10, 1971, Ser. No. 179,414**

**Int. Cl. G10b** *15/00*

**U.S. Cl. 84—484** **19 Claims**



An instrument produces a selected number of beats per unit time with each beat in a preselected group, which group may represent a measure in music, having a unique sound or recovery to advantageously distinguish the individual beats. The beats may be recorded on a magnetic tape having a plurality of tracks with each track either containing beats at the same frequency as every other track and a different number of beats in a group or beats at a different frequency from every other track with each track having the same number of beats in a group.

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### 3,760,682

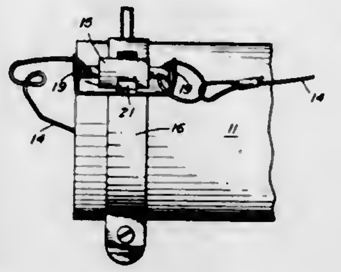
### EXTERNAL CARRIAGE ADAPTER FOR AIRCRAFT PARACHUTE FLARE

**John B. Dexter, California, Md.**

**Filed Feb. 18, 1969, Ser. No. 800,209**

**Int. Cl. B64d** *1/04*

**U.S. Cl. 89—1.5 D** **5 Claims**



The combination with a flare release mechanism of a clip to hold the disconnect coupling so that the movement of the lanyard by the wind pressure or retention of the lanyard by tape wrappings will not result in an accidental initiation of the flare or that the retention of the lanyard will not result in a dud, and yet release the disconnect coupling upon release of the flare casing and the tightening of the lanyard.

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### 3,760,683

### MULTI BARREL AUTOMATIC WEAPON

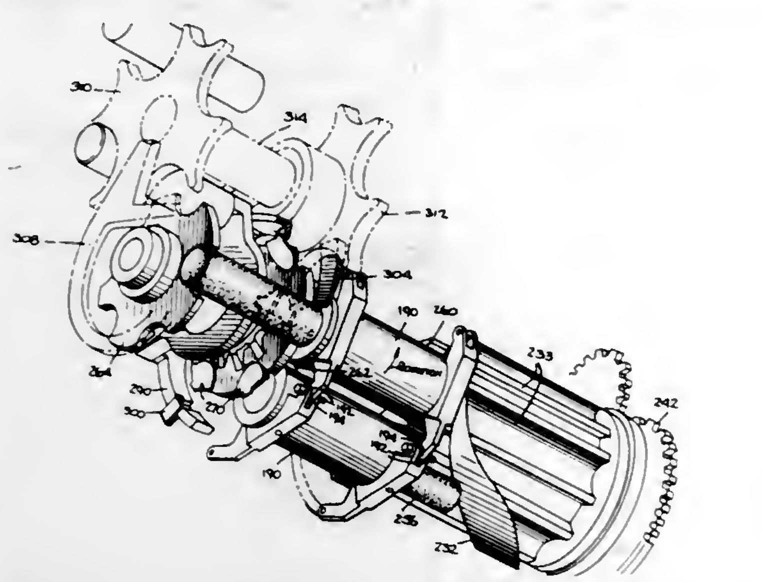
**James Marion Seemann, South Burlington, Vt., assignor to General Electric Company, Burlington, Vt.**

**Filed June 1, 1971, Ser. No. 148,651**

**Int. Cl. F41d** *7/04*

**U.S. Cl. 89—12** **7 Claims**

A gun has at least a barrel, at least a chamber, means for moving said chamber transversely with respect to said barrel between a non coaxial feed station and a coaxial lock and fire station, means for chambering a fresh cartridge in said chamber and thereby ejecting along a path any misfired cartridge, and means for normally blocking said path and for unblocking said path in the presence of a misfired cartridge.



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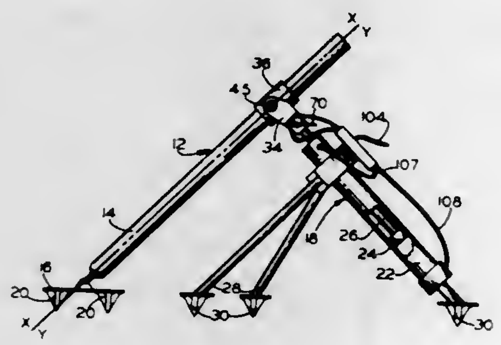
### 3,760,684
### AUTOMATIC ELEVATION RECOVERY SYSTEM FOR CANNONS

**Ronald J. LaSpisa, North Tonawanda, and Gary W. Woods, Rensselaer, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Apr. 7, 1972, Ser. No. 242,004**
**Int. Cl. F41g** *3/10, 5/04*
**U.S. Cl. 89—37 C** **8 Claims**



In a cannon system, a change in the elevation angle of the cannon tube is converted to angular displacement of the yoke trunnions of the forward tripod support of the cannon tube. This angular displacement is sensed by a fluidic sensor which transmits a corresponding signal to a fluidic amplifier whereby the signal is amplified and transmitted to a cylinder for actuation of a piston therein responsive to the signal. The cylinder, piston and a piston rod form one leg of the tripod and the linear displacement of the piston acts to change the elevation of the tube to where it returns to the pre-selected angle of elevation as sensed by the sensor.

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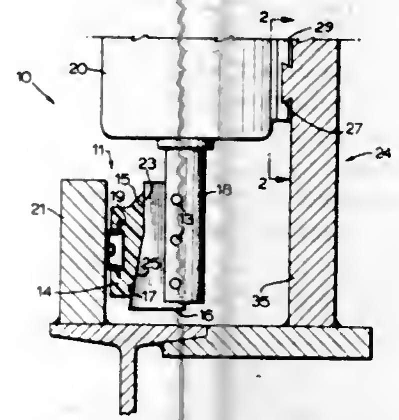
### 3,760,685
### ADJUSTABLE PROFILE CUTTER MEANS

**Leslie Truxa, Montreal, and J. Gilbert Descary, Lachine, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada**

**Continuation of Ser. No. 9,592, Feb. 9, 1970, abandoned. This application Nov. 3, 1971, Ser. No. 195,217**
**Int. Cl. B23c** *1/12*
**U.S. Cl. 90—15** **2 Claims**

The surface of a plastic foil used for extracting water from the forming wire of a paper making machine is formed or reconditioned by a profile cutter traversing the length of the foil, to provide a capability for correct foil profiling from standard stock and reconditioning or adjustment to foils, even at the mill.



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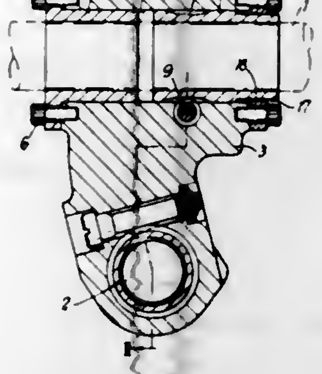
### 3,760,686
### BACKLASH ELIMINATION ARRANGEMENT

**David Goodwin, Colchester, Essex, England, assignor to Machine Tools Limited, London, England**

**Filed Feb. 22, 1972, Ser. No. 228,201**
**Claims priority, application Great Britain, Feb. 25, 1971, 5,434/71**
**Int. Cl. F16h** *55/18*
**U.S. Cl. 90—22** **1 Claim**



Particularly for use in a machine tool, for example, a lathe or milling machine, an assembly for the elimination of backlash between a screw-threaded shaft and a member which co-operates with the shaft, including a first nut on the member and threaded on the shaft, a second nut threaded on the shaft and a worm carried by the member in engagement with worm teeth on the second nut, so that rotation of the work will move the second nut axially of the shaft to eliminate backlash between the first nut and hence the member and the shaft.

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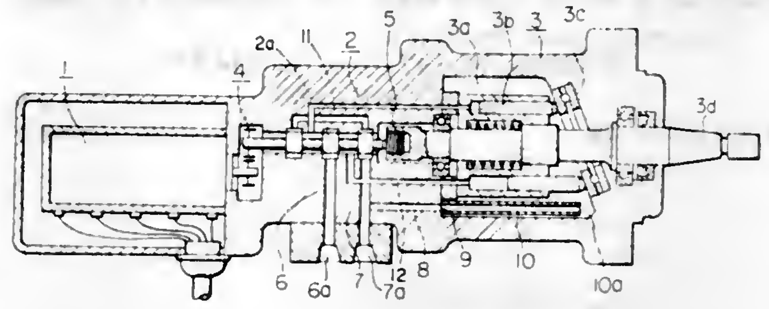
### 3,760,687
### ELECTRO-HYDRAULIC PULSE MOTOR

**Seiuemon Inaba, Kawasaki; Kobei Ito, Fujisawa; Kanryo Shimizu, Kawasaki, and Youichi Amemiya, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan**

**Filed Dec. 13, 1971, Ser. No. 207,163**
**Claims priority, application Japan, Dec. 26, 1970, 45/131959**
**Int. Cl. F15b** *21/00*
**U.S. Cl. 91—39** **1 Claim**

The disclosure relates to an improved electro-hydraulic pulse motor having an arrangement wherein a novel tubular member is disposed in the chamber of the hydraulic motor part so that a drain opening provided in the chamber for returning the hydraulic fluid which has leaked out of the hydraulic motor part, is displaced in the direction of the output shaft of the hydraulic motor part and as a result of this,

hydraulic fluid is always reserved in the chamber to enable lubrication of the moving elements of the hydraulic motor part, even if the electro-hydraulic pulse motor is used in the vertical position with the shaft vertically upward.



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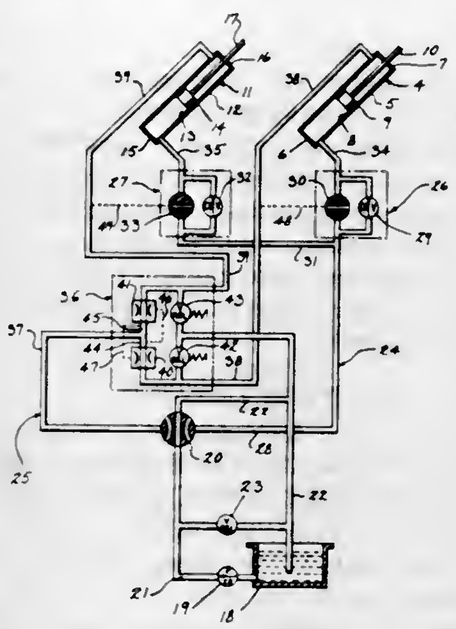
### 3,760,688
### SYNCHRONIZED CONTROL SYSTEM FOR TELESCOPING BOOMS

**Robert E. Dummer, Milwaukee, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.**

**Filed Nov. 9, 1971, Ser. No. 196,934**
**Int. Cl. F15b** *11/22*
**U.S. Cl. 91—412** **2 Claims**



A fluid control circuit for driving a plurality of double-acting linear fluid actuators at proportional, synchronized rates to extend and retract a multi-section boom has a flow divider assembly that meters proportional amounts of operating fluid into and out of each of the rod ends of the actuators to maintain the synchronization of the actuators. The flow divider assembly includes a plurality of relief valves, each of which are connected between a rod end of one of the actuators and the circuit reservoir to provide a means for resynchronizing the actuators with one another.

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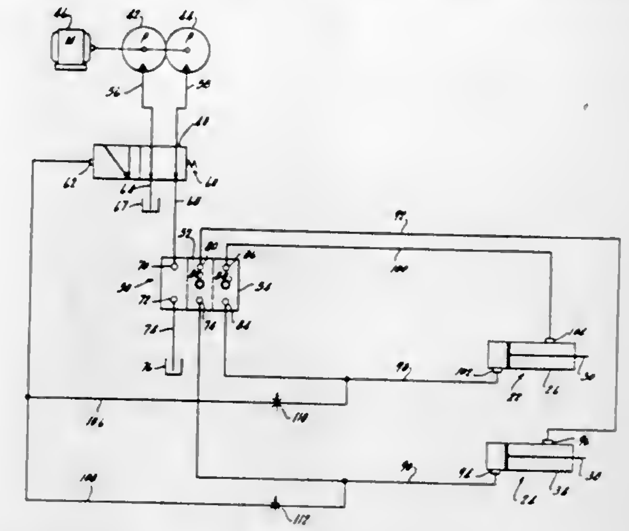
### 3,760,689
### CONTROL SYSTEM FOR AUTOMATICALLY SEQUENCING OPERATION OF A PLURALITY OF HYDRAULIC PUMPS FOR SUPPLYING A PLURALITY OF HYDRAULIC ACTUATORS

**Roger Johnston, Marion, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.**

**Filed Feb. 24, 1972, Ser. No. 229,022**
**Int. Cl. F15b** *13/06, 13/09*
**U.S. Cl. 91—412** **3 Claims**

A machine such as a mobile hydraulic crane has a telescopic boom comprising two independently movable boom sections. Each boom section is movable to extended and retracted positions by separate independently operable hydraulic actuators. Each actuator is operated or controlled by a manually operable three position hydraulic control valve. A plurality of hydraulic pumps are provided for supplying the actuators and a control system including a pressure-responsive sequencing valve is provided for automatically and sequentially connecting one or more pumps to supply the cylinders, depending on the number of cylinders that are being actuated at any given time. The sequencing valve responds to a pressure increase which occurs in the event the supply lines to both actuators



are operated simultaneously in the boom-extend direction. If either actuator is being operated in the boom-extend direction, only one pump is connected to supply it. If more than one actuator is being operated in the boom-extend direction, more than one pump is then automatically connected to supply fluid to the system by the pressure-responsive sequencing valve.

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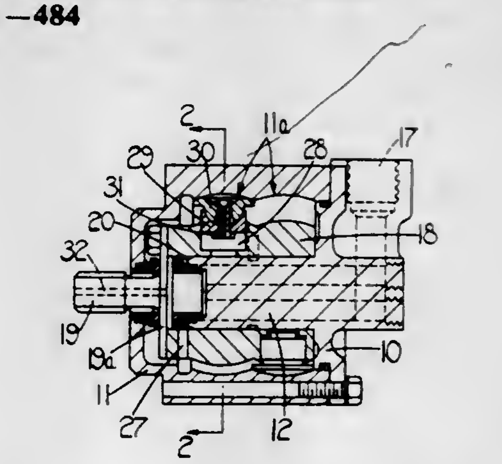
### 3,760,690
### ROTARY HYDRAULIC MACHINES

**Frank George Freeman, Solihull, England, assignor to Joseph Lucos (Industries) Limited, Birmingham, England**

**Filed June 28, 1971, Ser. No. 157,386**
**Int. Cl. F04b** *19/00*
**U.S. Cl. 91—484** **4 Claims**



A rotary hydraulic machine has a rotor journalled on a pintle which extends internally of the machine casing. The rotor has an axial bore into which the pintle extends so as to provide a space between the end of the pintle and the end of the bore. Fluid pressure within the casing is admitted to this space to partially offset the pressure urging the rotor onto the pintle.

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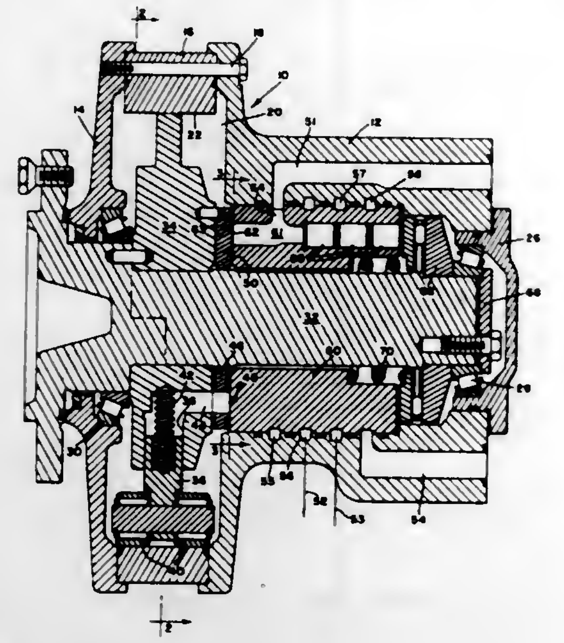
### 3,760,691
### STEP VARIABLE DISPLACEMENT HYDRAULIC MOTOR

**Richard Merle Kleckner, Arlington Heights, Ill., and James Henry Kress, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed Dec. 17, 1971, Ser. No. 209,154**
**Int. Cl. F01b** *1/06*
**U.S. Cl. 91—492** **1 Claim**

A hydraulic motor has a housing with an annular cam surface on the inner circumferential surface of the housing, the cam surface being generally sinusoidal and having a plurality of cam lobes at equiangular intervals. A rotatable cylinder block is mounted in the housing and has a plurality of radially extending cylinders having pistons with cam followers on their outer ends which engage the cam surface to cause the cylinder block to rotate in response to reciprocation of the pistons. Valve means are provided for sequentially connecting the cylinders to a pressure source or a return line to cause the reciprocation of the pistons, and additional valve means are provided to selectively cause each piston to complete one stroke for each cam lobe to provide a first motor displacement or to permit each piston to idle as it passes certain of the cam lobes to provide different motor displacements.



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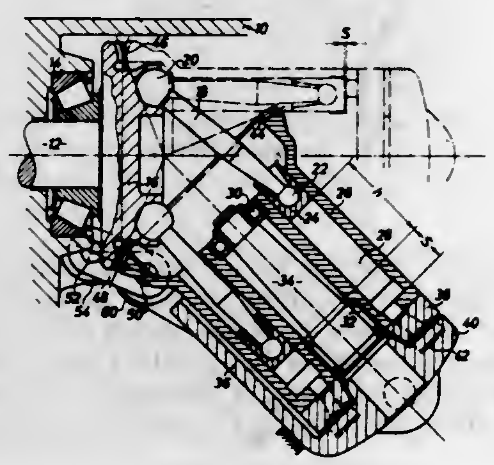
### 3,760,692
## AXIAL PISTON TYPE MACHINE
**Hans Molly, Dr. Eugen-Essig-Strasse, 48, Malsch, Germany**
**Filed Nov. 18, 1971, Ser. No. 199,974**
**Claims priority, application Germany, Dec. 16, 1970, P 20 61 905.0; Feb. 4, 1971, P 21 05 119.4; Dec. 16, 1970, P 20 61 906.1; Jan. 16, 1971, P 21 02 000.8; Jan. 16, 1971, P 21 01 963.6**
**Int. Cl. F01b** *3/00*
**U.S. Cl. 91—505** **20 Claims**



In an axial piston-type machine (pump, motor or transmission) with a pivotable cylinder block and axial pistons in articulated connection with the drive flange, the cylinder block is pivotable in every position about an instantaneous axis disposed outside the axes of the cylinder block and drive flange. The drive flange is in driving connection with the cylinder block through toothed members, particularly those having teeth positioned on toric surfaces, whose mesh is determined by the angle-bisecting plane between drive flange axis and cylinder block axis.

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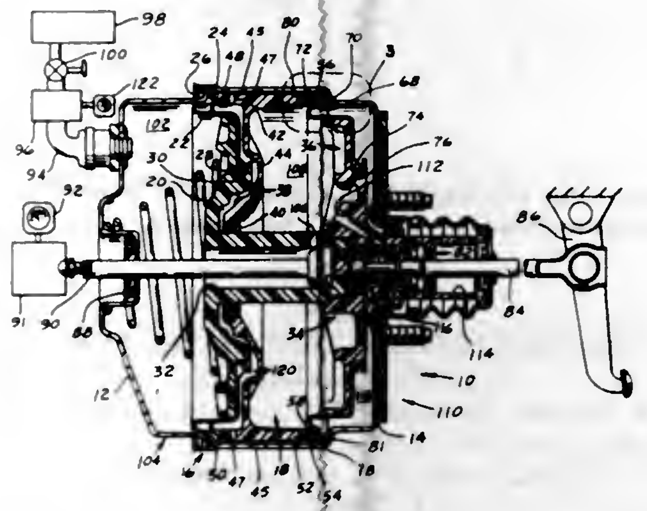
### 3,760,693
## TANDEM SERVOMOTOR PARTITION
**Lawrence R. Myers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.**
**Filed Mar. 15, 1972, Ser. No. 234,747**
**Int. Cl. F01b** *19/00*
**U.S. Cl. 92—48** **2 Claims**



A tandem servomotor having a separation spacer with a fixed flow path for bleeding pressurized air into a vacuum chamber when the rear diaphragm is misassembled to prevent the creation of a rear pressure differential in the rear chamber upon initial actuation. The output from the tandem servomotor will be proportionally reduced as the resulting force produced by the pressure differential is reduced. This reduction in output force will signal an internal malfunction of the servomotor upon assembly.

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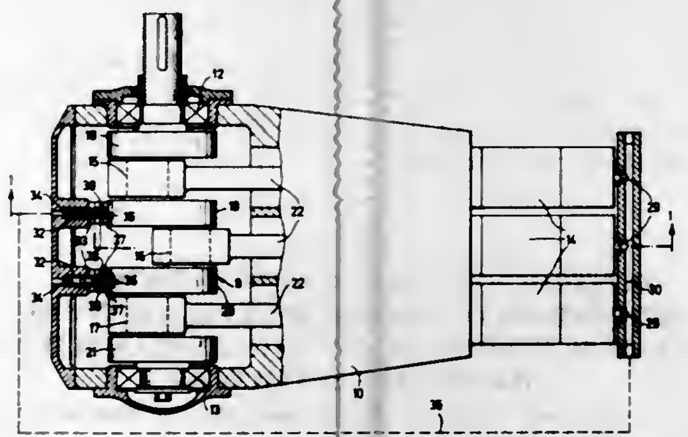
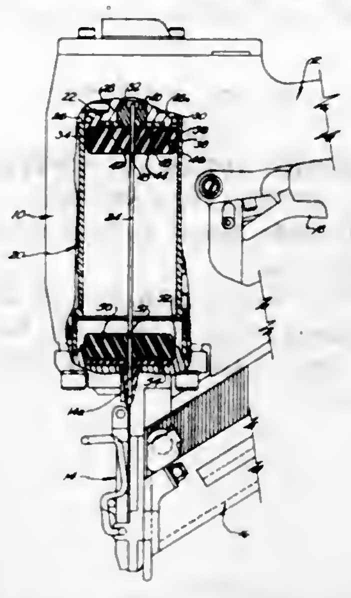
### 3,760,694
## MULTI-CYLINDER CRANKSHAFT MACHINE, IN PARTICULAR A RECIPROCATING PUMP OR COMPRESSOR
**Walter Lieb, Jahnstrasse-12, Dettingen, Germany**
**Filed Oct. 27, 1971, Ser. No. 193,122**
**Claims priority, application Germany, Nov. 3, 1970, P 20 53 987.1**
**Int. Cl. F01b** *1/02*
**U.S. Cl. 92—73** **20 Claims**



The main object of the invention is a multi-cylinder crankshaft engine the crankshaft of which is non-positively supported between its bearings on the side opposite to the engine pistons, for instance by spring means and preferably by a fluid pressure varying substantially proportionately to the variation of the force exerted by the engine pistons to the crankshaft.

### 3,760,695
## RESILIENT PISTON STOP CONSTRUCTION
**Robert G. Rothfuss, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio**
**Filed Mar. 1, 1972, Ser. No. 230,569**
**Int. Cl. F01b** *11/02*
**U.S. Cl. 92—85** **8 Claims**



Resilient structure for stopping a high energy piston in short distance at the end of its stroke without generating excessive heat and without exceeding the elasticity of the components. The structure includes two identical resilient members, one disposed in the end of the cylinder and the other carried on the underside of the piston. The member carried by the piston may be used to resiliently, detachably secure a working member to the piston.

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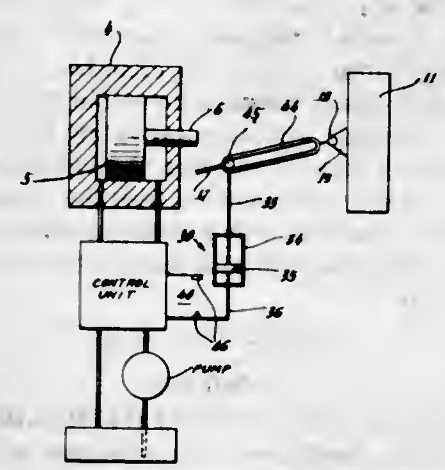
### 3,760,696
## CLOSURE DEVICE
**Peter Florjancic, St. Martinstr. 12, Garmisch-Partenkirchen, Germany**
**Filed Mar. 11, 1971, Ser. No. 123,151**
**Claims priority, application Austria, Mar. 25, 1970, A2793/70**
**Int. Cl. F16j** *1/10*
**U.S. Cl. 92—129** **3 Claims**



An improved closure apparatus for use with injection molding devices and the like in which a rigid brace pivoted into operative position between a force producing source and a reciprocating working member has a grooved sliding guide portion in which a slide ring is movable. The slide ring is pivotally connected to a piston rod actuable by a stationary hydraulic cylinder. The rigid brace is pivoted through an angle of 90° and means are provided for automatically controlling the actuation of the force producing source in dependency on the position of the rigid brace. The closure device is readily usable with a variety of mold heights.

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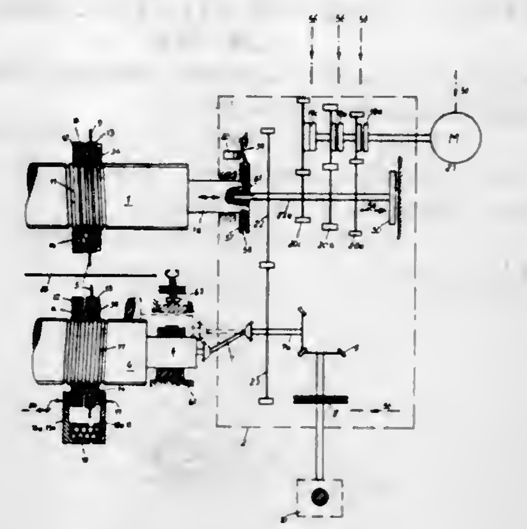
### 3,760,697
## APPARATUS FOR GROOVING AND/OR LONGITUDINALLY CUTTING A CONTINUOUS WEB
**Alfred Besemann, Hamburg, Germany, assignor to Werner H. K. Peters Maschinenfabrik G.m.b.H., Hamburg, Germany**
**Filed Sept. 20, 1971, Ser. No. 181,857**
**Claims priority, application Germany, Sept. 26, 1970, P 20 47 503.0**
**Int. Cl. B26d** *1/24, 5/02*
**U.S. Cl. 93—58.2 R** **12 Claims**



An apparatus for longitudinally deforming webs of paper, cardboard and the like and especially of corrugated board. The main object of the invention is to adjust the positioning of the tools and thereby to form the basis for automatically preselecting and adjusting the tools of such machines.

These tools for longitudinally deforming said web may be either grooving, cutting or slitting tools.

For solving this problem, the tools and the tool shafts are screw threaded, and means are provided for clamping said tools on said tool shafts for achieving the working condition. Servo motors including coupling and braking means are provided for actuating the adjustment of said tools. Substantially mechanical means including compressed air operated nozzles form the basis for a highly efficient, reliable and likewise simple device to preselect the different positions of the tools.

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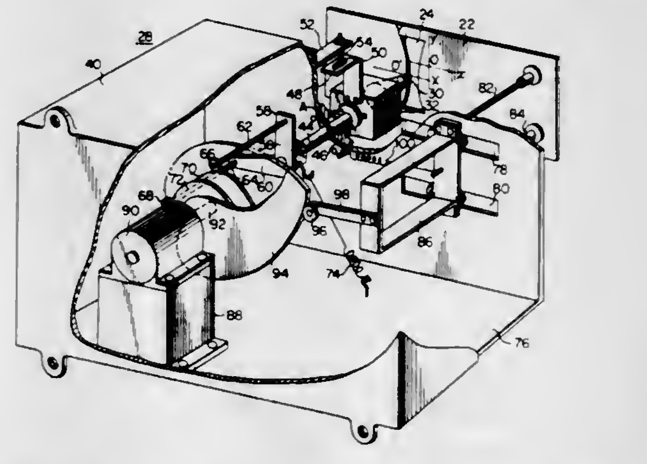
### 3,760,698
## LIGHT EXPOSURE APPARATUS FOR FORMING FLUORESCENT SCREENS OF COLOR PICTURE TUBES
**Takeo Fujimura, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**
**Filed Oct. 4, 1971, Ser. No. 186,217**
**Claims priority, application Japan, Oct. 17, 1970, 45/91405; Oct. 21, 1970, 45/92679; Oct. 27, 1970, 45/94435**
**Int. Cl. G03b** *9/02*
**U.S. Cl. 95—1** **7 Claims**



The disclosed apparatus includes a point source of light irradiating progressively the face plate for shadow mask color picture tubes from one end to the other through a slit on a douser reciprocating in parallel with the face plate. For forming phosphor dots of the particular color, the slit elongates in a direction to displace the corresponding gun from the tube axis and reciprocates perpendicularly to that direction at a higher rate for the central portion than for the lateral edge portions of the face plate. In synchronization with the movement of the slit, the light source depicts a closed curve as determined by the shape and speed of movement of the slit.

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### 3,760,699

### CAMERA CONNECTED WITH ELECTRONIC FLASH DEVICE

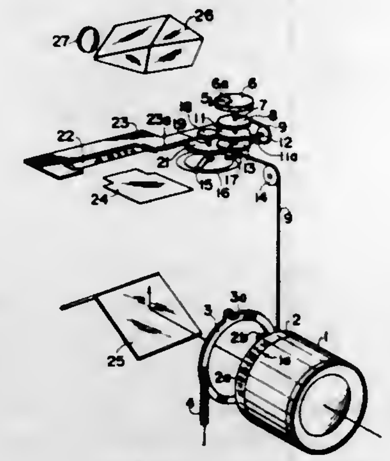
**Kayoshi Tsujimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed June 23, 1971, Ser. No. 155,709**

**Claims priority, application Japan, June 23, 1970, 45/54021; June 26, 1970, 45/55276**

**Int. Cl. G03b** *7/04, 9/02, 19/00*

**U.S. Cl. 95—10 C** **10 Claims**



Circuitry for controlling the exposure of an electronic flash device includes a light measuring circuit for receiving light from an object illuminated by an electronic flash and generating current in response thereto whereby the flash is terminated at a predetermined level. The predetermined level is adjusted by biasing means which are responsive to the diaphragm aperture setting and the film speed setting. In an alternative embodiment the predetermined level for terminating the flash is also adjusted in accordance with the indication of an exposure meter which is actuated by a second light measuring circuit.

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### 3,760,700

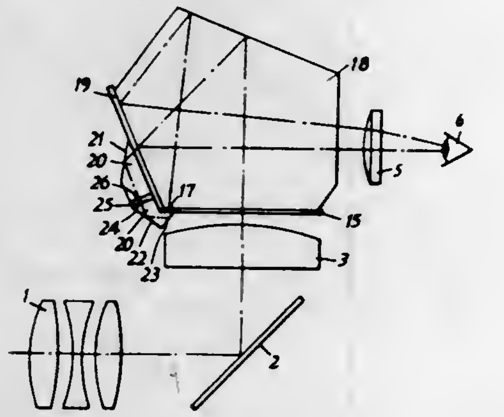
### SINGLE-LENS REFLEX CAMERA

**Werner Trankner, 3, Grunwinkel; Erich Hahn, Heidemuhlweg 45; Werner Hahn, 71 Dobritzer Strasse, and Helmut Tillig, 8 Nagelstrasse, all of Dresden, Germany**

**Filed Dec. 14, 1971, Ser. No. 207,819**

**Int. Cl. G01j** *1/00*

**U.S. Cl. 95—10 B** **7 Claims**



A single lens reflex camera having within its housing a viewfinder which includes an image erecting system, an image field lens and an eyepiece. The camera is provided with a grey wedge having various values of grey situated in the housing adjacent an image erecting surface of the erecting system. A light guiding member positioned on the image erecting surface directs light from the subject through the grey wedge into the eyepiece. Exposure factor setting elements are coupled with an indicating device which is movable along the grey wedge by adjustment of the setting means. The illuminated wedge and indicator is visible in the viewfinder to enable setting for accurate exposure.

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### 3,760,701

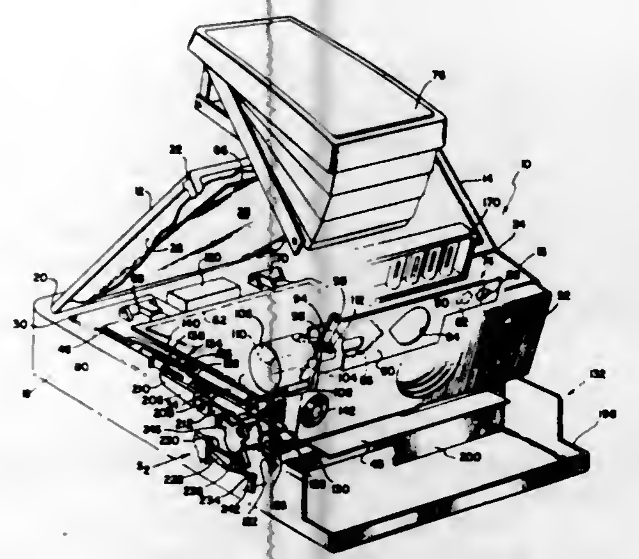
### PHOTOGRAPHIC APPARATUS WITH DELAYED INTERLOCK SWITCH

**Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Continuation of Ser. No. 213,316, Dec. 29, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 279,026**

**Int. Cl. G03b** *17/52, 17/00*

**U.S. Cl. 95—11 R** **25 Claims**



Photographic apparatus of a variety suited to accept a film supply in the form of a disposable cassette. Upon insertion of such a cassette within a receiving chamber, a loading access door is closed to secure the cassette within the noted chamber as well as to energize a feature providing for the automatic removal of a dark slide or the like. A multiple cam actuated switch is operated in conjunction with the closure of the access door. This switch not only provides a delayed actuation of the automatic dark slide removal feature, but also serves an interlock function.

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### 3,760,702

### TWIN LENS CAMERA SYSTEM WITH SLIDING BACK

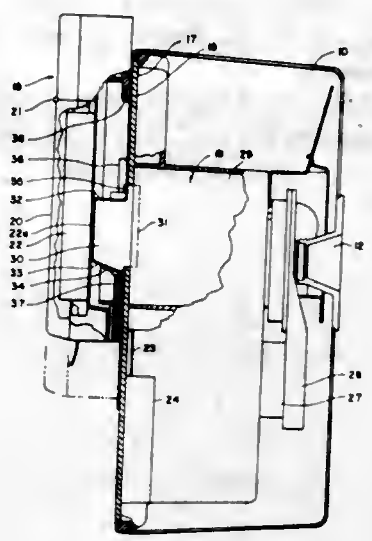
**Myron A. Seiden, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Jan. 3, 1972, Ser. No. 214,633**

**Int. Cl. G03b** *19/02*

**U.S. Cl. 95—36 R** **22 Claims**

A camera system for producing a plurality of photographs from a single sheet of photographic material. A twin lens, sliding back system for such purpose. A first structure of this nature for producing photographs of one size for purposes such as portrait, identification, or record. A second structure of this nature as an adaptation of such first structure for producing photographs of a second, lesser size for purposes such as identification or record, for example, for photographs for attachment to data sheets, as paste-on for buttons, and the like. As useful in such camera systems, a camera back of unique configuration for receiving a film holder complementary to such configuration, and a unique assembly of a camera back with a film holder of less than the size usual to such back.



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### 3,760,703

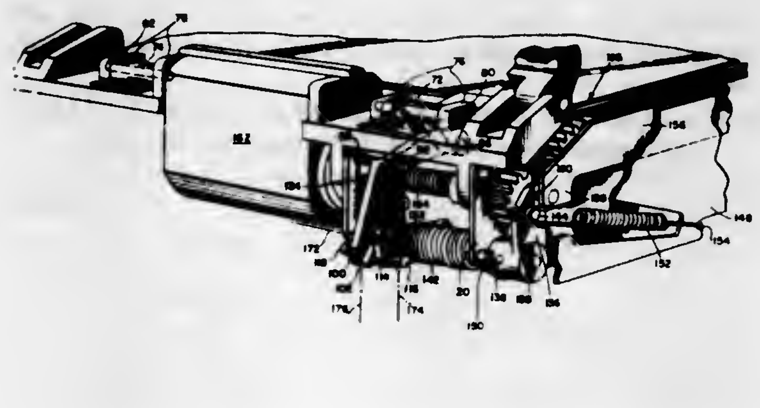
### COMBINED LOST-MOTION AND SUPPLEMENTAL TORQUE MECHANISM

**Igor Blinow, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Apr. 24, 1972, Ser. No. 246,854**

**Int. Cl. G03b** *19/12*

**U.S. Cl. 95—42** **26 Claims**



A reflex photographic apparatus incorporates an operator reflex assembly which is moved during a photographic cycle to convert an optical path from a viewing-focusing mode configuration to an exposure mode configuration. Spring means are utilized to drive the assembly, via a four-bar linkage, from the viewing mode position to an exposure mode position quickly and while minimizing elastic rebound at the termination of the movement. A motor is utilized to return the assembly to the viewing mode position following a photographic exposure. A pair of override springs interconnect two of the elements of the four-bar linkage so as to provide a lost-motion connection between the operator reflex assembly and the motor means. Should the reflex assembly be restrained during its return movement, the lost-motion connection permits the motor to complete its cycle without overloading. Further, the override springs function to provide a supplemental torque to aid in moving the operator assembly from its viewing mode position to its exposure mode position.

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### 3,760,704

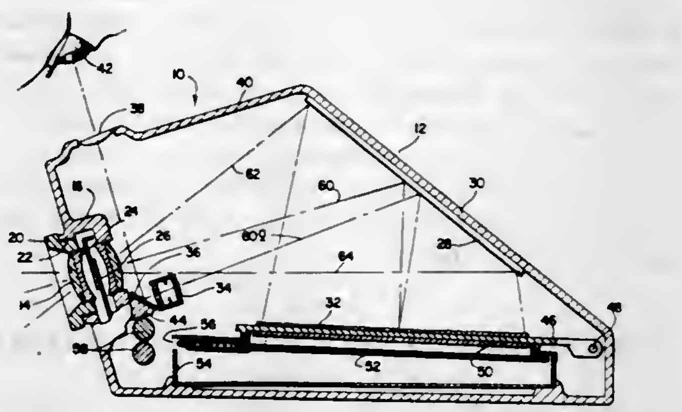
### REFLEX CAMERA AND VIEWER WITH A FOLDED OPTICAL PATH

**James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Dec. 30, 1971, Ser. No. 214,253**

**Int. Cl. G03b** *19/12*

**U.S. Cl. 95—42** **21 Claims**



A reflex camera and viewer with a folded optical path are described. The optical arrangement of the viewer permits an observer to see and thereby focus an image formed by the objective lens on a focusing screen within the camera. Folding the optical path of the viewer with a mirror near the objective lens permits locating the optic axis of the viewer almost normal to the focusing screen. Other optical elements situate in the optical path of the viewer include a lens forming a real image of the scene focused on the screen by the objective lens and an eye lens magnifying that real image to a convenient size for the observer. Orienting the axes of the two lenses in the viewer at a slight angle to the optic axis of the viewer reduces any field tilt and distortion in the image as seen through the viewer.

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### 3,760,705

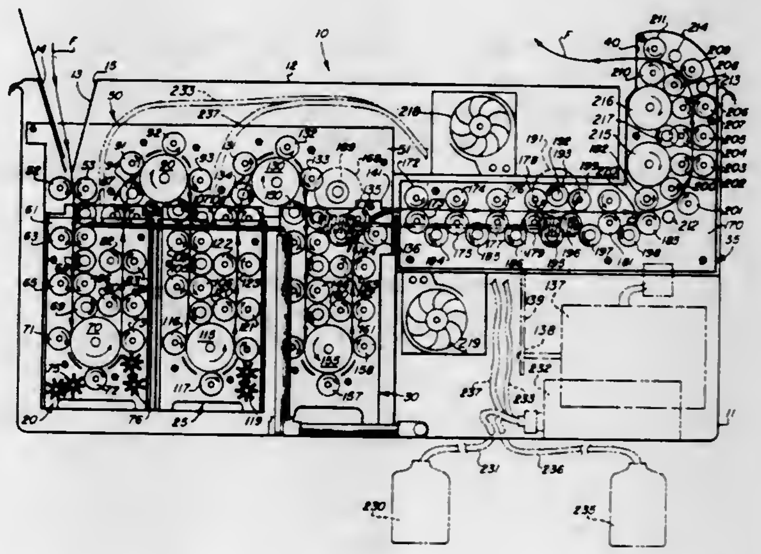
### FILM PROCESSING APPARATUS

**William S. Miller, Santa Clara, Calif., assignor to Filmamatic Corporation, formerly Kimball & Associates, Inc., Sunnyvale, Calif.**

**Continuation-in-part of Ser. No. 134,693, April 16, 1971, abandoned. This application Aug. 3, 1971, Ser. No. 168,648**

**Int. Cl. G02d** *3/12*

**U.S. Cl. 95—94 R** **8 Claims**



An automatic film sheet developing apparatus having a number of processing compartments formed in a unitary housing and including a like number of modular film-advancing roller assemblies each slideably insertable into and removable from a corresponding one of the compartments for propelling and guiding a sheet of film sequentially through the compartments to accomplish development of the film. A crossover roller assembly unit is disposed above the processing compartment roller assemblies and guides the film from one compartment to the next in the processing sequence. Apparatus for powered rotation of the rollers is provided, including a motor and gear train driven thereby. Substantially all of the roller drive gear train is incorporated into and removable with the individual roller assemblies and thus upon removal of the roller assemblies the interior of the processing unit is free both of the rollers and the associated drive mechanism. The individual rollers are resiliently mounted in the modular assembly units to accommodate film of varying thickness and to avoid jamming of the film in the drive system. A calibrated pump supplies predetermined quantities of developer solution and fixer solution to the respective compartments in proportion to the linear movement of the film advancing through the processor in order to maintain the proper chemical balance in the respective solutions.

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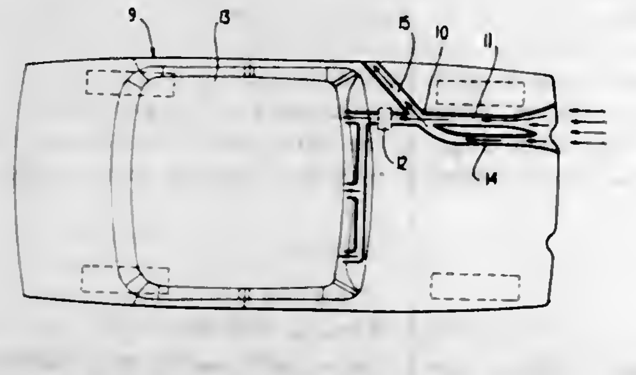
### 3,760,706
### CONTROL INSTALLATION FOR AIR OR GAS STREAMS OF VENTILATION SYSTEMS

**Manfred Zick, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany**

**Filed Mar. 30, 1971, Ser. No. 129,530**
**Claims priority, application Germany, Apr. 1, 1970, P 20 15 409.0**
**Int. Cl. B60h** *1/24*
**U.S. Cl. 98—2.06** **23 Claims**



A control installation for air or gas streams of ventilation systems, especially for motor vehicles, in which a fluid control device arranged in the air or gas stream includes a through-channel for the air or gas stream and a branch line whereby a control channel is disposed opposite the branch line whose control pressure is subjected at least approximately to the fluctuations of the air or gas stream.

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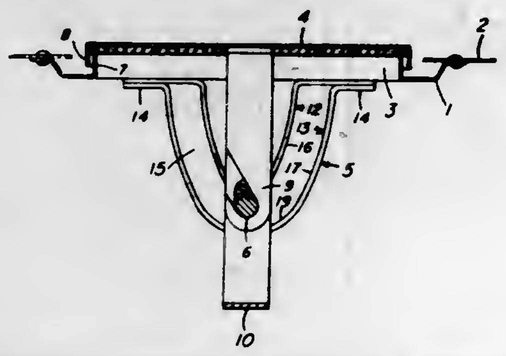
### 3,760,707
### TWO-WAY HINGELESS VENTILATOR

**Timothy A. Kelly, 755 Virginia Ave., Salem, Va.**

**Filed June 30, 1971, Ser. No. 158,240**
**Int. Cl. B60h** *1/24*
**U.S. Cl. 98—2.18** **6 Claims**



The ventilator has a closure member swingable against one side of a wall at opposite sides of an opening therein and held in selected position by the force exerted by a spring rod against the wall's opposite side. Double-bracketed guide members receiving and restricting radial movement of opposite end portions of the rod in guideways between inner and outer fixed brackets and cooperating stops on and limiting relative axial movement of the rod, render the ventilator fail-proof under excessive twisting forces.

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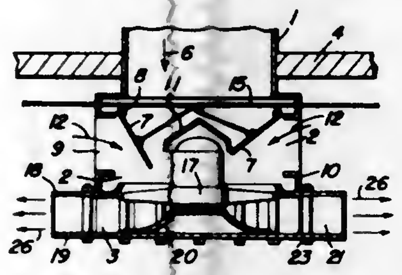
### 3,760,708
### VENTILATING SYSTEM

**Poul M. Burup, c/o N. P. Burup & Son, Holbaekvej 158, Roskilde, Denmark**

**Continuation of Ser. No. 826,176, May 20, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,274**
**Int. Cl. F24f** *13/06*
U.S. Cl. 98—39 **6 Claims**



A ventilating system for an enclosed space having a plurality of air inlet ducts communicated therewith with each duct including a distributor defined by vertically spaced plates forming a peripheral discharge with the upper plate having a central aperture receiving a fan. Adjustable members are provided between the plates for varying the discharge characteristics of air and air inlet means is provided between the distributor and ceiling for inlet of air from the space into the distributor with the air inlet means having control flaps or baffles associated therewith for simultaneously controlling the air inlet from the space and the air inlet from the ducts for varying the ratio of recirculated air and fresh air being discharged from the distributor.

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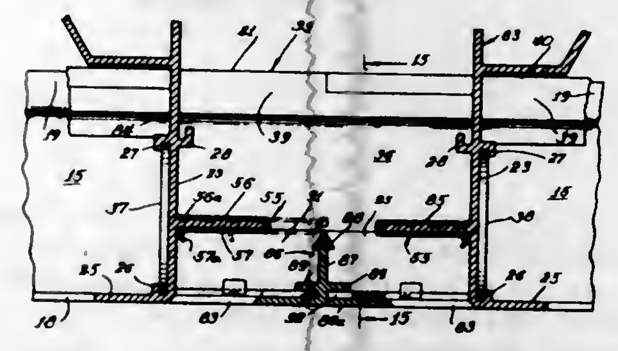
### 3,760,709
### VENTILATING AIR DISTRIBUTING CHANNEL SPREADER-SUPPORTING BRACKET

**Joel R. Rachlin, 1785 Wedgewood West, Elm Grove, Wis., and Rudolph Otto Neudek, W271N1275 Meadowbrook Rd., Waukesha, Wis.**

**Division of Ser. No. 10,508, Feb. 11, 1970, Pat. No. 3,673,945. This application June 12, 1972, Ser. No. 262,040**
**Int. Cl. F24f** *7/04*
U.S. Cl. 98—40 D **2 Claims**



**The supporting grid (e.g., main and cross inverted tees) of a suspended ceiling also supports ventilation air-distributing apparatus including an air flow spreader. This apparatus comprises a lower air flow channel section formed of two extruded metal bars having vertical webs with hooks on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the opposite side of the tee to align channels. The air from the duct discharges out through the opening between the webs and a spreader directs the air generally outwardly, as well as downwardly. In** one aspect of the invention, special brackets are provided to support the air flow spreader at its proper position.

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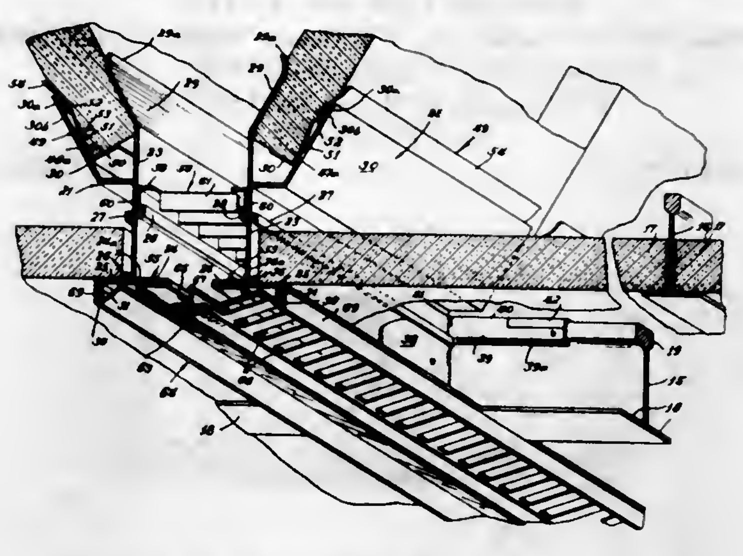
### 3,760,710
### VENTILATING AIR DISTRIBUTING CHANNEL BAR

**Joel R. Rachlin, 1785 Wedgewood West, Elm Grove, Wis., and Rudolph Otto Neudek, W271N1275 Meadowbrook Rd., Waukesha, Wis.**

**Continuation of Ser. No. 10,508, Feb. 11, 1970, Pat. No. 3,673,945. This application June 12, 1972, Ser. No. 262,038**
**Int. Cl. F24f** *13/06*
**U.S. Cl. 98—41 SV** **1 Claim**



Ventilation air distributing apparatus supported by a suspended ceiling grid comprises an air flow channel formed of two extruded metal bars having vertical webs with hook formations on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the opposite side of the tee to align channels. Along the top of the web of each bar are two upwardly and outwardly extending spaced arms which are used to hold the sides of a fiberglass air duct. Flanges extending toward each other between the webs carry adjustable shutters to control the flow of air. At the bottom of the webs are flanges forming supports for ceiling panels and an air distributor.

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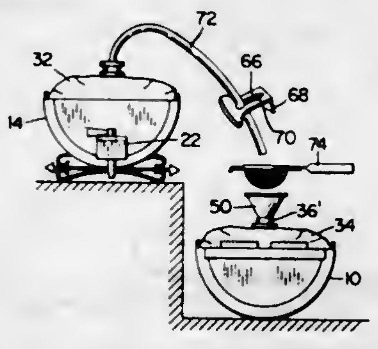
### 3,760,711
### APPARATUS IN THE FORM OF A KIT FOR HOME WINE MAKING

**Robert B. Webster, Huntington Beach, Calif., assignor to Plastimade, Inc., Van Nuys, Calif.**

**Filed Dec. 23, 1971, Ser. No. 211,180**
**Int. Cl. C12h** *1/22*
**U.S. Cl. 99—277.1** **12 Claims**



An assembly or kit apparatus particulary adapted for home wine making by simplified wine making processes. The kit comprises a rigid container in the form of a barrel provided with upper and lower halves. A pair of flexible plastic bags are provided, each with a plastic fitting with cap, the fitting being adapted for accommodation to a bung hole in one-half of the barrel and also for connection to a tube which connects to a spigot forming part of the lower half of the barrel. The parts of the kit accommodate the processing of the wine and dispensing of it when ready through the barrel spigot from one of the plastic bags contained in the barrel.

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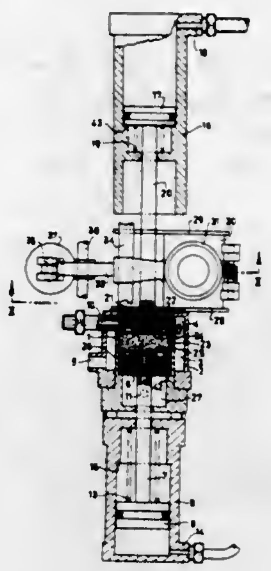
### 3,760,712
### MECHANICAL UNIT FOR BREWING INFUSIONS, MORE PARTICULARLY ESPRESSO-COFFEE

**Luigi Rossi, Via Alessandria 2, Pontecurone, Italy**

**Filed Dec. 1, 1971, Ser. No. 203,753**
**Claims priority, application Italy, Dec. 1, 1970, 32498 A/70**
Int. Cl. A47j *31/30*
U.S. Cl. 99—289 **9 Claims**



An automatic machine is disclosed, for brewing infusions, more particularly espresso coffee, in which a first cylinder has a first piston reciprocable therein, and into which a second piston can enter, as driven by a stem, for providing a brewing chamber. The distinguishing feature of the machine according to the invention is that a second cylinder is provided, having the same diameter as the first, the second cylinder being movable between a loading position (charge of coffee powder) in which the second cylinder is coaxial with the first, and a second position, in which the second cylinder is far from the first. The second cylinder has a sector, hinged to another sector and the former can be opened against the bias of a spring. The advantage achieved by the invention is to reduce the size and the mechanical intricacy of the assembly to a minimum.

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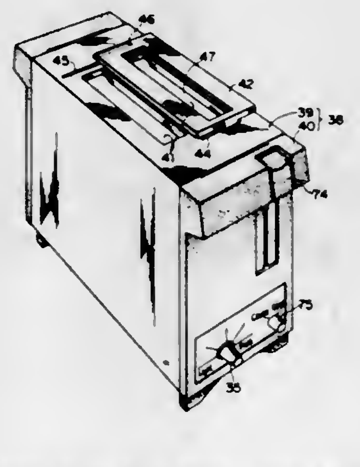
### 3,760,713
### TOASTER WITH A CLOSURE COVER

**Hosei Sato, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., and Toyo Press Co., Ltd., both of Osaka, Japan**

**Filed June 9, 1972, Ser. No. 261,400**
**Int. Cl. A47j** *37/08*
**U.S. Cl. 99—391** **9 Claims**



A toaster provided with a closure cover slidably mounted on the upper surface of said toaster and adapted to close a bread inlet opening of the toaster, and with a closure cover operating mechanism including an arm having a horizontally extending lower portion pivotably supported by an inner casing of the toaster and an upright portion extending upwardly from said horizontally extending lower portion and operatively connected at its upper end to the closure cover. The closure cover operating mechanism is operatively associated with a bread carrier frame elevator mechanism of the toaster in such a manner that said closure cover may be shifted to a position to close the bread inlet opening when the bread carrier frame is lowered and to a position to open said bread inlet opening when said bread carrier frame is elevated.

### 3,760,714

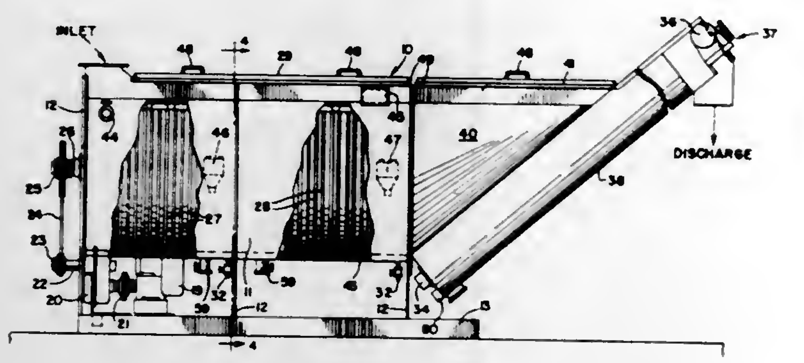
### BLANCHING APPARATUS

**Don C. Lortz, Box 1258, Idaho Falls, Idaho**

**Filed Dec. 29, 1971, Ser. No. 213,679**

**Int. Cl. A23n** *9/00*

**U.S. Cl. 99—404** **3 Claims**



A blanching apparatus comprising a perforate screw conveyor mounted for rotation within a liquid filled shell having mounted on its outer surfaces a plurality of thermally insulated steam conducting passages for indirectly heating the liquid within the shell. In one instance, a perforate screw conveyor extends within one end of the shell for the discharge of materials from within the shell and in another modification of the invention, a rotaty Ferris wheel-type arrangement is provided at the discharge end of the shell for the removal of materials from within the same. Access to the interior of the shell and to the discharge means aforesaid is provided by means of hinged sections or panels extending thereover.

### 3,760,715

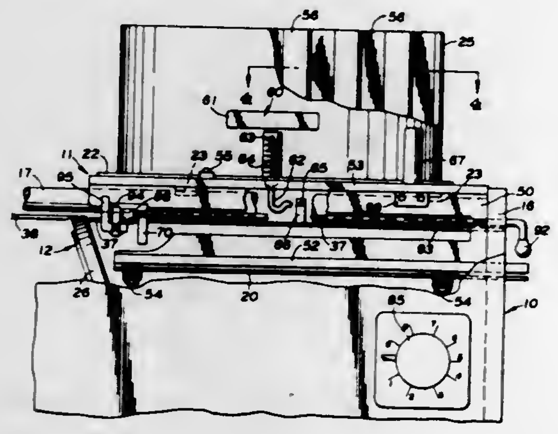
### MACHINE FOR SLICING SAUSAGE AND APPLYING THE SLICES TO PIZZA IN A PREDETERMINED PATTERN

**James E. Grote, 998 Thurman Ave., and Delbert J. Fisher, 3121 Wessex Ct., both of Columbus, Ohio**

**Filed Dec. 20, 1971, Ser. No. 209,552**

**Int. Cl. B26d** *7/06;* **A47j** *37/00;* **A21c** *9/04*

**U.S. Cl. 99—450.1** **13 Claims**



A machine which receives and holds a group of sausage sticks over a pizza with their axes vertical and substantially perpendicular to the pizza and with their lower ends spaced above the pizza. The group of sausage sticks is moved laterally relative to a band-type cutting blade and the pizza is simultaneously moved therewith so that as the sausage slices are severed from the lower ends of the sticks, they drop in a predetermined pattern on the pizza. The machine includes improved sausage holding means, improved adjustments for varying the thickness of the sausage slices severed, improved adjustments for producing different diameter pizzas, and removability of certain parts to permit refrigeration.

### 3,760,716

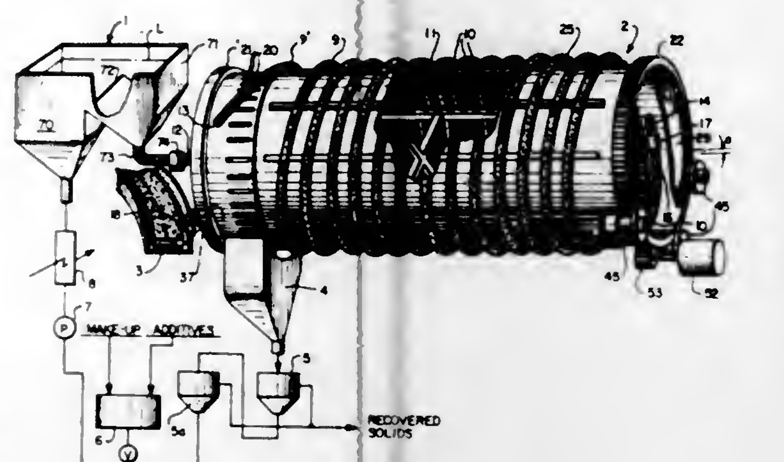
### REHYDRATION APPARATUS

**William H. Stevenson, III, c/o Ocean Trove Development Corp., P.O. Box 11565, Winston-Salem, N.C.**

**Filed June 8, 1971, Ser. No. 151,063**

**Int. Cl. A23l** *1/33*

**U.S. Cl. 99—536** **14 Claims**



Apparatus for continuous rehydration of material, typically freeze dried shrimp, in which helically arranged conduit means, rotated about the axis of the helix, is employed to establish successive treating zones, including at least a rehydrating zone and a dewatering zone, and cyclically operating feed means is used to supply successive quantities of dried material and liquid rehydration medium to the input end of the conduit means, the rotating helical conduit means operating to advance the successive quantities continuously to accomplish, e.g., saturation, dewatering, and equilibration.

### 3,760,717

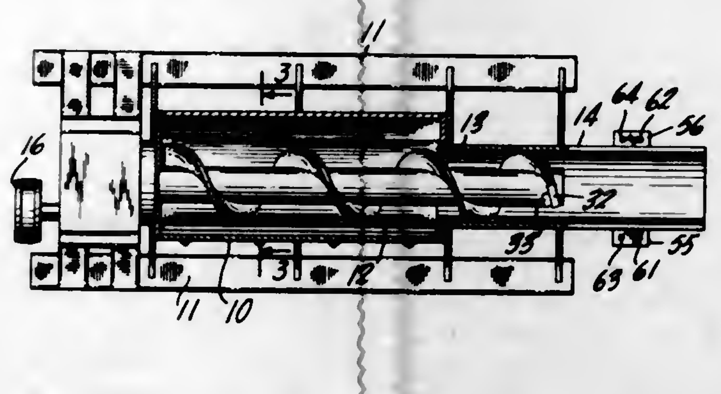
### SHREDDER-COMPACTOR

**Kenneth E. DeMilt, Scotch Plains; Stephen Collins, South Amboy, and Henry Gardner Scholer, Carteret, all of N.J., assignors to Mil-Pac Systems, Inc., Mountainside, N.J.**

**Filed Aug. 18, 1970, Ser. No. 64,698**

**Int. Cl. B30b** *15/08*

**U.S. Cl. 100—98 R** **6 Claims**



Apparatus for reducing in volume by compaction organic and inorganic waste material or garbage. An auger-compacter

effects shredding or shearing of the waste material into shreds or particles compacted and reduced in volume and delivered as the output. Shearing or shredding is accomplished by coaction of the auger and slots in a compaction tube within which the auger is rotatably disposed. The slots are disposed extending axially of the compaction tube on the upper part thereof and are circumferentially spaced. A breaker or shredder-bar in a hopper receiving the waste material may be provided upstream of the slots to coact with the auger in shredding or shearing the waste material or garbage before introduction into the compaction tube.

### 3,760,718

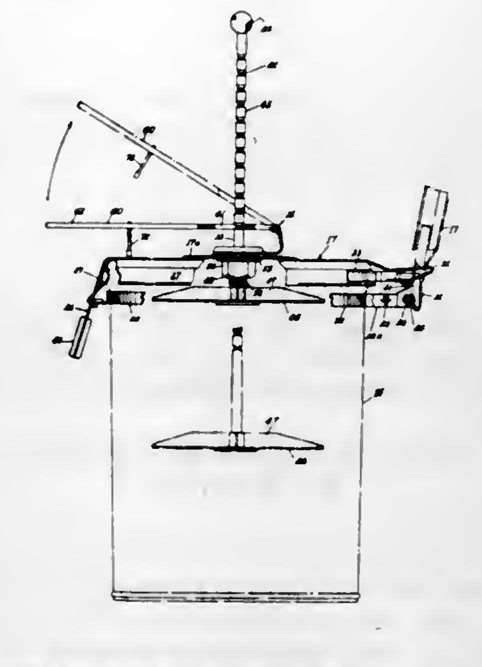
### TRASH COMPACTOR ATTACHMENT

**Anthony V. Adornetto, Zanesville, Ohio, assignor to Akens-Adornetto Industries, Inc., Zanesville, Ohio**

**Filed Oct. 18, 1971, Ser. No. 190,089**

**Int. Cl. B30b** *1/04*

**U.S. Cl. 100—227** **9 Claims**



A trash compactor for attachment to containers, such as a trash or garbage can, for compacting the trash or garbage deposited therein. The compactor attachment includes a plunger with a head for pressing against the deposited trash and a lever arrangement for applying successive increments of pressure to the plunger to compact the trash or garbage engaged by the head.

### 3,760,719

### TYPE-HOLDER ELEMENT FOR "ON-THE-FLY" PRINTING MACHINE

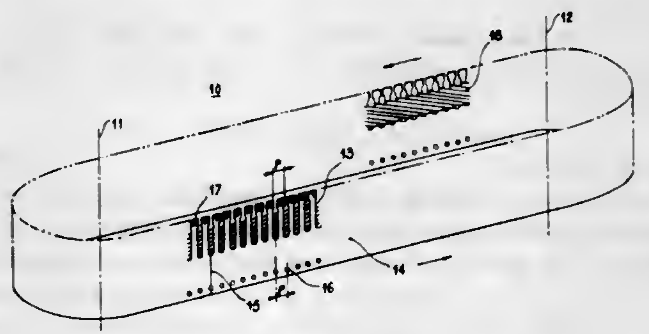
**Christian Torrens, Danjoutin; Jacques Roland Deproux, Sevres, and Michel Picard, Belfort, all of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France**

**Filed Nov. 9, 1971, Ser. No. 197,097**

**Claims priority, application France, Nov. 10, 1970, 7040372**

**Int. Cl. B41j** *1/20*

**U.S. Cl. 101—111** **13 Claims**



For employment in an on-the-fly printer wherein printing is accomplished by selectively actuating print hammers aligned along a print line to drive a print-receiving member against opposing type elements, a type-carrying member wherein type elements are mounted on individual resilient tongues of a moving endless belt for travel along a print line and wherein vibration arresting means is provided to suppress vibration of the type-carrying tongues in the plane of the print line.

### 3,760,720

### PRINTING PRESSES

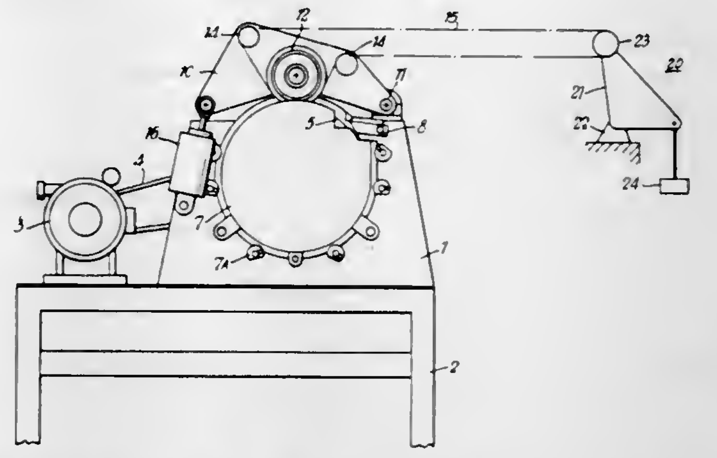
**Richard Carlile Marshall, Harpenden, and William Stuart Steer, Croxley Green, both of England, assignors to Odhams (Watford) Limited, Watford, England**

**Filed Apr. 26, 1971, Ser. No. 137,531**

**Claims priority, application Great Britain, Apr. 27, 1970, 20,193/70**

**Int. Cl. B41p** *9/10*

**U.S. Cl. 101—157** **2 Claims**



A laboratory printing press uses an endless loop web passing around an idling impression roller and air-cushion bearings. A lever assembly acts between one of the bearings and a weight selected according to the required tension in the web. To print, the impression roller is brought by a pneumatic piston and cylinder assembly, against the driven printing cylinder with a portion of the web nipped therebetween, the roller having a low inertia. A photoelectric resolver senses the revolutions of the cylinder and is used to control the operation of the pneumatic assembly. Access to the printing cylinder and the impression roller is improved by having their shaft bearings arranged one one side only so that they are both cantilevered.

### 3,760,721

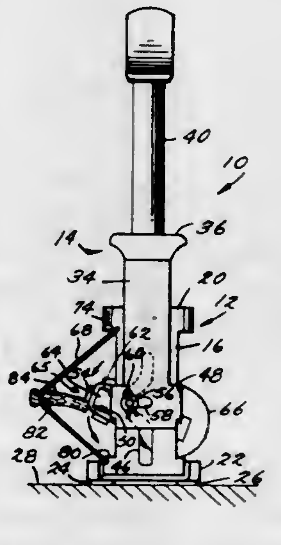
### PRICE STAMPER AND STAINLESS STEEL PAD HOLDER

**William F. Stier, Sr., 3015 Nabraska, Sioux City, Iowa**

**Filed Mar. 17, 1971, Ser. No. 125,311**

**Int. Cl. B41k** *1/42*

**U.S. Cl. 101—334** **4 Claims**



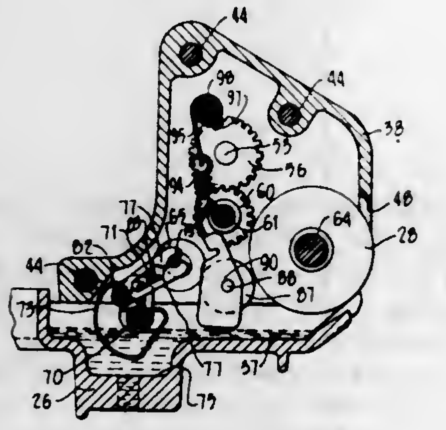
A holder for an inking pad is provided which is removably mountable on a manually operated printing stamper; the holder consists of a rectangular sheet of flexible material having notches cut out adjacent each of its corners and a rectangular slot positioned equidistantly from its upper and lower edges; the dimensions of the sheet are such that it may be bent into an arcuate shape and the notches positioned in engagement with the frame of the stamper whereby, due to its resilience, the holder will be maintained in engagement with the frame of the stamper; a felt inking pad is inserted through the slot of the holder so that a portion of the pad intersects the path of the printing elements of the stamper so that when the printing elements are actuated to move through the path, they will come into contact with the inking pad to receive a coating of ink.

### 3,760,722
### INKING DEVICE FOR A ROTARY PRINTING MEMBER

**Sheldon E. Thorson, Pleasanton; Cecil F. Clemons, and Vito Viola, both of San Leandro, all of Calif., assignors to The Singer Company, New York, N.Y.**

**Filed Apr. 5, 1971, Ser. No. 131,240**
**Int. Cl. B41f** *31/06, 31/14*

**U.S. Cl. 101—350** **9 Claims**



An inking device for a rotary print head which includes an inking roller for applying ink to the printing surface of a rotating head. A predetermined amount of ink is taken from the ink fount by means of a rotating dipper finger and is applied to the surface of a filmer roller. From the filmer roller the ink is transferred to the print head inking roller in measured amounts under the control of a metering roller. The metering roller is selectively adjustable to control the pressure contact of the surface thereof with that of the filmer roller and the inking roller, thereby enabling a lesser or greater amount of ink to be transferred from the filmer roller to the print head inking roller.

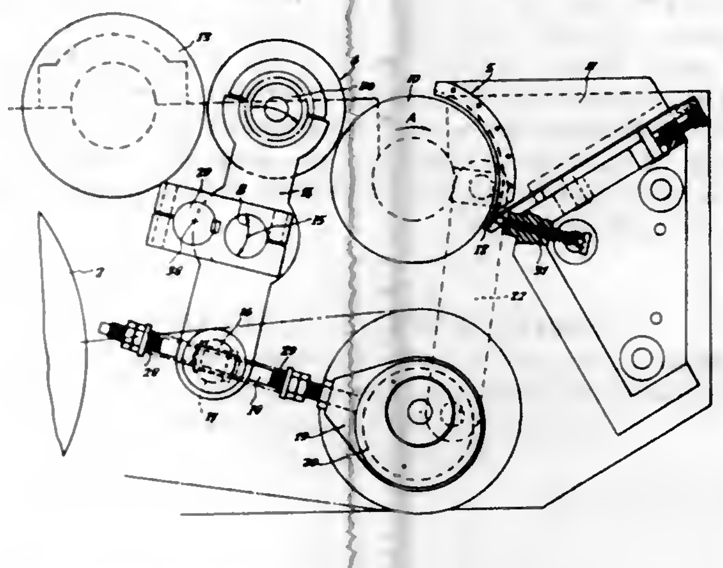
### 3,760,723
### INKING MECHANISM WITH ADJUSTMENT FOR DUCTOR ROLL OSCILLATION

**Alistair Gordon Taig, Claverham, England, assignor to Strachan & Henshaw Limited**

**Filed Aug. 12, 1971, Ser. No. 171,047**
**Int. Cl. B41f** *31/14*

**U.S. Cl. 101—350** **4 Claims**

A dab or ductor roll which oscillates to alternately touch an ink-source roll from which it receives ink and an ink-receiving roll to which it transfers the ink oscillates on a pivotted arm. The axis on which this arm pivots is itself movable relative to the axis of the ink-source and ink-receiving rolls in an arcuate path of the same sense as the curvature of the ink-receiving roll. Thus by adjusting the position of the pivot axis the contact time per oscillation between the dab roll and the ink-source roll, and hence the amount of ink transferred, can be adjusted and the ink-source roll can rotate intermittently through constant arcs of rotation.



### 3,760,724
### FAST-SET PLASTISOL INK

**David A. Budzinski, Euclid; Jack L. Sorkin, University Heights, and Clarence E. Charogoff, Cleveland, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Apr. 23, 1971, Ser. No. 136,996**
**Int. Cl. B41m** *1/06*

**U.S. Cl. 101—426** **5 Claims**

A non-volatile, fast-set, heat-dry plastisol vehicle for printing inks is provided comprising a finely divided, substantially water-insoluble, thermoplastic, film-forming polyvinyl resin that is solid at room temperatures dispersed in a sufficient amount of a single compatible liquid plasticizer to form a plastisol, and an effective amount of a tackifying agent consisting essentially of liquid polystyrene to inhibit "flying" of the plastisol from a printing press and the like. After application to a backing member, usually paper stock, in a printing operation, the plastisol is heated above the softening temperature of the polyvinyl resin which then swells and effectively absorbs the liquid plasticizer and liquid polystyrene. Preferably, the polyvinyl resin is pigmented to provide a contrasting color with respect to the backing member on which it is printed. The use of liquid polystyrene as a tackifying agent reduces not only the number of different plasticizers needed but also the total amount of plasticization as compared to prior practice.

### 3,760,725
### SELECTIVE PRINTING APPARATUS WITH AN ACTIVATED MASTER

**Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany**

**Filed June 9, 1972, Ser. No. 261,163**

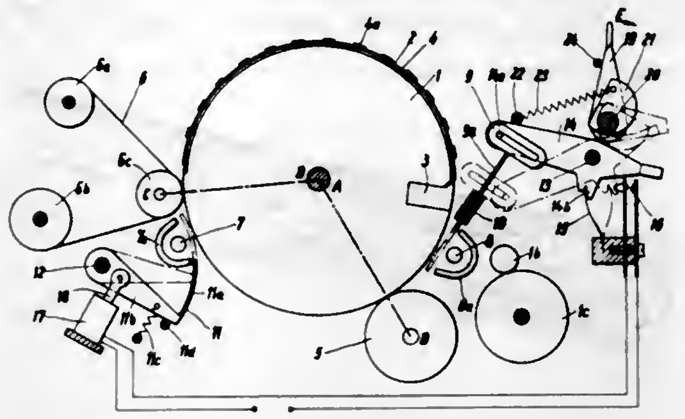
**Claims priority, application Germany, June 14, 1971, P 21 30 175.7**

**Int. Cl. B41l** *19/02;* **B41m** *5/26*

**U.S. Cl. 101—471** **10 Claims**

The heat absorbing text of a printing machine master on a duplicating drum is placed in contact with a dye coating on a sheet or web and irradiated by a first source of radiation so that portions of dye coating in contact with the heat absorbing text melt and adhere to the heat absorbing text while the remainder of the dye coating remains on the sheet when the same is pulled off the master. During the following revolutions of the duplicating drum, copy sheets are fed while a second source of radiation heats the applied coating on the text of the

master before the text reaches the printing line. Shielding means are selectively operated to cover the first and second sources of radiation to prevent coating before printing, and dye transfer during printing, so that selected shielded lines of the master are not printed. In another embodiment, coated narrow and wide webs selectively cooperate with corresponding narrow and wise sections of the master sheet.

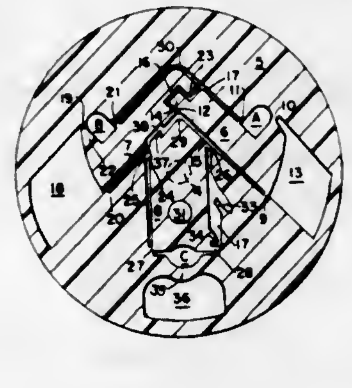


### 3,760,726
### EXPLOSIVE TRAIN BARRIER MODULE FOR FUZES

**David L. Overman, Beltsville, Md., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Mar. 9, 1972, Ser. No. 233,195**
**Int. Cl. F42b** *3/10*

**U.S. Cl. 102—22** **9 Claims**



A mechanical barrier module is provided between the primary and secondary explosives of an explosive train. The barrier module is fabricated from a single block having integral interlocking sections defined by through-molded slots and interconnecting shear points. Explosive motor means are provided for each interlocking section to facilitate the shearing of said shear points and release of said interlocking sections. The respective sections are interlocked in such a manner that the mutual release of all of said sections can only result by the release of said sections in one predetermined sequence. Detonation means are provided for detonating the secondary explosive when all of said interlocking sections are released.

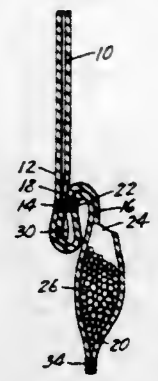
### 3,760,727
### BLAST-HOLE LINER

**Richard M. Callister, and Robert J. Langer, both of Virginia City, Minn., assignors to Masabi Jobbers Inc., Virginia City, Minn.**

**Filed June 3, 1971, Ser. No. 149,565**
**Int. Cl. F42b** *3/00*

**U.S. Cl. 102—24 R** **10 Claims**

Blast-hole liner which includes a flexible, water-proof tube member closed at one end and a pouch member depending from the closed end of the tube member. The pouch member is provided with an opening spaced from the distal end thereof to permit weighting material to be inserted into the pouch distally of the opening.



### 3,760,728
### EXPLOSIVE CARTRIDGE

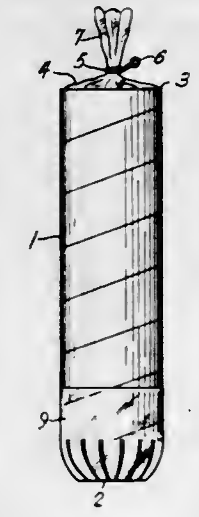
**James Glen McKee, Chateauguay, Quebec, and Gordon Towell, Otterburn Heights, Quebec, both of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada**

**Filed Mar. 1, 1972, Ser. No. 230,811**

**Claims priority, application Canada, Mar. 24, 1971, 108,631**

**Int. Cl. F42b** *3/00*

**U.S. Cl. 102—24 R** **6 Claims**



A blasting explosive cartridge comprising a substantially rigid tubular paper shell open at both ends, a thin-walled water-impervious thermoplastic bag disposed in tight nonslipping relationship within said shell and a blasting explosive composition contained within said impervious bag, said bag being sealed at both ends and having an unfilled portion projecting outward one open end of said shell, the opposite open end of said shell having a heat-shrunk thermoplastic cap in closely adhering relationship thereover. Contrarily to cartridges of the prior art, the new cartridge is devoid of any gathering of paper at either end. This property has the advantage of assuring uninterrupted propagation of explosion in a train of cartridges placed end-to-end in a borehole.

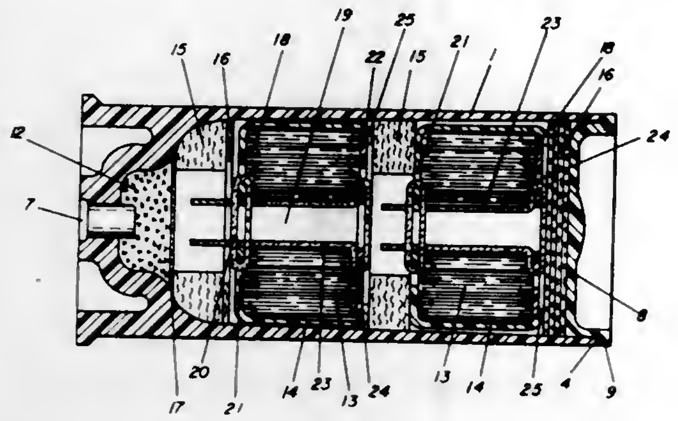
### 3,760,729
### HERMETICALLY SEALED PLASTIC CARTRIDGE CASE/CAP SYSTEM

**Donald J. Freeman, Parsippany, N.J., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Dec. 21, 1971, Ser. No. 210,535**
**Int. Cl. C06d** *1/00*

**U.S. Cl. 102—32** **9 Claims**

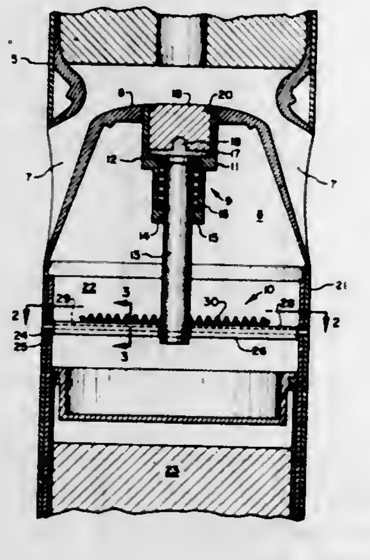
A container, such as a cartridge case for an illuminant star signal, comprises a molded case of fiberglass reinforced rigid thermoplastic resin possessing a cap of similar but unreinforced resin ultrasonically welded thereto to provide a hermetically sealed unit. Due to the dissimilarity in fiberglass content of the cap and case materials, the cartridge possesses a line of reproducible weakness along the weld line. Signal cartridges of this type are capable of failing reliably along said weld line to achieve a highly reproducible narrow altitude range of star trajectory and reliable star ignition.



### 3,760,730
### ROCKET VEHICLE

**Donald W. Osborne, Brigham City, and Stanley V. Peterson, Ogden, both of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.**

**Filed Mar. 6, 1972, Ser. No. 232,052**
**Int. Cl. F42b** *15/10*
**U.S. Cl. 102—49.4** **6 Claims**



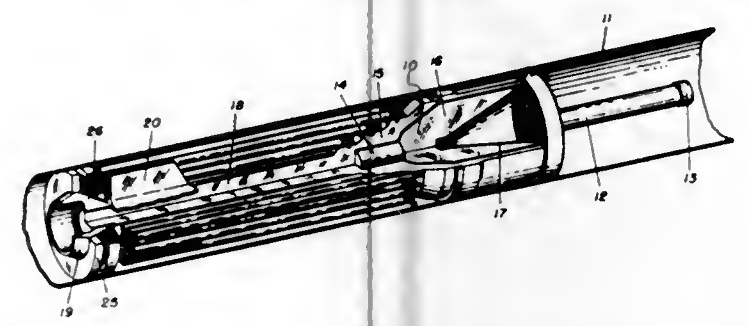
A rocket motor has a plurality of peripheral, canted, thrust nozzles and an aftwardly extending coupling member. A thermally operated time delay device in communication with the interior of the rocket motor, and operatively connected to a latch means that locks the rocket to a cargo carrying case, is capable of releasing the latch means and separating the rocket from the cargo at a predetermined instant in time.

### 3,760,731
### INFANTRY PROJECTILE

**Gerald E. Gaughan, Dover; Earl H. Buchanan, Bernardsville, and Emil W. Thompson, Succasunna, all of N.J., assignors to the United States of America as represented by the Secretary of the Army**

**Filed Oct. 28, 1971, Ser. No. 194,058**
**Int. Cl. F41f** *3/04*
**U.S. Cl. 102—56** **10 Claims**

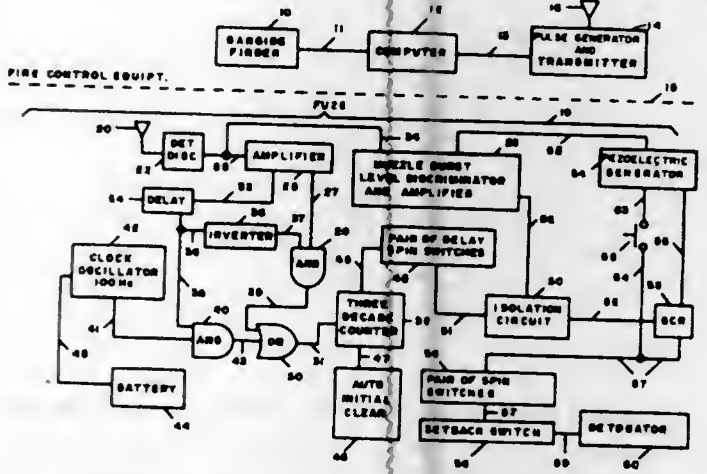
A supersonic high explosive anti-tank projectile capable of being launched from a tube by individual personnel including, at its forward end, stand-off means joined to a generally conical high explosive portion having its apex directed rearwardly. A boom of reduced cross-sectional area, extending rearwardly, affixed to the apex of the high explosive portion and carrying at the opposite end thereof a converging/diverging nozzle of circular cross section and provided with a plurality of radially extending fins, intermediate its ends, of a diameter equal to that of said conical portion. A plurality of stick shaped propellant charges supported by a step shaped means disposed about said conical portion. The sticks being supported only about said conical section intermediate the nozzle and the conical portion and filling this volume. A combustible casing surrounding the propellant sticks and extending approximately between the conical portion and a blowout disc closing the open end space between the outer periphery of the nozzle and the casing.



### 3,760,732
### WEAPON SYSTEM FOR A SET IN-FLIGHT DIGITAL TIME FUZE WITH MUZZLE ACTION

**William A. Schuster, Hopatcong, and Edmund L. Bisson, Hackettstown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Jan. 8, 1971, Ser. No. 104,896**
**Int. Cl. F42c** *11/06, 11/00, 9/00*
**U.S. Cl. 102—70.2 R** **9 Claims**



An improved rapid fire weapons system that permits a projectile while in flight to be safely and accurately set and armed for either muzzle action or long distance detonation of the projectile against either moving or stationary targets by a coded high frequency transmitted pulse or in the event of an electrical failure by a hand settable switch to muzzle action.

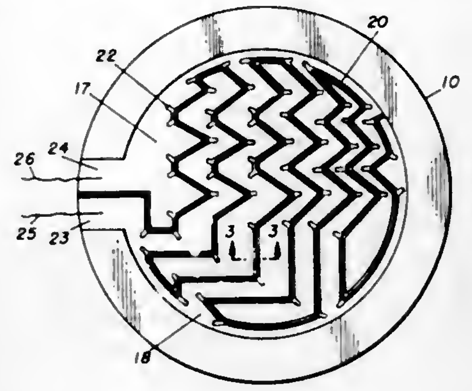
The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

### 3,760,733
### SELF-LEVELING ANTI-DISTURBANCE DEVICE

**Michael A. Marchiando, Richmond, Ind., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Apr. 3, 1972, Ser. No. 240,569**
**Int. Cl. F42b** *5/08*; **H01h** *35/02*
**U.S. Cl. 102—70.2 R** **5 Claims**

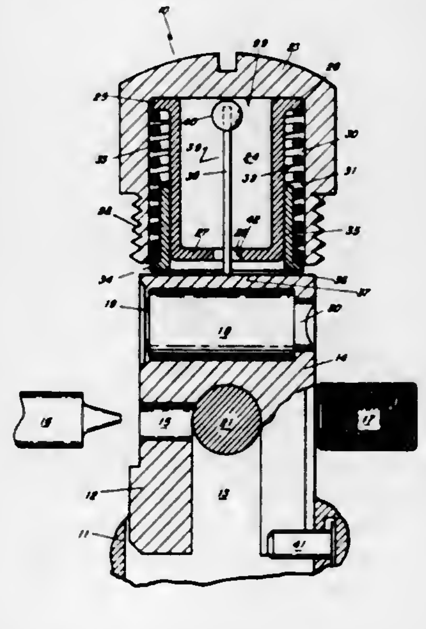
A normally open self-leveling anti-disturbance device which includes a base having a generally hemispherical recess and closed by a cover or lid provided with an outwardly directed hemispherical protuberance for providing a hemispherical channel between the cover and the base. The surface of the recess is provided with a conducting coating which is divided into two separate electrical circuits by etching. The circuits are physically isolated by a continuous serpentine-like raised narrow rib which is formed with a central insulated crack or depression. A metallic sphere is disposed within the channel and is free to translate therein. When the device is moved or disturbed the sphere will move across the raised rib and in so doing will temporarily short the two circuits. In its normal or undisturbed position the sphere will contact only one of the circuits. There is also provided a plurality of bumpers or deflectors to prevent the sphere from translating only within the clear paths between the adjacent portions of the isolating rib.



### 3,760,734
### DELAYED ARMING DEVICE

**Jack Brothers, Succasunna, N.J., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Apr. 28, 1972, Ser. No. 248,470**
**Int. Cl. F42c** *15/24*
**U.S. Cl. 102—76** **6 Claims**

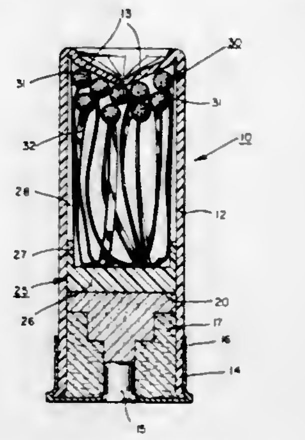


A delayed arming device for fuzes and the like wherein a slide member carrying a detonator is biased toward an armed position such that the detonator is aligned with a firing pin but restrained by a bore riding pin in its unarmed state. The slider carries a vibratory member whose shaft extends through a fixed, restricted opening so that as the slider moves between the unarmed and armed positions the effective shaft length decreases. The munition within which the device is operative, upon firing, produces a setback force therein that initiates the vibratory motion of the member. Upon exiting the bore, the bore riding pin is ejected and the slider commences its travel toward the armed position. The movement of the slider is slowed by the vibratory impact of the shaft against the walls of the opening through which it passes thereby acting as an effective fulcrum. Thus, the slider motion is delayed and when the vibration amplitude sufficiently decreases the slider will quickly complete its travel to arm the fuze.

### 3,760,735
### VISUAL AID FOR SPORTSMAN GUNNING

**Paul F. Schmitt, Lazy Day Lakes, Box 135-A, R.D. No. 1, Perkasie, Pa.**

**Filed Dec. 3, 1971, Ser. No. 204,666**
**Int. Cl. F42b** *11/16*
**U.S. Cl. 102—87** **5 Claims**

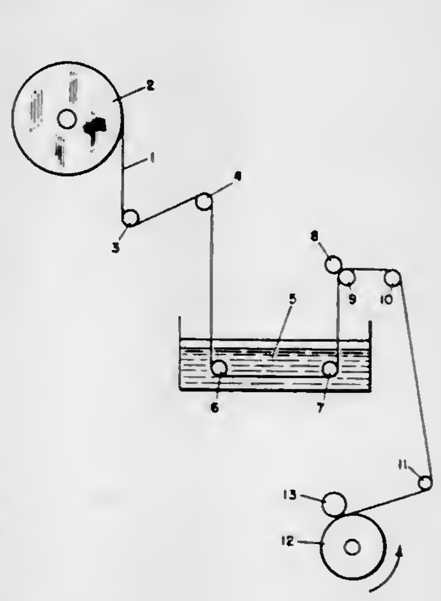


A tracer shot shell includes a tubular casing having a base, a primer cap in the base, an explosive gun powder propellent in the casing adjacent the cap, and a power piston containing shot. The shot is in the form of pellets, preferably of rubber or plastic, to each of which is secured an elongated tail of fluorescent material, preferably orange color. The tails may be from 1 to 3 inches long. The explosive charge in the shell is preferably reduced to a one-third or other fraction of a normal charge, to reduce the velocity of the pellets, so that the paths of the pellets are visible to the marksman.

### 3,760,736
### NON-METALLIC ROTARY BANDS

**Merrill Eig, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 18, 1971, Ser. No. 190,158**
**Int. Cl. F42b** *31/00*
**U.S. Cl. 102—93** **7 Claims**



Rotating bands comprising a composite product of a flexible, cross-linked, resin and a spunbonded synthetic organic fiber tape composed of randomly arranged, continuous filament synthetic organic fiber polymer, e.g. polyester, bonded at the filament junctions. The bands can be produced by winding on the projectile shell a tape of the spunbonded synthetic fiber impregnated with a liquid epoxy or equivalent resin, which on curing yields a flexible, cross-linked resin, and then curing the resin by heat and/or a catalyst. The novel bands, which possess a unique combination of flexibility, stiffness, strength and toughness, impart the correct spin and muzzle velocity to the projectile when fired through a rifled barrel. The bands reduce friction and engraving force, since engraving is accomplished by depression of the rifling of the barrel (lands) into the novel band without permanent deformation as distinguished from conventional metal rotating bands, which are engraved by shearing and displacement of metal.

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### 3,760,737
### MONORAIL

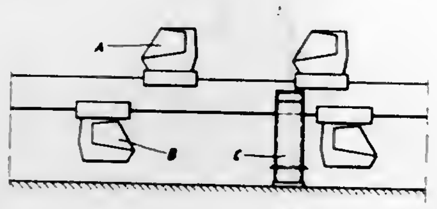
**Klaus Becker, and Hartwig Sprung, both of Wetter, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany**

**Filed Dec. 20, 1971, Ser. No. 210,052**

**Claims priority, application Germany, Jan. 14, 1971, P 21 01 485.7**

**Int. Cl. B61b** *3/00*

**U.S. Cl. 104—89** **7 Claims**



Disclosed herein is a new monorail with plural bearing surfaces, one of which serves to guide and to support suspension (top supported or "below rail") railway vehicles and another which serves to guide and to support upright (bottom supported or "above rail") railway vehicles, all of which vehicles are powered by electrolinear motors energized through secondaries forming part of the new monorail.

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### 3,760,738
### TRANSPORTATION INSTALLATION, PARTICULARLY FOR PASSENGERS

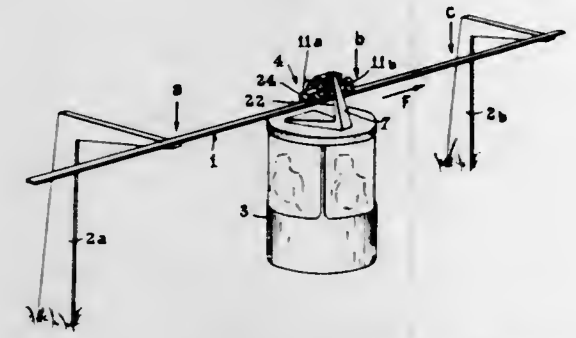
**Francois L. Giraud, Plaisir, France, assignor to LTV Aerospace Corporation, Dallas, Tex.**

**Filed June 23, 1971, Ser. No. 155,744**

**Claims priority, application France, July 6, 1970, 7024982**

**Int. Cl. E01b** *25/26*

**U.S. Cl. 104—105** **25 Claims**



A transportation installation having a main track on which a conveyor is movable, a side or secondary track substantially parallel to the main track and a car having a first means engageable with the conveyor for moving the car with the conveyor and a second means engageable with the side track, and operating means operable by the weight of the car for selectively moving the second means into engagement with the side track and for disengaging the first means from the conveyor when the car reaches a predetermined station on the secondary track. The operating means may comprise opposed sets of bellows and conducting means for causing flow of fluid from one set of bellows into the other upon the actuation of a valve due to the action of the weight of the car on the bellows upon the actuation of the valve. The side or secondary track may deflect outwardly of the main track to free the main track for movement of other cars past the location of a car switched to the side track.

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### 3,760,739
### CONVEYOR TRACK SWITCH ACTUATED BY A LINEAR MOTOR

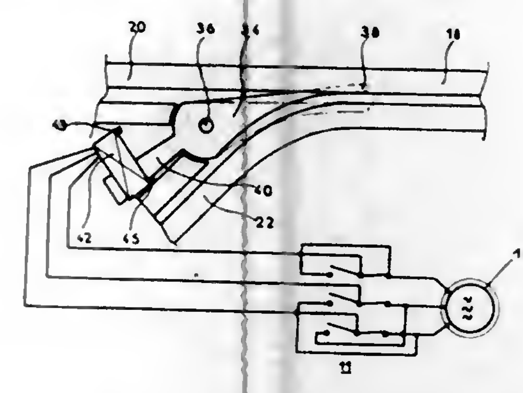
**Jean-Rene Benner, 6 Allees des Vergers, Courtry, France**

**Filed June 11, 1971, Ser. No. 152,330**

**Claims priority, application France, June 15, 1970, 7022004**

**Int. Cl. E01b** *25/26*

**U.S. Cl. 104—130** **3 Claims**



A linear induction motor switch tongue actuating arrangement producing a propelling force having a high starting value and a value which falls with growing speed of the switch tongue. A linear induction motor stator element co-operates with an armature plate secured to the switch tongue. The stator energization may be used to operate an electromagnetic locking device for the tongue.

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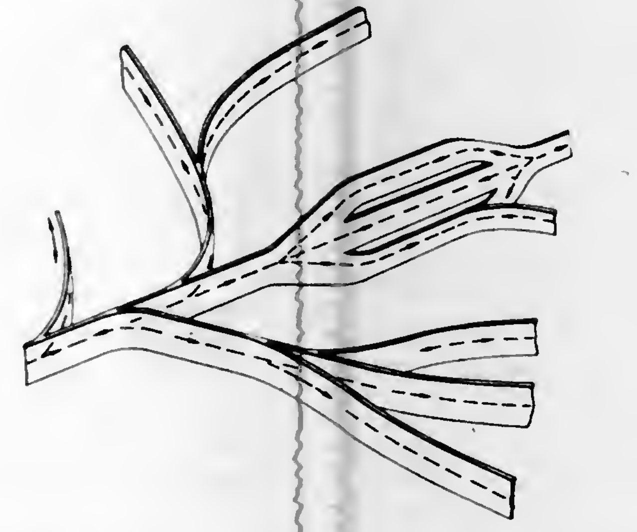
### 3,760,740
### HIGHLY IMPROVED TRANSPORTATION SYSTEM

**Justin M. Jacobs, Jr., 1245 Jones St., San Francisco, Calif., and Neil S. Stafford, Rt. 3 Box 355, San Jose, Calif.**

**Continuation-in-part of Ser. No. 861,843, Sept. 29, 1969, Pat. No. 3,659,529. This application Dec. 28, 1971, Ser. No. 212,906**

**Int. Cl. B61b** *3/02*

**U.S. Cl. 104—130** **17 Claims**



The disclosure is of a transportation system which includes an elongated guidebeam having three spaced apart running surfaces. Two of the running surfaces as substantially vertical to accommodate wheels rotating about vertical axles and the third running surface is substantially horizontal to accomodate wheels rotating on horizontal axles. Wheels which rotate on a normally vertical axle and wheels which rotate on a normally horizontal axle are connected to a rack which is adapted to move along the running surfaces of the guidebeam. The wheels connect the rack on the side of the guidebeam in cantilever fashion. Connecting switch sections are provided at desired locations on the elongated guidebeam to connect two or more guidebeams. The switch sections have no moving parts and cooperate with wheels of the rack which are movable on the guidebeam by self-contained means carried on the rack in a direction normal to the direction of travel of the rack to provide for high speed switching of the rack between an upline guidebeam and one of two or more spaced apart downline guidebeams and between two or more spaced apart upline guidebeams and a single downline guidebeam.

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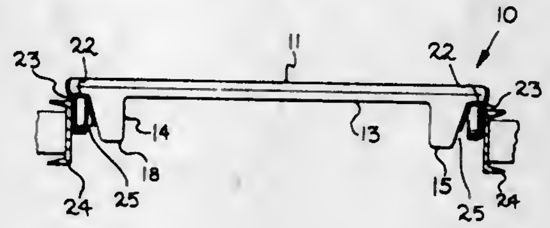
### 3,760,741
### PALLET

**Samuel L. Belcher, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed June 14, 1971, Ser. No. 152,546**

**Int. Cl. A63g** *21/00*

**U.S. Cl. 104—135** **1 Claim**



A pallet for use in a gravity flow rack warehousing system, wherein the pallet is mounted on tracks. The pallet has a load bearing platform and a pair of supporting pads attached beneath the platform; the pads having one sloping wall and a load-bearing plate positioned on the lower surface of the platform; the plates providing a supporting contact between the pallet and the track and the sloping walls of the pads serving to guide the pallet along the tracks.

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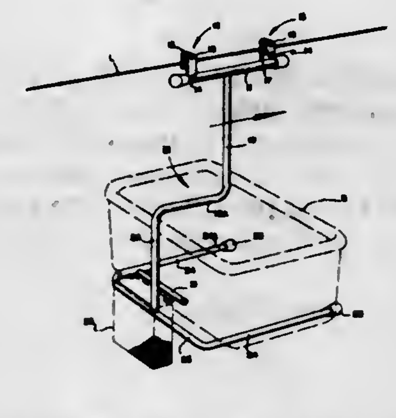
### 3,760,742
### CLOTHES BASKET HANGER

**Ronald T. Roloff, Rt. 1, Box 1760, Eugene, Oreg.**

**Filed Dec. 15, 1971, Ser. No. 208,182**

**Int. Cl. B61b** *7/08*

**U.S. Cl. 105—151** **2 Claims**



A hanger structure having trolley means removably engageable with a clothes line. Arms symmetrically disposed below the trolley structure for the balanced support of the basket. A support member depending from the trolley means extending downwardly past one side of the basket permitting unrestricted placement and removal of the basket over the oppositely located outer ends of the arms. A portion of said support member serving as a hand hold for the user. A clothes pin container is conveniently provided adjacent the last mentioned portion of the upright support.

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### 3,760,743
### HATCH COVER

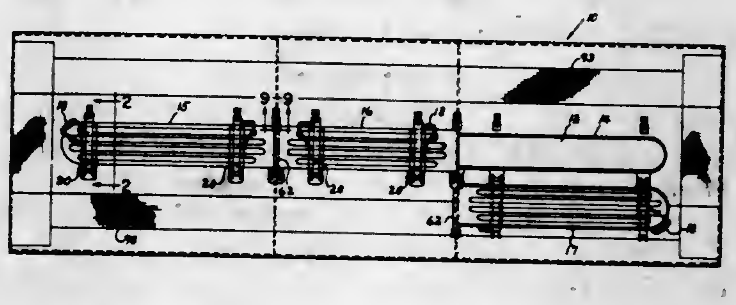
**Howard J. Walk, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.**

**Filed Mar. 17, 1972, Ser. No. 235,745**

**Int. Cl. B61d** *39/00*

**U.S. Cl. 105—377** **15 Claims**

A hatch cover having a flexible gasket is supported by one or more pivoted straps having a slotted end which is bent downward. The inner end of the slot engages a lever and cams it to a cocked position, so that after the strap passes the lever the latter falls back and engages the upper side of the bent down ends of the strap. Stepping on a footplate which is part of the lever moves it along the top side of the strap to an over-center position, camming the strap downwardly and thus compressing the gasket and tightly locking the hatch cover closed.



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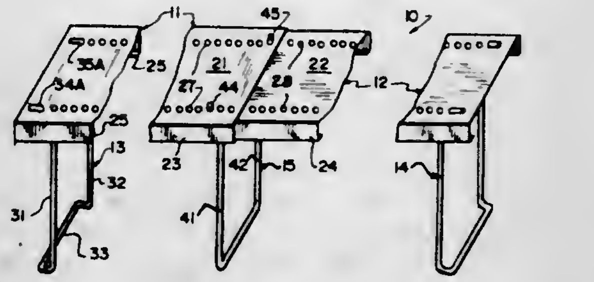
### 3,760,744
### EXPANSIBLE SHELF ADDITION

**Ira G. Cruckshank, 1905 N. Williamsburg Dr., Hoffman, Ill.**

**Filed Apr. 19, 1971, Ser. No. 135,082**

**Int. Cl. A47b** *1/00*

**U.S. Cl. 108—64** **2 Claims**



A horizontally adjustable shelf structure formed of two telescoping sheet metal members, each having a plurality of linear, equally close spaced perforations, two wire-formed supporting end legs adapted to be attached through the perforations, and a center supporting leg formed with tangs that extend through registered perforations of both members thereby locking the members together and also serving as a load bearing support.

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### 3,760,745
### TURNTABLE DEVICE

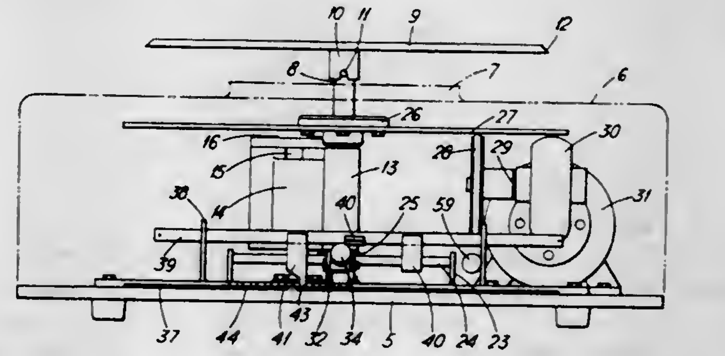
**John MacManus, 143-16 Twenty-Second Rd., Whitestone, N.Y.**

**Continuation-in-part of Ser. No. 68,103, Aug. 31, 1970, Pat. No. 3,724,417. This application Mar. 27, 1972, Ser. No. 238,356**

**Claims priority, application Great Britain, Apr. 2, 1971, 8530/71**

**Int. Cl. A47b** *11/00*

**U.S. Cl. 108—139** **12 Claims**



A turntable for supporting a confection is rotatably mounted about a vertical axis and is constrained by a linear guide to move to and fro in a horizontal direction. A friction wheel drives the turntable selectively in either of two modes. In one, the turntable is driven at a constant speed. In the other, the friction wheel is at an angle to produce a component which moves the turntable along the guide, and the speed of rotation of the turntable is continuously varied.

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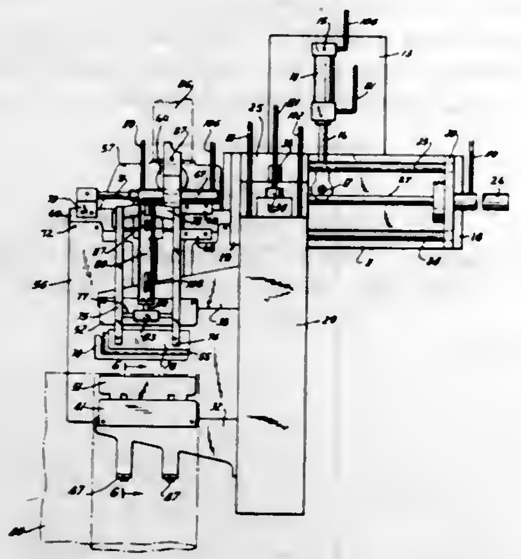
### 3,760,746
### SEWING MACHINE ATTACHMENT

**Mario Portilla, Jr., 1975 Troy Ave., Brooklyn, N.Y.**
**Filed Dec. 14, 1971, Ser. No. 207,817**
**Int. Cl. D05b** *35/08*
**U.S. Cl. 112—134** **14 Claims**



A sewing machine attachment wherein a pair of jaws are pneumatically closed to fold a cloth. Thereafter, a pneumatic clamp is moved against the cloth as the jaws are withdrawn to hold the folded cloth against a movable plate having a slot. The sewing machine moves the movable plate to bring the slot under the sewing machine needle to sew the fold, thereby providing a pleat. After the pleat has been sewn the pneumatic clamp releases the pleated cloth. The folding, clamping, and releasing operations are automatically and sequentially performed by a pneumatic system once the cycle is initiated by an operator.

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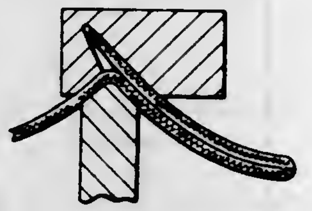
### 3,760,747
### VERSATILE BLIND STITCH SEWING MACHINE

**Mitsuo Matsumoto, Tokyo; Yoshihide Nishizuka, and Teruo Iwata, both of Osaka, all of Japan, assignors to Nara Sewing Machine Industrial Co., Ltd., Tokyo, Japan**
**Filed Nov. 26, 1971, Ser. No. 202,396**
**Claims priority, application Japan, Nov. 28, 1970, 45/117740; Nov. 28, 1970, 45/117741**
**Int. Cl. D05b** *1/24*
**U.S. Cl. 112—178** **2 Claims**



A versatile blind stitch sewing machine which comprises a power source, pulleys, an upper shaft, work feed means, needle rocking means, a lower shaft casing, work holding-down means and work support means in which the work holding-down means includes a work holding-down member provided on the undersurface with an inverted V-shaped groove and the work support means includes a work support member having a complementary inverted V-shaped tip end and adapted to move toward and away from the work holding-down member so as to vary the clearance therebetween through which a work to be stitched passes.

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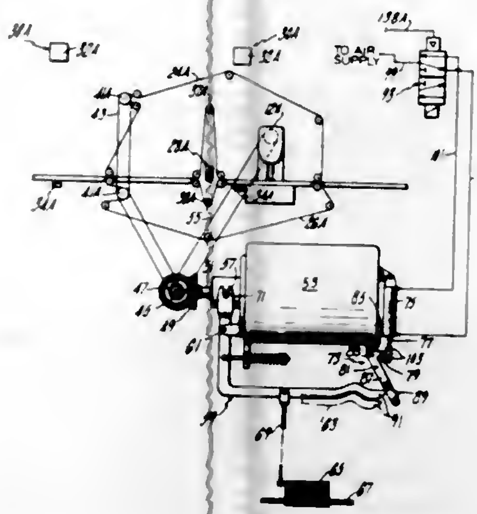
### 3,760,748
### SEWING MACHINE CUTTING MECHANISM

**John L. Rockerath, Utica, N.Y., assignor to Jetsen, Inc., Barnevald, N.Y.**
**Continuation-in-part of Ser. No. 153,664, June 16, 1971. This application June 6, 1972, Ser. No. 260,163**
**Int. Cl. D05b** *69/08*
**U.S. Cl. 112—219 B** **14 Claims**



A sewing machine having a cutting mechanism, an override control mechanism operable for positively controlling the advance of material past the cutting mechanism, and sensing means for sensing the presence of material upstream of the cutting mechanism for actuating the override control mechanism to effect automatic feeding of material past the cutting mechanism in synchronism with the operation of the cutting mechanism.

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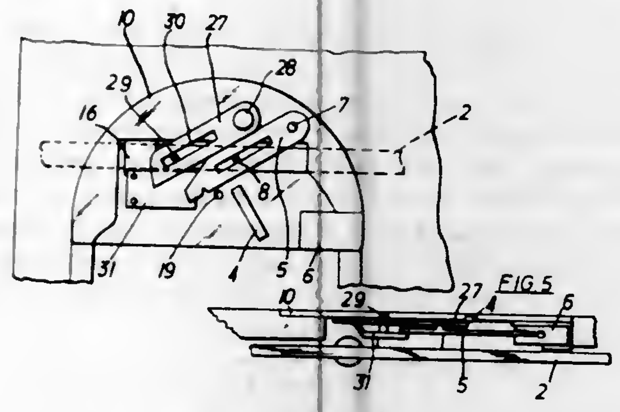
### 3,760,749
### MECHANISM FOR SIMULTANEOUSLY CUTTING TENSIONED BOBBIN THREADS AS ALL THE NEEDLE HEADS OF AN AUTOMATIC EMBROIDERING MACHINE

**Ludwig Trageser, 32 Von Bargen Strasse, Hamburg, Germany**
**Filed May 5, 1972, Ser. No. 252,142**
**Claims priority, application Germany, Sept. 7, 1971, P 71 34 050.6**
**Int. Cl. D05b** *65/00*
**U.S. Cl. 112—252** **10 Claims**



A mechanism for simultaneously cutting tensioned bobbin threads at all the needle heads of an automatic embroidering machine comprises a reciprocable draw bar which extends below all the needle heads. A cutter blade is provided under each needle head and is secured to the draw bar so as to be operable by the displacement of said draw bar. A fixed counterblade is associated with and located in spaced relationship to each cutter blade. A thread drawing lever is arranged to be operable by the draw bar at the same time as the cutter blade, for cooperation with a thread clamp fixedly mounted in spaced relationship to the thread drawing lever, said counterblade being located alongside the deflection path of said thread drawing lever.

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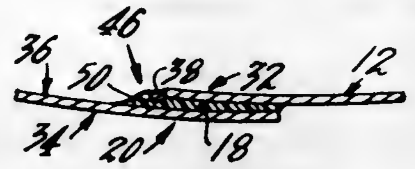
### 3,760,750
### METHOD AND APPARATUS FOR FORMING CREASE ON BLANK OF LAP SIDE SEAM TUBULAR BODY

**Kenneth Richard Rentmeester, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.**
**Filed Sept. 25, 1970, Ser. No. 75,530**
**Int. Cl. B21d** *51/26*
**U.S. Cl. 113—120 K** **7 Claims**



The raw metal edge on the inside lap in an adhesively-bonded lap side seam of a tubular body is protected from chemical attack by a corrosive substance from within the tubular body by applying a side seam adhesive along one marginal edge portion of the body blank, bending the other parallel marginal edge portion of the blank to form a crease thereon, rolling the blank into tubular form to place the adhesively-coated marginal edge portion and the creased marginal edge portion in an overlapping, facing position, and imbedding the creased marginal edge portion into a portion of the adhesive on the one marginal edge portion to bury the raw metal edge, the imbedding being achieved by compressing the overlapped marginal edge portions together to assemble the lap side seam of the tubular body.

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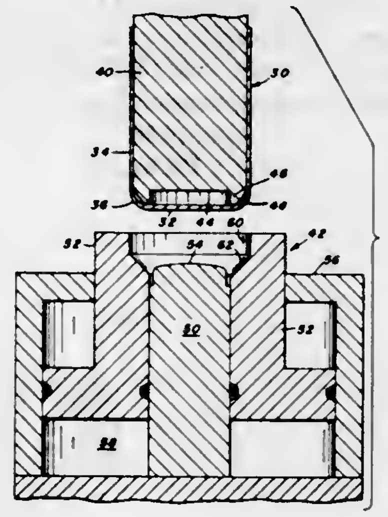
### 3,760,751
### CONTAINER BODY AND A METHOD OF FORMING THE SAME

**Lloyd G. Dunn, Lower Burrell; James R. Morran, New Kensington, and Donald L. Peters, Delmont, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.**
**Continuation of Ser. No. 856,331, Oct. 9, 1969, abandoned. This application Oct. 29, 1971, Ser. No. 194,073**
**Int. Cl. B21d** *51/00*
**U.S. Cl. 113—120 H** **6 Claims**



An aluminum container body and a method of forming the same by ironing the side wall of a drawn cup to thin and lengthen it, and reforming the bottom end wall of the ironed cup to form therein an upwardly domed central portion connected through a substantially vertical wall section and an outwardly and upwardly tapered shoulder into the side wall of the can body. The ironed can body may have a protective coating applied to its inner surfaces and cured thereon prior to reforming the end wall.

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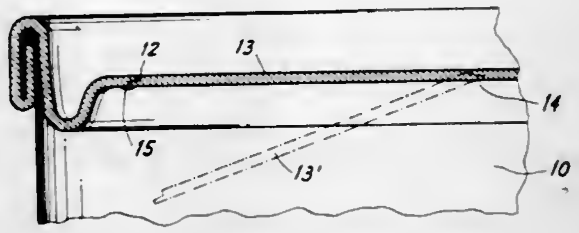
### 3,760,752
### EASY-OPENING DEVICE FOR SHEET METAL CONTAINERS AND THE LIKE AND METHOD OF PRODUCING SUCH DEVICES

**Joseph A. Geiger, 7258 Parkwood Ct., Falls Church, Va.**
**No Drawing. Filed Jan. 7, 1972, Ser. No. 216,181**
**Int. Cl. B21d** *51/00*
**U.S. Cl. 113—121 C** **15 Claims**



An easy-opening device for sheet metal containers and the like where a wall panel covering an intended opening in a sheet metal wall is arranged to be easily removable from the opening, a cut through the sheet metal wall along a major portion of the contour of the intended opening separating the wall panel from the adjacent aligned sheet metal wall and forming a bending hinge at the uncut portion; and where an overlap configuration on the cut limits the removability of the wall panel to a one-way pivoting motion around the hinge. The intended opening is prepared by cutting and deforming the wall along the opening contour into an overlap configuration with the adjacent wall portions remaining substantially aligned.

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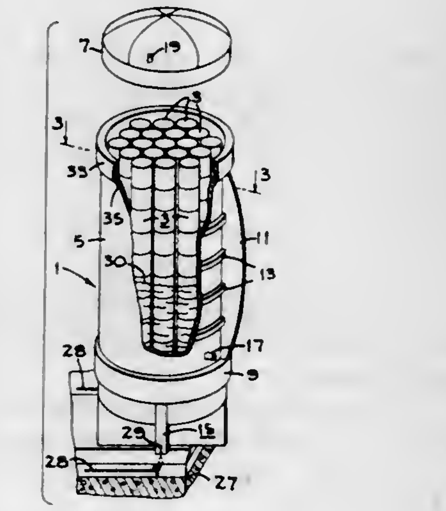
### 3,760,753
### FLOATABLE-SUBMERSIBLE VESSEL CONTAINER

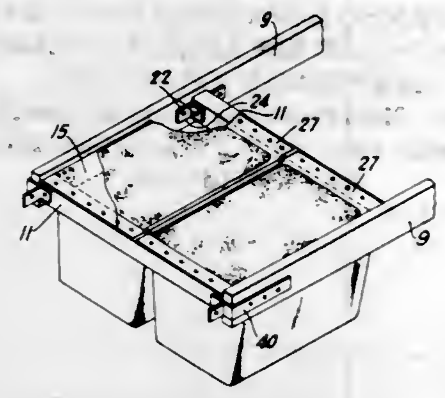
**Johann Mertens, Santa Cruz, Calif., assignor to Nuclear Waste Systems Company, Campbell, Calif.**
**Filed Apr. 15, 1971, Ser. No. 134,185**
**Int. Cl. B63g** *8/22;* **B63b** *35/00*
**U.S. Cl. 114—0.5 T** **12 Claims**



A sealed floatable, submersible vessel container for carrying contaminant waste materials to sea, said container providing pressure equalization while sinking.

### 3,760,754
### MODULAR UNIT FOR A FLOATING DOCK SYSTEM

**Glenn R. Drummond, Raleigh, and Barry F. Clutter, Cary, both of N.C., assignors to Koppers Company, Inc.**
**Filed May 24, 1971, Ser. No. 146,139**
**Int. Cl. B63b** *35/00*
**U.S. Cl. 114—.5 F** **1 Claim**



A modular unit for a floating dock system for marinas is presented.

The unit includes a deck buoyed by plastic pontoons which include a self-adjusting water ballast feature.

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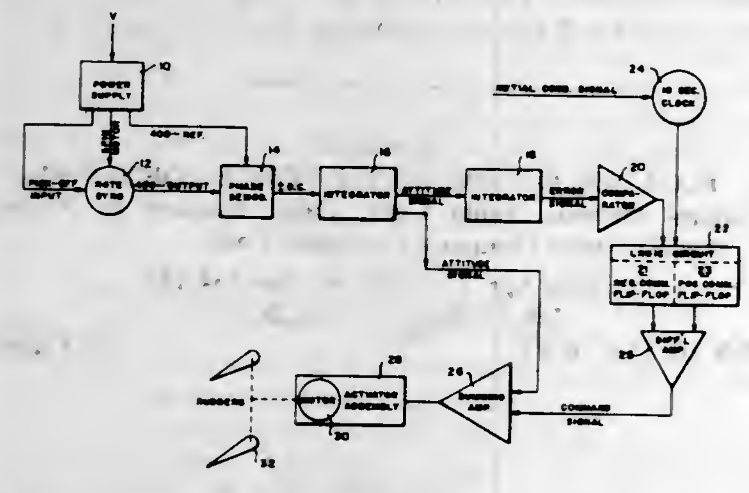
### 3,760,755
### GUIDANCE SYSTEM FOR STRAIGHT RUNNING VEHICLES

**William H. Licata, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Sept. 20, 1971, Ser. No. 181,670**
**Int. Cl. F42B** *19/00;* **F42b** *15/02*
**U.S. Cl. 114—23** **5 Claims**



A guidance system for heading control of a straight running vehicle, such as a torpedo, using a rate gyro with integrator and logic circuitry which measures the rate of angular deviation from course and which returns the vehicle to the previous intended track.

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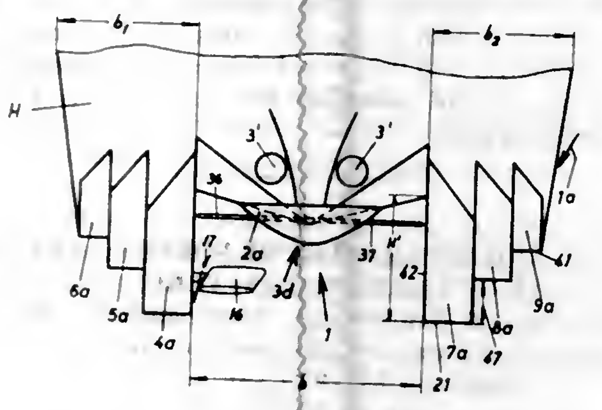
### 3,760,756
### WATERCRAFT CONSTRUCTION

**Wilhelm Boden, Kreis Eckernfoerde Schlei, Kopperby/ueber Kappeln, Germany**
**Filed Dec. 22, 1970, Ser. No. 100,673**
**Claims priority, application Norway, Dec. 23, 1969, 5087**
**Int. Cl. B63b** *1/38*
**U.S. Cl. 114—66.5 R** **62 Claims**

A hydrofoil has an elongated hull of a predetermined first volume and is provided with a bottom wall and a longitudinally extending center keel. Two or more stabilizing elements are provided on the respective lateral sides of the keel, flanking the same, and defining between themselves beneath the bottom wall of the hull at least one air channel which extends longitudinally of the hull and whose volume is equal to between substantially one-fifteenth and one-third of the volume of the hull itself. Various other features are also disclosed.



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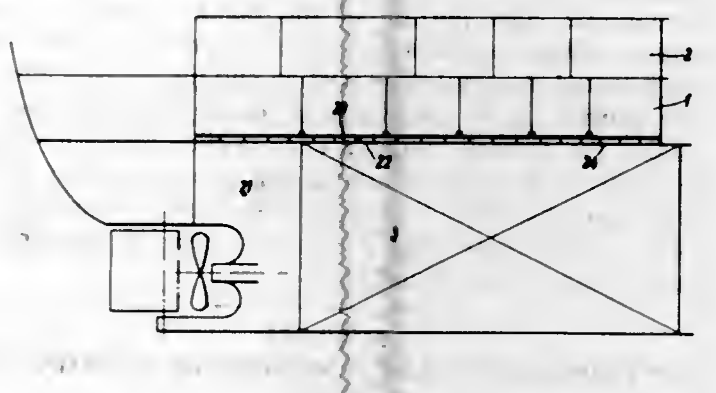
### 3,760,757
### IMPROVEMENTS IN OR RELATING TO THE SOUND-PROOFING OF SHIPS

**Werner Piening, Dietrichstal 4, Bad Lauterberg, Germany**
**Filed Apr. 12, 1971, Ser. No. 133,118**
**Int. Cl. B63b** *3/52*
**U.S. Cl. 114—85** **10 Claims**



This invention relates to a method of sound-proofing a ship and to a ship constructed accordingly. The noisy parts of the ship, containing the power plant, are separated from the other parts of the ship to be kept silent by a layer which is adapted to reflect sound conducted through the air and to absorb sound conducted through the solids and through this layer. Thus, it is avoided that sound is spread over parts above this layer.

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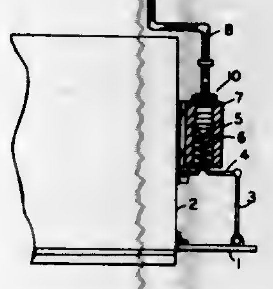
### 3,760,758
### AUTOMATIC TRIM TAB MEANS FOR MARINE CRAFT

**Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y.**
**Continuation-in-part of Ser. No. 16,476, March 14, 1970, Pat. No. 3,628,484. This application Dec. 28, 1971, Ser. No. 205,928**
**Int. Cl. B63b** *1/22*
**U.S. Cl. 114—66.5 P** **4 Claims**



A pair of trim tabs are pivotally connected to the transom of a boat adjacent to the water line. The angle of each trim tabs is adjusted automatically by an adjustable spring loaded linkage. The spring loaded linkage may be manually adjusted for the proper trim at a desired speed.

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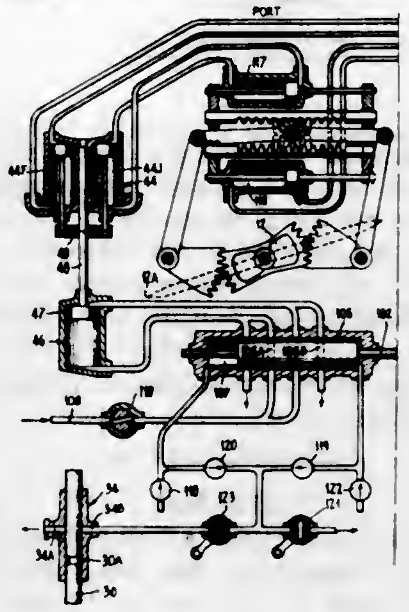
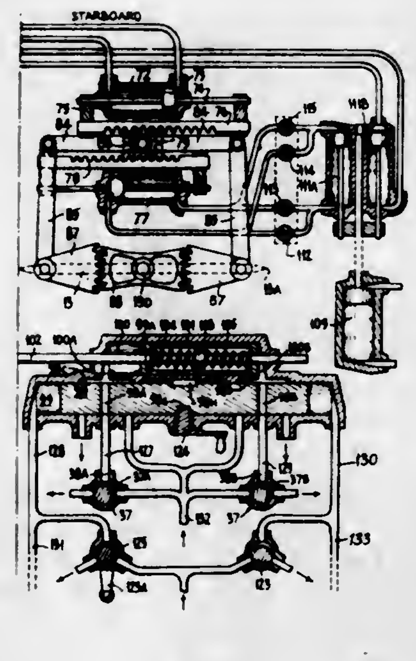
### 3,760,759
### STABILIZING APPARATUS FOR SHIPS AND THE LIKE

**Thomas Norman Lang, 3 Fewster Rd., Hampton, Victoria, Australia**
**Filed Mar. 10, 1971, Ser. No. 122,772**
**Claims priority, application Australia, Mar. 16, 1970, 626/70**
**Int. Cl. B63b** *39/06*
**U.S. Cl. 114—126** **18 Claims**





A ship stabilizing apparatus comprising means to stabilize a ship by the tilting of fins extended therefrom, said fins being operable to apply anti-rolling forces, anti-pitching forces or forces which are an integration of anti-rolling forces and anti-pitching forces, said forces being modulated to suit the ship's immediate stabilizing requirements and said tilting to be timed to avoid the application of pro-oscillatory forces to the ship and said fins in special circumstances being controllable to apply continuously to the ship about its rolling axis a clockwise or an anti-clockwise torque.

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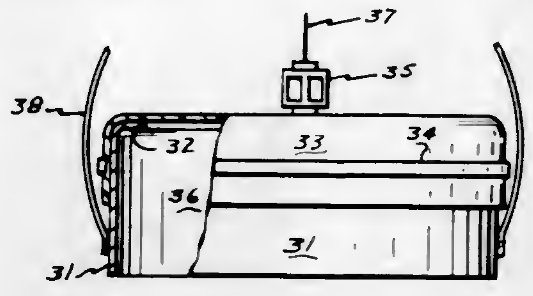
### 3,760,760
### ANCHOR

**Elbert M. Stevens, Box 157, Rt. 4, Medina, Tex.**
**Division of Ser. No. 54,698, July 14, 1970, Pat. No. 3,682,125. This application Nov. 22, 1971, Ser. No. 201,052**
**Int. Cl. B63b** *21/24*
**U.S. Cl. 114—206 R** **3 Claims**



An anchor for ships and boats which upon lowering is partially embedded in the bottom of a body of water and is maintained in such position by the force applied by the water column bearing thereagainst.

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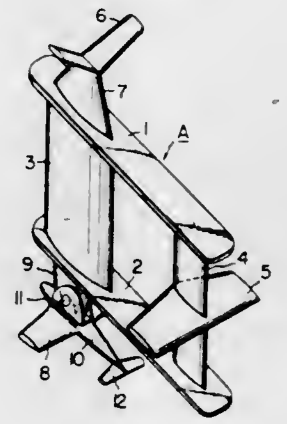
### 3,760,761
### UNDERWATER KITE DEVICE

**Kousuke Umazume, 13-5, 2-chome, Shimorenjaku, Mitaka-shi, Tokyo, Japan**
**Filed Nov. 30, 1972, Ser. No. 310,926**
**Claims priority, application Japan, Dec. 2, 1971, 46/97494**
**Int. Cl. 63b** *21/56*
**U.S. Cl. 114—235 B** **6 Claims**



A kite device to be towed in water which is adapted to carry various telemetering instruments for measuring schools of fish, depths of the sea and carrying out other functions, and which comprises a pair of frames disposed in the towing direction, a transverse main wing and tail surfaces extending between and connecting the pair of frames at the forward and aft parts thereof, respectively, a first deviation wing provided at a transversely outer position relative to one frame, and second deviation wing provided at a transversely outer position relative to the other frame, the hydrodynamic force created by the first deviation wing for moving the kite device in a transversely outward direction being greater than the force created by the second deviation wing for moving the kite device in the opposite transverse direction.

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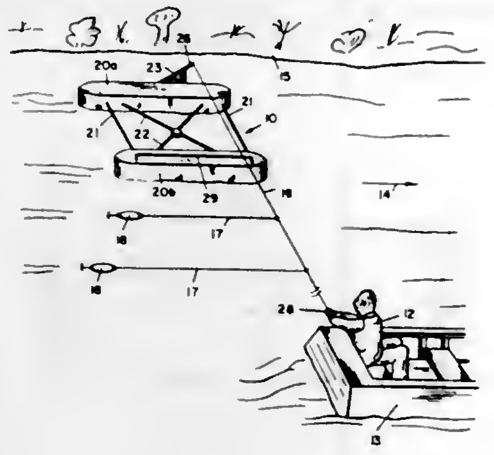
### 3,760,762
### TROLLING DEVICE

**Gillis Spongberg, P.O. Box 533, Rocky Mountain House, Alberta, Canada**
**Filed Dec. 10, 1971, Ser. No. 206,659**
**Int. Cl. B63b** *21/00*
**U.S. Cl. 114—235 R** **2 Claims**

A trolling device manipulable from a boat for trolling close to shore. The device has a pair of transversely spaced parallel floats and a rudder is pivoted to the outer side of one of the floats. A single line connected to the rudder serves for towing the device as well as for positioning the rudder relative to the associated float.



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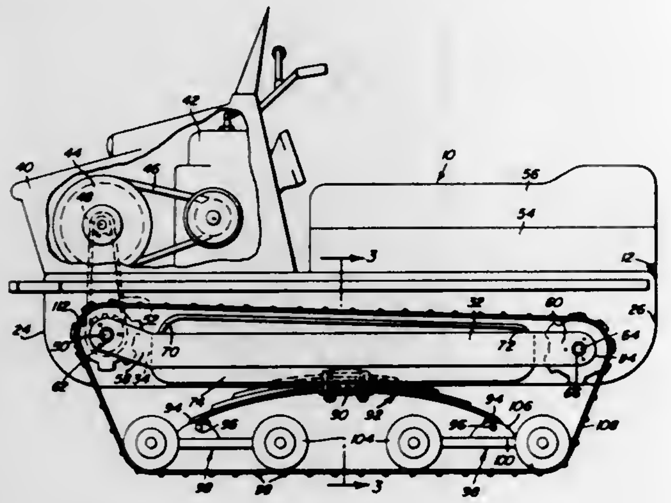
**3,760,763**

## ALL TERRAIN VEHICLE

**Albert V. Brusacoram, 27 N.E. 11th St., Chisholm, Minn.**
**Filed Feb. 26, 1971, Ser. No. 119,229**
**Int. Cl. B60f** *3/00*
**U.S. Cl. 115—1 R** **6 Claims**



An amphibious vehicle of the type including opposite side endless track assemblies. The vehicle includes a main central body portion which extends longitudinally of the vehicle and defines a hollow elongated sealed flotation compartment above which the operator's position and driving motor of the vehicle may be disposed. The vehicle further includes opposite side laterally outwardly projecting and elongated generally horizontally disposed stub wing-type housings which are also sealed and define opposite side flotation compartments. The opposite side tracks of the vehicle encircle and are for the most part supported from the opposite side housings on either side of the main body portion and the endless tracks are trained about drive and idle sprocket wheels disposed at corresponding ends of the tracks spaced endwise outwardly of the corresponding ends of the opposite side housings. The combined buoyancy of the main body portion flotation compartment and the opposite side flotation compartments is sufficient to float the vehicle with an operator thereon with the water level disposed at least slightly below the upper extremities of the opposite side flotation compartments whereby the vehicle, when floating, will have resistance to rolling about its longitudinal axis.

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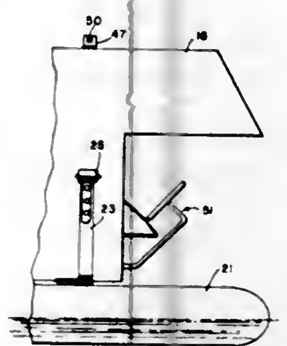
**3,760,764**

## CAMPER BOAT APPARATUS

**William W. Jones, 4935 N. Palm Ave., Orlando, Fla., and Frank D. McCaulley, 844 E. Church, Longwood, Fla.**
**Filed Feb. 28, 1972, Ser. No. 229,783**
**Int. Cl. B60f** *3/00*
**U.S. Cl. 115—1 R** **6 Claims**



A camper boat apparatus having a camper body for placement on a vehicle such as a pickup truck is provided having means for readily removing the camper from the vehicle. A pair of pontoons is connected to the camper body by hinged arms that allow the pontoons to swing down into one position for use of the camper body as a pontoon houseboat and to swing up into a second position where they are locked and held away from interference with the use of the camper body on the land vehicle.

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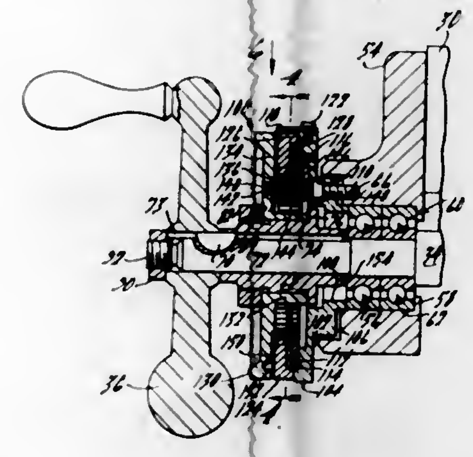
**3,760,765**

## MACHINE TOOL INDICATOR MECHANISM

**Joe Scott, 2800 W. Grand Blvd., Apt. 309, Detroit, Mich.**
**Filed Sept. 1, 1971, Ser. No. 176,964**
**Int. Cl. G01p** *13/00*
**U.S. Cl. 116—115** **17 Claims**



An improved machine tool indicator mechanism adapted for retrofitting on a machine tool such as a milling machine, the milling machine having a rotatable shaft for displacing a work support relative to a tool carrying head or vice versa, the indicator mechanism comprising a pair of scales for translating the rotational movement of the shaft to an axial traveled distance relative to a fixed point, and including means for independently zeroing the scales at any given displaced position.

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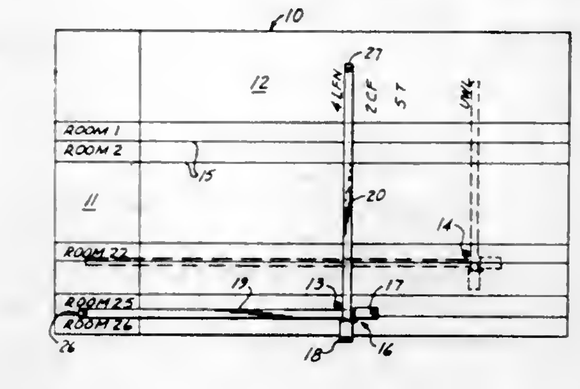
**3,760,766**

## INDICATING DEVICE

**Paul R. Wopschall, 11 N. Fifth Ave., Arcadia, Calif.**
**Filed Nov. 21, 1972, Ser. No. 308,487**
**Int. Cl. G09f** *5/00*
**U.S. Cl. 116—135** **5 Claims**

There is disclosed an indicating device for facilitating chart reading, comprising a pair of tapes each extrudable from a

tape housing, the two housings being hinged together so that they may be swung to a side by side position or to a position in which the tapes when extruded are perpendicular and intersecting each other. Placing the tape intersection at markings of the chart facilitates reading of the items at the vertical or horizontal coordinates.



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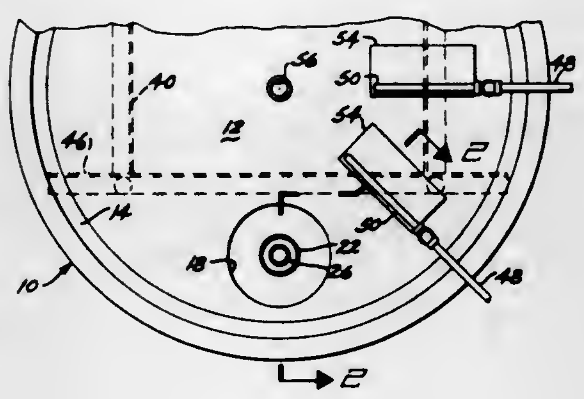
**3,760,767**

## TANK, FILTER AND DEPROTEINATOR FOR MARINE LIFE

**William P. Hickey, 7585 Nottingham Dr., Lambertville, Mich.**
**Filed July 15, 1971, Ser. No. 162,855**
**Int. Cl. A01k** *63/00*
**U.S. Cl. 119—3** **7 Claims**



A circular tank having a generally flat bottom with a sediment well positioned at one side thereof. Feces and other sediment are brought into the well by inducing a circular movement to the water within the tank to move the sediment around the tank and into the well. The tank preferably includes a standpipe arrangement within the well which continually removes the sediment from the well. The tank is preferably situated with the bottom sloping toward the sediment well. In large tanks, jets of water are positioned adjacent the bottom to jet the sediment up the slope of the tank where the circulation of the water then moves the sediment downwardly to the sediment well. Charged air bubbles are used to produce a froath of the dissolved protein surrounding the standpipe so that waste water also removes the protein. The tank is preferably made out of fiberglass so that it has very smooth internal surfaces which do not retain the sediment. The tank is inexpensively constructed using a fiberglass coated plywood bottom that is supported on a polygonal frame located centrally of the tank with the sediment well positioned between the frame and the sidewall of the tank. Outriggers from the frame extend under the sidewalls of the tank on opposite sides of the sediment well so that the sidewalls are utilized to carry verticle load and decrease the stresses in the bottom of the tank.

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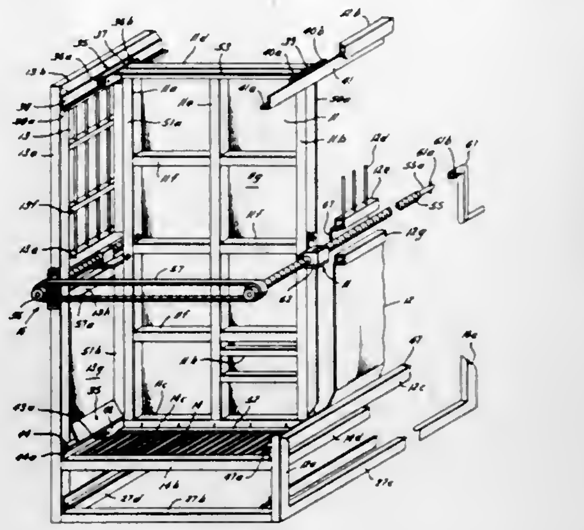
**3,760,768**

## CAGE APPARATUS

**Carol M. Patterson, Bryan, Tex., assignor to Research Equipment Company, Inc., Bryan, Tex.**
**Filed Mar. 13, 1972, Ser. No. 233,922**
**Int. Cl. A01k** *01/02*
**U.S. Cl. 119—17** **10 Claims**



Cage apparatus for housing an animal such as a primate including, top, bottom, front, rear and opposing side walls; the rear wall being movable toward the front wall in order to further confine the animal within the cage; threaded shaft members mounted with the side walls for synchronized rotation; and, advance means mounted with the rear wall and threadedly engaging the threaded shaft members whereby rotation of such shaft members moves the rear wall toward front wall of the cage until the primate is restrained against movement.

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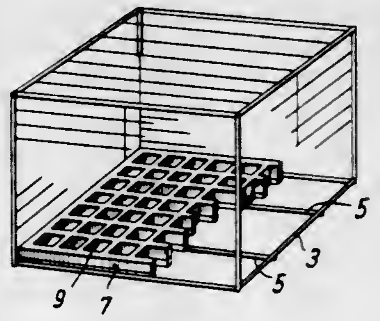
**3,760,769**

## FLOOR GRATE IN CAGES OR BATTERIES OF CAGES FOR KEEPING POULTRY

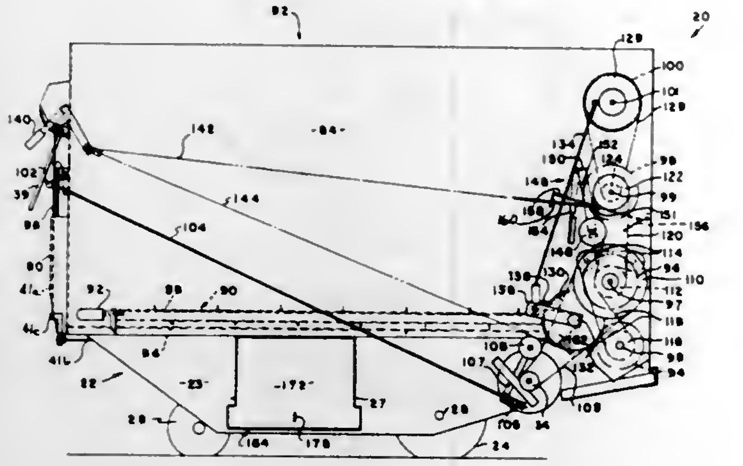
**Arthur Erfeling, Altenwalde, Germany, assignor to Lohmann-Apparatebau Kommanditgesellschaft, Cuxhaven, Germany**
**Filed Mar. 30, 1971, Ser. No. 129,503**
**Claims priority, application Germany, Apr. 4, 1970, P 20 16 227.0**
**Int. Cl. A01k** *31/14, 31/18*
**U.S. Cl. 119—48** **2 Claims**



The invention relates to a floor grate assembly comprising separate grate portions having similar configurations and designed to be placed in cages or batteries of cages for keeping poultry. If the poultry is destined to produce eggs they may roll over the floor grate. According to the invention, at least the upper side of the upper grate portion stays, which are contacted by the animal, consist of soft material and has a width suitably accommodated to the feet of the animal. Preferably, at least the upper surface of the grate stays consists of a soft plastic material, especially soft or plasticized PVC (polyvinylchloride) or rubber. The lower grate portion is formed of relatively hard material and is a direct support for the upper grate portion.

### 3,760,770
## BATTERY POWERED FEED CART

**Frank N. Weaver, and Keith B. Anderson, both of East Earl, Pa., assignors to Weaverline Corporation, Churchtown, Pa.**
**Filed May 31, 1972, Ser. No. 258,456**
**Int. Cl. A01k** *5/00*
**U.S. Cl. 119—52 B** **10 Claims**



The present invention relates to a battery powered feed cart having a relatively long, high and narrow body profile and including a feed box or hopper provided with a series of augers for distributing feed from the cart into a livestock feeding area. The battery powered feed cart is provided with a low, centrally disposed, slideable battery drawer which may be selectively extended outwardly from either side of the feed cart for easy and convenient access and serviceability. Also, the present feed cart is provided with a two speed, forward-reverse transmission and a unique control linkage for actuating said transmission in an efficient and orderly manner and generally providing a control medium that prevents premature and inadvertent "on the go" shifting between forward and reverse.

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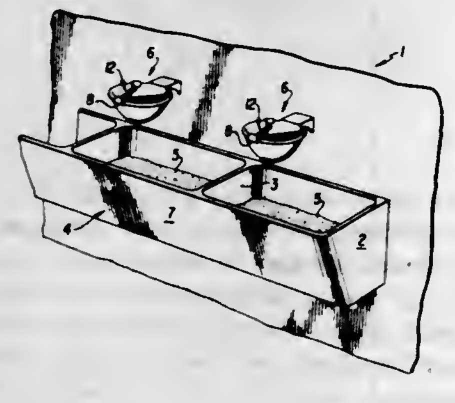
### 3,760,771
## METHOD AND APPARATUS FOR MINIMIZING THE FOULING OF A LIVESTOCK AREA AND PERMITTING AERATION AND VENTILATION AT A WATER RECEPTACLE

**Ernest E. Mummau, Rt. 1, Box 266 A, Oxford, Pa.**
**Filed Sept. 21, 1971, Ser. No. 182,457**
**Int. Cl. A01k** *07/00*
**U.S. Cl. 119—75** **8 Claims**



Method and apparatus for minimizing the fouling of a livestock area and characterized by the use of coil spring means operable to define an impediment to licking of an upper portion of a water body by livestock.

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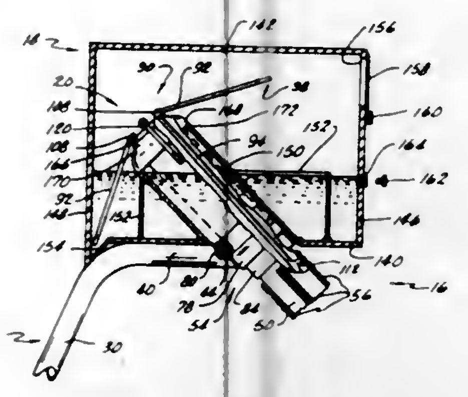
### 3,760,772
## LIVESTOCK TREATER

**Wayne H. Smith, Leoti, Kans.**
**Continuation-in-part of Ser. No. 68,149, Aug. 31, 1970, Pat. No. 3,669,078. This application June 5, 1972, Ser. No. 259,474**
**Int. Cl. A01k** *29/00*
**U.S. Cl. 119—157** **6 Claims**



A livestock treater has a frame with a plurality of legs, one of which is a turnable rubbing device. The frame has a reservoir mounted on the upper portion thereof with the rubbing device extending thereinto and therefrom. A dipper on the upper portion of the rubbing device is adapted to turn therewith and disperse liquid to the rubbing device and to the rubbing device bearing mount. More particularly, the invention is a cattle treater having a rotatable rubbing device integral with the supporting frame for a reservoir and having a dipper operable to remove liquid from the reservoir and transfer it to the rubbing device and to the rubbing device mounts for lubrication.

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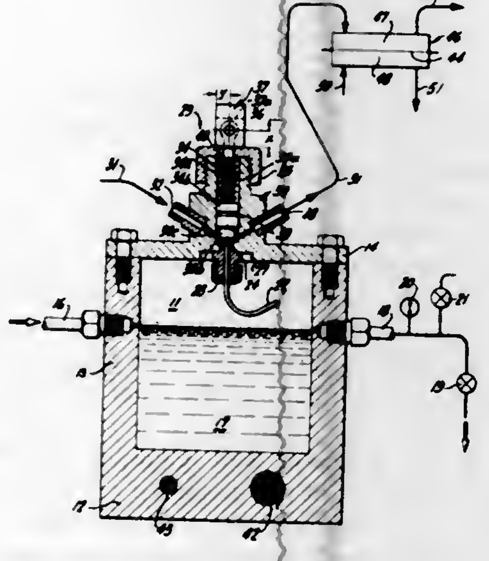
### 3,760,773
## GAS GENERATING AND METERING DEVICE AND METHOD

**Mark Victor Christensen, Menlo Park, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.**
**Filed Mar. 6, 1972, Ser. No. 231,979**
**Int. Cl. F22b** *1/00*
**U.S. Cl. 122—4 R** **6 Claims**



An apparatus and method for generating a vaporized liquid additive (e.g., water) at an accurately controlled flow rate primarily to accurately meter the formed vapor additive to a carrier gas stream. The apparatus includes a chamber for additive liquid with a gas vent tube having a capillary orifice, a conduit for carrier gas, and a valve assembly interposed between the gas vent tube and carrier gas conduit for opening and closing flow from the former into the latter. Means is provided for heating the chamber to a temperature within a range selected to vaporize the additive liquid at a predetermined vapor pressure. The flow rate past a capillary orifice of a given size of additive vapor formed in the chamber is dependent only upon temperature. The liquid additive is heated to a closely controlled evaporation temperature at which the vaporized material is imparted a selected vapor pressure and viscosity which, in turn, adjusts the flow rate. The additive vapor is metered into a fixed carrier gas stream in proportion to its flow rate, controlled by the evaporation temperature.

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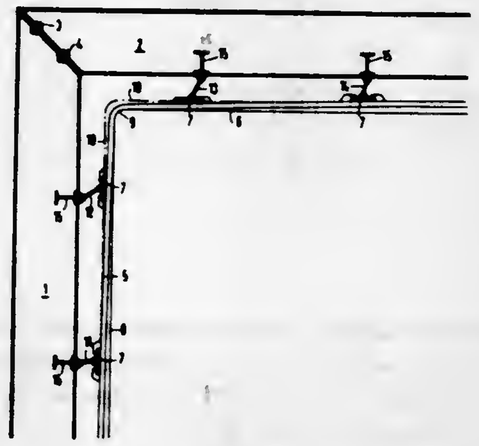
### 3,760,774
## BOILER HAVING GAS-TIGHT WELDED FURNACE WALLS

**Rupprecht Michel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany**
**Filed Nov. 15, 1971, Ser. No. 198,698**
**Claims priority, application Germany, Nov. 13, 1970, P 20 55 803.6**
**Int. Cl. F22b** *37/24*
**U.S. Cl. 122—6 A** **10 Claims**



A boiler mounted on a supporting frame structure has gas-tight welded furnace walls suspended at the top of the frame structure and arranged to form a furnace of rectangular cross-section wherein heat is generated when the boiler is operating. A member is connected to the walls and introduces a discontinuity therein. A plurality of horizontal bands surrounding the walls to take up the expansion and contraction forces developed therein because of the heat generated in the furnace and each of the horizontal bands consist of four segments connected one with the other to form a substantially rectangular figure, the segments being rigidly joined at their ends to form the corners of the figure. At least one additional band is disposed in the upper region of the member and a holding means connects the furnace walls to the additional band at the corners thereof so as to cause the walls to take up the portion of the forces acting in the region of the member. A force transfer means is connected between the plurality of bands and the furnace walls for guiding the boiler body in the plurality of bands so as to pretension the walls of the furnace so as to cause the walls to define obtuse angles at the corners of the furnace when there is no heat being developed therein, the angles being selected so as to cause the angles to become right angles as well as to cause the walls to extend parallel to adjacent band segments when the furnace is heated.

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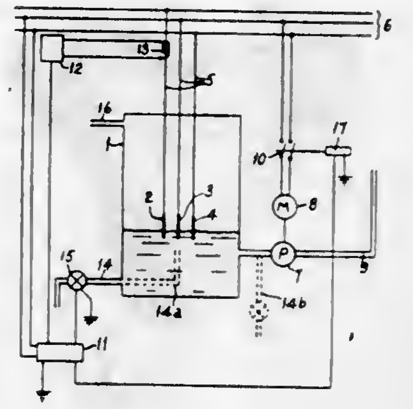
### 3,760,775
## ELECTRODE BOILERS

**Stanley Austen Williams, 10 Durlston Rd., Parkstone, Poole, Dorset, England**
**Filed Nov. 16, 1971, Ser. No. 199,187**
Claims priority, application Great Britain, Nov. 30, 1970, 56759/70
**Int. Cl. F22b** *37/54*
**U.S. Cl. 122—382** **15 Claims**

An electrode steam boiler comprises a water-receiving shell, water-heating electrodes supported in the shell, a pump for supplying feed water to the shell, means for causing intermittent operation of the pump, and means for withdrawing water from the shell just before and/or during and/or just after at least some of the periods of operation of the pump, so that water withdrawal occurs when the concentration of salts in the boiler water is highest.



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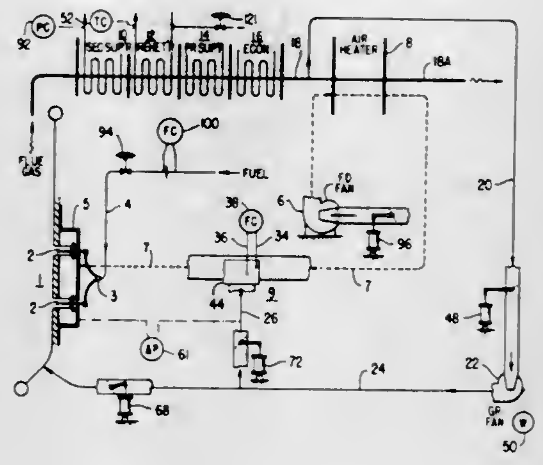
### 3,760,776
## SYSTEM FOR CONTROLLING THE INJECTION OF AN INERT GAS INTO THE AIR SUPPLIED A BURNER TO INHIBIT THE FORMATION OF $NO_x$

**Oliver W. Durrant, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.**
**Filed Dec. 16, 1971, Ser. No. 208,669**
**Int. Cl. F22g** *1/02*
**U.S. Cl. 122—459** **10 Claims**



A Combustion Control System for a vapor generator in which flue gas is recirculated to the furnace thereof to control reheat temperature and a controlled portion of the recirculated gas is injected into the air supplied the burners to inhibit the formation of nitrogen oxides.

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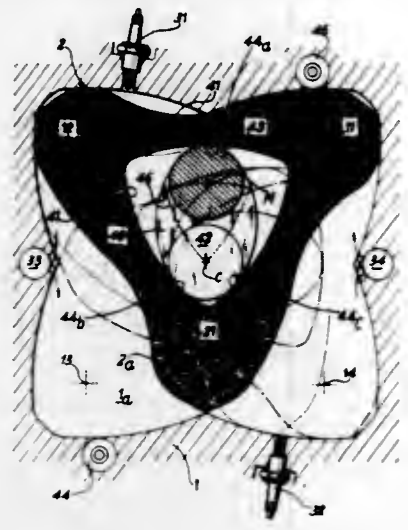
### 3,760,777
## ROTARY-PISTON ENGINE

**Marcel Leroy, and Albert Thiebaut, both of 126 boulevard d'Alsace Lorraine, Le Perreux, France**
**Filed July 13, 1972, Ser. No. 271,393**
**Claims priority, application France, July 16, 1971, 7126132**
**Int. Cl. F02b** *55/02, 55/14;* **F01c** *1/02*
**U.S. Cl. 123—8.45** **10 Claims**

The engine comprises a four-lobe cavity and a rotor having three heads which are each maintained in contact with the stator so as to define three variable-volume chambers between the internal surface of the stator and the external surface of the rotor.

An oval-shaped eccentric is rigidly fixed to an output shaft having an axis which coincides with the center of the stator



and is continuously applied at three points in tangential contact with a closed track having the shape of a curvilinear triangle.

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### 3,760,778
### VAPOR GENERATORS

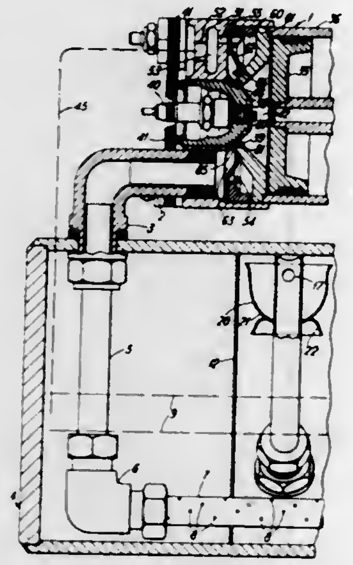
**Claude H. May, Beaumont Cambridge Pk., St. Peter Port, Guernsey (Channel Is.)**

**Filed Nov. 19, 1971, Ser. No. 200,445**

**Claims priority, application Great Britain, Dec. 4, 1970, 57,809/70**

**Int. Cl. F01p** *9/02;* **F01n** *3/04*

**U.S. Cl. 123—41.17** **5 Claims**



Apparatus for the generation of liquid vapor under pressure by means of heat from the combustion products of an internal combustion engine comprises a reservoir for the liquid to be vaporized having an inlet duct for the combustion products which communicates with the lower part of the interior of the reservoir. The combustion products pass from the inlet duct into the reservoir by way of a screen formed with a large number of small holes providing free passage for gas or liquid and this screen is preferably formed by an extension of the duct lying within the reservoir and formed with the small holes round its periphery. As a result of this construction the combustion product may bubble upwardly through liquid in the reservoir so as to transfer heat directly to the liquid with a high rate of heat transfer. An outlet from the reservoir is preferably so constructed as to reduce the amount of liquid carried over with the vapor and the outlet line may pass through at least one further closed vessel in order to trap any residual liquid. The internal combustion engine supplying the combustion products is preferably of the free-piston type and includes an arrangement for avoiding excessive heating of a release valve and its seat. For this purpose a duct is provided to supply liquid to a chamber in contact with the heated portion of the cylinder head and this chamber includes a portion adjacent the seat of the release valve which includes narrow outlets opening into the inlet duct in the region of reduced pressure immediately following the valve opening. In this way liquid is drawn into the inlet duct leading to appreciable cooling of the release valve and its seat.

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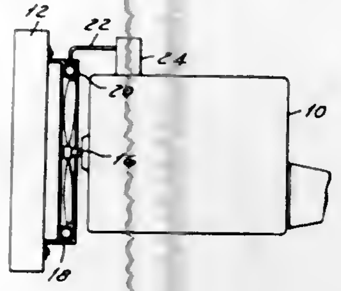
### 3,760,779
### VARIABLE PUMPING SYSTEM FOR A PROPELLER FAN

**Alastair S. MacLennan, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed May 3, 1972, Ser. No. 249,989**

**Int. Cl. F01p** *7/12*

**U.S. Cl. 123—41.05** **6 Claims**



An inflatable rubber tube is attached to the interior of a fan shroud for the cooling fan of a reciprocating engine where the tube surrounds the rotation envelope of the fan. A temperature sensing mechanism deflates the tube to increase the clearance space of the fan and thereby decrease pumping efficiency when engine temperature is below its normal operating level. The temperature sensing mechanism inflates the tube to increase pumping efficiency if engine temperature rises above its normal operating level.

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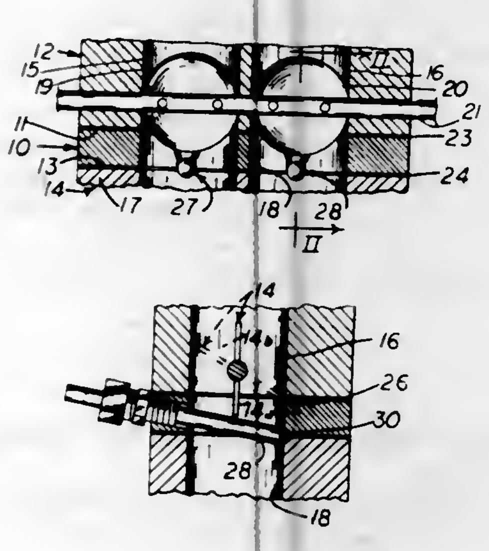
### 3,760,780
### ELECTRIC HEATING MEANS FOR FUEL VAPORIZATION IN INTERNAL COMBUSTION ENGINES

**Wilmer C. Jordan, 3915 W. Wrightwood Ave., Chicago, Ill.**

**Filed Aug. 12, 1971, Ser. No. 171,110**

**Int. Cl. F02m** *31/12*

**U.S. Cl. 123—122 F** **2 Claims**



Electric heating means for fuel vaporization in internal combustion engines to improve the efficiency, performance and starting thereof, an optimum amount of electrical power being supplied to the heating means during operation of the engine. Important features relate to the mounting of the electric heating means in a support plate between a carburetor and an intake manifold and in the construction and mounting of the heating means to achieve maximum efficiency of radiation of heat into the air-fuel mixture. Another feature relates to the use of a heating unit for each engine cylinder, mounted adjacent the intake valve. Further features relate to the construction of the heating means for improving the starting of small engines having a cubic inch displacement of on the order of thirty cubic inches or less.

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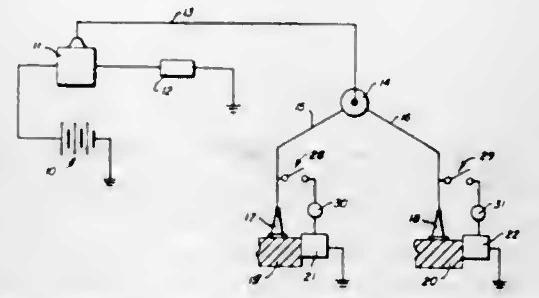
### 3,760,781
### ENGINE SAFETY SYSTEM HAVING SAFETY ASSEMBLY INDENTIFIABLY OPERABLE FOR EACH COMBUSTION CHAMBER

**Glen R. Boldt, R.R. 2, Baldwin, Wis.**

**Filed Mar. 26, 1971, Ser. No. 128,323**

**Int. Cl. F02p** *11/02, 11/06*

**U.S. Cl. 123—148 S** **12 Claims**



The safety system is for internal combustion engines, especially snowmobiles, having at least two combustion chambers; each combustion chamber is equipped with a safety assembly operable independently of the others.

Each individual safety assembly includes a temperature sensor which is so mounted as to sense an unsafe operating temperature for the specific combustion chamber with which it is arranged. Preferred mounting of the sensor is at the exhaust port for the combustion chamber, or alternately in a position for reading temperatures from the base brass or copper gasket for the spark plug. In the preferred embodiment, the sensor automatically actuates a responsive switch means when unsafe operating temperatures are reached; and this serves to interrupt temporarily the intermittent electrical actuation of the ignition means or spark plug for the combustion chamber. The interruption lasts for the time the chamber is at the unsafe temperature. When the chamber returns to a safe temperature, the switch automatically serves to reinstate the intermittent electrical actuation of the spark means for it. Additionally, however, a separate manually-operated switch permits negation of the effect of the automatic interruption so as to reinstate spark ignition even when the individual combustion chamber is at the unsafe temperature.

In an alternate embodiment, the temperature sensor actuates a responsive warning when an unsafe operating temperature for the chamber is reached. The warning may be such as to illuminate an instrument panel light or cause an audible sound (such as a buzzer) for the chamber. Thereafter, a manually-operated switch controlled by an operator may be shifted to terminate or interrupt temporarily the intermittent electrical actuation of the ignition means for the specific overheated chamber.

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### 3,760,782
### IGNITION CIRCUIT

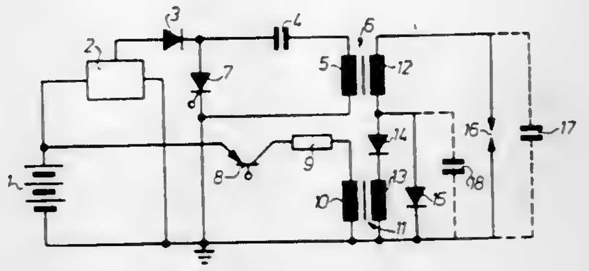
**Klaus Meyer, Schwieberdingen, and Gert Strelow, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Aug. 4, 1972, Ser. No. 277,926**

**Claims priority, application Germany, Aug. 6, 1971, P 21 39 360.2**

**Int. Cl. F02p** *3/06, 3/02*

**U.S. Cl. 123—148 E** **7 Claims**



An ignition circuit for combustion engines has an ignition transformer and an ignition spool, each having primary and secondary windings. The two secondary windings are series connected by means of a high voltage diode. Another high voltage diode bridges the first mentioned diode and the secondary of the ignition spool —both diodes being arranged to conduct current in the same direction. A sparkplug is connected between the free ends of the secondary winding.

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### 3,760,783
### INSTALLATION FOR FLAME STARTER DEVICES

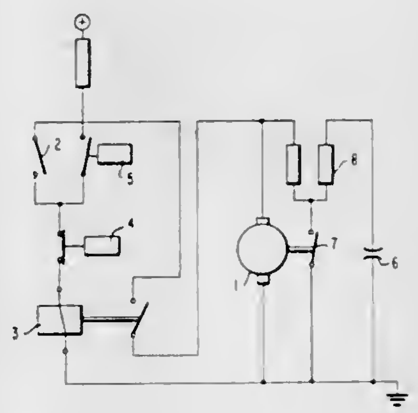
**Gerard Frankle, Grunback, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany**

**Filed Nov. 19, 1971, Ser. No. 200,395**

**Claims priority, application Germany, Nov. 21, 1970, P 20 57 309.5**

**Int. Cl. F02m** *31/04*

**U.S. Cl. 123—179 H** **10 Claims**



An arrangement for a flame starter installation in air-compressing internal combustion engine, which includes an electric switch that permits the continued operation of the flame starter installation after the starting operation of the engine only when the engine rotational speed does not drop below a predetermined engine rotational speed.

### 3,760,784

### EMERGENCY STOP DEVICE FOR AN ENGINE SUPPLIED BY THE INJECTION OF LIQUID FUEL

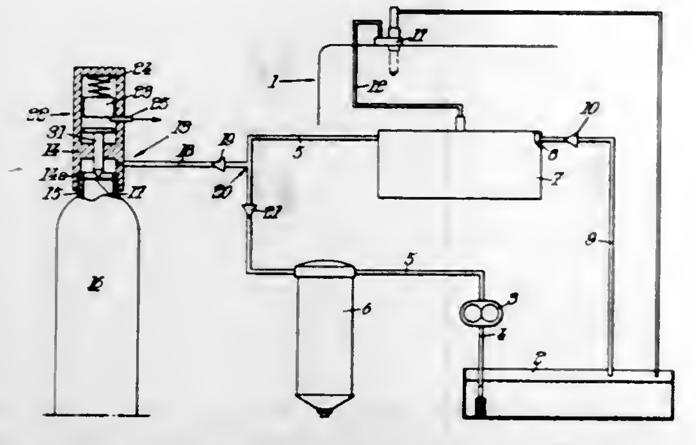
**Charles Grondel, La Rochelle; Yves Giraudeau, and Jean-Claude Geantet, both of Surgeres, all of France, assignors to Societe Surgerienne De Constructions Mechaniques, Surgeres, France**

**Filed Feb. 7, 1972, Ser. No. 224,093**

**Claims priority, application France, Feb. 11, 1971, 7104602**

**Int. Cl. F02b** *77/08;* **F02d** *17/04*

**U.S. Cl. 123—198 DB** **9 Claims**



The supply chamber of the injection pump is provided with a scavenging valve. A supply pump sends fuel through a fuel filter to the supply chamber. A bottle of gas has its mouth sealed by a diaphragm which is pressurized by a percussion mechanism in the case of an accident. The gas is thereby released, flows rapidly through a check-valve into the pipe leading to the supply chamber of the injection pump, sweeps the fuel from this chamber through this scavenging valve and stops the engine.

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### 3,760,785

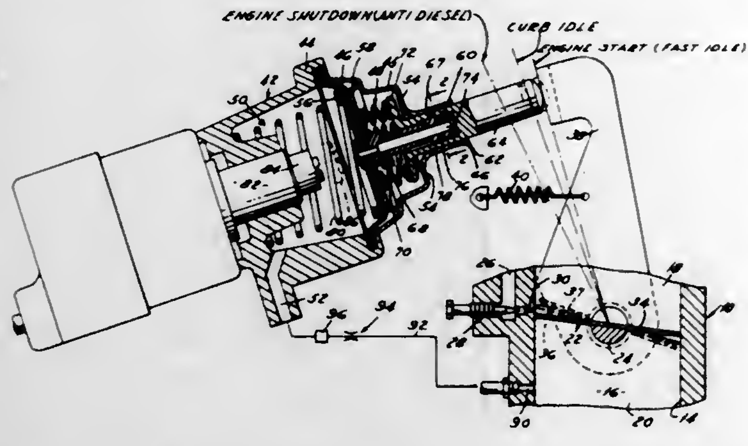
### CARBURETOR THROTTLE VALVE POSITIONER

**Robert S. Harrison, Detroit, and Harold E. Marcum, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Continuation-in-part of Ser. No. 159,892, July 6, 1971. This application Aug. 7, 1972, Ser. No. 278,674**

**Int. Cl. F02m** *19/12, 1/14;* **F02d** *23/00*

**U.S. Cl. 123—198 DB** **6 Claims**



One embodiment of a downdraft type carburetor has an idle system discharge port that is straddled by the normal idle speed and closed throttle positions of the throttle valve so as to permit idle speed fuel and air flow in one position and no flow in the other position; a third beyond normal idle, or fast idle speed position is provided for engine startup; another embodiment has a conventional idle system with a transfer port cooperating with the edge of the throttle valve so as to permit normal idle speed fuel and air flow in one position and a less combustible mixture flow in a second position, as well as a third beyond normal idle engine hot start position; the three positions of each embodiment are controled by a servo operatively engaging the throttle valve; the servo operation is controlled by intake manifold vacuum to initially close the throttle valve upon engine shut off, with a subsequent return of the throttle valve to its fast idle position for engine restarting, or to return the throttle valve to a normal idle position upon release of the vehicle accelerator pedal during engine operation.

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### 3,760,786

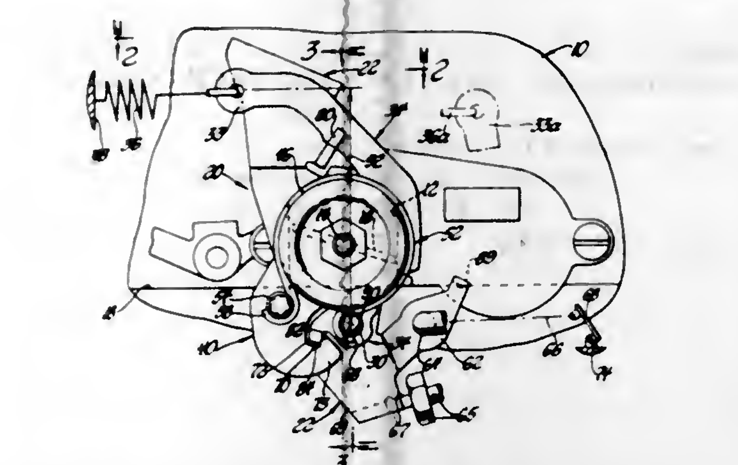
### REDUNDANT THROTTLE RETURN SYSTEM

Keith D. Marsh, St. Clair Shores, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

**Filed Dec. 1, 1972, Ser. No. 311,166**

**Int. Cl. F02b** *77/08;* **F02d** *11/04;* **B60k** *22/08*

**U.S. Cl. 123—198 DB** **7 Claims**



A throttle valve, situated within the induction passage of a fuel or air induction device, is carried by a throttle shaft for fixed rotation therewith; a lever fixedly connected to the throttle shaft is operatively connected to a remotely situated operator's foot-operated throttle control; a first throttle return spring is operatively connected to the first lever for returning the throttle valve to an idle position whenever the foot-operated throttle control is released; a second safety spring is provided for assuring the movement of the throttle valve to the idle position in the event that, for example, either the first throttle return spring or the associated throttle control linkage should fail while the throttle valve is in either a partly or fully opened position; and manually operated lever means is provided for at times operatively engaging the lever fixedly secured to the throttle shaft in order to thereby rotate the throttle valve toward an open position against the resistance of the safety spring.

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### 3,760,787

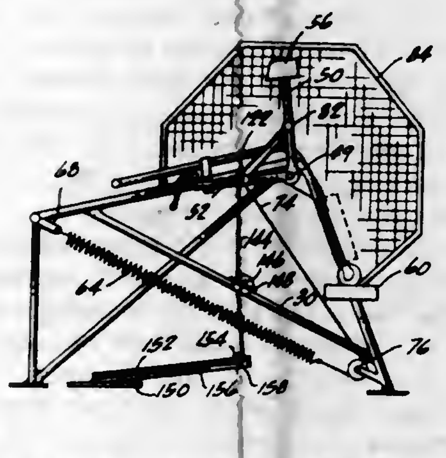
### SPRING TYPE BALL THROWING BOOSTER

**Edward W. Kahelin, 812 5th St., Manhattan Beach, Calif.**

**Filed Jan. 21, 1971, Ser. No. 108,528**

**Int. Cl. F41b** *7/00*

**U.S. Cl. 124—16** **3 Claims**



A portable, manually operated collapsible softball pitching machine having a spring actuated underhand pitching arm movable to operative position with a cocking lever. The ball pitching machine has a cocking lever that engages the spring biased pitching arm and moves it to a half cocked position where the pitching arm is latched. The cocking lever then engages a booster arm amd moves the pitching arm to a fully cocked position. Provided also is a pivotally mounted platform that is manually operated to tension a separate spring to add an additional force to the pitching arm.

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### 3,760,788

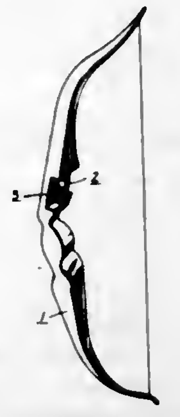
### ARCHERY BOW ARROW REST

**Robert B. Hartman, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.**

**Filed Sept. 3, 1971, Ser. No. 177,575**

**Int. Cl. F41b** *5/00*

**U.S. Cl. 124—41** **5 Claims**



An arrow rest for an archery bow that is universally applicable to arrow shafts of several diametrical sizes. The rest features a unitized generally V-shaped construction having two fixed outer extremities lending support to an arrow shaft. The outer extremities of the member are in a plane perpendicular to the plane formed by a bowstring and an archery bow. A surface on one of the extremities allows an arrow shaft that is placed upon it to position itself between the two outer extremities. A hollow base portion of the arrow rest allows for passage of a vane of an arrow, without interfering with a bow or arrow rest upon release of an arrow.

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### 3,760,789

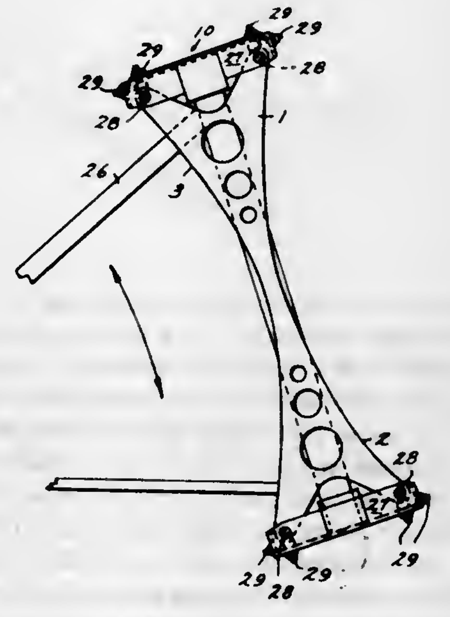
### SAW BLADE

**Paul E. Egleme, Rixensart, Belgium, assignor to Norton Company, Worcester, Mass.**

**Continuation-in-part of Ser. No. 868,694, Oct. 23, 1969, abandoned. This application Dec. 3, 1971, Ser. No. 204,631**

**Int. Cl. B28d** *1/06*

**U.S. Cl. 125—17** **9 Claims**



An improved saw structure includes a novel saw blade which can be mounted in a mounting frame to produce tensile stresses directed towards both edges of the elongate blade and generally perpendicular to a cutting edge of the blade. Further tensile stresses are directed lengthwise along the imaginary median line. The blade is provided with cutting elements along one of its edges, and its backing edge is arcuate in form.

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### 3,760,790

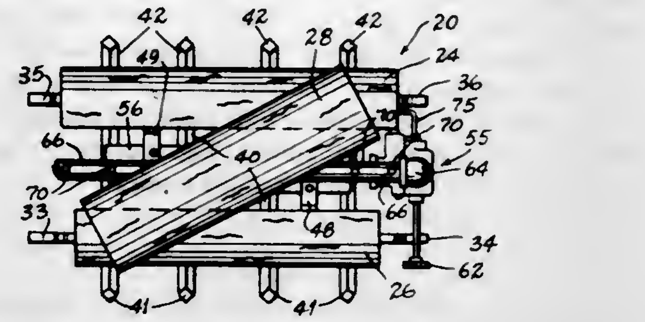
### GAS FIREPLACE UNIT

**William R. Voges, and Earl J. Hodges, both of Belleville, Ill., assignor to Rolsch Enamel & Mfg. Co., Belleville, Ill.**

**Filed Sept. 16, 1971, Ser. No. 181,086**

**Int. Cl. F24c** *3/04*

**U.S. Cl. 126—92 R** **19 Claims**



This invention relates to a gas fireplace unit and particularly to one that produces an authentic fire free from pollutants such as carbon monoxide and soot. The unit includes a grill, a burner pipe mounted on the grill, a plurality of gas jets having sized orifices mounted vertically in the burner pipe, and means for supplying a regulated amount of gas to the burner pipe to control the pressure in the pipe within prescribed limits. An imitation fuel such as gas logs is positioned on the grill relative to the jets such that the flames do not impinge on the logs. Clean yellow authentic flames are produced from the tips of the jets by proper control of the gas pressure in the burner and sizing of the jet orifices.

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### 3,760,791

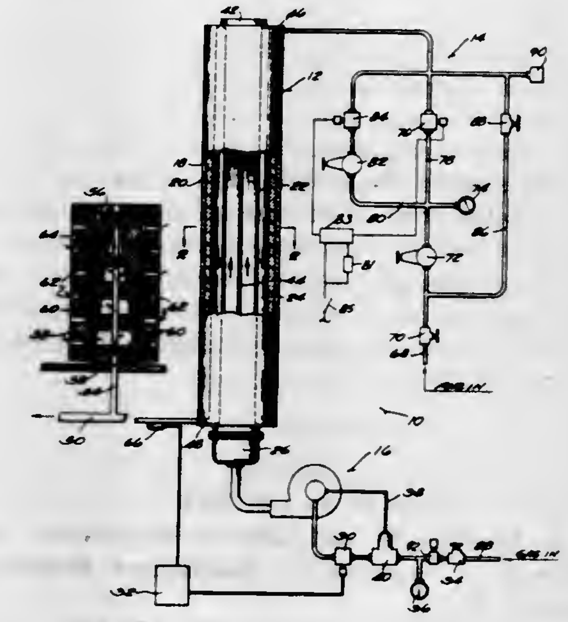
### APPARATUS FOR HEATING A PRESSURIZED GAS

**Edward L. Schlies; Harrison Weaver; John W. Haun, and Dwight L. Hensel, all of Brillion, Wis., assignors to Beatrice Foods Co., Chicago, Ill.**

**Filed Feb. 24, 1972, Ser. No. 228,944**

**Int. Cl. F24h** *3/10*

**U.S. Cl. 126—110 R** **9 Claims**



The heater includes a heat exchanger, a pressure control system and a heater. Pressurized gas (e.g. compressed air), the flow of which is regulated and controlled by the pressure control system, flows through an elongated, annular passage inside the heat exchanger between an elongated, tubular shell and a heating member which is heated by the heater (e.g. a concentric, elongated tubular flue through which hot combustion gases from a gas burner flow). The gas is heated as it flows in contact with the heated surface of the heating member.

The pressure control system automatically sequences the regulations of the flow of pressurized gas introduced into the heat exchanger so that the flow of heated gas delivered by the heater is initially at a relatively low volume and, after a predetermined time, is at a higher volume. A low volume bleed, continuously flowing through the annular passage while the heater is operating, prevents overheating of the heating member and keeps the heat exchanger and hardware connected thereto warm between heating cycles, thereby minimizing warm up time at the start of a heating cycle.

The heater is particularly adaptable for use in curing cores or molds made from moistened sand and a thermosetting binder material where rapid heat curing is desired, without the eroding effect of an initial high pressure gas flowing therethrough prior to curing of the binder.

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### 3,760,792

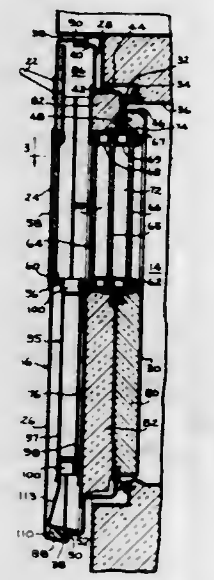
### FLOW-THROUGH SHUTTER FOR OVEN DOOR WINDOW

**James A. White, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Sept. 5, 1972, Ser. No. 286,297**

**Int. Cl. F24c** *15/04*

**U.S. Cl. 126—198** **10 Claims**



A door construction having a transparent sealed window for use with a high temperature self-cleaning oven. The door includes a plurality of glass panes and a cooling air channel extending between two adjacent glass panes, and a hollow radiation blocking shutter which slides into either a lower hidden position or an upper exposed position blocking the window. The shutter in its exposed position covers over the faces of the adjacent glass panes and forces the cooling air to pass upwardly through the shutter to protect the panes from airborne particles of soil that might otherwise lodge on the glass and obscure the visibility through the window.

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### 3,760,793

### DEEP FAT FRYER

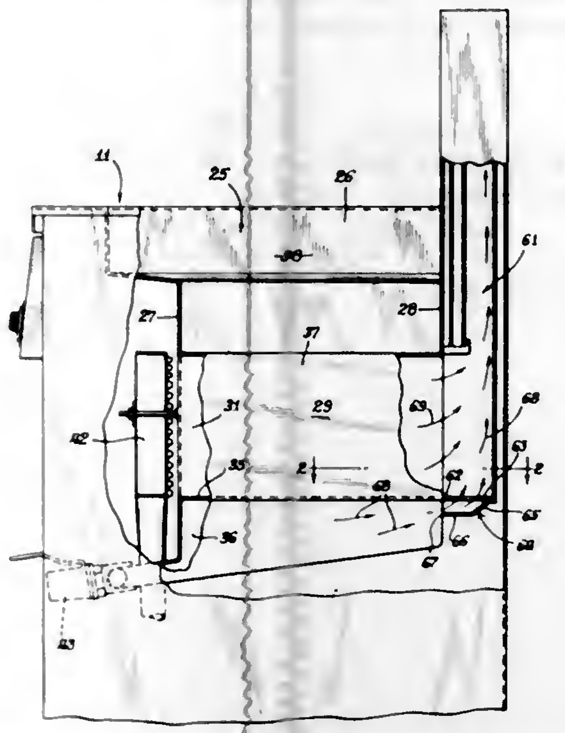
**Richard J. Anetsberger, and John A. Anetsberger, both of Northbrook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.**

**Filed Feb. 14, 1972, Ser. No. 226,008**

**Int. Cl. A47j** *27/00*

**U.S. Cl. 126—391** **4 Claims**

A deep fat dryer having a cooking pot, combustion chambers extending front-to-rear under the pot, burners adjacent front ends and a vertical flue at rear ends of combustion chambers, characterized by a horizontal bottom wall for the flue with an air intake opening of less area than the horizontal area of the flue, and a cool air scoop secured along its rear edge adjacent rear edge of opening and having a depending portion comprising a forwardly and downwardly inclined section and a horizontal section defining a free edge forwardly of the air intake opening spaced below the bottom flue wall a distance substantially sixty percent of the front-to-rear width of the air intake opening.



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### 3,760,794

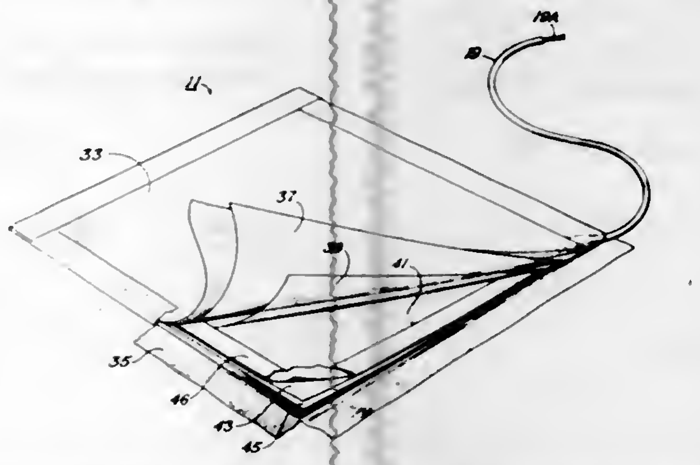
### RESPIRATION MONITORING APPARATUS AND METHOD

**Raymond B. Basham, Fort Worth, Tex., assignor to Electronic Monitors, Inc., Fort Worth, Tex.**

**Continuation-in-part of Ser. No. 97,737, Dec. 14, 1970, abandoned. This application Sept. 1, 1971, Ser. No. 176,983**

**Int. Cl. A61b** *5/08*

**U.S. Cl. 128—2 R** **11 Claims**



Apparatus and method for monitoring the respiration of a patient through utilization of a force responsive transducer, which ideally is a capacitor transducer constructed from alternate layers of conductive and nonconductive materials that are flexible such that when placed beneath a patient or a resilient patient support, such as a mattress, the distance between the plates of the transducer changes for the purpose of producing electrical responses that upon amplification energize indicator means, such as a visual alarm or an audible alarm. The transducer is responsive to the vertical, reciprocating forces and motions caused by respiration and along with the associated circuitry, is sufficiently sensitive to energize an alarm upon sensing a cessation of respiration.

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### 3,760,795

### SLEEVE FOR MEASURING BLOOD PRESSURE

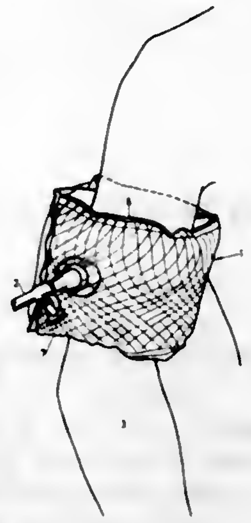
**Ter Je Adelhed, Solna, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany**

**Filed Jan. 12, 1972, Ser. No. 217,335**

**Claims priority, application Sweden, Feb. 1, 1971, 1185/71**

**Int. Cl. A61b** *5/02*

**U.S. Cl. 128—2.05 C** **4 Claims**



A sleeve for measuring blood pressure has an inner hollow space connected with a source of pressure means. The invention is particularly characterized by the provision of an inner tubular piece consisting of an elastic thermoplastic artificial material and an outer tubular piece of substantially the same length consisting of bendable thermoplastic artificial material which is provided with a connection to the inner space. The inner space is formed by welding the edges of the two pieces, said edges extending substantially transversely to the longitudinal direction of the pieces.

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### 3,760,796

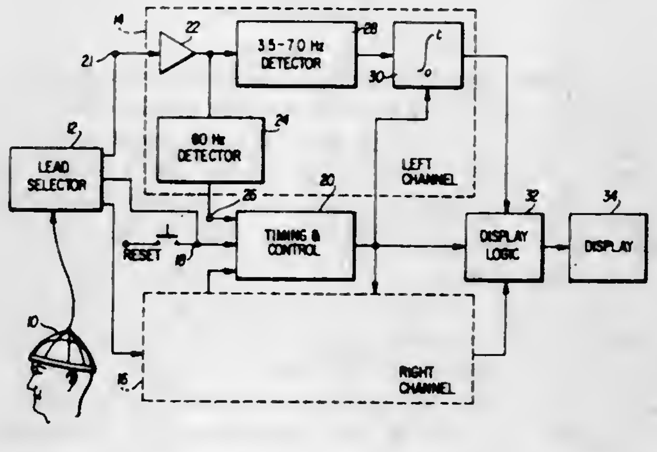
### METHOD AND APPARATUS FOR AUTOMATIC ANALYSIS OF BRAIN WAVE SIGNALS

**Lee R. Baessler, Manhattan Beach; Lech Pisarski, and Harvey F. Glassner, both of Los Angeles, all of Calif., assignors to Humetrics Corporation, Los Angeles, Calif.**

**Filed Sept. 29, 1971, Ser. No. 184,825**

**Int. Cl. A61b** *5/00*

**U.S. Cl. 128—2.1 B** **22 Claims**



A method and apparatus for the automatic analysis of the electroencephalogram waveform through the evaluation of the waves of the EEG waveform which occur within the frequency range from 3.5 Hz. to 7.0 Hz. within a predetermined time interval, e.g. 10 seconds. A linear ramp signal is generated for the time periods between zero crossovers of the EEG signal which represent a frequency within the 3.5 to 7 Hz. range. The cumulative amplitude that the ramp attains during the predetermined time interval is compared with a predetermined value to indicate a characteristic of the EEG waveform.

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### 3,760,797

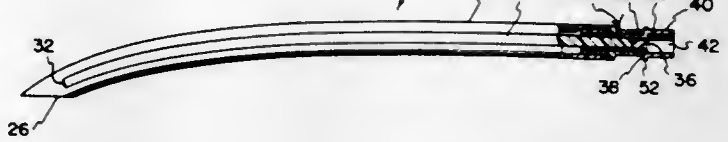
### METHOD AND APPARATUS FOR ENDOTRACHEAL INTUBATION

**Vyrle D. Stauffer, 7174 Carr, Arvada, Colo.**

**Filed Feb. 3, 1971, Ser. No. 112,342**

**Int. Cl. A61b** *1/06, 16/00, 25/00*

**U.S. Cl. 128—6** **5 Claims**



This invention relates to novel apparatus for endotracheal intubation which comprises a rigid acrylic rod sized to fit easily inside a trachea tube and extend from end-to-end thereof, and a source of illumination fastened to one end of the rod in position to direct a light beam therealong, said light source and rod cooperating to stiffen the trachea tube while illuminating the area beyond the distal end thereof. The invention also encompasses the unique method for inserting a flexible tube into the trachea which includes the steps of stiffening the tube by inserting a rigid acrylic rod therein, illuminating the area beyond the distal end of said tube by directing a light beam into the proximal end of the rod, passing the distal end of the rod thus sheathed into the larynx illuminated thereby, and removing the rod and associated light source from the proximal end of the tube while the latter remains in place.

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### 3,760,798

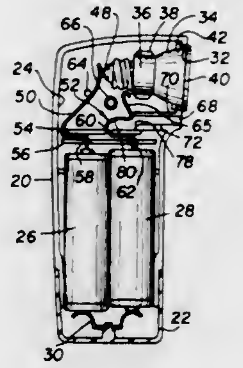
### SELF-ILLUMINATING TONGUE DEPRESSOR AND THE LIKE

**Ladislav Leslie Edinger, 1084 Allerton Ave., Bronx, N.Y.**

**Filed Nov. 24, 1971, Ser. No. 201,740**

**Int. Cl. A61b** *1/24*

**U.S. Cl. 128—16** **8 Claims**



A self-illuminating gripping handle adapted to have attached to it a tongue depressor or the like, the insertion of the tongue depressor within the handle urging an internal spring-like switch through closing movement completing an energizing circuit which provides illumination contributing to effective use of the tongue depressor.

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### 3,760,799

### SONIC TEETH-CLEANING APPARATUS AND METHOD

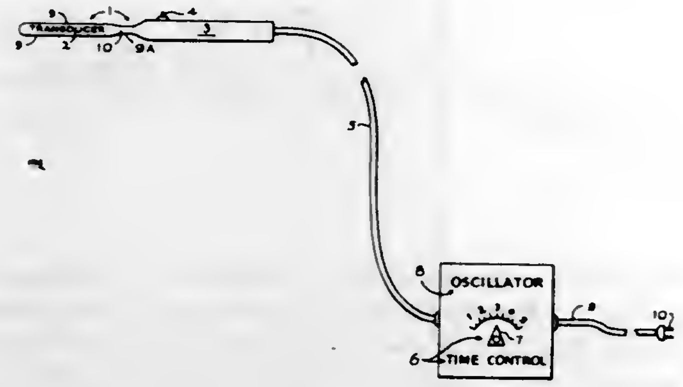
**David Lamar Crowson, 6 Qual Jules Courmont, Petal, Miss.**

**Filed Mar. 2, 1972, Ser. No. 231,100**

**Int. Cl. A61h** *9/00*

**U.S. Cl. 128—24 A** **8 Claims**

Apparatus for cleaning teeth with liquid dentifrice, optionally mixed with dental-disease-inhibiting agents, comprising: a transducer of a size and nature adapted to be held in the mouth for producing ultrasonic (or subsonic) vibrations in the mouth-inclosed liquid; a handle attached to the transducer; a circuit leading to the transducer, including an electric oscillator, an optional automatic time control, a switch actuator (optionally a pushbutton), and an electric cord that goes thru the handle. The portion of the transducer assembly that fits between the lips is sufficiently small in vertical thickness to



allow the lips to seal around this portion against escape of the dental solution. The invention includes a simple and efficient method of cleaning teeth comprising filling the mouth with liquid dentifrice and sonically (ultrasonically or subsonically) agitating and circulating the liquid into all areas of the mouth.

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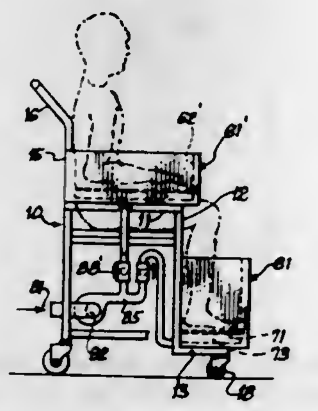
### 3,760,800
### FLUIDOTHERAPY APPARATUS UTILIZING GAS-FLUIDIZED SOLIDS

**Herbert Kenneth Staffin, Colonia, N.J.; Ernest J. Henley, Houston, Tex., and George E. Hansen, Edison, N.J., assignors to Procedyne Corporation, New Brunswick, N.J.**

**Filed June 19, 1972, Ser. No. 264,069**

**Int. Cl. A61h** *29/00*

**U.S. Cl. 128—24.1** **8 Claims**



Apparatus and method for fluidotherapeutic treatment of parts of the human body, by the use of a gas-fluidized-solids bed in which the part is submerged and subjected to combined heat, massage and/or medication.

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### 3,760,801
### THERAPEUTIC EXERCISING APPARATUS FOR TORSO AND BODY EXTREMITIES

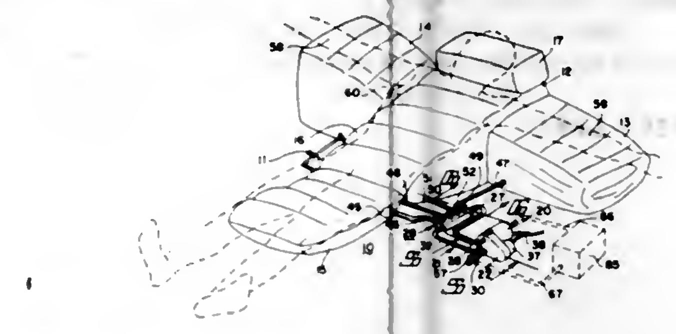
**Alexander T. Borgeas, 129 W. Catalina Dr., Phoenix, Ariz.**

**Filed Mar. 22, 1971, Ser. No. 126,594**

**Int. Cl. A61h** *1/00*

**U.S. Cl. 128—25 R** **3 Claims**

A therapeutic apparatus for automatically inclining and declining the torso and upper and lower extremities of a person from a substantially horizontal to a vertically sloping position to aid in controlling the circulation and position of these members.



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### 3,760,802
### SUPPORTING DEVICE FOR FRACTURED TUBULAR BONES

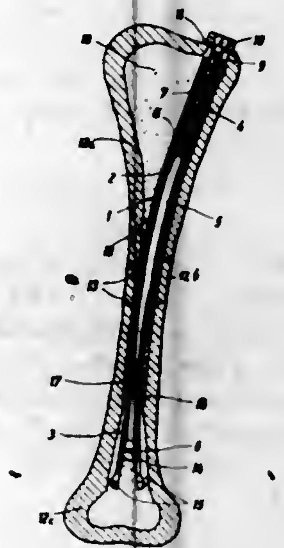
**Artur Fischer, Altheimer Strasse 219, Tumlingen, Germany, and Jean-Nicolas Muller, Strasbourg, France, assignors to said Fischer, by said Muller, Tumlingen, Germany**

**Filed Feb. 18, 1972, Ser. No. 227,371**

**Claims priority, application Germany, Feb. 26, 1971, P 21 09 162.3; Mar. 30, 1971, P 21 15 189.6; Apr. 23, 1971, P 21 19 902.0**

**Int. Cl. A61f** *5/04*

**U.S. Cl. 128—92 BC** **12 Claims**



An elongated supporting sleeve is to be introduced into a longitudinally extending curved interior cavity of a fractured tubular bone. It is curved in at least substantial conformance with the curvature of the bone cavity and has an internal passage extending longitudinally and through which an expander rod of similar curvature extends. At the front end of the supporting sleeve is located an expansion element which, when the expander rod is withdrawn in axially rearward direction through the passage of the supporting sleeve, is expanded into engagement with the inner walls bounding the bone cavity. An instrumentality is provided for so withdrawing the expander rod that it will perform only a rearward axial movement but will not turn.

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### 3,760,803
### METHOD OF SELF-INJECTION USING MUSCLE ELEVATING ARM CLAMP

**Laura A. Boothby, 22 Poplar St., Hudson Falls, N.Y.**

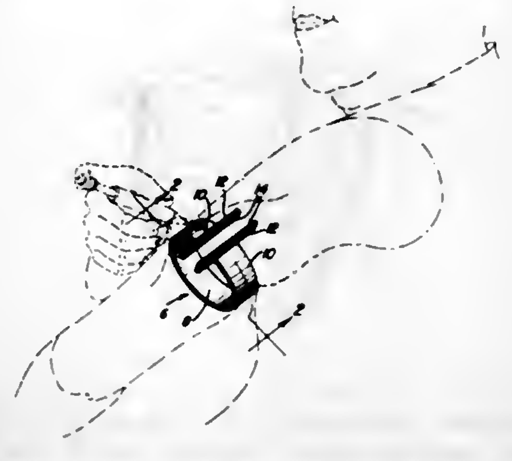
**Filed Oct. 27, 1971, Ser. No. 193,000**

**Int. Cl. A61m** *5/00*

**U.S. Cl. 128—215** **1 Claim**

A method for self-injection using a special purpose arm clamp or band whereby diabetic when called upon, without

aid or assistance, can prepare and condition a predetermined arm site for self-injecting the needle of an insulin syringe. The clamp comprises a resilient C-shaped arm band having normally spaced terminal ends provided with integral horizontally elongated jaws. The band and jaws are unified, made of a noncorrodible sheet material and have requisite resilient and constrictive properties. The opposed, spaced, parallel jaws have inwardly disposed faces covered with compatibly usable, compressively resilient pads.



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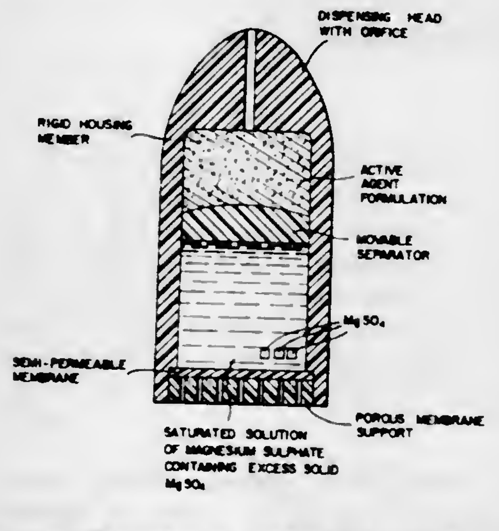
### 3,760,804
### IMPROVED OSMOTIC DISPENSER EMPLOYING MAGNESIUM SULPHATE AND MAGNESIUM CHLORIDE

**Takeru Higuchi, Lawrence, Kans., and Harold M. Leeper, Mountain View, Calif., assignors to Alza Corporation, Palo Alto. Calif.**

**Filed Jan. 13, 1971, Ser. No. 106,031**

**Int. Cl. A61m** *31/00*

**U.S. Cl. 128—260** **7 Claims**



An osmotic dispenser is described which is capable of releasing to its outside environment concentrations of active agent at an osmotically controlled rate over a prolonged period of time, and the motive force of which dispenser depends on the osmotic pressure developed by either (1) an aqueous solution of magnesium sulphate, preferably a saturated aqueous solution, or (2) a saturated aqueous solution of magnesium chloride containing excess magnesium sulphate solute in solid form, against a hypotonic aqueous environment.

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### 3,760,805
### OSMOTIC DISPENSER WITH COLLAPSIBLE SUPPLY CONTAINER

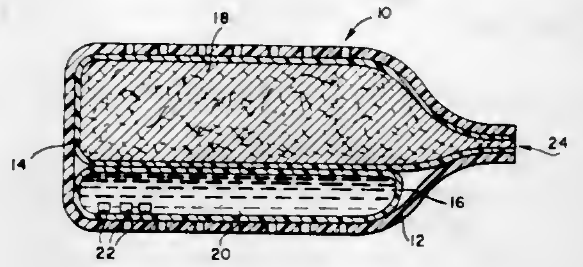
**Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.**

**Filed Jan. 13, 1971, Ser. No. 106,131**

**Int. Cl. A61m** *31/00*

**U.S. Cl. 128—260** **18 Claims**

An osmotic dispenser is comprised of (1) a water porous housing member confining (2) a first flexible bag of relatively impervious material containing an active agent and provided with active agent dispensing head, and (3) a second bag of controlled permeability to moisture containing a solution which exhibits an osmotic pressure gradient against water. The first and second bags are disposed within the housing member such that water permeates from the external environment through the housing and migrates by osmosis into the solution contained in the second bag which increases in volume thereby generating mechanical force on the first bag, which mechanical force in turn ejects the active agent out of the apparatus.



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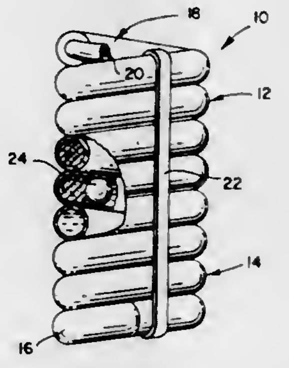
### 3,760,806
### HELICAL OSMOTIC DISPENSER WITH NON-PLANAR MEMBRANE

**Harold M. Leeper, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.**

**Filed Jan. 13, 1971, Ser. No. 106,132**

**Int. Cl. A61m** *31/00;* **A61f** *5/46*

**U.S. Cl. 128—260** **14 Claims**



An osmotic active agent dispenser is comprised of: (1) a first helical compartment of relatively impervious material containing an active agent and provided with a dispensing head for releasing active agent to the exterior of the dispenser; (2) a second helical compartment of controlled permeability to water containing a solution of an osmotically effective solute which exhibits an osmotic pressure gradient against water, the second compartment being interconnected with said first compartment to define a continuous helix therewith; and (3) a movable barrier member separating the first from the second compartment. The barrier member is slidably responsive to an increase in volume in the second compartment via absorption of water by osmosis therein; whereby as water flows into the compartment (2) of the dispenser in a tendency towards osmotic equilibrium with its environment, corresponding pressure is exerted behind the barrier (3) driving it into and diminishing the volume of the compartment (1), in turn continuously ejecting active agent thereout at an osmotically controlled rate over a prolonged period of time.

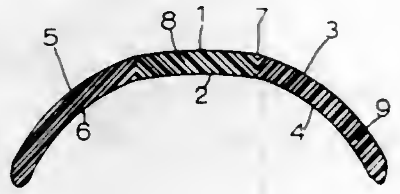
### 3,760,807
### METHOD OF RESHAPING THE CORNEA TO ELIMINATE REFRACTIVE ERRORS

**Charles W. Neefe, Box 429, Big Spring, Tex.**

**Continuation-in-part of Ser. No. 45,333, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 562,022, May 16, 1966, abandoned. This application Apr. 7, 1972, Ser. No. 241,904**

**Int. Cl. A61m** *31/00*

**U.S. Cl. 128—260** **12 Claims**



A method of correcting refractive errors of the eye by changing the shape of the central segment of the cornea by softening the corneal tissue with drugs and reshaping the cornea to the surface of a concave mold.

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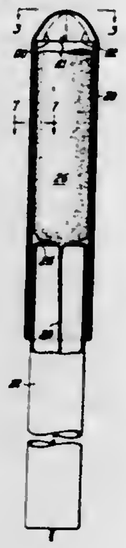
### 3,760,808
### TAMPON APPLICATOR ASSEMBLY

**Keith T. Bleuer, 1663 Wilshire Dr., N. E., Rochester, Minn.**

**Filed Dec. 1, 1969, Ser. No. 881,180**

**Int. Cl. A61f** *13/20*

**U.S. Cl. 128—263** **6 Claims**



A tampon applicator assembly having inner and outer telescoped cardboard tubes and an absorbent fibrous tampon body within the outer tube so that the inner tube may expel the fibrous body out of the outer tube, with a cap or sack of film covering the end of the fibrous body protruding from the outer tube and preferably covering a part or all of the outer surface of the outer tube with weld flanges of the cap or sack being inside, whereby insertion of the assembly into a body cavity is facilitated.

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### 3,760,809
### SURGICAL LANCET HAVING CASING

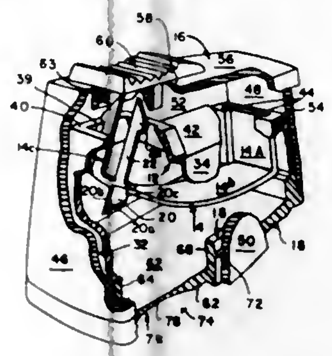
**Stephen P. Campbell, Jr., Brookline, Mass., assignor to Damon Corporation, Needham Heights, Mass.**

**Filed Oct. 22, 1971, Ser. No. 191,948**

**Int. Cl. A61b** *17/32, 17/34, 5/14*

**U.S. Cl. 128—314** **6 Claims**

A surgical lancet which has a blade resiliently driven to lance dermal tissue with a snap action has a presser foot that forms a cavity directly over the dermal tissue being lanced and has a cavity-encircling rim for placing against tissue adjacent the lancing site. The rim presses against the dermal tissue to pucker tissue at the lancing site into the cavity and to constrict veinal capillaries adjacent the lancing site. The puckered tissue ensures that the lance is not pressed into bone structure, and the vasoconstriction causes a localized engorgement at the lancing site. The lancet further has a manually holdable casing that forms an aseptic enclosure for the lancing blade, with a septum that the blade pierces in snaping to the lancing position.



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### 3,760,810
### SURGICAL LIGATING INSTRUMENT OF THE ENDOSCOPE TYPE

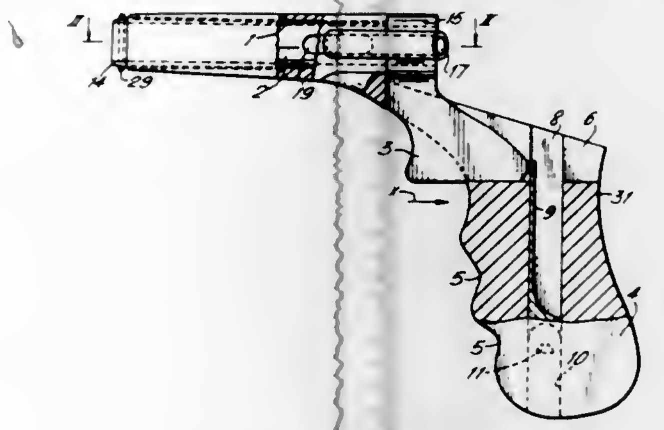
**Marc E. J. Van Hoorn, 197 Avenue Winston Churchill, Bruxelles, Belgium**

**Filed Dec. 7, 1971, Ser. No. 205,555**

**Claims priority, application Belgium, Dec. 11, 1970, 97445; June 1, 1971, 104090**

**Int. Cl. A61b** *17/12*

**U.S. Cl. 128—326** **24 Claims**



A surgical instrument for ligating internal structures of a cavity in the human body, such as internal hemorrhoids, by means of at least one elastic cord comprises two tubes mounted for relative sliding movement one inside the other, the inner tube protruding at the front of the outer tube. A grip member is connected to one of said two tubes and has actuating means to produce a relative displacement of the outer tube forwardly relative to the inner tube. The outer tube and/or the inner tube has a greater length than the depth of the cavity up to the structure to be ligated, so that it constitutes an endoscope.

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### 3,760,811
### ENDOTRACHEAL TUBE CLAMP

**Daniel Edward Andrew, Waterloo, Ontario, Canada**

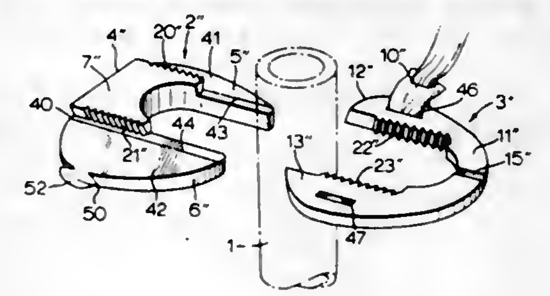
**Continuation-in-part of Ser. No. 843,020, July 18, 1969, Pat. No. 3,602,227. This application Jan. 20, 1971, Ser. No. 108,158**

**Claims priority, application Canada, Jan. 20, 1970, 072534**

**Int. Cl. A61m** *25/02, 16/00;* **A44b** *21/00*

**U.S. Cl. 128—351** **4 Claims**

A disposable clamp for holding an endotracheal tube or the like during use comprises a pair of superimposed wafer-like clamping members formed with complementary cut-away portions to define an aperture for receiving the tube. The members provide respective pairs of parallel upstanding walls of sawtooth profile which engage one another to prevent separation of the clamping members. The members are retained in superimposed relation by means of interfitting dovetail or equivalent formations. When assemled, the clamping members can be separated only by breaking one of the clamping members, for which purpose a line of easy fracture is provided.



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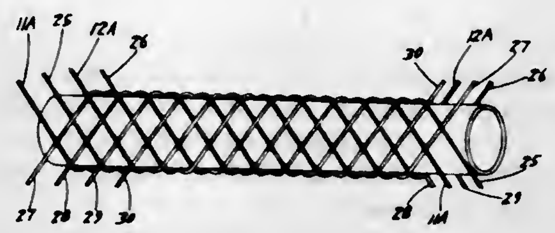
### 3,760,812
### IMPLANTABLE SPIRAL WOUND STIMULATION ELECTRODES

**Gerald W. Timm, and William E. Bradley, both of Minneapolis, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.**

**Filed Mar. 19, 1971, Ser. No. 126,145**

**Int. Cl. A61n** *1/04*

**U.S. Cl. 128—418** **10 Claims**



Electrical stimulation electrodes for implantation within a living body for transmission of stimuli to excitable neural or contractile cells. The electrodes are characterized by flexibility to permit following of contour variations and maintenance of electrical contact with the stimulation region. The electrodes include a pair of parallel spaced apart helically wound conductors maintained in this configuration. When the electrode is implanted, undesired excitation of nearby structures can be avoided.

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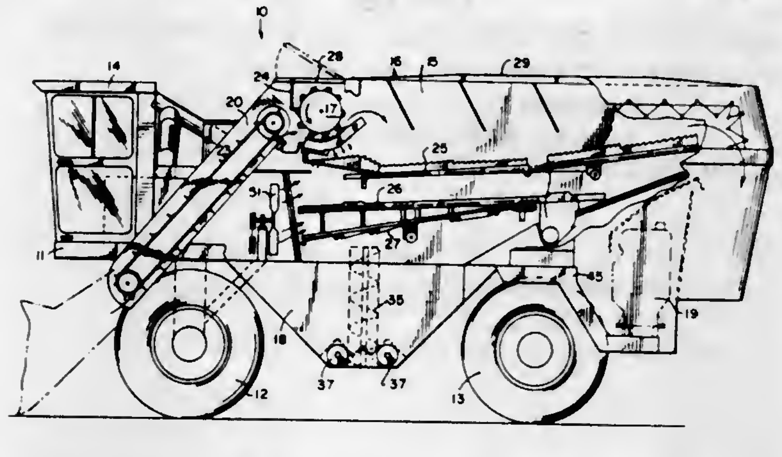
### 3,760,813
### COMBINE WITH GRAIN BIN BENEATH SIEVES

**Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.**

**Filed Dec. 9, 1971, Ser. No. 206,448**

**Int. Cl. A01f** *12/18*

**U.S. Cl. 130—27 HF** **8 Claims**



The combine has the threshing cylinder, the grain separating mechanism, and the casing containing same located entirely above the wheels. the grain bin is located beneath the casing in the space between the wheels, and is substantially wider than the casing. The engine is mounted on a cantilevered drop frame behind the rear wheel with the engine base lower than the top of the wheels, and beneath the rear part of the grain separating means. The fan and its intakes are located high above the ground. A boom type grain delivery means has a portion extending vertically upward from the grain bin outside of the casing.

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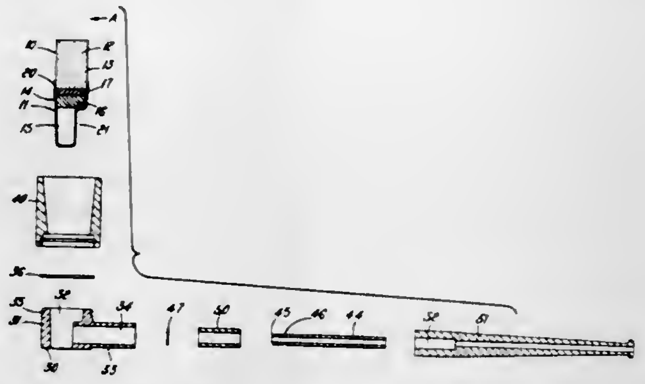
### 3,760,814
### TOBACCO CARTRIDGE FOR PIPE-LIKE SMOKING DEVICE

**Kenneth B. Fether; David B. L. Brickwood, and Peter Steer Sampson, all of London, England, assignors to Imperial Tobacco Group Limited, Bristol, England**

**Continuation of Ser. No. 848,483, Aug. 8, 1969, abandoned. This application Aug. 31, 1971, Ser. No. 176,700**

**Int. Cl. A24d** *01/14*

**U.S. Cl. 131—3** **8 Claims**



A cartridge of tobacco for use with a pipe-like smoking device. The cartridge includes a charge of tobacco mounted in a rigid support which holds one end thereof and forms an enclosed chamber which chamber includes a trap chamber for waste juices from the tobacco. An aperture in the rigid support provides communication with the enclosed chamber for access to one end of the tobacco charge therethrough.

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### 3,760,815
### PREPARATION OF RECONSTITUTED TOBACCO

**Edward J. Deszyck, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.**

**Filed Jan. 6, 1971, Ser. No. 104,459**

**Int. Cl. A24b** *03/14*

**U.S. Cl. 131—140 C** **10 Claims**

Tobacco parts are treated with ammonium salts of organic acids, added or formed in situ, in the presence of ammonium hydroxide to obtain an alkaline pH, to release tobacco pectins and form calcium and/or magnesium salts with the organic anions. The pectins act as a binding agent and together with the treated tobacco and precipitated salts constitute a mix that may be cast or otherwise treated to form a reconstituted tobacco product.

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### 3,760,816
### METHOD AND APPARATUS FOR CONDITIONING TOBACCO

**Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany**

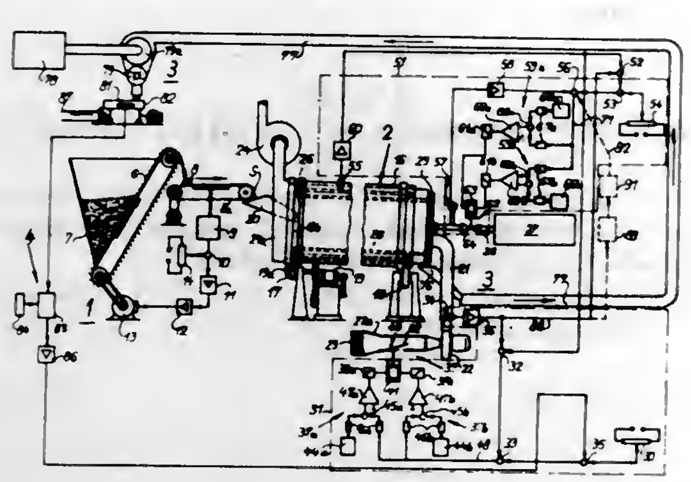
**Filed Apr. 14, 1971, Ser. No. 134,004**

**Claims priority, application Germany, Apr. 22, 1970, P 20 19 369.5**

**Int. Cl. A24b** *09/00;* **F26b** *03/04*

**U.S. Cl. 131—140 R** **20 Claims**

The moisture content of a tobacco stream which contains a fixed quantity of tobacco per unit length is reduced during flow through a revolving drum which is heated by steam, oil or gaseous combustion products. At the same time, the tobacco stream exchanges heat with hot air which is conveyed through the drum counter to the direction of tobacco movement. The tobacco is thereupon cooled and its moisture content is measured to automatically adjust the temperature of heated air and the temperature of the drum when the measured moisture content deviates from a desired moisture content. The heating device for the drum is indirectly adjusted by a thermometer which measures the temperature of heated air. The regulating unit for the air heating device is directly connected with the unit which measures the moisture content of conditioned tobacco.



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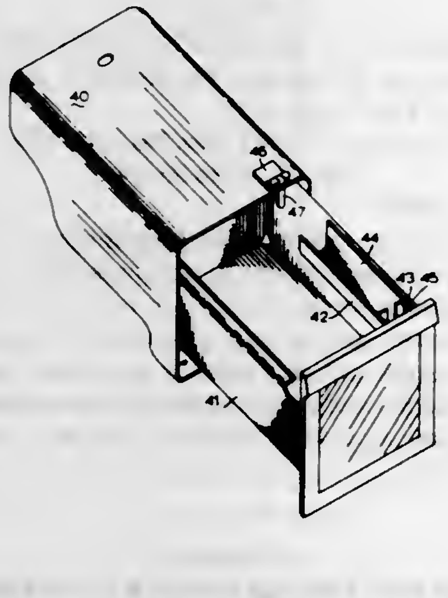
### 3,760,817
## EXTINGUISHING ASHTRAY

**Earl E. Eilertson, Albuquerque, N. Mex., assignor to Arnold M. Vie, Albuquerque, N. Mex. and Eugene E. Eilertson, Utica, Mich., part interest to each**
**Division of Ser. No. 40,472, May 22, 1970, Pat. No. 3,620,226. This application July 22, 1971, Ser. No. 165,366**
**Int. Cl. A24f** *19/14*
**U.S. Cl. 131—235 R** **5 Claims**



An ashtray of the type which slides into and out of a mount includes an elongated cigarette receiving and extinguishing trough with its longest dimension aligned with the direction of movement of the ash container. An expelling lever is hinged from the mount extending into the trough. When a cigarette is placed in the trough and the ash container closed or moved to a position within the mount, the lever does not engage the cigarette, which remains in the trough covered by the mount and extinguished. When the ash container is opened or moved out of the mount, the lever engages the cigarette and expels it from the trough.

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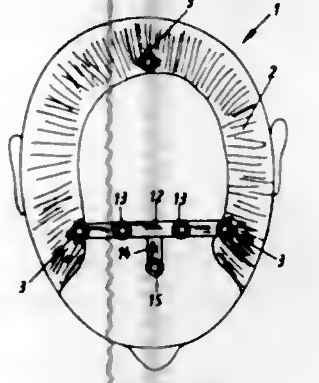
### 3,760,818
## TOUPET STRUCTURE AND METHOD OF SECURING THE SAME ON A HUMAN HEAD

**Josef Schweifer, Telgter Str. 1-4, Munster, Germany**
**Filed July 12, 1971, Ser. No. 161,788**
**Claims priority, application Germany, July 31, 1970, P 20 38 346.4; Jan. 22, 1971, P 21 03 182.3; Jan. 22, 1971, G 71 02 513.3**
**Int. Cl. A45d** *44/00*
**U.S. Cl. 132—1 R** **19 Claims**



A toupet structure comprises a holding arrangement which can be placed on the head of a user, and connecting means which connects the holding arrangement with remaining hair on this head. Thereupon a toupet is placed onto the holding structure and releasable securing arrangements are used for releasably securing the toupet with the same.

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### 3,760,819
## PERMANENT WAVING OF HAIR WITH QUATERNARY AMMONIUM ALKYLATING AGENTS AND AMMONIUM THIOGLYCOLATE

**Gunther Vogt, Schifferstadt/Pflaz, Germany, assignor to L'Oreal, Paris, France**
**Continuation of Ser. No. 598,959, Dec. 5, 1966, abandoned, which is a continuation-in-part of Ser. No. 212,158, July 24, 1962, abandoned. This application Sept. 9, 1970, Ser. No. 70,919**
**Int. Cl. A45d** *7/06*
**U.S. Cl. 132—7** **5 Claims**

A method of permanently waving keratin substrates, such as hair, by applying thereto keratin softening agents and a quaternary ammonium halide salt keratin alkylating agent. Quaternary ammonium halide salts that make suitable keratin alkylating agents are mono, bis and tri quaternary reaction products or mixtures thereof selected from the group consisting of the reaction products of (1) hexamethylaminetetramine and cyanuric chloride; (2) hexamethylaminetetramine and 1,4-dichlorobutene; (3) hexamethylaminetetramine and p-bischloromethylbenzene; and (4) triethanolamine and cyanuric chloride.

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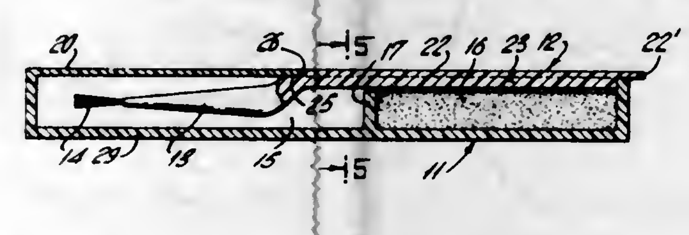
### 3,760,820
## CONTAINER WITH COVER-CARRYING APPLICATOR

**David Seidler, 527 Lexington Ave., Forest Hills, N.Y.**
**Filed May 12, 1971, Ser. No. 142,720**
**Int. Cl. A45d** *40/00;* **A46b** *11/00*
**U.S. Cl. 132—79 R** **8 Claims**



A container comprises a case divided into compartments, one of which is partially covered by a topwall. A lid has mounted thereon an applicator which can be inserted into the partially covered compartment as the lid is placed on the case. A second compartment serves to hold material to be applied by the applicator. The lid serves as a handle for the applicator.

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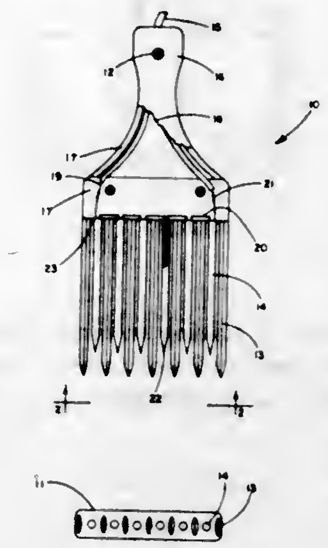
### 3,760,821
## HEATED HAIR COMB

**Willard T. Weddington, 245 W. 38th St., Apt. 203, Indianapolis, Ind.**
**Filed Jan. 31, 1972, Ser. No. 222,214**
**Int. Cl. A45d** *24/10;* **H05b** *1/00*
**U.S. Cl. 132—118** **5 Claims**



A comb which is heated via electrical energy. The comb has a handle to which a plurality of hair combing teeth are mounted. Interspaced alternately between the hair combing teeth are a plurality of heating teeth which are mounted to the handle. Each of the heating teeth are hollow so as to receive an electrical wire which is connectable to a source of electrical energy. The combing teeth have a longer length than the heating teeth and project outwardly of the heating teeth. The heating teeth and the combing teeth are arranged in a single straight row. The end tooth at each end of the row is one of the combing teeth. Each combing tooth projects laterally on either side of the row a distance greater than the heating teeth.

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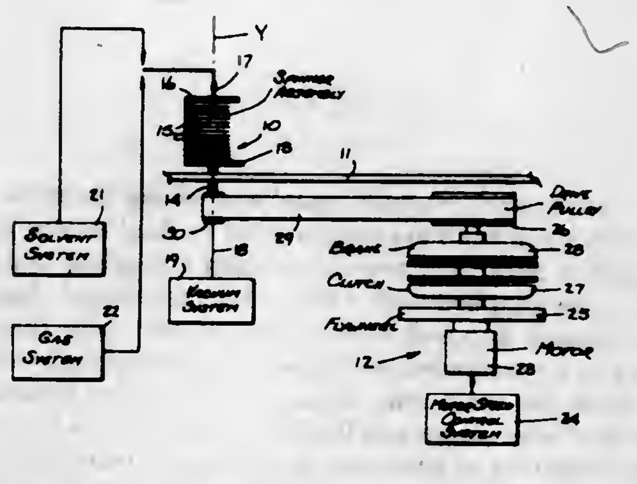
### 3,760,822
## MACHINE FOR CLEANING SEMICONDUCTIVE WAFERS

**Arthur Evans, Sunset Hill Rd., Brookfield Center, Conn.**
**Filed Mar. 22, 1972, Ser. No. 236,835**
**Int. Cl. B08b** *3/10*
**U.S. Cl. 134—99** **8 Claims**



An automatic production machine useful in the fabrication of integrated circuits for coating semiconductive wafers and microelectric substrates with photosensitive films. The machine is provided with a multi-deck spinner including a motor-driven turntable having a vertical stack of vacuum chucks mounted thereabove. The chucks are supported one above the other and are cantilevered from two parallel pipes extending upwardly from the rim of the turntable. Each chuck serves as a deck for supporting a wafer to be coated by centrifugal action. One pipe functions as a vacuum line manifold communicating with a pattern of grooves formed on the upper face of each chuck to hold the wafer thereto. The other pipe functions as a treatment line manifold to supply gas or a cleaning solvent to a port on the undersurface of each chuck, whereby the gas or solvent is dispensed onto the exposed surface of the wafer on the chuck therebelow.

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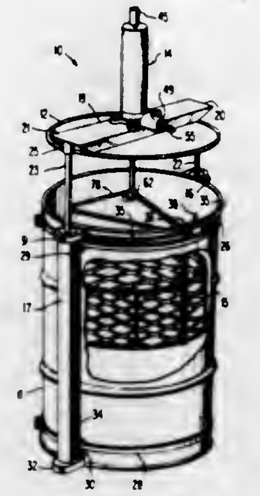
### 3,760,823
## PARTS CLEANING APPARATUS

**Milton A. Ferguson, 3986 Menlo Dr., Dorraville, Ga.**
**Filed Aug. 30, 1971, Ser. No. 176,225**
**Int. Cl. B08b** *3/06*
**U.S. Cl. 134—141** **8 Claims**



Apparatus for cleaning engine parts or the like wherein the engine parts are placed in a basket and the basket is reciprocated in a container filled with cleaning solution. A pneumatic basket reciprocator encloses a cylinder with a valved piston connected to the basket and the reciprocator functions automatically to drop the basket in a downward direction when the piston reaches the upper end of its stroke, and the piston reverses its direction in response to the differential in air pressure across the piston and to the flow of air through the valves of the piston or by tne engagement of the piston valves with the bottom of the cylinder, whereby the amplitude and frequency of the piston and basket movement are functions of the weight of the parts placed in the basket and the rate of air flow to the piston.

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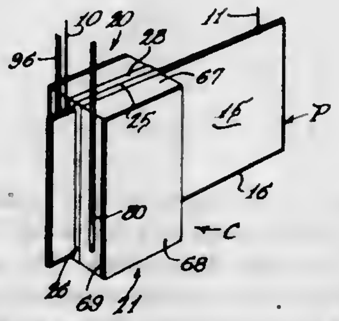
### 3,760,824
## HIGH PRESSURE PLATE WASHER

**Robert E. Edwards, Inverness, and Donald H. McKer, Waukegan, both of Ill., assignors to The Roy M. Moffitt Company, Schiller Park, Ill.**
**Filed May 8, 1972, Ser. No. 251,123**
**Int. Cl. B08b** *3/02*
**U.S. Cl. 134—144** **9 Claims**



A jet washer for cleaning plates used in the leather tanning industry for adhesively mounting hides during processing thereof. The jet washer includes cabinet structure located at each side of a path of travel of the plates with each cabinet having a plurality of rotatable multi-arm jet spray units for delivering high velocity water or other liquid jets against the surface of the plate and with the multi-arm jet units being in sufficient numbers and oriented vertically and horizontally to have a liquid jet directed against every part of the opposite sides of the plate during the travel of the plate through the washer.

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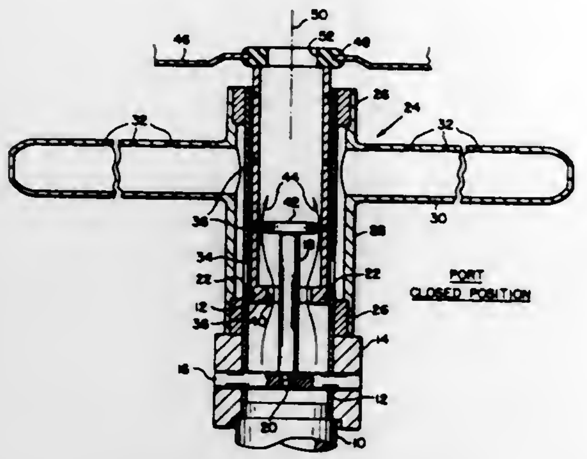
### 3,760,825
### WASHING MACHINE TRANSFER VALVE

**John J. Barnun, deceased, late of Niagara Falls, N.Y., assignor to Sybron Corporation, Rochester, N.Y.**

**Division of Ser. No. 656,908, July 28, 1967, Pat. No. 3,529,773. This application May 19, 1970, Ser. No. 38,747**

**Int. Cl. B08b** *3/02*

**U.S. Cl. 134—56 D** **16 Claims**



A washing machine including a washing compartment for alternatively receiving either one of a first type of article-carrying dolly having a conduit system and a second type of article-carrying dolly not having a conduit system, a fluid inlet in the washing compartment, a rotatable spray head mounted in the washing compartment, and a transfer valve connected to the fluid inlet and responsive to the type of dolly received in the washing compartment for controlling the flow of fluid from the fluid inlet to the spray head when the second type of dolly is in the compartment and to the conduit system of the first type of dolly when the first type of dolly is in the washing compartment.

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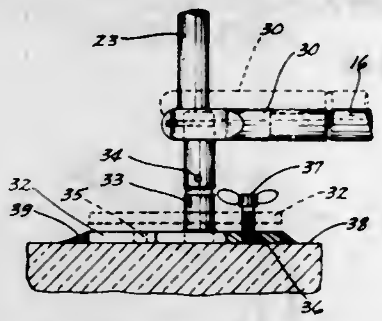
### 3,760,826
### SHELTER STRUCTURE

**Noble C. Rasmussen, 711 19th St., West Des Moines, Iowa**

**Filed Oct. 12, 1971, Ser. No. 188,278**

**Int. Cl. A45f** *1/16*

**U.S. Cl. 135—1 R** **4 Claims**



A shelter structure having a tubular metal framework, surface contacting means hingeably connected to the framework, and a covering over the framework. The surface contacting means may include release means consisting of a bolt threaded through the surface contacting means and adapted to break the surface contacting means away from a surface in contact therewith.

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### 3,760,827
### HANDLE OR CROWN FOR UMBRELLA

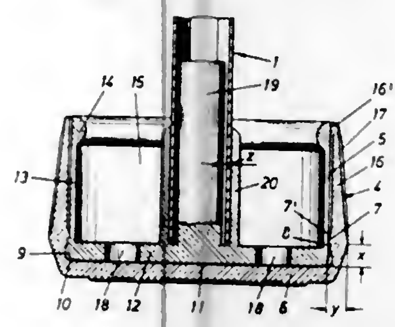
**Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada**

**Filed June 14, 1971, Ser. No. 152,594**

**Claims priority, application Germany, June 23, 1970, G 70 23 427.4**

**Int. Cl. A45b** *9/02*

**U.S. Cl. 135—46 M** **7 Claims**



An umbrella handle having an inner plastic element fixed to the handle stick and a clip-on cover nesting part of plastic material suitable for ornamentation.

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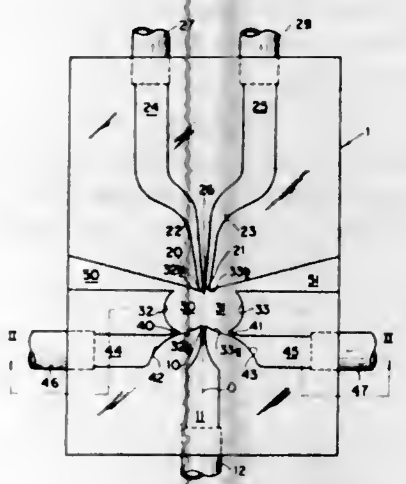
### 3,760,828
### PURE FLUID CONTROL ELEMENT

**Minoru Kawabata, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya City, Japan**

**Continuation of Ser. No. 3,023, Jan. 15, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,737**

**Int. Cl. F15c** *1/16*

**U.S. Cl. 137—81.5** **4 Claims**



In order to perform both digital and analog functions when relatively small loads are encountered by fluid leaving its vent passages, a pure fluid control element comprises main fluid inlet means supplied with a fluid to be controlled, fluid flow outlet means disposed downstream of the main fluid inlet means at a predetermined distance to receive the controlled flow from the main inlet means, vortex means between the main fluid inlet means and fluid flow outlet means for producing a vortex flow to attract the fluid from the main inlet means, vent passage means adjacent the fluid flow outlet means and extending into said vortex means, and control fluid inlet means extending into said vortex means in the same direction as the vortex flow and supplied with a control flow for regulating the vortex flow to control the deflection of the fluid from the main fluid inlet means.

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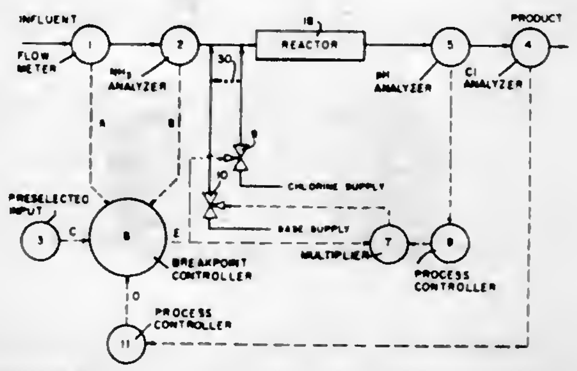
### 3,760,829
### AUTOMATIC CONTROL SYSTEM FOR THE SAFE AND ECONOMICAL REMOVAL OF NH3 BY BREAKPOINT CHLORINATION

**Walter W. Schuk, Lincolnia Heights, Alexandria; Thomas A. Pressley, Springfield, both of Va., and Dolloff F. Bishop, Camp Springs, Md., assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.**

**Filed May 9, 1972, Ser. No. 251,777**

**Int. Cl. G05d** *11/08*

**U.S. Cl. 137—93** **5 Claims**



An automatic system for controlling the chlorine feed in the breakpoint chlorination process at the optimum dose level, under the conditions of varying ammonia concentration and process flow rates as well as other fluctuations in process chlorine demand. The function of the automatic breakpoint controller is described by the equation:

$$(A \cdot B \cdot C) D = E$$

where A is the process flow rate, B is the $NH_3$—N concentration, C is the preselected $Cl{:}NH_3$—N weight ratio, D is an error signal which is a function of the predetermined free chlorine residual and the measured free chlorine residual and E is the total chlorine dose.

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### 3,760,830
### FLOW REGULATING VALVE FOR PRESSURE FLUIDS

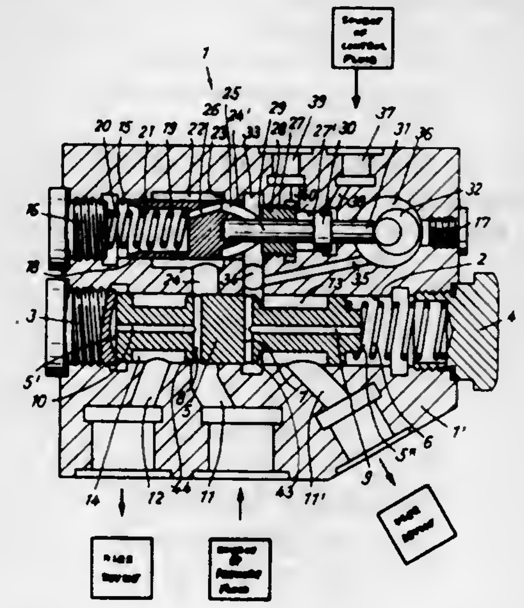
**Rudolf Fritzsche, Stuttgart-Feuerbach; Friedrich Wilhelm Hofer, Hofingen, and Rudi Schmid, Stetten/Filder, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Aug. 16, 1971, Ser. No. 176,361**

**Claims priority, application Germany, Aug. 17, 1970, P 20 40 728.7**

**Int. Cl. G05d** *11/02;* **F16k** *31/12*

**U.S. Cl. 137—101** **8 Claims**



A flow regulating valve for pressure fluids has a housing provided with an inlet and two outlets for pressure fluid. A slidable control member in the housing has differential pressure faces exposed to differential pressure in response to whose magnitude it divides a flow of fluid entering the inlet into a main and a secondary stream which are each channeled to one of the outlets. An adjustable throttling device is located in the housing and permits adjusting of the pressures acting upon the respective pressure faces, and an eccentric displaces the throttling device to various positions to obtain a desired setting. A pressure-fluid operated control arrangement is associated with the throttling device and can vary the once-selected setting of the latter independently of the manual setting of the eccentric and in dependence upon a control pressure governed by a reference value.

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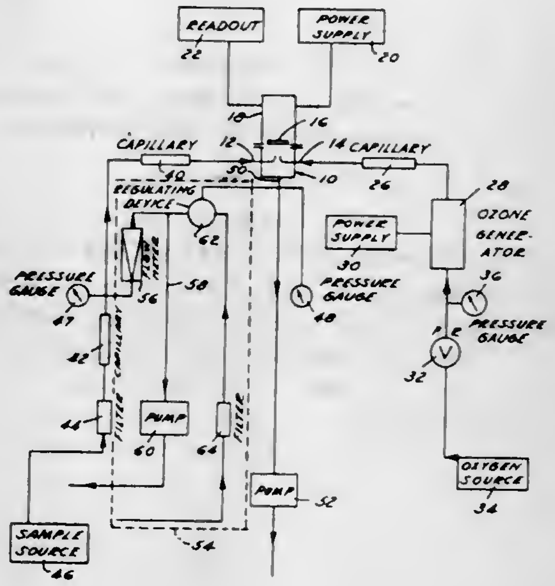
### 3,760,831
### GAS FLOW CONTROL SYSTEM FOR AN ANALYTICAL INSTRUMENT

**Alex D. Colvin, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Nov. 1, 1971, Ser. No. 194,245**

**Int. Cl. G05d** *7/01*

**U.S. Cl. 137—117** **4 Claims**



Gaseous sample mixture flows through two restrictive capillaries in series with each other on its way to a chemiluminescent reaction chamber. A bypass pump has its inlet connected to the junction of the capillaries and its outlet communicating with the atmosphere. A pressure regulator connects the inlet of the bypass pump with the atmosphere. The pressure regulator responds to the pressure difference between the junction of the capillaries and the reaction chamber to control the flow of atmospheric air to the bypass pump inlet and thereby maintains a constant sample mixture flow rate into the reaction chamber despite variations in the pressure of the source of the sample mixture.

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### 3,760,832
### HEAT CONTROLLED GAS LIFT VALVE

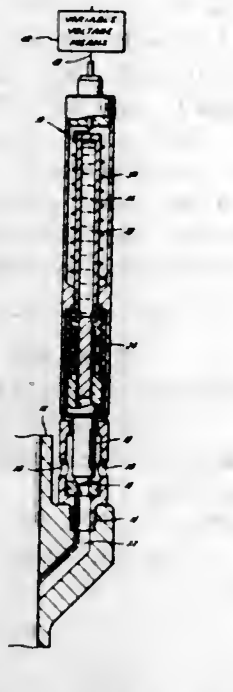
**Harold E. McGowen, Jr., and Gilbert H. Tausch, Houston, Tex., assignors to Camco Cincorporated, Houston, Tex.**

**Filed Nov. 11, 1971, Ser. No. 197,828**

**Int. Cl. F04f** *1/08*

**U.S. Cl. 137—155** **8 Claims**

A gas lift valve having a seat and a valve element for admitting pressurized fluid into a well conduit in which the operation of the valve is controlled by heat. A closed chamber having a fluid therein which is exposed to the valve element for moving the element in one direction as the fluid expands, said fluid being expandable and the pressure increases when heat is applied thereto, and the fluid pressure decreases on removal of heat therefrom. Means for applying and/or removing heat from the closed chamber for controlling the actuation of the valve. An electrical or fluid heating coil positioned adjacent the closed chamber and a control line leading to the well surface for controlling the heat applied to the closed chamber. A cooling coil positioned adjacent the closed chamber with a control line leading to the surface for controlling the heat removed from the closed chamber.



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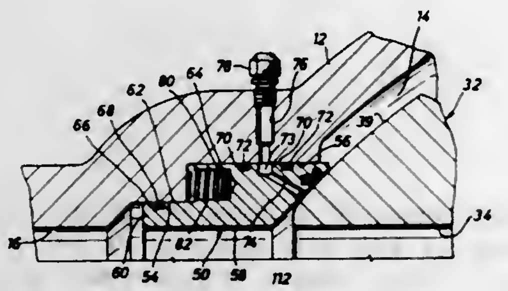
### 3,760,833
### SEALING MEANS FOR VALVE STRUCTURE

**Willard E. Kemp, and Jerry B. Tomlin, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.**

**Filed Mar. 14, 1972, Ser. No. 234,557**

**Int. Cl. F16k** *5/20*

**U.S. Cl. 137—246.22** **7 Claims**



A spherical plug valve structure having a seat assembly on opposed sides of a ball valve member. Each seat assembly is mounted for limited longitudinal movement toward and away from the adjacent ball valve member and an annular recess in the seat assembly receives a sealing element having a free lip portion in sealing contact with the valve member. An annular groove contiguous with the recess and facing in a direction generally perpendicular to the recess receives a resilient O-ring which is in contact with and provides a resilient support for the lip portion of the sealing element. The sealing element has its free end terminating generally adjacent the groove and may be partially received within the groove upon contact with the ball valve member particularly under high pressure conditions.

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### 3,760,834
### RESERVOIR FOR PRESSURIZED FLUIDS

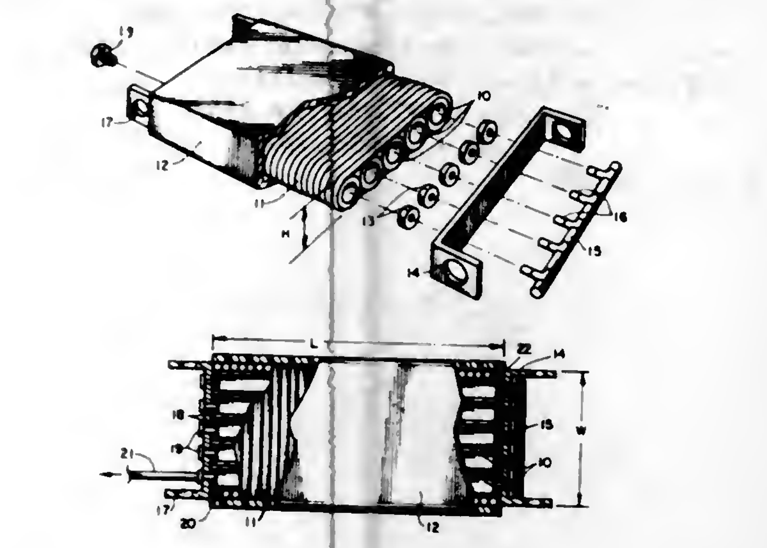
**David Edwin Shonerd, 1025 Winther Way, Santa Barbara, Calif.; Alvin Singer, 1125 Hohlfelder Rd., Glencoe, Ill., and Charles L. Vaughan, 95 Monarch Bay, South Laguna, Calif.**

**Filed June 27, 1972, Ser. No. 266,653**

**Int. Cl. F16k** *51/00*

**U.S. Cl. 137—255** **15 Claims**

A plurality of straight tubes in side by side relationship are surrounded by a single long tube of substantially lesser diameter helically wound about the straight tubes to define a reservoir for pressurized natural gas. The helically wound single long tube serves both as a protective covering and strengthening structure for the straight tubes. The straight tubes and helically wound tube may be interconnected by suitable manifolding and a fill opening provided for storing pressurized fluid. The tubular configuration is that of a fairly flat parallele-piped corresponding in size to a conventional standard automobile gasoline tank and thus well suited to replace the conventional gasoline tank to drive vehicles by natural gas.



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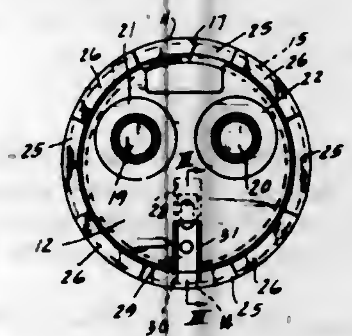
### 3,760,835
### INDEX MEANS FOR REMOVABLE VALVE

**Gene A. Tracy, Centerville, Minn., assignor to The Cornelius Company, Anoka, Minn.**

**Filed Nov. 22, 1971, Ser. No. 200,990**

**Int. Cl. F16l** *29/00*

**U.S. Cl. 137—322** **5 Claims**



A valve assembly includes a mounting sleeve which has an upwardly opening recess, valve means that include a body slidable into said mounting sleeve, and a retaining key slidably guided in the body and movable in response to gravity into said recess to lock the body in said sleeve.

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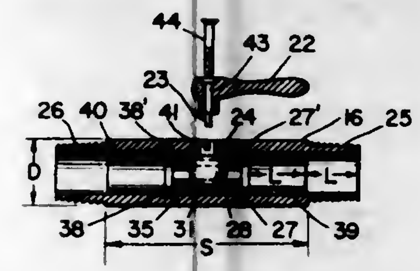
### 3,760,836
### UNDER-FIXTURE VALVE

**Thomas Albanese, 116 Norlin St., Las Vegas, Nev.**

**Filed Feb. 24, 1972, Ser. No. 229,048**

**Int. Cl. F16k** *5/06*

**U.S. Cl. 137—360** **5 Claims**



An under-fixture valve comprises an elongated body having an outer diameter corresponding to the pipes normally connected to an outlet water pipe so that the valve body may be threaded to the outlet water pipe and project from a wall structure. The wall structure itself can then be completed and finished with a minimum of interference with the valve body. The valve is closed while work on the wall is being completed so that the main water supply may be left on and there is no necessity for turning off the main water supply when connecting the other end of the valve body to a fixture pipe leading to an overhead fixture. The design is such as to readily accomodate a surge chamber as a part of the under-fixture valve if desired.

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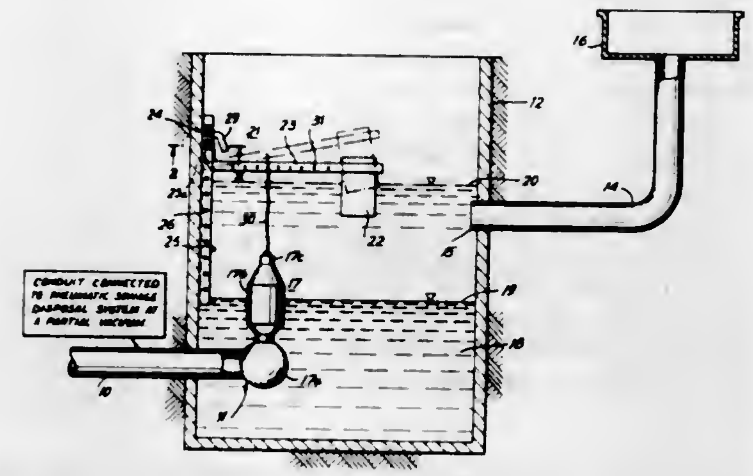
### 3,760,837
### APPARATUS FOR CONTROLLING FLOW OF WASTE LIQUID INTO A PNEUMATIC LIQUID DISPOSAL SYSTEM

**Jan Vilhelm Amren, Sollentuna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden**

**Filed Nov. 18, 1971, Ser. No. 200,018**

**Int. Cl. F16k** *31/28*

**U.S. Cl. 137—398** **10 Claims**



Waste liquid is discharged pneumatically into a liquid sewage or disposal system through a discharge conduit from the outlet of a vessel which receives such liquid from sanitary conveniences. A body in the vessel, which is capable of floating in the liquid therein, is drawn by suction toward the outlet when the liquid falls to a first low liquid level above the outlet, so that flow of air from the vessel into the system will be prevented. The floating body is removed from the outlet by mechanism in the vessel when the liquid therein rises to a second higher level, so that liquid will be withdrawn pneumatically from the vessel.

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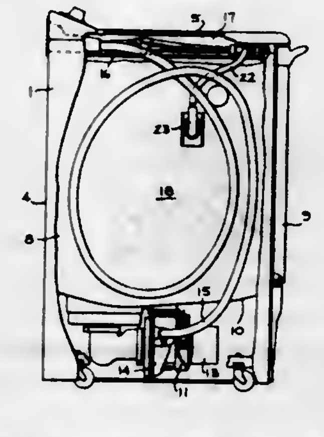
### 3,760,838
### HOSE STORAGE SYSTEM FOR A WASHING APPLIANCE

**Edwin M. Hall, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Oct. 6, 1972, Ser. No. 295,437**

**Int. Cl. B65h** *75/36*

**U.S. Cl. 137—355.17** **5 Claims**



An improved storage system for manually extendable and retractable hoses, such as the water inlet hose and the effluent discharge hose, of a portable washing appliance. The hoses are stored in separate intersecting compartments arranged between the appliance cabinet and the washing chamber. The arrangement of separate compartments substantially separates the hoses whereby manipulation by the appliance operator requires a minimum of effort, and the life of the hoses is substantially improved due to reduced wear from frictional engagement.

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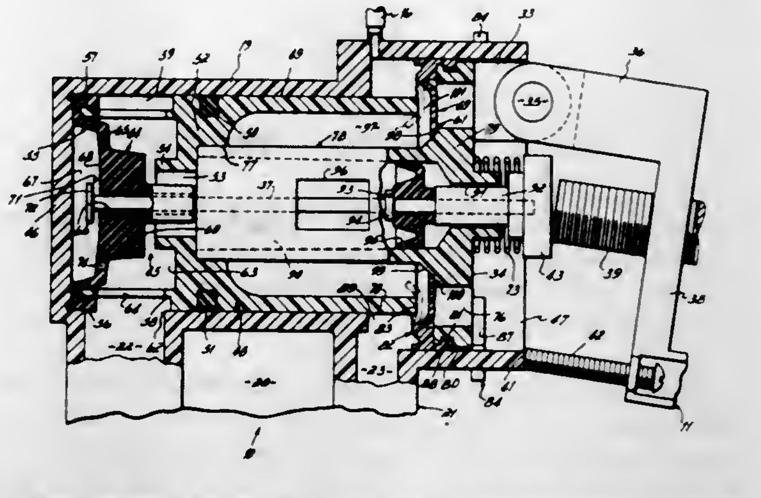
### 3,760,839
### FLOAT VALVE

**Robert W. Hyde, Crystal River, Fla., assignor to Pryde Inc., Cincinnati, Ohio**

**Filed Oct. 28, 1971, Ser. No. 193,372**

**Int. Cl. F16k** *31/18*

**U.S. Cl. 137—414** **12 Claims**



A float valve adapted for use in a toilet tank and which, in combination with a float arm and float, serves to control the refill level of water in that tank after the toilet has been flushed. The float valve is structured so that water flow therethrough is essentially noiseless from opening to closing of the valve; the valve's structure is such that more than one pressure drop is created within the valve housing to prevent any one pressure drop from inlet line pressure to tank pressure from being of a sufficient size to create water noise, and is such that chatter or fluttering of the valve is essentially eliminated as water flow through the valve is terminated. Further, the float valve is structured so that overflow of the toilet tank as a result of a leaky float ball is not possible; the valve closes due to water pressure in the inlet line when the tank has been refilled and the valve opens due to the float's weight as the tank is drained when the toilet is flushed.

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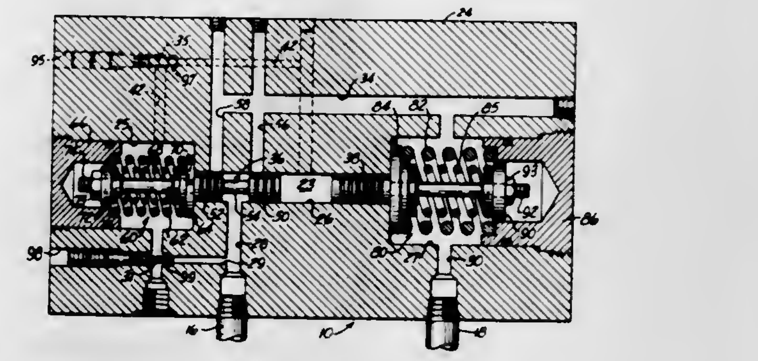
### 3,760,840
### DYNAMIC MODULATOR

**Paul Gates, Waukesha, Wis., assignor to Applied Power Inc., Milwaukee, Wis.**

**Filed Mar. 10, 1972, Ser. No. 233,488**

**Int. Cl. F16k** *17/26*

**U.S. Cl. 137—493** **11 Claims**



A dynamic modulator for modulating fluid pressure transients in the hydraulic lines to a hydraulically actuated device, the modulator including a metering piston to control the flow of fluid bypassed through the modulator; a modulating piston positioned to respond to the movement of the metering piston and to control the response of the metering piston; and a bypass duct network connected across the metering piston and including metering valves to control the time interval of response of the metering piston to pressure variations across the metering piston.

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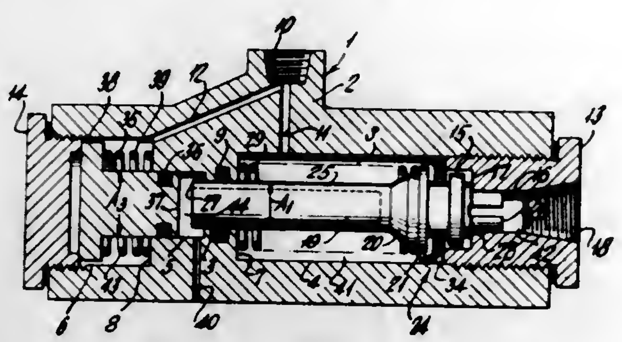
### 3,760,841
### CONTROL VALVE

**Vernon M. Daffron, Ellisville, Mo., assignor to Wagner Electric Corporation, Newark, N.J.**

**Filed July 12, 1972, Ser. No. 271,183**

**Int. Cl. B60t** *8/26;* **F16k** *15/02*

**U.S. Cl. 137—493** **6 Claims**



A control valve for use in a hydraulic brake system is provided with a proportioning valve generally operable in response to fluid pressure supplied thereto between first and second predetermined values to effect the application through said control valve of an applied fluid pressure in a first predetermined ratio with the supplied fluid pressure, and a resiliently urged piston is responsive to supplied fluid pressure in excess of the second predetermined value to engage said proportioning valve and effect a second predetermined ratio between the supplied and applied fluid pressure, said piston and proportioning valve being responsive to supplied fluid pressure in excess of a third predetermined value to blend the supplied and applied fluid pressures.

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### 3,760,842
### PRESSURE MANIFOLD HAVING PLURALITY OF QUICK CONNECT-DISCONNECT PLUGS FOR SELECTIVELY RECEIVING PRESSURE METER, DRAIN COCK, ETC.

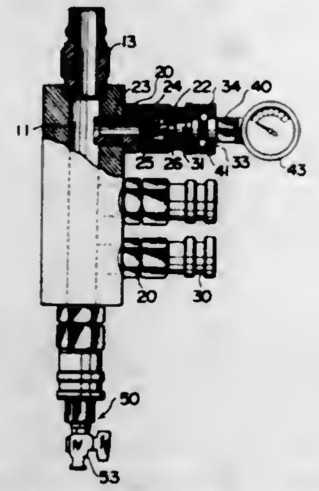
**Toshio Mikiya, 17-10, 1 chome, Ikegami, Ota-ku, Tokyo, Japan**

**Filed Nov. 22, 1971, Ser. No. 200,901**

**Claims priority, application Japan, Dec. 29, 1970, 45/133325 (utility model); Jan. 22, 1971, 46/1909**

**Int. Cl. F16k** *37/00*

**U.S. Cl. 137—557** **8 Claims**



A manifold for diverting compressed air supplied via pipes in communication with a compressor, to various air tools, connected with pressure meter, drain cocks and pipes for air tools, if necessary, by connectors.

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### 3,760,843
### MULTI-WAY DIRECTIONAL FLUID FLOW CONTROL VALVE ARRANGEMENT

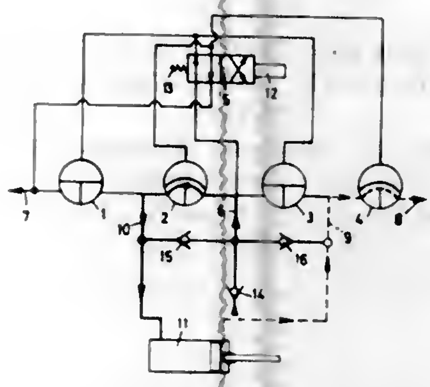
**Donald Alexander Larner, Kingston-upon-Thames, England, assignor to Fluid Devices Limited, London, England**

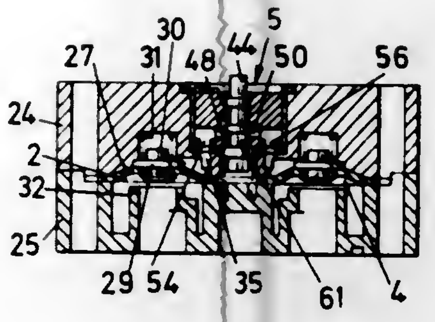
**Filed Feb. 1, 1972, Ser. No. 222,569**

**Claims priority, application Great Britain, Feb. 1, 1971, 3646/71**

**Int. Cl. F16k** *11/20*

**U.S. Cl. 137—596.15** **22 Claims**





In order to provide a multi-way directional fluid flow control valve arrangement which provides good control whilst being relatively cheap to manufacture, I use simple main valves all of which have parallel axes and all lie in a common plane, enabling me to form the main valves in a cheap manufacturing operation; the pilot valve however is more complex and has at least four connections, but because the pilot valve is smaller, this extra complexity does not make the whole valve arrangement more expensive.

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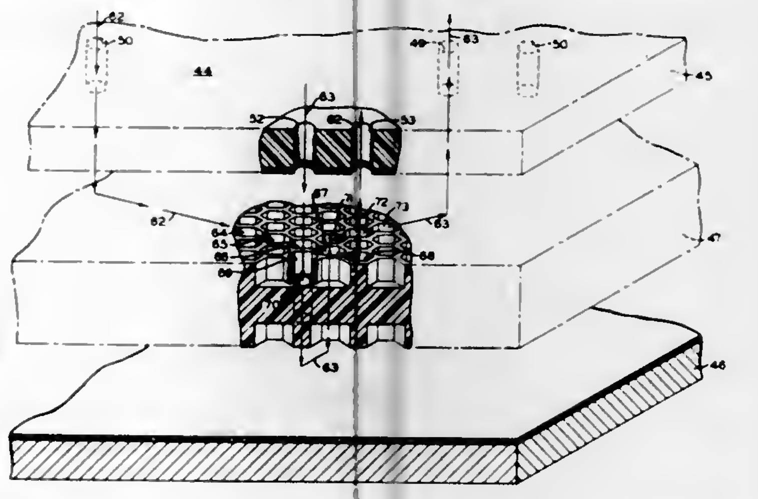
### 3,760,844
### CIRCUIT MODULE FOR FLUID DISTRIBUTION

**Paul E. Olson, and Ronn J. Leaf, both of Lexington, Ky., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.**

**Filed July 19, 1971, Ser. No. 163,668**

**Int. Cl. F17d** *1/00*

**U.S. Cl. 137—608** **4 Claims**



This invention relates to a circuit module for fluid distribution through which a source of fluid under pressure is connected to a plurality of logic control valve devices by means of passageways provided by interconnected cells or chambers formed in a moulded cellular plastic fluid circuit plate interposed between an upper and a lower flat cover plate, each provided with a plurality of passageways. Certain of these passageways in the upper cover plate open at one end into a corresponding cell or chamber in the circuit plate and at the opposite end registering with one end of a passageway in one of the logic valve devices, each of which is removably mounted on this cover plate. One or more passageways, each of any configuration, can be provided in the cellular plastic fluid circuit plate by removing a part of the plastic wall or partition between each adjoining pair of a plurality of pairs of the cells or chambers thereby providing for the flow of fluid from a source of fluid under pressure connected to a first one of the cells via a passageway in a manifold secured to the lower cover plate and a passageway in this plate, then successively through the other of the interconnected cells or chambers and the respective passageway in the upper cover plate to the logic valve device, or from the logic valve device through a passageway in the upper cover plate, another passageway provided by a second set of interconnected cells or chambers in the circuit plate to a second logic control valve device either mounted on the upper cover plate or located remote therefrom and connected to the manifold by suitable piping, or to atmosphere. The cover plates and the fluid circuit plate may be secured together either by a suitable bonding sealing material or a plurality of bolts and nuts and the logic valve devices may be removably secured to the upper cover plate by bolts that extend through these three members and receive a nut on their outer end. The cells or chambers in the moulded plastic fluid circuit plate may be hexagonal, triangular or any other desired shape, these chambers being separated one from the other by a thin plastic wall, a portion of which may be easily broken or cut out to provide a communication between any two adjacent chambers.

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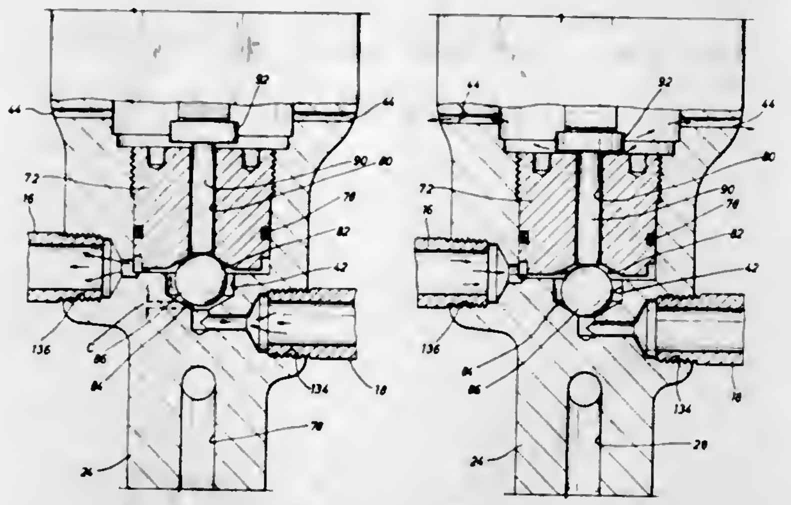
### 3,760,845
### HIGH-LOW PRESSURE RESPONSIVE PILOT VALVE STRUCTURE

**Eulas R. Atkinson, Conroe, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.**

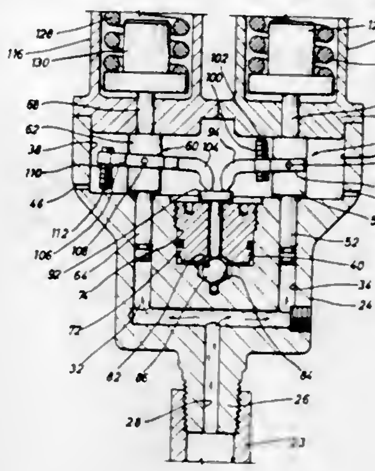
**Filed Sept. 25, 1972, Ser. No. 292,215**

**Int. Cl. F16k** *11/07, 31/12*

**U.S. Cl. 137—625.66** **10 Claims**



A high-low pressure responsive pilot valve structure comprising a valve body having a valve chamber with oppositely facing valve seats thereon. A valve element on one of the valve seats is biased into seated position thereon within the operating pressure range by pressurized control fluid in contact with the valve element and thereby permitting the flow of control fluid through an outlet passage to a valve actuator or the like. Fluid responsive means engage the valve element to move the valve element to the other opposite valve seat in blocking position with respect to the flow of control fluid from the control fluid supply through the outlet passage upon either a predetermined low pressure being reached or a predetermined high pressure being reached. When the valve element is seated on the other opposite valve seat, the control fluid from the valve actuator or the like is permitted to bleed to atmosphere.



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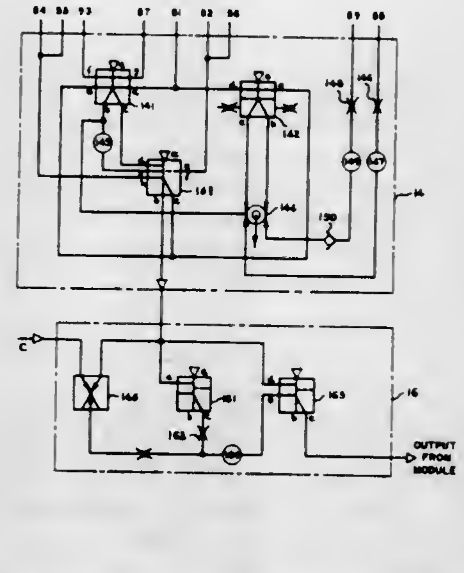
### 3,760,846
### MULTI-CONDITION RESPONSIVE FLUIDIC PULSE GENERATOR FOR FLUIDIC FUEL INJECTION SYSTEM

**Lael B. Taplin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Mar. 30, 1972, Ser. No. 239,739**

**Int. Cl. F15c** *1/12*

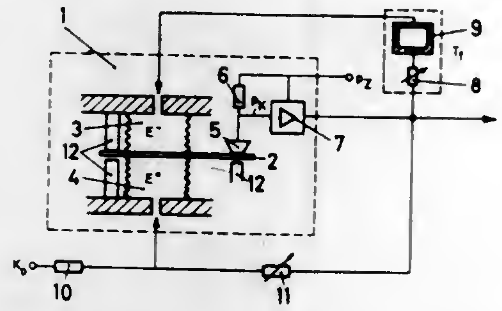
**U.S. Cl. 137—820** **12 Claims**



A fluidic pulse generator is disclosed which is capable of responding to a plurality of inputs having both digital and analog characteristics and of providing an output signal having a pulse duration which is a function of the various input parameters. Such a device is of utility when used as the main fuel injection pulse computing device in a fluidic fuel injection system. The circuitry is comprised of a plurality of fluidic gating devices and the variable time determinative means which includes a chargeable volume and a variable restriction illustrated in the form of a vortex fluidic device.

### 3,760,847
## PRESSURE-MEDIUM OPERATED RECTANGULAR WAVE GENERATOR

**Horst Bauer, Stuttgart-Fasanenhof, Germany, assignor to J. C. Eckardt, AG, Stuttgart, Germany**
**Filed Aug. 30, 1971, Ser. No. 176,167**
**Claims priority, application Germany, Aug. 28, 1970, P 20 42 671.5**
**Int. Cl. F15c** *3/14, 3/04*
**U.S. Cl. 137—824** **15 Claims**



A pneumatic rectangular wave generator including a differential pressure amplifier, one input pressure of which is derived from a pressure divider and the other input pressure is derived from the output pressure delayed by a timing element.

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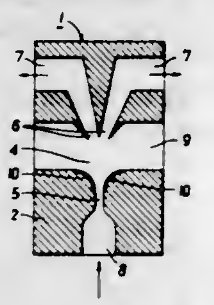
### 3,760,848
## SIGNAL TRANSDUCER FOR FLUIDIC CONTROLS

**Fritz H. Rehsteiner, Eschen, Liechtenstein, assignor to Enfo Entwicklungs-Und Forschungs-AG, Schaan, Liechtenstein**
**Filed Oct. 29, 1971, Ser. No. 193,641**
**Claims priority, application Austria, Oct. 30, 1970, 9772**
**Int. Cl. F15c** *3/00*
**U.S. Cl. 137—828** **20 Claims**



A signal transducer for fluidic controls comprising a deflection chamber into which a fluid is discharged through at least one discharge nozzle and from which emerge outlet orifices for the power fluid jet coming out of the discharge nozzle(s). Heat transfer elements are arranged in the deflection chamber to which control signals can be fed in the form of heat energy to heat and/or cool the element(s) for deflecting the power fluid jet(s).

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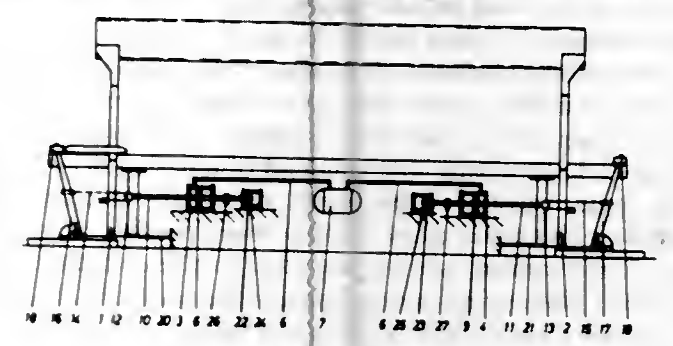
### 3,760,849
## PNEUMATIC PICKING APPARATUS FOR A LOOM

**Gerhard Hofmann, and Friedrich Wilhelm Bassing, both of Hamburg, Germany, assignors to Alfa-Laval Bergedorfer Eisenwerke GmbH, Hamburg, Germany**
**Filed Apr. 25, 1972, Ser. No. 247,273**
**Claims priority, application Germany, Apr. 27, 1971, P 21 20 511.8**
**Int. Cl. D03d** *49/42*
**U.S. Cl. 139—144** **12 Claims**

The picker stick of a loom is operated by a pneumatic cylinder and piston motor having a pressure chamber communicating with a closed container for air at a predetermined pressure so that the pneumatic piston is biassed. Hydraulic resetting piston means, operated by a liquid in a resetting chamber, hold the pneumatic piston in an initial position. When the resetting chamber in the hydraulic resetting cylinder is relieved by opening a control valve, the pneumatic piston drives the picker stick whereupon the control valve is shifted to another position so that the hydraulic resetting piston resets the pneumatic piston to the initial position.



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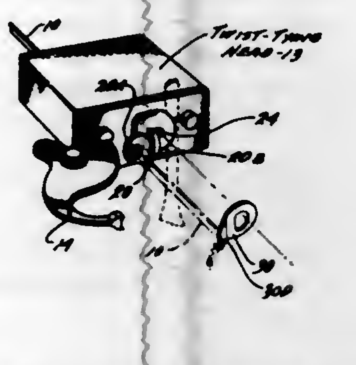
### 3,760,850
## TYING MACHINE

**Jack H. Kulp, San Juan Capistrano, Calif., assignor to Royal Industries Inc., Pasadena, Calif.**
**Filed Aug. 14, 1972, Ser. No. 280,529**
**Int. Cl. B21f** *15/04*
**U.S. Cl. 140—93 A** **5 Claims**



A tying machine for twist-tying articles with tying ribbons subject to a "memory". The machine includes a deflecting means to compensate for the curvature of the ribbon due to its memory to assure the ribbon is engaged by a wrapping needle to wrap the ribbon around the article to be tied.

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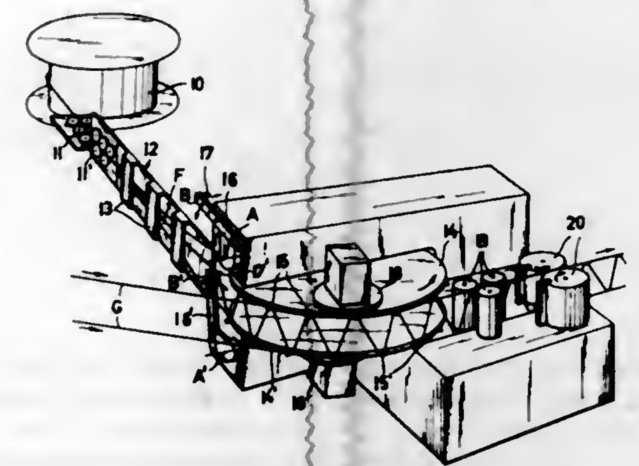
### 3,760,851
## DEVICE FOR FORMING A ZIG ZAG WIRE

**Gerhard Schmidt; Klaus Ritter, and Hans Gott, all of Graz, Austria, assignors to Firma EVG Entwicklungs-u, Verwertungsgesellschaft m.b.H., Graz, Austria, by said Schmidt and Ritter**
**Filed Dec. 7, 1971, Ser. No. 205,547**
**Claims priority, application Austria, Dec. 10, 1970, A 11130/70**
**Int. Cl. B21f** *1/04*
**U.S. Cl. 140—105** **5 Claims**



The invention is concerned with a device for forming a zig zag wire for a structural member such as a lattice girder. The device comprises two circular discs which are mounted coaxially and spaced apart and are coupled together and driven so that they rotate constantly and synchronously in the same direction. Each disc has distributed angularly around its periphery wire bending pins which project substantially radially from the rim of the disc. Two pivoted wire bending levers oscillated in a plane parallel to the plane tangential to the discs in which in use the lattice wire will be fed to the device. Each lever has near its end a wire bending pin and is pivoted at a location near to a different one of the discs but outside the cylindrical space defined by the two discs. The levers are driven so that they oscillate in alternation and each lever has a length such that when the lever is its extreme working position its end projects beyond the plane of the remote disc so that the lattice wire is first thrust by the wire bending pin of the one lever into the path of the wire bending pins of the remote disc to bend the wire which is subsequently bent, during the return strokes of the levers, by the pin of the other lever around a pin of the other disc.

Lightweight girders with parallel upper and lower flanges joined together by a zigzag bent wire web are used in large quantities nowadays for a variety of purposes. Among the various constructions a type of girder is widely used in which the lattice wire web occupies a single plane. The flanges extend along over the peaks of the lattice wire zigzags, where the lattice wires are bent, or extend along on both sides of the peaks, symmetrically with respect to the plane of the lattice.

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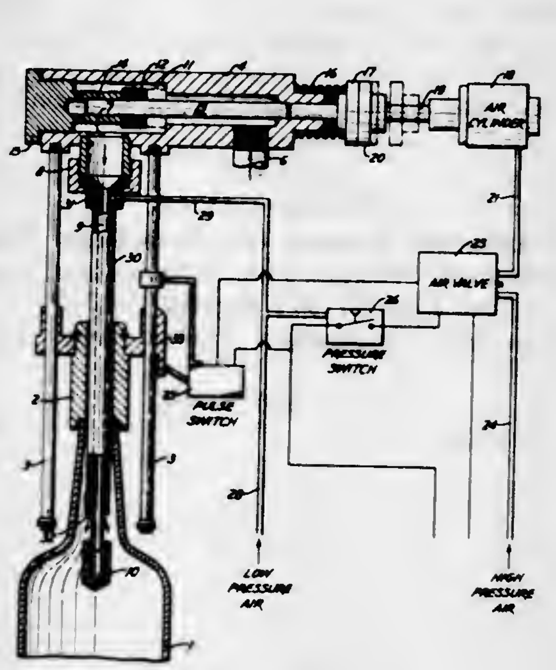
### 3,760,852
## CONTAINER FILLING APPARATUS WITH LEVEL-SENSING SHUT-OFF

**Chester E. Waxlax, Moon Township, Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.**
**Filed June 15, 1971, Ser. No. 153,261**
**Int. Cl. B65b** *31/00*
**U.S. Cl. 141—40** **2 Claims**



A container filling machine is provided with a vertical nozzle having an outlet at its lower end for discharging a liquid product into a surrounding container. Supply of the product to the upper end of the nozzle is controlled by a normally closed valve. A vertical level-sensing tube encircles the nozzle in spaced relation with it and has a lower end above the nozzle outlet. The upper end of the tube is connected with a source of air pressure to normally cause a stream of air to issue from the lower end of the tube intermittently or continually. There are means for closing the valve which are actuated by increase in air pressure in the sensing tube caused by liquid product in the container closing its lower end. The annular space between the nozzle and the encircling lower end of the sensing tube forms the tube outlet, and this outlet must be closed all around the nozzle by liquid product in the container in order for the air pressure in the tube to increase and cause the valve to close.

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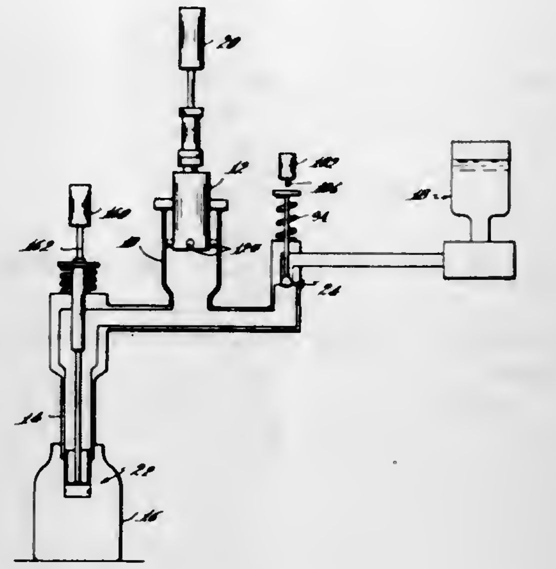
### 3,760,853
## CONTAINER-FILLING APPARATUS

**William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.**
**Filed May 13, 1970, Ser. No. 36,920**
**Int. Cl. B65b** *3/04*
**U.S. Cl. 141—146** **24 Claims**



Container-filling apparatus comprising a chamber connected to a source of material and to a filling nozzle and a ram supported for movement in the chamber in one direction to induct material from the source into the chamber and in the other direction to displace material from the chamber through the filling nozzle into a container supported therebelow. Valves control the flow of material from the source to the chamber and from the chamber to the nozzle, a motor effects reciprocation of the ram and a pneumatic control circuit controls the rate of reciprocation of the ram, provides for reducing the rate of the displacement stroke near the end of a filling operation and provides for preventing initiation of the displacement stroke in the event that there is no container in filling position below the filling nozzle. The filling apparatus is designed for single or multiple filling heads and when the apparatus is provided with multiple heads there are feed wheels for moving empty containers one at a time from an input conveyor onto the container supports for filling and for removing filled containers from the container supports after filling onto an output or discharge conveyor. The component parts of the filling head assembly comprising the chamber, ram, valves and filling nozzle are detachably connected by quick-release clamps to enable replacing and/or substituting one chamber and ram for another of different size and/or one nozzle for another in accordance with the viscosity and volume of the material being handled and for ease in cleaning.

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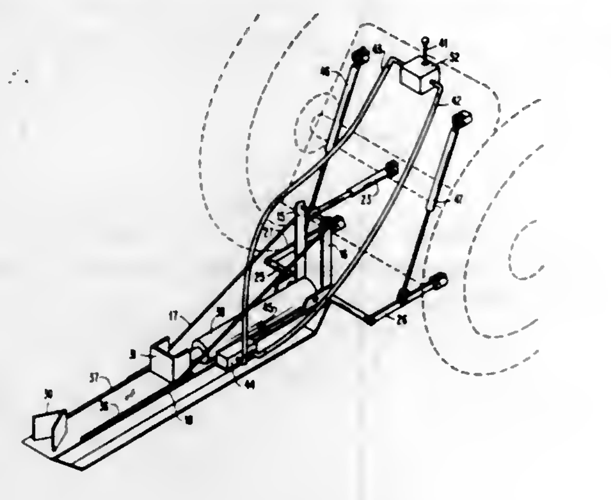
### 3,760,854
## LOG-SPLITTER FOR USE WITH VEHICLES HAVING HYDRAULIC PRESSURE SYSTEMS

**Robert D. Worthington, Todds Rd., Rt. No. 7, Lexington, Ky.**
**Filed June 23, 1972, Ser. No. 265,719**
**Int. Cl. B27l** *7/00*
**U.S. Cl. 144—193 A** **5 Claims**

A log-splitter includes a ground-engagable beam with a hydraulic cylinder on the upper beam surface receiving pressure fluid from a vehicle to which the splitter is detachably connected for transportation and for selective lifting of the splitter. The connection of the splitter to the vehicle is made at the end of the beam nearer the center of gravity of the log-splitter.



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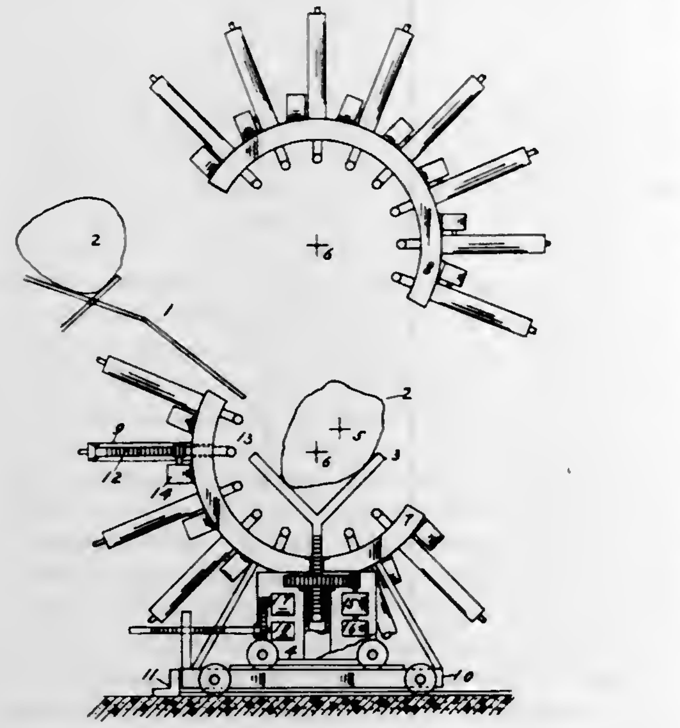
### 3,760,855
### APPARATUS FOR CENTERING IRREGULAR PEELER LOGS

**Reinhold Hermann Nilberg, 463 Beachview Dr., Vancouver, B.C., Canada**

**Filed Sept. 14, 1970, Ser. No. 71,698**

**Int. Cl. B27l** ***5/04***

**U.S. Cl. 144—209 A** **7 Claims**



This invention relates to a centering apparatus for peeler logs with substantially noncircular cross sections, nonuniform taper and noncircular sweep. The mantle of a log is represented by the peripheries of a number of cross sections. Each periphery is determined by a number of points on the periphery. Each point is sensed by a displacement transmitter and simultaneously duplicated in a log mantle duplicating unit, so that the duplicated periphery is represented by points with chords in between. Simultaneously, with the duplication of the log mantle, two special free floating variable diameter cylinders, with inherent expansion forces in each and a common axis for both, are contracted by the chords for the duplication of the peripheries. The variable diameter cylinders have in their final position, within the duplicated log mantle, maximum diameters and their common axis is the peeling axis for the log.

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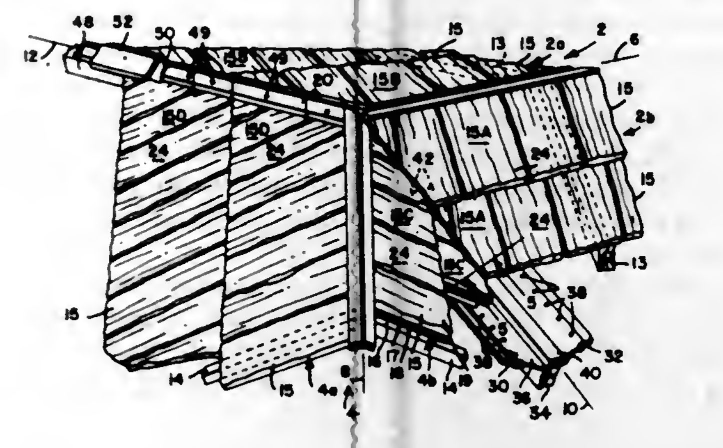
### 3,760,856
### BUILDING PANEL ENCLOSURES FOR VALLEY AND HIP STRUCTURES

**John K. Kough, Morgan Hill; Otis M. Martin, San Jose, and Silas N. Miller, Saratoga, all of Calif., assignors to Ditz-Crane, San Francisco, Calif.**

**Division of Ser. No. 856,235, Aug. 7, 1969. This application Dec. 20, 1971, Ser. No. 209,995**

**Int. Cl. B27m** ***3/02***

**U.S. Cl. 144—323** **3 Claims**



Prefabricated enclosure tip panels and a method of manufacturing the tip panels for enclosing valley and/or hip areas. The tip panel at one longitudinal end is beveled at an angle "*a*" which angle is dependent upon the relative angle between the two sections at the valley and/or hip joint. The other longitudinal end is adapted for interengagement with a standard panel. A method of manufacturing the tips includes segmenting a standard panel at the angle "*a*" to form a first valley tip panel and a first hip tip panel. A second standard panel is then segmented at an angle (180°—*a*) to form a second valley tip panel complementary to the first valley tip panel and a second hip tip panel complementary to the first hip tip panel. The tip panel segments are adapted to be joined in combination along the valley line and/or hip line to form a complete valley and/or hip construction and to engage standard panels. A valley flashing may be positioned along the valley center line and extend laterally relative to the center line beneath the valley tip panels to provide a hidden run-off path for water on the roof.

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### 3,760,857
### ANTI-SKID DEVICE

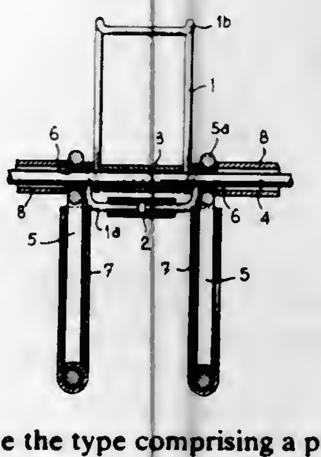
**Genevieve Antoinette Rioman, Villa Doux-Repos Montee des Bergers Domaine Princesse Zita, 06 Mandelieu, France**

**Filed Aug. 25, 1971, Ser. No. 174,757**

**Claims priority, application France, Aug. 27, 1970, 7031348**

**Int. Cl. B60c** ***27/04***

**U.S. Cl. 152—226** **5 Claims**



An anti-skid device the type comprising a plurality of shoes which are capable of being readily attached to and removed from a wheel on which a tyre is mounted, the shoes having resilient lateral limbs, and transverse limbs which extend across the tyre tread and serve to minimise or prevent skidding on slippery road surfaces.

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### 3,760,858
### PNEUMATIC TIRES

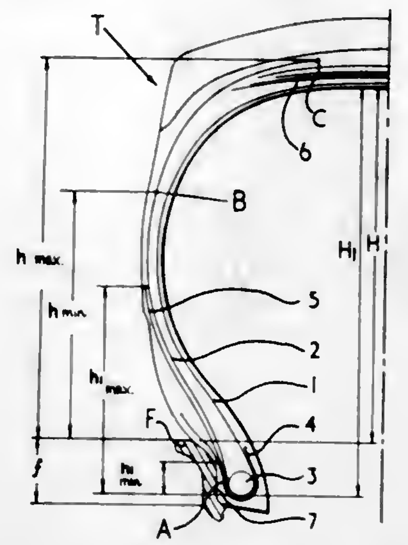
**Alfred Harry Grossett, Warley, England, assignor to Dunlop Holdings Limited, London, England**

**Filed Sept. 27, 1971, Ser. No. 183,805**

**Claims priority, application Great Britain, Feb. 10, 1970, 46,860/70**

**Int. Cl. B60c** ***9/08***

**U.S. Cl. 152—361** **19 Claims**



A pneumatic tire having a radial ply carcass and a sidewall reinforcing ply in at least one sidewall of the tire. The sidewall reinforcing ply may be a direct continuation of the carcass ply turn-up or a separate ply, overlapping the turn-up. The sidewall reinforcing ply may extend to the remote side of the tire breaker assembly either under or over the breaker assembly or between two layers thereof. The sidewall reinforcing ply may be of cranked form.

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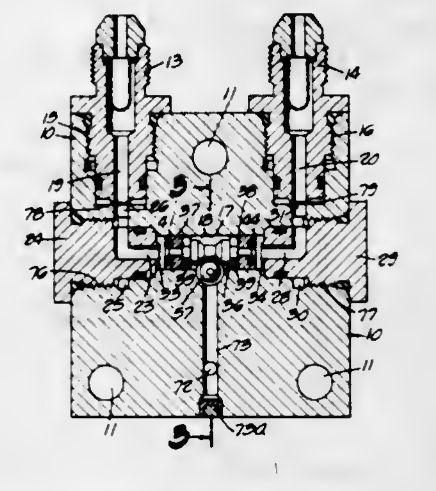
### 3,760,859
### AIR PRESSURE CONTROL FOR DUAL TIRES

**James F. Shahan, Tucson, and Richard D. Hofmann, Paradise Valley, both of Ariz., assignors to Dilar, Inc., Tucson, Ariz.**

**Filed Feb. 8, 1972, Ser. No. 224,538**

**Int. Cl. F16k** ***15/20***

**U.S. Cl. 152—415** **9 Claims**



A device for equalizing the pressure in the pneumatic tires of a dual wheel assembly employs a valve shuttle which has three positions: (a) it isolates pressure in one tire, (b) it equalizes the pressure between the tires, (c) it isolates pressure in the other tire. A fill valve assembly has an element for holding the valve shuttle in position (b) so that the tire pressures are equalized during filling. Also, the valve shuttle closes by pressure differential in the case of a blowout or puncture of one of the tires, to prevent loss of pressure from the other tire. Furthermore, a pressure relief valve is provided to prevent overpressure in either of the tires.

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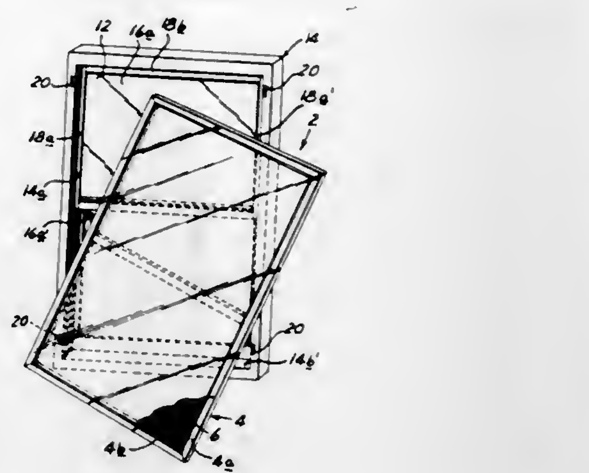
### 3,760,860
### STORM WINDOW ASSEMBLY

**Jack N. Kelarakis, 301 Royal Palm Blvd., Apt. 204, Charleston, S.C.**

**Filed Dec. 6, 1971, Ser. No. 204,961**

**Int. Cl. E06b** ***3/80***

**U.S. Cl. 160—179** **3 Claims**



A storm window assembly is formed from a conventional window screen unit converted for winter use into a storm window assembly simply and easily by providing a rectangular, bag-like structure made of a flexible synthetic plastic material and enclosed on three sides and open on one side slidably to receive the screen unit. The bag-like structure is most advantageously made of a clear, transparent material, slightly longer than the screen unit so the open end portion thereof may be pulled tightly around the adjacent end of the screen unit within the bag and anchored in such tight condition by suitable anchoring means, like a strip of adhesive tape or the like.

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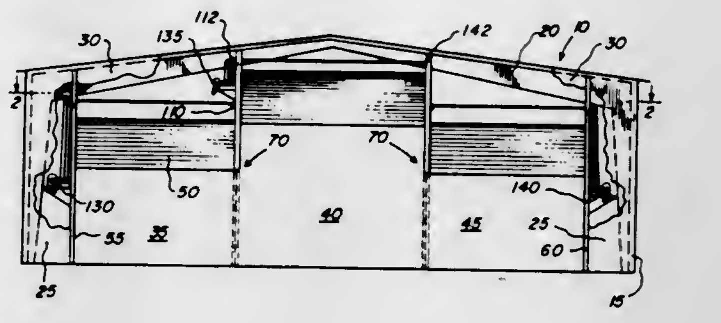
### 3,760,861
### DOOR FOR HANGARS AND OTHER STRUCTURES

**Kenneth O. Hammerstrom, 103 E. Third St., Riceville, Iowa**

**Filed Feb. 22, 1972, Ser. No. 227,817**

**Int. Cl. E06b** ***3/44***

**U.S. Cl. 160—184** **9 Claims**



A door for hangars and other structures in which the door is made in a plurality of sections with each section being comprised of slidably mounted panels guided in fixed and movable guide structures. The movable guide structures are mounted intermediate the length of the door and include telescopic parts which move with the panels to clear the door opening when the panels are elevated. The panels and movable guide structures are stored in the head frame of a door opening of any desired configuration. The construction permits the central portion of the door configuration to be of a greater elevation in the side portions to accommodate high-tailed aircraft.

### 3,760,862

## METHOD FOR CASTING STEEL INGOTS

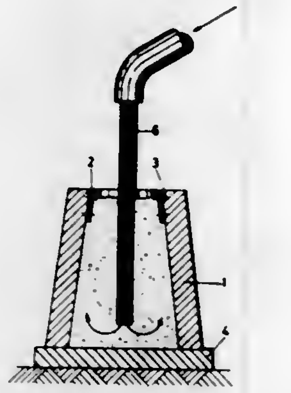
**Sebastian Van Goudoever, Santpoort, and Leonard Jansse, IJmuiden, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V., Ijmuiden, Netherlands**

**Filed Aug. 12, 1971, Ser. No. 171,339**

**Claims priority, application Netherlands, Aug. 14, 1970, 7012060**

**Int. Cl. B22d** *27/18, 27/20*

**U.S. Cl. 164—55** **4 Claims**



In casting steel ingots, e.g., for rolling purposes, the ingot mould is filled with effervescent steel in a single casting operation, after a time the liquid contents are killed by addition of a deoxidizing agent, and thereafter a gas, preferably air, is blown through the molten steel from a lance introduced into the molten steel from above and into proximity to the bottom of the mould. The lance preferably consists of a non-heat-insulating tube of a normal and usual steel composition, and heat discharge from the upper part of the molten steel is preferably decreased by applying an insulating layer locally onto the inner wall of the ingot mould and/or strewing a heat insulating powder onto the steel.

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### 3,760,863

## METHOD FOR THE MANUFACTURE OF CAST IRON PARTS HAVING INTERNALLY ARRANGED FRICTION BEARING SURFACES

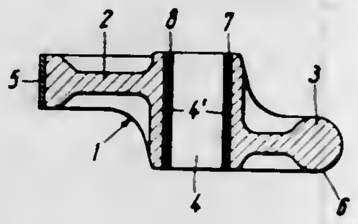
**Ernest Rudolf Weyersberg, Stuttgart-Bad Cannstatt, Germany, assignor to Firma Dr. -Ing. h. c. F. Porsche KG, Germany**

**Filed June 5, 1970, Ser. No. 43,725**

**Claims priority, application Germany, June 11, 1969, P 19 29 602.7**

**Int. Cl. B22d** *19/08*

**U.S. Cl. 164—107** **14 Claims**



Method for the manufacture of gray cast iron parts having internally arranged friction bearing surfaces, especially rockerarms for internal combustion engines, which are provided with a bearing bore produced by a core placed into the mold. The core can take the form of a thin-walled steel bushing which is removed from the bearing bore after the cast iron part has cooled and is removed from the mold. The core can be removed by either turning-out or pressing-out, and after removal of the core, the bore or at least a portion of the bore can be ground to the desired dimensions. Prior to the casting process, the core can be subjected to either heating or cooling, and during the casting process, a cooling medium stream can be passed through the core.

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### 3,760,864

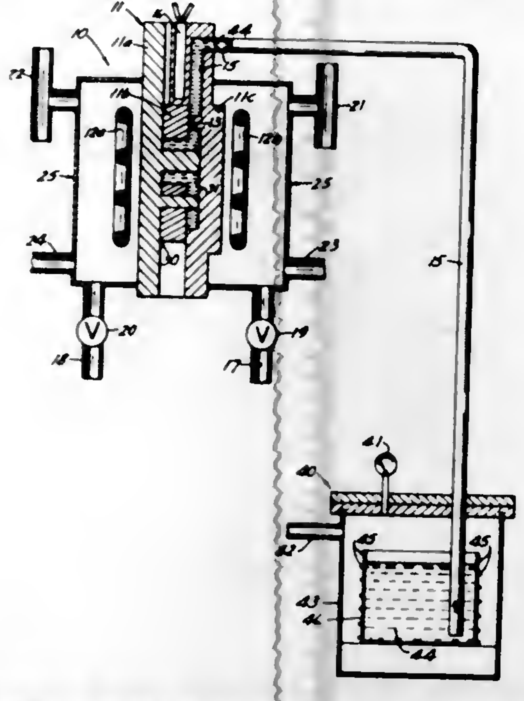
## METHOD OF CASTING IN THIN-WALLED MOLDS

**Russell B. Kirby, Jr., Baytown, and Stephen C. Wing, Landfall, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Feb. 12, 1971, Ser. No. 114,800**

**Int. Cl. B22d** *27/04*

**U.S. Cl. 164—126** **1 Claim**



A thin-walled, highly heat conductive mold for casting low porosity metal articles having thin sections. The mold is perforate to provide a narrow gate opening preferably within the mold wall rather than along the mold parting line. In removing the articles from the mold the solidified metal in the gate opening breaks at its junction with the cast article to provide a gate-free article. A method is provided for producing, at a high production rate, the above-mentioned cast articles.

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### 3,760,865

## APPARATUS FOR THE FABRICATION OF MOLD LININGS SUCH AS HOT TOP SECTIONS FOR INGOT MOLDS

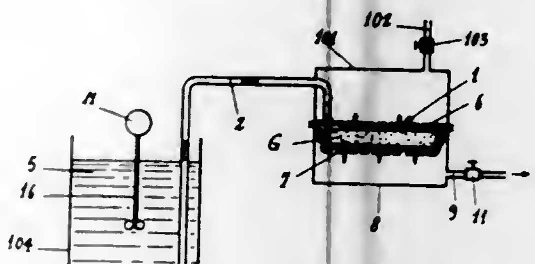
**Henri Jean Daussan, rue du Fort, Longeville-les-Metz, France**

**Division of Ser. No. 798,035, Feb. 10, 1969, Pat. No. 3,651,855. This application Aug. 11, 1971, Ser. No. 170,741**

**Claims priority, application France, Feb. 23, 1968, 68141036; Aug. 19, 1968, 68159956**

**Int. Cl. B22c** *15/22;* **B28b** *1/26*

**U.S. Cl. 164—160** **1 Claim**



An apparatus for the fabrication of mold linings such as hot tops and hot top sections for ingot-molds and similar lining elements, comprising means for conveying a slurry by difference of pressure into a closed mold having a cavity in which at least one wall is permeable to the dispersing phase of the slurry means for supplying continuously said slurry into said cavity until it is completely filled with the sediment formed by the material in suspension in the slurry and means for drying out the lining thus formed before it is removed from the mold. The mold comprises two superposable flask sections, each fitted with a half-shell which is at least partially permeable to the dispersing phase of the slurry and a chamber which can be fixed on one of the two flask sections and which is connected to a compressed air or vacuum source. The invention also includes an apparatus having the same object as the aforesaid one, and comprising a tank at atmospheric pressure containing a slurry, a closed mold made of two superposable flask sections as hereinbefore, two chambers which can respectively be fixed on said flask sections and one of which is connected to a compressed air or vacuum source, whereas the other chamber is fitted with a cock providing a communication with the atmosphere when open and a supply duct, one end of which is immersed in said tank.

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### 3,760,866

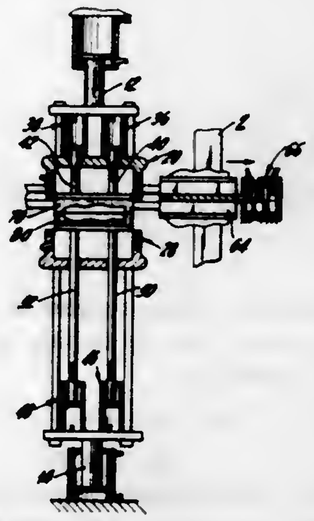
## APPARATUS FOR MAKING SAND MOLDS

**Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y.**

**Filed Aug. 13, 1971, Ser. No. 171,535**

**Int. Cl. B22c** *15/28*

**U.S. Cl. 164—200** **3 Claims**



A machine for making sand molds having a pair of vertically reciprocable mold chambers, a horizontally guided reciprocable pattern carrier movable into and out of the space between the mold chambers, and one plate each in the mold chambers, which are vertically movable within the respective mold chamber independently of the movement of the mold chamber for expelling the finished mold from the mold chambers.

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### 3,760,867

## APPARATUS FOR ALTERING THE CROSS-SECTIONS OF CONTINUOUSLY CAST METAL PIECES

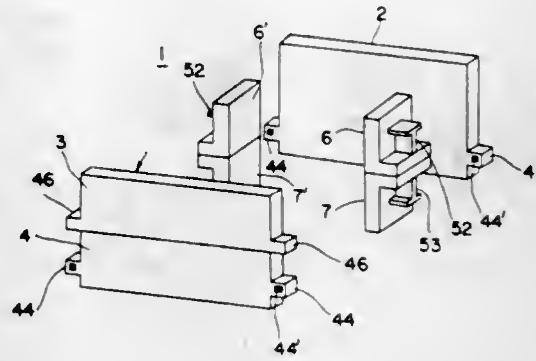
**Tadashi Murakami; Takeshi Hiromoto, both of Hirohata-ku, Himeji; Zenzo Soejima, Otsu-ku, Himeji; Toyosaburo Hamano, Takasago; Shinsuke Hashimoto, and Shingo Shibamoto, both of Otsu-ku, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan**

**Division of Ser. No. 99,809, Dec. 21, 1970, Pat. No. 3,710,843. This application Oct. 26, 1972, Ser. No. 301,248**

**Int. Cl. B22d** *11/02*

**U.S. Cl. 164—283** **5 Claims**

An apparatus for altering the width dimension of a continuously cast piece in the continuous production of the cast piece by continuous casting. The apparatus has a water-cooled casting mold comprised of a first water-cooled front wall having an upper and a lower section, a second fixed water-cooled front wall spaced from the first water-cooled front wall, the sections of the first front wall being slidable on each other toward and away from the fixed front wall. Two spaced opposed side walls each having an upper and a lower section are positioned between the front walls, the corresponding sections of the side walls being slidable on each other toward and away from each other. Means is associated with the front walls for moving the front wall sections and releasably press fixing the sections of the first front wall to each other and for releasably press fixing the side walls between the front walls. Means is associated with the side walls for moving corresponding side wall sections toward and away from each other and for releasably press fixing the side wall sections to each other.



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### 3,760,868

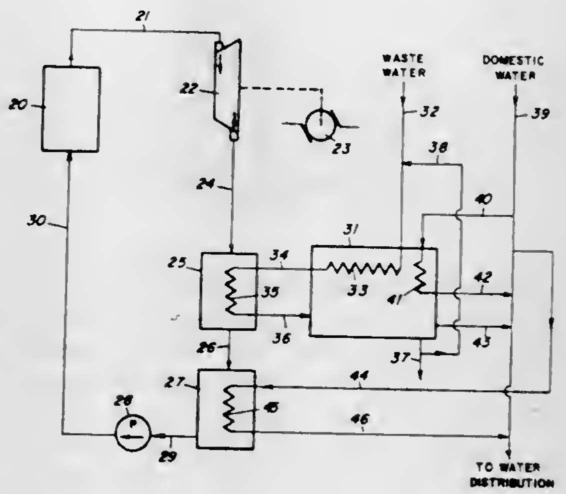
## DISPOSAL OF WASTE HEAT

**Allen Cywin, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed Jan. 28, 1971, Ser. No. 110,430**

**Int. Cl. A23c** *3/02*

**U.S. Cl. 165—1** **2 Claims**



An urban domestic water distribution system and its associated ground mass is used as a heat sink for waste heat produced by industrial processes. A domestic water stream is utilized as cooling water for waste heat-producing processes and is thereafter introduced into the distribution system.

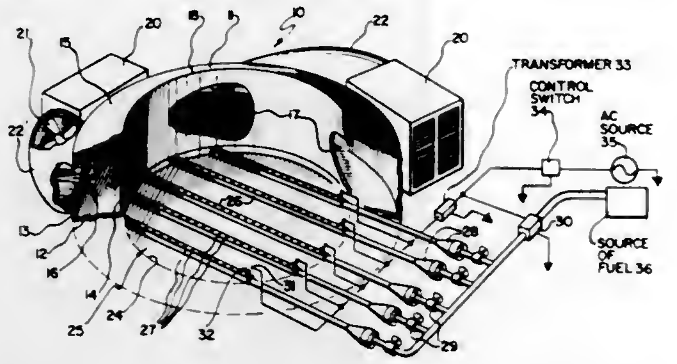
### 3,760,869
### METHOD OF THERMAL EXHAUST AND SYSTEM THEREFOR

**Dale H. Brown, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Apr. 22, 1971, Ser. No. 136,405**

**Int. Cl. F25b** *29/00*

**U.S. Cl. 165—30** **2 Claims**



The altitude of rise of plumes of gases discharged into the atmosphere from the exhaust ports of chimneys is increased by the provision of means to heat the hot gases in the chimney to augment the thermal energy thereof.

### 3,760,870
### COOLER CONSTRUCTION FOR CIRCULATING CONTROLLED AMOUNTS OF HEAT CARRIER FROM A REACTION VESSEL

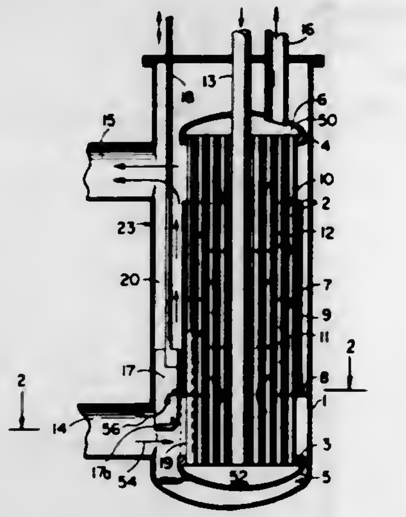
**Friedrich Guetlhuber, Ruhmannsfelden, Germany, assignor to Deggendorfer Werft and Eisenbau GmbH, Germany**

**Filed Dec. 4, 1970, Ser. No. 95,207**

**Claims priority, application Germany, Dec. 18, 1969, P 19 63 394.4**

**Int. Cl. G05d** *23/00*

**U.S. Cl. 165—35** **5 Claims**



A cooler for the passage of a regulable partial current of heat carrier in a reaction vessel includes a cooler housing having longitudinally spaced inlet and outlet connections. A plurality of cooling tubes extend longitudinally through the housing and the interior of the housing is divided into a flow path along and around the tubes from the inlet to the outlet and a control flow through a by-pass extending from the inlet to the outlet on the exterior of the tubes but within the housing. The coolant is circulated through a central coolant inlet tube which extends centrally within the tube bundle for flow from the chamber defined at the far end upwardly through the tubes to an opposite chamber for removal. The by-pass flow is regulated by means of a slide valve which may be slid along the by-pass passage to divert a portion of the inlet flow through the inlet so that it flows directly through the by-pass to the outlet and is not affected by the cooling tubes. The circulation to the cooler may be from the interior of the reactor to the inlet and from the outlet back into the reactor. Alternatively, the flow may be through an annular conduit extending around the reactor from the outlet of the cooler and thence downwardly on the exterior passage around the annular outlet back to the inlet. The first partial current conducted around the cooling tubes and the second partial current conducted through the by-pass passage, which are regulable relative to each other, form together a constant partial current of the heat carrier circulated in the reaction vessel.

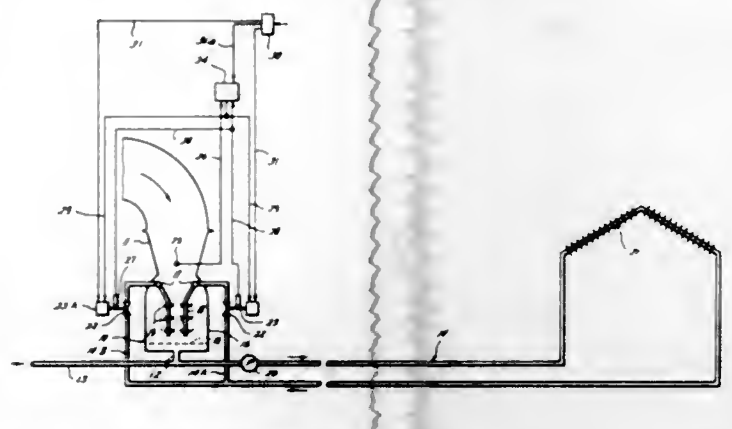
### 3,760,871
### APPARATUS FOR CONDENSING EXHAUST STEAM FROM A STEAM TURBINE POWER PLANT

**Michael W. Larinoff, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.**

**Filed Oct. 12, 1971, Ser. No. 188,117**

**Int. Cl. F28b** *3/04, 11/00*

**U.S. Cl. 165—110** **3 Claims**



Power plant turbine exhaust steam is condensed in a direct contact condenser by the quenching action of a subcooled portion of the condensate.

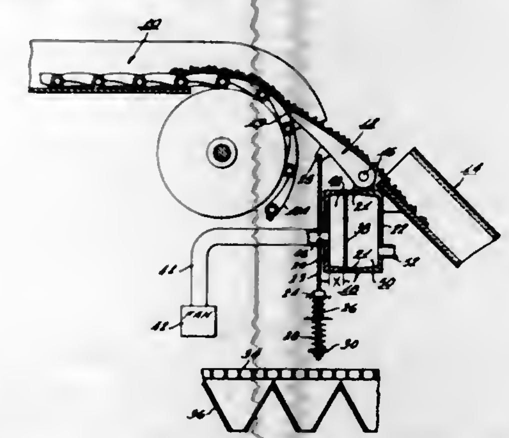
### 3,760,872
### STRUCTURAL MEMBER HAVING DIFFERENTIAL TEMPERATURE CONTROL MEANS AND COMBINATION OF SUCH STRUCTURAL MEMBER WITH HORIZONTAL STRIPPER FOR GRATE CONVEYOR

**Walter J. Hartwig, Oconomowoc, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed Jan. 10, 1972, Ser. No. 216,641**

**Int. Cl. F28f** *13/14*

**U.S. Cl. 165—120** **20 Claims**



An apparatus for and a method of controlling the temperature differential between different surfaces or walls of a structural member such as a hollow box beam, and a structural member whose temperature differential is so controlled. The invention has important utility in the combination in which it controls the temperature differential between the opposite walls of the box beam which conventionally supports the horizontal stripper member, used for stripping hot ore pellets or the like from the surface of a grate conveyor or the like since one of the walls of the box beam which supports the horizontal stripper is normally subjected to much higher temperatures than the opposite wall thereof, causing undesirable deflection of the beam. In accordance with an embodiment of the invention, a partition is provided inside the hollow box beam at a predetermined spacing from the hotter wall, whereby to define a cooling chamber for the hotter wall, and cooling air is circulated through the cooling chamber at a predetermined velocity and pressure, whereby to reduce the temperature of the hotter wall and thereby reduce the temperature differential between the two opposite walls of the box beam. Means may be provided for sensing the temperature differential between the opposite walls of the beam and for controlling a variable or variables such as the velocity and pressure of air passing through the cooling chamber as a function of the sensed temperature differential whereby to maintain the temperature differential between the opposite walls at an acceptable value.

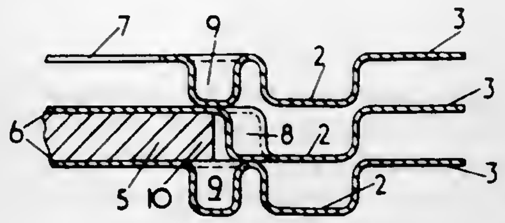
### 3,760,873
### PLATE HEAT EXCHANGERS

**Felix William Wright, Copthorne Bank, near Crawley, England, assignor to The A.P.V. Company Limited, Sussex, England**

**Filed Feb. 24, 1972, Ser. No. 228,914**

**Int. Cl. F28f** *3/00*

**U.S. Cl. 165—166** **10 Claims**



A heat exchanger plate has an unperforated port portion to separate passes. This portion is reinforced by a reinforcement having edge formations whereby the effect of an annular diaphragm around the reinforcement is avoided. In a preferred form, the inner wall of a gasket recess surrounding the port portion is formed with alternating zones of local widening, cooperating with the lobes or full diameter zones of the reinforcing element, and normal width zones cooperating with reduced diameter zones of the reinforcing element, with reinforcing ribs to strengthen the widened space between the reinforcing element and the inner wall of the gasket recess.

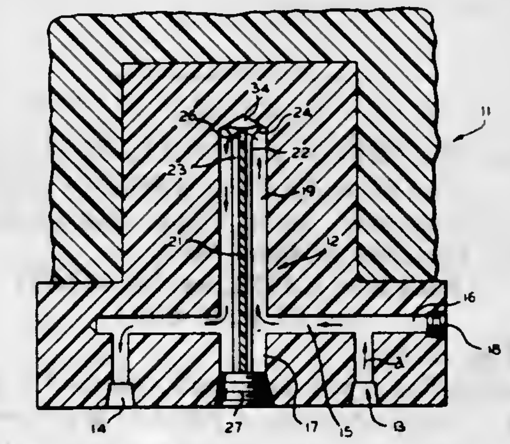
### 3,760,874
### HEAT EXCHANGE FLUID BAFFLES

**Borislav Boskovic, 4734 N. Talman, Chicago, Ill.**

**Filed Feb. 28, 1972, Ser. No. 229,860**

**Int. Cl. F28f** *1/40*

**U.S. Cl. 165—177** **10 Claims**



A heat exchange fluid baffle for assuring that heat exchange fluid travels over a lengthened path through mold apertures that are used for controlling the temperature of the plastic or other material being molded in the mold. The baffle comprises an extruded blade. The blade comprises a main central body section that has spaced apart longitudinal edges with sufficient flexibility to bend and spread as the blade is press fitted into the aperture. A passageway at the inner side of the blade enables the fluid to pass around the blade in going from the fluid intake opening to the fluid exit opening. A separate pipe threaded plug closes the aperture through which the blade is inserted.

### 3,760,875
### FLOATING STRUCTURE WITH ROTATABLE TEMPLET FOR CONNECTING GUIDE LINES THERETO

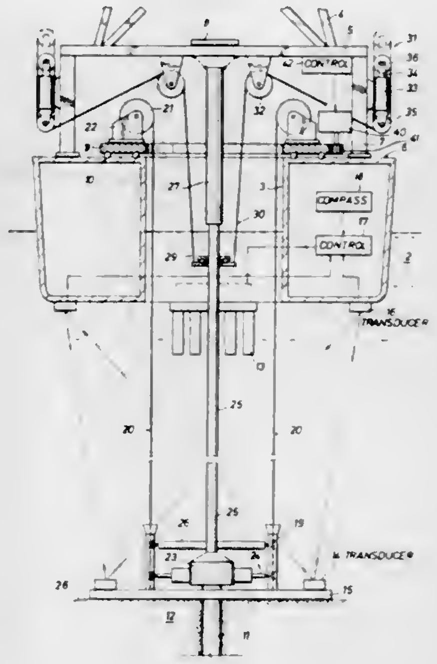
**Bob E. Busking, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.**

**Filed May 26, 1971, Ser. No. 147,110**

**Claims priority, application Great Britain, June 29, 1970, 31,390/70**

**Int. Cl. E21b** *7/12, 43/01*

**U.S. Cl. 166—.5** **3 Claims**



A constant tension system for guide lines used in connecting an underwater wellhead to a dynamically stationed ship wherein twisting of the guidelines is prevented by mounting the guidelines on a rotatable templete disposed on the structure.

### 3,760,876
### WELL COMPLETION SYSTEMS

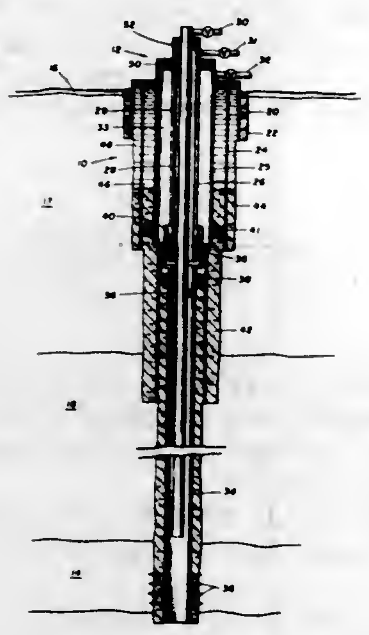
**Elmo M. Blount, Irving, Tex., and Nicolas J. Prueger, Spenard, Alaska, assignors to Mobil Oil Corporation, New York, N.Y.**

**Division of Ser. No. 57,636, July 23, 1970. This application May 11, 1972, Ser. No. 252,441**

**Int. Cl. E21b** *43/24, 43/10*

**U.S. Cl. 166—57** **4 Claims**

Well completion system for wells penetrating a permafrost zone in the earth. The system comprises a protective casing and a production casing extending to a subterranean formation. The production casing is suspended from the protective casing at a downhole location in order to reduce loading at the wellhead. Also disclosed are means for supporting other tubular goods within the well rather than at the wellhead.



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### 3,760,877
### SPOON FOR PLUGGING CASED PETROLEUM PRODUCTION WELLS

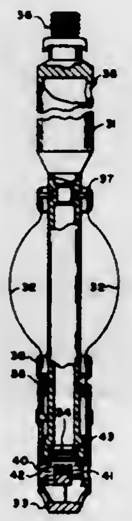
**Guy De Lajarte, Toulouse, and Jacques De Saint Palais, Saint Gaudens, both of France, assignors to Entreprise De Recherches Et D'Activities Petrolieres (ELF), Paris, France**

**Division of Ser. No. 11,587, Feb. 16, 1970, Pat. No. 3,423,550. This application July 21, 1971, Ser. No. 164,889**

**Claims priority, application France, Feb. 26, 1969, 6905030**

**Int. Cl. E21b** *23/00, 33/13*

**U.S. Cl. 166—164** **2 Claims**



An umbrella unit which is screwed to an actuating tool and lowered into the production tubing of an oil well by means of a wire line is fitted with a set of upwardly-directed and a set of downwardly-directed spring-actuated knives which are outwardly and radially displaceable within the well casing so as to lock said umbrella against the casing wall in the required plugging position, the umbrella proper being then caused to open out radially and filled with gravel or like material. A spoon comprising a reservoir tube filled at the wellhead with cement grout is lowered by means of a wire line, the cement grout being discharged through bottom openings by means of a glass window which is broken by means of a striker-piece upon impact of the bottom of the spoon on the gravel.

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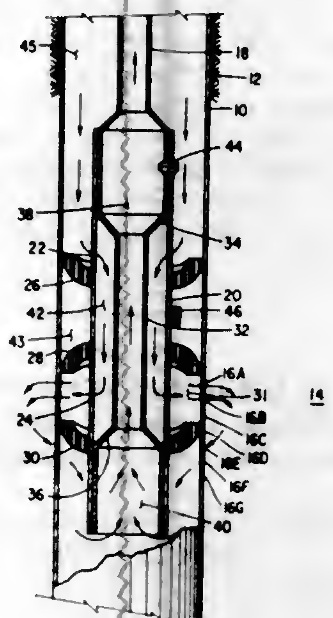
### 3,760,878
### PERFORATIONS WASHING TOOL

**Robert M. Peevey, New Orleans, La., assignor to Amoco Production Company, Tulsa, Okla.**

**Filed Mar. 16, 1972, Ser. No. 235,222**

**Int. Cl. E21b** *23/00, 37/00*

**U.S. Cl. 166—185** **7 Claims**



This invention concerns a tool for washing perforations in a casing set in a well bore. It includes a cylindrical housing having an upper port, and a lower port. The housing is connected to the lower end of a string of tubing hung from the well bore. The housing has various packers and passages so that cleaning fluid circulated down the annulus between the tubing string and casing flows in through the first port and out the second port through perforations at the same level as the second port. The cleaning fluid returns through lower perforations in the casing carrying sand or other plugging material with it and is returned up the tubing string.

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### 3,760,879
### PETROLEUM RECOVERY PROCESS UTILIZING FORMALDEHYDE-SULFITE-REACTED POLYACRYLAMIDE

**Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio**

**Filed Oct. 29, 1971, Ser. No. 193,740**

**Int. Cl. E21b** *43/20*

**U.S. Cl. 166—275** **7 Claims**

Viscosity and screen factor of modified polyacrylamides for use in supplemented recovery of petroleum are increased by treatment with formaldehyde and either simultaneously or sequentially with sulfite or bisulfite to yield a high molecular weight partially hydrolyzed sulfomethylated polyacrylamide which is hydrophilic and exhibits high efficiency in petroleum recovery.

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### 3,760,880
### CONSOLIDATION OF PARTICULATE MATERIALS LOCATED IN EARTHEN FORMATIONS

**Francis E. Dollarhide, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed June 1, 1972, Ser. No. 258,601**

**Int. Cl. E21b** *43/04*

**U.S. Cl. 166—276** **10 Claims**

A consolidating composition and a method is provided for placing a consolidated mass of particles in a borehole having high compressive strengths and being permeable to the flow of fluids. The consolidating composition comprises a mixture produced by sequentially mixing together, (1) particulate

solids and a carrier liquid and (2) an uncured aldehyde-hydroxylaryl resin dissolved in a solvent which itself is soluble in said carrier liquid. Alternatively the resin solution and particulate material can be simultaneously mixed into the carrier, e.g., the resin and particles are premixed and then introduced into a carrier liquid.

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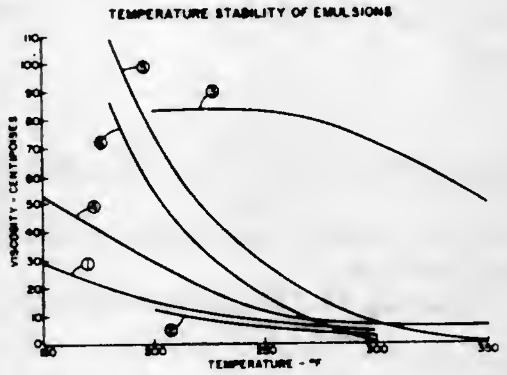
### 3,760,881
### TREATMENT OF WELLS WITH FLUIDS CONTAINING COMPLEXES

**Othar M. Kiel, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.**

**Continuation-in-part of Ser. No. 146,349, May 24, 1971, Pat. No. 3,710,865, which is a continuation-in-part of Ser. No. 76,887, Sept. 30, 1970, abandoned. This application June 15, 1972, Ser. No. 263,081**

**Int. Cl. E21b** *43/26, 43/27*

**U.S. Cl. 166—308** **25 Claims**



A subterranean formation surrounding a wellbore is treated by injecting into the formation a water-based viscous fluid containing a complex produced by the reaction of an aliphatic quaternary ammonium compound with a water-soluble compound selected from the group consisting of monosaccharides, disaccharides, trisaccharides, polysaccharides, and long chain synthetic hydroxylated polymers which yield such complexes at a temperature between about 20°C and about 205°C or higher. The complexes permit the formation of emulsions and other viscous fluids which are more stable at elevated temperatures and in the presence of salts than those prepared with other materials and thus facilitate the treating of high-temperature formations not readily susceptible to treatment with other water-based fluids. Fluids containing the complexes are particularly useful as hydraulic fracturing fluids.

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### 3,760,882
### FULL HYDRAULIC EARTH WORKING IMPLEMENT

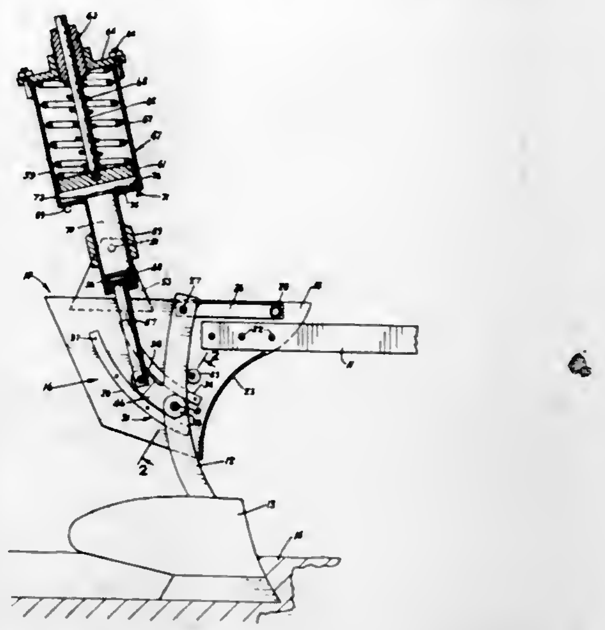
**Cletus J. Geurts, Gibson City, Ill., assignor to Geurts, Inc., Minneapolis, Minn.**

**Continuation-in-part of Ser. No. 486,712, Sept. 13, 1965, and a continuation-in-part of Ser. No. 666,047, Sept. 7, 1967. This application Mar. 16, 1971, Ser. No. 124,753**

**Int. Cl. A01b** *61/00*

**U.S. Cl. 172—265** **27 Claims**

An earth working implement having a high ground clearance beam connected to a frame unit having side plates. An articulated linkage is connected to an earth working tool and pivotally joined to the frame unit. Tracks on the side plates cooperate with rollers on the standard to guide the movement of the plow bottom to a trip position without the plow bottom going below its normal earch working position. A hydraulic cylinder acting on the standard continuously holds and biases the plow bottom to its earth working position.



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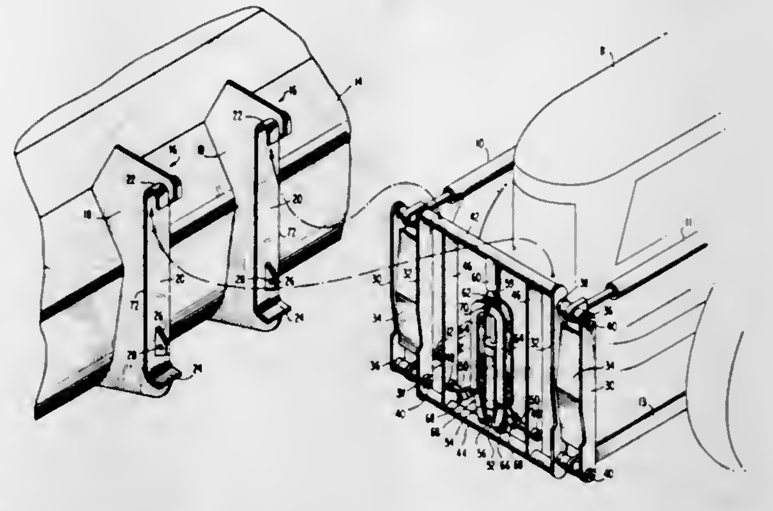
### 3,760,883
### QUICK HITCH ASSEMBLY

**Billy D. Birk, Wamego, Kans., assignor to Balderson, Inc., Wamego, Kans.**

**Filed Mar. 27, 1972, Ser. No. 238,208**

**Int. Cl. A01b** *51/00*

**U.S. Cl. 172—273** **8 Claims**



A quick hitch assembly for connecting and disconnecting implements such as snow plows, buckets, blades and the like to the front of a wheeled or track type vehicle. A single, vertically mounted, hydraulic cylinder is connected by a pair of linkage mechanisms to selectively actuate a pair of lock pins which are mounted for horizontal reciprocal sliding movement.

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### 3,760,884
### TINE FOR ROTARY SPADER

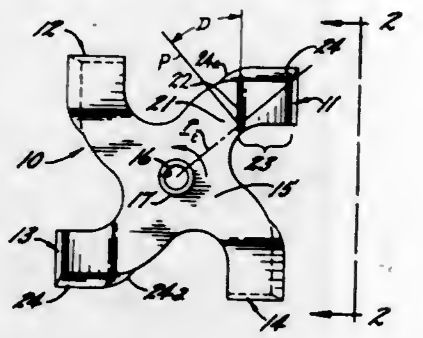
**J. Vincent Webster, and Douglas D. Dankel, Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.**

**Filed Jan. 10, 1972, Ser. No. 216,374**

**Int. Cl. A01b** *33/10, 33/02*

**U.S. Cl. 172—555** **1 Claim**

A tine for a rotary spader which is intended for mounting on a horizontal drive shaft as one of a plurality of units spaced end-to-end distinguished by a flat body, a set of four blades of dog-leg shape presenting a sharpened leading edge and with each blade having a straight tip portion which is angled retreatingly to produce a swastika-like shape. The blades and body are formed integrally of a single plate of metal and each top portion is bent over at an angle along a bending line which is generally perpendicular to the tip axis, adjacent blades being bent in opposite directions.



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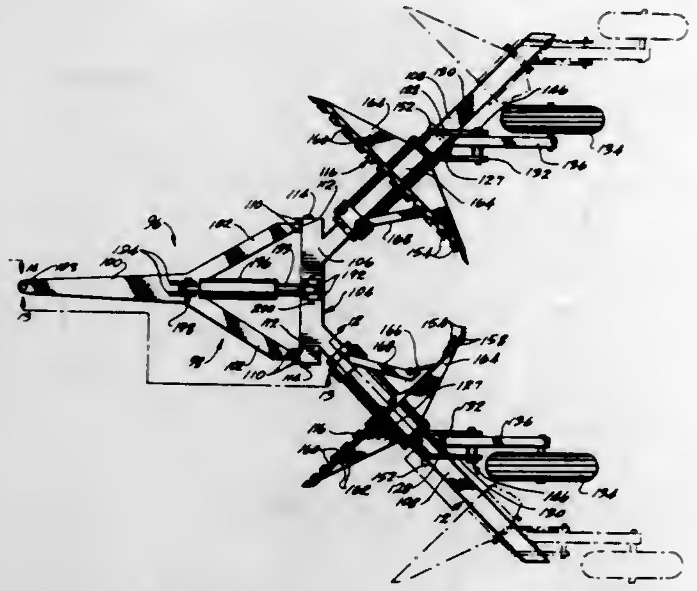
**3,760,885**
**RIDGE FORMER**
**Ross B. McKenzie, 8115 Rio Linda Blvd., Elveria, Calif.**
**Continuation-in-part of Ser. No. 823,759, May 12, 1969, abandoned. This application Mar. 15, 1971, Ser. No. 124,049**
**Int. Cl. A01b** *5/06*
**U.S. Cl. 172—574** **15 Claims**



A ridge forming machine includes a frame adapted to move over the ground and a pair of opposed scrapers mounted on the frame to engage the ground and scrape dirt on the ground toward each other to form a ridge. The scrapers can be moved toward and away from each other to vary the area over which the dirt is scraped. In one form of the invention the frame comprises a front section pivotally interconnected with a rear frame section having a pair of rearwardly diverging beams. A separate disc is rotatably mounted on each beam, and the beams are pivotal relative to the front frame section to move the discs up and down relative to the ground.

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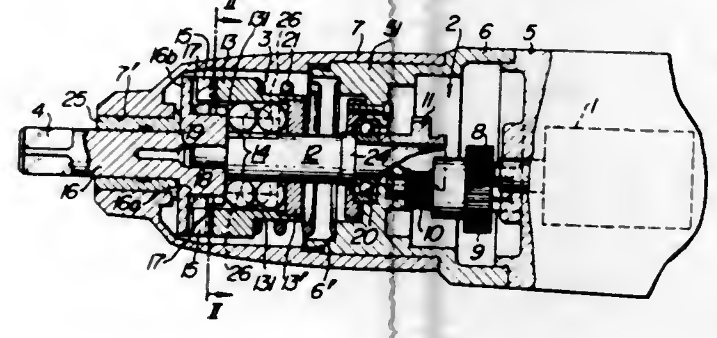
**3,760,886**
**ELECTRICALLY-POWERED DEVICE FOR EXERTING ROTATIONAL IMPACT FORCE TO A FASTENER ELEMENT**
**Yubi Mori, Neyagawa-shi, and Kouichi Mizu, Hirakata-shi, both of Japan, assignors to Matsushito Electric Industrial Co., Ltd., Osaka, Japan**
**Filed Nov. 12, 1971, Ser. No. 198,334**
**Claims priority, application Japan, Nov. 16, 1970, 45/101744; Sept. 1, 1971, 46/79556 (utility model)**
**Int. Cl. E21b** *33/03*
**U.S. Cl. 173—93.6** **12 Claims**

A device for exerting impact force to a fastener such as a nut to tighten or loosen the nut with respect to an associated bolt. The device has an axially movable and rotatable cylindrical drive member normally in engagement with an output shaft of the device having an outer end for engagement with a fastener. An electrically actuated drive shaft extends into the drive member for relative rotational movement with respect to the drive member. A formation comprising a plurality of balls is disposed between the drive member and shaft. The arrangement is such that the formation is depressed circumferentially of the drive member to expand axially thereof in response to the relative rotational movement between the drive member and the shaft whereby the drive member is disengaged from the output shaft.



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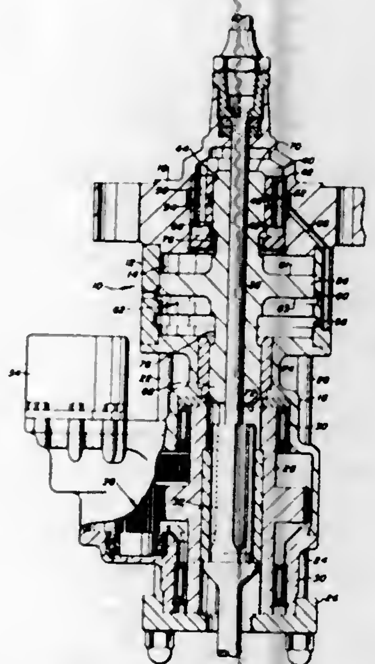
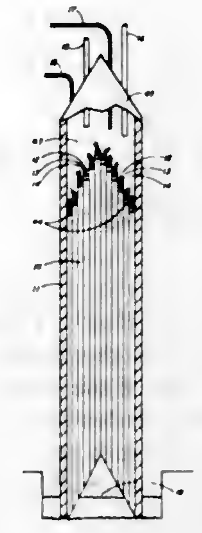
**3,760,887**
**REVERSIBLE PISTON HAMMER FOR PERCUSSION TOOL**
**Dieter K. Palauro, Denver, Colo., assignor to Gardner-Denver Company, Quincy, Ill.**
**Filed Aug. 18, 1972, Ser. No. 281,725**
**Int. Cl. F01b** *29/04*
**U.S. Cl. 173—134** **5 Claims**



A pneumatic percussion tool having a reciprocable piston hammer with similar reduced diameter portions extending from opposite sides of an enlarged piston portion. Each reduced diameter portion includes an annular groove cooperable with associated inlet porting for admitting pressure air to act on the piston to deliver a percussion blow. The respective grooves are located at different positions with respect to the opposite impact end faces of the piston hammer and the hammer can be reversibly disposed in the tool cylinder to provide variable impact blow, blow frequency, and air consumption.

**3,760,888**
**SHOCK WAVE DRILLING CALLED SHOCK TUBES EARTH DRILL**
**Louis Richard O'Hare, 2700 Indiana N.E., Albuquerque, N. Mex.**
**Filed Dec. 27, 1971, Ser. No. 192,712**
**Int. Cl. E21b** *11/00*
**U.S. Cl. 175—4.5** **4 Claims**



This earth drill is a parallel array of combustion type shock tubes whose shock waves are directed into a hole for loosening and moving aside earth and rock and in which means are employed for simultaneous ignition of the combustible gases or vapor fuel and oxidizer mixture in each of the tubes, the various positionings of the tubes in the array relative to each other in different embodiments is such that the open end of each tube which directs the shock of that tube down into the hole may have a different elevation from any or all of the other tubes as to produce a desired interaction of the shock waves from the tubes in the array and thereby produce an aggregate shock wave either focused principally downward or one at any of several degrees of downward and outward. The geometry of the shock directing end of each shock tube may vary to enhance the directive effect.

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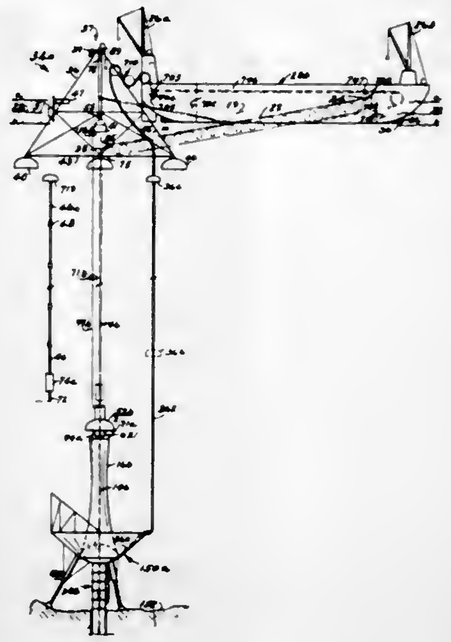
**3,760,889**
**APPARATUS AND METHOD TO MODIFY AND SERVICE A SUBAQUEOUS STRATA DRILLING SYSTEM**
**Arthur John Nelson, 3304 Shasta Dr., San Mateo, Calif.**
**Continuation-in-part of Ser. No. 789,494, Jan. 7, 1969, Pat. No. 3,594,808. This application May 17, 1971, Ser. No. 143,769**
**Int. Cl. E21b** *7/12*
**U.S. Cl. 175—6** **7 Claims**

A vertical array comprises: a lengthened drill string extending in reach from its buoyant support station initially positioned in vicinity of the water surface, through the body of water and to the lowest penetration of the floor strata as an assembly to deepen the hole by an amount approximating the free length through the said body of water; a drilling fluid circulating system having a conduit portion periodically lengthened while drilling and so independently suspended as to retain fluid communication with the string, to have an increased length approximating the increased depth of hole. To change the assembly; the total increased length of conduit is removed as a unit, the string said free length is withdrawn from the well as a unit, a portion of the string length is segmentally disassembled from the array to leave for unit removal a final string assembly equal to said free length. Provisions are included to control the well against blowout caused by sudden release of excessive formation fluid pressure.



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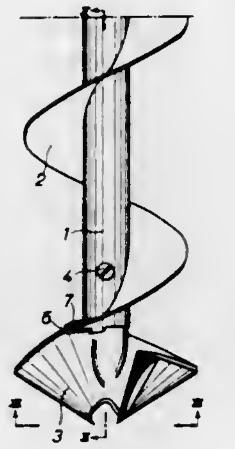
**3,760,890**
**ICE AUGER**
**Uuno Rantanen, Rauhankatu 2-4 A5, Heinola, Finland**
**Filed Sept. 16, 1971, Ser. No. 181,050**
**Int. Cl. F25c** *5/04*
**U.S. Cl. 175—18** **4 Claims**



An ice auger is formed of a body tube with ice-removing helix and a detachable blade, which has been provided with a supporting element fitting into the end of the body tube. The blade has been provided with one or several forks against the bottom of which the end of the helix rests, whereby the blade and the helix together form a continuous helical surface which has no fixing elements or shoulders slowing down the passage of the ice flow.

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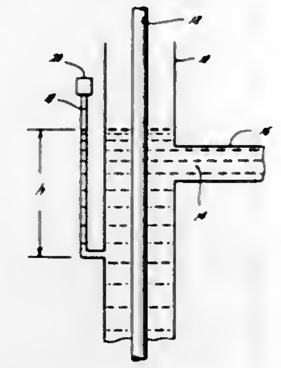
**3,760,891**
**BLOWOUT AND LOST CIRCULATION DETECTOR**
**John F. Gadbois, Houston, Tex., assignor to The Offshore Company, Houston, Tex.**
**Filed May 19, 1972, Ser. No. 255,160**
**Int. Cl. E21b** *47/10*
**U.S. Cl. 175—48** **12 Claims**

A method and apparatus for rapidly detecting blowouts and lost circulation in a drilling well, having particular application to a well being drilled at sea from a floating drilling platform. The return rate of flow of drilling fluid which will be affected by a blowout is monitored and transduced into an electrical signal proportional thereto. The magnitude of the electrical signal is monitored and accumulated over selected overlapping intervals of time to form a sequence of accumulated values. Each accumulated value in the sequence is compared with at least one of the previous accumulated value in the sequence and the difference therebetween determined. This difference is compared with preselected values denoting the allowable limits of the return flow rate of the fluid. If the difference between the accumulated values exceed the preselected values, an indication is provided of the commencement of a blowout or lost circulation. This abstract is not intended to define this invention which, of course, is measured by the claims, or to be limiting in any way as to the scope of this invention.



## 3,760,892
## AQUEOUS DRILLING FLUID AND METHOD OF USE THEREOF

**Thad O. Walker, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**

**Filed June 26, 1972, Ser. No. 266,165**

**Int. Cl. E21b** *21/04*

**U.S. Cl. 175—65** **10 Claims**

An aqueous drilling fluid dispersant and a method of drilling wells using said drilling fluid dispersant which comprises a substituted pyridine compound selected from the group consisting of 2,3-dihydroxypyridine, 5-chloro-2,3-dihydroxypyridine and mixtures thereof.

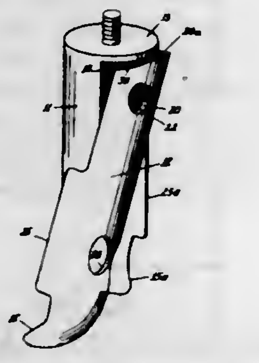
## 3,760,893
## CYLINDER TYPE SOIL-SAMPLING AUGER

**Ralph L. Meeker, 138 Glencoe Rd., Columbus, Ohio**

**Filed Apr. 3, 1972, Ser. No. 240,654**

**Int. Cl. E21b** *11/00*

**U.S. Cl. 175—316** **3 Claims**



A soil-sampling auger of cylindrical tubular form with a leading open end in the form of an auger bit. The tubular auger consists of two substantially semicylindrical sections pivoted together at the trailing or closed end so that the sections can be swung apart to expose or remove the soil sample after the auger has been turned into the ground and then pulled out of the ground with the entrapped soil sample. The pivot arrangement between the sections is so designed that turning the auger into the ground exerts a force which keeps the sections closed.

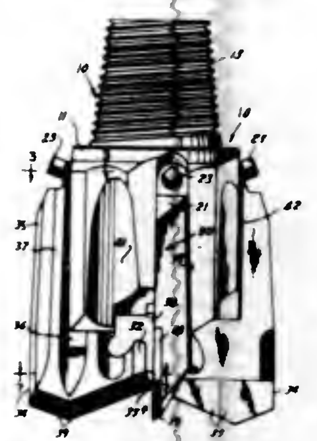
## 3,760,894
## REPLACEABLE BLADE DRILLING BITS

**Michael J. Pitifer, 305 N. Avenue U, Lubbock, Tex.**

**Filed Nov. 10, 1971, Ser. No. 197,208**

**Int. Cl. E21c** *13/00*

**U.S. Cl. 175—413** **5 Claims**



A replaceable blade drilling bit wherein the blades have shoulders engageable with the body to absorb longitudinal thrust on the cutting edge of the blades from the cutting edge axially of the body. The blades are anchored in place on the body at the ends of the blades opposite the cutting edges by bolts or other securing means. The body may be made for three, four or five blades. Also, retaining means is provided on the blades engageable in grooves in the body for absorbing torsion or torque circumferentially of the axis of the body as the bit is used.

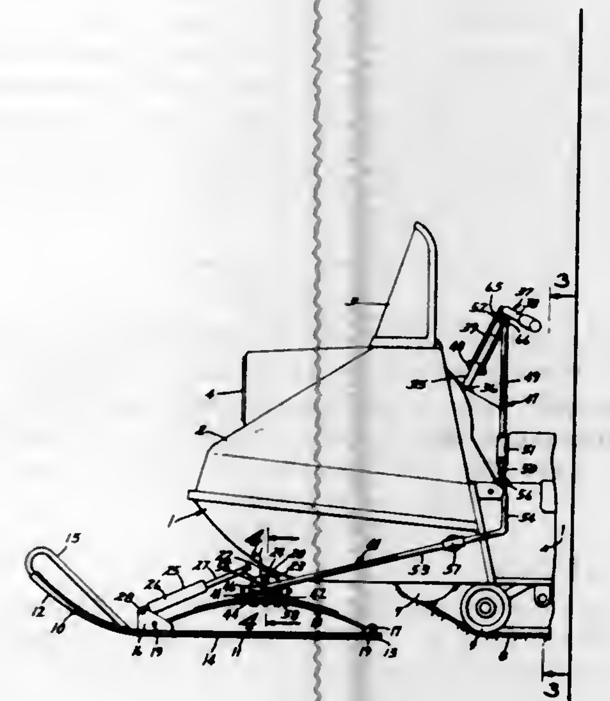
## 3,760,895
## STEERING APPARATUS FOR A SELF-PROPELLED VEHICLE

**Werner W. Martinmaas, 835-10th Ave., N.W., Watertown, S. Dak.**

**Filed Dec. 27, 1971, Ser. No. 212,067**

**Int. Cl. B62m** *27/02*

**U.S. Cl. 180—5 R** **9 Claims**



A self-propelled vehicle having a pair of supporting skis which are dirigible for steering the vehicle. The vehicle has control apparatus for imparting steering movement to the skis as well as pivotal or tilting movements to the skis on generally horizontal axes extending longitudinally of the skis, the tilting movements being relative to the vehicle frame structure.

## 3,760,896
## STEERING DEVICE FOR ENDLESS TRACKED VEHICLES

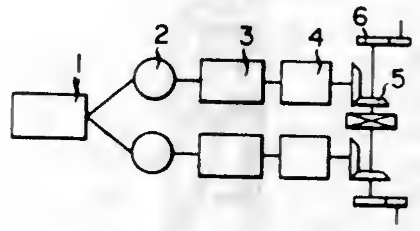
**Eiji Kawamura, and Hiroyuki Taki, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan**

**Filed Apr. 19, 1971, Ser. No. 135,073**

**Claims priority, application Japan, Apr. 18, 1970, 45/32683**

**Int. Cl. B62d** *11/08*

**U.S. Cl. 180—6.7** **2 Claims**



The steering device for endless tracked vehicle provided with dual type power transmission mechanism capable of driving right and left endless track mechanisms separately, which comprises providing right and left clutches for forward and reverse movements between two pivotal turn valves, wherein when a pivotal turn is made, fluid selectively flows into the right and left clutches for forward and reverse movement through the liquid path from the pivotal turn valve as the speed valve for a speed change is in a neutral state.

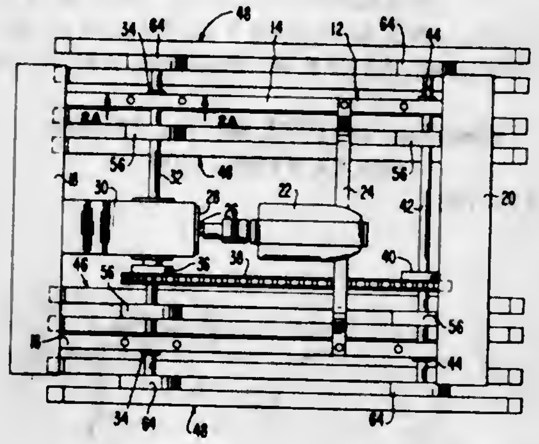
## 3,760,897
## LOAD MOVING VEHICLE

**James R. Reynolds, 681 B Ehrhorn, Mountain View, Calif., and Richard Manske, 4013 W. Tuolumne Rd., Turlock, Calif.**

**Filed Sept. 23, 1971, Ser. No. 182,971**

**Int. Cl. B62d** *57/02*

**U.S. Cl. 180—8 A** **5 Claims**



A vehicle suitable for use in moving heavy loads along horizontal and inclined paths wherein the vehicle includes a frame having a pair of spaced shafts rotatably mounted thereon. Each shaft has two pairs of disks rigidly secured thereto and being eccentrically mounted thereon, one pair of disks being rotatably mounted on a pair of inner track units and the other pair of disks being rotatably mounted on a pair of outer track units. The track units are generally parallel with each other and the eccentric coupling of the shafts to the inner track units is approximately 180° out of phase with that of the disks of the outer track units. Reversible drive means carried by the frame and coupled with the shafts rotating the same and thereby the disks relative to respective track units to cause one of the pairs of track units to advance in stepwise fashion as the other pair of track units remains stationary and vice versa. A pair of roller units can be releasably attached to the outer track units to permit the vehicle to be rolled over a flat surface with the track units elevated above the surface.

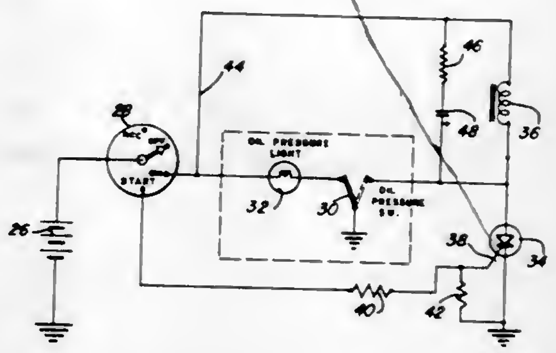
## 3,760,898
## AUTOMOTIVE ANTI-THEFT AND SAFETY DEVICE

**Patrick D. Kendall, 6566 Elizabeth St., Cass City, Mich.**

**Filed Sept. 16, 1971, Ser. No. 181,056**

**Int. Cl. B60r** *25/00*

**U.S. Cl. 180—114** **8 Claims**



An anti-theft and safety device for vehicles and the like, said device comprising a normally closed solenoid-operated fuel valve connected to an SCR circuit which is adapted to be triggered through an ignition switch in the start position, thus preventing theft by by-passing the ignition switch. The device further includes an oil pressure or level responsive switch and an RC circuit which are effective to turn off the SCR in response to an adverse oil condition or related engine malfunction.

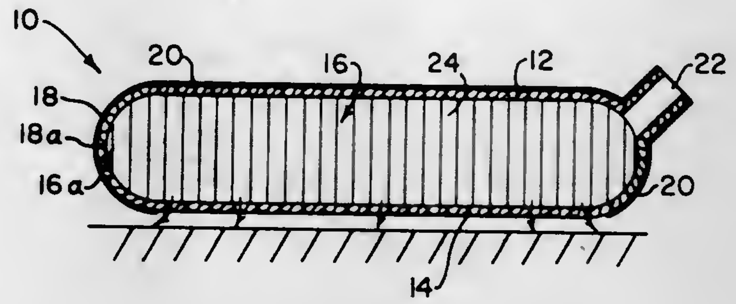
## 3,760,899
## INFLATED AIR BEARING

**Richard L. Crossman, Tallmadge; Richard R. Fisher, Cuyahoga Falls, and Harry T. Kifor, Canton, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio**

**Filed May 6, 1971, Ser. No. 140,769**

**Int. Cl. B60v** *1/00*

**U.S. Cl. 180—125** **5 Claims**



Disclosed is a load supporting device of the air cushion type. The device is formed of a dual wall inflatable fabric which is sealed at its edges and coated on its upper and side surfaces with an air-tight coating. The lower surface of the device is porous. The device is inflated by a low or high pressure air supply and the air escaping through the porous lower surface supports the device with its load a small distance above the ground surface. The device may be used in moving and lifting heavy loads, for supporting patients, and for other uses. Another primary use is for distributing heavy loads over larger areas, this would permit moving heavy loaded commercial or military trucks over bridges and so forth because of decreased concentrated wheel loads.

## 3,760,900
## EXHAUST MUFFLER AND SCAVENGER APPARATUS

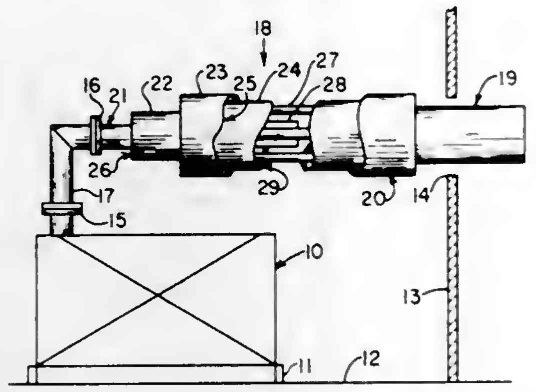
**Cecil L. Overcast, Lovington, N. Mex., assignor to The Estate of James D. Johnson, deceased, Pecos, Tex.**

**Filed Jan. 7, 1972, Ser. No. 216,158**

**Int. Cl. F01n** *1/08*

**U.S. Cl. 181—53** **4 Claims**

A unitized muffler and scavenger apparatus for use in conjunction with internal combustion engines. The muffler is contained within structure which forms an annular flow passageway through which scavenged gases flow from proximity of the engine to a mixing chamber located downstream within the apparatus. The muffling action is attained by a tube chamber located upstream of a resonator chamber which in turn is located upstream of the before mentioned mixing chamber. A series of radially spaced apart split flow tubes cause the exhaust gases to flow countercurrent as the gases proceed through the apparatus.



A tuning element is disposed near the outlet of the apparatus for regulating the noise level as well as the back pressure within the apparatus thus achieving the optimum operating configuration of the apparatus.

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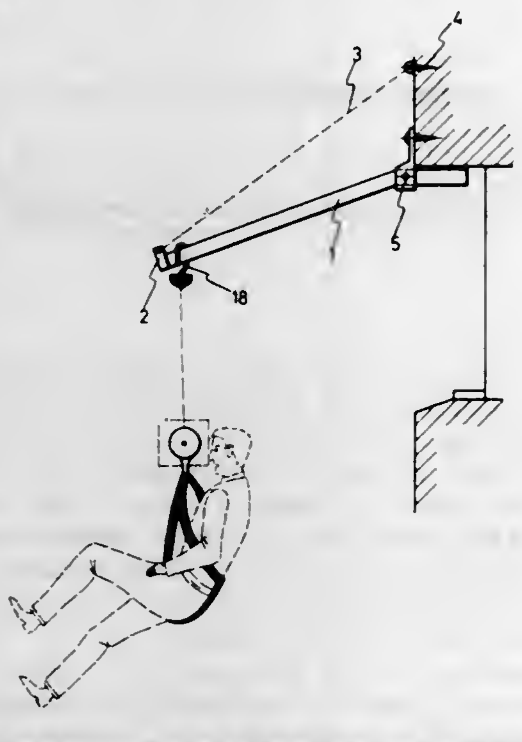
### 3,760,901
### LIFESAVING SYSTEMS FOR ESCAPING FROM HIGH BUILDINGS IN THE CASE OF FIRES OR OTHER EMERGENCIES

**Pierce Charles Hynes, Amesti 23, 6°, Algerta-Bilbao (Vizcaya), Spain**

**Filed Mar. 12, 1971, Ser. No. 123,611**
**Claims priority, application Spain, Mar. 13, 1970, 377,492**
**Int. Cl. A62b** *1/08*
**U.S. Cl. 182—7** **6 Claims**



A lifesaving system for escaping from high buildings in case of fires or other emergencies. The system has a descending bar coupled to the upper part of a window and which projects outwardly, such as from a building, or is coupled to a fixed point of a place a person wishes to leave. A harness or belt is provided which snugly surrounds a part of the body. A hermetically closed element is also provided which has an assembly of wheels coupled to each other in its interior. This hermetically closed element is joined by a part to the harness or belt, and therefore to the user; and is also joined by another part, such as a hook, to the descending bar when the persons to be rescued leaves the building by descending vertically.

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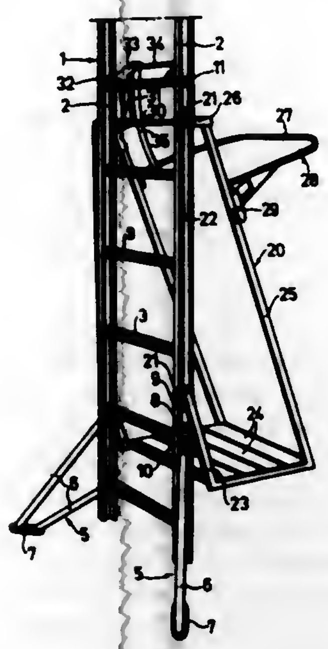
### 3,760,902
### SCAFFOLD STRUCTURE

**Curt Lennart Nyman, Billdalsgatan 24, Boras, Sweden**

**Filed Nov. 13, 1970, Ser. No. 89,344**
**Claims priority, application Germany, Nov. 17, 1970, G 69 44 598.3**
**Int. Cl. E06c** *7/16*
**U.S. Cl. 182—103** **5 Claims**



A scaffold structure comprising a ladder like scaffold part having two vertical string members and a plurality of horizontal rungs, support legs to retain one end on the ground and space the structure from a wall or building in relation to which it is in use and a platform movable up and down the scaffold part and with hooks to engage the scaffold part and retain the platform at any desired level.

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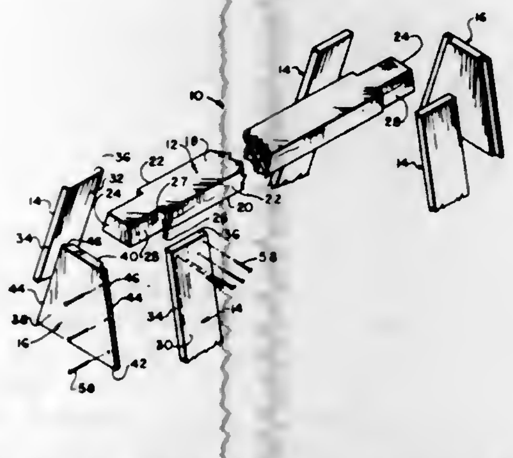
### 3,760,903
### METHOD OF ASSEMBLING A SAW HORSE AND SAW HORSE AND ASSEMBLY KIT THEREFOR

**James S. Thompson, 5810 S.W. Erickson, Apt. 4, Beaverton, Oreg.**

**Filed Jan. 28, 1972, Ser. No. 221,556**
**Int. Cl. F16m** *11/00*
**U.S. Cl. 182—181** **4 Claims**



A saw horse kit including an elongated article support member defining four beveled surfaces, four elongated leg members each having opposite beveled ends, and two trapezoidally shaped gussets defining notches or channels extending along the entire length of the non-parallel sides thereof. The saw horse is assembled by securing each of the gussets to different pairs of leg members such that each of the notches of the gussets receives therein a predetermined portion of a respective one of the leg members. The article support member is in position on the upper surface of the gussets and between the opposed leg members secured to the gussets such that each of the aforestated beveled surfaces contiguously en-

gages with and is fastened to surface portions of a respective leg member.

The method of this invention includes assembling each of said gussets to a respective pair of leg members, each of said assembling steps including positioning two of said leg members together with the respective ends aligned so that said aligned ends form a predetermined shape, making a mark on each of said positioned leg members a predetermined distance from said aligned ends using a template having edges of said predetermined shape, moving said positioned leg members apart, positioning the upper surface of said gusset against said moved leg members in alignment with said marks such that the grooves of said gussets respectively receive therein portions of said moved leg members, and securing each gusset to its pair of moved leg members, positioning said article support member on said gussets such that a beveled end of each of said leg members rests contiguously against a respective one of said beveled surfaces, and securing the leg members to said article support member.

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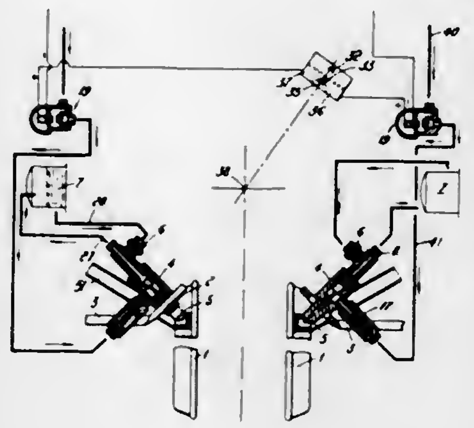
### 3,760,904
### DEVICE FOR LUBRICATING WHEEL FLANGES OF RAILWAY VEHICLES

**Prem Chandra Luthar, South Eastern Railway Colony, Calcutta, India**

**Filed July 23, 1970, Ser. No. 57,682**
**Int. Cl. B61k** *3/00*
**U.S. Cl. 184—3 R** **1 Claim**



A system for lubricating the wheel flanges of railway vehicles (locomotives and railway cars) while negotiating a curve, in order to inhibit wear on flanges and rails and simultaneously ensure smooth guidance around curves.

Oil spray nozzles are positioned adjacent the wheel flanges of the vehicle and the relative displacement between the bogie frame and the undercarriage of the vehicle causes compressed air to be supplied to the oil nozzles to spray the oil on the flanges.

The improvement in such a system comprises the provision of means for adjusting the control means for supplying compressed air to the spray nozzle assembly to function at various radii of curvatures of the track.

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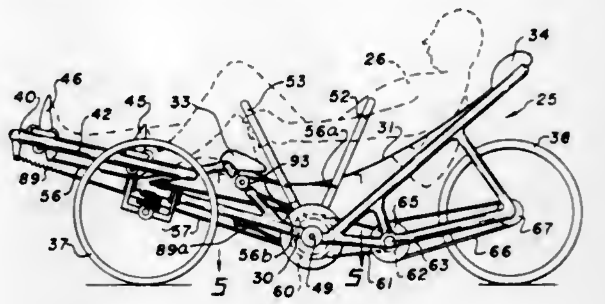
### 3,760,905
### HUMAN BODY POWER CONVERTER

**Gordon E. Dower, 4640 N.W. Marine Dr., Vancouver, British Columbia, Canada**

**Filed Feb. 1, 1971, Ser. No. 111,519**
**Int. Cl. F03g** *5/00*
**U.S. Cl. 185—2** **22 Claims**

Apparatus by means of which the muscles of the human body are used to develop energy. This may be done in order to exercise the muscles, or to use the muscles to develop useful power. The apparatus may be an exerciser only, a device for causing a patient to perform certain exercises for patient assessment, a vehicle, or a unit for developing power for some useful purpose.



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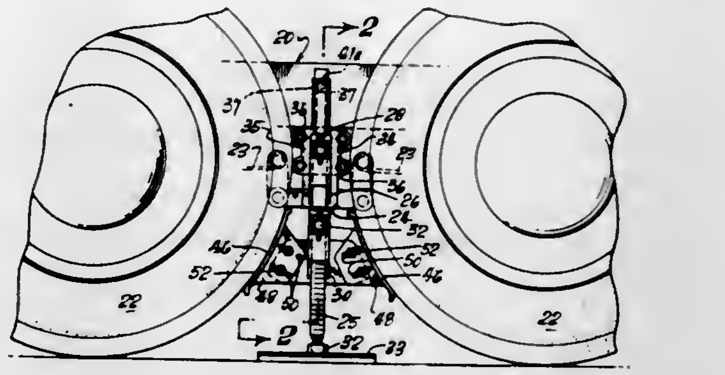
### 3,760,906
### JACK ASSEMBLY FOR STABILIZING HOUSE TRAILER

**Leland T. McGee, 3107 Euclid St., Lynwood, Calif.**

**Filed Jan. 20, 1971, Ser. No. 107,982**
**Int. Cl. B60t** *1/00*
**U.S. Cl. 188—4 R** **48 Claims**



A manually-operable jack means applies lift force to one side of a frame of a parked trailer to cooperate with a similar jack means on the other side of the frame to stabilize the trailer. Each jack means has brake shoe means to immobilize at least one ground wheel of the trailer. In one embodiment a pair of brake shoes is lifted into wedging engagement with a pair of ground wheels on one side of the trailer. In another embodiment a single manually-operable mechanism of the jack means employs toggle links both for the purpose of lifting the trailer frame and for the purpose of braking at least one trailer wheel.

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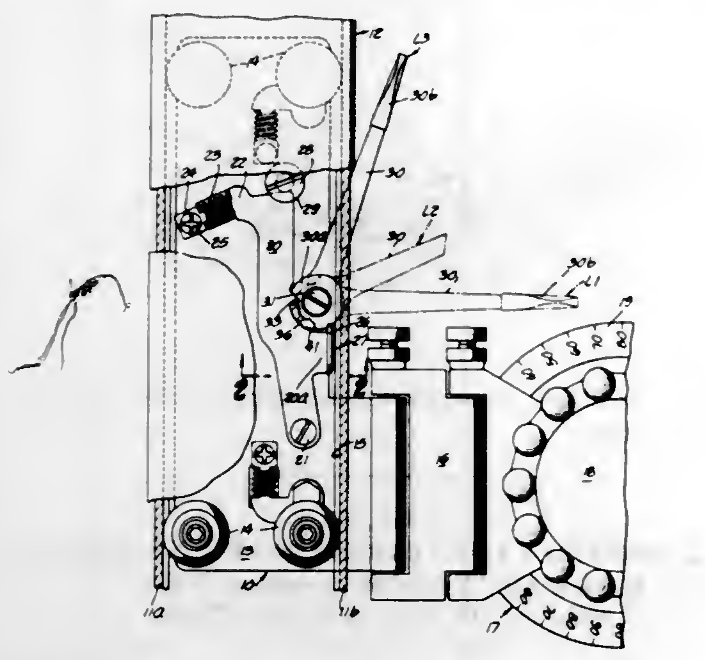
### 3,760,907
### BRAKING DEVICE FOR CARRIAGE TYPE DRAFTING MACHINES

**Harlan N. Harris, 9981 Pali Ave., Tujunga, Calif., and Edward T. Harris, 1401 Nolden, Los Angeles, Calif.**

**Filed Apr. 22, 1971, Ser. No. 136,498**
**Int. Cl. B61h** *7/12*
**U.S. Cl. 188—43** **8 Claims**

A braking device for a drafting machine carriage which is supported for movement on a trackway, together with an associated drafting head assembly, wherein a brake member is normally spring urged towards a brake applying position with respect to the trackway, and in which an easily accessible actuator lever, provided with a camming surface operatively associated with the brake member, is manually movable respectively to a plurality of brake operating dwell positions including a "brake on" normal position in which the lever is positioned ajdacent the drafting head assembly and from which posiiton the lever is movable in one direction to momentarily release the brake element, and in an opposite direction to successive salient positions, the first providing a permanent "-brake off" position, and the next again providing a permanent "brake on" position in which the brake actuating lever extends in close proximity along the trackway so as to protect the actuating lever and hold the carriage against movement during shipping.



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### 3,760,908
### DISC BRAKES FOR VEHICLES

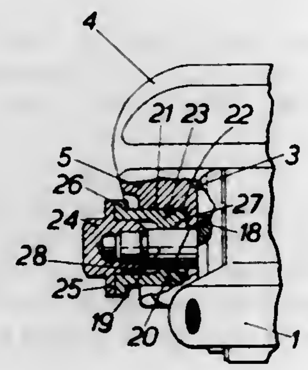
**Heinrich Bernhard Rath, and Wolfgang Hess, both of Koblenz, Germany, assignors to Girling Limited, Birmingham, England**

**Filed Sept. 2, 1971, Ser. No. 177,892**

**Claims priority, application Great Britain, Sept. 4, 1970, 42,341/70**

**Int. Cl. F16d** *55/228*

**U.S. Cl. 188—72.5** **1 Claim**



In a disc brake of the sliding yoke reaction type incorporating a yoke mounted for sliding movement relative to a stationary member and an hydraulic brake applying actuator, the actuator has an axial extension of reduced diameter which is received within a bush housed in an opening in the limb of the yoke upon which the actuator acts, and means are provided for engagement between the bush and the extension to prevent relative axial movement taking place between the actuator and the yoke.

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### 3,760,909
### ELECTROMAGNET FOR BRAKES AND CLUTCHES

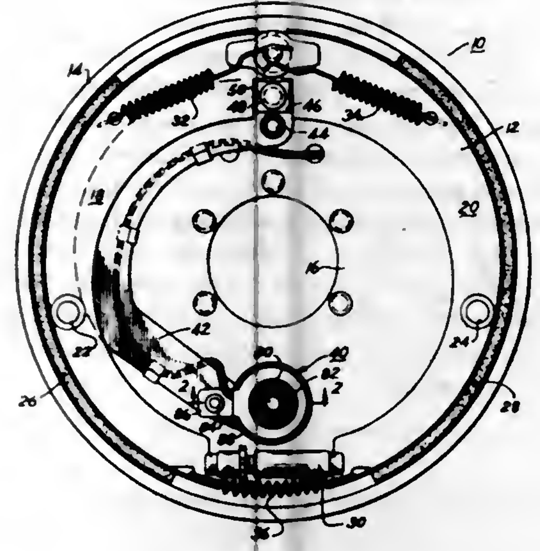
**Leroy K. Grove, 512 S. Merrifield Ave., Mishawaka, Ind.**

**Filed Feb. 28, 1972, Ser. No. 229,759**

**Int. Cl. F16d** *65/34;* **H02k** *7/102*

**U.S. Cl. 188—138** **15 Claims**

An electromagnet for brakes and clutches having outer and inner poles and an electrical coil for magnetizing the poles for engaging the armature of the brake or clutch, in which the armature contact face of the poles is provided with alternate lands and recesses. The lands and recesses may be in a variety of different shapes, including those with straight and circular configurations. The lands are preferably crowned and the recesses may be filled with an abrasive-impregnated material, such as an epoxy, to increase the frictional characteristics of the magnet.



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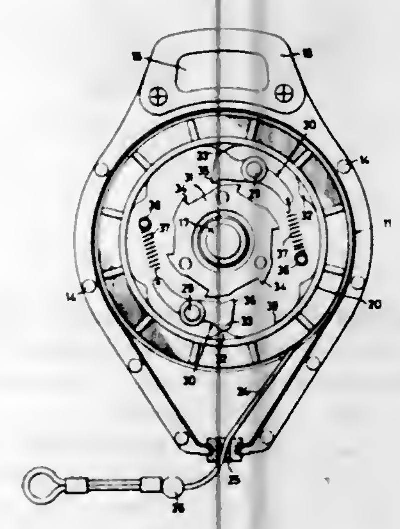
### 3,760,910
### SAFETY DEVICE

**Atsuo Koshihara, 25-2 Omino, Sakai, Japan**

**Filed Apr. 14, 1972, Ser. No. 244,176**

**Int. Cl. F16d** *59/00*

**U.S. Cl. 188—180** **2 Claims**



A safety device for preventing a worker working in a high place from falling. The device has a flat and hollow case and a rope outlet opening at the lower portion thereof. A rope winding reel is rotatably mounted in the case, and a rope has one end attached to the reel, the other end extending out of an outlet opening in the case. A spiral spring in the case biases the reel in a direction to wind the rope. Spring loaded pawls mounted on a rotatable disc adjacent the reel engage a ratchet wheel fixed concentrically within the pawls adjacent the reel. The inner periphery of the reel has lugs and recessed portions formed alternately at suitable intervals therearound, which engage the pawls to rock the pawls when the reel is turned. A brake system is provided between the disc and the case to brake the disc and properly dampen the disc when the disc is rotated.

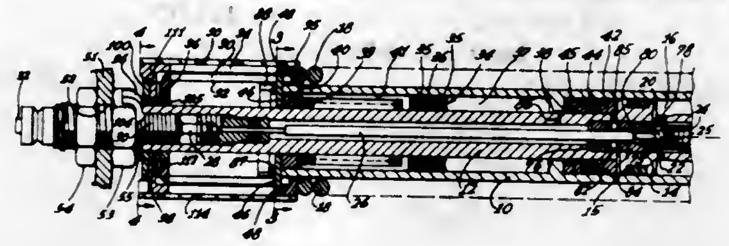
### 3,760,911
### HYDRAULIC LOCKING DEVICE

**Percy L. Porter, and Clyde R. Porter, both of Los Angeles, Calif., assignors to P. L. Porter Co., Los Angeles, Calif.**

**Division of Ser. No. 846,782, Aug. 1, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,023**

**Int. Cl. F16d** *63/00*

**U.S. Cl. 188—300** **6 Claims**



A piston on a piston rod divides a cylinder into two hydraulic locking chambers, fluid flow between the two chambers being through the piston under control of a locking valve. A rotary adjustment sleeve of stepped configuration permits adjustment of the piston stroke. A reservoir for hydraulic fluid adjoins one locking chamber so that leakage from the chamber is into the reservoir. The reservoir is cut off when the piston moves out of its normal limit position.

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### 3,760,912
### SAFETY SYSTEM FOR TWO-CIRCUIT BRAKE INSTALLATIONS OF MOTOR VEHICLES

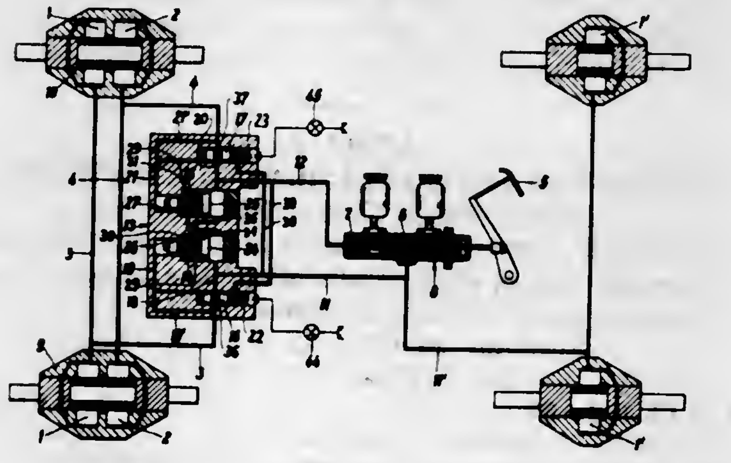
**Erich Braun, Rielinghausen, Germany, assignor to Dr. -Ing. h. c. F. Porsche KG, Stuttgart-Zuffenhausen, Germany**

**Filed Sept. 17, 1971, Ser. No. 181,385**

**Claims priority, application Germany, Sept. 18, 1970, P 20 46 135.2**

**Int. Cl. B60t** *11/32*

**U.S. Cl. 188—345** **25 Claims**



A safety installation for two-circuit brake installations of motor vehicles, in which two mutually independent brake circuits, of which each is equipped with its own line system and with independent wheel brake cylinders, is supplied with pressure fluid by a master brake cylinder constructed as tandem cylinder; a pressure amplifier element connected in the secondary circuit and a shifting element closing the main circuit are thereby coordinated to each brake circuit and are automatically adjusted in dependence on the pressure decrease in one of the brake circuits.

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### 3,760,913
### ELECTRICAL DISTRIBUTION AND CURRENT COLLECTING SYSTEM FOR A VEHICLE TRAVELING ON A SINGLE TRACK WAY

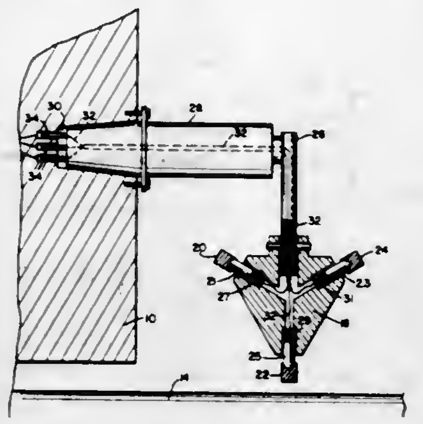
**Jean-Pol Payen, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France**

**Filed Oct. 6, 1970, Ser. No. 78,550**

**Claims priority, application France, Dec. 2, 1969, 6941623**

**Int. Cl. B60l** *5/36*

**U.S. Cl. 191—49** **1 Claim**



Electrical distribution and current collecting system for a vehicle traveling on a trackway having a single-track portion and means, such as end loops, for engaging the vehicle forwardly on said portion. A current collecting carriage cooperates with feed conductors disposed along said portion on one side thereof and coupling means arranged on both sides of said vehicle permit electrical and mechanical coupling to said carriage for both directions of traveling of said vehicle.

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### 3,760,914
### ROLLER TYPE FREEWHEEL CLUTCH

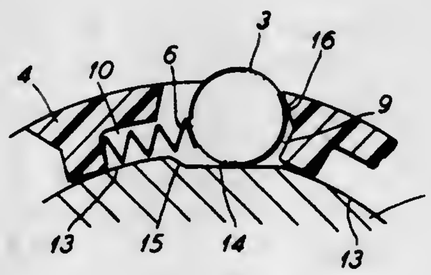
**Werner W. Gelbrich, Heidelberg, Germany, assignor to Borg-Warner-Stieber GmbH, Heidelberg, Germany**

**Filed Mar. 24, 1972, Ser. No. 237,838**

**Claims priority, application Germany, Apr. 1, 1971, 7112604**

**Int. Cl. F16d** *41/07*

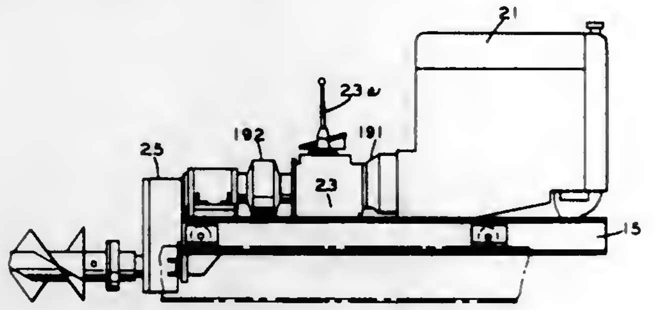
**U.S. Cl. 192—45** **3 Claims**



A wedging roller free wheeling device includes a two piece plastic cage, the cage members being assembled with a cammed race and secured in position to form a subassembly. The cage includes pockets for a number of pleated energizing springs and rollers, each pocket is provided with a shoulder arranged to prevent radial separation of the roller from the cage. The subassembly can be preassembled for later combination with a cylindrical race to form a free wheeling clutch.

### 3,760,915
### AUGER APPARATUS DRIVE MEANS

**William G. Young, and Frederick G. Horning, both of Salem, Ohio, assignors to The Salem Tool Company, Salem, Ohio**
**Division of Ser. No. 851,696, Aug. 20, 1969, Pat. No. 3,663,062. This application June 24, 1971, Ser. No. 156,572**
**Int. Cl. F16d** *47/00;* **E21c** *1/00*
**U.S. Cl. 192—48.3** **12 Claims**



Auger apparatus, such as a coal mining machine, adapted to utilize one or more augers. Apparatus is disclosed embodying three augers in which two side augers are driven from a power source, and an intermediate auger is located between, and driven from one of, the side augers. Apparatus is also disclosed having a rigid cutting head assembly comprising three or more augers. Also disclosed is apparatus having a main gearbox connected to adjustable or removable auxiliary gearboxes, so that the apparatus can be adapted to drive one or more augers from a main gearbox. Also disclosed is an auger power system embodying two clutches the first of which, preferably a mechanical clutch, is located between the engine and the transmission and is used to disconnect the transmission from the engine to permit shifting of transmission gears, and the other of which clutches, a non-mechanical clutch such as an air clutch, is located between the transmission and the uager or augers and is used as the operating clutch.

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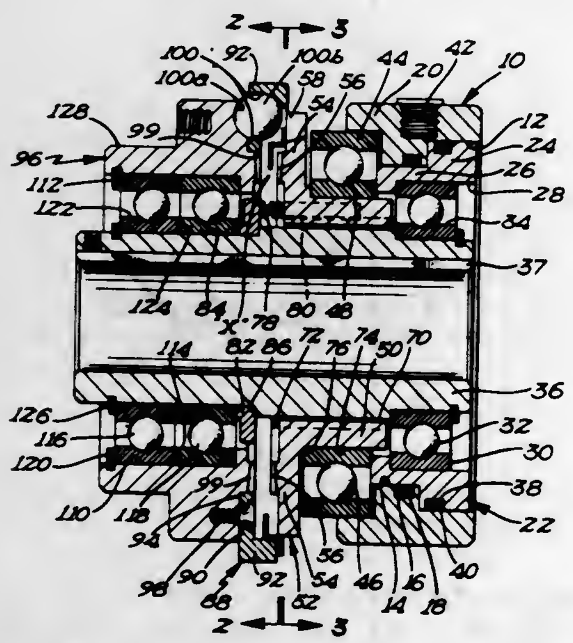
### 3,760,916
### SINGLE POSITION FLUID OPERATED CLUTCH

**James V. Hanks, and Eugene L. Dahl, both of Minneapolis, Minn., assignors to Horton Manufacturing Company, Inc., Minneapolis, Minn.**
**Filed Apr. 7, 1972, Ser. No. 242,105**
**Int. Cl. F16d** *11/10, 25/061*
**U.S. Cl. 192—67 R** **8 Claims**



The disclosure relates to a clutch having coaxial driving and driven members including a hub for mounting on a driven shaft with a drive member slidably mounted on the hub and rotatable thereby, the drive member formed with a multiplicity of ball-receiving cavities, a carrier member having a multiplicity of balls mounted thereon for engagement with the cavities, the carrier and drive members having intermeshing teeth, means for carrying the ball carrier rotatable on the hub, and means for urging the drive member axially on the hub for engagement of the cavities thereof with the balls of the carrier as the teeth of the drive member engage the teeth of the ball carrier to thereby rotate the means carrying the ball carrier.

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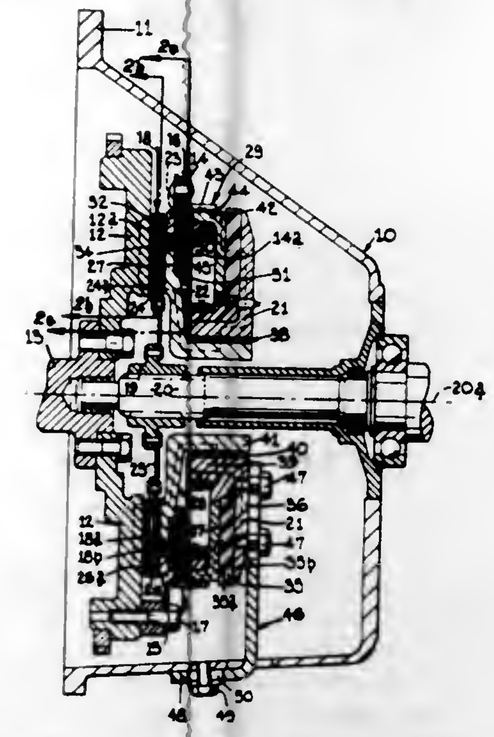
### 3,760,917
### CLUTCHES

**Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Birmingham, England**
**Filed Aug. 9, 1972, Ser. No. 279,096**
**Int. Cl. F16d** *27/01, 27/10*
**U.S. Cl. 192—84 C** **11 Claims**



The invention provides an electro-magnetic clutch in which axially spaced clutch plates and an intervening clutch plate form part of a magnetic circuit containing a series permanent magnet for engergizing the circuit and establishing clutch engagement, this engagement being effected by passing current through an electrical winding associated inductively with the magnetic circuit while leaving contact faces of the clutch plates in light rubbing engagement or closely spaced relation.

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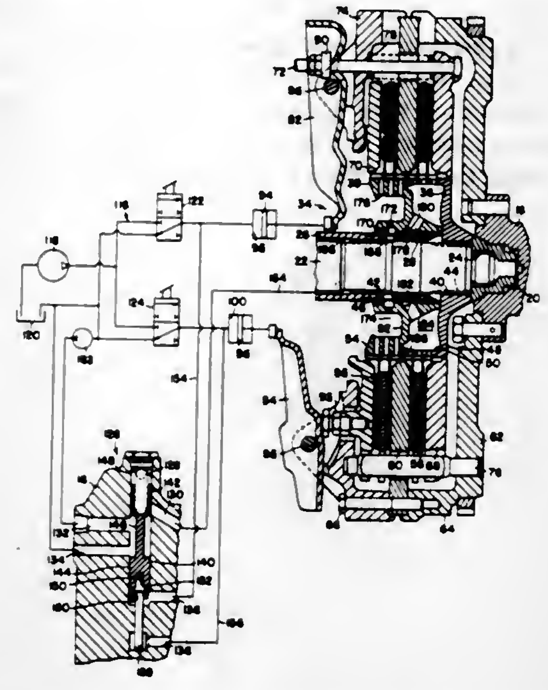
### 3,760,918
### TRACTOR PTO AND PROPULSION CLUTCH ASSEMBLY INCLUDING LUBRICATION MEANS

**Peter Donald Wetrich; Lyle Robert Madson, both of Cedar Falls, and Wesley Walter Weissenfluh, Dike, all of Iowa, assignors to Deere & Company, Moline, Ill.**
**Filed Apr. 20, 1972, Ser. No. 245,737**
**Int. Cl. F16d** *25/10, 13/72*
**U.S. Cl. 192—87.11** **9 Claims**

A tractor transmission includes a hollow PTO input drive shaft having a propulsion input drive shaft located therein, the ends of the shafts terminating adjacent an engine flywheel and carrying PTO and propulsion clutch elements for selectively fixing one or the other or both of the shafts to the flywheel for rotation therewith. The clutch elements are respectively actuated into engagement with a backing plate carried by the flywheel by means of a pair of concentrically arranged fluid-operated pistons. A pilot-operated clutch-lubrication-fluid control valve shifts in response to the operating pressure acting on the pistons to block the flow of fluid to the clutches when both clutches are disengaged, to permit a predetermined amount of fluid to flow to both clutches when both or only the propulsion clutch is engaged and to permit a lesser amount of fluid than said predetermined amount to flow toward the clutches when only the PTO clutch is engaged. A restriction is located in the lubrication fluid passage between the connection of the passage with the PTO and propulsion clutches and the restriction acts to cause substantially all of the lesser amount of fluid to flow to the PTO clutch when only the PTO clutch is engaged.



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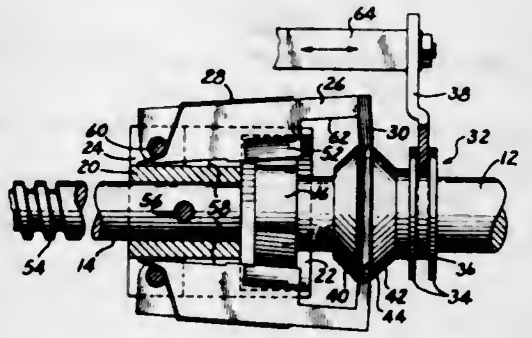
### 3,760,919
### POSITIVE CLUTCH WITH DUAL RELEASING CAMS

**Frederick M. Gilsinger, Highland, Ind., assignor to Simmons Company, New York, N.Y.**
**Filed Mar. 6, 1972, Ser. No. 232,105**
**Int. Cl. F16d** *11/12*
**U.S. Cl. 192—89 A** **5 Claims**



A clutch operable by very light control force and having as its driver a hub with opposed lugs and as its driven member a block mounting opposed pivoted dogs urged by springs into position to engage the opposed lugs of the driver and having a finger following a cam spool on the driving shaft to disengage the dogs from the lugs by the axial shifting of the spool on the driving shaft.

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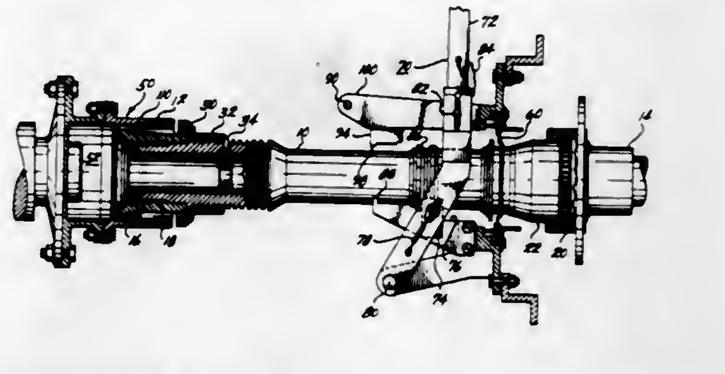
### 3,760,920
### POWER SHAFT COUPLING AND UNCOUPLING MECHANISM

**William H. Delfeld, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.**
**Filed Aug. 14, 1972, Ser. No. 280,690**
**Int. Cl. F16d** *19/00*
**U.S. Cl. 192—93 R** **10 Claims**

A power shaft coupling arrangement, specifically designed for marine use, which can shift axially for connecting and disconnecting an engine and a transmission so as to allow operation of the engine separately from the transmission. To disconnect or uncouple the shaft arrangement, a locking means at the engine end of the shaft is moved to a stowed position. A shift means carrying a yoke is cammed into engagement with a shift land on the shaft so as to shift the power shaft axially for separating crown tooth couplings at each end of the power shaft from the corresponding teeth on the engine and transmission units. Support blocks and the yoke keep the shaft in correct alignment so that engine and transmission are both disconnected from the shaft. In addition, a seal arrangement on the transmission end of the power shaft arrangement is engaged with either the transmission unit or a support unit so as to seal the engine end of the shaft against water splash from the transmission end while the shaft is either in coupled or in uncoupled position.



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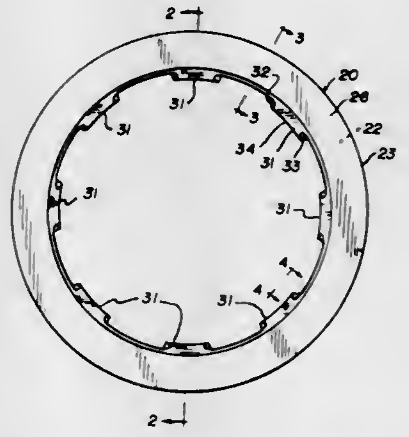
### 3,760,921
### CLUTCH DISC AND METHOD OF MAKING

**Daniel C. Gillespie, Maywood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.**
**Filed Sept. 15, 1971, Ser. No. 180,675**
**Int. Cl. F16d** *13/60*
**U.S. Cl. 192—107 R** **4 Claims**



A clutch disc includes spline engaging teeth formed by swaging the sheet metal to provide a work hardened tooth having a face wider than the thickness of the sheet metal. The improved tooth strength and increased surface area permits reduction of sheet metal thickness in the order of one-third providing a more compliant disc and allowing the use of additional discs in a given axial length.

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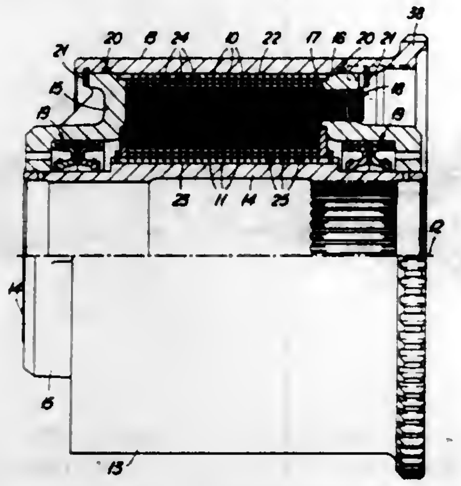
### 3,760,922
### ROTARY COUPLINGS

**Anthony P. R. Rolt, Stratford-on-Avon, and Derek Gardner, Leamington Spa, both of England, assignors to Harry Ferguson Limited, Coventry, Great Britain**
**Filed July 16, 1971, Ser. No. 163,385**
**Claims priority, application Great Britain, July 18, 1970, 34,950/70; July 18, 1970, 34,952/70**
**Int. Cl. F16d** *13/74;* **F16h** *1/44*
**U.S. Cl. 192—111 B** **11 Claims**

A device for controlling or limiting difference in rotational speed or acceleration between relatively rotatable shafts, for example the front and rear propeller shafts in a four-wheel drive motor vehicle transmission, employs a viscous liquid such as a silicone fluid in contact with relatively rotatable sets of mutually interleaved and mutually spaced annular plates the working surfaces of which are provided with through openings in the form of holes and/or radial slots from which are derived in combination with the inclusion of a pre-determined quantity of air in the viscous liquid advantages including inter alia improved compactness in relation to torque capacity and in relation to dissipation of heat generated during shearing of the viscous fluid. A transmission unit incorporating an interaxle differential gear and such a device is described.



### 3,760,923

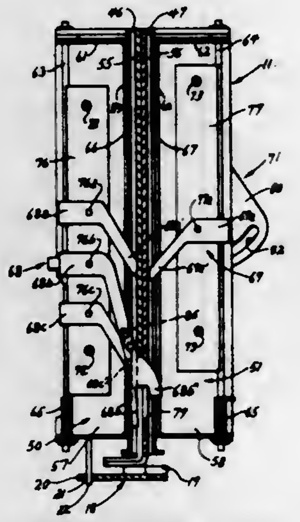
### READILY ADJUSTABLE COIN-OPERATED MECHANISM

**Henry Carl Voegeli, 918 Gibbs Rd., Venice, Fla.**

**Filed June 26, 1972, Ser. No. 266,427**

**Int. Cl. G07f** *5/08*

**U.S. Cl. 194—1 G** **8 Claims**



This invention provides a coin-operated mechanism that is particularly adapted for controlling the operation of the latch of a machine for vending newspapers and the like and is readily adjustable for operation at various coin combinations totaling different prices. Basically, the mechanism of the present invention comprises: frame means; at least one generally vertical coin chute provided adjacent the frame means; pawl carrying means mounted on the frame means for generally vertical movement with respect to the frame means and coin chute; and drive means for readily causing generally vertical movement of the pawl carrying means between first and second positions as related to the frame means and coin chute.

### 3,760,924

### CHIPS FOR USE IN AUTOMATIC DISPENSING MACHINES

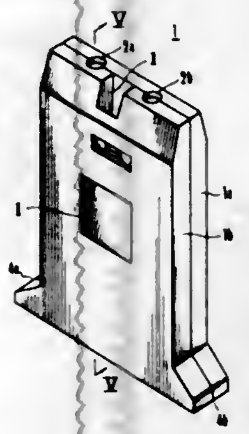
**Koshei Arita, 10,23,2-chome, Minamimagome, Ohota-ku, Tokyo, Japan**

**Filed Dec. 28, 1971, Ser. No. 212,933**

**Int. Cl. G07f** *1/06*

**U.S. Cl. 194—4 F** **6 Claims**

A chip for use in an automatic dispensing machine having a slot for receiving the chip, and which comprises a sublimative magnet, a film for sealing the magnet in an air tight condition, an electric resistance wire arranged on the film, electrical contacts connected to the opposite ends of the resistance wire, and a casing containing the sublimative magnet, the film, the electric resistance wire and the contacts. The casing has openings adapted to receive contact rods mounted in the chip receiving slot of the automatic dispensing machine for energizing the resistance wire through the electric contacts. Upon the chip being inserted in the chip receiving slot, a current is passed through the resistance wire of a magnitude sufficient to cause it to fuse and the heat of fusion of the resistance wire breaks the film and disintegrates and demagnetizes the sublimative magnet thus rendering the chip unusable again. The rupturable element of the chip is manufactured by a method comprising the steps of applying an electric resistance wire in the form of a rectangular wave onto a length of adhesive tape with two parallel sides of the rectangular wave extending along the opposite side edges of the adhesive tape, bonding metal foils to the opposite side edges of the adhesive tape and to the parallel sides of the rectangular wave, and severing transversely the adhesive tape.



### 3,760,925

### SERIAL PRINTER WITH ROTATING INTERPOSER AND PLURAL HAMMERS

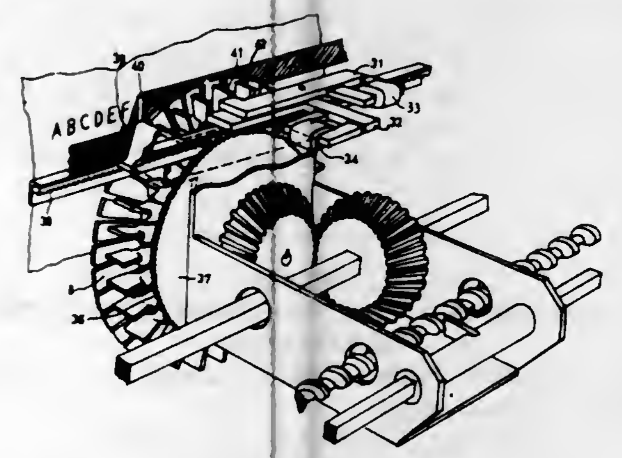
**Oscar Bossi, Milano, Italy, assignor to Honeywell Information Systems Italia, Milan, Italy**

**Filed July 12, 1971, Ser. No. 161,678**

**Claims priority, application Italy, July 14, 1970, 27390 A/70**

**Int. Cl. B41j** *1/32*

**U.S. Cl. 197—53** **12 Claims**



A serial printer is provided having a movable typecarrying member, a movable carriage bearing a part of printing hammers having heads partially superimposed and an interposer member having elements to which is imparted motion correlated to the print carriage and in the opposite direction. Printing is effected by cooperation of the print hammers and the typecarrying member, through the interposer.

### 3,760,926

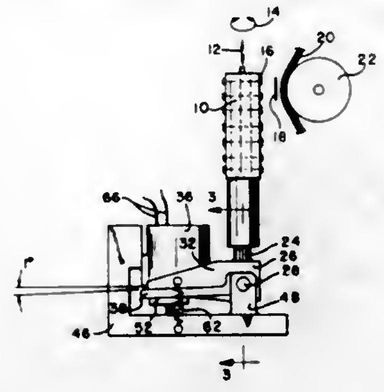
### FREE FLIGHT PRINT SYSTEM FOR A SERIAL PRINTER

**James G. Bath, Hudson, and Steven P. Cahill, Lynn, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed Aug. 25, 1971, Ser. No. 174,821**

**Int. Cl. B41j** *1/32*

**U.S. Cl. 197—55** **13 Claims**



A serial printer print head rotates about a fixed axis and moves toward a multiple fold print medium in a controlled free flight manner. The print head is mounted on a yoke support which in turn freely rests on a movable armature. Both the yoke and the armature pivot about a fixed axis which intersects structure used to position the print head. The positioning structure itself is flexible at the pivotal point so as to introduce a minimum amount of spring energy. The yoke is constantly biased so as to result in a controlled free flight when it lifts off the armature plate.

### 3,760,927

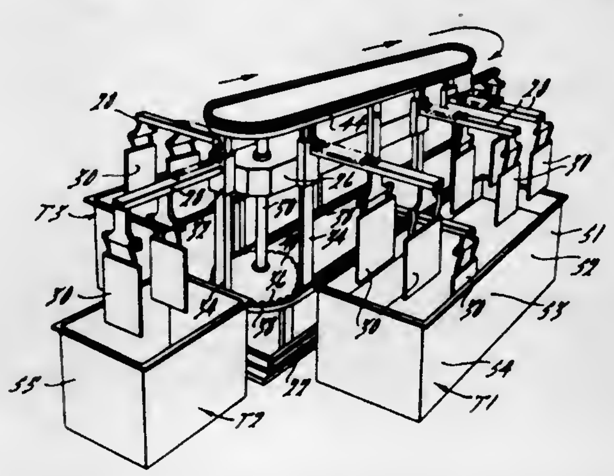
### CONVEYING MACHINE WITH PROCESS SELECTOR

**Giacomo R. Zambon, Warren, Mich., assignor to The Udylite Corporation**

**Filed July 15, 1971, Ser. No. 162,934**

**Int. Cl. B23q** *5/22*

**U.S. Cl. 198—19** **14 Claims**



A conveying machine for transporting workpieces through a series of work stations comprising a plurality of work carriers disposed at spaced intervals, each incorporating a vertically movable carriage thereon from which the workpieces are adapted to be suspended. Each work carrier is provided with a selector mechanism comprising a plurality of presettable levers that are adapted to coact with cams at certain of the work stations to effect an engagement and retention of the carriages of selected work carriers in a raised position at such stations, thereby providing for a preselected variation in the processing cycle to which the workpieces on successive work carriers are subjected. In accordance with this arrangement, individual work carriers can be mechanically programmed to undergo a storage operation, a skip operation, a delayed entry operation or an early pick-up operation, as well as combinations thereof at selected locations along the path of travel of the work carriers.

### 3,760,928

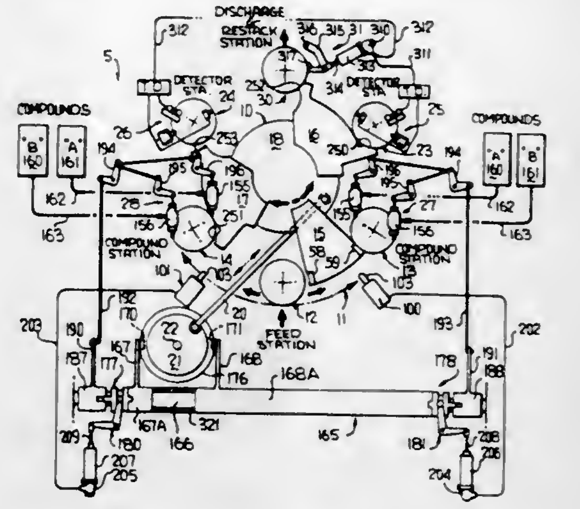
### COMPOUND APPLYING MACHINE

**Raymond F. Galitz, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.**

**Filed Jan. 19, 1971, Ser. No. 107,643**

**Int. Cl. B23q** *5/22*; **B65g** *47/26*

**U.S. Cl. 198—19** **22 Claims**



This disclosure relates to a machine for applying compound to container end units or closures, the machine including feed and discharge stations at 6 and 12 o'clock, respectively, compound applying stations at 4 and 8 o'clock, and inspection stations at 2 and 10 o'clock with novel oscillating means including a first oscillating member which feeds successive articles from the feed station in an alternate fashion to the compound applying stations in opposite directions along a generally circular path of article travel. A second oscillating member oscillates across one of the pair of compound applying and inspection stations to simultaneously feed an article from the compound applying station to the adjacent inspection station while an earlier inspected article is fed to the discharge station. Likewise, another oscillating member is associated with the remaining pair of compound applying and inspecting stations to likewise move an article from the compound applying station to the inspection station while an earlier inspected article is moved to the discharge station. Each pair of compound applying and inspecting stations includes means for elevating the articles away from the path of article travel to permit the return stroke of the oscillating feed member associated therewith.

### 3,760,929

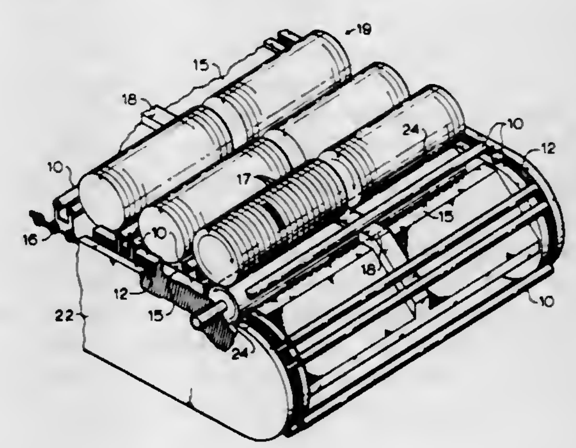
### LID INSPECTION MEANS

**George H. Lederer, 75 Gordon Rd., Willowdale, Ontario, Canada**

**Filed Dec. 3, 1971, Ser. No. 204,429**

**Int. Cl. B23q** *5/22*

**U.S. Cl. 198—19** **3 Claims**



Stacks of axially thin diametrically wide circular articles are inspected while separated on a line of contact provided by a device rotating the stack and another line of contact.

### 3,760,930

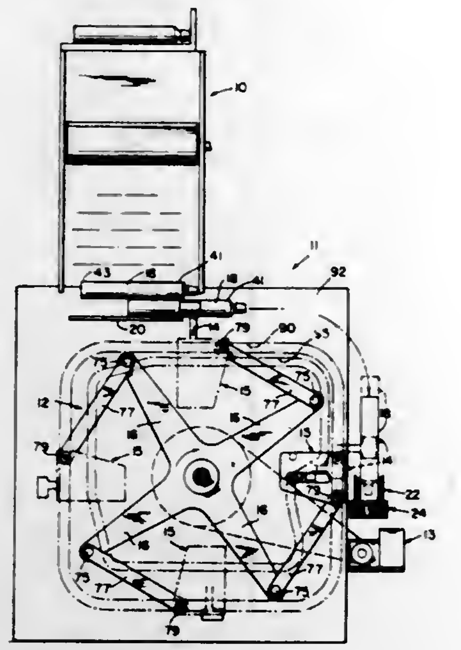
### METHOD AND APPARATUS FOR INJECTING BY POSITIVE ACTION COLLAPSIBLE CARTON TUBES INTO HOLDERS OF A TUBE FILLING MACHINE

**August Reichert, 29 Berwyn Pl., Glen Rock, N.J.**

**Filed Dec. 22, 1971, Ser. No. 210,748**

**Int. Cl. B65g** *47/06*

**U.S. Cl. 198—25** **9 Claims**



A method and apparatus for injecting by positive action empty collapsible carton tubes of a substantially uniform diameter into tube holders of a machine for filling the tubes with a suitable material, in which there is provided a supply hopper for the tubes including an outlet channel having a series of angularly projecting flange portions arranged in spaced relation along one inner side surface of the channel and another series of other angularly projecting flange portions arranged in spaced relation along the opposite inner side surface of the channel, each of the flange portions projecting from the one inner side surface of the channel being positioned in an intermediate and staggered spaced relation to flange portions projecting from the opposite inner side surface of the channel so as to provide a series of relatively short angular paths for permitting a controlled restricted passage of each tube one at a time between flange portions at opposite inner sides of the channel with a weighted end portion of the tube under the force of gravity initially passing through a restricted angular path defined by a first pair of flange portions projecting from the opposite inner side surfaces of the channel and thereafter being held back by a next succeeding flange portion until the opposite end portion of the tube or relatively lighter weight moves along the restricted angular path to a point where the entire tube passes through the gap defined by the preceding pair of said projecting flange portions.

Thus each tube passes in turn in such restricted manner through the series of short angular paths defined by the series of angular flange portions projecting from opposite inner side surfaces of the channel and ultimately is disposed on a receiving platform in a substantially horizontal relation and not in a random tilted or jamming position.

Thereafter a tube carrier injection mechanism including suitable cam-operated jaws or spring fingers carried by devices operably connected to arms of a rotatable spider are arranged to periodically and successively grasp the carton tube disposed on the receiving platform to angularly position the grasped tube and inject the tube in a positive action into a selected tube holder of the tube filling machine. Upon the tube being injected into the tube holder the cam-operated jaws or spring fingers grasping the tube are thereafter actuated to an open position so as to release the injected tube then effectively inserted in the tube holder.

### 3,760,931

### ENTRY ROLLWAY FOR COOLING BEDS FOR ROD ROLLING MILLS

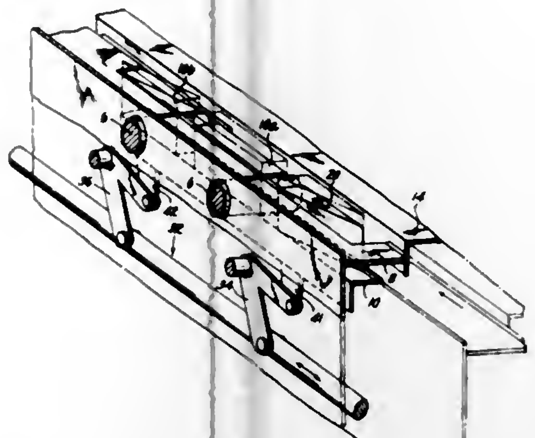
**Otto Karl Buchheit, Ingbert, Saar, Germany, assignor to Moeller & Neumann GmbH, Ingbert, Saar, Germany**

**Filed Nov. 12, 1969, Ser. No. 875,765**

**Claims priority, application Germany, Nov. 12, 1968, P 18 08 333.5**

**Int. Cl. B65g** *13/02*

**U.S. Cl. 198—127** **2 Claims**



An entry rollway for cooling beds for rod rolling mills includes vertically movable inclined bottom plates for lateral delivery of the rods on to the cooling bed. Several successively arranged tapered guide members are provided for deflecting the arriving ends of the rods and of which the lifting mechanism is adapted to be cut off additively and progressively in order to displace the deflection point to the cooling bed.

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### 3,760,932

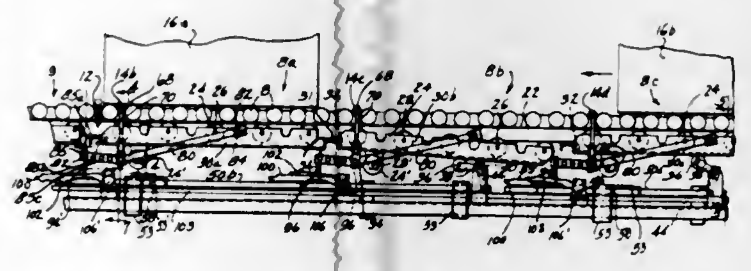
### SECTIONAL CONVEYOR APPARATUS

**Walter M. Schneider, Chicago, Ill., assignor to Conveyor Systems, Inc., Morton Grove, Ill.**

**Filed Jan. 21, 1972, Ser. No. 219,766**

**Int. Cl. B65g** *13/02*

**U.S. Cl. 198—127 R** **11 Claims**



A sectionalized conveyor system comprising contiguous conveyor sections each having spring urged article position sensing means urged into the path of articles moving thereon to detect the passage of an article thereover. Engagement of an article position sensing means by an article on a conveyor section effects the movement of a reciprocated pawl means associated with the conveyor section immediately behind the same into moving engagement with an associated actuating means thereby moved into a position where it is latched by an associated latch means. The movement and latching of the actuating means into such position terminates operation of the latter conveyor section as long as the article position sensing means is engaged by the article. Each cycle, the continuously reciprocated pawl means momentarily releases the actuating means from the associated latch means so the actuating means can return readily to its initial position when the associated article position sensing means returns to its original position as the article involved leaves contact therewith.

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### 3,760,933

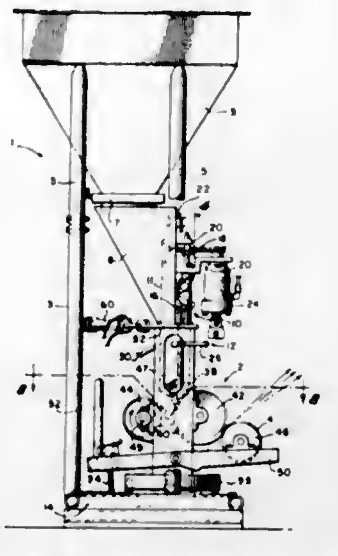
### APPARATUS FOR RAPIDLY COATING SURFACES WITH WET, PARTICULATE MATERIALS

**Lewis Fritts Maldeis, Hinsdale, Ill., and Aubrey Meredith Shideler, Medina, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.**

**Division of Ser. No. 813,193, April 3, 1969, Pat. No. 3,653,951. This application Oct. 18, 1971, Ser. No. 190,385**

**Int. Cl. B44d** *1/08*

**U.S. Cl. 198—128** **11 Claims**



An apparatus for rapidly coating a distant surface with wet, particulate material, which includes thrower means having a high speed endless slinger belt for projecting wet, particulate material at a high rate onto a distant surface; storage means for storing dry, particulate material, and feed metering and mixing means for successively and continuously metering the dry material from the storage means, mixing liquid with the dry material and discharging the resulting wet, particulate material at the high rate onto a selected area of the belt.

A method for coating wet, particulate material onto a distant surface at a high rate including the steps of metering dry, particulate material at a high rate from a storage means, adding a metered amount of liquid to the dry material, mixing the liquid and dry material uniformly together, metering the resulting liquid-material mixture onto a slinger belt and projecting the wet mixture at the high rate as a continuous ribbon onto a distant surface.

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### 3,760,934

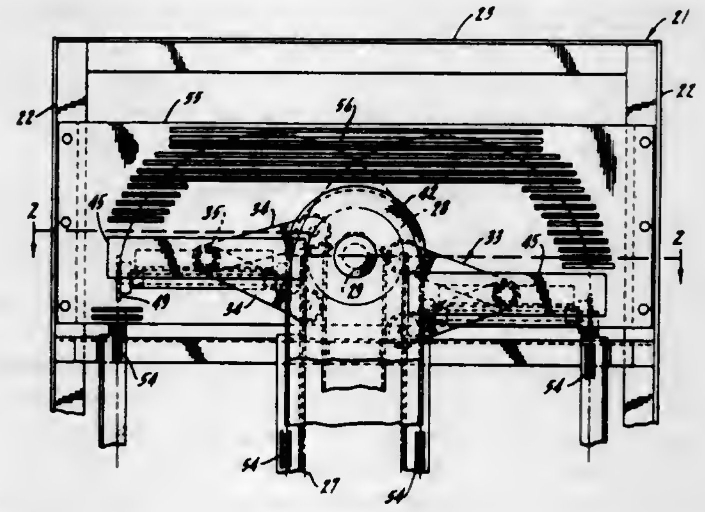
### MOTION TRANSFER SYSTEM

**Elmer E. Olson, Nashotah, Wis., assignor to G. B. Lewis Company, Watertown, Wis.**

**Continuation-in-part of Ser. No. 823,763, May 12, 1969, abandoned. This application May 12, 1971, Ser. No. 142,461**

**Int. Cl. B65g** *17/34*

**U.S. Cl. 198—158** **27 Claims**



A motion transfer system for conveying a carried unit, such as a shelf in a chain driven conveyor, about a curvilinear path of movement while maintaining the carried unit in a firmly gripped, fixed position with respect to a reference plane, such as the horizontal, during the linear and curvilinear movements.

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### 3,760,935

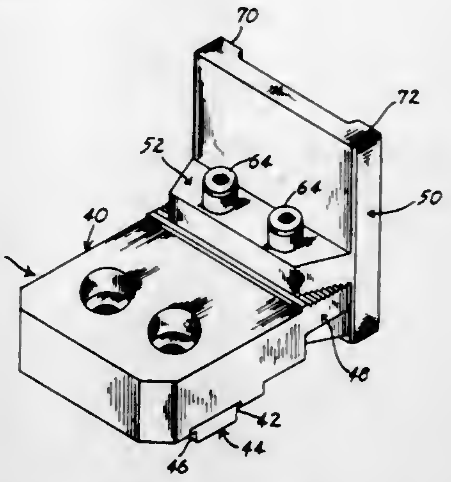
### PUSHER LUGS FOR CONVEYORS

**Harold R. Ziegelmeyer, 5010 Griffin Creek Rd., Medford, Oreg.**

**Filed June 23, 1972, Ser. No. 265,610**

**Int. Cl. B65g** *19/00*

**U.S. Cl. 198—173** **3 Claims**



The present invention has to do with longitudinally adjustable pusher lugs for conveyors, the lugs being adapted for use as original equipment or as replacements for presently conventional, adjustable pusher lugs which cannot be depended upon to hold their adjustments for any extended period. The present lug includes a base or mounting member adapted for fixed attachment to the conveyor but never intended to engage a work piece, and a pusher member clamped thereto with capacity for longitudinal adjustment relative to the mounting member. Both members are formed with numerous longitudinally extending ridges of like trapezoidal cross-section, the sloping sides of adjacent ridges forming V-shaped channels between them.

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### 3,760,936

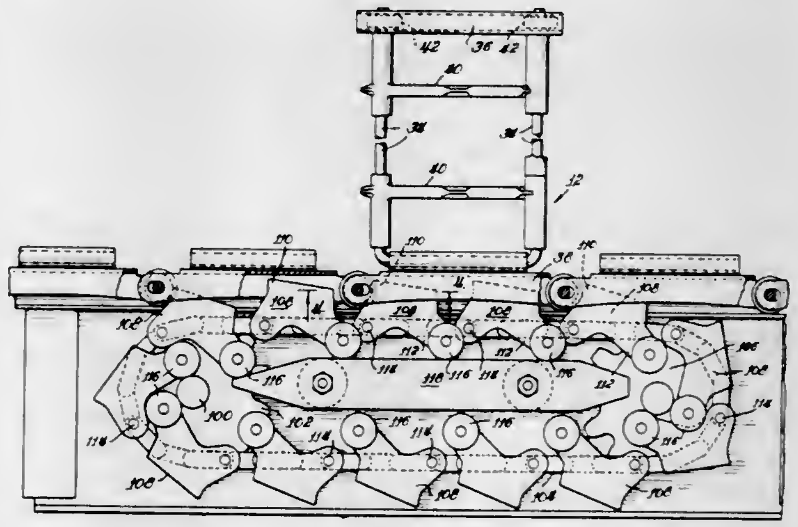
### DISHWASHER CONVEYOR SYSTEM

**Erik O. Vilen, La Grange Park, and Vytas Zygas, Cicero, both of Ill., assignors to G.S. Blakeslee & Co., Chicago, Ill.**

**Filed Nov. 22, 1971, Ser. No. 200,966**

**Int. Cl. B65g** *15/00*

**U.S. Cl. 198—181** **6 Claims**



A conveyor system adapted to move soiled ware in an orbital path and through a series of pre-wash, wash and rinse sections. A plurality of conveyor sections having means for holding the soiled ware are pivotally connected together at their inner ends to form a continuous series. The conveyor sections have roller means at their inner and outer ends which are in rolling engagement, respectively, with inner and outer orbital tracks formed on a horizontal platform. A drive assembly uses an endless series of spaced apart drive members which move in a closed loop path that has a portion coinciding with a portion of the path for the inner ends of conveyor sections. The drive members are spaced apart so that only one drive member is in driving engagement with the conveyor sections at any one instance of time.

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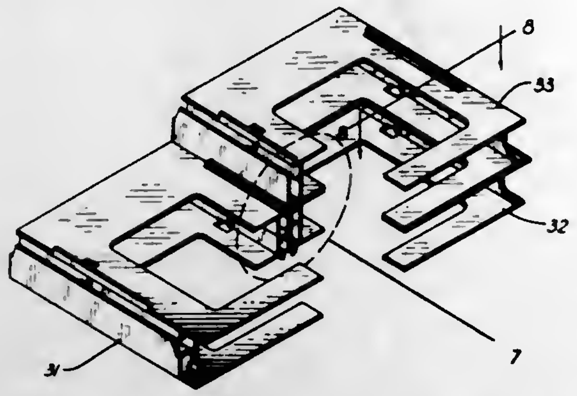
### 3,760,937
### INTERCONNECTING STORAGE HOLDER FOR TAPE CARTRIDGE

**Roger E. Van Wyngarden, 5806 Rosslyn Ave., Indianapolis, Ind., and Mark E. Brackemyre, P.O. Box 731, Morresville, Ind.**

**Filed Apr. 20, 1972, Ser. No. 245,891**
**Int. Cl. B65d** *21/02, 85/00*
**U.S. Cl. 206—1 R** **6 Claims**



A holder for storing a tape cartridge which is vertically and horizontally connectable to identical holders. The holder is a five sided enclosure with one open end for slidably receiving the cartridge. A spring finger mounted to the side wall of the holder is releasably engageable with the cartridge. A pair of hook-shaped rails are mounted to the top and bottom walls of the holder. The bottom and top wall each include a slot positioned immediately adjacent and inward of each rail. In addition, a pair of ridges are mounted to the top and bottom walls. The ridge on the top wall is lockingly engageable with a holder stacked thereatop with the rail on the top wall projecting into a slot on the holder stacked thereatop. Likewise, the ridge and rail on the bottom wall of the holder are engageable with a holder stacked therebelow. Oppositely extending flanges are mounted to the opposite sides of the holder so as to interlock with similar flanges provided on holders positioned along side.

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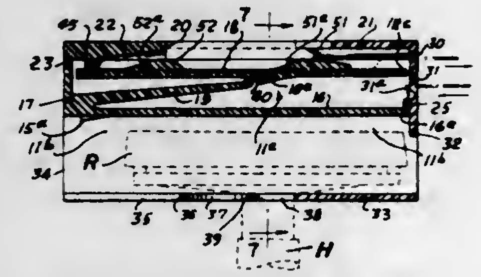
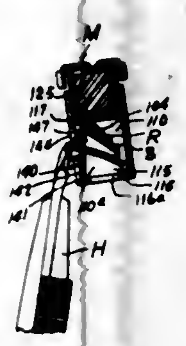
### 3,760,938
### COMBINED MAGAZINE RECEPTACLE FOR USED BLADES AND PROTECTIVE COVER FOR SAFETY RAZOR HEADS HAVING BLADES THEREIN

**Ted L. Ferrier, Jr., P.O. Box 1451, Dallas, Tex.**

**Filed Sept. 28, 1970, Ser. No. 75,892**
**Int. Cl. B65d** *85/54*
**U.S. Cl. 206—16 BC** **12 Claims**



A magazine for new safety razor blades for storing and dispensing blades for use and a receiver and guard for covering the head of a safety razor having a blade therein to protect the edge of the blade against damage and prevent the blade from damaging other items. The dispenser and guard is designed for use with double edge blade razors and for single edge blade razors. A receptacle for used blades is also incorporated.



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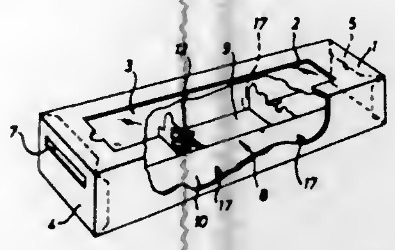
### 3,760,939
### PEEPSHOWS

**Thomas W. Hawkyard, 8 Well Walk, Hampstead, London, N.W.3, England**

**Filed Oct. 20, 1971, Ser. No. 190,904**
**Int. Cl. B65d** *79/00;* **A63h** *33/00*
**U.S. Cl. 206—46 AM** **8 Claims**



A peepshow comprises an elongate cardboard tube into which slides an insert having a base and side and end walls, one of which end walls has a peep hole in the form of a slot. The tube has an aperture for admitting light. Panels to be viewed which are cut to the shape of, and depict, scenery, human, animal or cartoon figures, for example are constituted by flaps folded up from the base.

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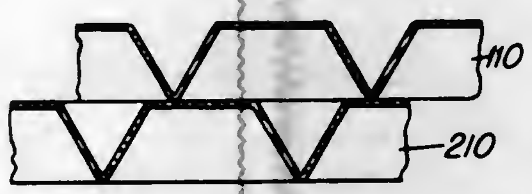
### 3,760,940
### METHOD OF EMBOSSING THIN, LIMP PLASTIC FILM, AND DISPOSABLE AND EMBOSSED PLASTIC BAG PRODUCT

**Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.**

**Continuation of Ser. No. 808,922, March 20, 1969, abandoned. This application July 2, 1971, Ser. No. 159,531**
**Int. Cl. B65d** *85/67*
**U.S. Cl. 206—58** **6 Claims**



Thin polyethylene film, of 0.025 mm, or less thickness is passed between a pair of matching embossing rollers having, respectively, negative and positive embossing patterns on their surface, driven at the same circumfernetial speed, the speed of the embossing rollers being suitably chosen to allow the film to pass between the rollers while being embossed. The rollers are preferably cooled; the continuous embossed web, if two-layer and tubular, is then inflated to separate the two-embossed layers, which can then be heat-sealed together at intervals and the edge slit to form separable bags, when rolled up in a single roll for ease of dispensing; the embossing patterns preferably, but not necessarily match at least at the heat-seal lines.

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### 3,760,941
### PROCESS FOR PREPARING HIGHLY FREE FLOWING ROCK OR TABLE SALT

**Arno Singewald, Kassel, and Gunter Fricke, Neuhof, both of Germany, assignors to Kali und Salz GmbH, Kassel, Germany**

**Filed May 4, 1971, Ser. No. 140,261**
**Int. Cl. B03b** *1/04*
**U.S. Cl. 209—3** **9 Claims**

Process for preparing highly pure substantially free flowing rock or table salt from salt containing small amounts of anhydrite and kieserite which comprises admixing the rock salt with an anti-caking agent in the dry state, warming the mixture to a temperature of between 40°–120°C and subjecting the same to the action of high pressure electrostatic field.

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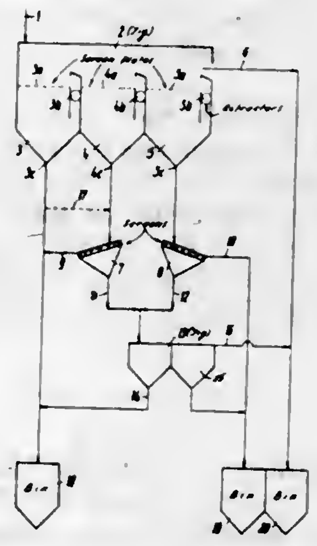
### 3,760,942
### METHOD FOR CLEANING COAL

**Dietrich Bartelt, Essen, Germany, assignor to Ruhrkohle Aktiengesellschaft, Essen, Germany**

**Filed Sept. 24, 1970, Ser. No. 74,986**
**Claims priority, application Germany, Oct. 20, 1970, P 19 49 655.0**
**Int. Cl. B03b** *7/0*
**U.S. Cl. 209—44** **6 Claims**



A cascaded washing process for coal in which after first stage jigging coarse shale is separated and the fine waste is rewashed for further fine coal-fine shale separation.

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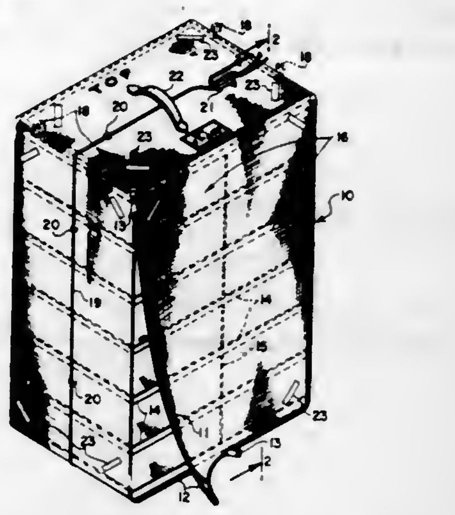
### 3,760,943
### METHOD AND APPARATUS FOR SORTING AND DISTRIBUTING MAIL

**Arthur J. Reader, 293 Pepperidge Rd., Hewlett Harbor, N.Y.**

**Continuation-in-part of Ser. No. 235,267, March 16, 1972. This application Nov. 13, 1972, Ser. No. 306,260**
**Int. Cl. B07c** *7/02*
**U.S. Cl. 209—122** **12 Claims**

A method and apparatus for sorting and distributing mail in which a flexible mail bag, having a plurality of spaced-apart compartments is collapsed after mail is disposed in the plurality of compartments and secured in its collapsed condition by an adjustable strap disposed about the outer surface of the bag. The collapsed, secured bag is transported from a central postal station to a gang mail box in a multi-tenant building, wherein the strap is released, the bag is opened and expanded, and mounted by means of hooks or loops in the gang mail box, which includes a plurality of doors accessible to the individual compartments of the bag. At the postal station, a U-shaped rack, disposed adjacent a sorting table, supports a plurality of the bags adjacent each other on three sides of the table. Mail is sorted from the table into the compartments of the bags, and the bags are delivered when the sorting operation is completed.



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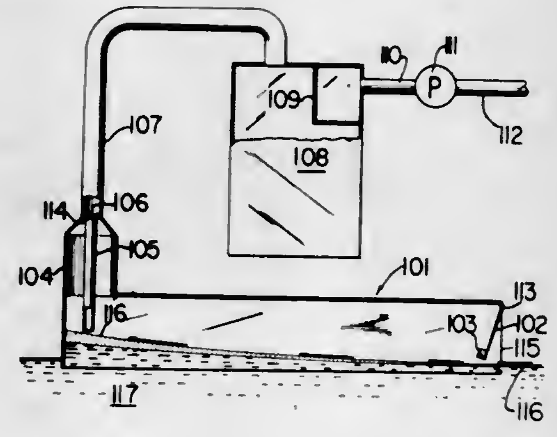
### 3,760,944
### SUCTION OIL DECANTER

**Edwin A. Bell, Lake Charles, and Thaddeus F. Padden, Sulphur, both of La., assignors to Cities Service Oil Company, Tulsa, Okla.**

**Filed Mar. 12, 1971, Ser. No. 123,513**
**Int. Cl. E02b** *15/04*
**U.S. Cl. 210—110** **1 Claim**



Disclosed herein is apparatus for the continuous removal of an oil slick from a body of water. The apparatus consists of a housing connected to an air suction device which draws a large volume of air through the housing. The movement of air through the housing causes the oil slick to be pulled within the housing and accumulated therein. This accumulation activiates apparatus within the housing which withdraws the accumulated oil from within the housing and removes it to a storage reservoir for further usage.

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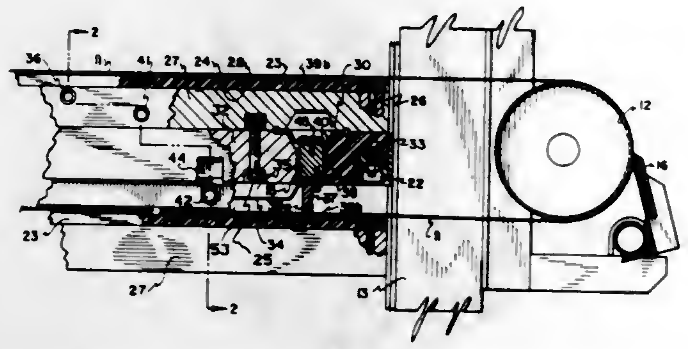
### 3,760,945
### PRESSURE FILTER

**Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah**

**Filed Oct. 12, 1971, Ser. No. 188,355**
**Int. Cl. B01d** *29/00, 25/32*
**U.S. Cl. 210—143** **9 Claims**

An endless web filter medium zig-zags through a stack of superposed, spaced-apart, stationary filter press units mounted in a frame. Each press unit includes a stationary upper section which receives a reciprocatory ring; the ring carries a flexible diaphragm fixed to its periphery thereby forming a first chamber between the diaphragm and the upper section. The web may be supported by a drainage grid formed on the stationary section of the unit below. Actuating means extend the ring downwardly to contact the web below to form a filtration chamber overlying the web. Slurry is introduced and contained in the filtration chamber overlying the web. Slurry is introduced and contained in the filtration chamber overlying the web. Fluid pressure is introduced into the first chamber to exert force against the diaphragm to press liquid from the slurry in the filtration chamber through the web while forming a cake of solids thereon. Then, the fluid pressure may be released while the actuating means retracts the ring, and the web carries the cake from the press units to a remote discharge.



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### 3,760,946

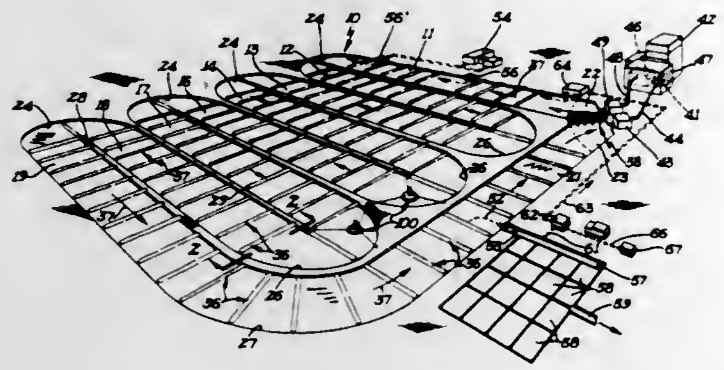
### COMBINATION SEWAGE TREATMENT AND COOLING SYSTEM

**Leonard J. Boler, Minneapolis, Minn., assignor to Cherne Industrial, Inc., Edina, Minn.**

**Filed Mar. 31, 1971, Ser. No. 129,672**

**Int. Cl. C02c** *1/10*

**U.S. Cl. 210—152** **17 Claims**



A combination system and plant includes a sewage treatment conduit in which liquid sewage to be treated is conveyed along an extended continuous loop or recirculating path, with means for introducing additional sewage at least at one point along the conduit, and with means for feeding at least a portion of the liquid from the conduit through the cooling condensers of an operating plant and back into the sewage treatment conduit. The system includes propulsion and treating means for maintaining at least a minimum rate of flow in the conduit to prevent settling of solids and for aerating the liquid. A plant cooling system pumping means preferably serves as one propulsion means for moving the liquid along through the conduit. The minimum rate can be maintained in case the flow of liquid through the cooling condensers of the power plant is shut down, and the conduit may include connecting means completely or partially bypassing the plant. Liquid in the conduit is aerated both for cooling it to the degree required for reuse in the cooling system and for oxygen enrichment to promote the desired sewage treatment. Liquid is removed from the sewage treatment conduit to settling tanks at a rate substantially equal to the rate of incoming flow of sewage less evaporation and other losses. Bacteria laden sewage solids in the settling tanks are returned to the treatment conduit near the entrance of the original raw sewage entrance. This returned sewage seeds the raw sewage with colonies of active bacteria. The sewage solids will eventually build up to an excess and this excess is later incinerated with the plant fuel, or burned in an individual incinerator, or used for other purposes, e.g., as fertilizer.

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### 3,760,947

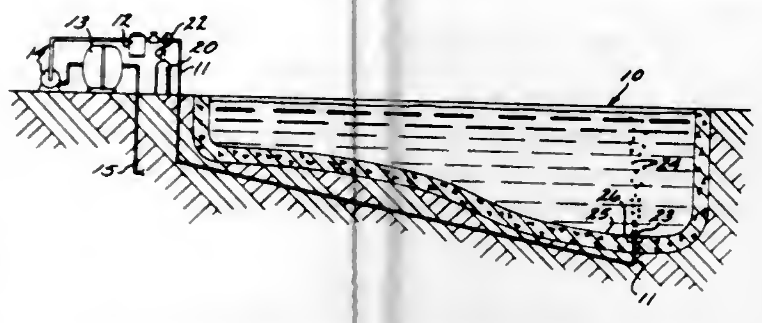
### APPARATUS PARTICULARLY USEFUL FOR CHLORINATING A RESERVOIR

**John Morrison, 11591 Cypress, Orange, Calif.**

**Filed May 20, 1971, Ser. No. 145,233**

**Int. Cl. C02b** *1/36*

**U.S. Cl. 210—169** **12 Claims**



A long thin flexible teflon tube extending in a drain line of a reservoir from the point where the line opens into the bottom of the reservoir to a point outside the reservoir where the tube extends outside the drain line and is removably connected to a chlorine gas bottle, there being provided at the point where the tube is connected to the bottle a fixed metering port, and there being provided a protector tube surrounding the thin tube from the drain line to the chlorine bottle, and a gas diffuser connected to the end of said thin tube where it opens into the reservoir.

A method of installing the above mentioned apparatus wherein one end of the thin tube is placed into the drain line at the bottom of the reservoir, and then, by drawing water from the reservoir through the drain line, the tube is drawn through the drain line to a point outside the reservoir, and then the tube is passed through a hole in the side of said line at a point outside the reservoir, then the tube is connected to a chlorine gas bottle.

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### 3,760,948

### STRAINER DEVICE IN VESSELS FOR TREATING CELLULOSIC PULP

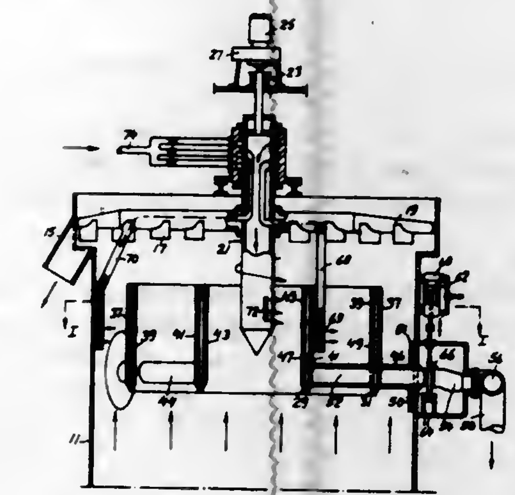
**Rolf J. Johansen, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden**

**Filed Jan. 31, 1972, Ser. No. 221,957**

**Claims priority, application Sweden, Feb. 2, 1971, 1245/71**

**Int. Cl. B01d** *29/42*

**U.S. Cl. 210—342** **7 Claims**



A standing cylindrical vessel for treating cellulosic pulp continuously fed therethrough, is provided with concentric strainer bodies having cylindrical faces and with rotary spray tubes having outlets for spreading a liquid in the pulp in circular paths between the strainer bodies. Liquid ejected through said outlets moves transversely of the pulp flow towards the strainer faces where liquid is withdrawn from the pulp. An impervious cylindrical wall or screen is located close to a liquid outlet moving between two strainer bodies and obstructs the flow therefrom in such a manner that the liquid flows merely or mainly towards one of said strainer bodies.

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### 3,760,949

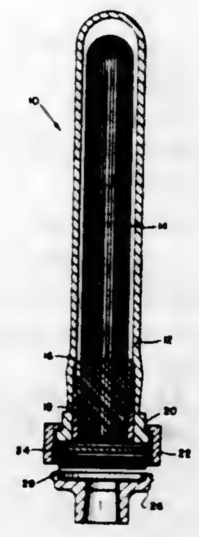
### SEALING MEANS FOR HOLLOW FIBER BUNDLES

**Donald F. Carey, Durham; Richard L. Leonard, Cary, and Thomas A. Orofino, Durham, all of N.C., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed Aug. 13, 1971, Ser. No. 171,431**

**Int. Cl. B01d** *31/00*

**U.S. Cl. 210—321** **6 Claims**



Hollow fiber bundles are sealed within an elongated tubular reverse osmosis module by means of a polymeric elastomer coated onto a fiber bundle at the point of exit of the bundle from the module. The elastomeric seal is in a tapered configuration with the narrowest point being at the open end of the module. The interior of the open end of the module contains a rigid insert shaped to mate the tapered bundle end. The sealing means described provides for fluid tight seals during operation of the module at relatively high pressures. There may also be provided a porous plate firmly held against the ends of the fibers at the open end of the module which aids in retaining the fiber bundle in the module during operation.

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### 3,760,950

### CENTRIFUGAL MACHINES

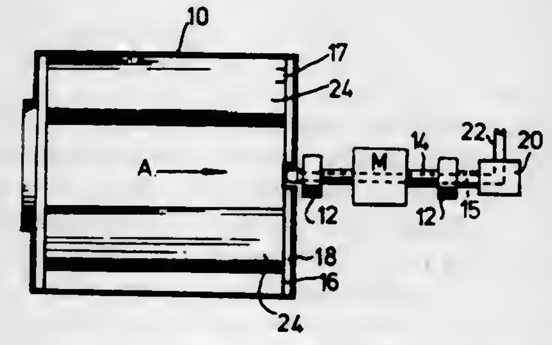
**Gordon Leslie Hine, Denby Dale, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, Yorkshire, England**

**Filed Dec. 2, 1971, Ser. No. 204,264**

**Claims priority, application Great Britain, Dec. 2, 1970, 57,336/70**

**Int. Cl. B01d** *21/26*

**U.S. Cl. 210—373** **18 Claims**



The present invention relates to a centrifugal machine in which at least one inflatable lifter is provided on the inside surface of the drum or basket, means being provided for inflating the or each lifter at predetermined intervals to loosen material previously deposited on the wall of the drum or basket.

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### 3,760,951

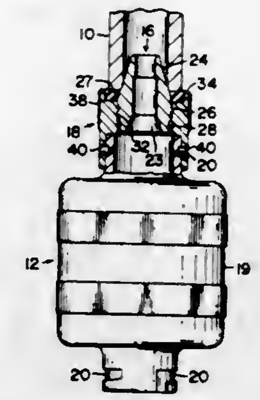
### WATER FILTER CONNECTION MEANS

**Edward Harry Mansfield, 905 Riverbrook Ct., Tampa, Fla.**

**Filed June 21, 1971, Ser. No. 154,758**

**Int. Cl. B01d** *27/00*

**U.S. Cl. 210—449** **5 Claims**



A water filter having a connection means for easily and quickly connecting the filter to a water faucet without the necessity of utilizing tools. An adapter screws to the faucet and the water filter is connected to the adapter by a bayonet fitting. Provision is made to connect the water filter at either end so it may easily be reversed for cleaning and flushing.

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### 3,760,952

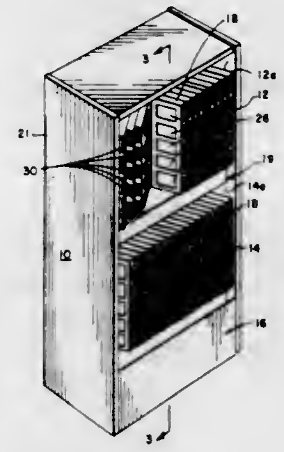
### DISPLAY DEVICE

**Jerry G. White, 203 Melody Ln., Terrell, Tex.**

**Filed July 1, 1971, Ser. No. 158,911**

**Int. Cl. A47f** *5/12;* **E05b** *73/00*

**U.S. Cl. 211—168** **14 Claims**



A display device for displaying merchandise such as a selection of prerecorded tape cartridges and cassettes, having a housing with a plurality of vertically pivotal holders in which tape cassettes, cartridges and similar merchandise can be displayed so that the information printed in the exterior of the merchandise can be viewed by the customers through openings provided in the holder. These holders are so designed that the merchandise can be placed in or removed from the holders by authorized personnel through the rear or interior of the housing, yet customers are prevented from removing the merchandise from the holders from the exterior or front of the housing.

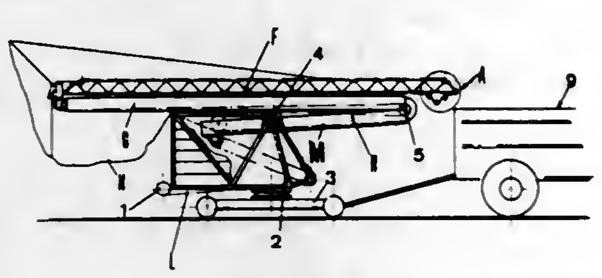
### 3,760,953
### SELF-ERECTING CRANE TO BE TOWED BY A TRUCK

**Egidio Cibin, c/o Dr. Ing Misitano A.G. Via Padova 217, Milan, Italy**

**Filed Sept. 27, 1971, Ser. No. 183,760**

**Int. Cl. B66c** *23/62*

**U.S. Cl. 212—46 A** **2 Claims**



In a tower crane consisting of three articulated members, viz. one lower member hinged to the slewing crane frame, a middle member articulated to the said lower member and articulated to the opposite end to the crane boom, the provision of an inextensible cable fixed at one end to the said slewing frame of crane and to the other end to the said middle member adjacently to the articulation between the said lower member and middle member, said inextensible cable being wound around an arcuated sector fixed to the middle member, whereby swinging of the hinged lower member by a capstan by means of a tackle device causes the self-erection of the tower.

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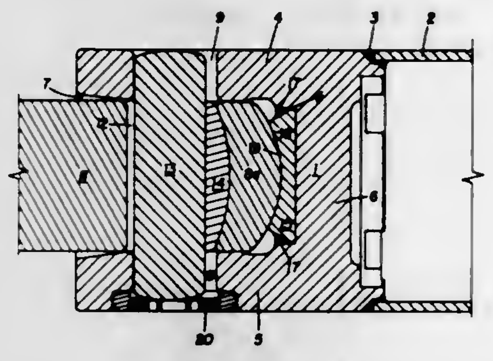
### 3,760,954
### RAILWAY COUPLING APPARATUS

**Elmer E. Hershey, and Donald L. Crummett, both of Fort Worth, Tex., assignors to Halliburton Company, Duncan, Okla.**

**Filed Mar. 20, 1972, Ser. No. 236,000**

**Int. Cl. B61g** *7/10, 9/20*

**U.S. Cl. 213—69** **6 Claims**



A railway car coupler section particularly suitable for resisting wear and for long life utilizes a coupler housing and coupler bar, with the coupler housing having a replaceable bearing insert made of a material having improved wear qualities over that of the coupler housing.

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### 3,760,955
### HYDRAULIC CUSHIONING UNIT

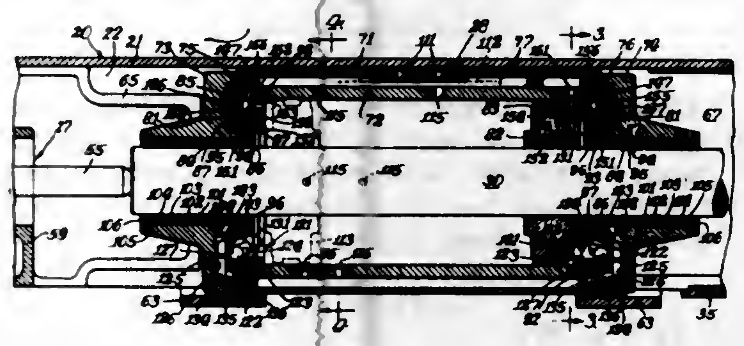
**Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.**

**Continuation-in-part of Ser. No. 52,265, July 6, 1970, Pat. No. 3,682,324. This application Nov. 3, 1971, Ser. No. 195,236**

**Int. Cl. B61g** *9/08*

**U.S. Cl. 213—43** **24 Claims**

A hydraulic unit for a railway cushioning device has improved head assemblies which close the ends of an outer reservoir housing and a cylinder contained in the housing to provide a strong, relatively light weight, and easily manufactured unit. The head assemblies comprise pairs of nested cylinder and reservoir heads. The head assemblies are located at each end of the unit and cooperate with the reservoir housing and cylinder to provide passages, including orifices, and valves for regulating flow of hydraulic fluid through the unit, and thereby absorb energy, in response to movement of a piston which slides in the cylinder. The orifices are located in the cylinder and include a small restricted orifice located adjacent one end of the cylinder and beyond the limit of travel of the piston, which permits the piston to move to the limit of its travel in the draft direction and provides hydraulic control for cushioning train action forces.



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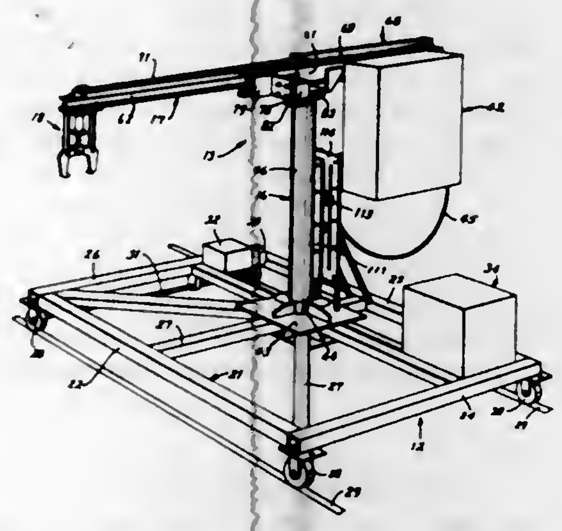
### 3,760,956
### INDUSTRIAL ROBOT

**A. Robert Burch, Plainwell, Mich., assignor to Burch Controls, Inc., Kalamazoo, Mich.**

**Filed Aug. 23, 1971, Ser. No. 174,116**

**Int. Cl. B25j** *9/00*

**U.S. Cl. 214—1 BB** **10 Claims**



An article-handling apparatus having a roller-supported base and a telescopic post assembly extending upwardly from the base. The telescopic post assembly includes a first post section secured to the base and a second post section slidably supported on the first post section and interconnected thereto by a first drive unit, such as a fluid pressure cylinder. A telescopically extendible boom assembly is rotatably supported on the upper end of the second post section and a second drive unit coacts therebetween for permitting selected swinging movement of the boom assembly. The boom assembly includes a telescopically extendible and retractable section which moves substantially radially relative to the post assembly and is movably controlled by a third drive unit, also preferably a fluid pressure cylinder. The movable boom section has an article gripping device mounted thereon which includes relatively movable gripping jaws controlled by a fourth drive unit, also preferably a fluid pressure cylinder. The base may be provided with a fifth drive unit for causing rotation of the support rollers to permit the apparatus to be rollingly moved between remote locations.

### 3,760,957
### CONVEYING DEVICE FOR A DROP FORGING PRESS

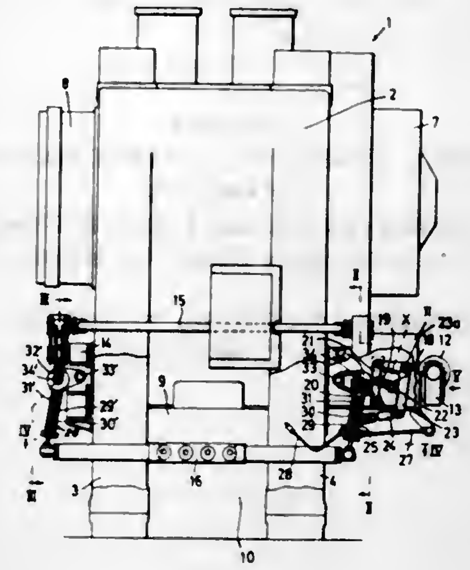
**Rolf Berger, Bergisch-Gladbach, Germany, assignor to Eumuco Aktiengesellschaft Fur Maschinenbau, Leverkusen, Germany**

**Filed Dec. 10, 1971, Ser. No. 206,768**

**Claims priority, application Germany, Dec. 11, 1970, P 20 61 043.9**

**Int. Cl. B30b** *15/30*

**U.S. Cl. 214—1 BB** **15 Claims**



A workpiece conveying device is provided for a drop forge type press which includes parallel conveying means which extend transverse through the frame of the press and are adapted to move in unison to grip and transfer a workpiece to and from the dies of the forging press. A drive control mechanism is provided on each side of the press frame and located above the lower die of the press. The conveying beams are suspended from the control mechanism by the use of spring-biased piston-cylinder units which move the conveying beams in response to the control mechanism. A motor drive assembly is provided for driving the control mechanism and in turn the conveying beams. Two detent gear mechanisms composed of pivoting linkage mechanisms move in separate planes which are arranged perpendicular to each other. The detent gears are designed and are interconnected to effect a predetermined, three-dimensional, closed path motion to the conveying beams. The spring-biased piston-cylinder suspension members are constantly pressurized into the extended position for normal operations. Release of this pressure retracts the conveying beams to provide clearance for removal of the bottom forging die. A safety release connection between the piston and rod of the suspension members permits the conveying beams to be separated to prevent damage to the control mechanism if the beams are inadvertently caught in the forging press ram operation. In another embodiment, the control mechanism is composed of a pair of movable slide plates which are located on opposite sides of the press frames and which are adapted to be moved in unison in two dimensions by the use of fluid motors. The slide plate movement is transferred to the conveying beams and movement of the beams in a gripping or third dimension is provided by a fluid motor-operated toggle mechanism.

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### 3,760,958
### CLAMPING TOOL CHANGER MECHANISM AND ACTUATING MECHANISM FOR A MACHINE TOOL

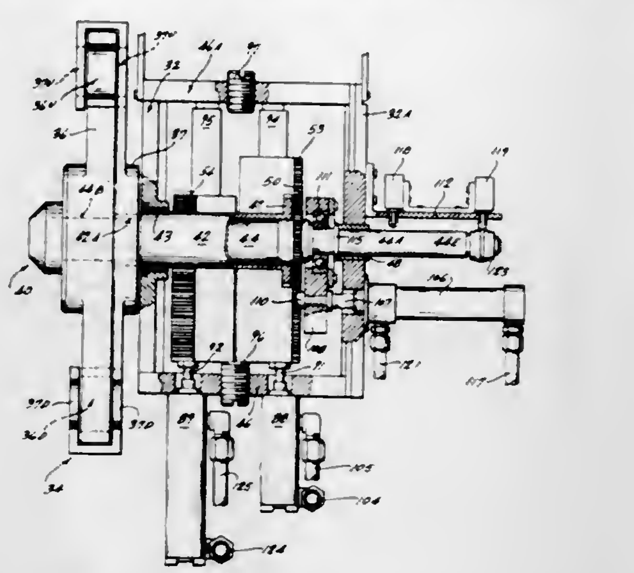
**Earl R. Lohneis, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.**

**Filed May 22, 1972, Ser. No. 255,410**

**Int. Cl. B23q** *5/32*

**U.S. Cl. 214—1 BD** **16 Claims**

The present invention relates to a tool changer mechanism operative to effect a bodily interchange of a pair of toolholders respectively mounted in spaced apart parallelism in an operating station and a storage station. To effect a tool interchange, a pair of independent and oppositely rotatable toolholder arms, are normally positioned in a vertical or substantially parallel parked position about a common parallel axis, between the horizontally spaced apart operating and storage stations respectively. Each of the toolholder arms is provided towards its opposite ends with inwardly or oppositely disposed semicircular openings movable toward one another into opposed or clamped tool encompassing relationship. The arms are interconnected to be controlled by a novel reversing mechanism to effect clockwise rotation of one arm simultaneously with effecting counterclockwise rotation of the other arm. By means of this arrangement, the inner and outer arms are initially rotated 90° in opposite directions to move the semicircular openings toward one another into a fully enclosed clamped position about the spaced apart toolholders carried in spaced apart parallelism in the operating station and storage station respectively. After urging the separate arms into fully enclosed gripping engagement with the spaced apart tools, a transverse cylinder is actuated to simultaneously move both oppositely clamped arms rectilinearly outward to extract the fully enclosed or clamped tools from the respective sockets. Next, with both arms still locked in enclosed tool engaging position, the entire assembly is rotated 180° to bodily interchange the positions of the enclosed tools relative to the spaced apart storage and operating stations. The assembly is then reversibly moved rectilineally inward to reinsert the now interchanged tools after which the reverse mechanism is again operated to reactuate the arms in independent reversed direction to return parked position.



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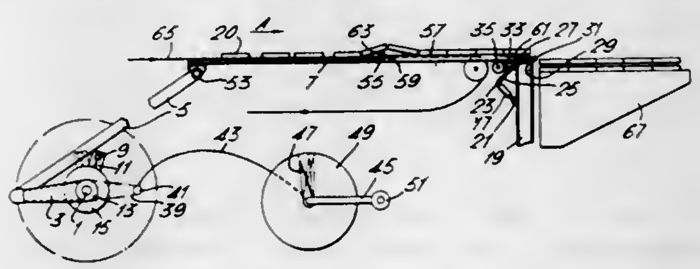
### 3,760,959
### LUMBER STACKER

**Ray William Newnes, Box 8, Salmon Arm, British Columbia, Canada**

**Filed Dec. 15, 1971, Ser. No. 208,220**

**Int. Cl. B65g** *57/10*

**U.S. Cl. 214—6 DK** **6 Claims**



A lumber stacker having a transfer chain, a set of lumber carrying forks and a stacking platform; a lug upstanding from the forks, a substantially vertically movable roller under the free forward end of the forks, a substantially vertically movable stop which can be moved upwardly to halt the forward movement of lumber on the transfer chain, a drive mechanism secured to the rearward end of the forks and an activating mechanism associated with the drive mechanism for controlling the operation of the roller and the stop.

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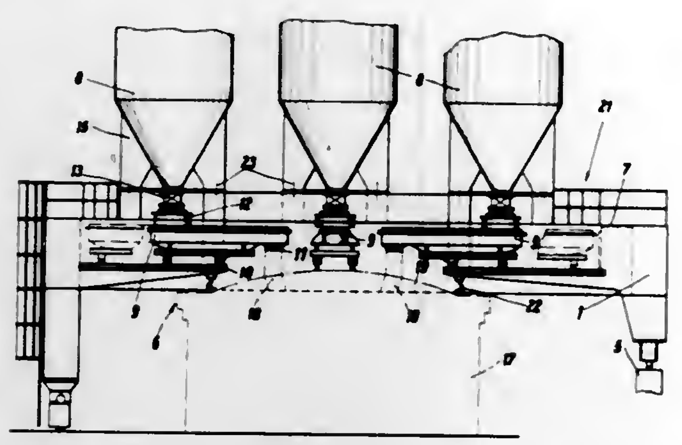
### 3,760,960
### APPARATUS FOR CHARGING ELECTRIC FURNACES

**Peter Schumacher; Werner Hug, both of Duisburg; Edgar Spetzler, Oberhausen/Rhld, and Dieter Terlaak, Essen-Frintrop, all of Germany, assignors to Demag, A.G., Duisburg, Germany**

**Filed May 25, 1972, Ser. No. 256,920**
**Int. Cl. F27d** *3/06*

**U.S. Cl. 214—35 R** **8 Claims**



An apparatus for charging electric furnaces with a hot charge, e.g., iron sponge pellets, which apparatus is provided with a transportable container discharging the charge through a shuttle conduit into a furnace feed opening.

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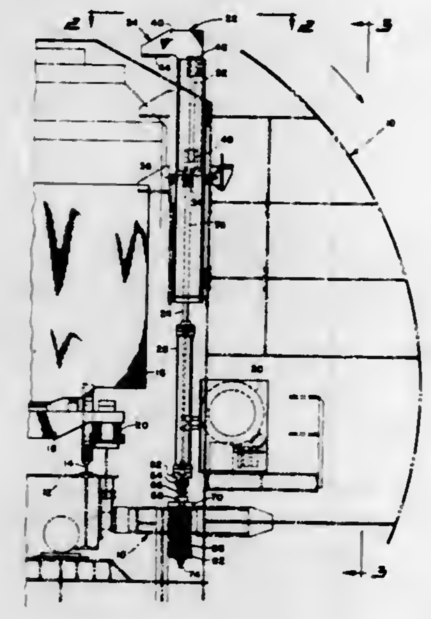
### 3,760,961
### LOAD COMPENSATED CAR DUMPER CLAMP

**Karl Haditsch, Seven Hills, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio**

**Filed Nov. 17, 1971, Ser. No. 199,588**
**Int. Cl. B65g** *67/54*

**U.S. Cl. 214—55** **11 Claims**



There is provided an improved hydraulic clamping apparatus which is characterized by hydraulically actuated extensible arm means coacting between first and second jaw members for moving them toward and away from each other. One of the jaw members is equipped with an abutment and means for anchoring the extensible arm thereto. These means comprise a floating and load-compensating mounting plate secured to the arm and constructed for seating engagement against the abutment in opposition to a load which tends to separate the jaw members. When the load on the arm exceeds a predetermined amount, the floating mounting plate is adapted for movement away from the abutment. Resilient means are provided for biasing the mounting plate against the abutment with a predetermined prestressed force which sets or determines the load at which the mounting plate will float away from the abutment. In this way, the loads are decreased and shock loads on the clamping equipment are readily endured and damage to the clamping mechanism and cars is minimized. Clamps embodying the features of the present invention are particularly useful for holding gondola-type railroad cars in a rotary dumper.

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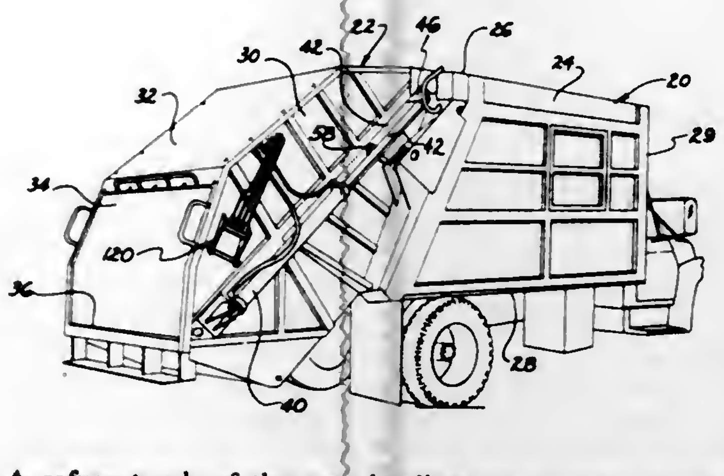
### 3,760,962
### CONTROL SYSTEM FOR REFUSE HANDLING APPARATUS

**Richard V. Clucker, Kenton, and Roland R. Kennedy, Galion, both of Ohio, assignors to Harsco Corporation, Camp Hill, Pa.**

**Filed Oct. 7, 1971, Ser. No. 187,384**
**Int. Cl. B65f** *3/00*

**U.S. Cl. 214—83.3** **1 Claim**



A refuse truck of the rear loading type provided with a novel packer blade and associated control apparatus. More specifically, the packer blade is mounted on a carriage that is arranged to reciprocate on an inclined track means so as to load and pack the truck body and the blade and carriage are respectively actuated by separate hydraulic cylinders which are in turn controlled in a novel manner so as to operate the carriage and the blade through successive cycles each of which is controlled by a respective pressure responsive controller. As a result, each of said cycles is automatically terminated by the occurrence of a predetermined pressure value and the mechanism will automatically proceed to the next succeeding cycle.

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### 3,760,963
### LIFTING ATTACHMENT FOR A CRANE

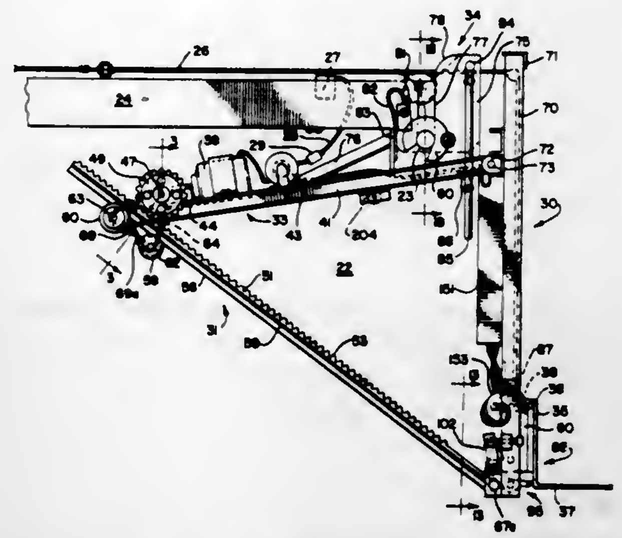
**Forrest D. Welch, 1715 Stone St., Saginaw, Mich.**

**Filed Aug. 26, 1971, Ser. No. 175,170**
**Int. Cl. E02f** *3/86*

**U.S. Cl. 214—152** **9 Claims**

A portable, readily attachable and detachable, mobile materials handling device which is capable of being selectively connected at or near the extreme end of the boom of a crane, for example, a hydraulic crane, to provide the crane with a fork lifting capability. When suspended from the boom head of a crane, the device is free from engagement with any support member of the crane other than the boom head. The attachment comprises elevator means which include a fork lift carriage assembly capable of being raised and lowered in cooperation with a plurality of telescoping channel members by the operation of the load line of the crane to achieve the desired lifting functions at all positions accessible by the boom of the crane. Leveling means are provided for maintaining the orientation of the fork lift, for example, in a substantially

horizontal position, wherein the main frame of the elevator mechanism is maintained in a substantially vertical position. The leveling means comprise a pair of spaced leveling members defining gear racks which mate with similar drive pinons driven by a power source connected to the power system of the crane. The leveling members are secured to the elevator means so that, by operation of the drive pinions, the lower end of the elevator means may be advanced or retracted relative to tee vertical by the tracking of the leveling members. The apparatus is arranged for convenient and rapid attachment to the crane, and the method of attachment is disclosed wherein the load line of the crane is reeved about a plurality of guide members, to connect to the boom of the crane. When so positioned, the device is raised into a connecting alignment with attaching pins on the boom head to be automatically secured



thereabout with a locking member. The primary latching mechanism comprises the attaching pins on the boom of the crane which cooperate with cammed, generally U-shaped slots on plates secured to the device and further includes the locking members for enveloping the attaching pins and being secured thereabout by a dog member. A secondary safety locking mechanism is disclosed comprising laterally actuatable pins in the plates on the device to be secured in mating recesses in the boom head by the operation of the secondary pin latching mechanism. The apparatus is characterized as being readily attached and detached from the boom of the crane and as being operable throughout the range of operation of the boom, for example, 0° to 70° or more relative to a horizontal plane. Moreover, the load space above the fork lift is substantially free from interfering members to accommodate a wide variety of loads.

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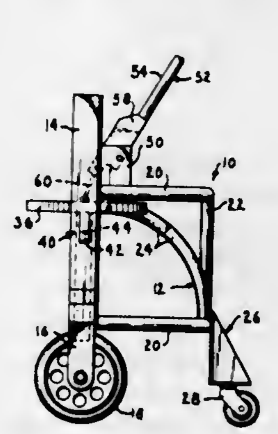
### 3,760,964
### DRUM TRANSPORTER

**Harold D. Trapp, 915 Tulane Ave., Salina, Kans.**

**Filed Feb. 14, 1972, Ser. No. 225,768**
**Int. Cl. B60p** *1/64*

**U.S. Cl. 214—390** **6 Claims**



Apparatus for transporting an object such as a drum or the like employs means for lifting the drum into a transporting position under a substantial mechanical advantage. A carriage is configured to partially surround the drum and the carriage is in three-point contact with the supporting surface. The two points at the side of the drum are located over center to assure that the weight of the drum will be concentrated on the carriage. A pair of upright supports on the carriage mount a pair of arms which are movable into engagement with the drum by a lever arm coupled with the arms. Without tilting the drum or moving it in any way the arms may be moved to grip the drum and then lift it off the surface on which it is disposed. A wheel located at each point of contact of the apparatus with the surface accommodates easy movement of the apparatus with the object supported thereby, over the surface.

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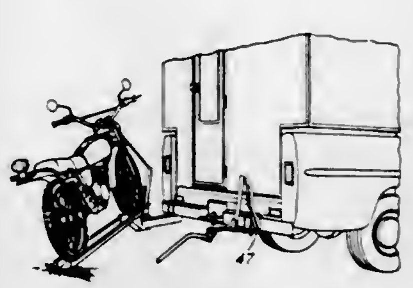
### 3,760,965
### CYCLE CARRIER

**Roy L. Chandler, Arlington, Tex., assignor to Red Ant Products, Inc., Mansfield, Tex.**

**Filed Jan. 14, 1972, Ser. No. 217,751**
**Int. Cl. B60r** *9/00*

**U.S. Cl. 214—450** **18 Claims**



The specification discloses a carrier for carrying a motorcycle or the like on a motor vehicle and comprises two support arms adapted to be coupled to a motor vehicle for supporting a channel or rail in a varrying position for carrying a motorcycle next to the motor vehicle. One end of the channel is pivotally coupled to one of the arms for pivotal movement about a pivot axis which is tilted or inclined in a lateral direction relative to the motor vehicle and upward and away from the other arm in a plane extending between the two support arms. When the other end of the channel is swung out, the channel pivots downward toward the ground and also tilts to facilitate loading and unloading.

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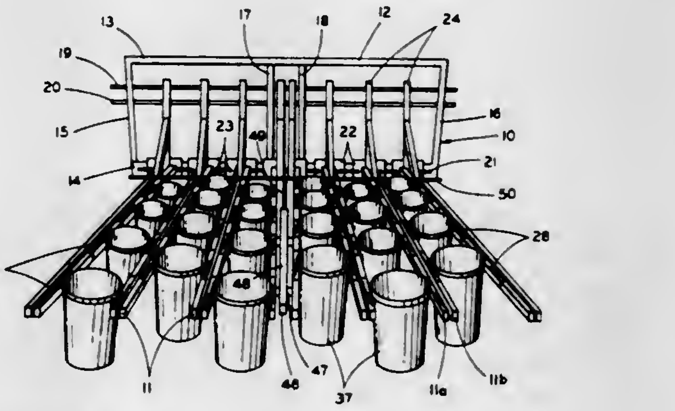
### 3,760,966
### APPARATUS FOR LIFTING AND MOVING CONTAINERS

**Learoy H. Jones, Jr., 812 12th Ave. N.E., Mulberry, and Joel F. Butler, 902 Chestnut Rd., Lakeland, both of Fla.**

**Filed Oct. 10, 1972, Ser. No. 296,329**
**Int. Cl. B66f** *9/14*

**U.S. Cl. 214—750** **7 Claims**



An apparatus for lifting and moving containers includes a frame and a plurality of spaced-apart generally parallel rails which extend from the frame in a generally horizontal plane. A plurality of slide means are slidably mounted on each rail for longitudinal sliding movement on the rail, and connecting means extend between adjacent slide means for permitting limited longitudinal sliding movement of each pair of adjacent slide means between adjacent and separate positions. An extendable hydraulic motor extends parallel to the rails, and a connecting rod extends transversely from the motor and is connected to one of the slide means of the rail. Extension of the hydraulic motor will extend the first slide means of each rail, and, after limited sliding movement permitted by the connecting means, the succeeding slide means on each rail will also be moved longitudinally along the rail until all of the slide means are separated from each other. Retraction of the hydraulic motor will cause successive butting of each slide means against the forwardly adjacent slide means until all of the slide means on each rail are adjacent each other. The containers to be lifted are supported between a pair of slide means on adjacent rails and can be lifted by raising the frame. The separation between the containers can be varied as desired by extending or retracting the hydraulic motor.

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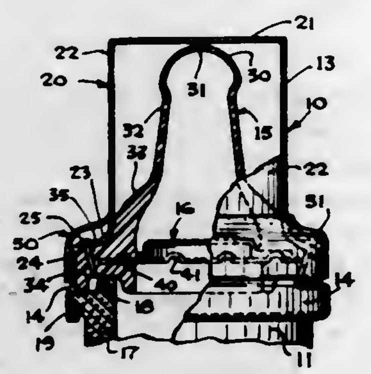
### 3,760,967
### INFANT FEEDING UNIT ASSEMBLY

**William Welch, Columbus; Donald Evans; Ned Neely, both of Worthington, all of Ohio, and Bruce Lockhart, West Haven, Conn., assignors to Abbott Laboratories, Chicago, Ill.**

**Filed Oct. 30, 1972, Ser. No. 302,310**
**Int. Cl. A61j** *9/00, 9/08*
**U.S. Cl. 215—11 C** **6 Claims**



An infant feeding assembly including a nipple and a protective cap or shroud and retaining ring structure which clamps the assembly together onto the open end neck portion of a container. The protective shroud encloses the nipple during storage as well as compressing the nipple and closing the air vent holes. The assembly includes a disk for separating the product from the nipple and closure, the disk having an annular ridge on the periphery thereof to provide an effective seal when the closure is attached to seal the container. Upon release of the pressure, the annular ridge aids in separating the disk and nipple thereby releasing the vacuum within the bottle and facilitating the formation of an effective fluid flow path for the product in the container. A collar which covers the frangible connection between the shroud and retaining ring structure is provided to minimize possible injury when the shroud is removed.

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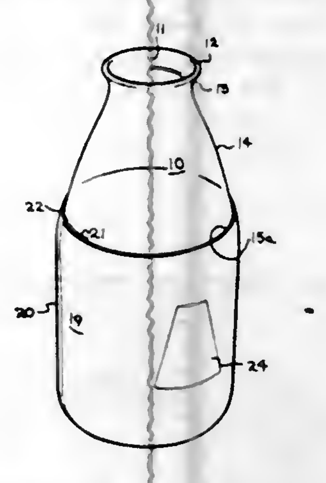
### 3,760,968
### COMPOSITE CONTAINER ARTICLE

**Stephen W. Amberg, St. James, N.Y.; Clarence A. Heyne; Stewart M. Lang, and John H. Meincer, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation-in-part of Ser. No. 92,437, Nov. 24, 1970, abandoned. This application July 2, 1971, Ser. No. 159,443**
**Int. Cl. B65d** *23/08*
**U.S. Cl. 215—12 R** **25 Claims**

The invention disclosed relates to an improved container article for pressurized products, such as beer, beverages, and the like, which is made from a glass bottle or jar and a sheet of shrinkable plastic material pre-decorated as flat sheet, then wrapped on a mandrel to a sleeve that is telescopically inserted over the major side wall of the bottle so that a lower marginal end thereof overhangs the bottom end of the bottle. The sleeve may be of a pre-foamed or non-foamed plastic material and is shrunken in situ by heat so that it fits snugly on the bottle surface and conforms to the body around its shoulder, side wall and its lower corner radius or heel and onto the bottom end of the bottle protecting the glass against surface damage, providing a pre-printed label or decoration for the bottle and covering the bearing surface and lower corner radius of the bottle protecting those areas plus affording coaster protection to furniture or like surfaces. The orientation of the plastic is major on the peripheral dimension of the sleeve and minor on the axial dimension. Antistatic compounds are applied to the surface opposite the printed surface also priming the bottle for good cohesion of the sleeve. The plastic sleeve has a skin depth differfential, the thicker skin being adjacent the bottle.



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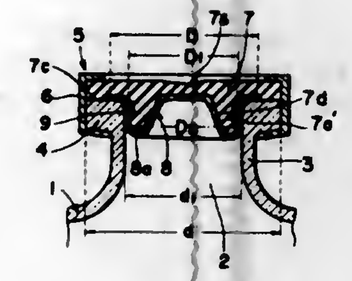
### 3,760,969
### CONTAINER CLOSURE

**Tsugio Shimamoto, Takarazuka; Masahiko Fujita, Suita; Yoshiharu Matsukura, Higashiosaka; Osamu Kawahara, Nara, and Mamoru Sakagami, Gojo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan**

**Filed Sept. 10, 1971, Ser. No. 179,413**
**Claims priority, application Japan, Sept. 16, 1970, 45/81043**
**Int. Cl. B65d** *39/00*
**U.S. Cl. 215—37 R** **4 Claims**

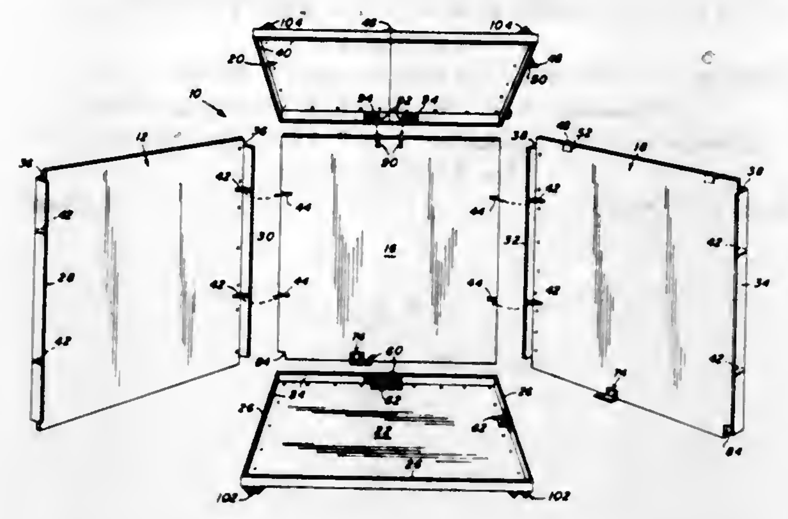


A container closure member adapted to sealably close an access opening of a glass bottle for solutions, which has a leg-like portion sealingly situated in the access opening. This closure member comprises a rubber covering plug formed with an annular protrusion and a shaped form of synthetic resin formed with an annular groove and firmly contacted with the covering plug with its annular groove receiving therein the annular protrusion of the covering plug. The diameter of the shaped form is smaller than that of a flange of the storage vessel, but larger than that of the access opening so that a tight contact between the closure member and the storage vessel can be advantageously ensured.

### 3,760,970
### CONTAINER

**David E. Lutz, Carlisle, Pa., assignor to Minicube System, Inc., Carlisle, Pa.**

**Filed Feb. 10, 1971, Ser. No. 114,257**
**Int. Cl. B65d** *7/24, 9/12*
**U.S. Cl. 220—4 F** **7 Claims**



A collapsible container provided with supporting means and self-aligning stacking means, and a locking device for locking the containers in stacked position with a mating container.

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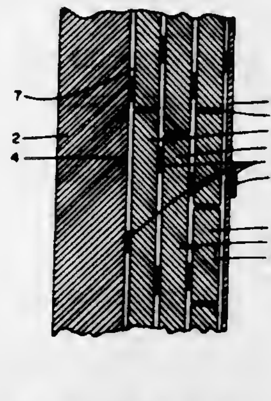
### 3,760,971
### LIQUID CRYOGEN STORAGE TANK FOR SHORE, SHIP OR BARGE

**Eugene L. Sterrett, Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio**

**Continuation-in-part of Ser. No. 21,574, March 23, 1970, Pat. No. 3,682,346. This application Oct. 12, 1971, Ser. No. 188,040**
**Int. Cl. B65d** *25/18*
**U.S. Cl. 220—9 A** **15 Claims**



A container for cryogenic fluids is described wherein a first layer of insulating blocks completely lines the interior of the container and at least a portion of one face of each block is bonded to the interior of the container by a cryogenic adhesive. The sides of the insulating blocks have a contractable insulating material completely surrounding them. At least a second layer of insulating blocks is bonded to the first layer of blocks; at least about 2 percent of the areas common to the faces of the first and second layers of blocks are bonded. The sides of the second layer of blocks are surrounded by a contractable insulating material. The face areas common to the blocks that are not bonded preferably have a substantially non-friction material attached thereto. The layers of blocks are arranged so that there are no direct heat paths to the walls of the container. A membrane of Mylar polyester film completely covers the interior of the container and is sufficiently bonded to the interior layer of blocks to support the Mylar film. Optionally, another layer of insulating blocks can be bonded to the Mylar film and then another layer of Mylar film bonded to this layer of blocks—this is preferred for containers used in transporting cryogen. Where the container is stationary, the top of the container does not have to have the membrane of Mylar film.

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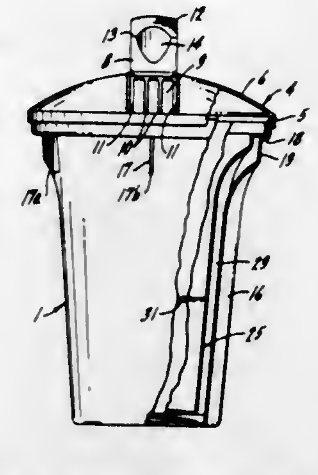
### 3,760,972
### CARAFE

**Robert A. McKirnan, Winnetka, Ill., assignor to Knight Engineering & Molding Co., Arlington Heights, Ill.**

**Filed Dec. 10, 1971, Ser. No. 206,752**
**Int. Cl. B65d** *25/18*
**U.S. Cl. 220—9 R** **2 Claims**



A carafe with a snap-in insulating liner and a removable domed cover. The carafe is nestable with and without the liner; the liners are nestable; a spout is carried entirely by the cover and includes a captive door openable in response to pressure on the cover.

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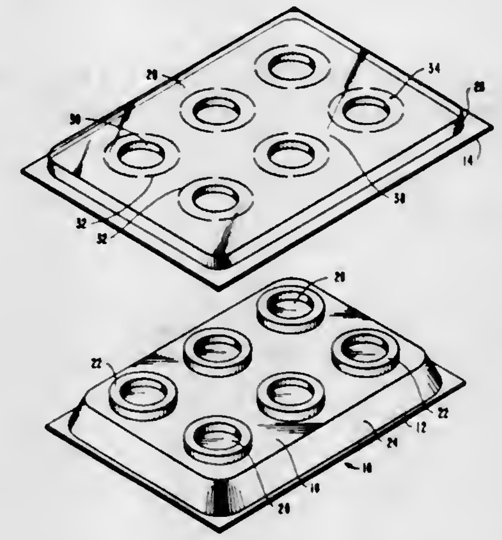
### 3,760,973
### RESEALABLE CONTAINER

**William P. Canning, San Marino, and Richard R. Kramer, Los Angeles, both of Calif., assignors to American Thermoform Corporation, Pico Rivera, Calif.**

**Filed Sept. 7, 1971, Ser. No. 178,267**
**Int. Cl. A47g** *19/00*
**U.S. Cl. 220—23.8** **11 Claims**



A resealable container includes a generally planar, integrally formed base such as of vacuum formed styrene having a plurality of depressions therein forming receptacles which extend outwardly from the plane on one side thereof and which have beaded portions extending outwardly on the opposite side of the plane to form the open ends of the receptacles. The container also includes a generally planar, integrally formed cover, also of vacuum formed sytrene or similar material, which is mounted on the base so that a plurality of shallow depressions in the cover extend into the various receptacles of the base. Individual lids defined by die cut scorings in the cover and which include the various shallow depressions therein are preferably sealed to the beaded portions of the receptacles such as by use of an appropriate adhesive to form an air-tight enclosure where they remain as the remainder of the cover is pulled away. Thereafter the lids are peeled away from the various receptacles to provide access thereto, after which the lids can again be inserted into the beaded portions of the receptacles to reseal the receptacles by virtue of an interference fit therewith.

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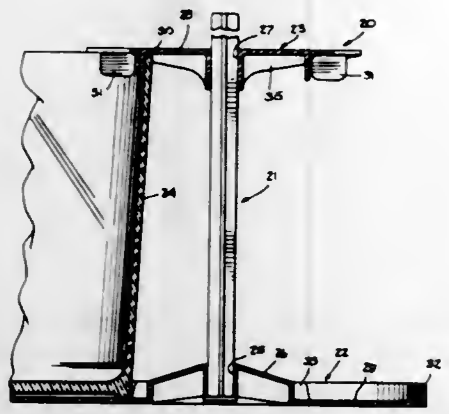
### 3,760,974
## PACKAGE FOR TUMBLERS AND THE LIKE
**Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio**
**Filed Dec. 6, 1971, Ser. No. 205,270**
**Int. Cl. B65d** *21/02;* **A47g** *19/00;* **B65d** *85/62*
**U.S. Cl. 220—23.83** **2 Claims**



An improved package for storing, transporting, and displaying articles such as tumblers is disclosed. The package has a bottom tray preferably formed of shaped plastic having spaced cups or nests for receiving the bottoms of tumblers of differing sizes. A stem extends upwardly from the central portion of the bottom tray through the tumblers to an adjustably positioned top also formed of shaped plastic. The package top includes several tumbler separating members or rim grips which extend downwardly from the top to hold tumblers of differing sizes spaced from one another and firmly positioned on the bottom tray.

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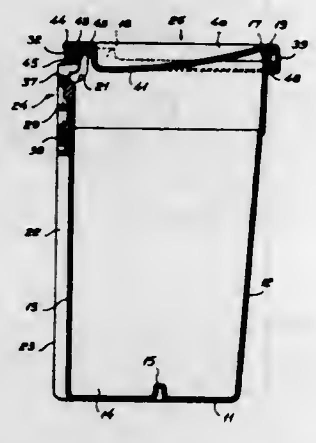
### 3,760,975
## WASTEBASKET HAVING A SUPPLY OF WASTEBAGS
**Stig Gustav Nils Reinhold Nilsson, Box 25, Kattarp, Sweden**
**Filed Sept. 25, 1970, Ser. No. 75,651**
**Int. Cl. B65d** *25/16, 43/16*
**U.S. Cl. 220—31 R** **11 Claims**



A wastebasket comprising a container has a suspension frame or plate detachably mounted on the outside of the rear wall of the container and provided with a hinged lid therefor. For mounting a bag of plastic foil in the container a plurality of such bags being provided as a storage roll of a continuous bag web from which bags may be torn off along a transverse perforation, there are provided two members located at each one of the rear corners of the container spaced from a plane which is determined by the suspension frame or plate the suspension frame or plate being adapted to bear against a wall surface or other vertical surface to which such suspension frame or plate is connected, in said plane.

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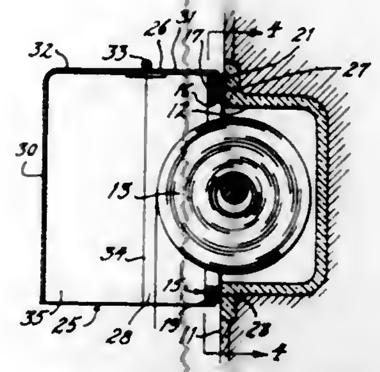
### 3,760,976
## COVER DEVICE FOR WALL-MOUNTED TOILET ACCESSORY
**Nicholas Andreacchio, 275 40th St., Apt. 9, Irvington, N.J.**
**Continuation of Ser. No. 810,133, March 25, 1965, abandoned. This application July 7, 1971, Ser. No. 160,477**
**Int. Cl. B65d** *43/15*
**U.S. Cl. 200—32** **2 Claims**



A cover device for a wall-mounted toilet accessory, such as toilet tissue or the like, including a frame to be affixed to the wall about the accessory, and a cover having top, side and front walls removably attached to the fixed frame.

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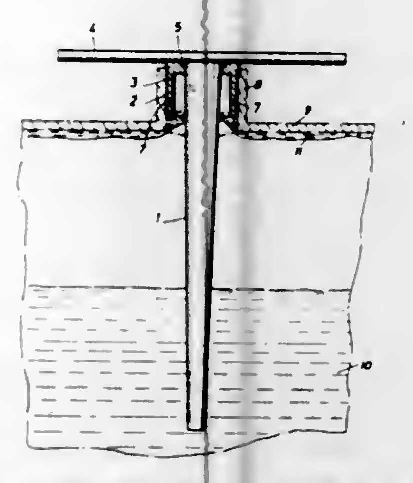
### 3,760,977
## VENTING FOR MOLTEN SULPHUR TANKCARS
**Malcolm MacKinnon, Calgary, Alberta, Canada, assignor to Shell Oil Company, New York, N.Y.**
**Filed May 18, 1971, Ser. No. 144,496**
**Int. Cl. B65d** *41/04*
**U.S. Cl. 220—39 R** **4 Claims**



A device for preventing possibility of explosion during handling and transporting molten sulfur in vehicles by use of a novel venting device.

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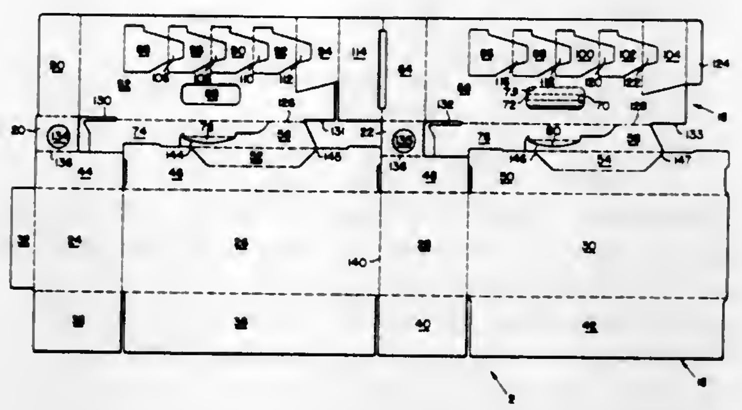
### 3,760,978
## MULTI-CONTAINER CARRIER CARTON
**Orison W. Stone, Valley Cottage, N.Y., assignor to John R. Schovee, Pittsford and Thomas R. Boston, Fairport, N.Y., part interest to each**
**Filed Feb. 19, 1971, Ser. No. 117,008**
**Int. Cl. B65d** *75/00*
**U.S. Cl. 220—115** **43 Claims**

An improved boxboard carton for use, in the preferred embodiment, as a twelve-bottle carrier, having an improved handle structure that includes means for holding or tilting the centrally located bottles outwardly to provide additional hand

room. In one embodiment, the holding means cooperates with a hand inserted into the handle to provide the additional room, and the entire carton, including the outer structure, the central divider, the multi-cell structure and the handle, is of one-piece construction using a single carton blank with a minimum amount of boxboard area and without waste. In another embodiment, the holding means itself holds the bottles outwardly without the need for cooperation with an inserted hand to accomplish the holding. The handle does not project above the upper surface of the carton whereby excellent stackability is achieved. The carton blank can be formed into a preglued carton tube on known high speed gluers, and the glued, flat carton tube can be set up by the bottler using existing equipment. In another embodiment, the top wall includes slits in one set of flaps and mating score lines in the other set of flaps, so that the top wall can be re-closed and locked after being opened.



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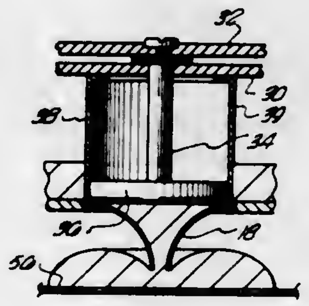
### 3,760,979
## MACHINE FOR MOLDING BATTER
**Lindow Seu, 1144 Coronado Ter., Los Angeles, Calif.**
**Filed Mar. 30, 1972, Ser. No. 239,591**
**Int. Cl. A21d** *13/08*
**U.S. Cl. 222—330** **11 Claims**



A machine for dispensing multiple uniformly molded portions of batter formed to have a circular shape with a central depression, is disclosed. A forcing unit is hydraulically driven downward against a feed member to have batter applied to a baking sheet in the desired form. The forcing unit includes a plurality of operatively ganged piston-cylinder components which serve to force measured portions of batter through a funnel element supported on a measuring plate of the feed member. An elevating pedestal serves to situate the baking sheet in close proximity beneath the feed member to receive the batter that is driven through the respective funnels by the forcing unit.

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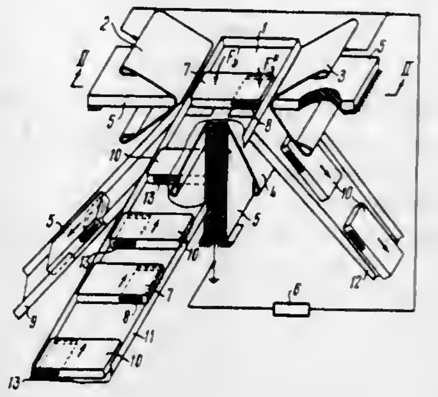
### 3,760,980
## METHOD OF SEGREGATING BODIES, ACCORDING TO THEIR ORIENTATION, HAVING PRONOUNCED DIELECTRIC PROPERTIES IN AN ALTERNATING ELECTROSTATIC FIELD, AND APPARATUS FOR PERFORMING SAME
**Benjamin Alexandrovich Ioffe, ulitsa Raunas 45/2, kv. 81, Riga, U.S.S.R.**
**Filed Dec. 16, 1969, Ser. No. 885,536**
**Int. Cl. B23q** *7/12*
**U.S. Cl. 221—157** **3 Claims**



The present invention relates to such fields of industry and engineering, where successively supplied bodies should be oriented into desired positions thereof, and, more particularly, it relates to a method of segregating, according to their orientation, bodies made of materials having pronounced dielectric properties in an alternating electrostatic field, as well as to an apparatus for performing such method.

The present invention can be used for introducing automation into various production processes, where successively supplied articles or workpieces, preferably, plate-like in configuration, are to be treated and handled in the course of their being manufactured and assembled into corresponding units, instruments, machines, etc.

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## ERRATUM

For Class 222—330 see:
Patent No. 3,760,979

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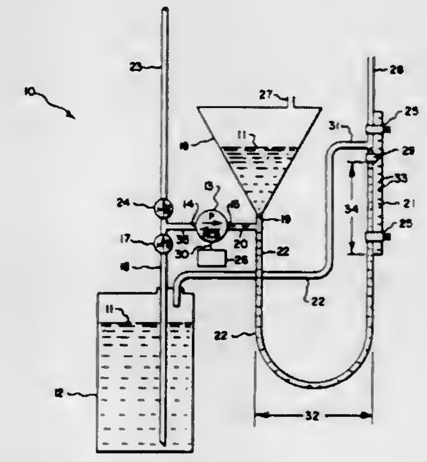
### 3,760,981
## BATCH METERING DEVICE FOR LIQUID DYES
**William H. Weed, Syracuse, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.**
**Filed July 25, 1972, Ser. No. 275,013**
**Int. Cl. B67d** *5/30*
**U.S. Cl. 222—14** **19 Claims**



A metering device for a liquid driven by a reversible pumping means which includes a storage means for holding the liquid and a measuring container above the storage means for measuring liquid which is to be delivered by the pumping means from the measuring container to a discharge means.

The metering device includes a means for setting the volume of liquid which will be dispensed from the metering device. The volume setting means is preferably an arch in a conduit between the bottom of the measuring container and the storage means. The arch is below the top but above the bottom of the measuring container so that when the liquid level in the measuring container and in the conduit reaches the arch, additional liquid supplied to the measuring container and the conduit, will flow over the arch and return to the storage means. The pumping means operates to remove liquid from the storage means to the measuring container and conduit and, when reversed, operates to remove liquid from the measuring container and conduit to the discharge.

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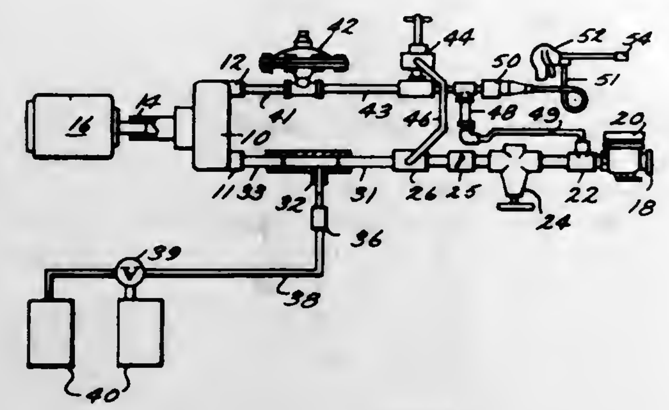
### 3,760,982
### PRESSURE WASH CONTROL SYSTEM

**Robert L. Haase, Quakertown, Pa., assignor to Aero Wash Systems, Inc., Quakertown, Pa.**

**Continuation-in-part of Ser. No. 91,134, Nov. 19, 1970. This application Feb. 24, 1971, Ser. No. 118,464**

**Int. Cl. B05b** *9/00*

**U.S. Cl. 222—63** **11 Claims**



A pressure washer comprising a power driven pump having a fluid receiving inlet connected to a fluid directing means and a fluid discharge outlet connected to a fluid discharge means. The fluid directing means comprises a conduit means, a flow switch mounted to the conduit means, check valve means mounted to the conduit means, a regulator mounted to the conduit means, and injector means mounted to the conduit means. A circuit means connects the flow switch and injector means to operate the injector means in response to activation by the flow switch. The fluid discharge means comprises a second conduit means, a bypass fixture mounted to the second conduit means, the fixture having a bypass conduit secured thereto with the other end of the bypass conduit being secured to the first conduit means. The bypass construction allows fluid to flow from the second conduit means into the first conduit means for recirculation when the fluid is at a predetermined pressure. The check valve means is additionally mounted to the second conduit means to provide for a fluid flow from the first conduit means to the second conduit means when the pump is stopped. A spray gun is removably connected to the second conduit means to provide for the dispensing of fluid from the pump.

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### 3,760,983
### MEASURING AND DISPENSING DEVICE FOR GRANULATED MATERIALS AND THE LIKE

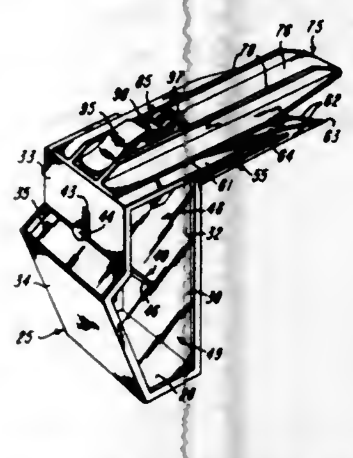
**Bernard C. Thompson, 3245 W. Altadine Ave., Phoenix, Ariz.**

**Filed June 20, 1972, Ser. No. 264,429**

**Int. Cl. B67b** *7/26*

**U.S. Cl. 222—90** **6 Claims**

A hopper has an internal baffle defining upper and lower chambers and is attached to a wall of a cardboard box-like container of granulated material by a pointed opening member which projects from the hopper and is effective to pierce a V-shaped opening within the container. The hopper is secured to the container by the opening member and a clamping member which cooperates with a projecting guide member to clamp the top wall of the container. Measured amounts of material are successively trapped within the upper hopper chamber and transferred to the lower hopper chamber for dispensing in response to reverse tilting of the container and hopper. The baffle member is adjustable to provide for changing the measured amount of material which is dispensed.



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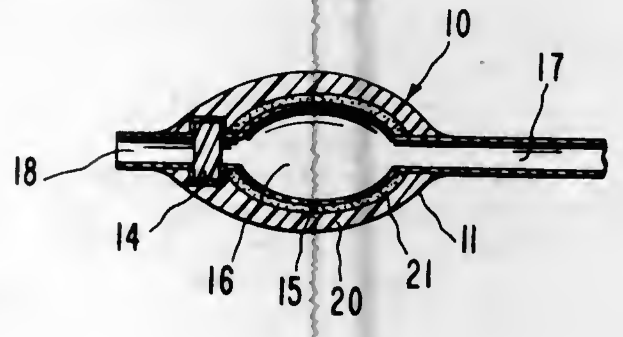
### 3,760,984
### OSMOTICALLY POWERED AGENT DISPENSING DEVICE WITH FILLING MEANS

**Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.**

**Filed Sept. 29, 1971, Ser. No. 293,551**

**Int. Cl. B65d** *35/28*

**U.S. Cl. 222—95** **5 Claims**



A device is disclosed comprised of a wall formed of a material collapsable in response to mechanical force and surrounding a closed compartment for containing an agent, a dispensing passageway communicates with the compartment and the exterior of the device for dispensing agent therefrom, a filling passageway communicates with the exterior of the device and the compartment for filling the device, a layer of an osmotically effective solute is despoited on the collapsable wall's outer surface, said solute capable of exhibiting an osmotic pressure gradient against an external fluid and increasing its volume as fluid diffuses by osmosis into the solute, an outer wall surrounding the layer of solute formed of a material having shape retaining properties, permeable to the fluid and substantially impermeable to solute, and wherein the filling passageway houses a material penetrable to a means for filling the compartment which material self closes on removal of the means to maintain the compartment in closed condition for subsequent collapsing thereof in response to mechanical or hydrostatic force generated by osmotic pressure arising in the solute layer, as fluid diffuses therein to increase its volume and generate forces that are exerted between the collapsable wall of the agent containing chamber and the more rigid outer semi-permeable wall, which collapsing force in turn dispenses an agent through the dispensing passageway when the compartment is charged with drug and the device is positioned in the environment of use.

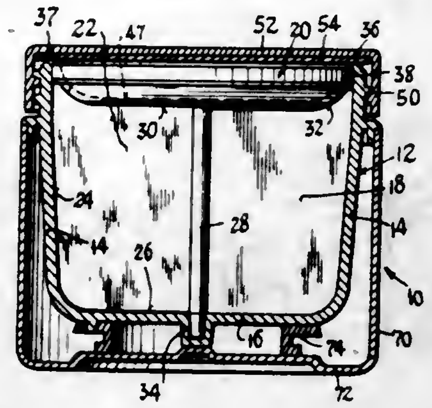
### 3,760,985
### DISPENSING CONTAINER

**James W. Bryan, 15 Madison Springs Dr., Madison, Conn.**

**Filed Feb. 28, 1972, Ser. No. 229,663**

**Int. Cl. A45d** *33/00*

**U.S. Cl. 222—136** **9 Claims**



A dispensing container for cosmetic creams or lotions comprising a dispensing jar having an annular side wall portion and a transverse bottom wall portion, in conjunction with a disk-like actuator cover which is rotatably mounted on the jar and constitutes a closure member therefor. The jar has a fixed vertical partition extending radially from its center to the side wall, and also engaging the bottom wall. The actuator cover has a depending substantially perpendicular vane adapted to slidably engage the inner surfaces of the jar. The vane and partition, along with the jar and actuator cover define first and second chambers adapted to contain the product being dispensed. The actuator cover has dispensing orifices disposed on opposite sides of the vane, one orifice communicating with the first chamber and the other orifice communicating with the second chamber. Thus the contents of one chamber can be dispensed through one orifice when the cover is rotated in one direction, and the contents of the other chamber can be dispensed through the other orifice when the actuator is rotated in the opposite direction. In another embodiment, a tubular orifice member having a bore communicating with the interior of the jar extends above the upper surface of the actuator cover and is engaged and sealed by the sealing liner of a threaded closure cap which thus effects a simultaneous seal of the tubular member and the jar contents.

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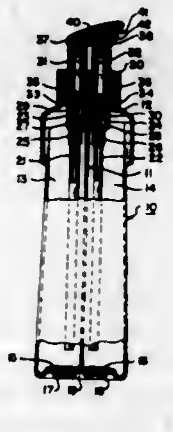
### 3,760,986
### DISPENSING BOTTLES WITH PUMP MEANS FOR SIMULTANEOUS DISPENSING

**Charles S. Castner, and Auguste J. Schorr, Reading, Pa., assignors to Schuyler Development Corporation, Reading, Pa.**

**Filed Aug. 19, 1970, Ser. No. 65,054**

**Int. Cl. B67d** *5/52*

**U.S. Cl. 222—137** **4 Claims**



A dispensing bottle is provided for dispensing two separate fluids to a common point. Such bottle is formed with an opening in the top and a divider extending through the interior and integral therewith to form two separate non-communicating compartments communicating with the opening and separated by said divider, pump means communicating with each compartment to withdraw fluid simultaneously from each compartment and discharge fluid from each compartment simultaneously to a common point and means for actuating said pump means.

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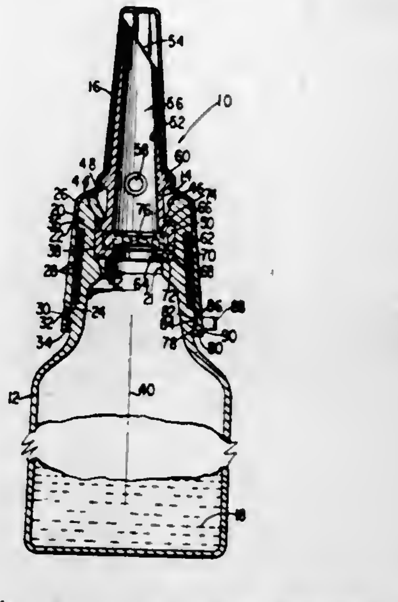
### 3,760,987
### SNAP ASSEMBLED DISPENSING PACKAGE AND COVER

**Eugene J. Meterhoefer, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 810,264, March 25, 1969, abandoned. This application June 2, 1971, Ser. No. 149,273**

**Int. Cl. B67d** *5/32*

**U.S. Cl. 222—153** **3 Claims**



The disclosure is directed to an improved universal dispensing package for medicaments to be dissolved in a parenteral solution prior to use. The package may be filled and assembled by merely snapping together its components. The packages reduce the cost of drugs by permitting the economy inherent in high speed filling and assembly. The package is made up of a container which has a tapered shank on its discharge end and a piercing device, snappably connected to the container, which also serves as a conduit for dispensing the medicament. A cover may be provided which fits over the conduit and shank and snap-fits into place. Associated with the package may be a pull-strip device for removing the cover, an internal filter and a vent in the conduit.

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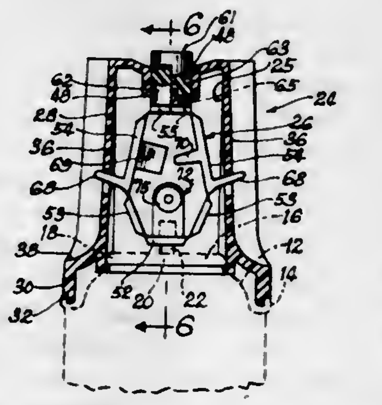
### 3,760,988
### SAFETY ACTUATOR MEANS FOR USE WITH AEROSOL DISPENSERS

**Efrem M. Ostrowsky, Highland Park, Ill., assignor to Federal Tool & Plastics (a division of UCA Corporation), Chicago, Ill.**

**Filed May 4, 1972, Ser. No. 250,174**

**Int. Cl. B65d** *83/14*

**U.S. Cl. 222—153** **13 Claims**



Safety actuator means adapted for securement to an aerosol container including a cap and a toggle-type actuator with means for digital engagement, said digital engageable means having to be simultaneously manually operated to operate the valve stem of the aerosol container, said digital operable means being such as to make operation by a child virtually impossible and thus providing a safety factor against the use of same by children.

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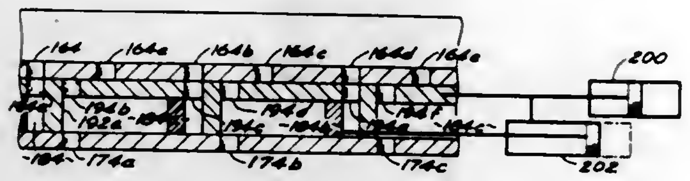
### 3,760,989
### APPARATUS FOR DISPENSING A PLURALITY OF DISCRETE QUANTITIES OF FLUENT MATERIAL

**Richard L. Morine, 8202 Concord Dr., Menton, Ohio, and James J. Hokes, 1531 Wagar Ave., Lakewood, Ohio**
**Division of Ser. No. 128,805, March 29, 1971, Pat. No. 3,722,560. This application Mar. 31, 1972, Ser. No. 240,223**
**Int. Cl. G01f** *11/02*
**U.S. Cl. 222—276** **11 Claims**



A dispensing apparatus and conveyor particularly suitable for use in bakeries for depositing fillings and the like into or on bakery products, or for supplying batter to pans. The apparatus broadly includes a combined dispensing head means and conveyor means which are actuated in timed relationship. The dispensing head means is located at a first position and arranged for discharging predetermined quantities of fluent material in a downward direction. The conveyor means passes beneath the dispensing head means and functions to move material receiving surfaces or products past the head means. At least one section of the conveyor extends generally horizontally under the depositing head means. Additionally, the conveyor section is provided with power means adapted to reciprocate it vertically upward toward the dispensing head means. Control means are interrelated between the reciprocating conveyor section and the dispensing head section so that the dispensing head functions while the material receiving surfaces are being, or have been, raised by the reciprocating conveyor section. The specification also discloses a dispensing head assembly adapted to dispense a plurality of discrete quantities of fluent material simultaneously. The assembly comprises first and second spaced plate members with the first member having a plurality of outlet orifices formed therethrough and the second plate member having a plurality of inlet orifices. A third plate member is positioned between the first and second plates for reciprocation relative thereto. The third plate member also has a plurality of openings formed through it and these openings define a plurality of closed, movable chambers. Positioned in each of the chambers is a piston or pusher member which divides the chambers into first and second chamber portions. The piston members and the third plate member are connected with actuating means adapted to simultaneously move all of the first and second chamber portions to alternately connect them with selected inlet and outlet orifices. Further, second actuating means are provided for reciprocating the third plate member independently of the first actuating means and the pusher members so that the third plate can be moved intermediate the movements produced by the first actuating means.

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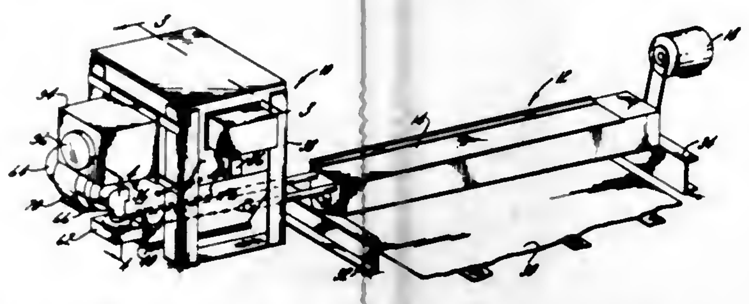
### 3,760,990
### APPARATUS FOR SUPPLYING POWDER

**Jonas T. Lindquist, Skokie, Ill., assignor to Oxy-Dry Sprayer Corporation, Chicago, Ill.**
**Continuation of Ser. No. 830,278, June 4, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,470**
**Int. Cl. B65g** *15/0*
**U.S. Cl. 222—371** **12 Claims**



An apparatus for supplying or transporting powder to a dispenser comprising an endless chain which is held taut between a drive wheel having a the rear surface shaped to accept the chain and turn-around wheel. To minimize strain, tension and the like, the drive and turn-around wheels are positioned to maintain the chain in a single plane. In the preferred embodiment, the motor for the drive wheel is mounted to automatically compensate for the development of any strain, tension or the like on the endless chain that would otherwise disturb the operation. hingedly

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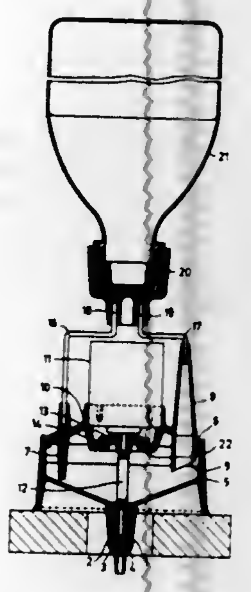
### 3,760,991
### DOSING DEVICE

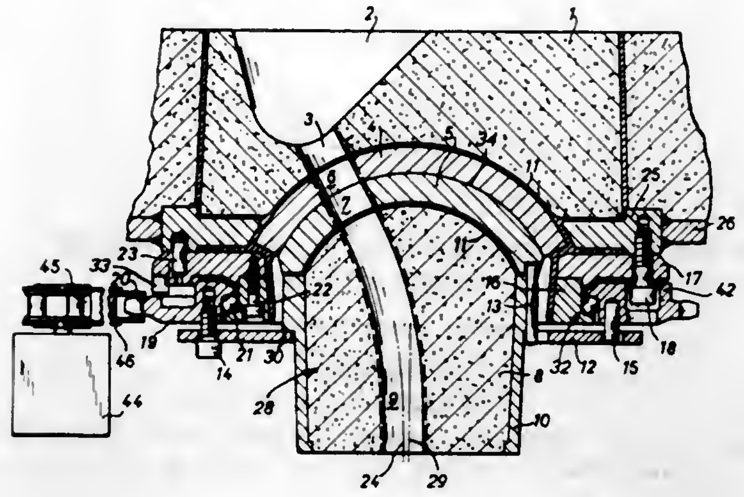
**Geert Brouwer; Jacobus Ignatius Maria van Dam, and Wilhelmus Jozef Mathias Lemmens, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed Feb. 16, 1972, Ser. No. 226,694**
**Claims priority, application Netherlands, Mar. 31, 1972, 7104264**
**Int. Cl. G01f** *11/20*
**U.S. Cl. 222—411** **4 Claims**



A dosing device for the pulse-free and continuous supply of a very accurate small flow of liquid comprising a rotor which is enveloped by a housing and is coupled to a motor. The rotor has shallow liquid pumping grooves and is vertically arranged. One side of the housing is closed by a wall having an outlet aperture and the other side communicates with an auxiliary container. The container has a cover plate carrying two tubes extending into the container. One tube extends deeper down in said container than the other, and is cut off at an angle, and is wider than the first tube. Both tubes are capable of communication with a closed container having the liquid to be dosed.

### 3,760,992
### ROTARY OUTLET VALVE FOR METALLURGICAL LADLES

**Hans Bieri, Todistrasse 9, Pfaffikon, Switzerland**
**Filed May 23, 1972, Ser. No. 256,147**
**Claims priority, application Switzerland, June 9, 1971, 8383**
**Int. Cl. B22d** *37/00*
**U.S. Cl. 222—512** **11 Claims**



An outlet valve for a metallurgical bottom-pour ladle with a rotary valve part, which is thrusted against a stationary valve part by a prestressed resilient ring surrounding the rotary valve part. The reaction thrust of the resilient ring is supported by a ball or roller bearing. The contact surface between the rotary valve part and the stationary valve part has preferably the form of a spherical calott. The rotary valve part is movable about a vertical axis between an open and a closed position.

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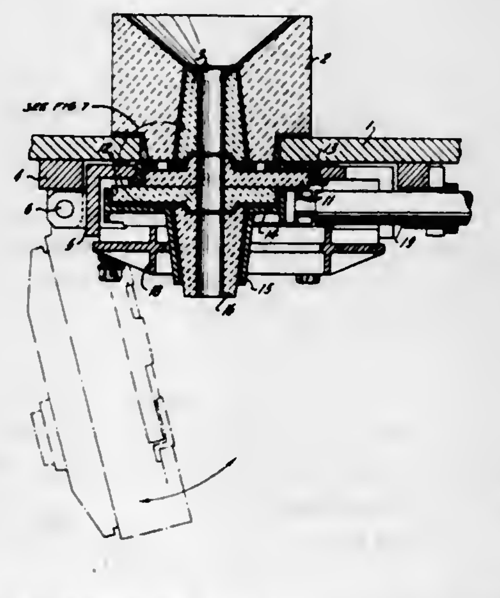
### 3,760,993
### SLIDE CLOSURE FOR RECEPTACLE FOR MOLTEN METALS

**Ernst Meier, Adliswil, Switzerland, assignor to Interstop A.G., Aug, Switzerland**
**Filed May 20, 1971, Ser. No. 145,205**
**Claims priority, application Switzerland, May 25, 1970, 7694/70**
**Int. Cl. B22d** *37/00*
**U.S. Cl. 222—533** **7 Claims**



A slide valve for a steel ladle has a removable housing supporting a refractory orifice plate and a pivotally mounted removable cover plate supporting a refractory slide plate. Two spaced seals may be provided between the housing and the ladle.

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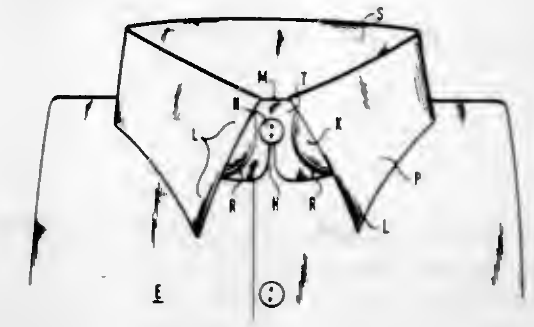
### 3,760,994
### FRONT SUPPORT FOR SHIRT COLLAR

**Tapio Volmar Taimisto, 1 piiri, Kausala, Finland**
**Filed Jan. 25, 1971, Ser. No. 109,534**
**Claims priority, application Finland, Jan. 27, 1970, 209**
**Int. Cl. D06c** *15/00*
**U.S. Cl. 223—83** **3 Claims**



The invention concerns a specially shaped support device for insertion beneath shirt collars while the shirt is packaged or stored for sale or display purposes. The conventional thin plastic support is modified with protruding "bubbles" which —when placed between the collar portion and the turned portion centered at the collar button of the shirt— acts as a front support on both sides of the middle point elevations for collar turns.

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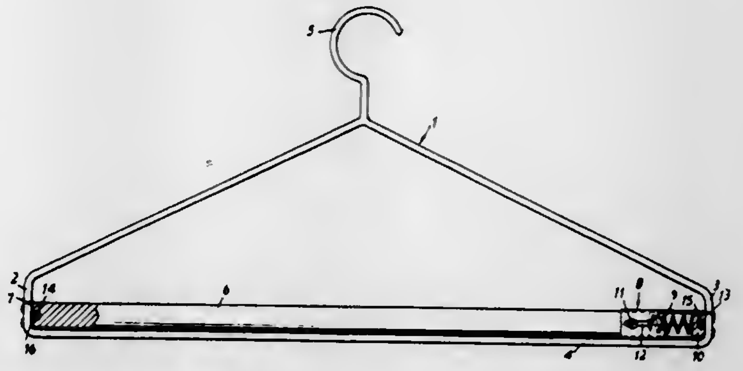
### 3,760,995
### HANGER ATTACHMENT ROD

**Raymond R. Wheeler, 514 Elk Dr., Riverton, Wyo.**
**Filed Nov. 26, 1971, Ser. No. 202,404**
**Int. Cl. A47j** *51/10*
**U.S. Cl. 223—85** **3 Claims**



The invention provides a hanger bar, for use with a garment hanger frame having an elongated base and end portions upstanding from said elongated base, which comprises:

i. a hanger rod including two portions which are movable relatively longitudinally to permit variation of the length of the hanger rod, each such portion including at a free end thereof a channel to receive a respective one of said upstanding end portions of said hanger frame base, and

ii. resilient means engaged with said two rod portions and acting thereon in the direction to tend to lengthen the rod.

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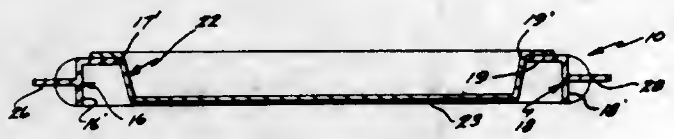
### 3,760,996
### INVERTIBLE DUAL PURPOSE TRAY HOLDER

**Morris C. Campbell, 305 Rosewood, S.E., Grand Rapids, Mich.**
**Filed June 14, 1971, Ser. No. 152,814**
**Int. Cl. A47g** *23/06*
**U.S. Cl. 224—48 R** **8 Claims**

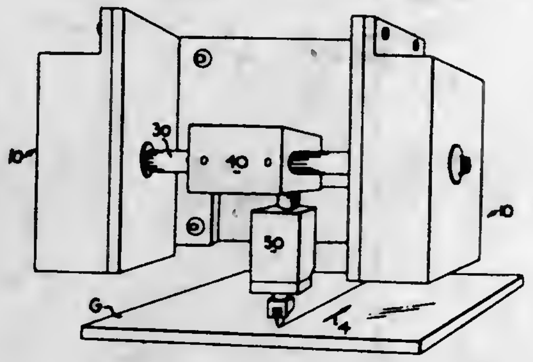
A one-piece tray holder is provided which has a cradle portion including a first aperture for supporting a tray or the like of a first configuration when the holder is oriented in a first position. When inverted, the cradle presents a different sized aperture for supporting a tray or the like of a second configuration. The tray holder is particularly well adapted to hold frozen dinner trays which are currently available in two standard sizes. The holder performs the dual function of providing mechanical support and stability for the tray being held as well as providing thermal insulation both to protect the consumer during the transportation of a heated tray, and to protect the surface on which the holder and heated tray may be placed.



### 3,760,997
### GLASS CUTTING USING A DIRECT-CURRENT TORQUE MOTOR

**David A. Bier, Meadowlands, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Mar. 26, 1971, Ser. No. 128,384**
**Int. Cl. C03b** *33/10*; **B26d** *3/08*
**U.S. Cl. 225—2** **17 Claims**



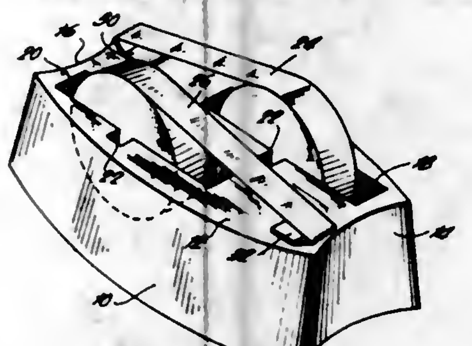
A cutter head in a glass-cutting machine is rigidly connected to a movable member within a constant-reluctance motor. Current is supplied to the motor to move the member and therefore actuate the cutter head. In a preferred embodiment, the constant-reluctance motor is a direct-current torque motor and the movable member is its rotor. In this embodiment, the cutter is downstream of the location of the axis of the rotor as the cutter scores the glass. Score lines of predetermined depth are obtained, despite small variations in thickness of the glass, and without the use of a pneumatic system that is slow-acting and difficult to maintain. Pressure exerted by the cutter head responds rapidly to changes in the current supplied to the motor, making it possible to vary the depth of the score desired during the making of a pattern cut, which could not be done with pneumatic or spring-loaded means of the prior art.

### 3,760,998
### MULTI TAPE DISPENSER

**Richard S. Sakihara, Hilo, Hawaii, assignor to The Raymond Lee Organization, Inc., New York, N.Y.**

**Filed June 29, 1971, Ser. No. 157,896**
**Int. Cl. B26f** *3/02*
**U.S. Cl. 225—38** **3 Claims**

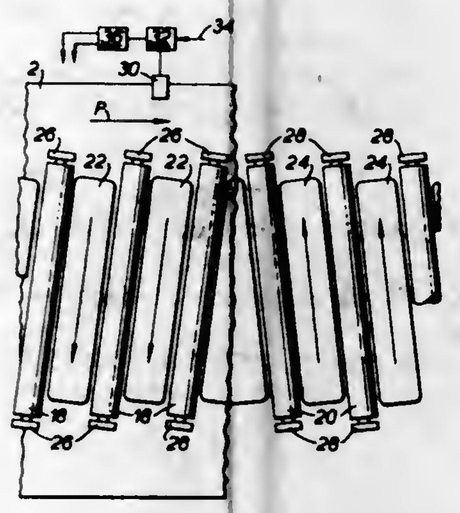
A base member has a generally flat top surface with first and spaced parallel vertical wells extending downward from the surface. First and second rolls of tape are disposed in corresponding wells and are each rotatable about a horizontal axis. The horizontal axes are parallel. A first cutter for tape is disposed adjacent one end of the first tape. A second cutter is disposed adjacent an opposite end of the second tape.



### 3,760,999
### APPARATUS FOR GUIDING SHEET

**Keith Hamilton Sandman, Horsell, Woking, Surrey, England, assignor to The British Iron and Steel Research Association, London, England**

**Filed Dec. 4, 1972, Ser. No. 311,557**
**Claims priority, application Great Britain, Dec. 3, 1971, 56,287/71**
**Int. Cl. B65h** *17/18*
**U.S. Cl. 226—15** **10 Claims**



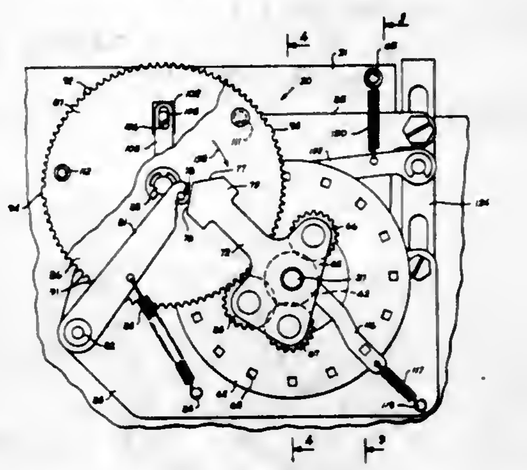
An apparatus for guiding magnetisable metal sheet or strip in a processing line. A set of rollers are mounted with their longitudinal axes inclined at a small angle to the normal to the direction of movement of the sheet so that sheet contacting the rollers will be given a lateral component of movement in one sense. The stator parts of a series of linear induction motors are mounted between the rollers so that when energised they apply a lateral force to the sheet in the same sense. In operation the sheet is also attracted towards the stator parts of the linear induction motors and hence towards the rollers, and the angled rollers are thereby utilised to assist the electromagnetic steering force on the sheet.

### 3,761,000
### WEB METERING MECHANISM

**Arthur A. Hagstrom, Hoffman Estates, Ill., assignor to Teletype Corporation, Skokie, Ill.**

**Filed Aug. 31, 1972, Ser. No. 285,286**
**Int. Cl. B65h** *23/18*
**U.S. Cl. 226—37** **20 Claims**

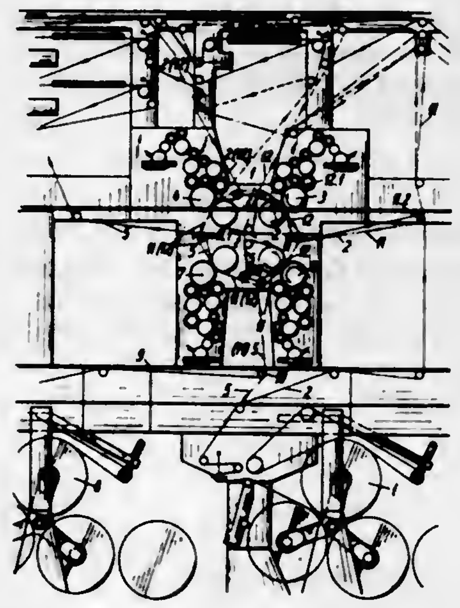
A metering mechanism utilized for form-out of a longitudinally movable succession of serially attached identical forms, is adapted to change the mode of form advancing means in a printing apparatus selectively as a function of form length to facilitate initiation of a printing operation at a common level on each form. The mechanism is adapted to accommodate forms of varying lengths by a preset adjustment of the oscillating angle between a pair of yieldably coupled angularly adjustable rotatable discs which selectively shift a rocking member having a pair of driving gears thereon between two stable angular positions to permit the gears alternately to engage alternate ones of the angularly adjustable discs. The mode of the advancing means is changed after each shift of the rocking member.



### 3,761,001
### DEVICE FOR WEBBING A ROTARY PRINTING PRESS

**Hans-Bernhard Bolza-Schunemann, Wurzburg, and Heinrich Lichtblau, Karlstadt/Main, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany**

**Filed Jan. 26, 1971, Ser. No. 109,898**
**Claims priority, application Germany, Apr. 30, 1970, P 20 21 246.8**
**Int. Cl. G03b** *1/56*
**U.S. Cl. 226—92** **34 Claims**

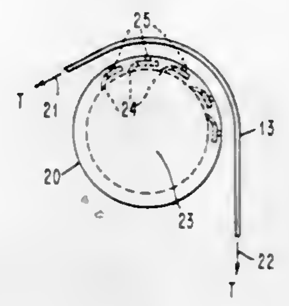


The invention relates to a device for webbing a rotary printing press. There is a rack guide rail track leading from adjacent the web supply in the printing press between the inside of the frame and the adjacent edge of the paper web being threaded through the printing press and printing couples. The rail track follows the desired path through the press. There are branch-off tracks connected by pivoted switch sections. Also, there are track sections connected by cross over centrally pivoted switch sections. A motorized carriage is propelled along the rail track and movably affixed to the rack guide rail track as it is moved therealong by suitable drive gearing cooperating with the rack on the track. The carriage has a gripper which is at its trailing end and it grips the leading edge of the paper web being threaded through the press. Suitable controls including programmed controls for the switches are provided for different lead-in paths through the printing press.

### 3,761,002
### FLUID BEARING HAVING DISCRETE HOLES FORMED BY VORTEX RESTRICTORS

**Gerald W. Baumann; Jay L. Groom, Jr., both of Longmont, and Gerald B. Lammers, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Nov. 15, 1972, Ser. No. 306,659**
**Int. Cl. B65h** *17/32*
**U.S. Cl. 226—97** **7 Claims**

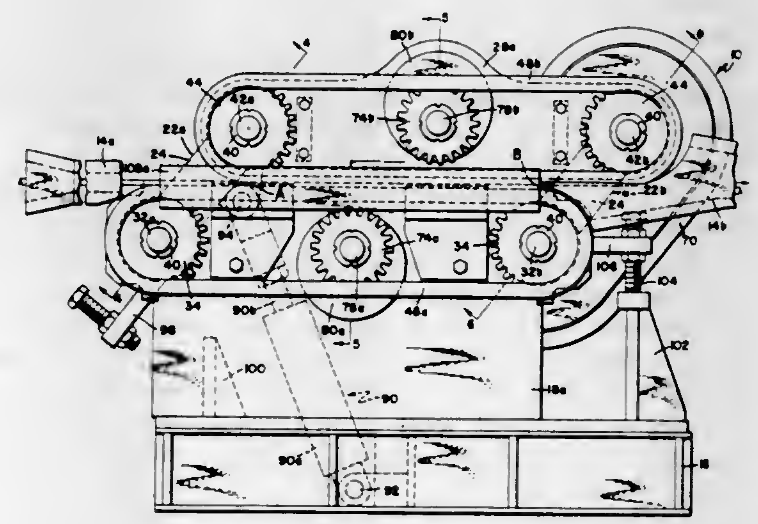


A thin foil of magnetic recording tape is accurately supported on a cushion of air adjacent a fixed-position reference surface. The reference surface includes a plurality of discrete holes through which air issues under pressure to form an air layer which supports the tape. These discrete holes are formed by the outlet openings of vortex restrictors.

### 3,761,003
### FLAT CHAIN GUIDE

**Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.**

**Continuation of Ser. No. 787,073, Dec. 26, 1968, abandoned. This application June 28, 1971, Ser. No. 157,750**
**Int. Cl. B65h** *17/24*
**U.S. Cl. 226—172** **1 Claim**



An apparatus for propelling a product length moving axially along a given path. The apparatus includes endless flat-surfaced flexible chains positioned on either side of the path. Each chain is supported on a set of spaced sprockets with the rotational axes of the sprockets supporting one chain being offset along said path relative to the rotational axes of the sprockets supporting the other chain. A piston and cylinder unit is employed to move one chain towards the other so as to grip the product length passing therebetween, and the chains are driven at a linear speed which is at least equal to that of the product length passing therebetween.

### 3,761,004

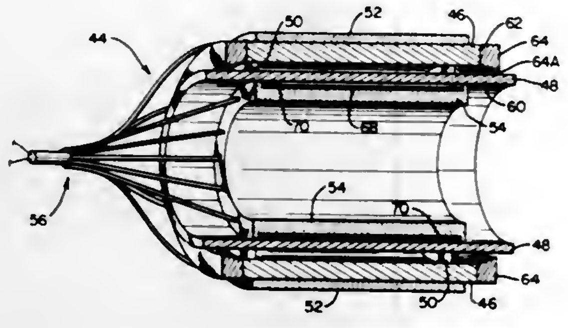
### ASSEMBLY FOR EXPLOSIVELY BONDING TOGETHER METAL LAYERS AND TUBES

**Ivor G. Hanson; George Herbst, both of Arvada, Colo., and Jerry M. Lewis, Louisville, Colo., assignors to E. F. Industries, Inc., Louisville, Colo.**

**Division of Ser. No. 880,822, Nov. 28, 1969, abandoned. This application Apr. 10, 1972, Ser. No. 242,858**

**Int. Cl. B23k** *21/00*

**U.S. Cl. 228—3** **12 Claims**



Method and assembly for welding a flyer metal tube to a parent metal tube, comprising assembling a flyer metal tube and a parent metal tube in concentric disposition with the outer surface of one of said tubes being disposed in parallel, spaced-apart relation with the inner surface of the other metal tube, selecting and matching two layers of explosive which will, during simultaneous detonation thereof, produce a general balance of forces along the resulting detonating fronts in a direction normal to said laters of explosive and, following detonation of the layers of explosive, maintain a pressure differential between the released and expanding gases generated by the detonation of the two layers of explosive below a predetermined amount, placing a first one of said layers of explosive about the outer surface of the outer metal tube and placing a second layer of explosive about the inner surface of the inner metal tube, and simultaneously detonating said layers of explosive along a common, generally planar front so that the detonation is propagated parallel to the longitudinal axis of said tubes. The loading of the layer of explosive disposed about a surface of the flyer metal layer is sufficient to produce a pressure greater than the elastic limit of the metal tube in the assembly having the higher elastic limit and to effect bonding between the metal tubes. The loading of the layer of explosive disposed about a surface of the parent metal tube is sufficient to preclude movement of the parent metal tube relative to the flyer metal layer in a manner that would prevent welding together of said metal tubes. The method and assembly relate to the use of a flyer metal tube having a resistance factor of at least approximately $1.5(10)^{-4}$ psi and which is spaced apart from the parent metal layer by a distance equaling at least approximately 0.05 times the thickness of the flyer metal layer, and also to the use of a flyer metal tube having a resistance factor of at least approximately $2.5(10)^{-4}$ psi and which is spaced apart from the parent metal tube by a distance equaling at least approximately 0.1 times the thickness of the flyer metal tube. The method and assembly also relate to the welding together of metal layers sandwiched between two layers of explosive in which the flyer metal layer has a resistance factor of at least approximately $2.25(10)^{-4}$ psi and the distance separating said metal layers, prior to bonding, equals at least approximately 0.1 times the thickness of the flyer metal layer. The article of manufacture produced comprises a flyer metal layer bonded to a parent metal layer in which the flyer metal layer, prior to bonding, has a resistance factor of at least approximately $2.25(10)^{-4}$ psi, and also a flyer metal tube bonded to a parent metal tube in which the flyer metal tube, prior to bonding, has a resistance factor of at least approximately $2.5(10)^{-4}$ psi.

### 3,761,005

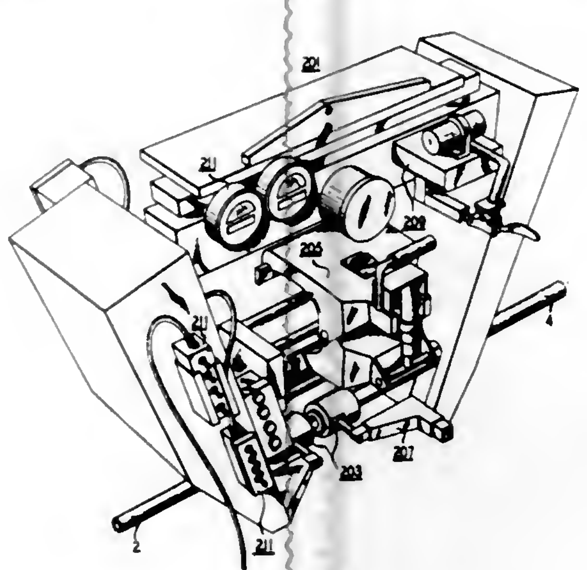
### APPARATUS FOR ALIGNING AND JOINING TUBULAR MEMBERS

**Howard Arthur Baxter, Califon, N.J., and Paul Edwin Young, Cedar Falls, Iowa, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Apr. 20, 1972, Ser. No. 245,822**

**Int. Cl. B23k** *37/04*

U.S. Cl. 228—4 **9 Claims**



Tubular waveguide sections are accurately aligned and joined by apparatus including a pair of alignment sleeves which surround and grasp the flanges of adjacent waveguide sections. The flanges are centered in the respective sleeves by alignment pins therein and the sleeves are aligned with each other by a plurality of alignment bars placed along the exterior thereof. A hydraulic cylinder presses the aligned flanges together in compression to a preload level preselected to prevent separation of the flanges and waveguide sections during any subsequent bending of the waveguide. A welding head welds the preloaded flanges. The alignment sleeves include a manifold therein through which a cooling fluid is circulated during the welding to prevent damage to the waveguide lining from excessive heat.

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### 3,761,006

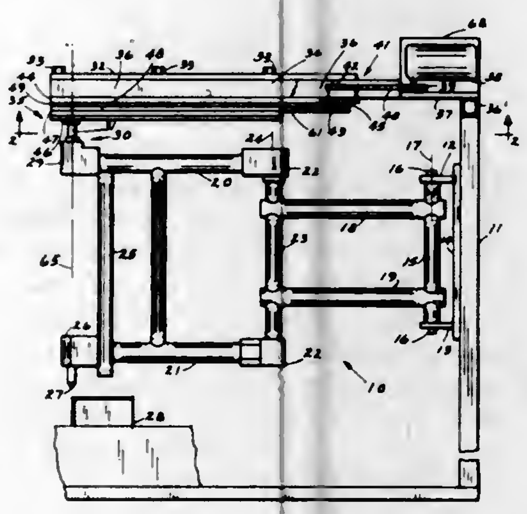
### WELDING APPARATUS WITH GUIDE MEANS

**Roy M. Middendorf, Greensburg, Ind., assignor to Tree City & Tool Engineering Co., Inc., Greensburg, Ind.**

**Filed Nov. 8, 1971, Ser. No. 196,595**

**Int. Cl. B23k** *1/00*

**U.S. Cl. 228—25** **13 Claims**



A welding apparatus having means for guiding a welding tool along a predetermined path. A welding tool is mounted to a folding arm swingably mounted to the frame of the apparatus. A linkage rod is bearingly mounted to the arm and projects into a slotted template. A slotted chain guide bearingly receives a continuous roller chain which is driven at a uniform speed by a motor sprocket combination. The linkage rod is connected to the chain thus moving with the chain and forcing the arm and welding tool at a uniform speed along a path determined by the template slot. A tracer is mounted to the linkage rod. The template on either side of the slot receiving the linkage rod projects into the tracer thereby preventing sideways disengagement of the tracer and rod from the template slot.

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### 3,761,007

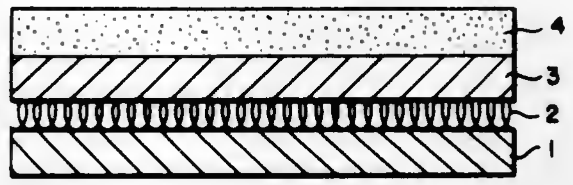
### METAL LAMINATED MATERIAL

**Ulf Richter, 5909 Wasserscheide, Germany**

**Division of Ser. No. 1,333, Jan. 8, 1970, Pat. No. 3,672,033. This application Jan. 20, 1972, Ser. No. 219,367**

**Int. Cl. B23k** *21/00;* **B23p** *3/02*

**U.S. Cl. 228—3** **5 Claims**



The present disclosure is directed to a laminated metallic composite and to a process for the production of said composites which comprises placing metallic spacers between the metal sheets to be bonded, said spacers being wound in a helical shape from a wire with the axis of the helices oriented substantially parallel with respect to the metal sheets, applying a layer of explosive to the upper sheet of metal and detonating said explosive to produce impingement and welding of the upper sheet with the remaining sheets.

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### 3,761,008

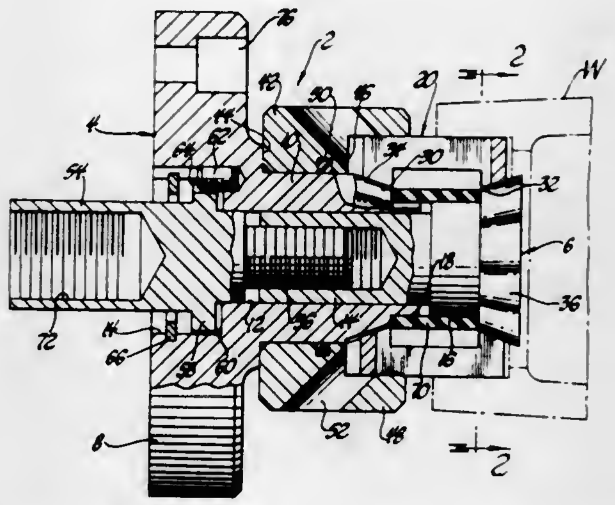
### EXPANSION ARBOR

**Roy C. Goulder, Sun City, Ark., assignor to Detroit Sales Co., Ferndale, Mich.**

**Filed Oct. 21, 1971, Ser. No. 191,310**

**Int. Cl. B23b** *31/40*

**U.S. Cl. 279—2** **6 Claims**



An arbor including a radially expandable and contractable collet carried by a pair of axially adjustable pressure applying members. The collet is formed with spaced, inclined end surfaces, each of which is formed with a series of scallops, or undulations having smoothly curved outwardly projecting lobes joined by smoothly curved, inwardly projecting troughs or recesses. Each of the pressure applying members has a pressure applying surface engaged with one of the end surfaces of the collet, and each of the pressure applying surfaces is complementally inclined with respect to the associated end surface of the collet, and is also formed with a series of complemental scallops, whereby movement of the pressure applying members toward each other applies radial pressure to the collet and secures the collet against rotation with respect to the pressure applying members.

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### 3,761,009

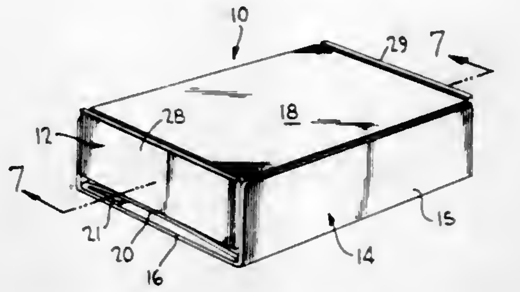
### SAFETY CARTON WITH SPRING LOCK

**Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F. N. Burt Company, Buffalo, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,223**

**Int. Cl. B65d** *5/38*

**U.S. Cl. 229—19** **6 Claims**



The rectangular carton comprises a base or receptacle member slidable within a sleeve member, the receptacle member being longer than the sleeve member by approximately twice the thickness of the walls of the members, and the end walls of the receptacle being slight higher than the side walls. The sleeve member is of one-piece construction and an inner extension of one of its side walls comprises a resiliently yieldable panel extending across the bottom of the sleeve member and having its terminal portion secured to the bottom wall by means of a glue flap. The bowed resilient extension urges the receptacle upwardly when the latter is disposed within the sleeve so that the upward extensions of the end walls of the receptacle project and embrace the top wall of the sleeve and thus prevent removal of the receptacle until an end thereof is depressed against the urging of the bowed resilient spring-lock extension.

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### 3,761,010

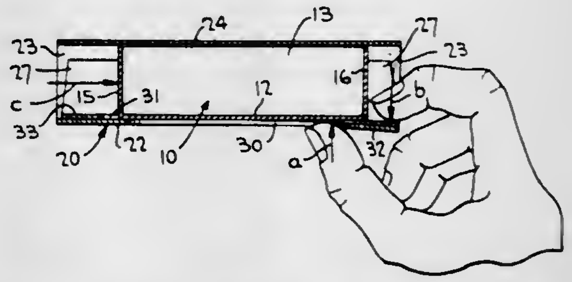
### SAFETY CARTON WITH CUT OUT LOCK

**Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F. N. Burt Company, Buffalo, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,386**

**Int. Cl. B65d** *5/38*

**U.S. Cl. 229—19** **3 Claims**



The carton comprises a rectangular inner slide or base member of the utmost simplicity, which is adapted to slide within a sleeve member of somewhat greater length. The sleeve member has a double-bottom comprising an inner panel having an opening therein approximating the size and shape of the horizontal contour of the base member. The added length of the inner panel provides a strap-like abutment at each end of the carton between which the base member may be normally retained. The outer panel of the double bottom of the sleeve member is provided with an opening smaller than the area of the base member but large enough to admit the finger to press the base member upwardly sufficiently to ride over the abutment at either end of the carton.

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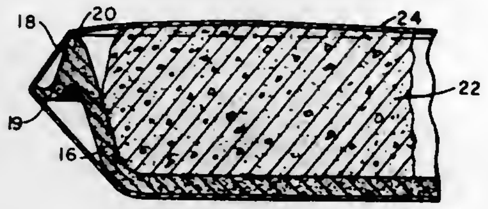
### 3,761,011
### FOOD PACKAGING TRAY

**Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 246,600, April 24, 1972, which is a continuation-in-part of Ser. No. 111,578, Feb. 1, 1971. This application Aug. 15, 1972, Ser. No. 280,747**

**Int. Cl. B65d** *1/00, 65/00*

**U.S. Cl. 229—2.5** **6 Claims**



A food packaging tray is molded of wood pulp or plastic and is intended for the packaging of food products in conjunction with a transparent overwrap plastic film. The tray has an improved peripheral lip which resists inward collapse of the side and end walls of the tray from the pressure exerted by the transparent overwrap plastic film.

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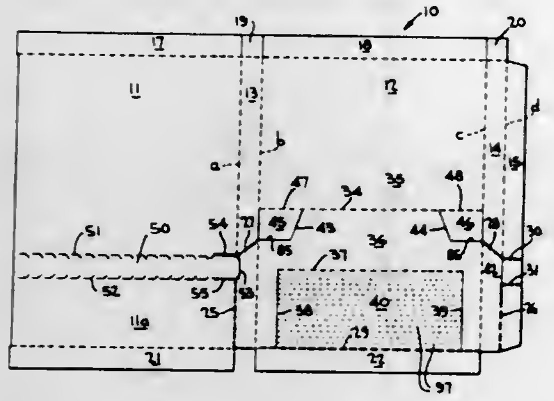
### 3,761,012
### CARTONS

**Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F.N. Burt Company, Inc., Buffalo, N.Y.**

**Filed May 26, 1971, Ser. No. 146,964**

**Int. Cl. B65d** *5/54*

**U.S. Cl. 229—51 TS** **3 Claims**



A box-board carton for containing a pack of sheets to be fed to a copying machine or the like is adapted to be applied to a feeding cassette for insertion into the intake of such machine. The carton is provided with a tear strip and certain easy tear lines for stripping away certain forward portions thereof for access to the sheets during feeding. Tongues are struck from the bottom panel of the carton to provide openings for interlocking with projections on such a cassette, whereby the carton cannot be withdrawn from the caseette without destroying the carton.

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### 3,761,013
### DOUBLE WALL PACKAGE FOR STORING ITEMS IN BACTERIA-FREE CONDITION

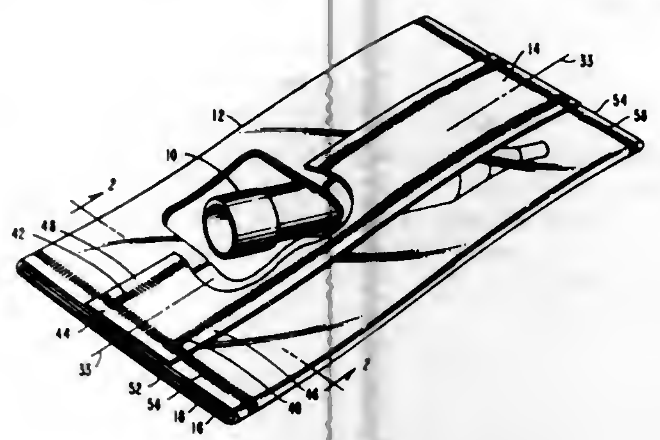
**Samuel J. Schuster, 1099 Hillside St., Monterey Park, Calif.**

**Filed Mar. 20, 1972, Ser. No. 236,409**

**Int. Cl. B65d** *33/16*

**U.S. Cl. 229—62** **29 Claims**

A package is disclosed comprising a double wall, plastic bag having an access opening covered by a readily removable closure membrane bonded to the bag by heat seals adjacent the access opening. Both the bag and the membrane are essentially completely impermeable to bacteria, but the membrane is highly permeable to sterilizing vapor in comparison to the plastic bag. The bag comprises inner and outer plies, portions of which define the access opening, and other portions of which overlap within the confines of the access opening. Along any transverse section of the bag, the combined thickness of the inner and outer plies is essentially the same, thereby facilitating the fabrication of the bag out of high temperature plastic, such as polypropylene, which can withstand steam sterilization temperatures.



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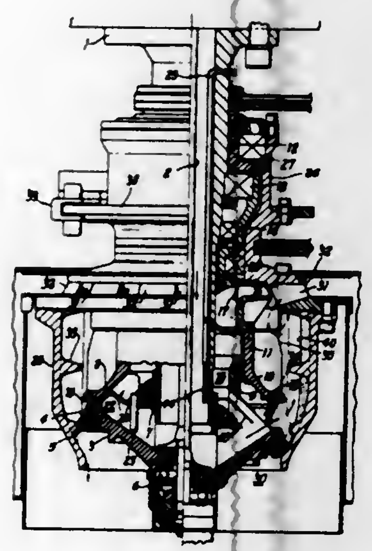
### 3,761,014
### CENTRIFUGING APPARATUS

**Terence Vernon Carter, South Nutfield, Redhill, England, assignor to M.S.E. Holdings Limited, Sussex, England**

**Filed May 12, 1971, Ser. No. 142,577**

**Int. Cl. B04b** *1/20*

**U.S. Cl. 233—38** **11 Claims**



Centrifuging apparatus comprises a main centrifuging chamber having a bypass containing sensing means to sense when a certain flow is produced in the bypass as a result of sediment increase in the main centrifuging chamber, the main chamber having a movable wall movable to open a discharge aperture of the main chamber and to define a secondary centrifuging chamber with the bypass to maintain a centrifuging action when the main chamber is being discharged of sediment.

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### 3,761,015
### ELECTRICAL IMPULSE COUNTER WITH SHOCKPROOFING MECHANISM

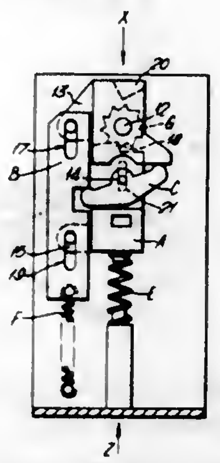
**John Hayward Cook, Sawbridgeworth, England, assignor to English Numbering Machines Limited, London, England**

**Filed Apr. 17, 1972, Ser. No. 244,458**

Claims priority, application Great Britain, June 2, 1971, 18597/71

**Int. Cl. G06m** *1/00*

**U.S. Cl. 235—91 A** **9 Claims**



A counting instrument comprising a counting wheel, a spring urged drive member and a ratchet and pawl arrangement operatively connecting the counting wheel and drive member, the arrangement being such that in a cycle of operations, the drive member moves forwards against the spring means from a rest position and back to the rest position to index the count wheel by one step, the instrument including an inertia member which is coupled to the drive member by a coupling means such that the inertia of the inertia member arising out of the instrument receiving shock loading tending to move the drive member forwards from the rest position is transmitted to the drive member to restrain the drive member from moving from the rest position.

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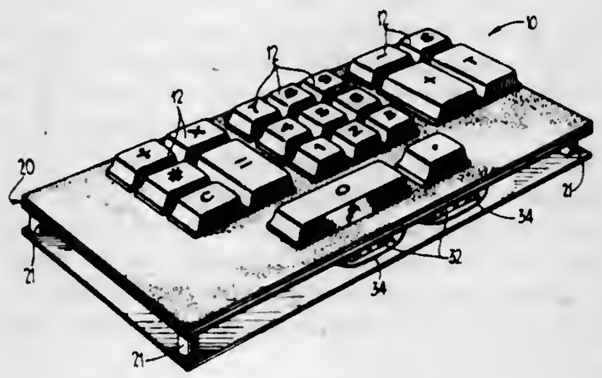
### 3,761,016
### KEYBOARD HAVING IMPROVED MAGNETIC ACTUATOR

**Egon A. Pedersen, Diablo, Calif., assignor to The Singer Company, New York, N.Y.**

**Filed Aug. 23, 1972, Ser. No. 283,250**

**Int. Cl. G06c** *7/02;* **H01h** *9/00*

**U.S. Cl. 235—145 R** **10 Claims**



An improved key stem magnet for eliminating magnet migration in a key assembly employing a magnetic actuator. A magnet has a slotted portion extending longitudinally for providing a pair of abutment edges which engage opposing surfaces of a key stem. The abutment edges prevent axial migration of the magnet when mounted in an aperture in the key stem. A pair of parallel, axially extending magnet sidewalls located substantially opposite the slotted portion limit axial rotation of the magnet in the aperture.

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### 3,761,017
### TEMPERATURE SENSITIVE PRESSURE REGULATOR

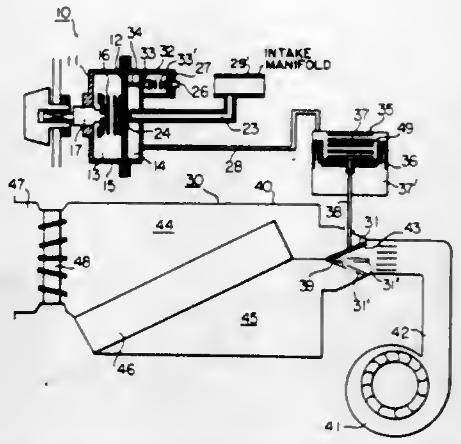
**Yohichi Mohri, Tsurumi-ku, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan**

**Filed Apr. 20, 1971, Ser. No. 135,631**

**Claims priority, application Japan, Apr. 24, 1970, 45/35286**

**Int. Cl. G05d** *23/275*

**U.S. Cl. 236—87** **9 Claims**



A temperature sensitive pressure regulator adapted to provide a temperature dependent pressure without being affected by variations in a source pressure. The pressure regulator comprises an airtight housing divided by a bimetallic partition into a first chamber and a second chamber. The first chamber is held at atmospheric pressure through an air vent. Instead of the first chamber only a support for an adjustment device may be used. A coiled spring is provided for urging the partition wall toward the second chamber. A conduit leading from a pressure source opens to the second chamber at a suitable spacing from the partition wall with the port of the conduit facing the partition wall. Another conduit is provided for communicating the second chamber with a pressure controlled device. Means are provided for selectively introducing atmospheric air into the second chamber. The bimetallic partition wall is responsive to the pressure difference between the first and second chambers as well as the surrounding temperature to be movable toward the facing port of the conduit tending to close it.

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### 3,761,018
### ELECTRONIC TEMPERATURE CONTROL APPARATUS HAVING A SPACE THERMOSTAT WITH OUTDOOR TEMPERATURE COMPENSATION

**Andre Rekai, Scarborough, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Oct. 27, 1971, Ser. No. 192,910**

**Int. Cl. F25b** *29/00*

**U.S. Cl. 236—91** **4 Claims**

Electronic temperature control apparatus having a temperature responsive resistance space thermostat connected to an amplifier circuit for providing an output to control a modulating multi-stage controller adapted to control stages of heating and cooling apparatus. An outdoor temperature responsive resistance compensating thermostat is connected to the amplifier circuit for modifying the control effect of the space thermostat. The outdoor thermostat is connected through a first diode to provide compensation when the system is used for heating and through a second diode reversely connected when the system is used for cooling to selectively isolate the output of the outdoor thermostat from modifying the space thermostat control of either the heating and the cooling apparatus. Errors due to diode voltage drops and diode voltage drifts with temperature are eliminated.

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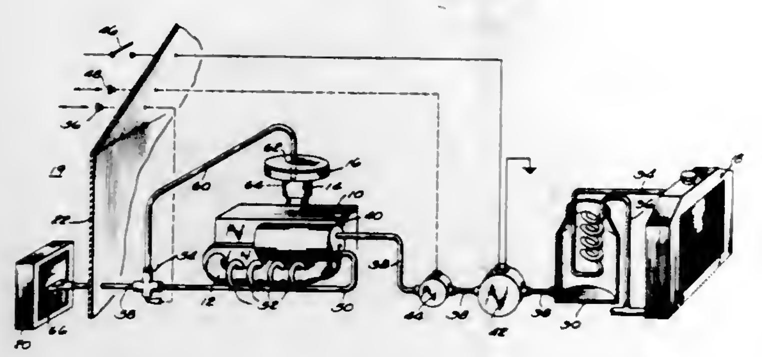
### 3,761,019
### AUTO HUMIDIFIER AND STEAM INJECTION DEVICE

**Miladin Delic, 3846 W. Wisconsin Ave., Milwaukee, Wis.**
**Filed Mar. 2, 1972, Ser. No. 231,093**
**Int. Cl. B60h** *1/06, 1/18;* **F02b** *47/02*
**U.S. Cl. 237—12.3** **3 Claims**



A reservoir of water separate from the cooling system of an automobile is heated by waste heat from the engine in several ways. A coil connected to the top and bottom of the radiator supplies heat to the initial supply of water from the cooling system of the engine. A tank placed above and in contact with the exhaust manifold further heats the water by contact between the tank wall and the exhaust manifold. Final heating of the water into steam is accomplished by intimate contact between the exhaust manifold and the tube through which the heated water is flowing toward the point of delivery.

The steam thus produced is delivered to the air intake of the engine, either at the air cleaner or at the intake manifold. Provision is also made for delivery of the steam to the inside of the passenger compartment of the vehicle for humidification.

A pump is provided near the tank containing the initial supply of water, the pump preferably being controlled from the driver's position. Adjacent the pump is an on-off valve also controlled from the driver's position. Between the final heating coil and the two points of delivery of the steam is an apportioning valve which is not capable of being turned off, but which apportions the steam between the engine and the passenger compartment.

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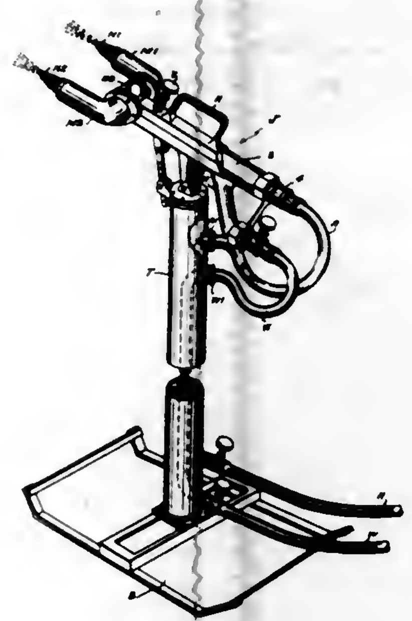
### 3,761,020
### METHOD AND APPARATUS FOR SNOW MAKING

**Joseph C. Tropeano, 20 Revere St., and Philip L. Tropeano, 12 Revere St., both of Lexington, Mass.**
**Filed Feb. 17, 1972, Ser. No. 227,126**
**Int. Cl. F25c** *3/04*
**U.S. Cl. 239—2 S** **3 Claims**

High velocity streams of compressed air and pressurized water are furnished in a cold ambient atmosphere from two independent sources of supply and precooled by momentarily confining the high velocity streams in elongated passageways formed in a snow-making jet construction whose outer surfaces are exposed to the cold ambient atmosphere. Portions of the passageways in the jet structure are arranged in a manner such that the stream of water is precooled by the cold ambient atmosphere and an inner stream of compressed air undergoes peripheral precooling by means of the precooled stream of pressurized water. The precooled stream of air may undergo successive stages of expansion while in a confined state to further cool the mixture. Regulated quantities of the precooled compressed air may also be injected into the confined stream of water at predetermined points thereby to control snow characteristics. Precooling compressed air and water with the jet construction of the invention produces snow at efficiency levels not heretofore realized in the art of snow making, and the characteristics of the snow crystals or particles being desirably controlled.



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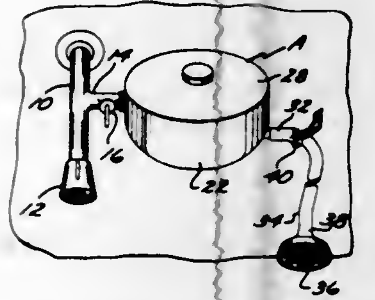
### 3,761,021
### SHOWER ACCESSORY

**Edward A. White, 3200 Peralta Ave., Long Beach, Calif.**
**Filed Sept. 20, 1971, Ser. No. 182,013**
**Int. Cl. B05b** *9/00*
**U.S. Cl. 239—312** **4 Claims**



A receptacle held at a desired elevation by a rigid first valved tubular member that is in communication with a shower head supporting pipe. The receptacle is adapted to hold a quantity of a water-soluble material that is particularly adapted for application to the human body in the form of an aqueous solution. A second flexible valved tubular member extends from the lower portion of the receptacle and terminates on the free end thereof in an applicator. The receptacle is provided with a removable cover. By opening the valve of the first tubular member water may discharge into the receptable to form an aqueous solution, which solution may be discharged through the second tubular member by gravity if the first valve is closed, or under a desired hydrostatic head if the first valve is wholly or partially open. Should it be desired, an aqueous solution may be placed directly in the receptacle, rather than forming the solution from a dry receptacle-contained material.

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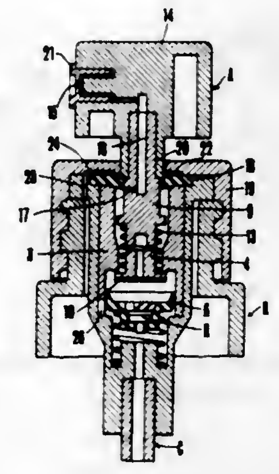
### 3,761,022
### A SPRING PRESSURE ACCUMULATIVE SPRAY DEVICE

**Hirosi Kondo, No. 30-4 Hanayano-cho, Nagasaki, Japan**
**Filed Apr. 4, 1972, Ser. No. 240,945**
**Int. Cl. B05b** *11/00*
**U.S. Cl. 239—333** **6 Claims**

This invention relates to a spray device for perfume, hair-spray, insecticide etc., and more especially to a spring pressure accumulative spray device capable of gaining fine spray

owing to its high pressure spraying. This spray device is capable of generating highly pressurized pressure accumulative liquid even when the spraying button is pushed by only slight finger force, while no internal pressure operates inside of the receptacle directly so that a pressure-proof receptacle is not necessary and any pressure drop due to a decrease in the amount of contained liquid or any leakage of the liquid while the device is not in use can be prevented. The construction is simple, and the device is a low cost pressure accumulative spray which can be discarded after use.



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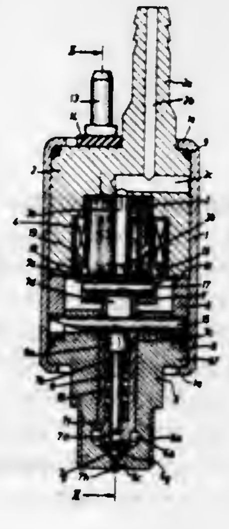
### 3,761,023
### ELECTROMAGNETIC INJECTORS FOR INTERNAL COMBUSTION ENGINES

**Herve Gueret, Clermont, and Pierre Advenier, Paris, both of France, assignors to Societe Des Procedes Modernes D'Injection Sopromi, Clichy, France**
**Filed Sept. 15, 1971, Ser. No. 180,602**
**Claims priority, application France, Sept. 25, 1970, 7034755**
**Int. Cl. B05b** *1/30*
**U.S. Cl. 239—585** **11 Claims**



An electromagnetic injector for reducing wear between the movable parts as provided by the spacing between the stationary and movable armatures at the end of the rising stroke of the needle valve, said spacing being obtained by a hydraulic abutment formed between said armatures by a film of fuel under pressure defining the residual gap. The fuel enters the gap through a central bore in the stationary armature and escapes over the edges of the movable armature.

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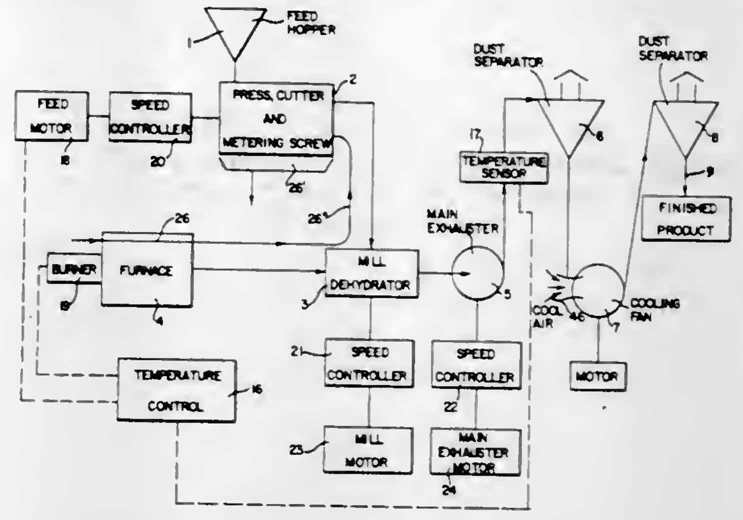
### 3,761,024
### APPARATUS FOR PROCESSING RAW ORGANIC MATERIAL INTO CLEAN, STERILIZED POWDER, MEAL OR FLAKES

**Joseph J. Schwey; Polly E. Schwey, both of 1958 33rd Ave., and Joseph L. Poggie, 815 Iris Ln., all of Vero Beach, Fla.**
**Continuation-in-part of Ser. No. 98,005, Dec. 14, 1970, abandoned. This application June 30, 1971, Ser. No. 158,497**
**Int. Cl. B02c** *18/40*
**U.S. Cl. 241—23** **14 Claims**



An apparatus and process are provided for rapidly and efficiently processing raw organic material into high quality clean, sterilized powder, meal or flakes. Means are provided for dividing the organic material into particles of substantially uniform size and for feeding the particles into milling and heating means. The particles are then simultaneously milled and heated by applying centrifugal forces and substantially equal and opposed aerodynamic forces to the particles until the desired powder, meal or flakes are produced. The powder, meal or flakes are then withdrawn from the milling and heating means and heated air and steam are separated therefrom.

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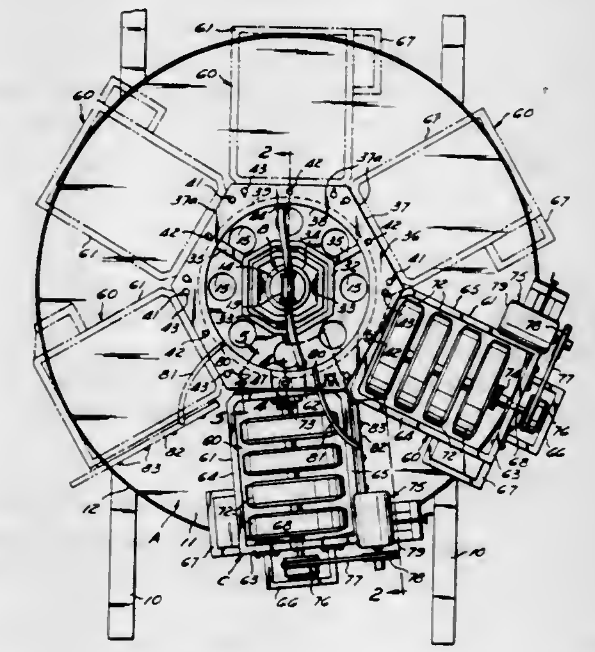
### 3,761,025
### ROCK CRUSHER AND GRINDING MILL

**Milton R. Young, R.D. 2, Loudonville, Ohio**
**Filed Apr. 24, 1972, Ser. No. 247,015**
**Int. Cl. B02c** *15/00, 15/14*
**U.S. Cl. 241—107** **15 Claims**



A rock crusher and grinding mill combination adapted for use in grinding rock aggregate to a usable size for commercial and industrial purposes. The combination includes a horizontal metal base plate rock grinding member having an upstanding vertical center post with a rotatable hub member mounted thereon and having a hub with a sleeve bearing and a universal joint coupling mounted thereon for horizontal rotation, vertical sliding rise and fall action and free movement in all directions, and a rock grinding roller member affixed to said rotatable hub member. The said roller member having a plurality of roller units with each said unit having rollers mounted on a drive shaft connected to power means for travel around said center post with each of said rollers adapted for a toe-in position with said center post and for a skidding sideslip or rubbing action on the material placed on said base plate.

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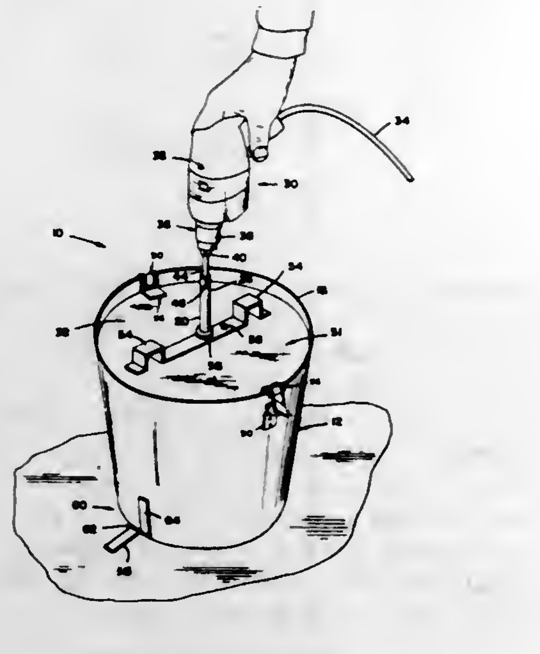
### 3,761,026
### MIXING AND GRINDING APPARATUS
**Frank D. Rohmer, 253 8th Ave., San Francisco, Calif.**
**Filed Mar. 30, 1972, Ser. No. 239,502**
**Int. Cl. B02c** *13/00*
**U.S. Cl. 241—199.12** **9 Claims**



A mixing and grinding apparatus comprising a bucket-like container having a centrally positioned, elongate, spindle-rod extending from the container base axially into the container cavity, and a cutting blade assembly defining an elongate, tubular shaft having a transverse cutting blade affixed thereto, the internal diameter of the tubular shaft larger than the diameter of the spindle-rod to be receivable thereover for rotation therearound. Rotative power for driving the cutting blade assembly is provided by a standard electric drill. The spindle-rod acts as a guide for the cutting blade assembly during rotation, insuring the maintainance of its axial alignment in the container as it is longitudinally displaced during mixing and grinding.

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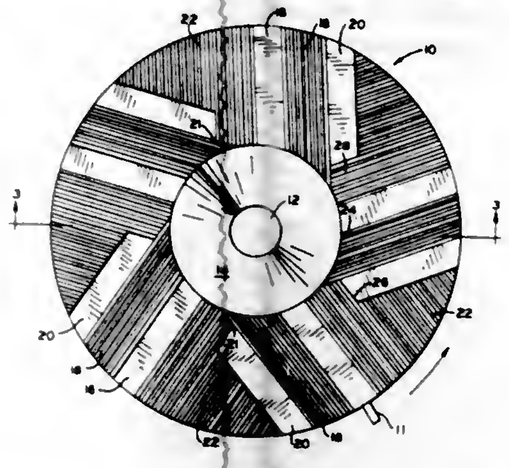
### 3,761,027
### DISK MILL
**Fausto Celorio Mendoza, Cumbres de Acultzingo 185, Lomas de Chapultepec, Mexico City, Mexico**
**Filed Aug. 2, 1971, Ser. No. 168,189**
**Claims priority, application Mexico, Mar. 15, 1971, 125691**
**Int. Cl. B02c** *7/12*
**U.S. Cl. 241—261.3** **11 Claims**

The specification discloses a disk mill in which a pair of opposed disks are mounted in a casing with the disks having an abrasive pattern of novel design on the opposite faces thereof.

One disk is held stationarily but adjustably in the casing while the other disk is rotatable therein and is under spring load so as to be yieldable in the event hard foreign particles are entrained in the material being milled.

The rotatable disk has a peripheral blade which picks up material from the bottom part of the casing and conveys it upwardly toward the top toward a tangential discharge opening. Finely milled material will pass through the discharge opening whereas coarser material will drop back into the mill for further treatment by the disks.



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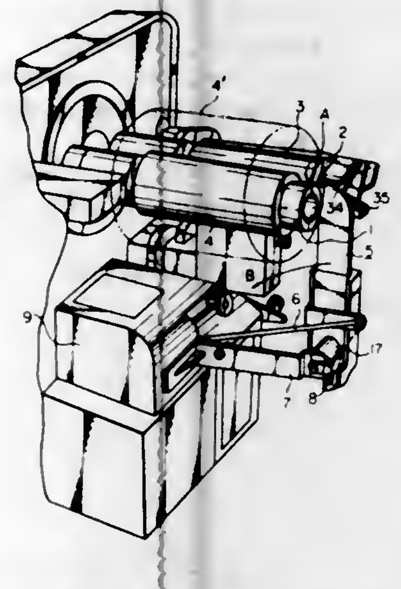
### 3,761,028
### AUTOMATIC SPINDLE-EXCHANGE APPARATUS ON TEXTILE MACHINERY
**Soichi Torii, Kita-ku, Kyoto-shi, Kyoto, and Haruyoshi Ishikawa, Ukyo-ku, Kyoto-shi, Kyoto, both of Japan, assignors to Torii Winding Machine Co., Ltd., Kyoto, Japan**
**Filed Jan. 26, 1971, Ser. No. 109,886**
**Claims priority, application Japan, Oct. 19, 1970, 45/91515**
**Int. Cl. B65h** *54/00*
**U.S. Cl. 242—18 A** **5 Claims**



Improved thread transfer mechanism of an automatic spindle-exchange apparatus of a turret-type yarn winder provided with a pair of bobbin supporting spindles symmetrically arranged with respect to a common turret shaft. The thread transfer mechanism comprises an articulated thread guide means for leading the thread between a full packaged bobbin to a catch means formed at a free end of the spindle holding an empty bobbin when it is required to exchange spindles for taking up the thread delivered from its supply source from the full packaged bobbin to the empty bobbin.

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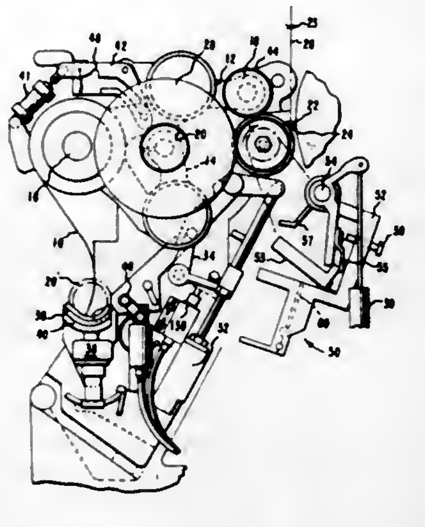
### 3,761,029
### YARN WINDING APPARATUS
**John Seymour Seney, Seaford, Del., assignor to E.I. Du Pont de Nemours & Company, Wilmington, Del.**
**Continuation-in-part of Ser. No. 56,501, July 20, 1970, abandoned. This application July 21, 1972, Ser. No. 273,867**
**Int. Cl. B65h** *54/02*
**U.S. Cl. 242—18 A** **9 Claims**

A yarn transfer device for use with a yarn windup of the type which is provided with rotatable package supports carried on chucks alternately movable into surface driven engagement with a drive roll on the windup. When actuated, the transfer device swings into engagement with a driven chuck carrying an empty support, cuts the yarn advancing to the package being doffed and threads the severed end of the feed yarn through a hollow shaft in the chuck by means of an air transport system. The severed end of yarn is centrifugally clamped in the driven chuck shaft until the centrifugal force applied drops low enough to release it to the end of the package support forming a readily accessible transfer tail thereon.



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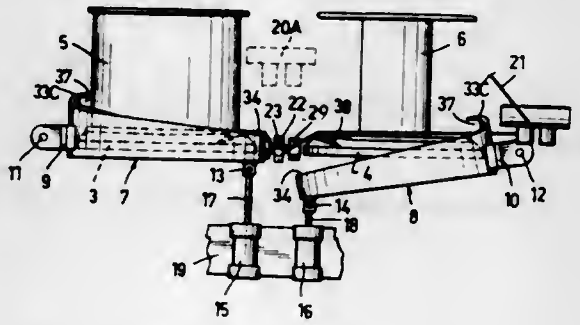
### 3,761,030
### WIRE CATCHING DEVICE FOR A CONTINUOUS WIRE SPOOLER
**Aarno Olavi Leinonen, Tapiola, and Asko Sakari Riekkinen, Kirkkonummi, both of Finland**
**Continuation-in-part of Ser. No. 22,781, March 26, 1970, abandoned. This application Feb. 18, 1972, Ser. No. 227,448**
**Claims priority, application Finland, Mar. 27, 1969, 895/69**
**Int. Cl. B65h** *54/02*
**U.S. Cl. 242—25 A** **2 Claims**



A wire catching device for a continuous wire spooler for preventing the cut end of the wire from whipping. The device comprises a ring-shaped cover positioned at one end of a wire reel. The cover is provided with an internal annular chute into which the cut end of the wire is guided and in which the end of the wire remains by means of the centrifugal force acting upon the wire during rotation of the reel.

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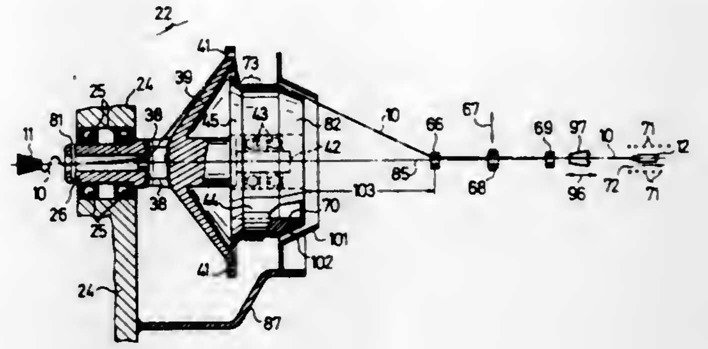
### 3,761,031
### STORAGE APPARATUS FOR FILAMENTARY MATERIAL
**Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland**
**Filed May 4, 1971, Ser. No. 140,159**
**Claims priority, application Switzerland, May 14, 1970, 7181/70**
**Int. Cl. B65h** *51/20*
**U.S. Cl. 242—47.01** **3 Claims**

A device for the storage of filamentary material includes a storage member supported from a support member for rotation with respect thereto, the storage member having a free end over which stored material can be taken off, the storage member having at its free end a cross-sectional area declining toward that free end, the device comprising an annular member surrounding the storage member adjacent the free end thereof, the opening of the annular member having a cross-sectional area declining toward the free end for checking ballooning of the filamentary material during take-off.



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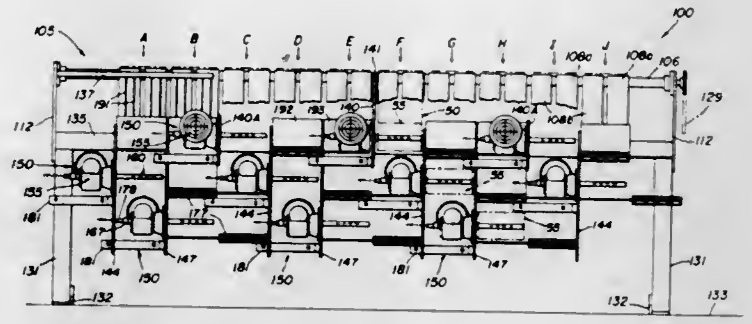
### 3,761,032
### AUTOMATIC TOWEL WINDING MACHINE
**Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah**
**Filed Mar. 25, 1970, Ser. No. 22,447**
**Int. Cl. B65h** *17/02, 27/00*
**U.S. Cl. 242—67.1** **60 Claims**



An automatic towel winder includes a frame supporting a plurality of winding units and a conveyor assembly for feeding a plurality of towels respectively to the winding units along a plurality of parallel side-by-side lanes, each of the winding units occupying three adjacent lanes and including a hollow winding mandrel having side perforations therein for winding the towel into a roll thereon, a constant-torque electric motor to drive the mandrel, suction means coupled to the hollow mandrel for urging the leading end of the fed towel against the mandrel to initiate winding thereon, an ejector for removing the wound towel roll from the mandrel and a receptacle for catching the ejected roll, the winding units being staggered on the frame to occupy a space only slightly wider than the combined widths of the fed towels; electric control circuitry for the winder and alternative embodiments of mandrel drive means and roll ejector are also disclosed.

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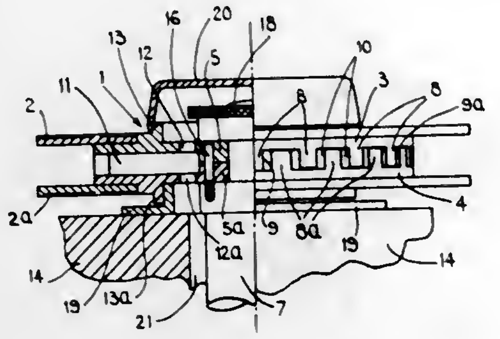
### 3,761,033
### HUBS
**Derek Whitmore, Kidsgrove, England, assignor to International Computers Limited, London, England**
**Filed Apr. 20, 1971, Ser. No. 135,673**
**Claims priority, application Great Britain, June 16, 1970, 29,068/70**
**Int. Cl. B65h** *75/28*
**U.S. Cl. 242—74** **6 Claims**

A vacuum hub for tape reels and capstans is disclosed. The hub consists of two hollow parts each part having a ring of spaced projections thereon. The width of the projections being less than the width of the spaces between the projections. When the two parts are secured together with the projections of one part inserted into the spaces of the other part a series of spaced apertures is formed extending from the interior of the hub to the outer surface.



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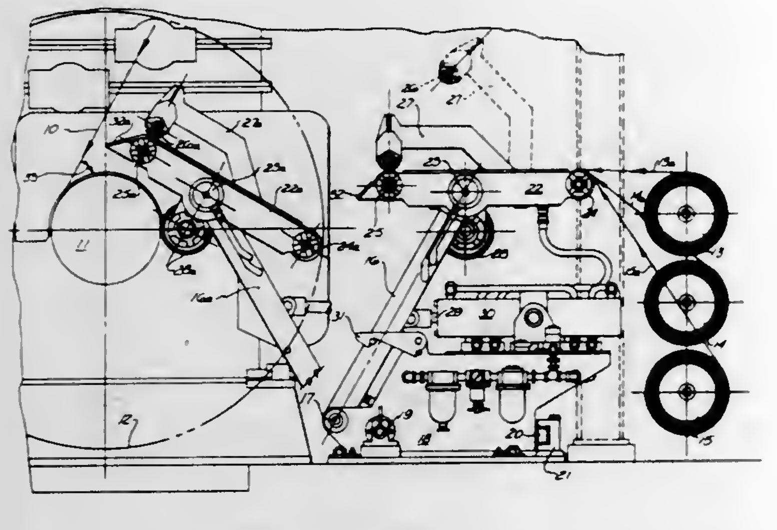
### 3,761,034
### PAPER FEEDING DEVICE

**Lorin D. Service, Butler, Pa., assignor to Armco Steel Corporation, Middletown, Ohio**

**Filed Mar. 22, 1972, Ser. No. 236,907**
**Int. Cl. B21c** *47/04;* **B65h** *19/18*
**U.S. Cl. 242—78.1** **7 Claims**



There is disclosed an apparatus for feeding a paper strip into the convolutions of a metal strip as it is being coiled on a coiler after rolling, or annealing and pickling and the like, where the strip has a polished surface which must be protected against scratching. The apparatus includes a splicing table over which the paper is passed from the supply roll, an upper pinch roll movable into and out of engagement with the paper strip, a lower driven pinch roll cooperating with said upper pinch roll, a driver roll, and a driving connection between said driver roll and lower pinch roll. The assembly of the splicing table and pinch rolls and drive rolls is movable from an inactive position to an active position, in which said driver roll contacts the periphery of the metal strip coil, to be frictionally driven thereby and to drive said lower pinch roll. The diameters of said driver roll and lower pinch roll, and the gear train therebetween, are such that the paper strip is fed at the surface speed of the coil. The lower pinch roll is provided with a slip clutch so that the paper may be withdrawn by the metal coil at a faster speed than that provided by the pinch roll, so that tearing of the paper strip during movement of the assembly to its inactive position before the upper pinch roll is raised, is avoided.

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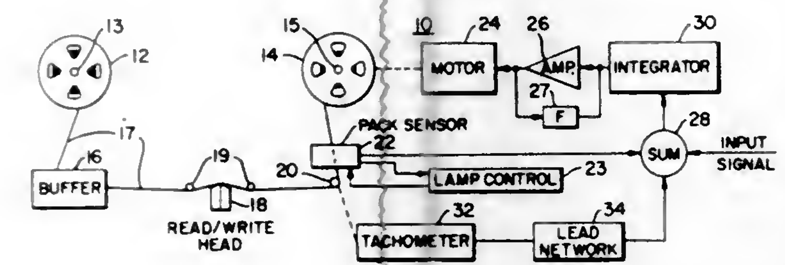
### 3,761,035
### TAPE TRANSPORT ARRANGEMENTS

**Ben C. Wang, Los Angeles, Calif., assignor to Wang Computer Products, Inc., Santa Monica, Calif.**

**Filed Aug. 4, 1969, Ser. No. 847,238**
**Int. Cl. G11b** *15/58, 15/30, 15/54*
**U.S. Cl. 242—182** **24 Claims**



Capstanless tape drive arrangements which employ various mechanical configurations and electrical circuitry to keep tape start-stop times and tape speeds substantially constant within selected ranges. These include the use of suitable tape loop buffering arrangements, a tape speed sensor with particular tape speed control servomechanism circuitry, and a pack sense transducer to provide an input signal to the motor control circuit to compensate for variations in pack radius. Also included are tape drive mechanism which admit of automatic threading of the tape through the drive path.

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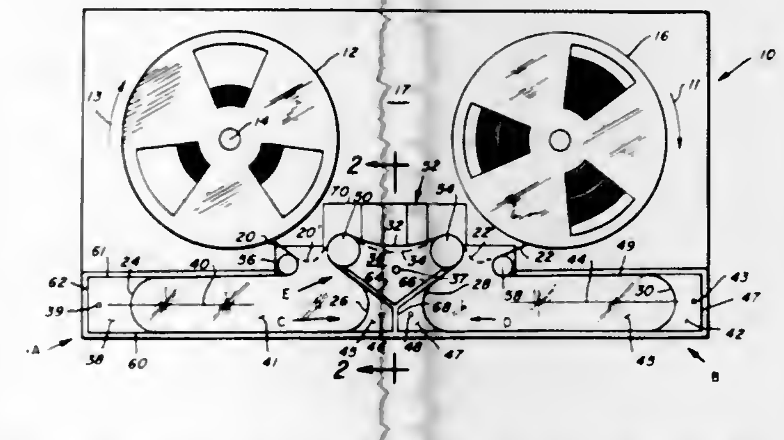
### 3,761,036
### TAPE DRIVE

**John H. Wilson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.**

**Filed Nov. 17, 1971, Ser. No. 199,697**
**Int. Cl. G11b** *15/32, 15/58, 23/12*
**U.S. Cl. 242—183** **6 Claims**



An improved tape deck for a magnetic tape handling system, which has particular advantages as relates to minimizing wear on the oxide surface of the tape and providing fast response of the tape to the drive of the capstan.

The file reel and machine reel are mounted on the upper portion of the tape deck, which is rectangular in shape. The entire lower edge is formed of one wall of each of four vacuum columns, of which two are principal columns and two are auxiliary vacuum columns. The ends of the two principal columns are positioned at the opposite edges of the tape deck. In the center portion of the wall along the lower edge of the deck is a Y-shaped wall which, in the space between the arms of the Y and the wall at the lower edge of the tape deck form two auxiliary vacuum columns.

A single capstan is used, which is placed at the end of one arm of the Y, and in the corresponding position on the end of the other arm, is a free-running roller. The tape is threaded, oxide surface up, over the capstan and the roller and is drawn down into the vacuum columns by atmospheric pressure on the top of the tape.

The magnetic head system, including read-write and erase heads, is placed above the tape with the head gaps on the bottom surface, in contact with the oxide coating of the tape. However, by applying vacuum to the triangular shape chamber below the tape, between the arms of the Y, the tape can be drawn out of contact with the heads.

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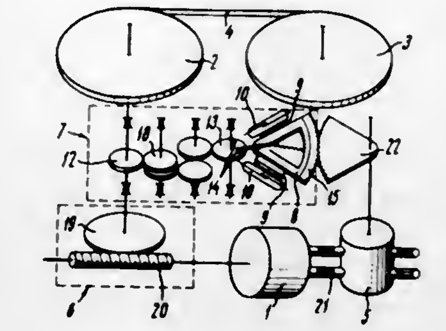
### 3,761,037
### MECHANISM FOR TRANSPORTING AN INFORMATION CARRIER

**Vladimir Valerianovich Benderovsky, ulitsa Dymerskaya, 37, kv. 1; Alexandr Ivanovich Schepotiev, Brest-Litovsky prospekt, 112, kv. 39; Igor Alexandrovich Yastrebov, Delegatsky pereulit, 10, kv. 1, all of Kiev, and Oleg Mikhailovich Vergiliev, ulitsa Marshala Rybalko, 16, korpus 4, kv. 69, Moscow, all of U.S.S.R.**

**Filed Oct. 20, 1971, Ser. No. 190,903**
**Int. Cl. B11b** *15/32;* **G03b** *1/04;* **G11b** *3/00*
**U.S. Cl. 242—201** **3 Claims**



A mechanism for transporting a carrier of information from one reel to another by means of a drive motor, comprising a unit adapted for reversing the direction of said motor rotation. Said unit incorporates a momentary-action lever with at least one permanent magnet secured thereon and adapted to cooperate with a magnet-controlled contact, and a mechanical counter whose input stage is kinematically connected to one of the reels and the output stage is operatively connected to said momentary-action lever.

The mechanism disclosed herein provides for a reliable automatic cyclic variation of the direction of the information carrier movement with the minimum reversing time.

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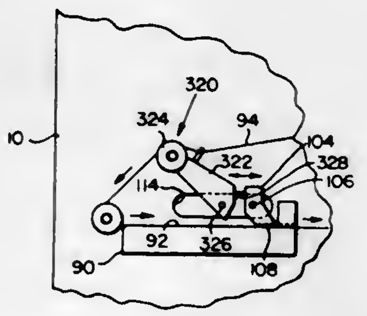
### 3,761,038
### TAPE-WRAPPING METHOD AND APPARATUS

**Du Wayne W. Stauffer, Fort Wayne, Ind., assignor to Garlock Inc., Palmyra, N.Y.**

**Filed Mar. 30, 1971, Ser. No. 129,472**
**Int. Cl. B65h** *17/42, 81/00*
**U.S. Cl. 242—7.02** **15 Claims**



An improvement in a method and apparatus for wrapping polytetrafluoroethylene tape onto the screw threads of fluid conduits for fluid sealing purposes. The wrapping is accomplished during, and in response to, a single up-down cycle of a linear gear rack, and comprises feeding the tape onto the workpiece during the up-stroke of the gear rack, and rotating the workpiece to wrap it with tape during the down-stroke of the gear rack. This provides a significant reduction in the length of stroke required and also in cycle time, over the known device using the down-stroke to accomplish both the feeding and the wrapping.

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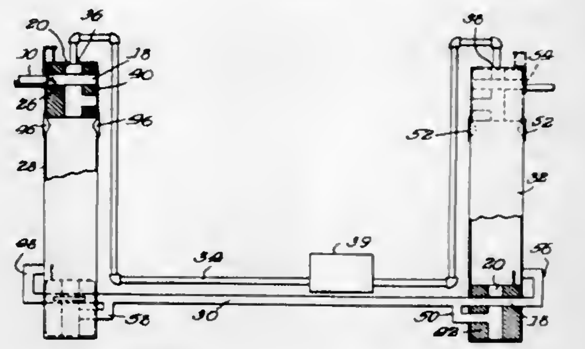
### 3,761,039
### PNEUMATIC CARRIER SYSTEM

**William J. Hazell, Golden, Colo., assignor to Powers Regulator Company, Skokie, Ill.**

**Filed Mar. 9, 1972, Ser. No. 233,232**
**Int. Cl. B65g** *51/32*
**U.S. Cl. 243—19** **5 Claims**



A pneumatic delivery system capable of transporting an information container around a sharp bend or corner without the need for conduit disposed on a large radius of curvature. A pneumatically movable capsule is positioned in a first conduit to carry the information container to the bend or corner where it leaves the capsule and enters a second conduit. Additionally a transfer station and an intermediate station are present which include a pneumatically movable capsule for transferring an information container from one deliver conduit to another and for withdrawing an information container from a delivery conduit respectively. Another aspect of the disclosure is a rotatable capsule positioned at the junction of two delivery conduits which receives an information container traveling in one conduit and is pneumatically rotated to a point where the information container can leave the capsule and travel through the second conduit.

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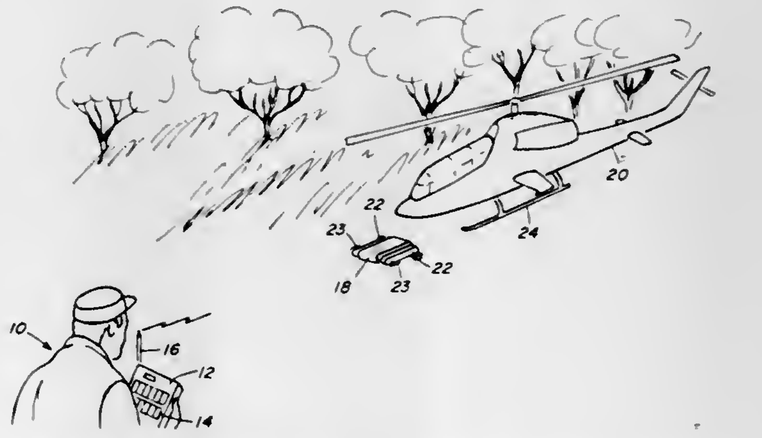
### 3,761,040
### REMOTE CONTROLLED HELICOPTER TRANSPORT DEVICE AND METHOD

**Phil F. Cummins, 2831 Fifth Ave., Fort Worth, Tex.**

**Filed Mar. 8, 1972, Ser. No. 232,841**
**Int. Cl. B64d** *3/00*
**U.S. Cl. 244—2** **17 Claims**



The specification discloses a remote controlled vehicle for transporting a helicopter. The vehicle comprises a low profile chassis dimensioned to be received underneath the fuselage of a helicopter. Crawler tracks are mounted on opposite sides of the chassis, and motors are mounted within the chassis for advancing the crawler tracks. Arms are mounted on the chassis and are selectively movable to engage the undercarriage of the helicopter. A hydraulic system selectively moves the arms between lowered and raised positions. A radio receiver is mounted in the chassis for controlling the motors and the hydraulic system in order to control the movement of the vehicle and to control the arms of the vehicle. In order to remotely control the vehicle, a portable radio transmitter is operated to transmit radio control signals to the radio receiver. In the preferred embodiment, the transmitter generates a plurality of unique tone combinations each corresponding to a different desired operation of the vehicle.

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3,761,041

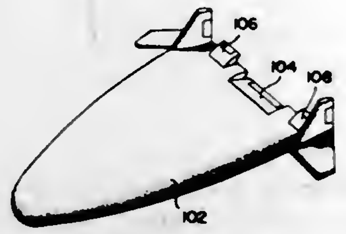
### LIFTING BODY AIRCRAFT

**William F. Putman, Princeton, N.J., assignor to Aereon Corporation, Princeton, N.J.**

**Filed Aug. 2, 9171, Ser. No. 168,193**

**Int. Cl. B64c** *9/12*

**U.S. Cl. 244—13 8 Claims**



Take-off and landing distances of a lifting body are significantly reduced by providing a downwardly deflectable inboard control surface at the trailing edge to control lift, and upwardly deflectable control surfaces, outboard in relation to the inboard control surface, to control pitching moment, and thereby adjust angle of attack. A control system not only allows a preliminary "trim" adjustment of all three surfaces but permits the outboard surfaces to be adjusted by the pilot to control the aircraft in flight.

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3,761,042

### GAS TURBINE ENGINE

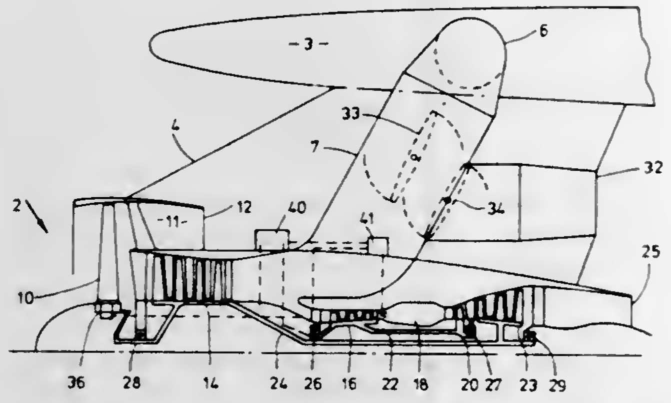
**Ralph Murch Denning, Bristol, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Filed May 4, 1971, Ser. No. 140,235**

**Claims priority, application Great Britain, May 16, 1970, 23,839/70; July 1, 1970, 31,937/70**

**Int. Cl. B64b** *1/36*

**U.S. Cl. 244—53 R 7 Claims**



A gas turbine engine has a variable pitch fan and a first compressor mounted on one shaft and driven from a common turbine, together with a high pressure compressor and turbine on a second shaft, ducting to supply bleed air to high lift devices on an aircraft in which the engine is mounted, and means for bleeding air from the first compressor to the high lift devices when the fan blades are turned to fine pitch. A control system is included to maintain the first compressor speed at maximum when the high lift devices are being used.

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3,761,043

### METHOD AND APPARATUS FOR PACKING A PARACHUTE INTO A PROJECTILE

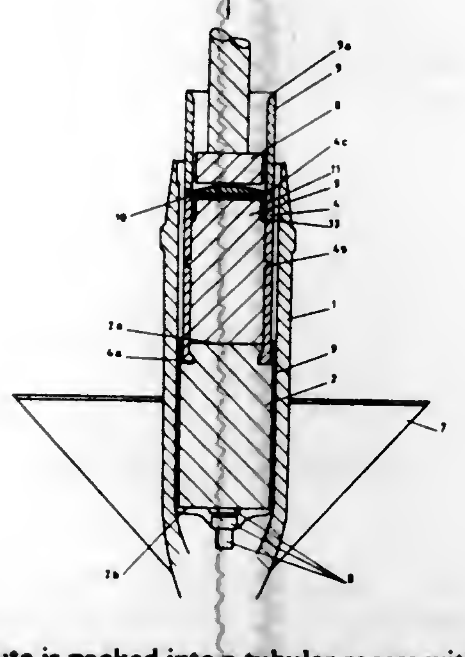
**Bjurn Herman Olof Simmons, Hertig Carls Alle 38, and Karl Ingemar Wenzel Johansson, Viaduktgatan 19, both of Kariskoga, Sweden**

**Filed May 31, 1972, Ser. No. 258,169**

**Claims priority, application Sweden, June 24, 1971, 8233/71**

**Int. Cl. B64d** *17/44, 17/46*

**U.S. Cl. 244—138 R 12 Claims**



A parachute is packed into a tubular recess within a projectile casing by urging said parachute, along with a retaining member, through a tubular channel communicating with said recess. The retaining member includes resilient detents which are adapted to engage an abutment located adjacent the upper end of the tubular recess, whereby said retaining member is automatically latched into place when the parachute has been fully compressed into said recess and retains the parachute within the recess.

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3,761,044

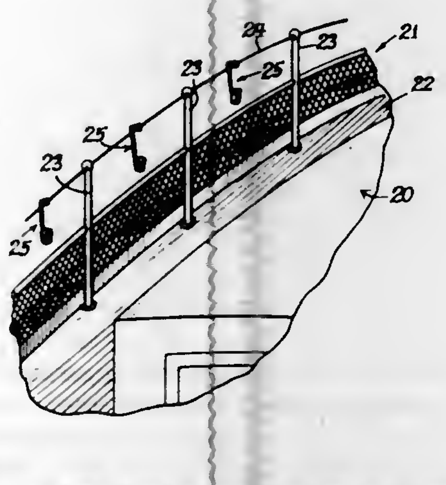
### DRINK CADDY

**Carl W. Ahmer, 1321 Hillside Rd., Northbrook, Ill.**

**Filed May 26, 1972, Ser. No. 257,306**

**Int. Cl. A47c** *7/70*

**U.S. Cl. 248—311 8 Claims**



A portable holding device embodying an open top wireformed basket coupled to a rigid hanger assembly having detachable connection with the lifeline of a ship or boat to provide substantially universal pivotal support of the basket such that a drinking vessel positioned in the basket is maintained in a generally upright attitude regardless of ship movements.

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3,761,045

### ADJUSTABLE SEAT

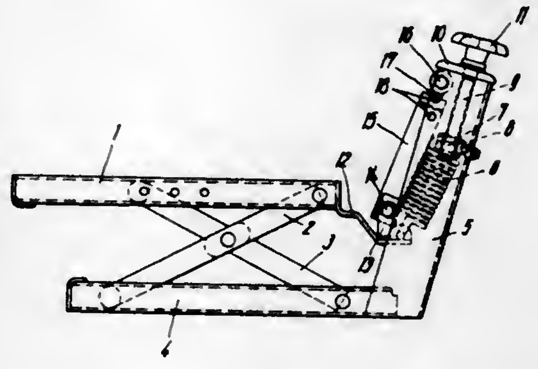
**Klaus Sturhan, Lemgo, Germany, assignor to Gebr. Isringhausen, Lemgo/Lippe, Germany**

**Filed Apr. 19, 1972, Ser. No. 245,403**

**Claims priority, application Germany, Apr. 23, 1971, G 71 15 796.5**

**Int. Cl. A47c** *3/30*

**U.S. Cl. 248—399 2 Claims**



A seat member is horizontally mounted on a pair of scissor-like arranged levers for movement in upward and downward directions. A fixed frame portion extends in a generally upward direction and is adjacent at least in part to the seat member. A shock absorber is pivotally connected to the seat end of the seat member and to the frame portion. A spring, whose tension can be adjusted, is also connected to both the seat member and to the fixed frame portion. The vertical position of the seat member is adjustable by changing the pivot connection of the shock absorber to different positions along the fixed frame portion.

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3,761,046

### TABLE FOR CONCRETE CASTING

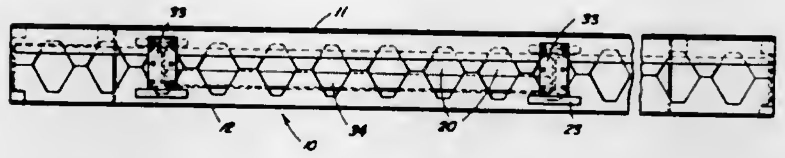
**Kenneth Gilbert Jessop, Ashford, Kent, England, assignor to Stelmo Limited, Kent, England**

**Filed Nov. 10, 1971, Ser. No. 197,301**

**Claims priority, application Great Britain, July 9, 1971, 32,266/71**

**Int. Cl. E04g** *11/00*

**U.S. Cl. 249—18 11 Claims**



A table for casting concrete comprising two girders held in parallel spaced apart relationship by cross-members extending through apertures in the webs of the girders and attached thereto. Further members extend parallel to the girders and are supported on the cross-members such that the face of the further members remote from the cross-members lies in the same plane as the flanges of the girders. A concrete casting plate lies over and is attached to the flanges of the girders and faces of the further members. Means may be provided for connecting two such tables in an end-to-end manner with the girders aligned and the plates co-planar. Mounting means may be provided on the ends of the cross-members.

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3,761,047

### MOLD COATING

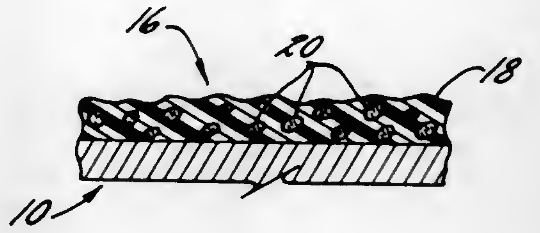
**George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.**

**Filed Aug. 9, 1971, Ser. No. 170,067**

**Int. Cl. B29c** *1/04;* **B28b** *7/38*

**U.S. Cl. 249—115 7 Claims**

A coating for the internal cavity of a mold for forming objects such as battery grids and the like including a perfluorocarbon film (e.g., - tetrafluoroethylene) having dispersed therein heat-insulating particles (e.g., - talc). The thickness of the film and the size and amount of the heat-insulating particles are maintained within defined limits to allow formation of complete grids with easy release from the mold.



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3,761,048

### MOLDS FOR ABLATIVE INJECTORS

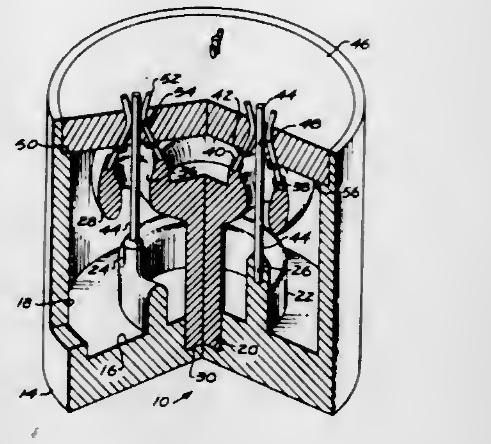
**Robert V. Kromrey, Fair Oaks, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.**

**Division of Ser. No. 876,610, Nov. 13, 1969, Pat. No. 3,599,430, which is a continuation-in-part of Ser. No. 771,388, Oct. 29, 1968. This application Nov. 23, 1970, Ser. No. 91,814**

**Int. Cl. B22c** *9/24*

**U.S. Cl. 249—146 3 Claims**

An injector according to the present disclosure comprises an ablative body having an injector face adapted to form a portion of a rocket combustion chamber. A plurality of ports is disposed in the injector face for injecting propellant into the combustion chamber and manifold means is integrally formed within the body for supplying propellant to said ports. According to one features of the present invention, a mold is provided for casting the ablative injector. The injector formed by means of the mold according to the present disclosure is a unitary ablative injector for injecting propellant into the combustion chamber of a rocket engine.



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3,761,049

### RE-USABLE MOLD FOR POURED CONCRETE RAIL

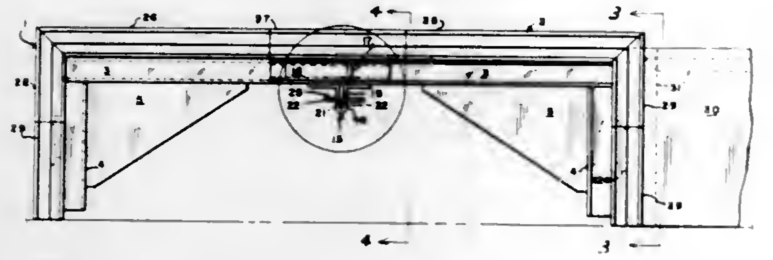
**Patrick H. Theeke, 650 N. Evergreen, Plymouth, Mich.**

**Filed Nov. 24, 1971, Ser. No. 201,916**

**Int. Cl. E04g** *9/00*

**U.S. Cl. 249—192 8 Claims**

A pair of end sections which may be assembled to form an opening in a poured concrete rail, said end sections including supporting means upon which are mounted top plates and end plates to define the peripheral surfaces of an opening. A clamping means to releasably clamp the supportive members together for use of the assembly in combination with a mold for pouring the rail, said clamping means including a pair of lugs which may be driven toward each other to a clamping position to clamp against the supporting means, and reversely moved from said clamping position and allowed to assume a release position. The top plates may receive between them a central plate having respective edges corresponding to the respective adjacent edges of the aforesaid top plates by which means the length of the mold can be determined. Each end plate is formed of two vertically, contiguously associated panels, an upper panel, having its lower edge resting on the upper edge of a lower panel, and the juncture of two said panels being so formed as to afford withdrawal of the lower panel whereby the entire mold is allowed to drop sufficiently to facilitate its removal from a hardened concrete wall.



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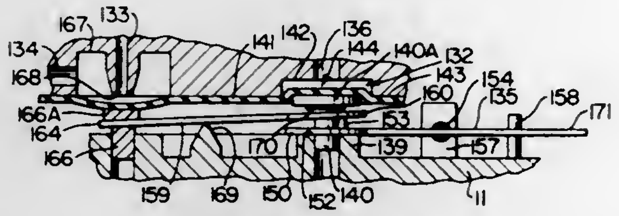
### 3,761,050
### PNEUMATIC CONTROL SYSTEM AND RESET VALVE FOR SUCH A SYSTEM OR THE LIKE

**Louis M. Puster, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.**

**Division of Ser. No. 016,479, March 4, 1970. This application May 20, 1971, Ser. No. 145,463**

**Int. Cl. F16k** *31/165*

**U.S. Cl. 251—14** **7 Claims**



A pneumatic control system having a source of control fluid providing two different control pressure levels for respectively switching the control device of the system from one operating condition thereof to another operating condition thereof, the control device comprising a pair of condition controller means each having a sensor and a bleed type pneumatic valve operated thereby together with relay means operatively interconnected to the source for directing a branch signal of the control fluid to a pneumatically operated device in relation to a pilot signal directed to a pilot chamber of the relay means by one of the control means. A pressure responsive means is provided for switching the system from one condition controller means to the other in relation to the pressure level of the source, and a reset means is provided for overriding the pressure responsive means.

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### 3,761,051
### INDUSTRIAL AIR VALVE WITH VALVE BODY HAVING FLEXIBLE SEALING LIP

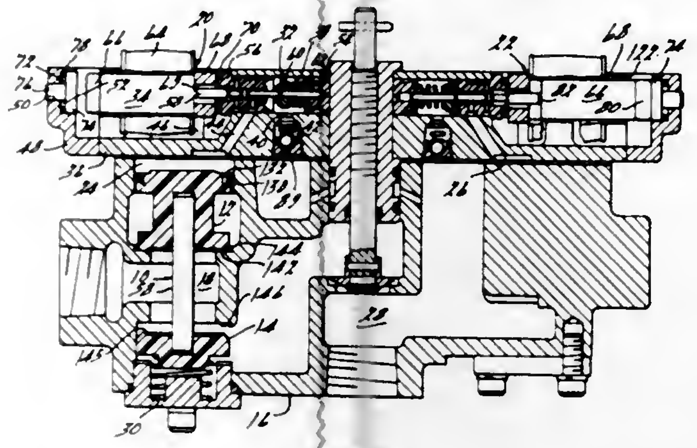
**Harlan R. Cagle, Clarkston, Mich., assignor to Sahlin Engineering Company, Inc., Birmingham, Mich.**

**Division of Ser. No. 880,061, Nov. 26, 1969, Pat. No. 3,582,039, which is a continuation-in-part of Ser. No. 639,545, May 18, 1967, abandoned. This application Dec. 21, 1970, Ser. No. 100,471**

**Int. Cl. F16k** *31/12*

**U.S. Cl. 251—63** **2 Claims**

There is herein disclosed an industrial type air valve assembly in which poppet type valve heads have a new and improved self-compensating sealing lip and are controlled by a new and improved solenoid operated pilot valve. The pilot valve is connected to an operating solenoid in a manner providing a no-load gap between a valve stem and a valve head to reduce starting load. The valve stem is supported by plastic bearing means providing minimal frictional loading to further reduce starting load. The valve stem and valve head cooperate to provide variable force transfer surfaces whereby pressure forces opposing movement of the solenoid armature are varied from a minimum pressure force prior to opening of the valve providing minimum resistance to the armature to a maximum pressure force immediately after opening of the valve to decelerate the armature to an intermediate pressure force to brake the armature as it bottoms.



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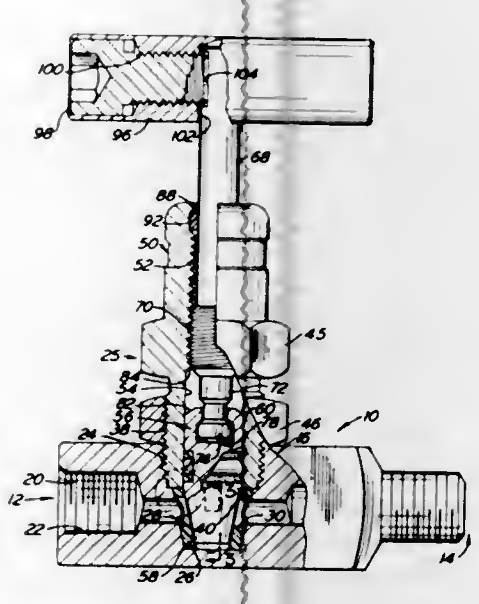
### 3,761,052
### FLOW PLUGGER VALVE

**William P. Tobbe, Cleveland Heights; Ernest A. Benway, Euclid; David M. Simko, Parma Heights; Barnard J. Gallagher, Mentor, and John Boylan, Cleveland Heights, all of Ohio, assignors to Whitney Research Tool Company, Emeryville, Calif.**

**Filed Feb. 7, 1972, Ser. No. 223,932**

**Int. Cl. F16l** *25/00*

**U.S. Cl. 251—88** **9 Claims**



The specification and drawings disclose a valve particularly suited for abrasive or corrosive fluids. The disclosed valve comprises a body with a generally conically shaped valve chamber and a seat insert removably positioned in the chamber. A bonnet member is removably connected to the body and has a cylindrical valve plug receiving opening axially aligned with the seat includes a first cylindrical section slidingly received in the opening an a conically shaped inner end portion adapted to enter and sealingly engage the seat insert. An actuating stem is threaded into the bonnet in axial alignment with the opening. The inner end of the stem is releasably and rotatably connected to the cylindrical end of the plug so that upon rotation of the stem, the plug can be moved toward and away from the seat. Seal ring means are carried by the cylindrical portion of the plug for sealingly engaging the walls of the opening. The seal ring means prevents fluids from passing from the valve chamber into the bonnet and seal both the stem-plug connection and the stem threads from the fluid. The seal ring means comprise an assembly of three ring members including a resilient O-ring positioned between two resilient washers. The inner washer acts as a wiping ring to clean the bore of abrasive particles and prevent wear on the O-ring. The O-ring performs the primary fluid seal function and the outer washer prevents blow-out of the O-ring under operating pressure.

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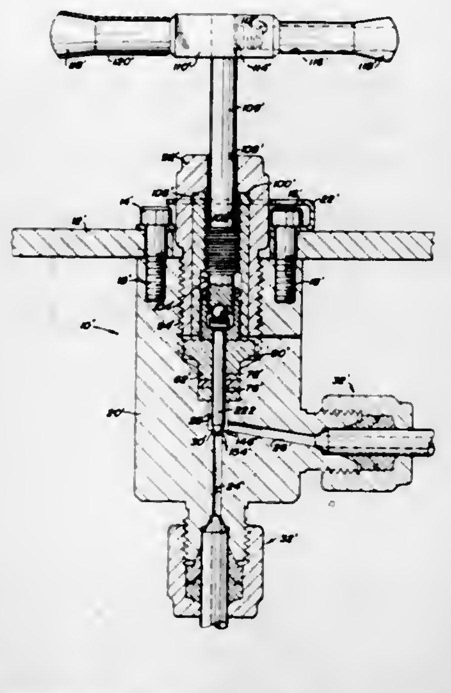
### 3,761,053
### HIGH PRESSURE VALVE

**Alfred Bedo, Walton Hills, and Edward Beck, Cleveland Heights, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio**

**Continuation-in-part of Ser. No. 862,804, Oct. 1, 1969, Pat. No. 3,679,169. This application July 24, 1972, Ser. No. 274,517**

**Int. Cl. F16k** *29/00*

**U.S. Cl. 251—88** **7 Claims**



A high pressure valve employing a nonrotating needle. The valve actuating stem is threadedly received in a liner sleeve of the valve packing nut. The inner end of the actuating stem is provided with means forming a bore. A valve needle including an enlarged spherical member is adapted to be received in the bore. Essentially line contact is provided between the bearing surfaces of the valve needle and of the actuating stem by the presence of the spherical member between the stem and the valve. Additionally, certain embodiments include means for adjusting the "play" between the stem and the valve while permitting the valve to be freely rotatable relative to the stem.

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### 3,761,054
### RECIPROCABLE VALVE WITH ROLLING BEARINGS

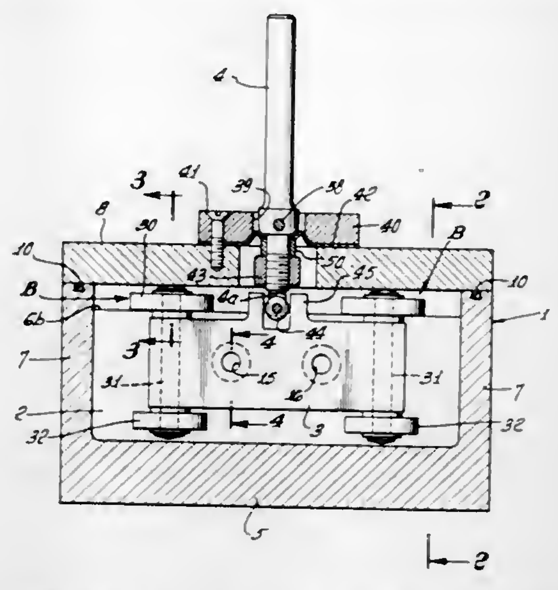
**Joseph T. Abdo, Rolling Hills, Calif., assignor to Scitech Corporation, Los Angeles, Calif.**

**Filed Mar. 24, 1972, Ser. No. 237,653**

**Int. Cl. F16k** *11/06*

**U.S. Cl. 251—172** **11 Claims**

A slide valve is supported in a valve body for reciprocal motion on rolling bearing members which support the slide in spaced relation to the internal body walls to prevent frictional engagement of the slide with the body. The slide and body have flow passages including ports having cylindrical seal members through which fluid flows, the seal members having face-to-face end sealing engagement with a flat face on the slide and impose a force normal to the bearing support tending to cause the slide to cock, and the bearings limiting the cocking of the slide.



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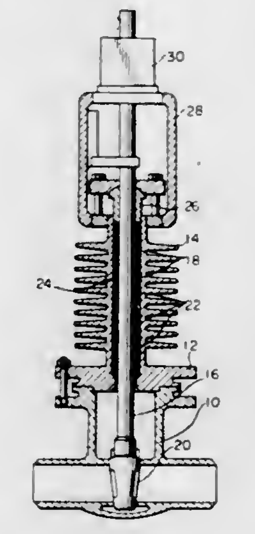
### 3,761,055
### FREEZE SEAL FOR SODIUM VALVES

**Satoru Ebuchi, and Takeo Kazama, both of Kitakyushu, Japan, assignors to Okano Valve Seizo Kabushiki Kaisha, Kitakyushu, Japan**

**Filed Nov. 8, 1971, Ser. No. 196,459**

**Int. Cl. F16k** *27/00*

**U.S. Cl. 251—214** **3 Claims**



A freeze seal for a valve having an elongated stuffing box and a longitudinally movable valve stem extending through the box. A plurality of metallic packings separated by metallic rings are disposed in the box around the valve stem to maintain sodium in the frozen state within the box. Each packing is formed of nickel, nickel base alloy, austenitic stainless steel, aluminum or aluminum base alloy in the form of a thin wire, wool, thin sheet, foil or combinations thereof. It can include two coaxial layers of metallic wool, a metallic foil interposed between them and an outer sheath made of a braid of thin metallic wire.

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### 3,761,056
### FAST ACTION VALVE

**Philipp Kreis, Neumarkter 34-36, Munich, Germany**

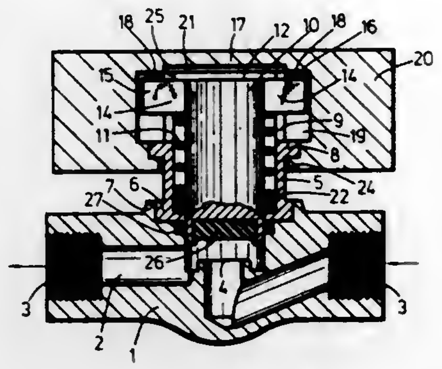
**Filed Dec. 3, 1971, Ser. No. 204,452**

**Claims priority, application Germany, Dec. 3, 1970, P 20 59 610.5**

**Int. Cl. F16k** *31/524*

**U.S. Cl. 251—255** **5 Claims**

A fast-action valve has an axially displaceable but nonrotatable valve stem engageable with a seat in the passage of a



valve body. The stem has a pair of laterally extending arms guided in axial slots in an axial sleeve forming part of the valve body. A handle is formed with an axially opening cavity receiving the arms of the stem and provided with a pair of axially symmetrical ramps which coact with the arms to axially displace the stem against the force of a spring on rotation of the handle. The handle is formed of a pair of symmetrically identical members joined together along a plane lying along the stem axis and in line with the two highest points (least-axial-force regions) of the ramps. Furthermore the valve handle has an inwardly projecting rim received by a guide on the sleeve so that the handle merely rotates without being displaced axially on rotation.

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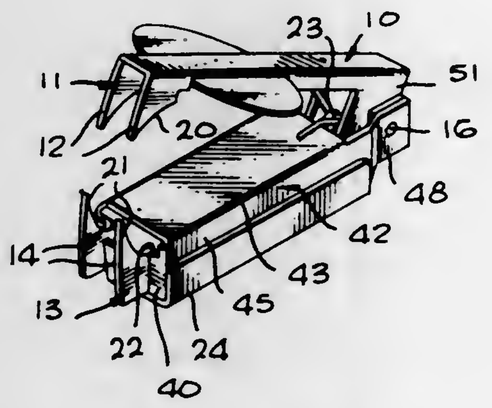
### 3,761,057
### STAPLE REMOVER

**Roy L. Nembhard, 1710 S. Orange Dr., Los Angeles, Calif., and James A. Sinclair, 2034 Midvale Ave., Los Angeles, Calif.**

**Filed Mar. 3, 1972, Ser. No. 231,581**
**Int. Cl. B25c** *11/00*
**U.S. Cl. 254—28** **10 Claims**



A staple removing device includes a pair of oppositely disposed, cooperable jaws each having a pair of spaced, wedge-shaped teeth. The teeth are shaped to fit beneath the crown portion of a staple and, when brought together, force the staple along the wedge teeth towards the thick portion, removing the staple from the attached material. The teeth of one jaw are configured to enable ready disengagement therefrom of the removed staple. A container is operatively disposed adjacent the end of the jaw to receive and retain the removed staple.

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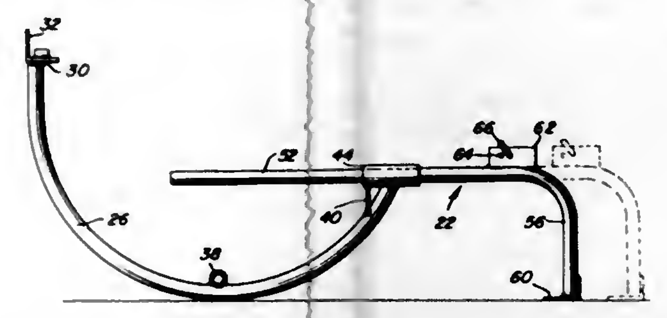
### 3,761,058
### LIFTING DEVICE FOR CEMENT MIXERS AND THE LIKE

**Guthrie B. Stone, Honeoye, and Christian T. Tertinek, Canandaigua, both of N.Y., assignors to Stone Construction Equipment, Inc., Honeoye, N.Y.**

**Filed July 1, 1971, Ser. No. 158,942**
**Int. Cl. B66f** *7/22*
**U.S. Cl. 254—94** **11 Claims**



An adjustable lifting assembly for cement mixers and the like, said assembly comprising a pair of oppositely disposed, compoundly curved tubular supports each rigidly affixed at one end thereof to a first angular mounting bracket for a cement mixer, the opposite end of each tubular support being attached to a rigid member having a pair of spaced collars thereon, a telescopic framework including a pair of parallel tubular members having straight portions which are slideably received in the collars, and a second mounting bracket straddling the tubular members and adapted to engage a portion of a cement mixer. The tubular members each have a bend therein forming a leg portion which is generally perpendicular to the straight portion extending through the collar, the ends of each leg portion being welded to an angular bracket adapted to rest on the ground when a cement mixer is in the raised position.

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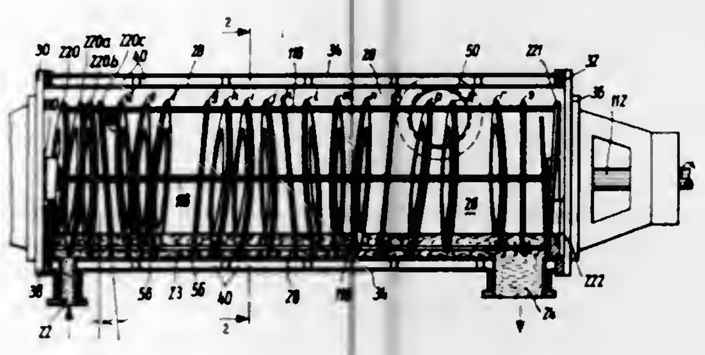
### 3,761,059
### PROCESSING APPARATUS

**Horst Rothert, and Wolf Karasiak, both of Berlin, Germany, assignors to The Firestone Tire & Rubber Company, Akron, Ohio**

**Filed Sept. 28, 1971, Ser. No. 184,424**
**Claims priority, application Germany, Mar. 19, 1971, P 21 14 080.7**
**Int. Cl. G08c** *35/00;* **B01f** *7/10*
**U.S. Cl. 259—9** **17 Claims**

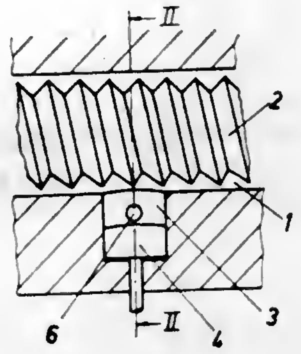


Flowable material is mixed and forwarded through a processing apparatus by means of a rotating structure having an array of annular discoidal members coaxially mounted thereon to rotate therewith. The annular discoidal members are inclined away from normality ot the axis of rotation, and the most rearward points of the peripheries of the successive discs are disposed along a helicoidal line coaxial with the rotation of the structure, which disposition of the discs causes the structure as a whole to emulate the action of a screw in that the flowable material is propelled through the apparatus. When the depth of flowable material in the apparatus is regulated such that it approximately equals the annular width of the discs, veils of flowable material continually fall from the rotating discs, for example to promote chemical reactions.

### 3,761,060
### MIXING AND CONVEYING APPARATUS

**Johann Schwab, Vienna; Wladimir Hascic, Maria Enzersdorf, and Manfred Furnsinn, Traiskirchen, all of Austria, assignors to Semperit Aktiengesellschaft, Hauptstrasse, Austria**

**Filed Dec. 15, 1970, Ser. No. 98,407**
**Claims priority, application Austria, Dec. 23, 1969, A 12030/69**
**Int. Cl. B01f** *15/02, 7/08*
**U.S. Cl. 259—22** **12 Claims**



Apparatus for mixing and conveying at least two materials, particularly liquid materials together forming a two or multi-component resin system, comprising a mixing chamber, a mixing and conveying worm located in the chamber, and two feed passages communicating with the chamber through orifices which are obturable by a common sealing piston, wherein in order to ensure simultaneous opening and closing of the orifices, they are located in a plane normal to the direction of travel of the piston. In one embodiment, the piston is carried on and axially movable with the worm, the orifices being formed in the wall of the mixing chamber. Alternatively, the orifices may open into a preliminary chamber, itself opening into the mixing chamber, and in which the piston moves. The leading surface of the piston in the closing position forms a part of the wall of the mixing chamber.

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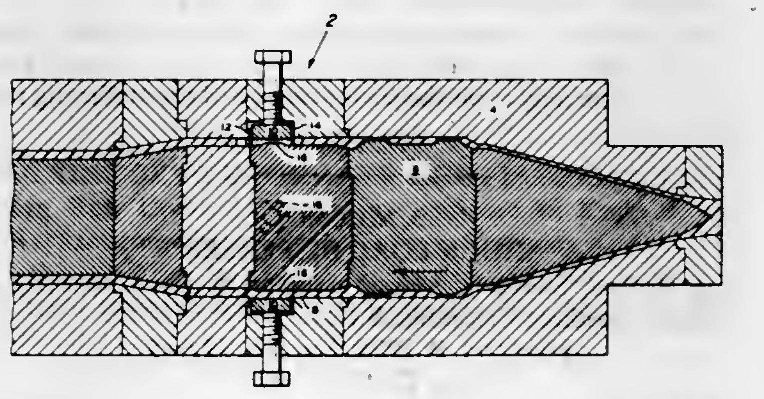
### 3,761,061
### APPARATUS FOR ADJUSTING THE FLOW OF MATERIAL THROUGH AN EXTRUDER

**Guy F. Carrow, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Aug. 26, 1971, Ser. No. 175,195**
**Int. Cl. B29b** *1/06*
**U.S. Cl. 259—185** **3 Claims**



An apparatus and method for adjusting the flow of material through the annulus between the churn and a housing assembly of a plasticizing section of an extruder.

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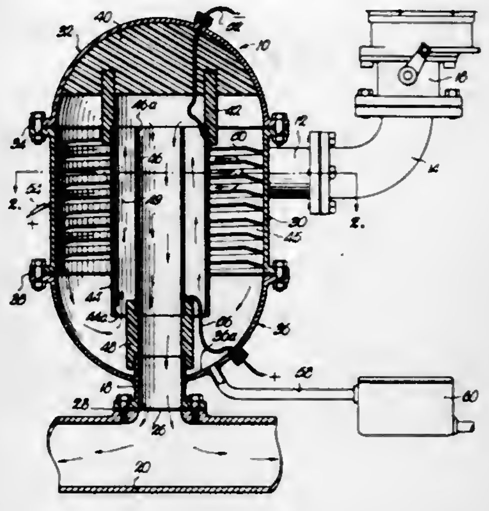
### 3,761,062
### METHOD AND APPARATUS FOR TREATING CARBURETED MIXTURES

**Arthur S. King, 9013 W. 51st Ter., Merriam, Kans.**

**Filed Apr. 28, 1972, Ser. No. 248,699**
**Int. Cl. F02m** *27/04*
**U.S. Cl. 261—1** **31 Claims**



A mixture of air, water vapor and droplets of fuel, such as a hydrocarbon type, is treated to assure complete combustion of the fuel to thereby minimize polluting emissions by passing the mixture through an electrostatic field in a heat exchange chamber having reduced pressure. Exposure to the field relaxes the surface tension of the fuel droplets to increase vaporization thereof, and physical contact of the mixture with heat exchange structure during fuel vaporization causes the water vapor of the mixture to condense for separation from the air and fuel vapor. One embodiment has concentric tubular electrodes which house the outlet for fuel vapor and air to prevent remixing of water condensation therewith, and a second embodiment has superimposed, plate-like electrodes which shield the fuel vapor and air outlet from water condensation and serve to break up fuel droplets by forcing the same to follow a tortuous, serpentine path through the field.

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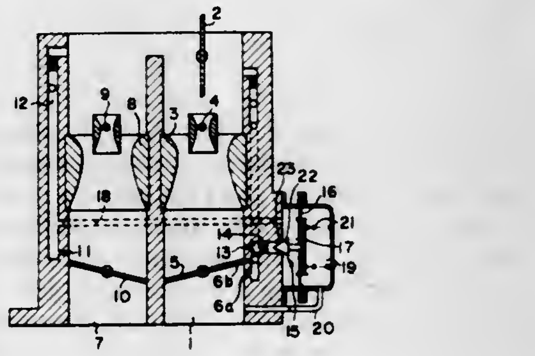
### 3,761,063
### CARBURETOR PROVIDED WITH AUXILIARY FUEL FEED MEANS

**Akira Shibanaka, Hiroshima-shi, and Harumi Takayama, Chiba-ken, both of Japan, assignors to Toyo Kogyo Co. Ltd., Hiroshima-ken and Nippon Carburetor Co., Ltd., Shinagawa-ku, both of Japan**

**Filed Apr. 5, 1971, Ser. No. 131,165**
**Claims priority, application Japan, Apr. 16, 1970, 45/36944**
**Int. Cl. F02m** *7/04*
**U.S. Cl. 261—41 D** **4 Claims**



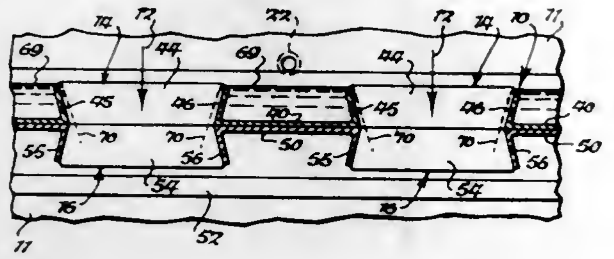
A carburetor for internal combustion engines having a passage controlled by a throttle valve, in which an auxiliary fuel injection nozzle is provided which is open in said passage at a location which will be upstream of the throttle valve when said throttle valve is in a closed position and downstream of the throttle valve when said throttle valve' is in a slightly opened position, and from which auxiliary fuel is injected into said passage during light-load (i.e. throttle valve slighty open), high speed operation of the engine.

### 3,761,064
### GAS SCRUBBER

**Jack J. Selway, Brielle, N.J., assignor to Andco Incorporated, Buffalo, N.Y.**

**Filed Dec. 30, 1970, Ser. No. 102,817**
**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—53** **15 Claims**



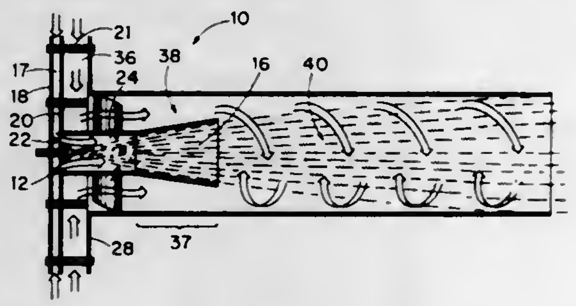
Apparatus for removing particulate material from a gas stream traveling through a duct comprising a pair of members each provided with a corresponding plurality of passages and arranged to cooperatively define a corresponding plurality of venturi passages extending generally parallel to the direction of flow of the gas stream and spaced around the axis of the duct. The members are relatively movable for varying the size of the venturi throats and for completely closing the passages when desired. Liquid is supplied to the upstream member and the venturi inlets defined thereby are of a configuration effecting a substantially uniform distribution of the liquid to the passages.

### 3,761,065
### HIGH EFFICIENCY DIRECT GAS-LIQUID CONTACT APPARATUS AND METHODS

**Stanley R. Rich, Worcester, and Theophanes G. Pantazelos, Somerville, both of Mass., assignors to RP Industries, Inc., Marlboro, Mass.**

**Filed May 21, 1971, Ser. No. 145,732**
**Int. Cl. B01f** *3/04*

**U.S. Cl. 261—76** **28 Claims**



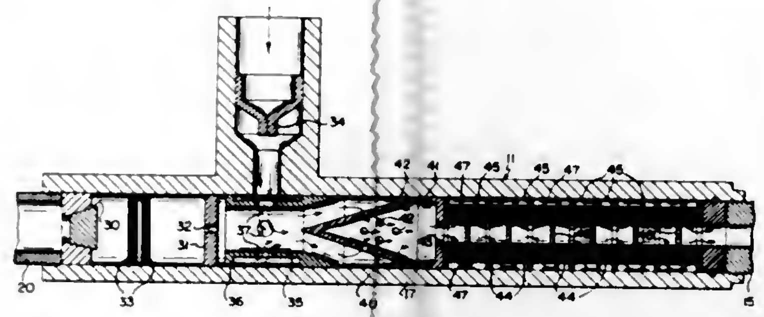
This disclosure depicts high efficiency direct gas-liquid contact apparatus and methods. Spray generating means receives a liquid under pressure and produces therefrom a spray having a divergent envelope. The spray is confined within a spray chamber having an inner surface with a divergent configuration substantially fitting the spray envelope. Gas is supplied to the spray for aspiration thereby through a multiple stage radial impedance-matching inlet duct system. The radial impedance-matching inlet duct system acts to increase the velocity of the gas while decreasing the pressure thereof to effect an impedance match of the pressure of the influent gas with the sub-ambient pressure created in the spray chamber. Means are shown in the inlet duct system for deflecting the flow of gas in the ducts to create turbulence in the mixed fluid and thereby to increase the gas-liquid contact therein. One embodiment disclosed is a closed system adapted for such applications as aerating oxygen-depleted bodies of water, sewage, etc., without rendering airborne any objectionable substances or organisms which might be present in the bodies.

### 3,761,066
### INLINE WATER CARBONATOR

**Clarence W. Wheeler, 1767 41st St., St. Petersburg, Fla.**

**Filed Sept. 8, 1971, Ser. No. 178,682**
**Int. Cl. B05b** *7/02*

**U.S. Cl. 261—78 A** **15 Claims**



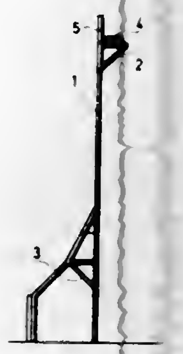
An inline water carbonator introduces CO2 and fresh water into a conduit leading to a carbonated water dispensing valve each time the valve is opened. The CO2 and water are thoroughly mixed in the conduit as the carbonated water is dispensed through the valve so that the water is charged with CO2 when it is dispensed.

### 3,761,067
### LARGE-SIZE METAL-FRAMED TOWER

**Istvan Marosi, and Frigyes Volgyes, both of Budapest, Hungary, assignors to Ipari Epulettervezo Vallalat, Budapest, Hungary**

**Filed Apr. 15, 1971, Ser. No. 134,368**
**Int. Cl. E04g** *11/04;* **B01f** *3/04*

**U.S. Cl. 261—111** **5 Claims**



A large size metal frame cooling tower of generally upright cylindrical configuration has an outer surface of metal frame work or panels. At least one stiffening ring is provided either on the inside or the outside of the cylindrical structure, or both. A crane may orbit the tower on one of the stiffening ring structures.

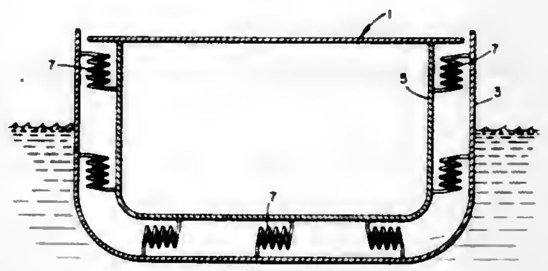
### 3,761,068
### SHOCK LOAD DISPERSER

**Nam P. Suh, Sudbury, Mass., assignor to The University of South Carolina, Columbia, S.C.**

**Filed Oct. 9, 1970, Ser. No. 79,615**
**Int. Cl. F16f** *7/00*

**U.S. Cl. 267—136** **16 Claims**

Method and apparatus for minimizing or eliminating damage to a system by mechanical impact. The method comprises minimizing the effects of a shock load by propagating the individual Fourier components of the stress waves associated with the load at different velocities over a short distance. The apparatus of the invention comprises a specially arranged or contoured body wherein the surface boundary causes the incident angle of the individual Fourier components to continuously vary over the distance of wave propagation. The method and apparatus is provided for specific uses such as automobile bumpers, automobile dashboards, suspension systems, ship construction, particularly submarines to minimize shock load damage, cargo handling and in building foundation construction to minimize or eliminate shock damage such as by earthquakes.

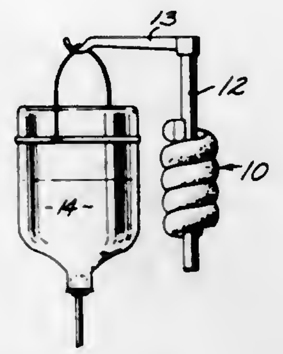


### 3,761,069
### BUFFER COIL

**Arthur B. Moore, 22745 G. Palm Ave., Colton, Calif.**

**Filed Oct. 21, 1971, Ser. No. 191,323**
**Int. Cl. F16g** *1/36*

**U.S. Cl. 267—152** **10 Claims**



A coil having a core fashioned from a strip of coiled spring steel and a thick jacket, completely surrounding the core, of flexible polyurethane foam. The coil can be easily wound by hand around the support rod for an intravenous feeding bottle to provide a buffer between the rod and a swinging bottle and eliminate the noise and possibility of breakage which would be present if the bottle banged into the bare rod. The spring steel core is formed into a flat, radially outwardly expanding coil with individual loops of equivalent normal diameter. As a result of this core design, the coil can be wound on the intravenous bottle support rod in the form of a helix which tightens itself axially and constrictively grips the rod to provide a wrapper capable of remaining in place without slippage. The polyurethane foam jacket acts as a sound and shock absorbing barrier around the rod on which the coil is installed.

### 3,761,070
### INDEXING DEVICE FOR A STRAIGHT INDEXING TABLE

**Georg Ruf, Creidtlitz, Germany, assignor to Kapp & Co., Werkzeugmaschinenfabrik, Coburg, Germany**

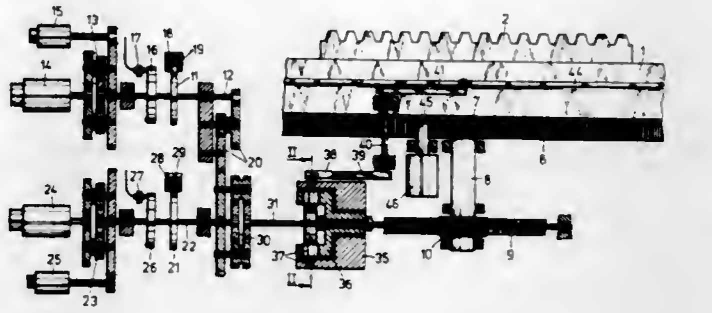
**Filed July 14, 1971, Ser. No. 162,385**

**Claims priority, application Germany, July 16, 1970, P 20 35 302.0**

**Int. Cl. B23q** *3/18;* **F16h** *37/06, 35/18*

**U.S. Cl. 269—59** **11 Claims**

An indexing, or positioning, device for a table guided for movement on a base. The positioning device comprises a pair of indexing discs connected via a totalizing transmission with the table to be positioned. Each indexing disc is driven through a differential transmission from a pair of motors, each of which has a brake to lock the motor when it is deenergized. Presettable counters control the motors and a pulse generating device associated with each disc feeds countdown pulses to the counters to stop the disc when a position thereof corresponding to the preset value in the counter is reached. Lost motion in the drive from the positioning device to the table is compensated for by a tensioning drive connected to the table and biasing the table in feed direction during indexing thereof and in the opposite direction at the end of a feed movement thereof.

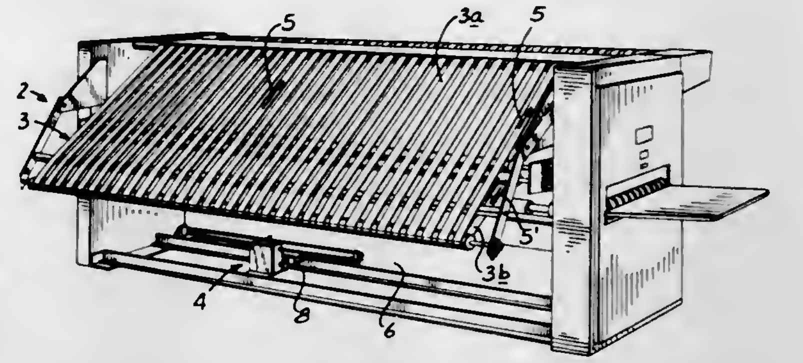


### 3,761,071
### LAUNDRY FOLDING MACHINE WITH STATIC ELECTRICITY DISSIPATING MEANS

**Sheldon P. Behn, Highland Park, Ill., assignor to Super Laundry Machinery Company, Inc.,, Chicago, Ill.**

**Filed Dec. 8, 1971, Ser. No. 205,913**
**Int. Cl. B65h** *45/00*

**U.S. Cl. 270—61 R** **14 Claims**



There is provided in association with the vertically oriented endless conveyor belts of laundry folding machines one or more spray heads for directing a mist of air and water on the bottom surfaces of the bottom section of the endless conveyor belts which will ultimately become the upper laundry supporting surfaces of the belts. Each spray head has air and water inlets respectively connected to controllable air and water valves. The air and water valves are operated by an adjustable timer which cyclically opens and closes the air and water valves for limited adjustable intervals during each cycle of operation thereof. The air valve is open for a time interval each cycle which encompasses, and extends preferably beyond the beginning and end of, the interval during which the water valve is opened during each cycle.

### 3,761,072
### APPARATUS FOR ERECTING CARTONS

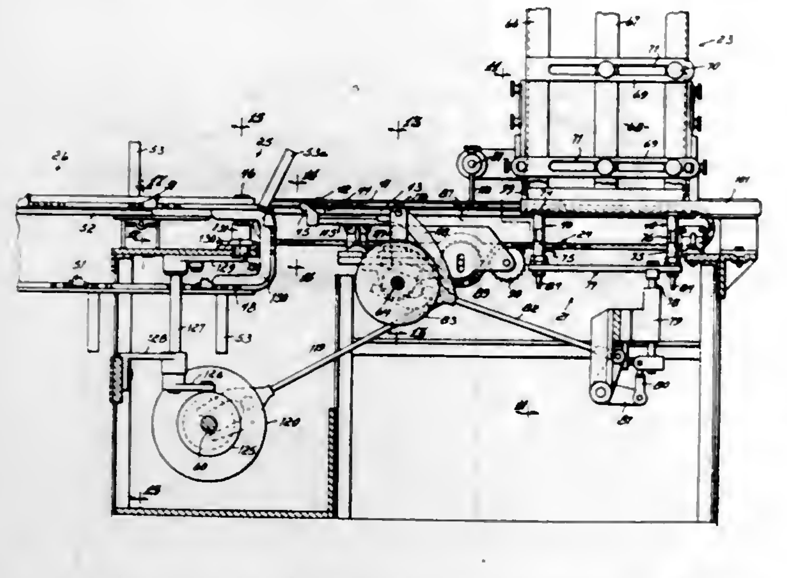
**Edwin Naul Deering, and Wickliffe Jones, both of Covington, Ky., assignors to R. A. Jones & Company, Incorporated, Covington, Ky.**

**Continuation of Ser. No. 875,762, Sept. 29, 1969, abandoned, which is a division of Ser. No. 662,978, Aug. 14, 1967, Pat. No. 3,476,024. This application Aug. 19, 1971, Ser. No. 173,254**
**Int. Cl. B65h** *3/08*

**U.S. Cl. 271—12** **3 Claims**

An apparatus for erecting cartons including a mechanism for separating one carton blank from a stack of carton blanks.

The separator mechanism includes vacuum cups for drawing one carton blank downwardly from the stack in timed relation with a feeder mechanism. The cups themselves are mounted on long elastic stems permitting contact with a carton blank even after the blank is contacted and moved by the feeder mechanism.



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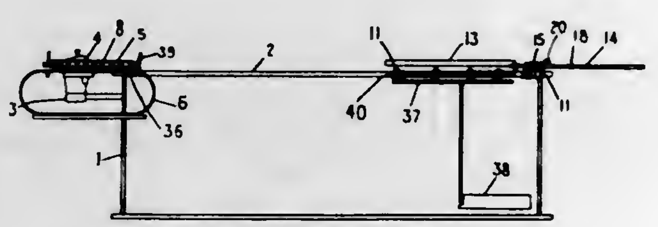
### 3,761,073
## DEVICE FOR AUTOMATICALLY GUIDING MATERIAL DURING SEAM FORMATION
**Douglas Harold Brain, Giffnock, Scotland, assignor to J. & P. Coats Limited, Glasgow, Scotland**
**Filed Sept. 14, 1971, Ser. No. 180,287**
**Int. Cl. D05b** *27/00, 69/00;* **B65h** *29/28*
**U.S. Cl. 271—79** **20 Claims**



A device for automatically guiding work pieces of textile and other material includes a guide rail along which are slidable clamps arranged to hold the work pieces and guide them to a position where the desired operation is to be performed on them. A transfer belt is provided to receive each work piece from the clamps and feed it to the position where the operation is to be performed on it. Spacing apparatus is incorporated in the device for automatically spacing the clamps ready to receive a work piece at a loading position and means are provided for opening and closing the clamps at the necessary positions and for transferring clamps which have just guided a work piece back to the starting position.

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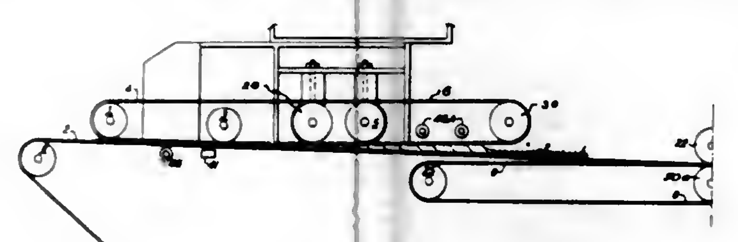
### 3,761,074
## ELECTROSTATIC LAYBOY WITH UNDERLAP SYSTEM
**Waldyn J. Benbenek, Lee; Frank A. Grosso, Pittsfield, and James G. Wellspeak, Lee, all of Mass., assignors to Clark-Aiken Company, Lee, Mass.**
**Filed Dec. 15, 1971, Ser. No. 208,187**
**Int. Cl. B65h** *5/24, 29/12*
**U.S. Cl. 271—46** **7 Claims**

A layboy assembly moves paper sheets and underlaps the sheets by guiding the sheets between opposing conveyors along a course, charging the edges of the paper sheets with an electrostatic charge as the sheets are moved first rapidly, then more slowly through a series of conveyors. An upper conveyor attracts the charged edges of the sheets as the sheets are slowed down. The charged edges are raised before and during slowdown to reduce the distance between moving sheets. The opposing conveyors diverge at the slowdown zone to leave a gap, thus permitting sheet under lapping when a static eliminator neutralizes the charges on the paper sheets releasing the raised edges of the sheets downstream of the charging elements.



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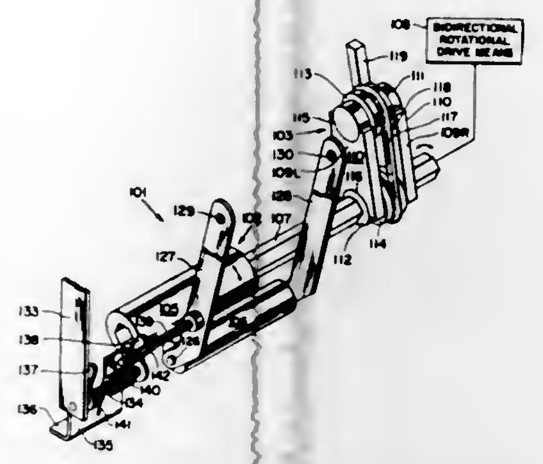
### 3,761,075
## DOCUMENT CONVEYING MECHANISM
**Frederik Tjado van Namen, Bergharen, Netherlands, assignor to The Singer Company, Rochester, N.Y.**
**Filed Dec. 29, 1971, Ser. No. 213,258**
**Int. Cl. B65h** *5/06*
**U.S. Cl. 271—53** **8 Claims**



A bidirectional document feed mechanism for permitting manual insertion and accurate alignment of individual documents. Bidirectional driving is under control of a drive roller and a pressure roller which form a primary document conveying means. During manual insertion of the document the drive and pressure rollers are separated and a document stop element aligns the inserted document. A secondary document conveying means is provided for holding the document and providing an initial feed in one direction until the document stop is removed from the document path and the primary document conveying means takes over. The secondary document conveying means responds to rotation of the drive roller in first and second directions in first and second different manners. More specifically, the secondary document conveying means comprises a subassembly which is tipped in first and second reciprocal directions depending upon the direction of rotation of the drive roller.

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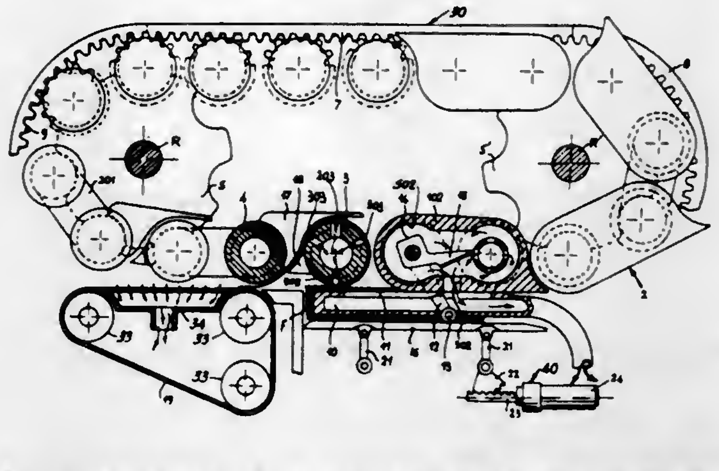
### 3,761,076
## PAPER FEEDER FOR PACKAGING MACHINES
**Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.**
**Filed Mar. 24, 1972, Ser. No. 237,684**
**Claims priority, application Italy, Mar. 25, 1971, 12591 A/71**
**Int. Cl. B65h** *3/08*
**U.S. Cl. 271—27** **7 Claims**

Apparatus for feeding sheets of material, which comprises a pair of spaced endless chains, a plurality of pairs of rollers mounted on said endless chains, means for driving said endless

chains along a predetermined path including at least one rectilinear portion, a supply of sheets of material mounted adjacent said rectilinear portion of said predetermined path, means for rotating the rollers about their axes in a direction such that the tangential component of the rotary motion of the portion of the rollers adjacent the sheets of material is opposed to the motion of the rollers along the rectilinear path, means for causing a sheet of material from said supply to adhere to one of said rollers and be carried partially therearound, and means mounted between the two rollers of each pair for receiving a sheet of material carried partially around said one roller and orienting it parallel to the rectilinear portion of said predetermined path.



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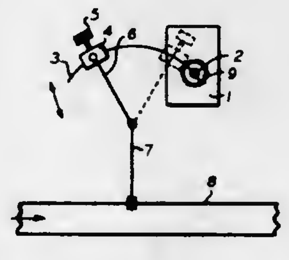
### 3,761,077
## BLAST AIR CONTROL DEVICE
**Karl-Hans Vollrath, 7031 Leipzig; Wolfgang Paul, 703 Leipzig, and Frank Fichte, 705 Leipzig, all of Germany, assignors to Veb Polygraph Leipzig, Kombinat Fur Polygraphische Maschinen und Austrustungen, Leipzig, Germany**
**Filed Sept. 23, 1971, Ser. No. 182,987**
**Int. Cl. B65h** *3/08*
**U.S. Cl. 271—26** **2 Claims**



A blast air control device for a sheet feeder with a device for the cyclic control of the blast air, which comprises a first device for the cyclic control of blast air and a second control device controlled by the feeder output as an input variable and associated with the first device. Means for regulating at least one of the pressure of the blast air and of the blast time over a wide output range of the feeder are provided in order to maintain automatically the optimum blast action.

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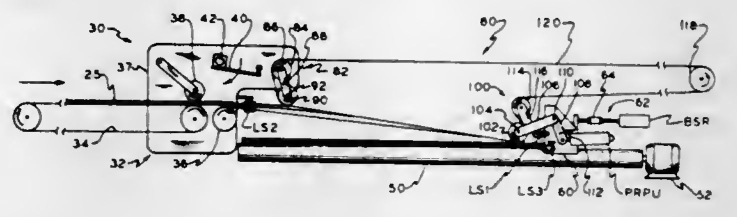
### 3,761,078
## METHOD AND APPARATUS FOR COLLECTING, STACKING AND HANDLING SHEET MATERIAL
**Frank J. DiFrank; Daniel L. Greiwe, and Walter R. Skudlarek, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**
**Filed Mar. 11, 1971, Ser. No. 123,325**
**Int. Cl. B65h** *29/68*
**U.S. Cl. 271—68** **24 Claims**

In a preferred embodiment of the invention a conveyor means delivers sheet material to a discharge station adjacent to and above a platform on which the sheets are to be stacked. The conveyor means includes a transportation conveyor such as a shingling conveyor, a feed out roll means below the sheet material and a gate pull roll means above the sheet material. The platform means may be a roller type conveyor disposed at right angles to the shingling conveyor. Overhead pull belt means above the platform engages the upper side of sheet material issuing from the discharge station to pull the sheet material into stacked position. The pull belt means is operable to establish contact with the upper side of the sheet material before an underside of the sheet material terminates contact with the feed roll. The pull belt means maintains contact with the upper side of the sheet material until the material is in the stack to prevent any free flight of the material from the discharge station to the stack.



Means are provided for sensing the stack height on the platform and a gate means at the discharge station is operative to interrupt flow of sheet material from the discharge station to the platform in response to a signal from the stack height sensing means. The last sheet out of the discharge station to complete a stack is also sensed. In response to a signal from the last sheet out sensor the overhead pull belt means is lifted, a back stop is retracted, and the roller conveyor is energized to move the stack out of the stack area. The removal of the stack from the stack area is sensed to resume normal operations.

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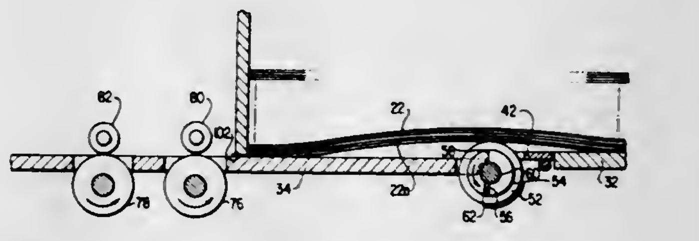
### 3,761,079
## DOCUMENT FEEDING MECHANISM
**Leo L. Azure, Jr., Richland, Wash., assignor to Automata Corporation, Richland, Wash.**
**Filed Mar. 5, 1971, Ser. No. 121,411**
**Int. Cl. B65h** *3/06*
**U.S. Cl. 271—41** **28 Claims**



A feeding mechanism receives a stack of documents, such as data-bearing cards, in a hopper, the hopper defining a feed throat through which the cards are fed individually and in succession. A feed roller is positioned for engaging the lowermost one of the stacks of cards, generally centrally of the planar surface thereof, the cards tending to bow about the feed roller and toward the support surface. The initial feeding effect of the feed roller in each cycle is to buckle or spring the card engaged thereby away from the stack and toward the support surface, thereby breaking frictional contact between that card and the adjacent card of the stack, greatly facilitating the feed operation. Drive rollers receive each card as it is fed through the throat from the hopper and transport the card from the hopper. In one embodiment, the feed roller is driven through a lost motion clutch from a drive shaft, in turn driven at a constant rotational speed. By virtue of the lost motion clutch, and the relative surface tangential velocities of the drive rollers and the feed rollers, the cards of the stack are fed individually and in succession, with uniform spacing between the trailing and leading edges of successive cards regardless of the lengths of the cards. Means are provided in the support surface of the hopper for separating the stack from the feed roller, thereby to interrupt the feed cycle. In a second embodiment of the invention, the feed roller is driven at a constant speed without the use of a lost motion clutch, and control means are provided for automatically effecting the separation of the stacks of cards from the feed roller. The automatic control means includes suitable detection means for enabling the feed means to feed successive cards of the stack, and thus provide the individual and successive feeding of the cards with the uniform spacing therebetween as aforenoted. In a typical application, the drive rollers drive the card through a sensing station, such as for optical sensing of indicia presented on the cards, and provide a stabilizing control on the card in the region of the sensing station for improving the accuracy of the sensing operation.

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### 3,761,080

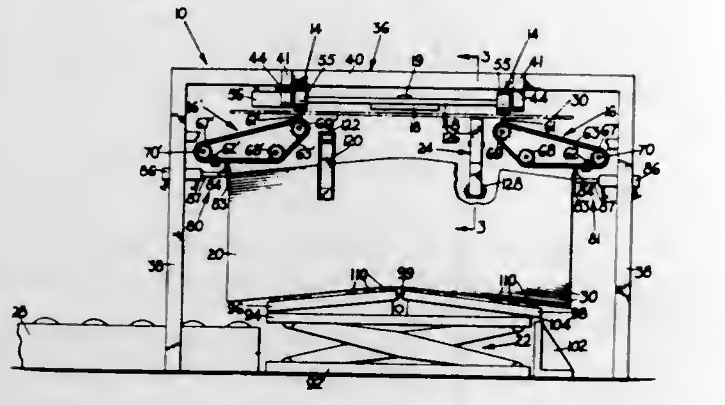
### SHEET STACKING APPARATUS

**Charles L. Larson, Grants Pass, Oreg., assignor to Jeddeloh Bros. Sweed Mills, Inc., Gold Hill, Oreg.**

**Filed May 21, 1971, Ser. No. 145,622**

**Int. Cl. B65h** *31/10, 31/38*

**U.S. Cl. 271—88** **5 Claims**



Apparatus for stacking flexible sheets, such as veneer sheets, in a uniform, aligned stack. Means are provided for conveying individual sheets to a location above an elevated stacking platform, and for lowering or dropping the sheets onto the platform. The center of the stacking platform is crowned along its transverse axis, so that sheets deposited thereon will be bent, and thereby acquire greater stiffness, along that axis. Means is also provided for lowering the platform as additional sheets accummulate, so that the top of the resulting stack is maintained at a predetermined level. A stationary fence, provided along one side of the stack, defines an aligned position for that side. An impact arm is provided on the opposite side of the stack to impact the edges of the uppermost sheets and push them against the stationary fence, and thereby into alignment. The stiffness imparted to the sheets by being bent allows them to be driven into contact with the fence without damage to their edges.

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### 3,761,081

### EXERCISING DEVICE

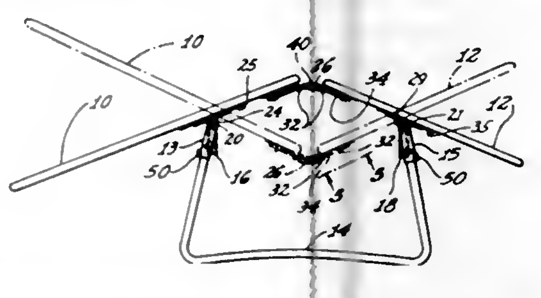
**Clarence C. Simmons, 1722 N. Winona, Apt. 203, Los Angeles, Calif.**

**Filed Feb. 24, 1971, Ser. No. 118,242**

**Int. Cl. A63b** *23/02*

**U.S. Cl. 272—58** **11 Claims**

An exercising device is provided in which two platforms are pivotally mounted on a support frame for individual angular movement about respective pairs of transverse axes, and in which the two platforms are pivotally interconnected through a universal coupling joint so as to provide limited radial movement of the platforms, limited up and down movement, limited lateral and diagonal movement, and any combinations thereof, for more effective exercising and slimming of the person using the device, particularly at the waist area.



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### 3,761,082

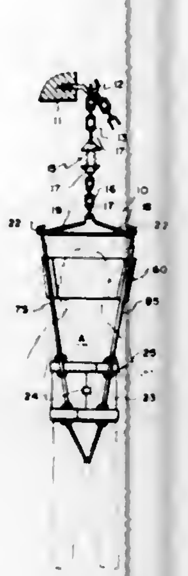
### HARNESS ASSEMBLY FOR EXERCISER AND WALKER DEVICES

**Curtis Wallace Barthel, Jr., 114 S. Humphrey, Oak Park, Ill.**

**Division of Ser. No. 95,234, Dec. 4, 1970, Pat. No. 3,721,436. This application Dec. 5, 1972, Ser. No. 312,253**

**Int. Cl. A61h** *3/00*

**U.S. Cl. 272—70** **4 Claims**



A harness assembly is provided for use with an exerciser and walker apparatus which is mounted on mounting means and accommodates the torso of the user disposed therein, the harness assembly including a chest strap for engagement above the upper extremity of a torso, a waist strap for engagement about the waist of the torso, head and shoulder restraint means, a plurality of suspension straps interconnecting the chest strap, waist strap and head and shoulder restraint means, the suspension straps including connecting means for extending the harness and the lower ends of the suspension straps connected to the waist strap, and a pair of leg straps interconnecting the rear and front portions respectively, of the waist strap, thereby to secure the waist about the lower extremity of the torso.

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### 3,761,083

### SPRING RESISTANT TYPE EXERCISING DEVICE

**Norman E. Buchner, 2714 S. Florence Dr., Tulsa, Okla.**

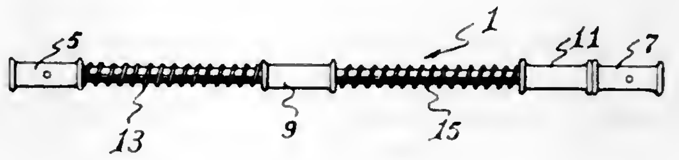
**Filed Sept. 29, 1970, Ser. No. 76,542**

**Int. Cl. A63b** *21/00*

**U.S. Cl. 272—83 R** **2 Claims**

An exercising device comprises a rod having handgrips fixed at each end and a pair of intermediate handgrips slidable on the rod. Each of the handles has substantially the same external configuration. Coil compression springs are disposed between one of the fixed handgrips and the adjacent slidable handgrip, and between the two slidable handgrips. By the selection of handgrips, the user can exert compressive force against one or both springs, or tensile force against one or

both springs. Two different spring strengths in each direction are thus available and when the springs themselves are of different strengths, then three different spring strengths are available in each direction.



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### 3,761,084

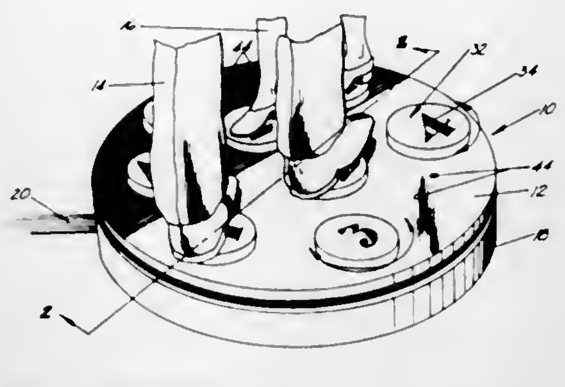
### BALANCE BOARD GAME

**Edward R. Dieckmann, 9643 Montgomery Rd., Cincinnati, Ohio**

**Filed Aug. 5, 1971, Ser. No. 169,406**

**Int. Cl. A63f** *3/00;* **A63b** *23/02*

**U.S. Cl. 273—1 R** **13 Claims**



A skill developing and recreational balance board game including a freely rotating and tiltable standing platform of appropriate size to allow two persons to stand uprightly thereon, a plurality of numbered occupant stepping blocks rotatably secured to the upper surface of the platform, and cards for selecting two of the rotating blocks to be occupied by the feet of each player, the two players standing on the platform being apprised from the cards, each card bearing a sequence of numbers, as to the sequence in which they are to place their feet on certain ones of said occupant stepping blocks, the blocks rotating freely as feet are placed thereon and the platform rotating and tilting as the players change position.

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### 3,761,085

### TABLE TENNIS PRACTICE AND GAME EQUIPMENT

**Jay E. Cook, Box 87, Cockeysville, Md.**

**Filed Aug. 23, 1971, Ser. No. 173,798**

**Int. Cl. A63b** *39/00*

**U.S. Cl. 273—30** **14 Claims**

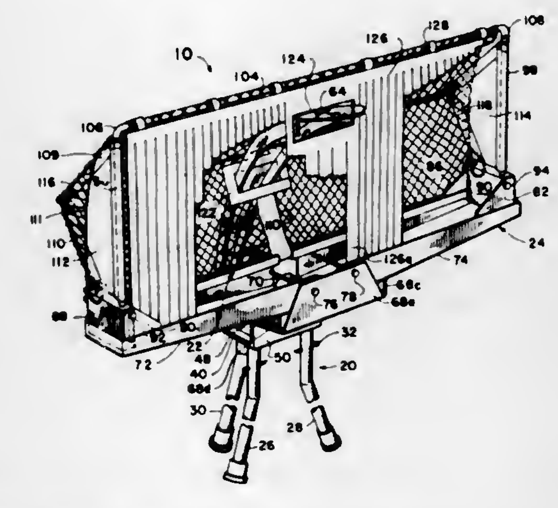

Table tennis practice and game equipment comprising a quick knock-down, quick-reassembly ball receiving and projecting unit, including tripod-mounted net, frame, and projector, the whole adapted for free standing deployment at one end of a table tennis table when in use, and for compact folding for shipment or storage when not in use; ball projection elevation angle adjustment is by tipping the ball receiving and ball projecting units together.

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### 3,761,086

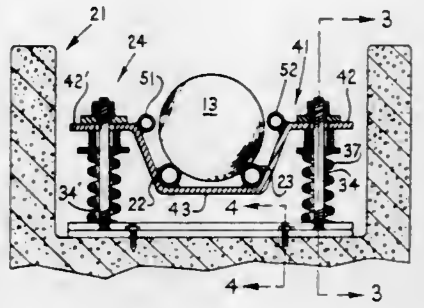
### BOWLING BALL RETURN TRACK SYSTEM

**Robert A. Miller, 987 Linden Ave., South San Francisco, Calif.**

**Filed May 31, 1972, Ser. No. 258,325**

**Int. Cl. A63d** *1/08*

**U.S. Cl. 273—47** **4 Claims**



A track system for bowling ball return in bowling alleys including a limitedly resilient track mounting for accommodating the shocks of ball bounce during return.

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### 3,761,087

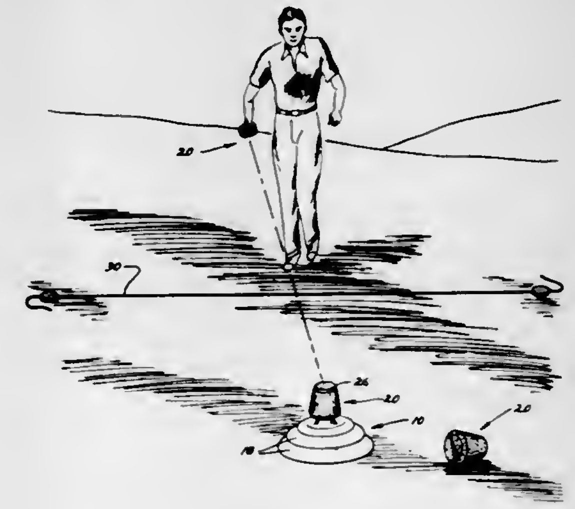
### FRUSTRUM SHAPED TARGET AND PROJECTILE

**Maurice J. Meyer, St. Paul, Minn., assignor to M M Industries, Inc., St. Paul, Minn.**

**Filed Apr. 23, 1971, Ser. No. 136,822**

**Int. Cl. A63b**

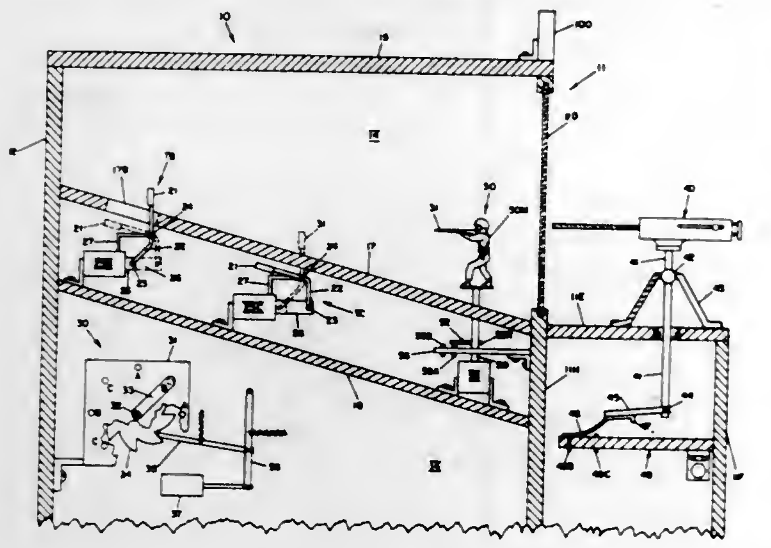
**U.S. Cl. 273—95 R** **5 Claims**



A vigorous action game is played with: (1) a circular, mound shaped plate supported on the ground and having an elevated flat horizontal supporting surface in the center thereof and a plurality of concentric, adjacent outwardly and downwardly arranged flutes; and (2) a plurality of frustums having rounded or relieved edges, one to each of three or more players. One player is designated as "IT" and balances his frustum on the flat supporting surface of the plate. Each of the others in turn tosses his frustum from behind a goal line at the plate to attempt to dislodge IT's frustum. The object of the game for each of these players is to retrieve his frustum and retreat behind the goal line without being tagged by IT. IT may tag only when his frustum is in place on the supporting surface of the plate.

### 3,761,088
### SHOOTING GALLERY APPARATUS IN WHICH A PROGRAMMED ROBOT COMPETES WITH THE OPERATOR

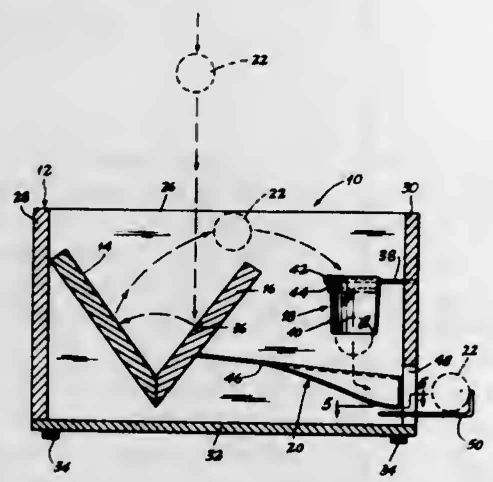
**Richard L. Brown, Bellevue, Nebr., assignor to Midway Manufacturing Company, Schiller Park, Ill.**
**Filed May 3, 1972, Ser. No. 249,824**
**Int. Cl. F41j** *9/00*
**U.S. Cl. 273—101.2** **12 Claims**



There is provided amusement apparatus enabling an externally rearwardly positioned operator to peer forwardly into an upright hollow housing and containing therewithin at least one target that is scoreably negotiatable by the operator with a manipulatable weapon attached to the housing. The housed target is also independently scoreably negotiatable by a programmed visible robot which seemingly to the operator takes aim and actively competes with him for the same target. Preferred embodiments include a plurality of distinct target locations, scheduling for automatically briefly displaying individual targets according to a predetermined schedule whereby the operator and robot might simultaneously compete for being the first to score a same target, an indicator to indicate the relative success of the operator and the robot of negotiating the target, reversing apparatus for the robot program relative to the targets presentation schedule thereby frustrating the operator's attempt to anticipate the robot, and handicaps to sharpen the robot and operator competition according to the operator's demonstrated weapon skill.

### 3,761,089
### RICOCHETTING BASKETBALL APPARATUS

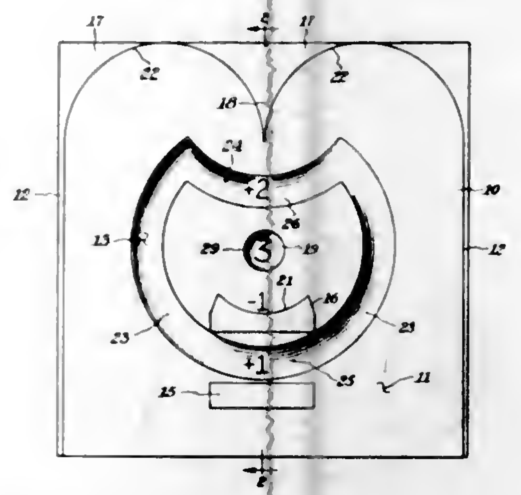
**Gary R. Slane, 12667 Olive St. Rd., St. Louis, Mo.**
**Filed July 21, 1971, Ser. No. 164,608**
**Int. Cl. A63b** *72/00*
**U.S. Cl. 273—105 R** **13 Claims**



There is disclosed a game designed to use relatively small objects in a manner requiring direct action on the part of a participant or player challenging to finger dexterity, hand and eye coordination, and three-dimensional vision. A small, open-top box adapted to be disposed on a table, and the like, is provided with two upwardly facing surfaces placed at a predetermined angle to each other, as approximately 65°, so that a small ball will be directed into a small basket also in the box near the surfaces when dropped from a selected height onto the surface closer to the basket. A ball return is provided.

### 3,761,090
### BOWLING TARGET

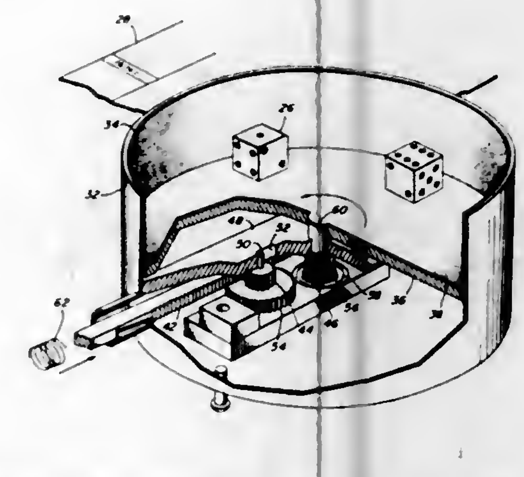
**Frank Nelson, Commodore, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y.**
**Filed Mar. 29, 1972, Ser. No. 239,285**
**Int. Cl. A63b** *71/00*
**U.S. Cl. 273—127 B** **2 Claims**



A bowling target for use in a competitive bowling game with two or more players. The face of the target is on a plane inclined at an acute angle to the horizontal surface on which the target rests, with a groove on the face of an irregular circular shape in which the ball may roll and rest. A slight ramp is placed before the front portion of the groove to deflect the ball over that portion of the groove, into the central area of the target face, where a concave recess in the center of the target face will retain a ball which barely rolls into said recess. The rear of the target is fitted with shaped protruding end walls of a concave shape. Various sections of the target face are marked with premium or penalty points.

### 3,761,091
### BOARD GAME APPARATUS

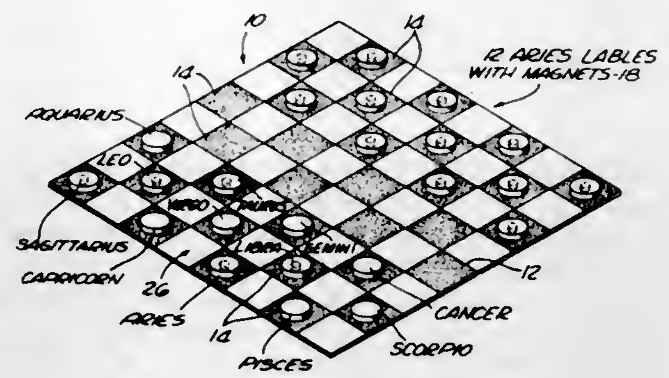
**Nathan Zohn, 59 Manchester Rd., Brookline, Mass.**
**Filed Dec. 13, 1971, Ser. No. 207,366**
**Int. Cl. A63f** *3/00*
**U.S. Cl. 273—130 H** **1 Claim**



A housing is provided with a flat playing surface at least a portion of which is transparent and bearing a plurality of playing spaces identified by dice-related numbers with different betting odds. Below the playing surface and within the housing is a rotary table mounted below the transparent portion of the playing surface and in close proximity to surrounding cylindrical side walls. A plunger actuated mechanism is provided for rotating the table to spin dice in a random fashion. The game is played by each participant placing chips or the like on a selected space on the playing board. The numbered spaces on the board correspond to different number combinations on the dice and the player wins whenever a number combination comes up on the dice which corresponds with the numbered space on the board on which he has placed his chips.

### 3,761,092
### MAGNETIC CHECKERS GAME

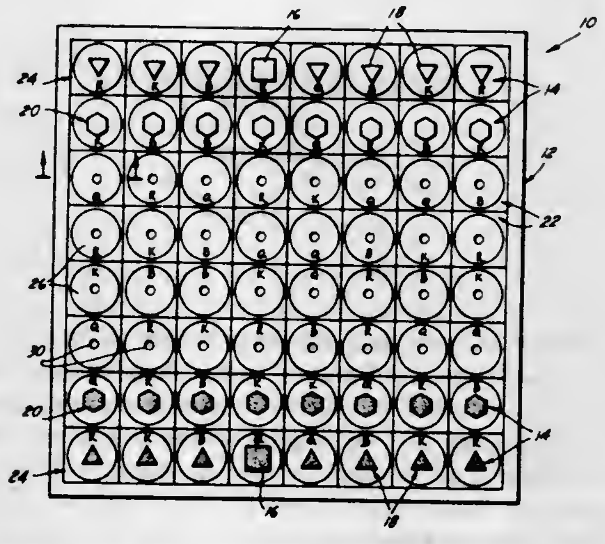
**Maxwell E. Shieff, 409 N. Palm Dr., Beverly Hills, Calif.**
**Continuation-in-part of Ser. No. 855,545, Sept. 5, 1969, abandoned. This application June 1, 1971, Ser. No. 148,789**
**Int. Cl. A63f** *3/02*
**U.S. Cl. 273—131 AD** **6 Claims**



A game including two sets of playing pieces each including 12 pieces. Each of the pieces has embedded in it a magnet having the poles oriented so that the north pole is at one side of the piece and the south pole at the other side. Each of the pieces may be labeled with one of the 12 signs of the zodiac. The magnets are oriented with positive pole up or down relative to the label so that each piece is related to other pieces as to attraction or repulsion in conformity with affinities or nonaffinities between respective signs of the zodiac. Instead of bearing signs of the zodiac, pieces may bear an identifying number, each set having pieces with magnets oppositely oriented. Play is similar to checkers, capture of a piece being by way of magnetic attraction and loss by way of magnetic repulsion.

### 3,761,093
### CHESS GAME APPARATUS

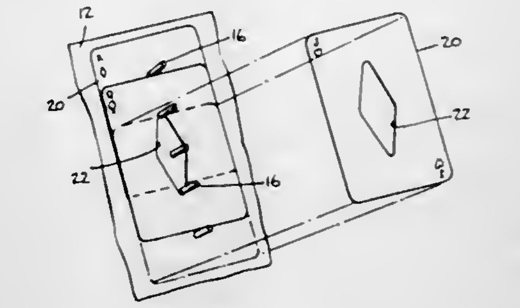
**Fred J. Migliore, 840 Palisades Ave., Yonkers, N.Y.**
**Filed July 21, 1971, Ser. No. 164,777**
**Int. Cl. A63f** *3/02*
**U.S. Cl. 273—131 AB** **5 Claims**



A chess game is provided in which the game board is characterized by indicia on the playing spaces. Each indicium represents a conventional chess playing piece such as a queen, rook, bishop and knight. A new type of playing piece is employed and is adapted to be moved from one space bearing an indicium to another space on the game board. The direction of movement of this piece from the first space is in a direction equivalent to the direction of movement of the conventional chess piece marked on that space. A plurality of such pieces are included, preferably in place of the conventional queens, rooks, bishops and knights. The direction of movement of all of these pieces is controlled by the indicia on the spaces which they occupy at any given time during the course of the game. Further challenge is provided by including interchangeable indicia bearing members for selective placement on the playing spaces at the start of the game.

### 3,761,094
### COMBINED CARD GAME APPARATUS AND PLAYING CARDS

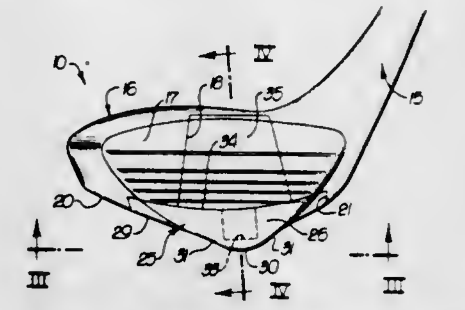
**Brice Belisle, 230 E. 9th St., New York, N.Y.**
**Filed Dec. 1, 1971, Ser. No. 203,642**
**Int. Cl. A63f** *1/10*
**U.S. Cl. 273—148 A** **6 Claims**



A device for holding and playing cards comprising a stand having a face element provided with a plurality of spaced parallel rows of pegs extending therefrom, in combination with a deck of playing cards provided with identical central apertures by which the cards are individually and removeably mounted on the pegs so that they are in alignment on the face element, with the cards being overlapped so that each card is sufficiently exposed from behind its overlapping card to show its suit and value.

### 3,761,095
### GOLF CLUB HEAD WITH SOLE PLATE-KEEL ATTACHMENT

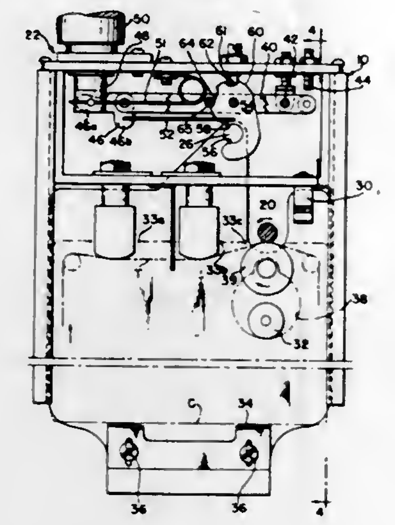
**Stanley C. Thompson, 2707 S. Fairfax Ave., Culver City, Calif.**
**Continuation of Ser. No. 6,443, Dec. 28, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,393**
**Int. Cl. A63b** *53/04*
**U.S. Cl. 273—174** **1 Claim**



A head for a golf club includes a wood body with a cutout in the lower surface thereof for receiving a sole plate, having a longitudinal keel with concave sides, to lower the center of gravity, to provide minimum ground contact, to stabilize the line of travel and to set up a favorable air flow along the bottom of the head for separating the grass as the club is swung. The sole plate may be provided with three upwardly opening cavities above the keel into which plugs may be inserted during manufacture to selectively vary the weight of the completed head.

### 3,761,096
### MULTIPLE TAPE APPARATUS

**Ernest C. Burkhart, 4041 Home Rd., Bellingham, Wash.**
**Division of Ser. No. 23,764, March 30, 1970. This application Dec. 13, 1971, Ser. No. 207,009**
**Int. Cl. G11b** *15/29*
**U.S. Cl. 274—4 F** **11 Claims**



A method of forming sentences on a multi-tape playback machine by rapidly switching in a programmed sequence between various tapes on which fragments are recorded. Another feature is the provision of a tray which is adapted to accommodate various types of tape cartridges for use in a multi-tape machine. Still another feature is the provision of a rapid cartridge moving mechanism for engaging and disengaging the tape cartridges with the drive and playback head.

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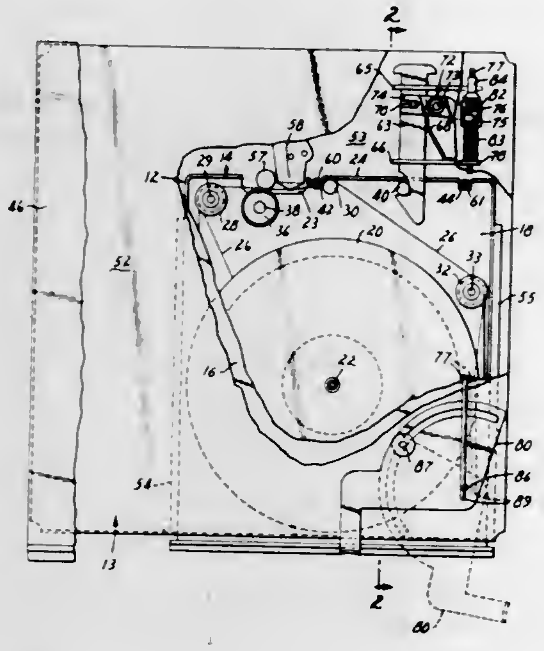
### 3,761,097
### TAPE CARTRIDGE POSITIONER

**Maynard P. Borman, Falcon Heights, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.**
**Continuation of Ser. No. 843,695, July 22, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,463**
**Int. Cl. G11b** *5/00;* **G03b** *1/04;* **G11b** *15/32*
**U.S. Cl. 274—4 C** **7 Claims**



A tape recording and/or reproducing machine in which tape extending across an opening in one face of a tape cartridge is positively aligned with a capstan and a transducer supported on the machine by pulling the cartridge to draw the cartridge face against abutments supported on the machine.

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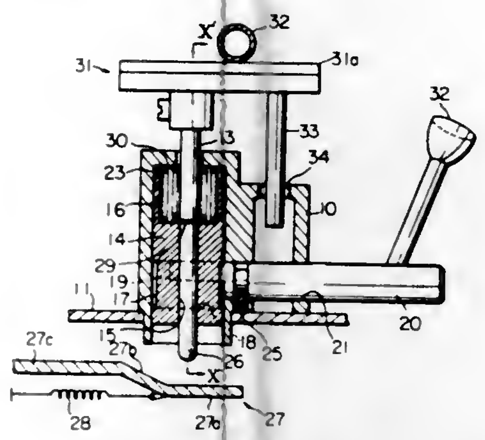
### 3,761,098
### PICK-UP ARM ELEVATOR

**Yoshiro Nishiwaki, and Masae Murata, both of Kanagawa-ku, Yokohama City, Japan, assignors to Victor Company of Japan, Limited, Yokohama City, Japan**
**Filed Sept. 1, 1972, Ser. No. 285,597**
**Int. Cl. G11b** *3/18, 17/06*
**U.S. Cl. 274—23 R** **4 Claims**



A pick-up arm elevator for a record player, comprising a piston member downward mechanically biased and adapted to slowly move due to a brake force applied thereto caused by a viscous liquid, an elevating rod generally coaxially coupled with the piston member and softly downward mechanically biased so that the elevating rod can move up separately from the piston member and move down together with the piston member, and a pick-up arm table mounted on an upper end of the elevating rod for carrying thereon the pick-up arm of the record player. The piston member is moved up and down through a manual handle and, on the other hand, the elevating rod is moved up and down by either the piston member or through a suitable linkage by the automatic pick-up arm returning apparatus of the record player.

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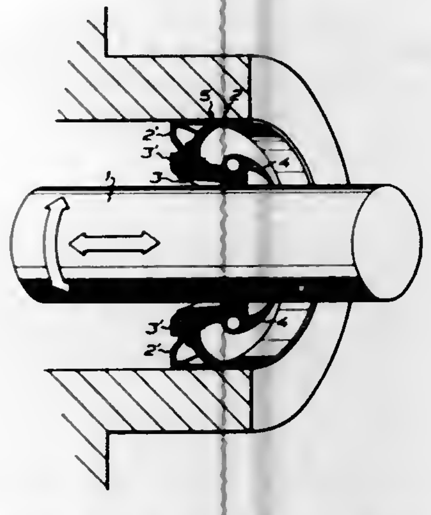
### 3,761,099
### SEALS FOR ROTARY AND AXIALLY MOVABLE SHAFTS

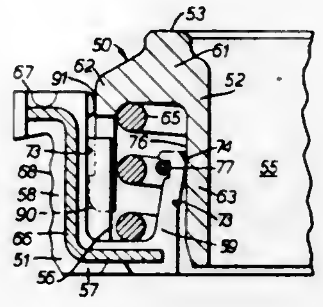
**Hans John Olof Hansson, Halmstad, Sweden, assignor to Lars Jan Herman Hanson and Anders Walter Andersson, Halmstead, Sweden**
**Filed Dec. 10, 1970, Ser. No. 96,958**
**Int. Cl. F16j** *15/32*
**U.S. Cl. 277—37** **1 Claim**



A seal for a rotary and axially movable shaft comprises a stationary outer element and an inner element axially guided in said outer element but freely rotatable therein, said inner element consisting of a sealing lip which is in elastic engagement with the shaft, a main portion in sealing elastic engagement with the outer element, and a collar interconnecting said two details, the engagement of the sealing lip with the shaft being stronger than that of the main portion with the outer element.

### 3,761,100
### FLUID SEAL ASSEMBLY

**Kenneth Roy Taylor, Glamorgan, and Stanley Wallace Tovey, Cardiff, both of Wales, assignors to Aeroquip (U.K.) Limited, Redditch, Worcestershire, England**
**Filed Feb. 14, 1972, Ser. No. 226,180**
**Claims priority, application Great Britain, Feb. 17, 1971, 4,850/71; June 16, 1971, 28,099/71**
**Int. Cl. F16j** *15/34*
**U.S. Cl. 277—65** **10 Claims**



A fluid face seal assembly consisting of two interfitting annular members of channel cross section, one of the members carrying the face seal and the other being for mounting the assembly. A lip seal is provided between the adjacent inner walls of the members, means are provided permitting axial relative movement of the members without relative rotation, and resilient means are provided to bias the members axially apart.

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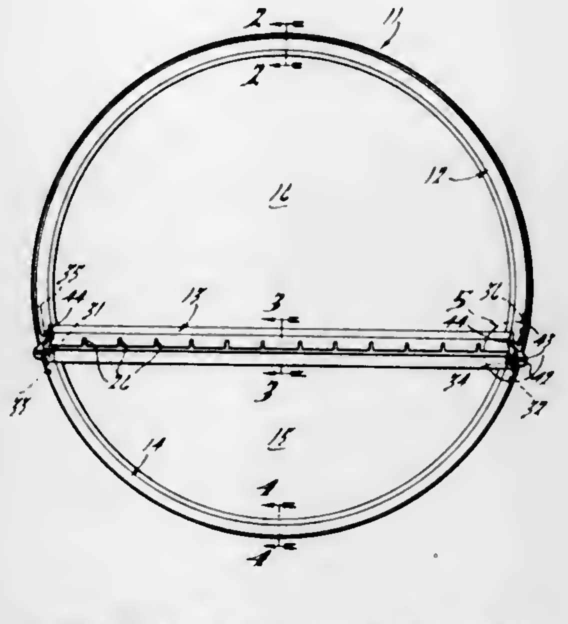
### 3,761,101
### TURBINE REGENERATIVE SEAL AND METHOD OF MAKING SAME

**William E. Good, Cinnaminson, N.J.; Leonard Di Grasso, Philadelphia, Pa., and James D. Hoffman, Santa Monica, Calif., assignors to Kelsey-Hayes Company, Romulus, Mich.**
**Filed Mar. 6, 1972, Ser. No. 231,975**
**Int. Cl. F16j** *15/34*
**U.S. Cl. 277—96** **22 Claims**



A thin, compliant seal for the regenerator of a gas turbine engine or the like and a method of making same. The seal is comprised of a plurality of individual seal elements that are interrelated with each other at their ends to preclude leakage. Two embodiments of end relationships are shown. In one embodiment two of the seal elements have interengaging portions that provide a loose connection between the elements. In the other embodiment, each of the seal ends carries a locating portion that coacts with means on the housing of the regenerator for providing a loose interrelationship between the seal ends. The end interrelationship of the seal elements in each embodiment permits relatively free movement of the seal elements under the influence of thermal expansion. This precludes warping of the seal as would occur if the seal were constructed from a single piece or if the seal was formed from pieces that were rigidly connected to each other. Each of the seal elements includes a first relatively thin, compliant part that is provided with a wear resistant coating that engages a rotating element. The coating is applied to a lightly oxidized surface of a relatively thin substrate which substrate is unstressed to reduce warpage. Cantilevered springs form another piece of each element. These cantilevered springs sealingly engage a static mating surface of the regenerator and resiliently bias the coated surface first piece into sealing engagement with the rotating element. The coating, as has been noted, is applied to an oxidized surface of the first part. In a preferred embodiment the coating is applied after the cantilevered spring is assembled to the first part. This subassembly is then held in a fixture and is preheated. A relatively thin transition layer of coating material is applied to the oxidized surface. The transition coating is formed from a material that will have an exothermic reaction with the oxidized surface. The final, wear resistant coating is then applied to the transition coating while maintaining the temperature and preventing excessive heating and, accordingly, warpage. The use of a thin seal and relatively thin coatings insures compliance of the seal with the mating surface of the rotating element.

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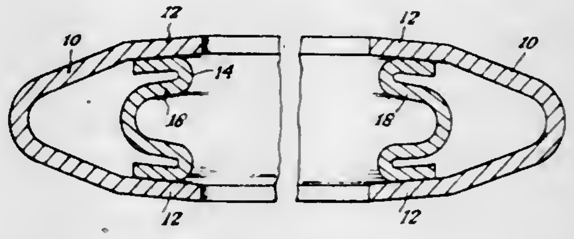
### 3,761,102
### SEALING MEANS

**Terence Peter Nicholson, Stocksfield, England, assignor to The Corrugated Packing and Sheet Metal Company Limited**
**Filed July 19, 1971, Ser. No. 163,929**
**Claims priority, application Great Britain, July 17, 1970, 34,862/70**
**Int. Cl. F16j** *15/08*
**U.S. Cl. 277—206 R** **2 Claims**



A sealing ring which is C-shaped in cross-section has an annular spring member located between the arms of the C and tending to force them outwardly. The spring member may be W-shaped in cross-section with the outer arms of the W lying against the ring.

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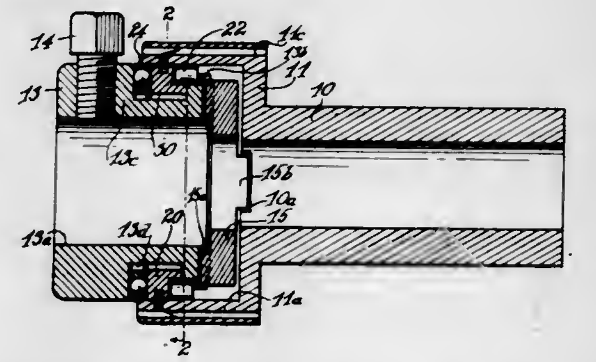
### 3,761,103
### TOOL HOLDERS

**Casimir M. Zajdel, 1527 N. Lockwood Ave., Chicago, Ill.**
**Filed Dec. 1, 1971, Ser. No. 203,750**
**Int. Cl. B23b** *31/08*
**U.S. Cl. 279—1 J** **10 Claims**



A tool holder movable toward work cut or reamed by the tool. The holder has a frontal head containing a tool carrier;

and the latter is floatingly disposed in a marginal spring contained in the head. A coupling keeps the tool carrier from turning relative to the head, but allows the tool carrier to deviate laterally in the floating leeway in the event of irregularities or off-center conditions in the work. An intermediate ring between the tool carrier and the outer head portion has a feature to lock the tool carrier endwise in the head.

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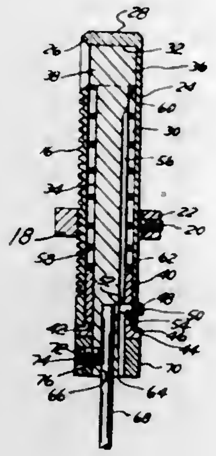
### 3,761,104
### EXTENSION TOOL HOLDER

**Louis A. Kubicek, Ypsilanti, Mich., assignor to Burr-Ban Tool Service Company, Detroit, Mich.**

**Division of Ser. No. 881,060, Dec. 22, 1969, Pat. No. 3,661,473. This application Nov. 11, 1971, Ser. No. 197,663**

**Int. Cl. B23c** *31/04*

**U.S. Cl. 279—19.7** **10 Claims**



An extension tool holder having a cylindrical outer housing adapted to be inserted into a chuck of a rotary drive machine. A tool holding rod is axially slidably mounted in a bore formed in the housing for rotation about its axis of elongation. A coil spring disposed within the bore around the rod biases the rod into the bore. During the backstroke of the machine chuck, in the deburring of holes the coil spring compresses due to the engagement of the cutting edge of the deburring tool and the edge of the hole being deburred, allowing the deburring tool to delay at the edge of the hole to adequately deburr the workpiece.

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## ERRATUM

For Class 279—2 see:
Patent No. 3,761,008

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### 3,761,105
### SAFETY-RELEASE SKI BINDING TOE-STOP MEMBER

**Robert Mimeur, Cluses, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France**

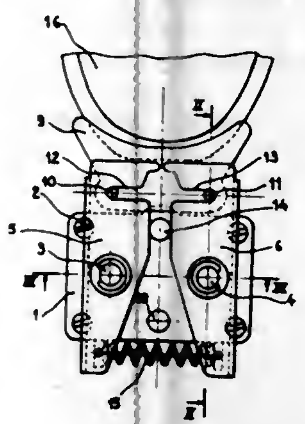
**Filed Sept. 9, 1971, Ser. No. 179,009**

**Claims priority, application France, Sept. 18, 1970, 7033992; Dec. 30, 1970, 7047300**

**Int. Cl. A63c** *9/00*

**U.S. Cl. 280—11.35 T** **6 Claims**

The boot-gripping jaw of a safety-release ski binding device has two parallel axes held and guided parallel to two vertical shafts by corresponding guide recesses in two facing channel pieces pivotally mounted about said shafts, with a spring tending to hold these pieces and the jaw in a central boot-gripping position. When the jaw is laterally displaced, one of the axes acts on its recess to pivot one of the pieces about its shaft against the action of the spring, and the jaw is held in alignment by abutment of the other axis in the other guide recess. After a certain displacement, the other axis moves out of its recess and the jaw pivots about said one axis to a boot releasing position.



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### 3,761,106
### SKI WITH MEANS FOR PREVENTING CROSSING

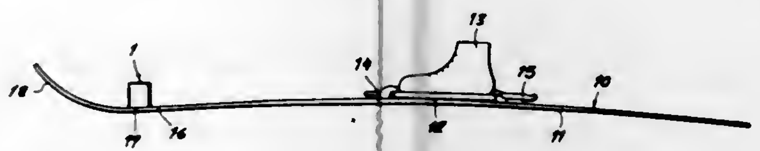
**Cunter Schwarz, Pflugstrasse, Zurich, Switzerland**

**Filed June 14, 1971, Ser. No. 152,618**

**Claims priority, application Switzerland, June 26, 1970, 9757/70**

**Int. Cl. A63c** *5/06*

**U.S. Cl. 280—11.37 E** **1 Claim**



A ski is provided with an upstanding member or body at the forward end thereof, at the junction of the upwardly turned tip with the generally horizontal or flat body of the blade, to prevent crossing of the skis in parallel-ski turning, etc. the appliance or member is secured to the ski through a cushion layer with adhesive and has upwardly converging flanks extending from the lateral edges of the blade.

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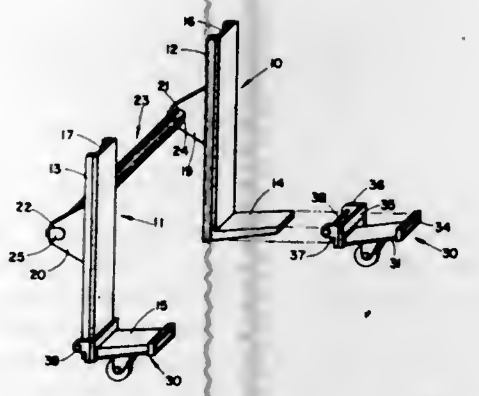
### 3,761,107
### FURNITURE-CARRYING DEVICE

**Donald B. Docherty, Rt. No. 1, Reynolds, and Paul L. Danner, Box 36, Illinois City, both of Ill.**

**Filed May 14, 1971, Ser. No. 143,404**

**Int. Cl. B65g** *7/12*; **B62b** *1/20*

**U.S. Cl. 280—34 B** **9 Claims**



A product-carrying device composed of a pair of L-shaped parallel members having upright leg portions and horizontal leg portions and detachably but rigidly interconnected by a singular cross member connected to the vertical leg portions and serving as a manual grip for carrying the device.

### 3,761,108
### MOTOR VEHICLE BODIES

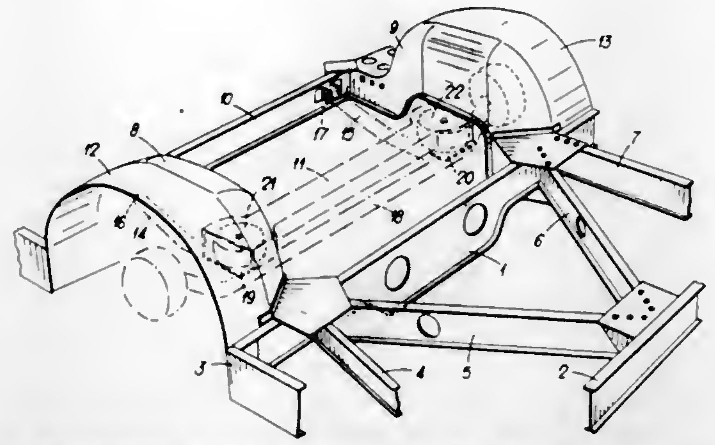
**Keith Reginald Hemmings, Adlington, England, assignor to British Leyland Truck and Bus Division Limited, Lancashire, England**

**Filed Aug. 31, 1971, Ser. No. 176,513**

Claims priority, application Great Britain, Oct. 9, 1970, **43454/70**

**Int. Cl. B62d** *23/00*

**U.S. Cl. 280—106.5 R** **6 Claims**



In an integral motor vehicle body the underframe is designed to transmit loads into the body sides, ie. the loads are not taken up entirely in the underframe.

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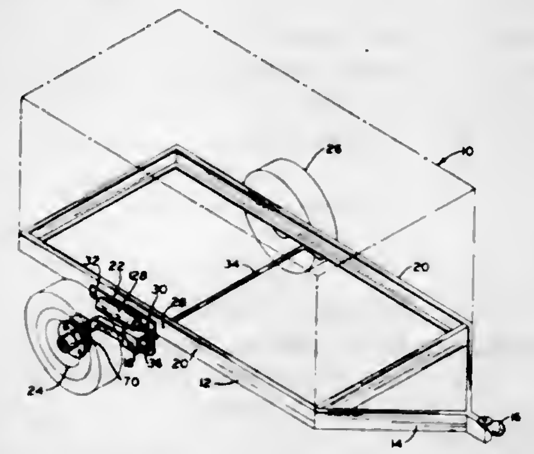
### 3,761,109
### SUSPENSION SYSTEM FOR VEHICLES

**William J. M. Campbell, Elkhart, Ind., assignor to Elkhart Bridge & Iron, Inc., Elkhart, Ind.**

**Filed Nov. 8, 1971, Ser. No. 196,683**

**Int. Cl. B60g** *11/52*

**U.S. Cl. 280—124 R** **4 Claims**



A suspension system for vehicles includes a lever mounted on a lug of the vehicle frame. The lever has a vehicle wheel mounted for rotation on an axle which is constructed transversely to one of the ends of the lever and a nonrotatable axle flange supports a brake for controlling rotation of the wheel. The lever has at its opposite end two opposed resilient means, one of the resilient means cushions the wheel to absorb both the weight of the vehicle and the ground reaction forces in one direction, and the other resilient means opposes wheel movement in a downward direction so it will not easily descend into chuckholes or the like thus adding stability to the wheel.

The resilient means can be in many different forms; among those contemplated are opposed springs of substantially different spring rate, the larger spring rate being to support the vehicle and the smaller spring rate being to oppose dropping of the wheel into chuckholes, ruts or the like. In place of springs, there is also contemplated for usage elastomeric members (known as "Ensolite") which are provided in stacks within a cylinder mounted for limited angular movement which provides a cushioning force for the wheel and also opposes movement of the wheel downwardly as previously described.

The lever has an adjustment between the resilient means and the lever end associated with the resilient means so as to control the position of the wheel relatively to the frame.

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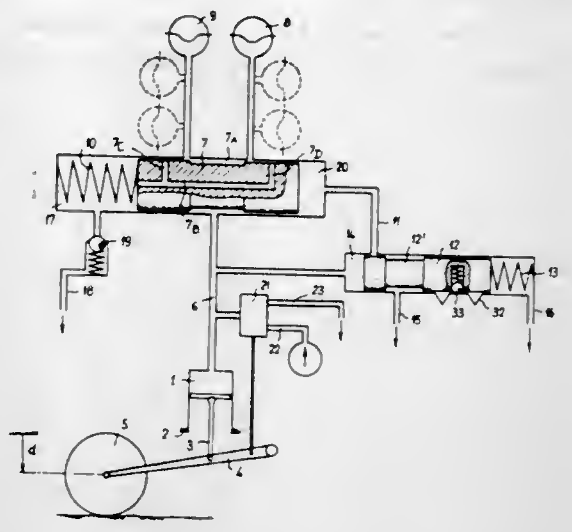
### 3,761,110
### MULTI-ACCUMULATOR HYDRAULIC SUSPENSION SYSTEM

**Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France**

**Filed Sept. 6, 1972, Ser. No. 286,669**

**Int. Cl. B60g** *11/30*

**U.S. Cl. 280—124 F** **2 Claims**



This hydro-pneumatic suspension device for motor vehicles comprising at least two accumulators set at different pressures and at least one slide valve distributor adapted to connect said accumulators having different pressures, separately and by turn, to cylinders associated with the wheels of the vehicle, said slide valve distributor being urged to a first positon by a gaged resilient member and pushed to another position by the fluid pressure in the load circuit when this pressure exceeds a predetermined threshold value, said device comprising in the circuit connecting said cylinder to said slide valve distributor a switching delay valve comprising means for holding its slide member in two predetermined positions, whereby the passage from one position to the other position of said slide member takes place according to the direction of movement at different values of the suspension pressure.

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### 3,761,111
### DEVICE FOR THE ABSORPTION OF IMPACT ENERGY ESPECIALLY FOR AUTOMOTIVE VEHICLES

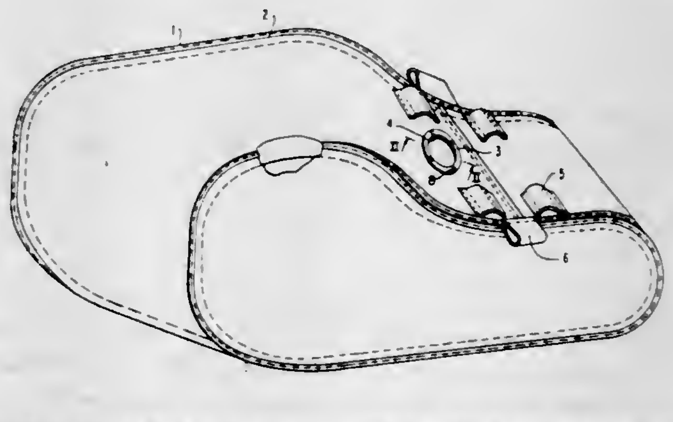
**Gustav-Wilhelm Kemper, Hachenburg, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**

**Filed Sept. 15, 1970, Ser. No. 72,312**

Claims priority, application Germany, Sept. 15, 1969, **P 19 46 607.0**

**Int. Cl. B60r** *21/10*

**U.S. Cl. 280—150 AB** **18 Claims**



A device for absorbing impact energy, especially for motor vehicles in the case of collisions, having a folding and collapsible bag which is sealed all around and made of a gastight material. A second foldable and collapsible bag which is smaller than the first-mentioned bag is disposed in the first bag so that the smaller bag is first inflated by a high-pressure generator such as a compressed air tank. The second bag can be made of porous material so that the gas pressure is controlled, whereby neither the inner nor the outer bag is subjected to excessive stress.

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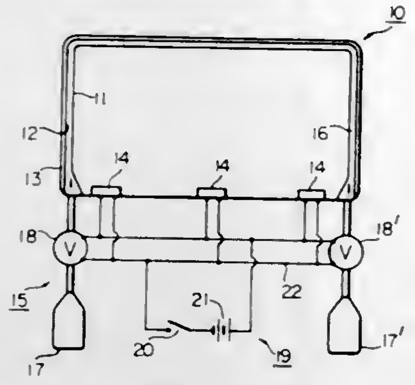
### 3,761,112
### VEHICULAR SAFETY SYSTEM

**Keizaburo Usui, and Takashi Haruna, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan**
**Filed June 16, 1971, Ser. No. 153,644**
**Claims priority, application Japan, June 26, 1970, 45/55719**
**Int. Cl. B60r** *21/08*
**U.S. Cl. 280—150 AB** **15 Claims**



A vehicular safety system for use in a vehicle having an inflatable bag for protecting a vehicle occupant from injury when a collision occurs. The safety ststem uses chemical explosives for explosively producing hot gases upon detection of the collision condition. The hot gases produced are introduced into the inflatable bag to provide an inflated shock-absorbing bag in front of the occupant. Thermal means is provided in the safety system for protecting the inflatable bag from thermal damage by the hot gases.

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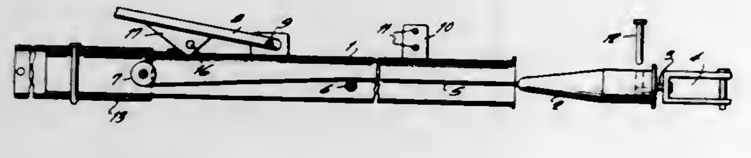
### 3,761,113
### SELF ALIGNING AND ADJUSTABLE WAGON TONGUE

**John B. Smitherman, Danville, Ind., assignor to The Raymond Lee Organization, Inc., New York, N.Y.**
**Filed Aug. 5, 1971, Ser. No. 169,188**
**Int. Cl. B60d** *1/14*
**U.S. Cl. 280—478 R** **1 Claim**



A hollow pipe is secured at one end to a wagon, and a trailer drawbar is secured to the base of a cone shaped member. A cable secured at one end to the apex of the cone member and at the other end to a movable means on the pipe is disposed intermediate its ends over rollers. Lever means tightens or loosens the cable to secure or release the member in the pipe.

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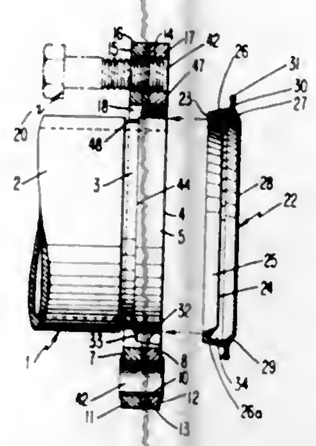
### 3,761,114
### PIPE TO FLANGE COUPLINGS

**James Blakeley, Thornhill, Ontario, Canada, assignor to Victaulic Company of Canada Ltd., Ontario, Canada**
**Continuation-in-part of Ser. No. 823,282, May 9, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,033**
**Int. Cl. F16l** *17/00*
**U.S. Cl. 285—111** **9 Claims**



Rigid coupling of a length of pipe to another length having a flange at its end or to piping appurtenances having a flanged end by employing a pressure responsive gasket formed to seal on the cylindrical surface of the first pipe length and against the surface on the flange of the other pipe end at right angles thereto. The gasket is housed in a readily applicable coupling member which has provision for engaging the pipe outwardly of the gasket and which includes a flange portion mated to the flange on the end of the other pipe section. The mated flanges have aligned bores for the passage of bolts therethrough to secure them in position for the basket to be effective. The coupling housing may be of two or more segments of a cylinder hinged together to form a complete cylinder with a key section to seat in a groove formed in the pipe. Spaced teeth may be provided on the key section for "rigid" coupling, or the leading edge of the key section may have a rounded contour for closer fit in a groove.

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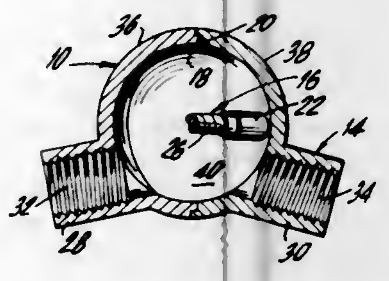
### 3,761,115
### SWIVEL CONNECTOR

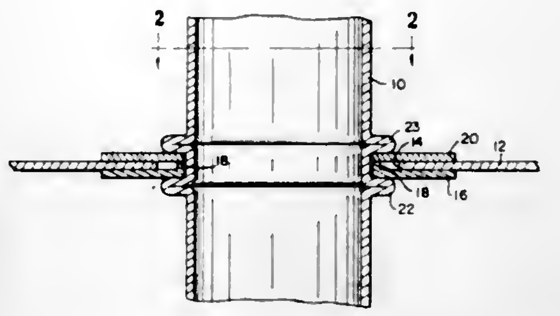
**Thomas Papasian, 5817 214th St., Bayside, N.Y.**
**Filed July 28, 1971, Ser. No. 165,633**
**Int. Cl. F16l** *27/00*
**U.S. Cl. 285—185** **10 Claims**



A swivel connector particularly for the passage of electrical cable elements therethrough includes first and second conduit parts having separate conduits with respective passages therethrough and bodies with mating surfaces which interengage and permit pivotal or swivel movement of one conduit part in respect to the other. The conduit parts are held together by clamping means which extend through a plane which is offset from the passages defined through the individual conduits when they are aligned.

### 3,761,116
### TUBE-PLATE INTERCONNECTION

**George Edward Scheitlin, and Gene Richard Hanson, Columbus, Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.**
**Filed May 22, 1972, Ser. No. 255,694**
**Int. Cl. F16l** *5/02*
**U.S. Cl. 285—192** **3 Claims**



An interconnection between a tube and a plate in which said tube is received in an opening in the plate and said tube and plate are movable radially with respect to each other, said tube and plate being radially movable with respect to the tube axis. A pair of washers are disposed on opposite sides of the plate around the tube and over the plate opening with a pair of projections on the tube holding the washers against said plate. One of said washers has a sleeve engageable with the other washer to prevent said washers from binding against the plate thereby permitting relative movement between said plate and tube.

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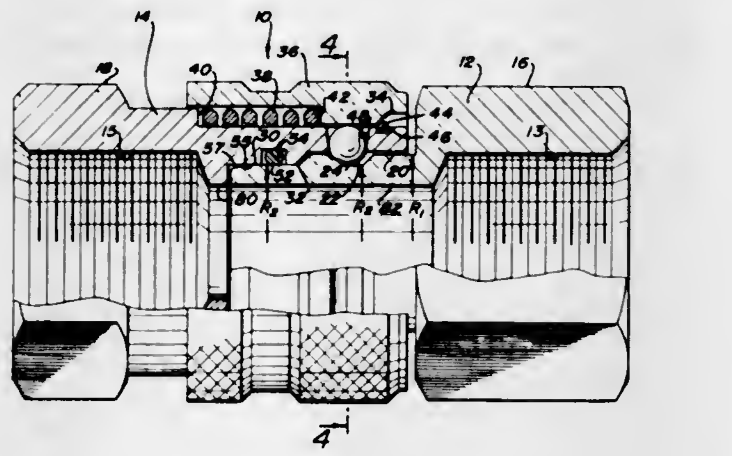
### 3,761,117
### QUICK CONNECT FITTING

**Ashok S. Shendure, Warrensville Heights, Ohio, assignor to Crawford Fitting Company, Solon, Ohio**
**Filed Apr. 19, 1972, Ser. No. 245,571**
**Int. Cl. F16l** *37/22*
**U.S. Cl. 285—277** **12 Claims**



A quick connect fitting of the type wherein a stem member is telescopically inserted into a body member with locking of the members accomplished by means of balls carried by the body member and adapted to be received in a groove of the stem member. The groove itself is defined by a flat annular bottom wall and diverging end walls. One end wall is defined by a generally frusto-conical surface. The other end wall is defined by a frusto-conical wall portion and a generally concave surface wall portion merging smoothly with the frusto-conical wall portion.

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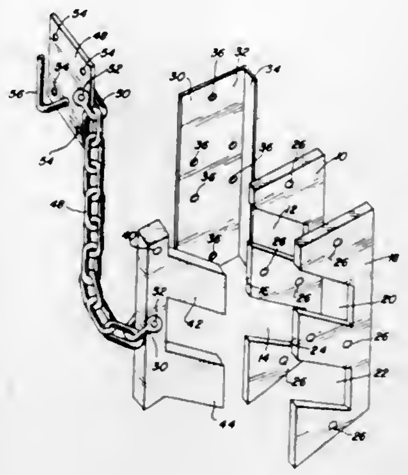
### 3,761,118
### DOOR BOLT

**Kenneth C. Westcott, 3253 N. Clifton St., Chicago, Ill.**
**Filed Sept. 1, 1971, Ser. No. 176,949**
**Int. Cl. E05c** *19/18, 1/04*
**U.S. Cl. 292—1** **8 Claims**



A door bolt device in which first and second plates connected to a door jamb and door end have non-horizontal slots which align when the door is closed. A key member located at the inside of the premises has a thickness greater than any one of the plates and has projections which are complementary with and substantially conform in shape to the slots for insertion therein to complete the lock.

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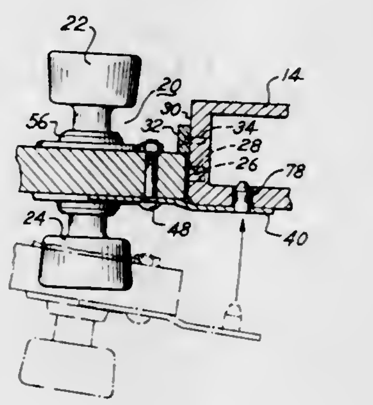
### 3,761,119
### DOOR PROTECTOR DEVICE

**Frederic C. Bennett, and Sandra J. Bennett, both of 61647 Meadowlark Ln., South Bend, Ind.**
**Filed Feb. 1, 1972, Ser. No. 222,556**
**Int. Cl. E05c** *1/06*
**U.S. Cl. 292—346** **8 Claims**



A device for preventing forced entry through a door used in conjunction with a doorjamb and a lock with a bolt interconnecting the door and jamb in which a metal plate is bolted or otherwise secured to the door overlapping the doorjamb. One or more studs are used to interconnect the plate and the adjacent face of the doorjamb to prevent the doorjamb from being forced away from the door. The studs preferably are secured to the plate and project inwardly into holes in the doorjamb. A slot, preferably of an arcuate configuration, is provided in the vertical edge of the plate on the door for receiving the doorknob shaft and surrounding plate or fixtures thereof.

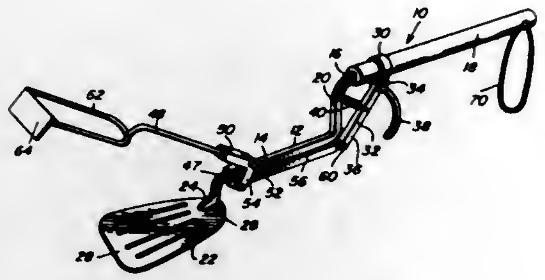
### 3,761,120
## FOOD PATTY TURNING DEVICE

**Charles E. Binkert, Quincy, Ill., assignor to A. A. Kolodziej, Quincy, Ill., a part interest**

**Filed Apr. 17, 1972, Ser. No. 244,758**

**Int. Cl. A47j** *43/28*

**U.S. Cl. 294—8** **10 Claims**



A spatula-type instrument with the usual handle-equipped broad blade configuration for placement on a food patty supporting surface and advancement of the blade along the surface toward and beneath an associated food patty. In addition to the broad blade which may be conventionally advanced beneath an associated food patty, the device includes a downwardly swingable food patty engaging or embracing arm with a downturned free end projecting endwise outwardly beyond the free outer marginal edge of the broad blade portion of the device and the arm is swingable downwardly about, or over, a food patty adjacent to which the broad blade is placed with the arm and the free downturned end thereof overlying and embracingly engaging the upper surface of the patty as well as the side thereof remote from the broad blade portion of the device. A trigger for downwardly swinging the arm is provided adjacent the handle of the device and partial actuation of the trigger is operable to swing the arm downward into operative position engaged with an associated patty while final actuation of the trigger is operative to shift the arm and its downturned free end toward the handle of the device so as to thereby drag the food patty toward and up onto the broad blade portion of the device.

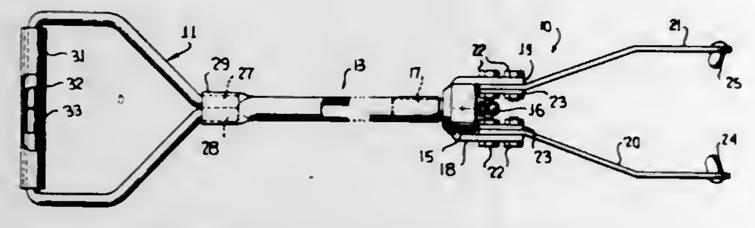
### 3,761,121
## GRIPPING TOOL WITH ROTATABLE HEAD

**Alfred E. Reid, Prospect St., Bethlehem, N.H.**

**Filed July 13, 1971, Ser. No. 162,136**

**Int. Cl. B65g** *7/12*

**U.S. Cl. 294—26** **5 Claims**



A gripping tool includes a shaft, a handle secured to one end of the shaft, and a tool head mounted for universal rotation at the opposite end of the shaft. The head includes a pair of resilient extending arms defining a gripping area into which a gripping projection extends from each arm. The tool is particularly suited for dragging standard gas cylinders over hilly terrains, the gripping projections being arranged to engage standard openings in the cylinder cap. The handle includes a freely rotatable grip extending perpendicular to the shaft.

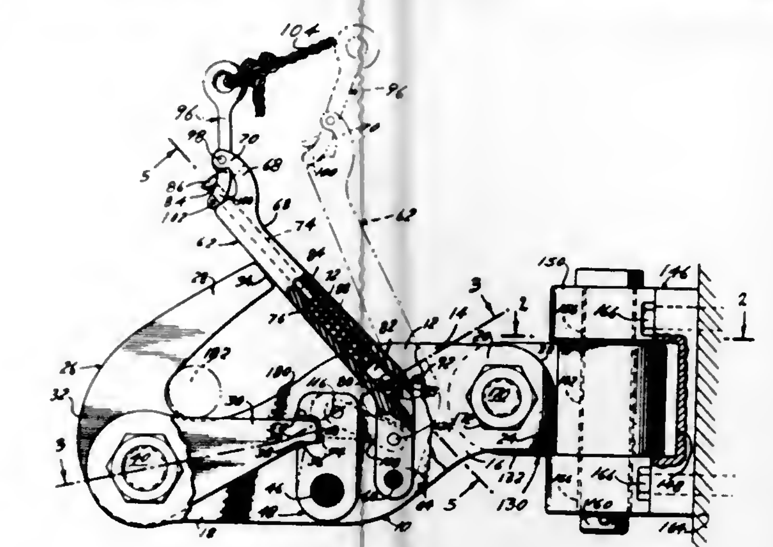
### 3,761,122
## RELEASABLE HOOK

**Irving Epstein, 4216 Shoreclub Dr., Mercer Island, Wash.**

**Filed Dec. 22, 1969, Ser. No. 886,902**

**Int. Cl. B66c** *1/34*; **B64d** *17/38*

**U.S. Cl. 294—83** **8 Claims**



In the mooring of ships and boats to a dock, it is necessary to have a line run from the ship or boat to the dock. The line can be more or less tight and must be fixed so as to allow relatively little movement of the ship or boat with respect to the dock. Then, when it is necessary to allow the ship or boat to sail away from the dock, it is necessary to disengage the line from the fastening means on the dock. This invention relates to a fastening means whereby a line can be positioned to the fastening means for securing the ship or boat adjacent to the dock. Then, the person on the dock can mechanically actuate the fastening means to allow the line to slip away from the fastening means and also to allow the ship or boat to sail away from the dock. This fastening means is identified as a releasable hook. When it is desired to have the ship or boat fixedly secured with respect to the dock, the fastening means tend to disfunction. Then, when it is desired to allow the line to be slipped and to allow the ship or boat to sail away from the dock, the operator on the dock can quickly and easily disengage the fastening means, or releasable hook, from the line.

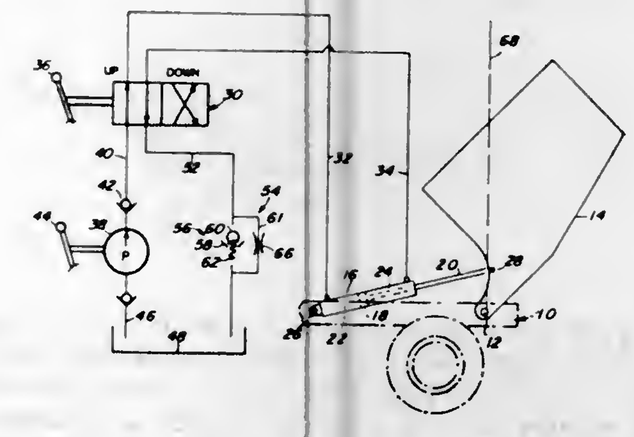
### 3,761,123
## FLOW CONTROL OF TILT CAB IN FREE FALL

**William T. Neill, Brookfield, and Roy Reynolds, Milwaukee, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.**

**Filed Dec. 10, 1971, Ser. No. 206,777**

**Int. Cl. B62d** *33/06*

**U.S. Cl. 296—28 C** **3 Claims**



In a tilting cab vehicle, a hydraulic system for raising and lowering the cab and employing a fluid-flow responsive restricter in the return line and separate from the main directional control valve for restricting fluid flow when the cab is in a free-fall condition.

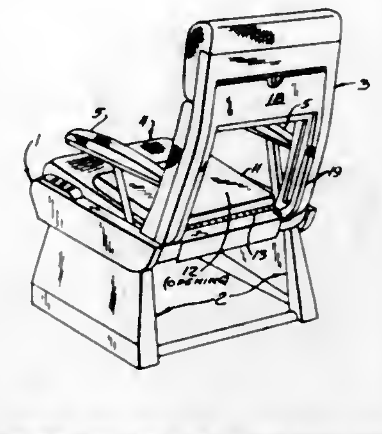
### 3,761,124
## VEHICULAR SEAT WITH FOOTREST OPENING FROM FORWARD SWINGING SEAT BACK PANEL SECTION

**Kirby B. Weik, and Edward J. Brennan, both of Bantam, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Dec. 27, 1971, Ser. No. 212,609**

**Int. Cl. A47c** *7/50, 13/00*

**U.S. Cl. 297—112** **7 Claims**



A vehicular passenger seat is provided with a special movable seat back panel section that has hinging means to permit such panel to pivot forwardly over the top of the seat cushion portion of the seating unit. The construction is such as to provide for a leg-footrest opening in the back of an unoccupied seat to be usable by a seat occupant to the rear. No tools or disassembly steps are involved in the opening or closing of the leg opening.

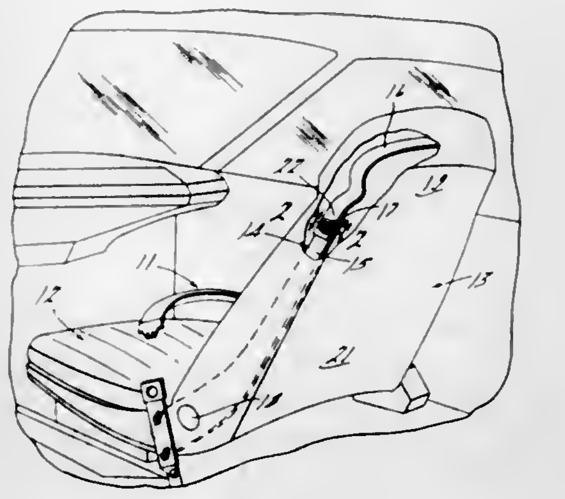
### 3,761,125
## ENERGY ABSORBING SEAT BACK

**Patrick M. Glance, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed May 12, 1972, Ser. No. 252,805**

**Int. Cl. B60r** *21/02*

**U.S. Cl. 297—216** **5 Claims**



A vehicle seat in which the side frame members are articulated intermediate their ends and are pivotally mounted on the seat cushion structure. The pivot joints are friction joints that are preloaded to predetermined torsional resistances. The area of the backrest above the upper or articulating pivots provides an impact area adapted under vehicle collision conditions to receive an impact load from a rear seat occupant's head. The area of the backrest between the backrest to cushion pivots and the articulating pivots functions similarly with respect to back seat occupant knee impacts. The friction joints permit rotation of the upper area of the backrest or rotation of the entire backrest relative to the seat cushion, the rotation occurring at a controlled rate as predetermined by the preloading on the pivot joints, thereby controlling the deceleration of the occupant impacting thereagainst.

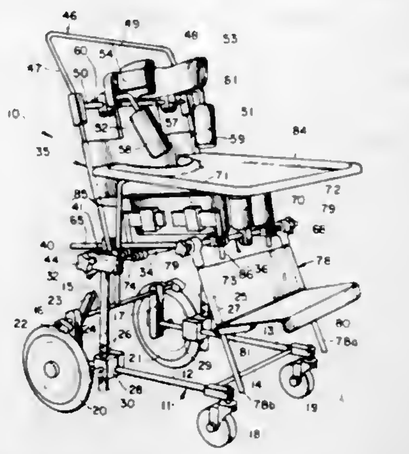
### 3,761,126
## ADJUSTABLE CHAIR FOR CHILDREN WITH CEREBRAL PALSY

**Larry Mulholland, 1343 Camden Ln., Ventura, Calif.**

**Filed Mar. 1, 1972, Ser. No. 230,607**

**Int. Cl. A47c** *15/00, 7/36*

**U.S. Cl. 297—384** **13 Claims**



A chair especially useful for children with cerebral palsy has a super structure portion that can be totally uncoupled by way of two support posts from a substructure portion constituted by a wheeled base.

A back rest and seat can be independently lengthened or shortened and tilted together as a seat-back rest unit to meet changing requirements. The seat is equipped with a pair of movable arm rests.

The primary components of the chair are capable of multiple independent or concurrent movements so that the chair configuration can be adjusted to accommodate the growth, medical or other needs of a child.

### 3,761,127
## SAFETY SEAT WITH A SAFETY BELT, IN PARTICULAR FOR MOTOR VEHICLES

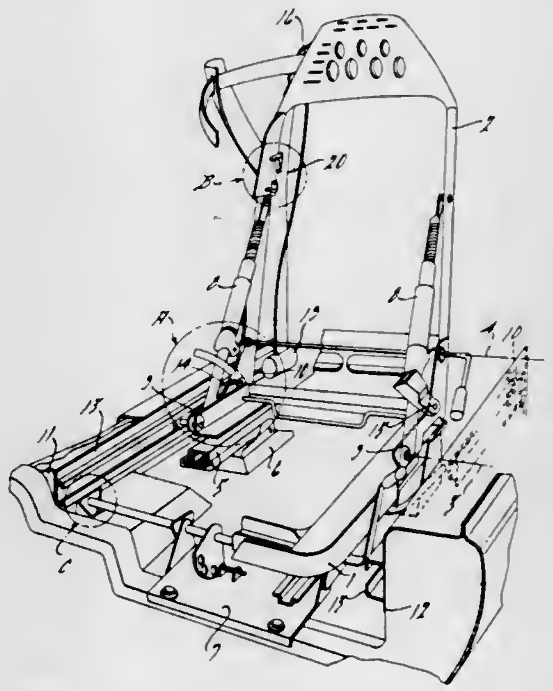
**Ralf Giese, Koln-Mauenheim; Paul Korner, Koln, and Axel Rauthmann, Dansweiler, all of Germany, assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Apr. 6, 1972, Ser. No. 241,591**

**Claims priority, application Germany, July 1, 1971, P 21 32 709.3**

**Int. Cl. B60n** *1/02*; **A62b** *35/00*

**U.S. Cl. 297—389** **11 Claims**



A safety seat with a safety belt, in particular for motor vehicles, with a seat and backrest frame, the backrest frame being adjustable in rake about a pivot axis and being supported on the seat frame through adjustable diagonal braces, the terminal points of a three-point safety belt being attached to the seat and backrest frame.

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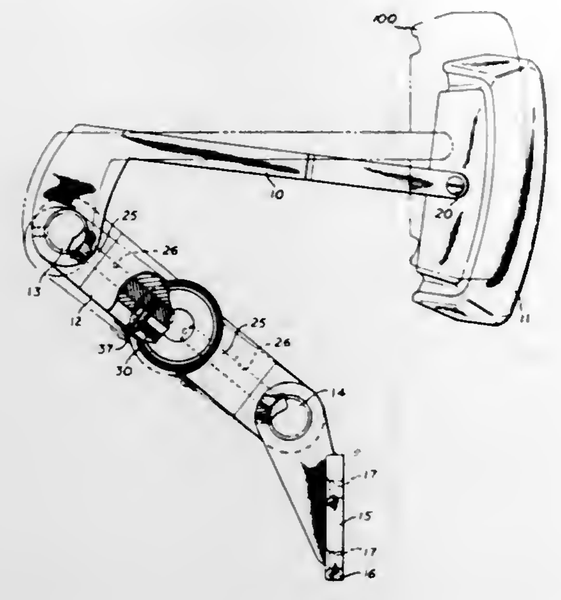
### 3,761,128
### HEADREST FOR AN OPHTHALMIC CHAIR OR THE LIKE

**George F. Schenk, Williamsville, and Irwin A. Bosack, Buffalo, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed Sept. 11, 1972, Ser. No. 288,196**
**Int. Cl. A47c** *7/36, 7/42*
**U.S. Cl. 297—408** **4 Claims**



A spring mounted linkage system adjustably supporting a headrest characterized by a single reciprocally movable knob uniquely capable of locking the headrest in various positons.

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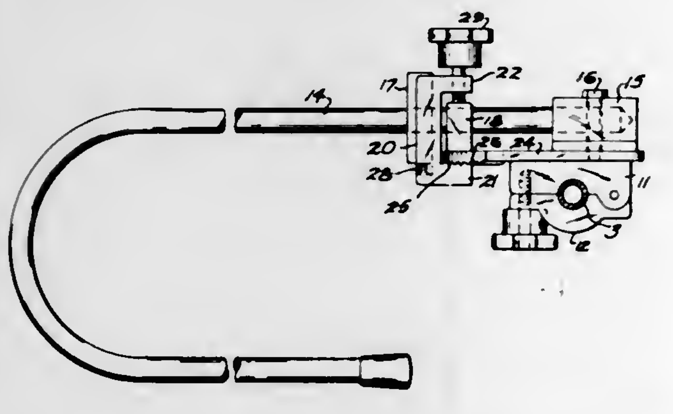
### 3,761,129
### LEG SUPPORT FOR INVALID CHAIR

**George H. Schultz, 8321 Carl Ave., Jennings, Mo.**

**Filed July 6, 1971, Ser. No. 159,985**
**Int. Cl. A47c** *7/50*
**U.S. Cl. 297—433** **2 Claims**



Structure including a clamp with opposed jaws, applicable to and removable from the frame of an invalid's chair, and an elongated cradle, for supporting the leg of a user seated in the chair with his leg extending outwardly from the chair seat, is pivoted at one end to the clamp. A locking screw is threaded through the cradle and into contact with the clamp to hold the cradle in selected angular positions relative to the clamp. When the locking screw is loosened, the cradle is disengaged automatically from the clamp jaw to swivel freely on the clamp, thus facilitating adjustment by a person in the chair or near it.

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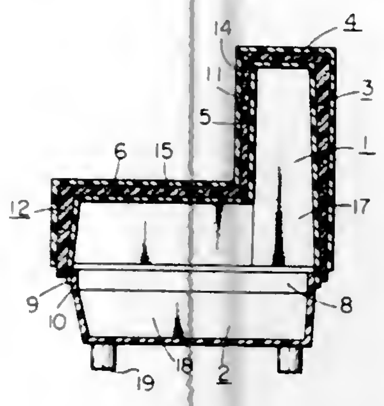
### 3,761,130
### CONVERTIBLE CHAIR

**Sohei Suzuki, Gifu; Saburo Koike, and Fumio Aiba, both of Kagamihara, all of Japan, assignors to Tenryu Industries, Co., Ltd., Gifu-ken, Japan**

**Filed May 15, 1972, Ser. No. 253,446**
**Claims priority, application Japan, May 19, 1971, 46/40888**
**Int. Cl. A47c** *7/14, 4/02*
U.S. Cl. 297—445 14 Claims



A convertible chair is provided with a core body formed from assembled upper and lower shells that are produced by a rotary injection molding process. The shells are bonded together, and the upper shell may have molded foam material applied as a cushion over which a detachable cover is provided. Armrests may be provided as part of the upper shell, and chair legs may be formed as part of the lower shell.

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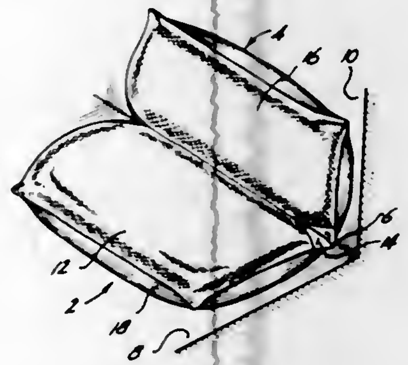
### 3,761,131
### ARTICLE OF FURNITURE AND METHOD OF MANUFACTURING SAME

**William H. Oliver, 1219 N. 50th, Seattle, Wash.**

**Filed Sept. 27, 1971, Ser. No. 183,794**
**Int. Cl. A47c** *13/00, 7/14*
**U.S. Cl. 297—456** **7 Claims**



A sofa-like article of furniture having pillow-like seat and back cushions. Each cushion consists of a flexible cover filled with a resilient particulate material such as chunks of polyurethane foam. The seat and back cushions are sewn together along their rear and bottom edges, respectively, to define a flexible hinge seam therebetween. The sofa can be placed with the seat cushion resting on a floor and the back cushion against a wall or can be used in a suitable frame. Also disclosed is a method of manufacturing the sofa.

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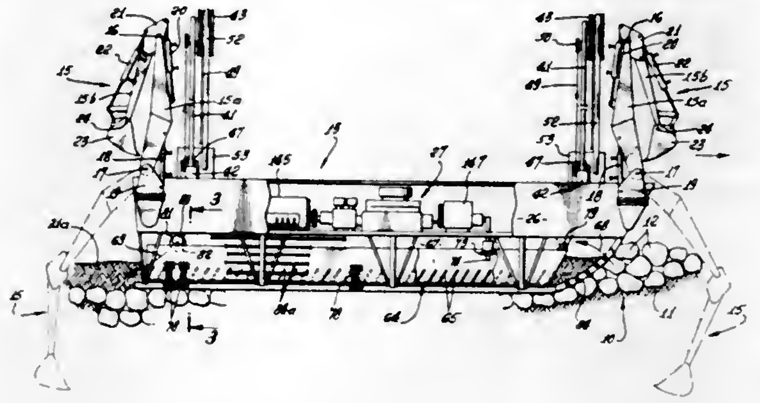
### 3,761,132
### APPARATUS AND METHOD FOR REPOSITIONING EARTHEN MATERIAL

**Donovan B. Grable, Long Beach, Calif., assignor to Wasteland Reclamation Corp., Long Beach, Calif.**

**Filed Jan. 15, 1973, Ser. No. 323,769**
**Int. Cl. E02f** *1/00;* **E20f** *5/00*
**U.S. Cl. 299—7** **46 Claims**

Subterranean earthen material including intermixed soil and rocks is repositioned by delivering fluid under pressure

downwardly to local portions of the material and effecting upward return flow of fluid through overlying material to effect sinking of rocks and upward displacement of soil, and depositing the soil in a surface layer overlying the sunken rocks. Also, precious metal particles may be removed from the upwardly displaced soil, in the manner described.



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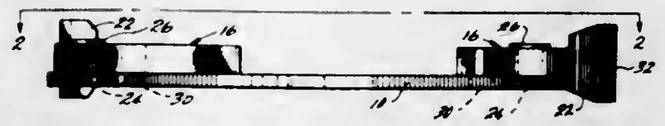
### 3,761,133
### ROTARY DISC HAVING ADJUSTABLE ICE CHIP CUTTERS

**David L. Buckley, Arcadia, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.**

**Filed Nov. 4, 1971, Ser. No. 195,618**
**Int. Cl. B63b** *35/12*
**U.S. Cl. 299—25** **8 Claims**



There is provided a rotary disc having a plurality of pivotably mounted ice chippers, the extension of the blades of the chippers beyond the periphery of the disc being maintained by rotation of the disc and a fixed or adjustable stop or other means positioned on the disc. The disc is provided with recesses for the blades of the ice chippers in order that they may be retracted into the recesses of the disc if an unusual resistance in the ice is met. Once the resistance has been overcome the cutter returns to its normal position by centrifugal forces or other means.

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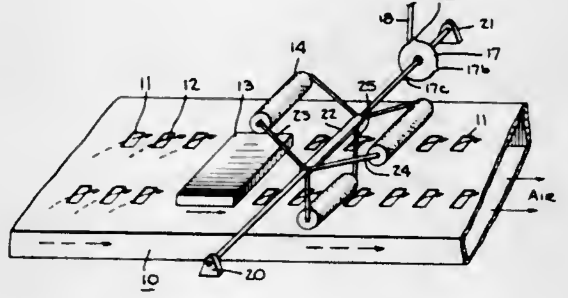
### 3,761,134
### ARTICLE DECELERATOR FOR AIR CONVEYOR

**Stanley E. Hurd, Sunnyvale, Calif., assignor to The Motch & Merryweather Machinery Company, Euclid, Ohio**

**Continuation-in-part of Ser. No. 7,090, Jan. 30, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,882**
**Int. Cl. B65g** *51/02*
**U.S. Cl. 302—31** **2 Claims**



A momentum decelerator for air conveyors having the preferred form of a rotatable turnstile positioned above the conveyor with a downwardly directed arm in the path of oncoming articles. The turnstile is rotated upon impact of the downward arm with the moving article to be slowed down and this rotation results in a second arm applying a decelerating force to the article in proportion to the momentum of impact. The decelerator distinguishes between a single article traveling along the conveyor and an accumulated group of articles, and operates only on the first member of a group, allowing the others of the group to pass without further restraint so as to prevent stopping of grouped articles on the conveyor.

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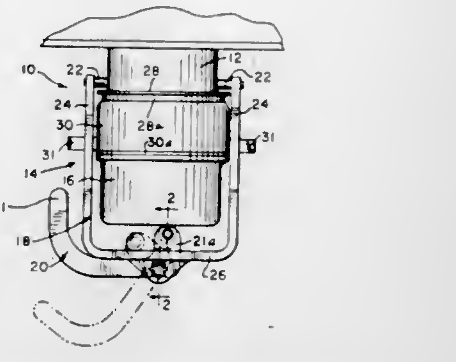
### 3,761,135
### LOCKING HANDLE FOR PNEUMATIC DISCHARGE TUBE

**William D. Mundinger, Highland, and William R. Shaver, Hammond, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.**

**Filed Feb. 14, 1972, Ser. No. 226,153**
**Int. Cl. B65g** *53/04*
**U.S. Cl. 302—52** **6 Claims**



A closure cap assembly for a pneumatic tube of a railway hopper discharge device and having a cap member closing off the tube and being fixedly held in position by a locking handle and bail unit including a locking handle with an eccentric adjustable pivot point which provides secure locking by being movable to compensate for dimensional differences and wear between assembled parts. The locking handle also includes an over center self locking feature.

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### 3,761,136
### METHOD OF TRANSPORTING SULFUR BY PIPELINE

**Richard L. Every, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**

**Filed Jan. 5, 1971, Ser. No. 104,179**
**Int. Cl. C01b** *17/10, 17/12*
**U.S. Cl. 302—66** **6 Claims**

The present invention relates to a method of transporting sulfur by pipeline with a minimum of sulfur precipitation and adherence to the internal parts of the pipeline system. By the present invention, the sulfur to be transported is formed into prills thereby reducing the static electricity charge accumulation capacity of the sulfur. The prills of sulfur are then formed into a pumpable slurry in a carrier liquid and the slurry is pumped through the pipeline.

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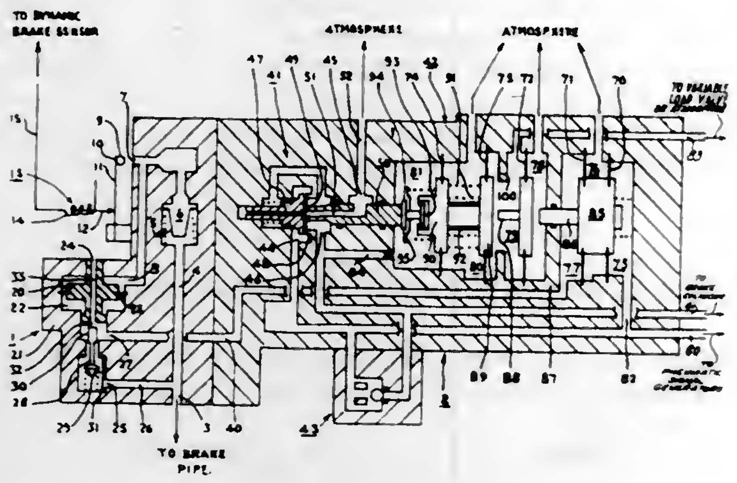
### 3,761,137
### BRAKING EQUIPMENT

**John William Green, and Rodney Edward Donovan, both of London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England**

**Filed Mar. 27, 1972, Ser. No. 238,331**
**Claims priority, application Great Britain, Apr. 27, 1971, 11,590/71**
**Int. Cl. B60t** *13/74*
**U.S. Cl. 303—3** **18 Claims**

Railway braking equipment incorporating a dynamic brake system which generates an electrical signal the value of which is dependent upon the degree of braking being effected by that system, which signal is converted into a first fluid-pressure which is compared with a second fluid-pressure indicative of the degree of overall braking required to be effected; the difference between the two fluid pressures controlling the degree of braking effected by a fluid-pressure braking system of the equipment.



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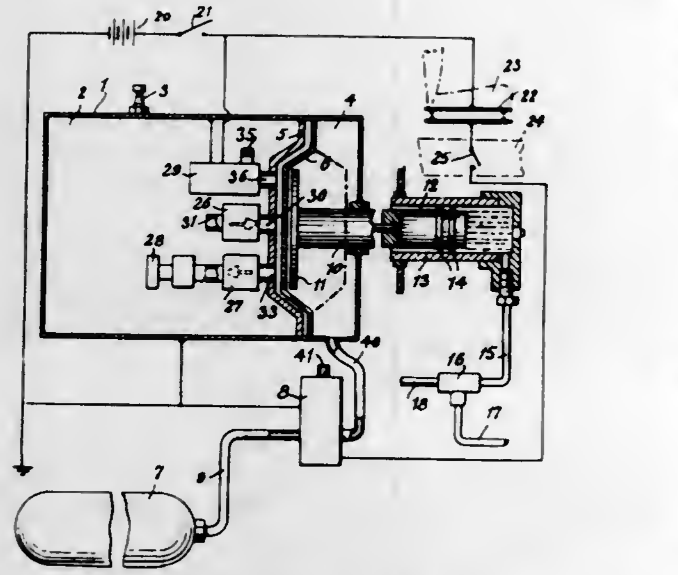
### 3,761,138
## CAPTIVE AIR BRAKE SYSTEM FOR MOTOR VEHICLES
**John G. Fontaine, 2817 N.E. 26th Ct., Fort Lauderdale, Fla.**
**Filed Apr. 19, 1971, Ser. No. 135,194**
**Int. Cl. B60t** *13/28*
**U.S. Cl. 303—9** **5 Claims**



A brake system in which a brake-applying mechanism can be caused to apply vehicle brakes by means of captive air of a predetermined degree of pressure while the vehicle is in motion or has its motor running, and which can have its brakes applied by air at a reduced pressure while the vehicle is stationary or is parked. A metering valve is employed in the system to control the opposing force to captive air and placed in the general area where the master cylinder is located, the valve being provided with a foot pedal. The invention further contemplates the employment of a seat switch that is operable to cause brake application when the driver of the vehicle moves from his seat.

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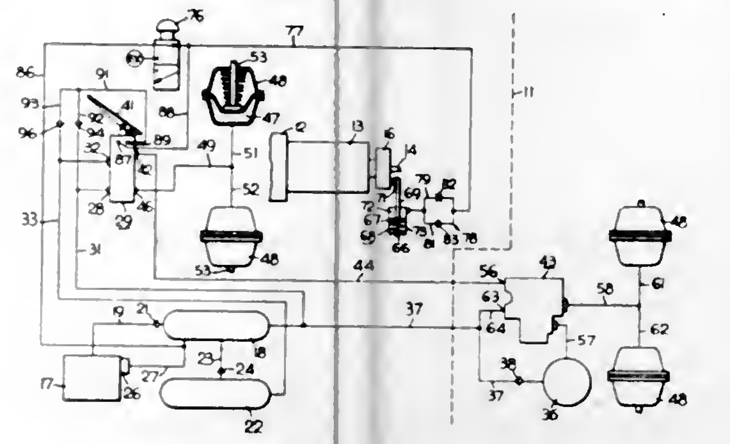
### 3,761,139
## VEHICLE BRAKING SYSTEM WITH SPRING APPLIED PARKING BRAKE
**George W. Rogers, Petersburg, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**
**Filed Mar. 27, 1972, Ser. No. 238,389**
**Int. Cl. B60t** *8/06, 13/00*
**U.S. Cl. 303—9** **6 Claims**

A tractor-trailer braking system including air operated service brakes for both the tractor and the trailer. A spring operated parking brake on the output shaft of the transmission is provided with restriction means for the exhaust of air from the air powered actuator employed to overcome the parking brake operating spring. This achieves a slow application of the parking brake to allow the service brakes to be applied first to bring the vehicle to a standstill and save wear and tear on the parking brake. A separate reservoir and standard relay valve is provided on the trailer unit for operating the trailer brakes. A pair of series connected air reservoirs are carried on the tractor which are connected to a dual treadle valve with an emergency operating or protection feature whereby the treadle valve will automatically be operated to brake the vehicle whenever the air pressure in the main or lead tank on the tractor is reduced to a predetermined value. A manually operated parking brake valve is interposed in line between the main reservoir and the parking brake air actuator chamber, and the control port of the protection section of the dual treadle valve is connected to the delivery side of the parking brake valve whereby when the parking brake valve is moved to its exhaust position the service brakes will be applied through operation of the protection section of the dual treadle valve to thus bring the vehicle to a standstill prior to application of the aforementioned parking brake.



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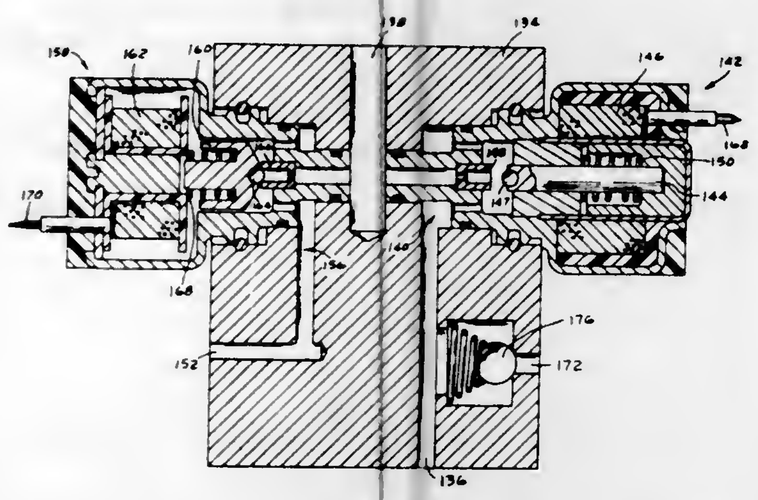
### 3,761,140
## HYDRAULICALLY ACTUATED ADAPTIVE BRAKING SYSTEM USING A SINGLE FLUID
**Richard L. Lewis; Jerome T. Ewald, and Martin A. Shields, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.**
**Filed Sept. 13, 1971, Ser. No. 179,919**
**Int. Cl. B60t** *8/26*
**U.S. Cl. 303—21 F** **14 Claims**



A hydraulic adaptive braking system is disclosed which uses a single fluid to both actuate the brakes of the vehicle and to provide a power assist to the vehicle operator when the brakes are applied. The system includes a brake booster which utilizes pressurized fluid from the vehicle's power steering pump to develop braking pressure which is communicated to the brakes of the vehicle. Adaptive braking valve means are located in both the front and the rear brake lines and include electrically operated valve means which control fluid communication between the booster, the brakes of the vehicle and a fluid reservoir. When an incipient skid condition is sensed, the electrically operated valve means terminate fluid communication between the booster and the vehicle's brakes, and then initiates communication between the vehicle's brakes and the aforementioned reservoir to permit braking pressure at the brakes of the vehicle to decay. When the incipient skid condition terminates, the electrically operated valve means again communicates braking pressure to the vehicle's brakes.

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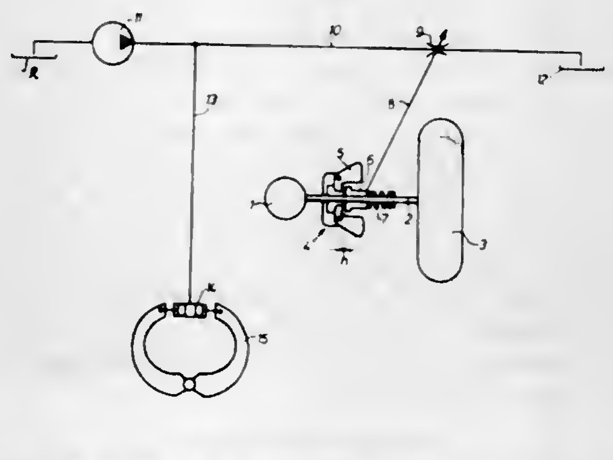
### 3,761,141
## DRIVE ARRANGEMENT WITH BRAKING SYSTEM
**Horst Baurle, Stuttgart; Karl Veil, Uhingen; Karlmann Hamma, Tettnang, and Egon Mann, Friedrichshafen, all of Germany, assignors to Robert Bosch, GmbH, Stuttgart and Zahnradfabrik Friedrichshafen AG, Friedrichshafen, both of Germany**
**Filed Jan. 3, 1972, Ser. No. 214,997**
**Claims priority, application Germany, Jan. 8, 1971, P 21 00 790.9**
**Int. Cl. B60t** *8/06*
**U.S. Cl. 303—21 F** **7 Claims**



A drive has a variable-speed output element and a sensing device is associated with this element for sensing the speed thereof. A fluid-operated braking unit receives pressure fluid from a source via a conduit, and throttling device is interposed in the conduit and is controlled by the sensing device so as to progressively increase the supply of pressure fluid to the brake unit when the output speed sensed by the sensing device exceeds a certain limit.

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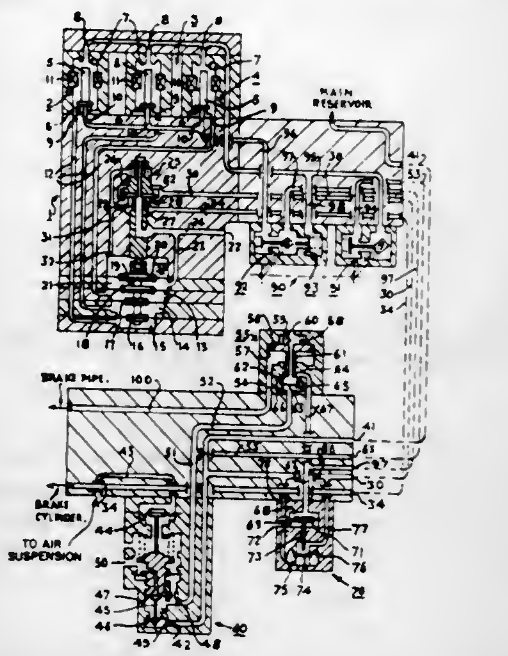
### 3,761,142
## ELECTRO-MAGNETICALLY CONTROLLED FLUID-PRESSURE SYSTEMS
**Eric Farmer Williams; Thomas David Turner, and Peter Raymond Johnson, all of London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England**
**Filed Dec. 2, 1971, Ser. No. 204,076**
**Claims priority, application Great Britain, Jan. 14, 1971, 1,865/71**
**Int. Cl. B60t** *8/18*
**U.S. Cl. 303—22 R** **11 Claims**

An electro-magnetically controlled fluid-pressure braking system the normal manner of operation of which is by selective energisation of electro-magnetic valves selectively to apply fluid-pressure to a multi-diaphragm stack; the system being alternatively operable in the event of loss of electro-magnetic control by applying fluid-pressure directly to the diaphragm stack through what is normally the exhaust parts of the stack.



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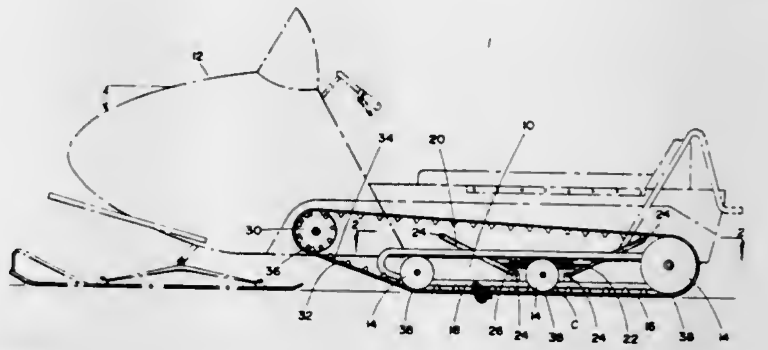
### 3,761,143
## ENDLESS TRACK SUSPENSION SYSTEM
**Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.**
**Filed May 14, 1970, Ser. No. 48,587**
**Int. Cl. B62d** *55/08;* **B62m** *27/02*
**U.S. Cl. 305—24** **12 Claims**



A wheel and slide suspension system for supporting or aligning a flexible and endless track from a wheel substitute vehicle used over various types of terrain and climatic conditions. Under hard-packed terrain conditions, wheels support the track away from the slide; and under soft terrain conditions, the track deflects to a position to engage and receive support from the slide. Lugs projecting from the track are engagable with the slide to maintain the track in longitudinal aligment.

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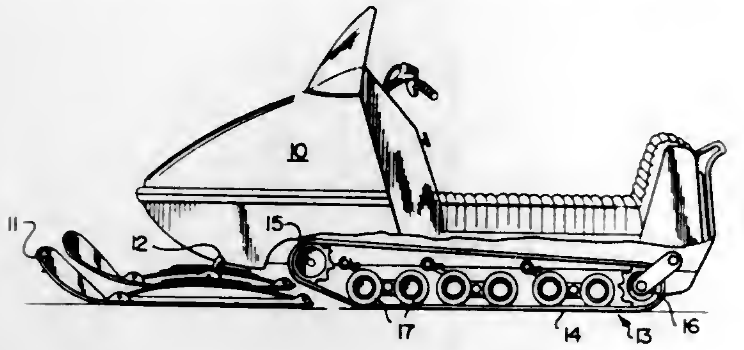
### 3,761,144
## BOGIE-WHEEL SUSPENSION ASSEMBLY
**Jules Perreault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada**
**Filed Dec. 2, 1971, Ser. No. 204,077**
**Int. Cl. B62m** *27/02*
**U.S. Cl. 305—27** **7 Claims**

The invention relates to an improved suspension system for vehicles, such as snowmobiles which derive their support from an endless belt or track in conjunction with a resiliently biased suspension system. The present invention provides a suspension system for the resiliently biased rolling support of an endless track on a vehicle chassis, comprising a trailing frame assembly adapted at an upper part for pivotable attachment to the vehicle chassis, and at a lower part for pivotable attachment to at least one wheel support member having at least two wheels mounted for rotation thereon one behind the other in the longitudinal direction of the chassis, the trailing frame is provided with springs connectable with the chassis for resiliently urging the frame and the wheels downwardly and forwardly with respect to the vehicle against the inner surface of the track.



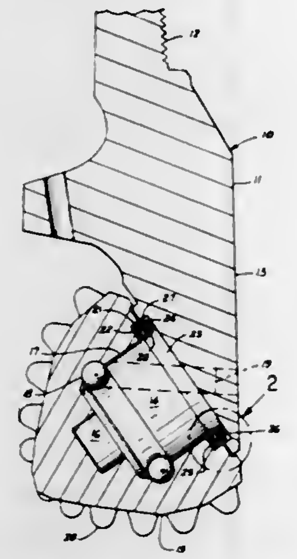
### 3,761,145
### SEAL MEANS FOR DRILL BIT BEARINGS

**Percy W. Schumacher, Jr., Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.**

**Filed Mar. 6, 1972, Ser. No. 232,134**

**Int. Cl. F16c** *33/76*

**U.S. Cl. 308—8.2** **7 Claims**



A drill bit including a roller cutter mounted on a greased bearing journal having a grease seal ring therearound and resilient means mounted between the seal ring and bearing journal to urge the seal ring against a sealing surface on the cutter in such a manner that the seal ring may be forced away from the cutter surface by some predetermined pressure from within the cutter but wherein the seal ring arrangement provides a substantially positive seal from pressures externally of the cutter to prevent detritus or other foreign material from entering into the bearing area interiorly of the drill bit cutter. Elastomeric material may be provided between the seal ring and the cutter sealing surface. The abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

### 3,761,146
### FLUID BEARING

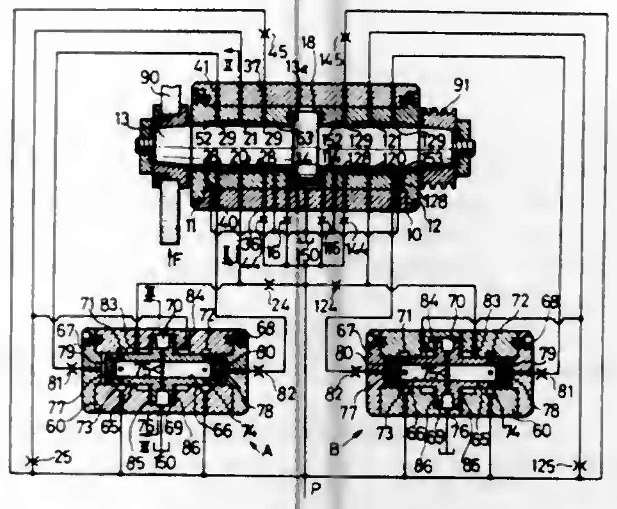
**Kunihiko Unno, Kariya, and Kazuhiko Sugita, Anjo, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan**

**Filed Oct. 26, 1971, Ser. No. 192,223**

**Int. Cl. F16c** *17/16*

**U.S. Cl. 308—9** **4 Claims**

In a fluid bearing comprising a bearing member adapted to rotatably support a shaft by means of a thin fluid film which is formed by supplying fluid under pressure into a small gap between the shaft and the bearing member and a control valve including a cylinder and a spool slidably received in the cylinder for controlling the pressure of the fluid, the bearing surface of the bearing member is provided with a plurality of control pockets and a plurality of detection pockets respectively surrounding the control pockets, the fluid is supplied under a predetermined pressure to the control pockets and the detection pockets, a pair of diametrically opposite detection pockets are connected to the opposite ends of the control valve for operating the spool, a pair of diametrically opposite control pockets respectively surrounded by the pair of diametrically opposite detection pockets are connected to the output of the control valve whereby upon creation of a pressure differential between the pair of detection pockets due to application of a load on the shaft, the fluid pressure in one of the pair of control pockets is increased whereas the fluid pressure in the other is decreased and wherein the control valve is balanced in accordance with the pressure differentials between the pair of detection pockets and between the pair of control pockets so that the pressure differentials are created between the pair of control pockets and the pair of detection pockets for restoring the shaft to the center of the bearing against the load. The spool is provided with a plurality of fluid passages inclined in the same direction with respect to the radius so that the fluid flowing through the passages creates a force tending to rotate the spool.



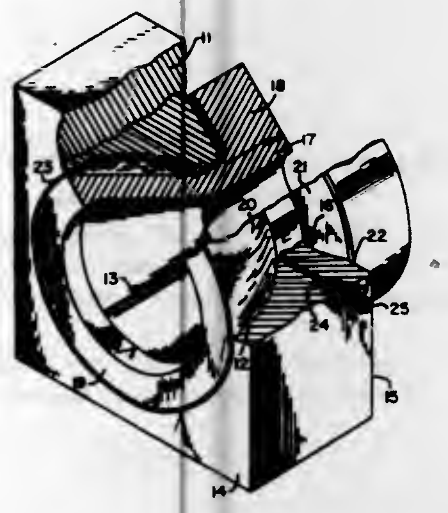
### 3,761,147
### GENERAL UTILITY HYDROSTATIC SPINDLE

**Gordon James Watt, Apt. 106, 245 Unquowa Rd., Fairfield, Conn.**

**Filed Jan. 31, 1972, Ser. No. 221,865**

**Int. Cl. F16c** *17/16*

**U.S. Cl. 308—9** **8 Claims**



A spherical and plane hydrostatic bearing of the outlet restrictor types rigidly combined in a compact spindle structure comprising a central housing with finished surfaces and bores, a shaft with thrust plate and truncated hemispherical bearing surface at opposite ends, and means for bringing fluid under pressure to the inner peripheries of the matched bearing surfaces to flow radially or longitudinally outward to the outer peripheries where clearance is slightly restricted. The bearings are self-adjusting for spacing and alignment, non-interacting with regard to individual degrees of freedom, and together define the spindle axis as the normal to the plane of the thrust bearing through the center of the spherical bearing.

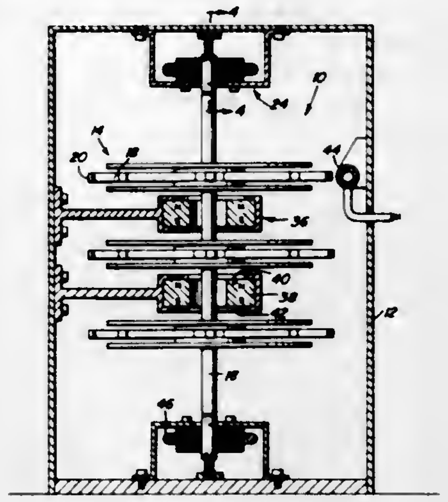
### 3,761,148
### MAGNETICALLY SUSPENDED ROTOR ASSEMBLY

**Gregory Grosbard, 353 W. 19th St., Apt. 1, New York, N.Y.**

**Filed Sept. 15, 1972, Ser. No. 289,362**

**Int. Cl. F16c** *39/06*

**U.S. Cl. 308—10** **12 Claims**



A magnetic rotor is rotationally supported by end thrust bearings while accelerated up to a predetermined speed, the bearings being retracted to transfer suport of the rotor to a magnetic suspension arrangement when rotation exceeds said predetermined speed and the rotor is no longer being accelerated. The bearings are biased into engagement with the rotor shaft and retracted by power operated solenoids that are energized under control of a rotor speed sensor.

### 3,761,149
### HYDROSTATIC RADIAL BEARING

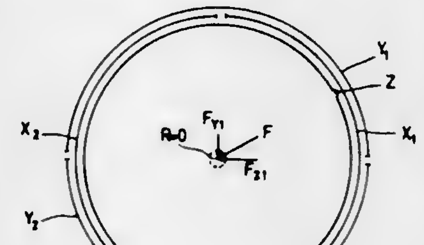
**Eric Tapley Ferguson, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Sept. 27, 1971, Ser. No. 183,764**

**Claims priority, application Netherlands, Oct. 15, 1970, 7015119**

**Int. Cl. F16c** *17/16*

**U.S. Cl. 308—122** **4 Claims**



A hydrostatic radial bearing having a housing with successive bearing segments in the circumferential direction. Each bearing segment comprises a pressure chamber and a raised edge which surrounds said chamber and together with the rotatable shaft forms an outflow gap. The pressure chambers are located partly beside each other and overlap each other in the circumferential direction. The outflow gaps have a resistance to flow which is variable in the circumferential direction; the resistance to flow varies in such manner that the forces exerted on the shaft by the pressure chambers, in response to a localized unevenness with respect to an imaginary line joining the center of the bearing to the center of one of the bearing segments.

### 3,761,150
### AXIAL FLUID-FILM BEARING

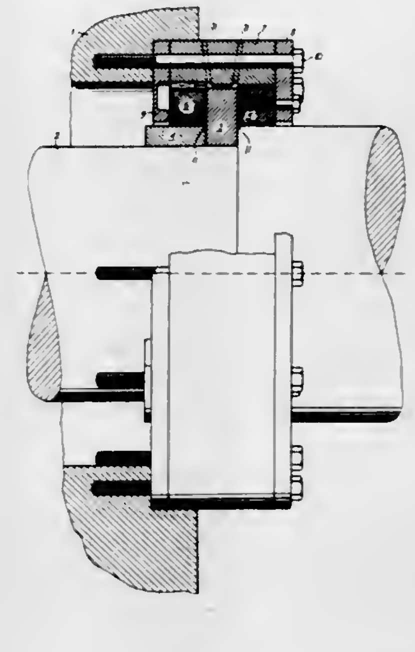
**Josef Linda; Frantisek Rosberg, and Jaroslav Marsalek, all of Prague, Czechoslovakia, assignors to Tos Hostivar narodni podnik, Praha-Hostivar, Czechoslovakia**

**Filed Apr. 7, 1971, Ser. No. 131,880**

**Claims priority, application Czechoslovakia, Apr. 13, 1970, 245270**

Int. Cl. F16c *17/04*

U.S. Cl. 308—160 12 Claims



A hydrodynamic axial or thrust bearing for rotating spindles and the like comprising a cylindrical shell surrounding and spaced from the spindle. The spindle is provided with an annular flange fixed to it, which is located between two ring shaped discs supported by the shell. One of the discs is fixed against axial and rotational movement while the other is fixed against rotation but is supported to move axially. The movable disc is provided with resilient means normally biasing it toward the flange. Oil is supplied between the faces of the flange and discs.

### 3,761,151
### THRUST BEARING

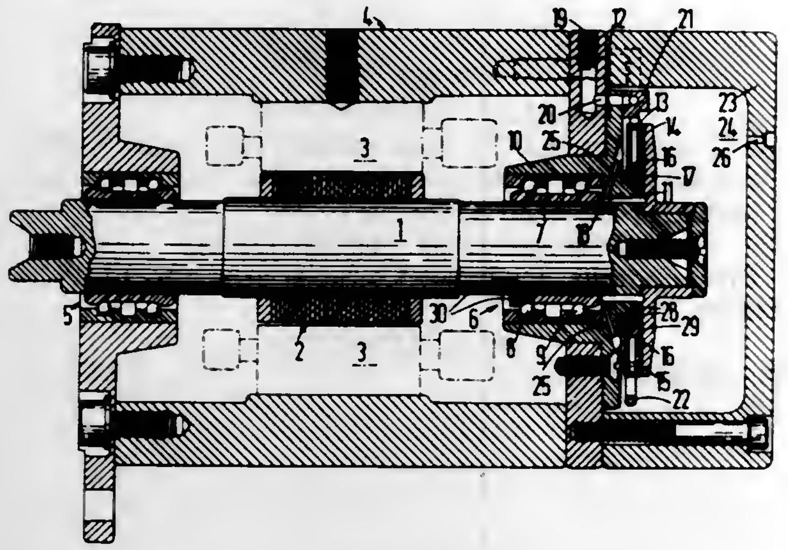
**John Kerr, Cambuslang, Scotland, assignor to National Research Development Corporation, London, England**

**Filed Aug. 17, 1972, Ser. No. 281,481**

**Int. Cl. F16c** *17/04*

**U.S. Cl. 308—160** **7 Claims**

A fluid thrust bearing has opposed surfaces, preferably normal to the rotational axis of, respectively, a thrust member of the rotary element of the bearing and a bearing pad fixed preferably resiliently, to the fixed bearing structure and supplied with pressurised fluid emerging through feed holes into a bearing space between the opposed surfaces. The leakage from the bearing space is collected in a chamber surrounding the bearing and pressure is caused to build up in this chamber due to an orifice restricting the escape of fluid from the chamber to atmosphere. The pressure in the chamber acts on surfaces of the rotary element in opposition to forces due to the pressure in the bearing space, these pressures varying differentially on any change in the distance between the opposed surfaces bounding the bearing space. The bearing can thus support axial loads in either direction.



Supply of fluid to the bearing pad may be through a coiled capillary tube communicating with a plenum chamber in the pad, from which fluid passes into the bearing space through one or more restrictor orifices which constitute the feed holes.

Preferably the opposed surfaces have an area large enough to give dynamic stiffness to the bearing due to a "squeeze" effect, in the presence of axial oscillatory forces of a frequency higher than that at which the pressure in the bearing space, due to the flow of fluid through the feed holes, can be caused to fluctuate.

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## 3,761,152

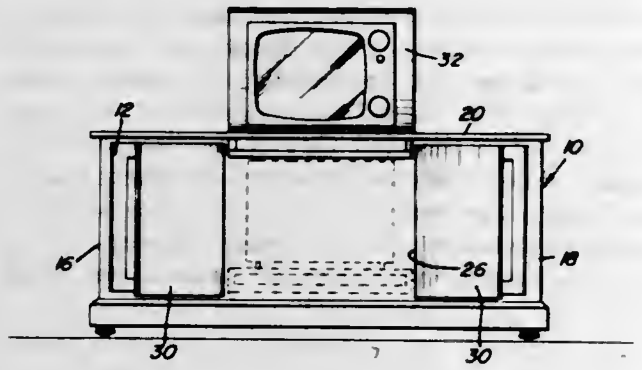
## CABINET WITH ELEVATOR SUPPORT PLATFORM

**John H. Cory, 6915 N.E. 3 Ave., Miami, Fla.**

**Filed Aug. 10, 1971, Ser. No. 170,445**

**Int. Cl. A47b** *81/06*

**U.S. Cl. 312—7 TV** **11 Claims**



A cabinet structure including a storage area therewithin and including front door structure defining the forward extremity of the storage area and shiftable to an open position for exposing the storage area. The cabinet structure further includes top door structure defining the upper extremity of the storage area and the top door structure may also be shifted between a closed position closing the upper extremity of the storage area and an open position to expose the storage area from above. A support platform is mounted within the storage area and is adapted to have an electrical appliance such as a television set or a sewing machine as well as other non-electrically powered structures supported therefrom. The platform is mounted within the storage area for guided vertical shifting and motor means is operatively connected to the support platform for raising and lowering the same. Also, the support platform includes a turntable upon which the associated television set may be rested and in this manner the television set may be viewed through the front of the cabinet when the support platform is in a lowered position and the front door structure is open or viewed from the front with the television set projecting above the top of the cabinet when the support platform is in its raised position and when the platform is in its uppermost position the turntable may be adjusted in order to allow the television set supported therefrom to face in substantially any direction.

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## 3,761,153

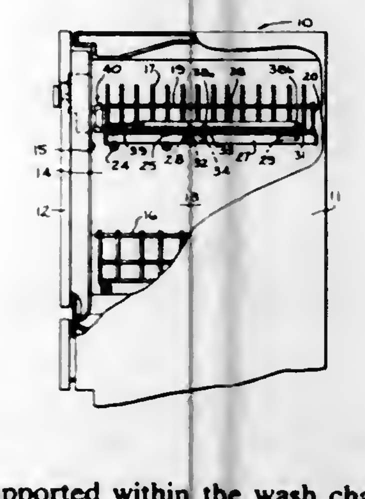
## DISH-WASHING MACHINE RACK ADJUSTMENT ASSEMBLY

**Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed June 17, 1971, Ser. No. 154,141**

**Int. Cl. A47b** *51/00, 51/04*

**U.S. Cl. 312—351** **6 Claims**



A rack is supported within the wash chamber of a front-loading dishwashing machine by pivotal support means permitting vertical adjustment of the level of the rack, and a manual control means disposed at the front end of the rack is linked to the pivotal support means whereby the vertical positioning of the rack side can be selectively adjusted.

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## 3,761,154

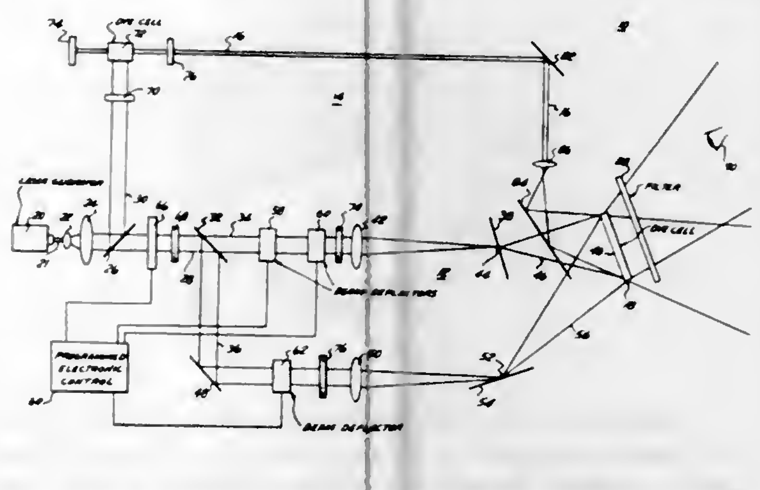
## DISPLAY DEVICE GENERATING MANY SUPERIMPOSED OUTPUT SIGNALS TO PROVIDE AN IMAGE

**David M. Shupe, Troy, and Takeo Sawatari, Birmingham, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.**

**Filed Dec. 27, 1971, Ser. No. 212,460**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—3.5** **8 Claims**



An image is formed by generating a large number of simple interference patterns and sequentially projecting those interference patterns onto an organic dye cell amplifier. The amplifier absorbs energy from the interference patterns and uses the absorbed energy to modulate a beam of laser light to provide a sequence of output signals. No one output signal comprises a complete image, and a large number of output signals must be integrated or superimposed in order to form an image. However, the output signals are generated at such a fast rate that an observer's eyes will integrate those signals so that the observer perceives them as a complete image. The observer's eyes integrate successive output images to perceive a changing scene.

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## 3,761,155

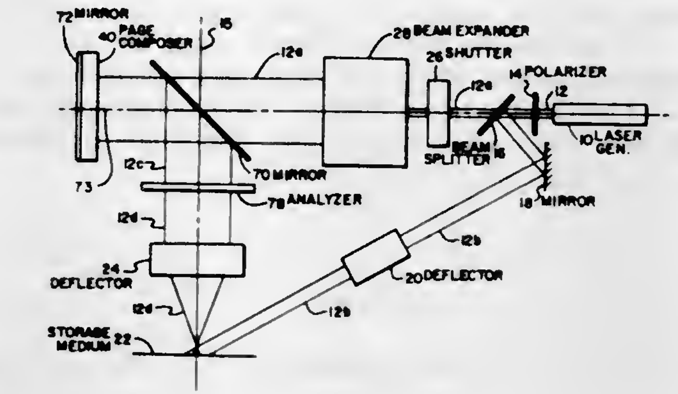
## FARADAY EFFECT PAGE COMPOSER FOR HOLOGRAPHIC MEMORY SYSTEM

**David S. Lo, Brunsville; Marlin M. Hanson, Cologne; Alan D. Kaske, Minneapolis, and Donald M. Manikowski, Bloomington, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,275**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—3.5** **2 Claims**



A holographic memory system having an electrically alterable page composer or data mask and a method of modulating a plane polarized laser beam thereby for generating a hologram in the holographic storage medium is disclosed. The method utilizes as the data mask a planar platelet of magnetizable magneto-optic material in which a two-dimensional array of discrete saturated magnetic domains, each domain having its magnetization vector M aligned in a first or a second and opposite direction normal to the plane of the platelet, is selectively written. The magnetic domains produce a Faraday or Kerr effect rotation of the respectively associated plane polarized portions of the incident laser beam for generating a spatially varying rotation of the plane of polarization of such portions of the laser beam, the spatial distribution of which portions is a function of the spatially positioned magnetic domains.

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## 3,761,156

## HOLOGRAPHIC COLORED LIGHT PATTERN SIMULATION

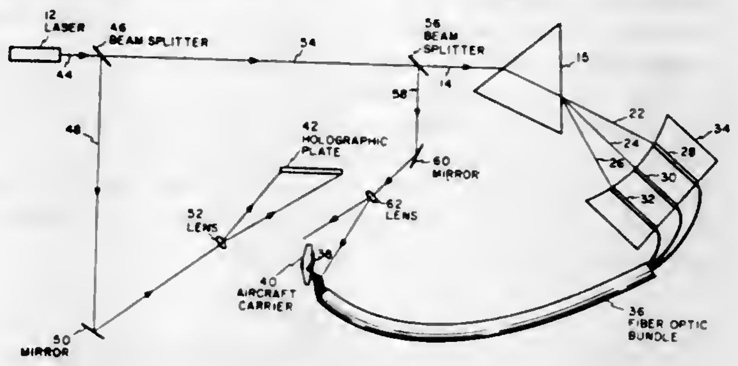
**Windell N. Mohon, Winter Park; Alfred H. Bodemann, and Geroge Derderian, both of Maitland, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 11, 1972, Ser. No. 242,959**

**Int. Cl. G02b** *27/00;* **G09b** *9/08*

**U.S. Cl. 350—3.5** **5 Claims**

A method of generating a holographically reconstructed image of a model object so that the image will appear to have lamps of various predetermined colors at predetermined locations and having predetermined sectors of viewability in which color is generated from a laser light source having a coherent beam output comprising a plurality of wavelengths characteristic of different colors and wherein packs of fiber optics are utilized to carry selected color light for presentation at predetermined locations on the model object. The ends of the optic fibers of the model are received in the model at selected distances from a face thereof as desired to provide desired angles of view whereat the lights become apparent to the viewer of the multicolor holographic image dependent upon the use to which the resultant holographic image is directed. One such use is in the simulation of a Fresnel Lens Optical Landing System used aboard aircraft carriers.



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## 3,761,157

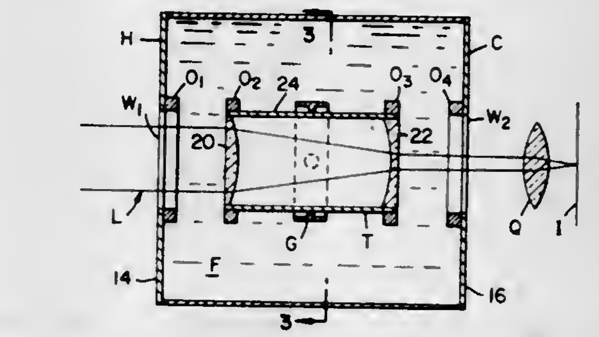
## IMMERSED TELESCOPE STABILIZER

**William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.**

**Filed Jan. 5, 1972, Ser. No. 215,485**

**Int. Cl. G02b** *23/00*

**U.S. Cl. 350—16** **18 Claims**



A telescope is supported and biased in alignment with a light path defined between light entrance and exit windows in a fluid filled chamber. The fluid, acting on both the sidewalls of the chamber and the sidewalls of the telescope, causes the telescope to undergo proportional angular motion with respect to an inertial reference system when the chamber is subjected to vibrational angular motion with respect to the reference system. Combinations of telescope magnifications with fluid indices of refraction as well as variable telescope-chamber motion relationships are disclosed for achieving image stabilization against accidental angular motion.

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## 3,761,158

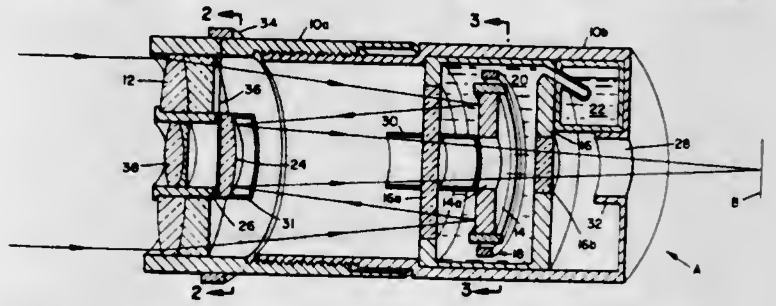
## TELESCOPE HAVING IMMERSED MIRROR STABILIZER

**William E. Humphrey, Berkeley, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.**

**Filed June 16, 1972, Ser. No. 263,576**

**Int. Cl. G02b** *23/02*

**U.S. Cl. 350—16** **19 Claims**



An immersed mirror stabilizer adapted for use in a catadioptric optic train. A cell having transparent end walls and containing transparent fluid is provided. A mirror is gimbal mounted and buoyantly neutrally supported within the cell. The mirror has an outer reflecting surface and a central hole for transmitting therethrough retrodirected light to a downstream imaging plane. According to the preferred embodiment, incident light is transmitted from an objective lens, through one transparent wall of the cell, to the stabilized mirror. The mirror retrodirects the light through the same transparent wall to a secondary mirror, typically located at the objective. Once again, the light is retrodirected from the secondary mirror, through the transparent wall, the hole in the mirror, and out the second transparent wall for imaging at downstream optics, typically a film plane.

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### 3,761,159
### OPTICAL MEMORY FOR COHERENT OPTICAL SYSTEMS

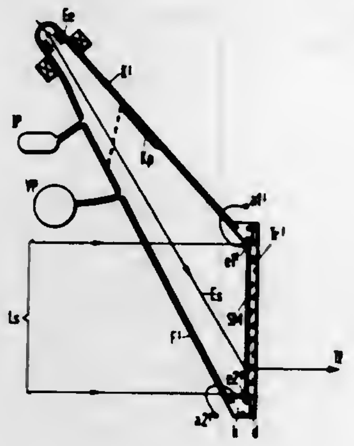
**Dieter Roess, Planegg, and Horst Kiemle, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed June 30, 1971, Ser. No. 158,440**

**Claims priority, application Germany, July 14, 1970, P 20 34 904.6**

**Int. Cl. G02f** *1/16*

**U.S. Cl. 350—160 R** **5 Claims**



An optical memory for coherent optical systems comprises a storage medium having transmission properties which may be changed locally by scanning with an electron beam. The storage medium is, for an incident coherent beam of light, a reversible material which may be changed locally in transparency and optical thickness as a function of the direction and energy density of the electron beam.

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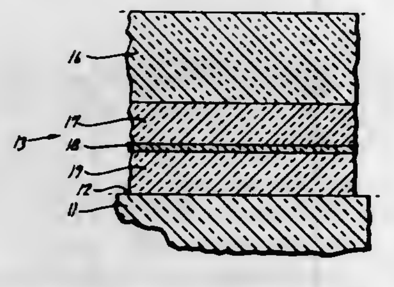
### 3,761,160
### WIDE BAND ANTI-REFLECTION COATING AND ARTICLE COATED THEREWITH

**Joseph H. Apfel, and Carol J. Snavely, both of Santa Rosa, Calif., assignors to Optical Coating Laboratories, Inc., Santa Rosa, Calif.**

**Continuation of Ser. No. 128,946, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 758,254, Sept. 9, 1968, abandoned. This application May 31, 1972, Ser. No. 258,422**

**Int. Cl. G02b** *5/28*

**U.S. Cl. 350—164** **4 Claims**



Wide band anti-reflection coating and article coated therewith having at least four layers for high index glasses and at least six layers for low index glasses.

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### 3,761,161
### LENS SYSTEM HAVING A LONG FOCAL LENGTH

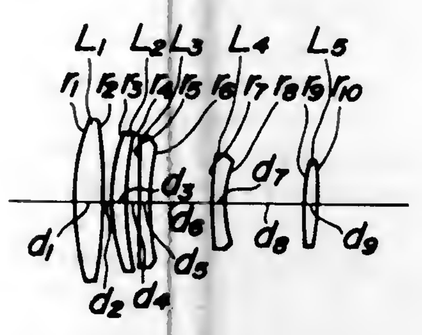
**Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan**

**Filed Apr. 7, 1972, Ser. No. 241,926**

**Claims priority, application Japan, Apr. 9, 1971, 46/21789**

**Int. Cl. G02b** *9/60, 13/02*

**U.S. Cl. 350—218** **3 Claims**



A lens system having a long focal length, which consists of a first positive lens component, a second positive meniscus lens component that has at its object side a convex surface, a third negative lens component, a fourth negative lens component and a fifth positive lens component, large air spaces being present between the third component lens and the fourth component lens and between the fourth lens components and the fifth lens components, respectively, and which is defined by the following five conditions, i.e.,

1. $0.7f > f_{1,2,3} > 0.4f$,
2. $0.05f > d_2 > 0.01f$,
3. $|r_5| > 3f, r_5 > 0$,
4. $0.2f > d_8 > d_6 > 0.1f$, and
5. $f > f_5 > 0.8f$

where $f$ is a composite focal length of the total lens system, $f_{1,2,3}$ is a composite focal length of the first, second and third component lenses, and $r_i$ ($i$=1, 2, . . . 10) and $d_i$ ($i$=1, 2, . . . 9) are radii of curvatures of the successive lens surfaces counted from the side of an object and axial thicknesses of or air spaces between the successive lenses counted from the side of the object, respectively. The telephoto ratio is on the order of 0.85 – 0.9.

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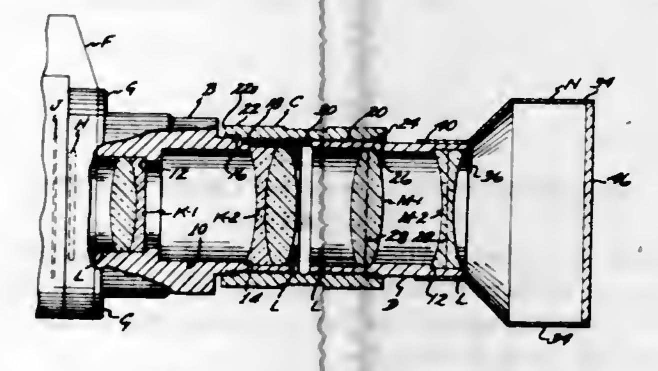
### 3,761,162
### MULTIPLE PURPOSE FIELD INCREASING OPTICAL DEVICE

**Jon Hall, 22350 Pacific Coast Hwy., Malibu, Calif.**

**Filed Oct. 12, 1971, Ser. No. 188,138**

**Int. Cl. G02b** *7/04*

**U.S. Cl. 350—255** **7 Claims**



A multiple purpose optical device that may be selectively and removably attached to engageable means on either the forward portion of a camera housing containing shutter means and a light sensitive film or engageable means on the forward portion of a projector containing a light source and a holder for said film after the film has been exposed and developed.

The device when mounted on a camera as above described laterally compresses the light image to which the film is exposed and increases the field of said camera as a result thereof. The device when mounted on said projector laterally expands the developed image on the film as said developed image is reproduced, with the compression and expansion being to such a degree as to nullify one another and provide a non-distorted and natural reproduction of said developed image on a projection receiving surface.

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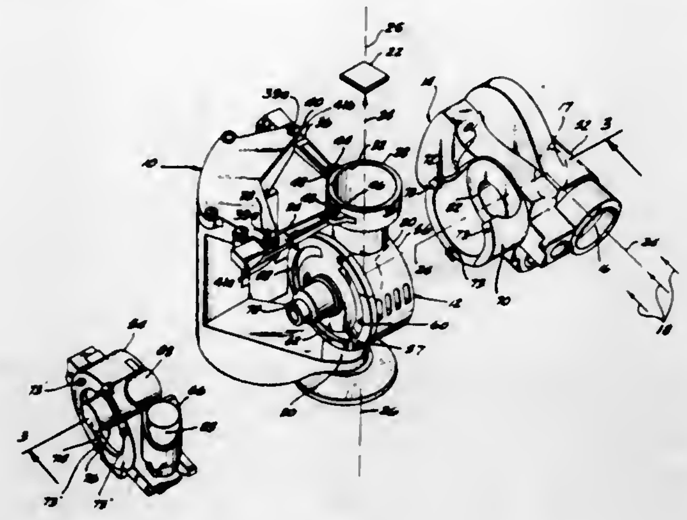
### 3,761,163
### VERNIER AZIMUTH GIMBAL SUSPENSION SYSTEM

**Arthur S. Chapman, Rolling Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Continuation-in-part of Ser. No. 884,928, Dec. 15, 1969, abandoned. This application Apr. 10, 1972, Ser. No. 242,450**

**Int. Cl. G02b** *5/08*

**U.S. Cl. 350—301** **12 Claims**



Low friction characteristics are provided in a vernier gimbal mount for a sighting device whose optical path passes through the center of its gimbal bearings. The optical system is so designed that an image is formed near the gimbal center on its inner gimbal. The mount includes an outer gimbal member with first and second ends which must be pivotally supported on a platform, the first end of the outer member having a wide optical passageway extending through its axis of rotation. To provide for small friction in the bearings at the wide optical passageway, a pair of links pivotally couple the first end of the outer member to platform, each link having one end pivotally mounted on the platform and another end pivotally mounted on the outer member at a point outside the passageway. The inner gimbal member is pivotally supported on the outer member by bearing parts which are placed on opposite sides of the outer member and which are secured together by arms extending through slots in the outer member.

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### 3,761,164
### AUTOMATICALLY CONTROLLED MIRRORS

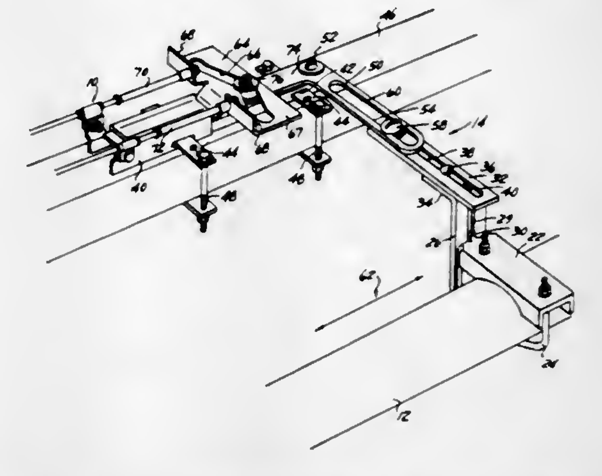
**Clyde M. McKee, 22175 Bernard St., Taylor, Mich.; Ward Scott, 429 Rochdale Dr., Rochester, Mich., and Sandor Shapiro, 24811 Templar, Southfield, Mich.**

**Filed Mar. 27, 1972, Ser. No. 238,093**

**Int. Cl. G02b** *5/08*

**U.S. Cl. 350—307** **10 Claims**

A mirror assembly for trucks or the like actuated in response to movement of the steering wheel to move to a position providing maximum visibility. Means are clamped to a member which is a part of the steering mechanism and which is movable upon rotation of the steering wheel to produce a corresponding pivotal movement in an arm member pivotally mounted to the vehicle. The arm member is connected to a cable system through a slide member having a V-shaped slot to produce linear movement of a cable assembly in the same direction upon pivotal movement of the arm member in either a clockwise or a counterclockwise direction. The cable assembly is connected to pivotally mounted exterior mirrors for the vehicle.



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### 3,761,165
### PHOTOCHROMIC WINDOW WITH CAPILLARY FLOW CONTROL

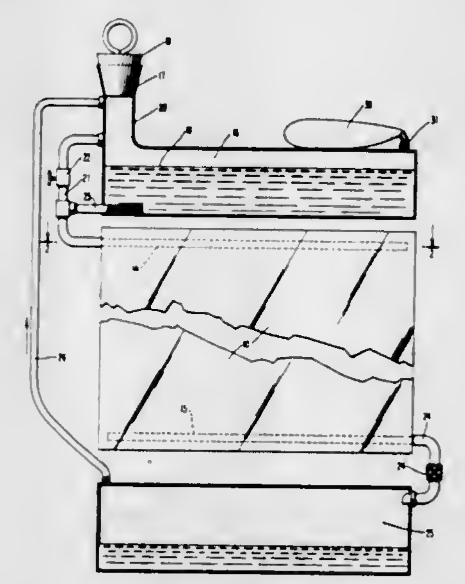
**Jean-Claude Besnard, Gometz-Le-Chatel, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France**

**Filed Apr. 30, 1971, Ser. No. 138,940**

**Claims priority, application France, May 4, 1970, 7016181**

**Int. Cl. G02b** *5/24*

**U.S. Cl. 350—312** **11 Claims**



A photochromic window is described in which a photochromic liquid flows slowly between panes of glass, the rate of flow being subjected to capillary control.

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### 3,761,166
### OVERLAP PHOTOGRAPHING DEVICE IN A CINECAMERA

**Hiroshi Hirata, Sakai, Japan, assignor to Minolta Camera Co., Ltd., Osaka-fu, Japan**

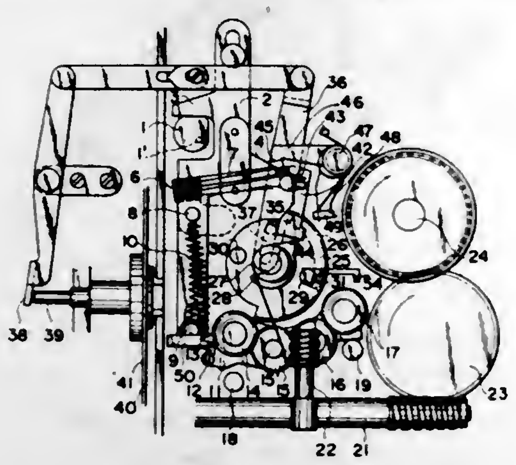
**Continuation of Ser. No. 96,183, Dec. 8, 1970, abandoned. This application Nov. 27, 1972, Ser. No. 309,716**

**Claims priority, application Japan, Dec. 9, 1969, 44/116327; Jan. 1, 1970, 45/8920**

**Int. Cl. G03b** *21/36*

**U.S. Cl. 352—91** **6 Claims**

The present invention is intended to effect automatically an overlap photographing in a cinecamera by operating a single change-over operation member, and an overlap photographing device in a cinecamera in accordance with the present invention comprises a camera driving member driven by a motor, a clutch interposed between a time set up member and a shutter opening operation plate and interlocked with a change-over operation member, and a switch for changing over the normal-reverse rotation of the motor operated by the shutter operation plate and said time set up member, and whereby in the normal photographing, by operating the change-over operation member the fade-out photographing in a certain length and the rewinding film in the same length are automatically carried out and stopped, and by restoring said change-over operation member the fade-in photographing in the same length film and the subsequent normal photographing are carried out.



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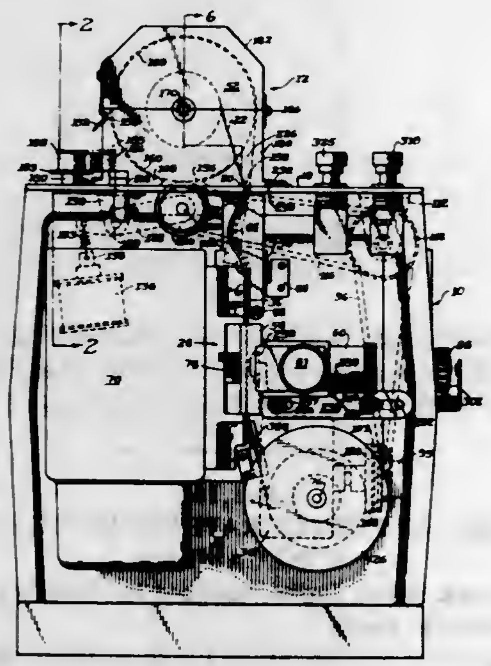
### 3,761,167
### PROJECTOR FOR AUTOMATICALLY THREADING, REWINDING, AND INDEXING A PLURALITY OF FILM SPOOLS AND A MAGAZINE FOR USE THEREWITH

**Elmer C. Henriksen, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.**
**Division of Ser. No. 706,239, Feb. 19, 1968, Pat. No. 3,614,022, which is a continuation of Ser. No. 439,210, March 12, 1965, abandoned. This application May 17, 1971, Ser. No. 150,940**
**Int. Cl. G03b** ***23/00***
**U.S. Cl. 352—124** **3 Claims**



A magazine having a plurality of adjoining reel compartments supplies film from successive reels in a film path for forward projection and receives film returned from the path during reverse projection and rewind following forward projection according to the condition of means for moving film between the magazine and a take-up member. During projector threading and rewind, the film path is enlarged and a shuttle for moving film intermittently during projection is prevented from film engagement. Sensing means at the film path condition the projector for (1) forward projection following threading, (2) rewinding following forward projection, and (3) terminating rewinding.

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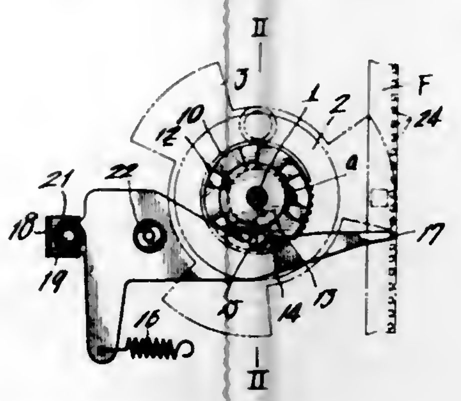
### 3,761,168
### MOTION PICTURE DISPLAY SPEED SHIFTING DEVICE

**Jihachiro Utsumi, Yokohama, and Takesaburo Shibuki, Ageo-shi, Saitama, both of Japan, assignors to Bell Ko-On Co., Ltd., Tokyo, Japan**
**Filed Feb. 2, 1972, Ser. No. 222,959**
**Claims priority, application Japan, June 2, 1971, 46/38418**
**Int. Cl. G03b** ***1/22***
**U.S. Cl. 352—168** **11 Claims**



A motion picture display speed shifting device includes a rockable arm having a film perforation engaging claw and a follower element. Cams are provided to engage the follower element and pivot the arm in a plurality of directions whereby the arm is actuated to cause the claw thereon to engage and disengage the perforation of the motion picture film and thereby move the motion picture film past a projector aperture. Biasing means are provided to selectively bias the follower element into engagement with either one of two rotary cam wheels to thereby vary the motion picture feed speed.

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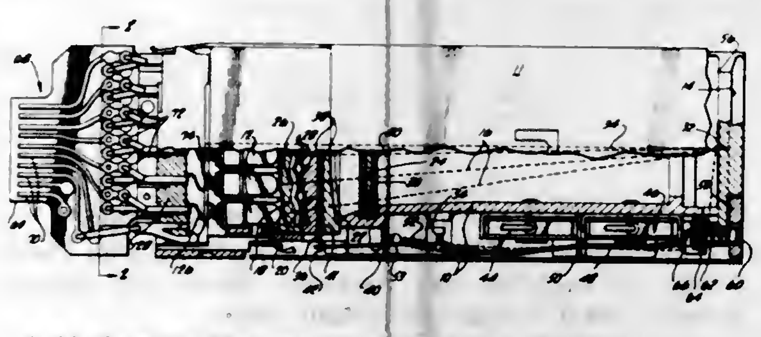
### 3,761,169
### MULTIPOSITION REAR PROJECTION DISPLAY APPARATUS

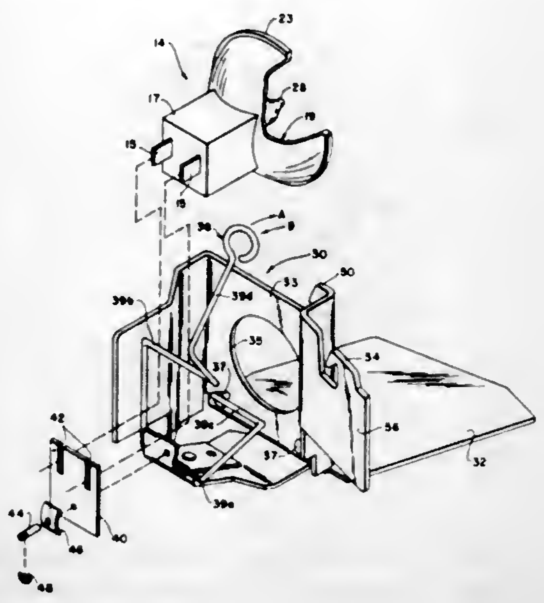
**Robert W. Farnden, Sepulveda; Roger Silverstone, Sunland, and John E. Hendricks, Encino, all of Calif., assignors to Industrial Electronic Engineers, Inc., Van Nuys, Calif.**
**Continuation of Ser. No. 819,609, April 28, 1969, abandoned. This application July 20, 1971, Ser. No. 166,225**
**Int. Cl. G03b** ***21/10***
**U.S. Cl. 353—25** **24 Claims**



A 48 character, 24 lamp rear projection, incandescent lamp powered display unit. The unit utilizes a flat movable mask incorporating the 48 characters to be displayed and a unique optical system to project the selected character on the unit display screen without distortion. An actuating mechanism for moving the mask between one of two positions is provided, the movement of the film being correlated with energization of a predetermined one of the lamps to produce the desired display. The display screen is movable to provide a push button arrangement which is to be actuated by the operator primarily in response to symbols or characters displayed thereon.

### 3,761,170
### PROJECTION LAMP MOUNTING APPARATUS

**Leonard G. Genesky; Franklin D. Kottler, and Robert F. Allen, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**Filed Feb. 19, 1971, Ser. No. 116,776**
**Int. Cl. G03b** ***21/20, 21/14***
**U.S. Cl. 353—87** **4 Claims**



A projection lamp mounting apparatus for adapting a projection lamp of the type having an ellipsoidal reflector for use in a photographic slide projector including a lamp support structure having a guide to position the lamp about the projector optical axis, and a wireform movable in one direction to urge the lamp into the projector and secure the lamp in position and movable in another direction to urge the lamp out of the projector.

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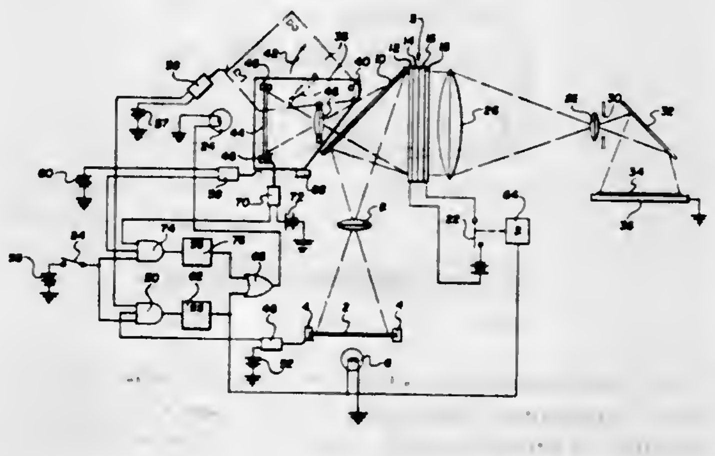
### 3,761,171
### NEGATIVE-POSITIVE, POSITIVE-POSITIVE EXPOSURE STATION

**Gary D. Fields, Parker, Colo., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Feb. 17, 1972, Ser. No. 227,239**
**Int. Cl. G03g** ***15/04, 15/00***
**U.S. Cl. 355—3** **17 Claims**



An exposure station is provided for making both negative-positive and positive-positive electrophotographic prints without employing reverse development techniques to develop one of the images. This is accomplished by projecting an image of a negative original onto a photoconductive-liquid crystal sandwich structure across which a potential is applied to form a temporary image in the liquid crystal, which temporary image is the reverse of the negative original. This temporary image is then projected onto a charged photoconductive surface to form a positive electrostatic latent image. In the positive-positive mode the same light source can be used in a first embodiment to project an image of a positive original through the photoconductive-liquid crystal sandwich, when in its transparent state, onto the photoconductive surface. In a second embodiment a separate light source can be used for projecting an image of the positive original to form a positive electrostatic latent image on the charged photoconductive surface. In addition, control means is provided to assure that the image of only one original can be projected at a time. In a third embodiment a single light source is used for both the negative-positive mode and the negative-negative mode.

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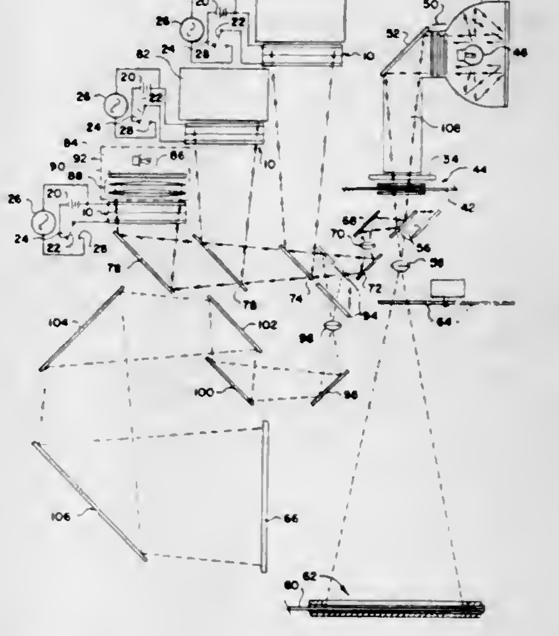
### 3,761,172
### COLOR ANALYZING PHOTOGRAPHIC PRINTER

**Edward K. Letzer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed Mar. 29, 1972, Ser. No. 239,061**
**Int. Cl. G03g** ***15/14***
**U.S. Cl. 355—3** **10 Claims**



A positive color representation of pictorial information contained on a photographic color negative is produced by a method and apparatus for projecting red, blue and green light through a photographic color negative positioned in a projection station, separating the red, blue and green light projected through the photographic color negative, forming and temporarily storing positive images of the separated red, blue and green color separation images, illuminating the respective stored positive images with red, blue and green light, respectively, and projecting the stored red, blue and green color positive images in mutual superimposition upon a viewing screen, whereby a positive representation of the pictorial information on the color negative is produced on the viewing screen. Each color positive image may be formed in a respective electro-optical color separation image forming, photoconductor-liquid crystal, sandwich structure by the application of a first voltage potential across the photoconductor-liquid crystal sandwich structure. The positive color representation of the pictorial information may be analyzed for color balance and intensity, and, as a result of each analysis, the relative intensities of the red, blue and green light projected through the color negative may be adjusted or varied. The temporarily stored positive images may be erased by application of a second voltage potential across the first, second and third photoconductor-liquid crystal sandwich structures.

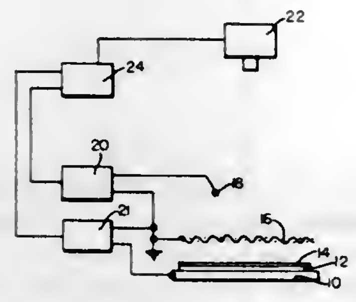
### 3,761,173
### IMAGING SYSTEM EMPLOYING IONS

**Richard A. Fotland, Warrensville, and Virgil E. Straughan, Euclid, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 178,521, Aug. 27, 1971. This application Aug. 2, 1972, Ser. No. 275,674**

**Int. Cl. G03g** *15/00*

**U.S. Cl. 355—3** **35 Claims**



In the formation of visible copies of an image, the use of an ion modulating array provided with an asymmetrical photosensitive coating together with means to electrostatically develop the ion image.

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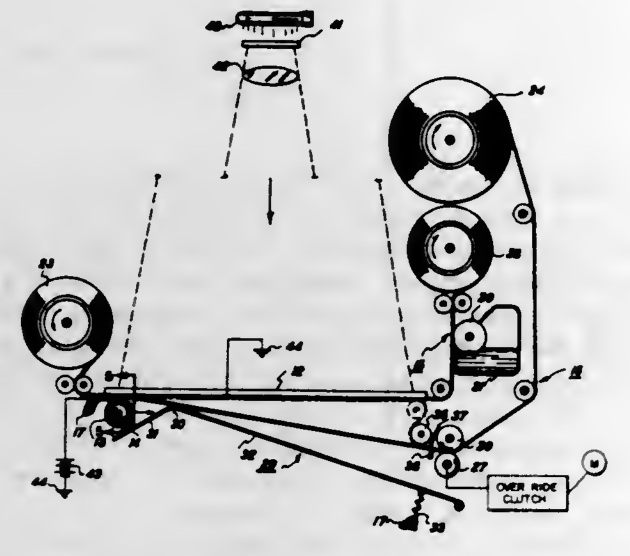
### 3,761,174
### MANIFOLD WEB HANDLING

**James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.**

**Division of Ser. No. 872,850, Oct. 31, 1969, Pat. No. 3,642,363. This application June 25, 1971, Ser. No. 156,934**

**Int. Cl. G03g** *15/14*

**U.S. Cl. 355—16** **8 Claims**



A manifold set of donor layer, imaging material layer and receiver layer is formed between a backing electrode and a tape electrode. The tape electrode is initially wound on a spool and is laid out over the various layers of the manifold set by unwinding it from the spool. The imaging material is exposed to electromagnetic radiation and subjected to an electric field. The donor and receiver layers are separated when the tape electrode is wound back onto the spool yielding complementary images formed from the imaging material on the donor and receiver layers.

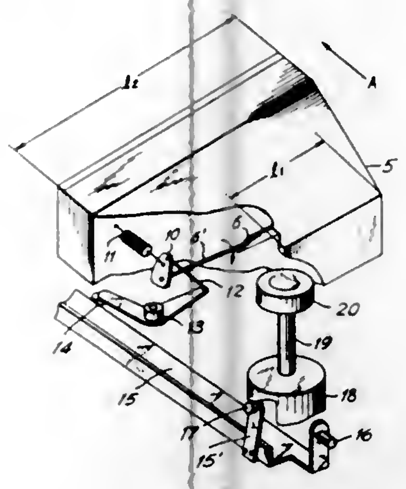
### 3,761,175
### LIGHT EXPOSURE MEANS FOR COPYING MACHINES

**Akira Shinozaki, Kitatama-gun, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan**

Continuation of Ser. No. 144,721, May 19, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,170

**Int. Cl. G03b** *27/76*

**U.S. Cl. 355—65** **4 Claims**



The new structure of a light exposure means for copying machine has been proposed. The said light exposure means is characterized by an improvement that in a light exposure means for copying machines wherein a focussing lens is located at an intermediate position of the optical path of the projecting optical system, the first diaphragm plate connected with the diaphragm operation mechanism is mounted near the focussing lens and also the second diaphragm plate is mounted near the image position of the projecting optical system. The new device enables us to make a copying machine in compact and simple form.

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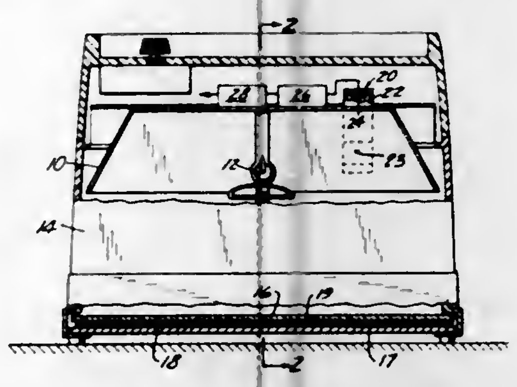
### 3,761,176
### AUTOMATIC EXPOSURE CONTROL FOR COPY MACHINE

**Gregory S. Lewer, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation of Ser. No. 829,356, June 20, 1969, abandoned. This application July 27, 1971, Ser. No. 166,607**

**Int. Cl. G03b** *27/78*

**U.S. Cl. 355—83** **8 Claims**



An automatic exposure control apparatus and method for a reflex photocopier including a light source and a diffuse reflector for reflecting light from the source uniformly onto a light-transmissive photosensitive film in intimate contact with an original document. A sample of light representative of the sum of the intensity of the light from the source and the intensity of the light reflected from the original document back through the film is continuously collected during each exposure cycle and each exposure cycle is controlled to maintain the integral of the intensity of the sample of light as a function of time constant over successive exposure cycles. The apparatus and method produce proper differential desensitization of the photosensitive film according to the differential reflectivity of the original document copied.

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### 3,761,177
### STROBOSCOPIC DEVICE

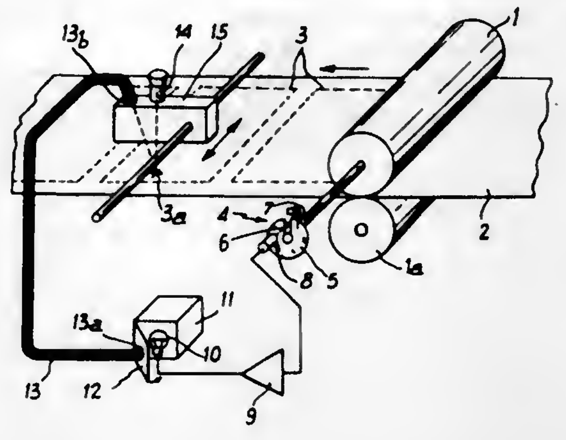
**Louis Corse, Paris, France, assignor to Chambon Automation Sarl, Paris, France**

**Filed Sept. 7, 1971, Ser. No. 178,006**

**Claims priority, application France, Oct. 9, 1970, 7032924**

**Int. Cl. G01p** *3/40*

**U.S. Cl. 356—23** **7 Claims**



A stroboscopic device for checking the details of a cyclic work performed on a sheet or web in a machine, notably a print made in a rotary printing-machine. It comprises an optical fibre having one end disposed in close proximity of the flash lamp located at a certain distance from the web and the other end located in close proximity of said web so as to illuminate an area where a detail of the work being accomplished is to be checked, said area, due to its intermittent illumination by the light emitted by the flash lamp and transmitted through said optical fibre, appearing as stationary to the observer.

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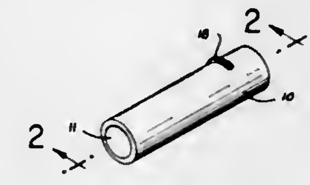
### 3,761,178
### APPARATUS FOR DETERMINING SPEED OF A MOVING OBJECT

**Carroll G. Turner, P.O. Box 806, Rosenberg, Tex., and Robert W. Turner, 7815 Prestwood Dr., Houston, Tex.**

**Filed Dec. 29, 1971, Ser. No. 213,292**

**Int. Cl. G01p** *3/40*

**U.S. Cl. 356—24** **6 Claims**



Apparatus is disclosed for determining the speed of a moving object by conducting an image of the object through a lens to a mirror and exciting the mirror with variable frequency oscillations from a light source or a vibrating source, until the image on the mirror becomes substantially steady. The frequency of oscillations exciting the mirror are proportional to the speed of rotation of a wheel driving the moving object. The apparatus may be mounted in a handheld housing.

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### 3,761,179
### MIRROR TESTING APPARATUS

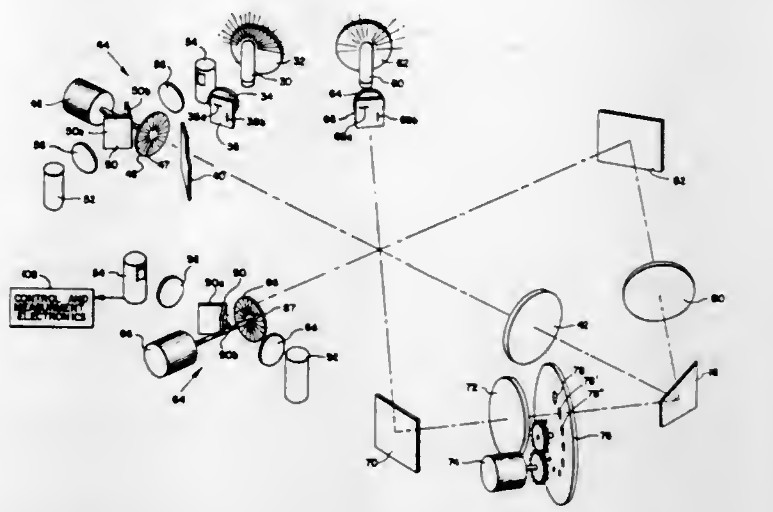
**William T. Plummer, Concord; Udo W. Salomon, Peabody, and Lawrence K. Ting, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed Aug. 26, 1971, Ser. No. 175,274**

**Int. Cl. G01b** *11/30*

**U.S. Cl. 356—120** **14 Claims**

An apparatus automatically measures the reflecting surface of a mirror to evaluate its local flatness and its overall flatness. In one embodiment of the apparatus, two separate optical systems are arranged so a mirror under test forms a part of each optical system. One optical system forms a large beam of light which covers the entire surface of the mirror. The other optical system forms a small beam of light which covers only a small local area of the mirror, but it includes a device which sweeps the small beam over the entire surface of the mirror. Overall or local variations in flatness of the surface result in proportional variations of light intensity at detectors associated with each optical system. Electronic circuitry processes signals generated by the detector to decide if the signals indicate the surface of the mirror under test is within predetermined limits.



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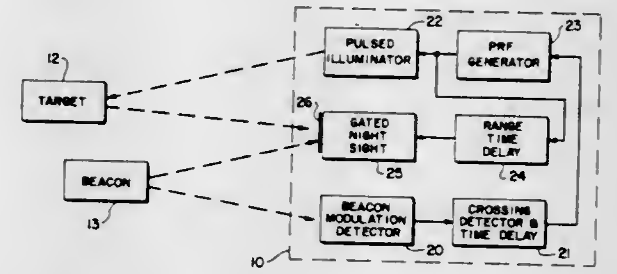
### 3,761,180
### SYNCHRONOUSLY GATED ACTIVE NIGHT SIGHT

**Richard F. Maxwell, Jr., 2019 Cedar Circle Dr., Baltimore, Md., and Jose E. Tallet, 124 Le Grande Dr., Pittsburgh, Pa.**

**Filed Sept. 22, 1972, Ser. No. 291,511**

**Int. Cl. G01c** *3/08*

**U.S. Cl. 356—152** **4 Claims**



A night sight employing a gated image intensifier is operated in conjunction with an amplitude-modulated tracking beacon on a missile and a pulsed light source for illuminating the target. The source is pulsed and the intensifier tube gated on for the target return magnet attached illumination such times that the amplitude modulated beacon intensity is at a low level for minimium viewing interference.

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### 3,761,181
### METHOD AND APPARATUS FOR MEASURING SOLDERABILITY OF METAL SURFACES

**Kenneth Sydney Monger, Great Baddow, and Frank Wallis, Chelmsford, both of England, assignors to The Marconi Company Limited, Chelmsford, Essex, England**

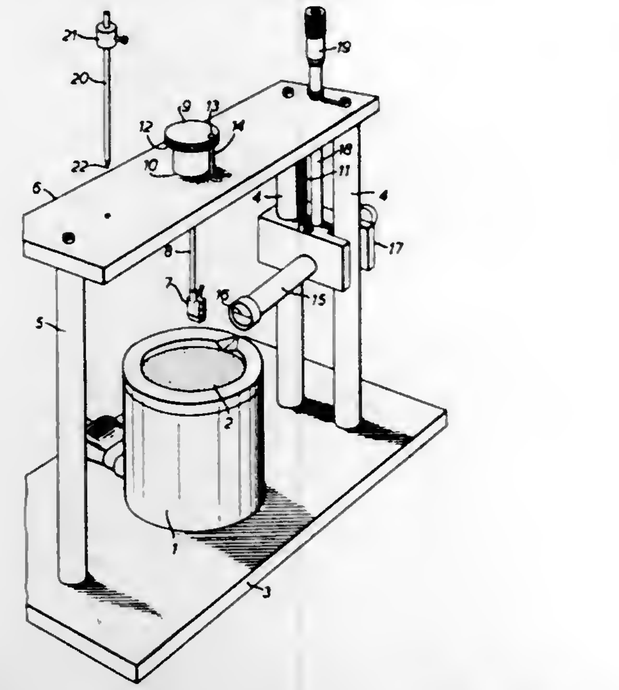
**Filed Dec. 6, 1972, Ser. No. 312,748**

**Claims priority, application Great Britain, Dec. 11, 1971, 57,656/71**

**Int. Cl. B23k** *37/04*

**U.S. Cl. 356—156** **11 Claims**

A method of obtaining an indication as to the solderability of a metal consists of focussing an optical telescope on a surface of molten solder in a container and noting the vertical height of the telescope, dipping a sample of the metal to be soldered into the molten solder, adjusting the vertical height of the telescope and refocussing it at the top of the solder meniscus formed up the sample, noting the difference between the two heights of the telescope and comparing the change in height with the change in heights achieved for samples of good solderability and poor solderability.



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### 3,761,182
### MEASURING THE DIAMETER OF A CIRCULARLY SHAPED OBJECT AND CORRECTING MEASUREMENT FOR SLIGHT DISPLACEMENTS OF OBJECT ALONG EITHER OF TWO ORTHOGONAL OPTIC AXES

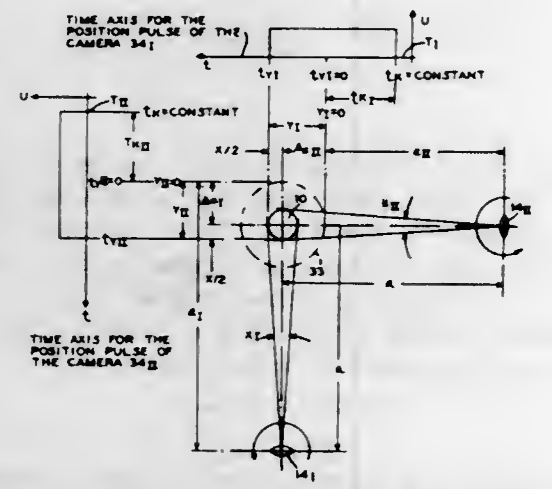
**Helmut Kubisiak, Leverkusen, and Dietrich Sorgenicht, Opladen, both of Germany, assignors to Exatest Messtechnik GmbH, Leverkusen, Germany**

**Filed June 1, 1972, Ser. No. 258,580**

**Claims priority, application Germany, June 4, 1971, No. P 21 27 751.0**

**Int. Cl. G01b *11/08***

**U.S. Cl. 356—160** **7 Claims**


TIME AXIS FOR THE POSITION PULSE OF THE CAMERA 34I
U
T1
t
tYI
tYI=0
tK=CONSTANT
tK=CONSTANT
TII
U
tKI
TIME AXIS FOR THE POSITION PULSE OF THE CAMERA 34II
34I

The disclosed invention involves periodically passing by using an optical scanning device, the profile image of the circular object to be measured before a photodetector which delivers pulses. The duration of each pulse is proportional to the diameter of the object. The improved invention corrects the diameter signal by a position signal giving the variation of the distance between the object and the optical scanning device. The apparatus for implementing such an improved method of measurement mainly comprises two scanning devices, the optical axes of which are orthogonally disposed with respect to each other and with respect to the longitudinal axis of the object, and a correction device is associated with each scanning device for correcting the diameter signal provided by the other scanning device.

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### 3,761,183
### DEVICE FOR MEASURING COLOR-COMPENSATION QUANTITY FOR COLOR PRINTING

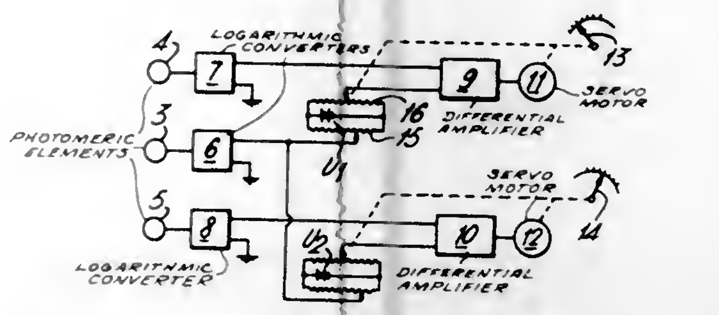
**Yoshio Yuasa, Sakai; Mikio Naya, and Koichiro Tsuchiyasu, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed Apr. 19, 1971, Ser. No. 135,247**

**Claims priority, application Japan, Apr. 17, 1970, 45/33252**

**Int. Cl. G01j *3/50***

**U.S. Cl. 356—175** **5 Claims**



The appropriate compensation quantities of a color compensation filter for use in color printing, as well as required exposure quantity, can be measured efficiently without insertion of such filters in an actual photographic enlarger. This can be accomplished by employing a device comprising a light source of standard spectrum, a means for measuring light transmitted through a color negative including three photodetectors respectively having photosensitivities in the red, green and blue spectrum ranges, operating circuits for computing each ratio between the output of a selected photoconductor and output of another or the other photodetector, and indicating means for indicating outputs of said operating circuits.

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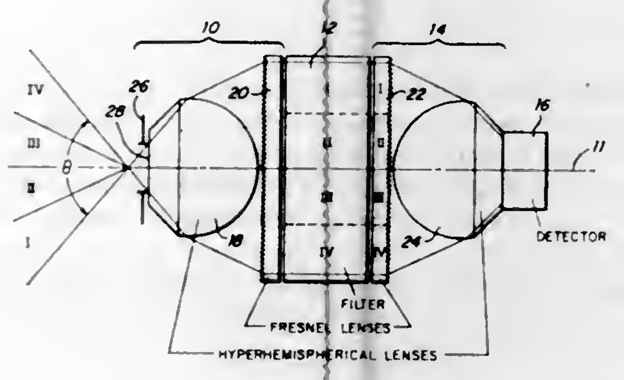
### 3,761,184
### WIDE ANGLE, NARROW BANDWIDTH LASER DETECTION SYSTEM

**Joseph L. McLaughlin, Jr., Bolton, Mass., assignor to Itek Corporation, Lexington, Mass.**

**Filed Feb. 7, 1972, Ser. No. 224,047**

**Int. Cl. G01j *3/46*; G02b *3/00*, *3/08***

**U.S. Cl. 356—186** **1 Claim**



A laser detection system for examining a large field of view to determine if the system is being illuminated by laser radiation at a specific frequency. The system includes a first positive lens system for gathering light over a large field of view and for substantially collimating the light for passage through an interference filter. The interference filter allows the passage of radiation in a narrow bandpass region about the specific frequency of laser radiation of interest. Radiation passing through the filter is then condensed by a second positive lens system and directed onto a photosensitive detector. The first and second lens systems form an image of the detector at the entrance to the first positive lens system which defines the entrance aperture to the laser detection system. In the preferred embodiment the first and second positive lens systems each consist of a hyperhemispherical lens and a fresnel lens.

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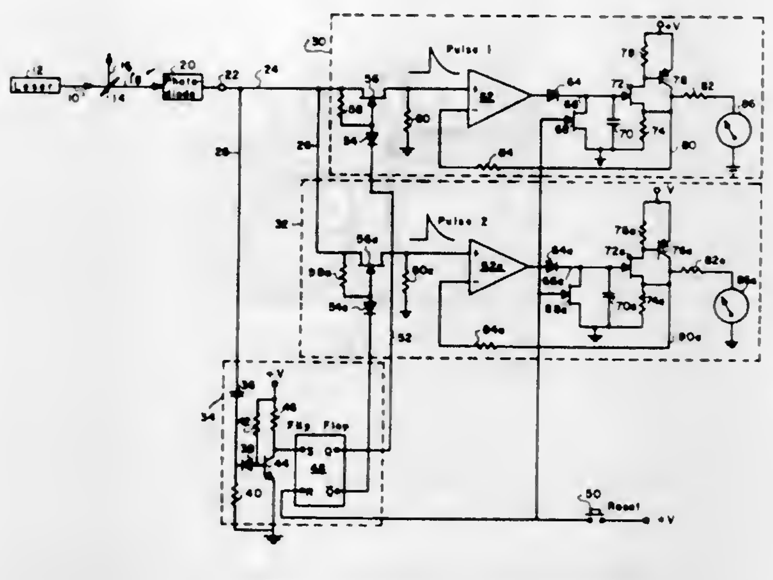
### 3,761,185
### LASER LIGHT PULSE MONITORING SYSTEM

**Druce Blackwell, Long Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.**

**Filed Dec. 18, 1970, Ser. No. 99,373**

**Int. Cl. G01j *1/10*; G01r *19/08***

**U.S. Cl. 356—229** **9 Claims**



The light output of a doubly pulsed laser is monitored by converting the two successive light pulses into corresponding electrical pulses and feeding the electrical pulses to a pair of parallel connected circuit channels. A first one of the circuit channels is conditioned to receive the first electrical pulse while a second one of the circuit channels is rendered immune to that pulse. The first electrical pulse charges a capacitor to a voltage proportional to the pulse amplitude and the voltage is displayed on a direct current voltmeter. The second circuit channel is conditioned to receive the second electrical pulse while the first circuit channel is rendered immune to that pulse. The second electrical pulse charges another capacitor to a voltage proportional to the pulse amplitude and the voltage is displayed on another meter. Both voltages are maintained for comparison with one another, after which the circuit channels may be reset to their initial condition for reception of the next set of electrical pulses.

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### 3,761,186
### APPARATUS FOR OPTICALLY INSPECTING THE CONDITION OF A SURFACE HAVING KNOWN VARIATIONS IN THE CONDITION

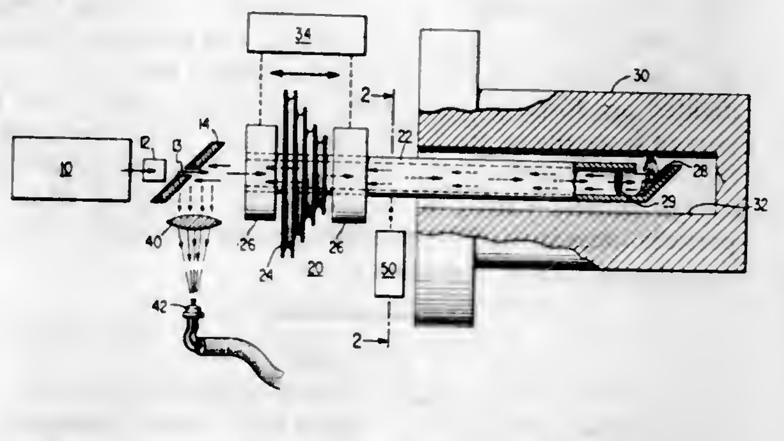
**Thomas Dimock Wason, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Continuation of Ser. No. 869,612, Oct. 27, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,099**

**Int. Cl. G01n *21/16***

**U.S. Cl. 356—241** **16 Claims**

A laser beam is used to selectively scan a surface under test, the characteristics of the surface determining the manner in which the scanning beam is reflected. A selected portion of the reflected beam is thereafter analyzed to indicate the condition of the surface.



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### 3,761,187
### FLOW-THROUGH CHAMBER FOR PHOTOMETERS TO MEASURE AND COUNT PARTICLES IN A DISPERSION MEDIUM

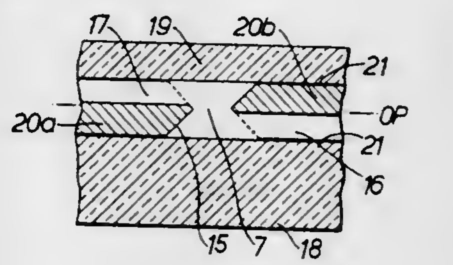
**Wolfgang M. Dittrich, Am Krug 42, and Wolfgang H. Gohde, Lohoefenerweg 39, both of Muenster, Germany**

**Division of Ser. No. 884,651, Dec. 12, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,798**

**Claims priority, application Germany, Dec. 18, 1968, P 18 15 352.1**

**Int. Cl. G01n *1/10***

**U.S. Cl. 356—246** **8 Claims**



A particle measuring and counting device comprises a flow-through chamber having a conduit for the dispersion medium. The central vertical nozzle of the conduit is disposed with its opening in the sharply focussed object plane of a microscope and uniformly illuminated from below or by incident illumination. Electronic counting and recording devices are coupled to the output of the microscope for analyzing light pulses occuring in the nozzle when particles pass therethrough.

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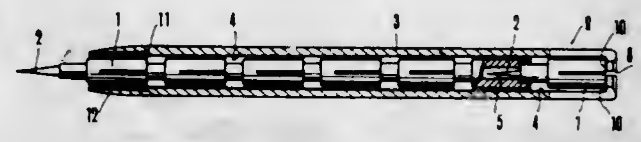
### 3,761,188
### PENCIL WITH SELF-REFILLING CARTRIDGES

**Chuang Chin-Chih, 10, Ln. 123, Song King Rd., Taipei, Taiwan, China /Taiwan**

**Filed Mar. 7, 1972, Ser. No. 232,577**

**Int. Cl. B43k *21/14***

**U.S. Cl. 401—57** **5 Claims**



A writing implement in which a plurality of short cartridges are arranged in order in a hollow of an elongate plastic tubular casing, said cartridge having a short presharpened lead at its front end and a hole at its rear part and having an outside diameter so as to be received in frictional relationship in the hole and when the short lead that is normally exposed at the front end of the tubular casing has become blunt or broken, the front-most cartridge can be readily removed by pulling it out of the front end of the tubular casing characterized in that several lines of slits reaching into the hollow inside of the plastic tubular casing at its rear end are formed in the longitudinal direction of the tubular casing, and resilient members that are continuous with the tubular casing but are mutually divided are formed by the slits, and engaging edges that are curved inwardly of the hollow are formed at the rear ends of the resilient members, and the rear end of the cartridge inside of the tubular casing is locked by the engaging edges to prevent retraction of the cartridges by the application of pressure during writing operation.

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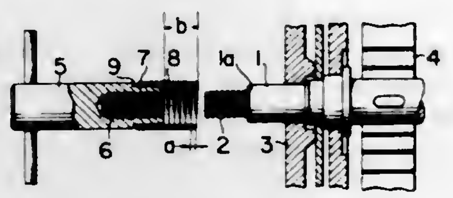
### 3,761,189
### DEVICE FOR FIXING SPRING WINDER MEANS

**Ikuo Suzuki, Okaya-shi, Nagano-ken, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano-ken, Japan**

**Filed June 1, 1972, Ser. No. 258,541**
**Claims priority, application Japan, June 8, 1971, 46/47562**
**Int. Cl. F16d** *1/00*
**U.S. Cl. 430—320** **6 Claims**



The device firmly secures a spring winder means to a spring winding stem by means of a coil spring intimately fitted over the spring winder means and the spring winding stem threadably connected together. The convolutions of the coil spring are directed in the same direction as the threads formed in the spring winder means and spring winding stem for threadable connection, so that the coil spring is tightened if the spring winder means is turned in a direction in which it is threadably disconnected from the spring winding stem. Thus, the spring winder means is firmly secured to the spring winding shaft through the coil spring and prevented from being dislodged therefrom.

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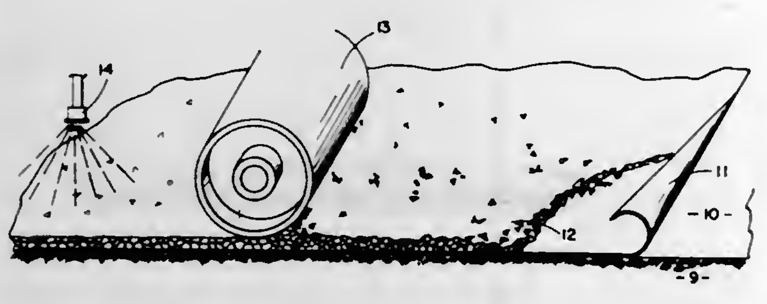
### 3,761,190
### UNITARY PARTICULATE MATERIAL SURFACE STRUCTURE AND METHOD AND MATERIAL FOR PREPARING THE SAME

**Alva G. Thaning, Hemet, Calif., assignor to Sta-Rock, Inc., San Jacinto, Calif.**

**Filed Oct. 8, 1969, Ser. No. 864,714**
**Int. Cl. E01c** *7/35*
**U.S. Cl. 404—82** **2 Claims**



A unitary particulate material strucure for use in yards around buildings or in roofing, for example, is produced by placing a flexible sheet, such as a polyvinyl plastic sheet, upon the ground or other support material or base. A thin layer of particulate material, such as gravel, crushed rock, stones, pebbles or the like, is placed over the exposed surface of the sheet and rolled level. The structure is completed by applying a binder to the layer of particulate material so that the binder penetrates the interstices of the particulate material. The binder is applied in a dispersion of plastic material, such as synthetic resins, and filler material, such as powdered silica, dispersed in an aqueous medium. Pigments, thickening and drying agents and the like may also be included in the binder dispersion for various applications of the unitary structure produced upon drying of the applied binder dispersion.

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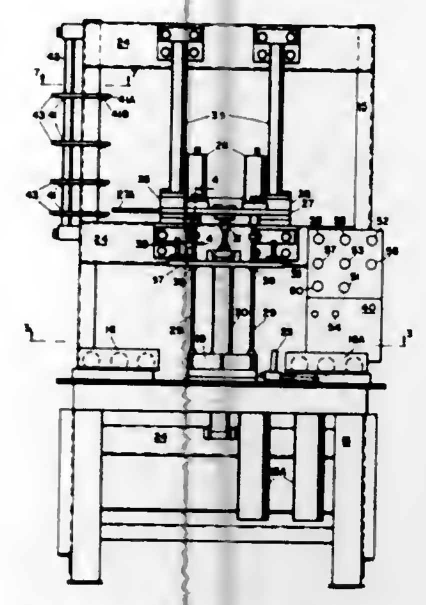
### 3,761,191
### ELECTRODE NIPPLE DRILLING MACHINE

**George E. Frazier, Fulton, Ky., assignor to The Carborundum Company, Niagara Falls, N.Y.**

**Filed Sept. 27, 1971, Ser. No. 184,140**
**Int. Cl. B23b** *39/20, 41/04*
**U.S. Cl. 408—13** **4 Claims**



A machine for drilling holes in electrode nipple blanks, the holes being undercut to hold the appropriate thermosetting binder material. The machine is air driven and has a control system which permits either manual or semi-automatic operation in a preset time sequence. The nipples receive their final threading after all other operations of drilling and binder material filling have been performed, the resulting finished nipples thus require no further thread cleaning or inspection before use.

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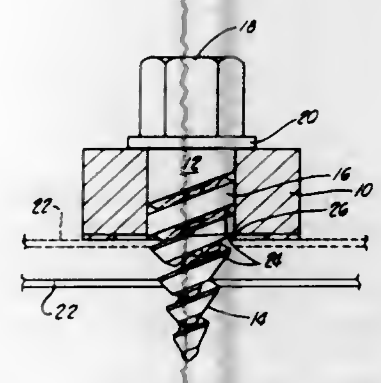
### 3,761,192
### CHIPLESS ROUND HOLE CUTTER

**Kelly B. Carr, West Covina, Calif., assignor to Carr Engineering Corporation, Los Angeles, Calif.**

**Filed Dec. 22, 1971, Ser. No. 210,846**
**Int. Cl. B23b** *51/02, 51/08*
**U.S. Cl. 408—22** **7 Claims**



A chipless round hole cutter including a screw shear and die body which cooperate to provide a round hole in a sheet of metal. The die body has an opening equal to the desired opening to be cut in the metal and the die body fits over the screw portion of the screw shear. The screw shear includes a tapered helical threaded section which is used to cut the metal and to carry and guide the cut metal within the groove to be retained in the threaded groove within the die body. The cutting edge of the screw shear adjacent to the die body provides for the final cutting of the hole to the desired size. The screw shear may be tapered along its entire length and with various size die bodies used to provide for a plurality of different size openings with a single screw shear or the screw shear may include a straight threaded section having a diameter substantially equal to the opening through the die body.

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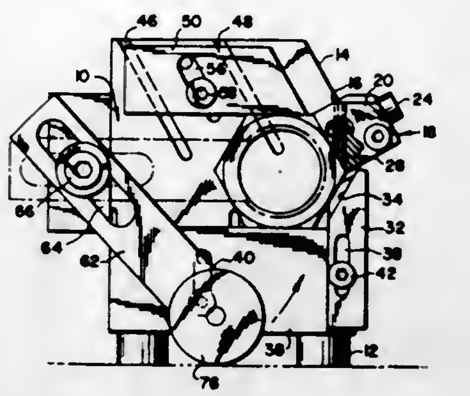
### 3,761,193
### DRILL JIG

**Matthew Del Giudice, 108-11 46th Ave., Corona, N.Y.**

**Filed July 15, 1971, Ser. No. 162,990**
**Int. Cl. B23b** *49/00*
**U.S. Cl. 408—115** **8 Claims**



The present invention is for a jig for supporting a workpiece to permit the drilling of precise and accurate holes in the peripheral areas thereof. The various elements of the jig are adjustable to accommodate workpieces of different size.

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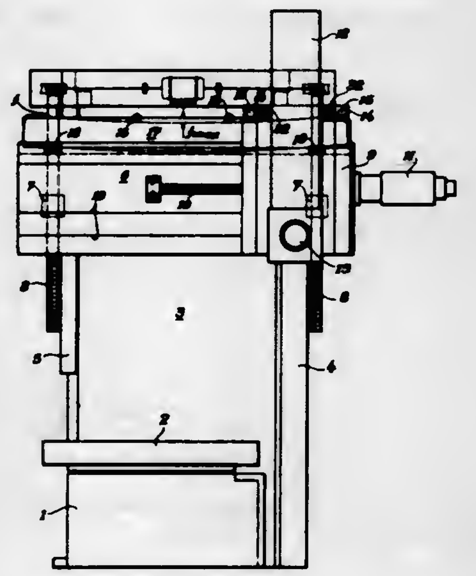
### 3,761,194
### APPARATUS FOR PREVENTING DEFLECTION OF TOOL HEAD GUIDING BEAM

**Hans Oskar Wagner, Buttgen-Vorst, Germany, assignor to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany**

**Filed May 2, 1972, Ser. No. 249,554**
**Claims priority, application Germany, May 5, 1971, P 21 22 204.8**
**Int. Cl. B23b** *47/26*
**U.S. Cl. 408—234** **5 Claims**



A machine tool having a transverse guide beam supported at two longitudinally spaced points in the frame and having guide surfaces on which a tool head is guided in the frame. A support beam is supported on the transverse beam near the points of support of the transverse beam and has a support surface parallel to the aforementioned guide surfaces. A tool head guided on said guide surface has rollers engaging the support surface on the support beam and which are automatically adjustable on the tool head to remain in load transmitting engagement with said support surface when the support beam deflects due to the tool head load, thereby to relieve the transverse beam of loads due to the tool head.

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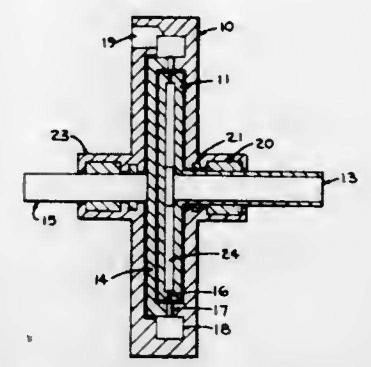
### 3,761,195
### COMPRESSING CENTRIFUGE

**Michael Eskeli, 6220 Orchid Ln., Dallas, Tex.**

**Filed May 4, 1971, Ser. No. 140,124**
**Int. Cl. F01d** *1/06, 1/22*
**U.S. Cl. 415—1** **13 Claims**



Method and apparatus for compressing dry or wet gases wherein the gas is compressed in a high speed rotor and discharged from said rotor in essentially compressed state to a secondary rotor where the kinetic energy of the fluid stream is converted to work; this work can be then used to decrease the work input to the primary rotor, resulting in an improved efficiency for the machine. Dry gases, such as air, may be compressed; also, wet gases or vapors, with a predetermined amount of liquid, such as gas-liquid mixture of propane, may be compressed and liquefied within the said primary rotor with the fluid being a liquid when reaching the secondary rotor and being discharged as a liquid from the machine. Further, liquid may be added to a dry gas in a predetermined amount, for example, water added to air, to absorb some heat during compression and thereby decrease primary rotor speed.

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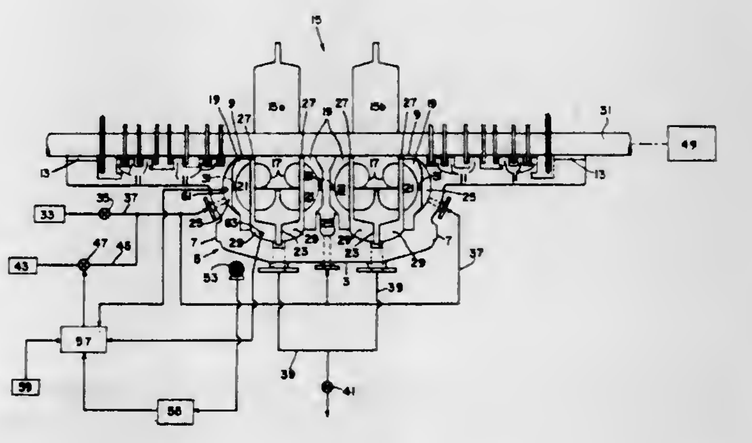
### 3,761,196
### CAVITATION CONTROL SYSTEM

**Eugene P. Weinert, 398 Willow Dr., Cinnaminson, N.J.**

**Filed Aug. 26, 1971, Ser. No. 175,239**
**Int. Cl. F01d** *5/10*
**U.S. Cl. 415—119** **2 Claims**



Subject invention relates to a novel and improved apparatus for minimizing the phenomenon of cavitation and noise in a liquid circulating energy conversion device such as a water brake. Pressurized air or a suitable gas is mixed with the liquid that is circulated in the device so as to increase the pressure throughout the circulating liquid above the point where it will boil and cause cavitation. Pressure of the air or gas is automatically controlled by the amplitude of the noise in the device when cavitation occurs.

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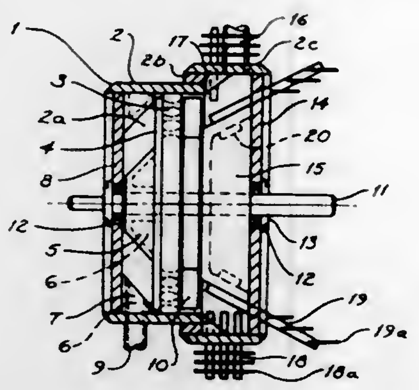
### 3,761,197
### VARIABLE SPEED VAPOR TURBINE

**Donald A. Kelly, 5806 69th Pl., New York, N.Y.**
**Filed Feb. 18, 1972, Ser. No. 227,349**
**Int. Cl. F01b** *25/02*
U.S. Cl. 415—159 9 Claims



The variable spped vapor turbine is a basic impulse type of turbine expander designed for closed Rankine cycle systems, which is intended to eliminate the need for a large gear reduction unit usually associated with high speed automotive turbines.

The turbine consists of an impeller with fixed axial flow blades, a nozzle plate which contains multiple sets of both axial and angular nozzles for varied axial, partial angular, and full angular vapor jet entrance.

The axial jet nozzles provide for a relatively low speed, fair torque output, while the use of angular jet nozzles results in high speed at good torque output levels.

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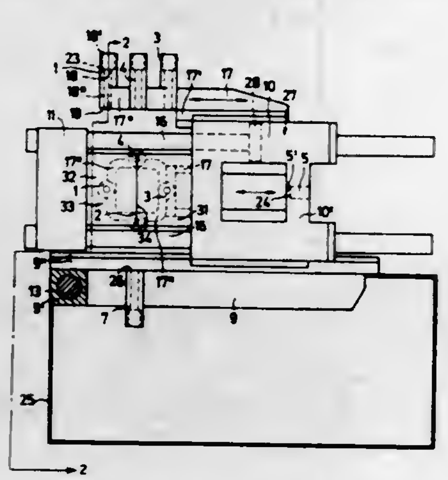
### 3,761,198
### INJECTION MOLDING MACHINE

**Karl Hehl, Siedlung 183, Lossburg/Wurttemberg, Germany**
**Filed Apr. 14, 1971, Ser. No. 133,829**
**Claims priority, application Germany, Apr. 24, 1970, P 20 19 875.8**
**Int. Cl. B28f** *1/00*
U.S. Cl. 425—192 21 Claims



An injection molding machine for processing synthetic and other similarly processed masses has a clamping unit with a casting mold defining a separating groove. Means are mounted on the clamping unit for selectively mounting injection units for operating into the separating groove in a direction parallel thereto, and for mounting special units. The mounting means has a carraige provided with connecting sleeves for receiving struts. A slide bearing is provided for clampably mounting the carriage in a slide guide defined on the clamping unit for movement in a direction parallel to the opening direction of the clamping unit. The connecting sleeves are two pairs of sleeves arranged in a crosswise manner so that one pair of sleeves lies in a plane parallel to the separating groove and the other pair of sleeves lies in a plane perpendicular to the separating groove. At least one additional slide guide is defined on the clamp unit for selectively holding the carriage in a position perpendicular to this position when held by the above-mentioned slide bearing.

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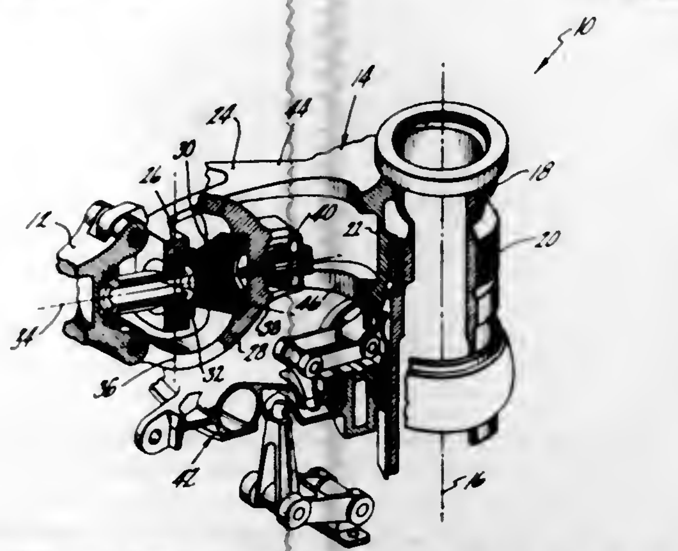
### 3,761,199
### HELICOPTER ROTOR WITH REDUNDANT LOAD CARRYING CAPABILITY

**Donald L. Ferris, Newtown, and Robert Zincone, Norwalk, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**
**Filed July 14, 1972, Ser. No. 272,087**
**Int. Cl. B64c** *27/38*
U.S. Cl. 416—134 10 Claims



A helicopter rotor in which the helicopter blades are mounted for rotation from a rotor hub which is shaped to provide redundant load carrying paths for blade centrifugal loading, torque loading, thrust loading and rotor head moment loading.

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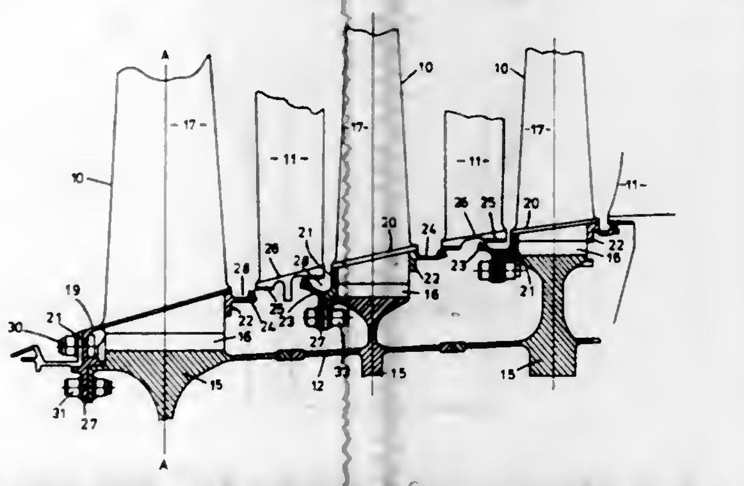
### 3,761,200
### BLADED ROTORS

**Terence Edward Gouvenot Gardiner, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**
**Filed Nov. 26, 1971, Ser. No. 202,395**
**Claims priority, application Great Britain, Dec. 5, 1970, 57,904/70**
**Int. Cl. F01d** *5/30*
U.S. Cl. 416—220 8 Claims



A bladed rotor for a gas turbine engine comprises a ring of blades mounted on a disc. The platforms for the blades are provided on a separate platform ring which has axially extending sealing rings at the axial ends to form seals with adjacent stator rings. Additional features are that additional radial flanges can be provided at the axial ends of the platform ring to act as sealing plates and locking tabs.

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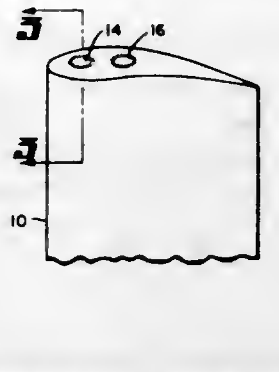
### 3,761,201
### HOLLOW TURBINE BLADE HAVING DIFFUSION BONDED THEREIN

**Stanley M. Silverstein, Stratford, and Victor Strautman, Trumbull, both of Conn., assignors to Avco Corporation, Stratford, Conn.**
**Division of Ser. No. 818,557, April 23, 1969, Pat. No. 3,626,568. This application Aug. 27, 1971, Ser. No. 173,499**
**Int. Cl. F01d** *5/18*
U.S. Cl. 416—232 2 Claims



This invention relates to turbine blades having diffusion bonded pins or inserts in the holes which are formed in the turbine blades during casting.

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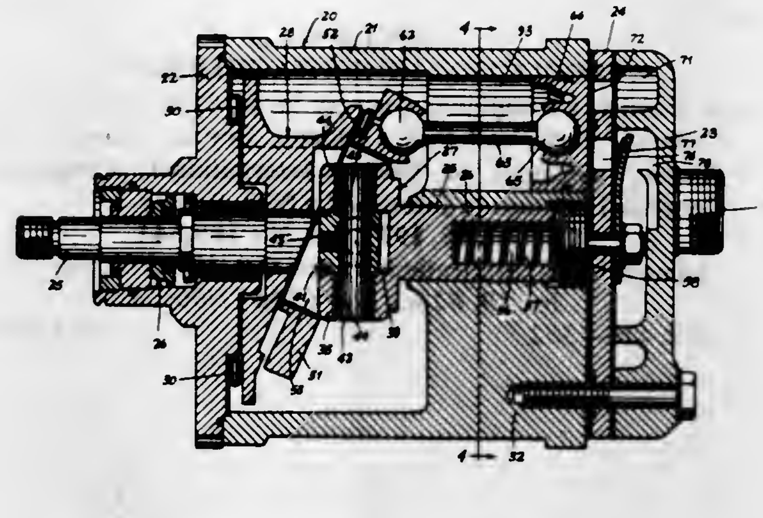
### 3,761,202
### COMPRESSOR WITH CROSS AXIS

**Orville Mitchell, Star Harbor, Tex., assignor to John E. Mitchell Company, Dallas, Tex.**
**Filed Jan. 18, 1972, Ser. No. 218,807**
**Int. Cl. F04b** *1/12*
U.S. Cl. 417—269 15 Claims



A multi-cylinder compressor of the nutating, or cam and wobble plate type, wherein the wobble plate is held against the cam rotor by a cross-axis mechanism that prevents rotation of the wobble plate while permitting its wobble, wherein all axial lost motion between the wobble plate and the cam is taken out by a continuous adjustable force transmitted through the cross-axis mechanism, preferably spring-maintained but capable of being positively and adjustably loaded, and wherein radial lost motion is prevented by design of the cross-axis mechanism.

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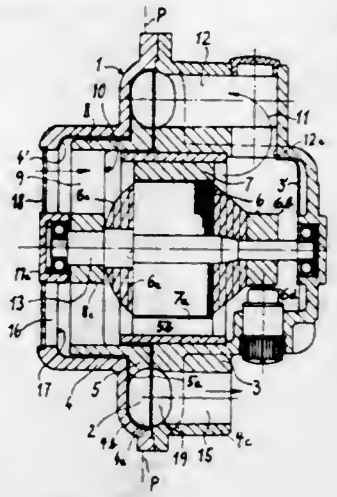
### 3,761,203
### RING-TYPE FAN

**Werner Neidhardt, and Otwin Reschauer, both of Augsburg, Germany, assignors to GefeG, Gesellschaft fur elektrische Gerate m.b.H, Augsburg, Germany**
**Filed Nov. 1, 1971, Ser. No. 194,655**
**Claims priority, application Germany, Oct. 31, 1970, P 20 53 562.0; Apr. 14, 1971, P 21 17 929.3**
**Int. Cl. F04b** *35/00*
U.S. Cl. 417—371 19 Claims



A ring-type fan or compressor comprises an impeller ring having a propeller-forming hub and surrounds an electric motor to which the fan impeller is coupled. The motor extends axially to both sides of the plane of the impeller ring which surrounds the fan and is rotatable in a housing in which the intake passage communicates with the motor chamber on the opposite side of the motor structure so that the displaced gases are initially drawn through the motor chamber to cool the motor. An axial blower may be located within the housing and is driven by the motor within the annular impeller.

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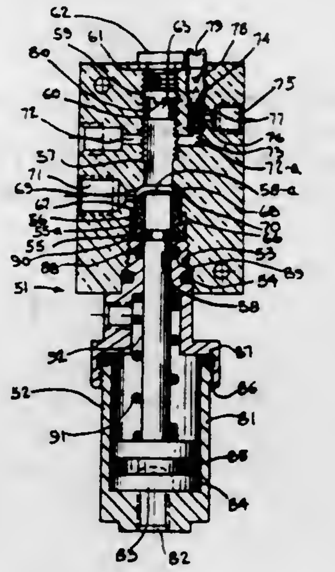
### 3,761,204
### POSITIVE DISPLACEMENT BOOSTERS

**Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio**
**Filed Dec. 6, 1971, Ser. No. 204,916**
**Int. Cl. F04b** *35/02*
U.S. Cl. 417—401 4 Claims



A series of simple booster pumps operating as positive displacement pumps driven by either pneumatic or hydraulic power cylinders simply attached to the respective pump chambers which receive piston rods upon each cylinder stroke, controllable as to its length by an adjustable stop-plug thereby displacing fluid from pump chamber at pressures proportional to the ratios of rod diameters versus piston diameter, with or without integral check valves in the inlet or outlet ports of the pump chamber, with a shuttle valve built-in in the inlet port of the design for handling aerated fluids such as grease, eggnog or the like, and a built-in outlet check valve in the same pump chamber, and appropriate seals separating the actuation power cylinder from the pressurization pump chamber by a threaded connection representing the only means for connecting actuator to the pump chamber and providing simple booster pump construction with provisions for capacity change by virtue of interchanging cylinders from one size of a given maximum capacity to another size with completely different boosting and volume control capabilities, all with extreme easiness and simplicity, mandatory in pollution control equipment manufacture, among other vital applications.

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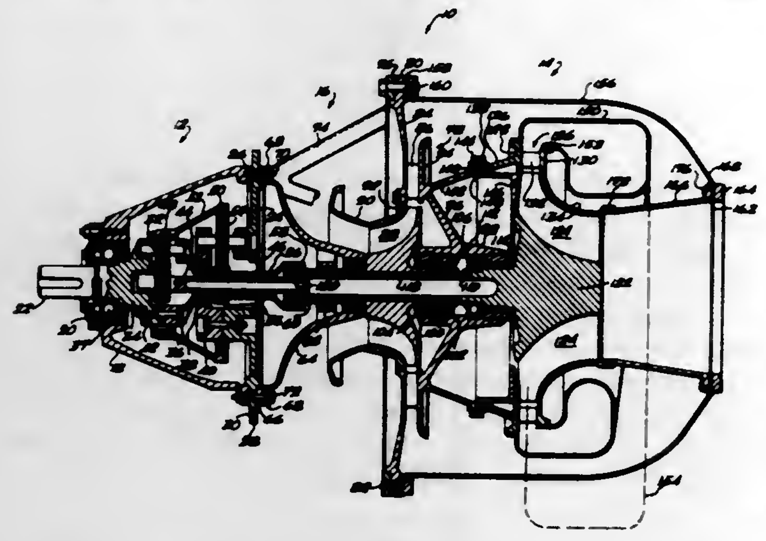
### 3,761,205
### EASILY MAINTAINABLE GAS TURBINE ENGINE

**Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.**

**Filed Mar. 20, 1972, Ser. No. 236,031**

**Int. Cl. F04b** *17/00*

**U.S. Cl. 417—407** **13 Claims**



A differential gas turbine engine is constructed so that the power module may be removed as a unit from the output gearbox. Additional features enable major hot section components to be removed for inspection or replacement without major disassembly of the engine.

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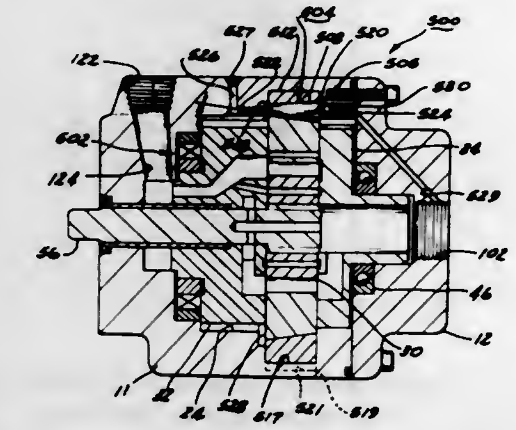
### 3,761,206
### FLUID DEVICE

**Burton A. Fierstine, Saginaw, Mich., assignor to Shively Bros., Inc., Flint, Mich., a part interest**

**Filed Feb. 2, 1971, Ser. No. 111,989**

**Int. Cl. F01c** *21/16;* **F03c** *3/00;* **F04c** *15/04*

**U.S. Cl. 418—16** **13 Claims**



A fluid device of the sliding vane type having a housing with low and high pressure operating passages, one of which is an inlet passage and the other an outlet passage. A rotor having radially extending vanes is rotatably mounted within a chamber defined by the inner surface of a cam ring and a pair of pressure plates operatively coupled to the opposite sides of the cam ring. The cam ring and pressure plates are mounted in the housing for rotation with the rotor, while means are provided for selectively increasing and/or decreasing relative rotational movement between the rotor and cam ring to control the amount of fluid displaced by the fluid device.

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### 3,761,207
### SEALING MEANS FOR ROTARY PISTON MACHINES

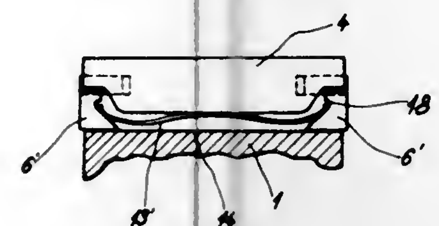
**Jiri Seidl, Uppsala, Sweden, assignor to Monark-Crescent AB Kyrkogatan, Varberg, Sweden**

**Filed Jan. 28, 1972, Ser. No. 221,618**

**Claims priority, application Sweden, Feb. 8, 1971, 1514/71**

**Int. Cl. F01c** *19/04*

**U.S. Cl. 418—121** **13 Claims**



Sealing means for rotary piston machines of the apex piston type comprise three types of basic sealing elements: apex seals for sealing engagement between the apexes of the piston and the centre wall of the housing; side sealing strips for sealing engagement between the ends of the piston and the end walls of the housing; coupling members for bridging the gap between the ends of the apex seals and the side sealing strips. This coupling member is located in the same groove as is the apex seal and below the end of the latter one.

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### ERRATUM

For Class 424—192 see:
Patent No. 3,761,198

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### 3,761,208
### PRODUCTION OF CONTACT LENSES

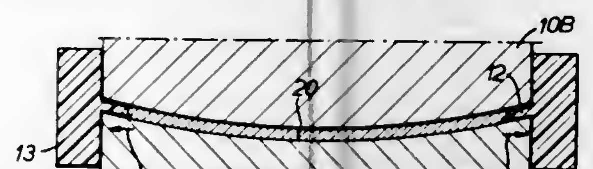
**Jean Boudet, Champigny; Georges Wajs, Charenton; Gerard Gomond, Paris, and Pierre Billault, Bry sur Marne, all of France, assignors to Essilor International (Compagnie Generale D'Optique), Joinvolle Le Pont, France**

**Filed Oct. 15, 1971, Ser. No. 189,644**

**Claims priority, application France, Oct. 19, 1970, 7037579**

**Int. Cl. B29c** *1/06;* **B29d** *11/00*

**U.S. Cl. 425—352** **4 Claims**



A contact lens, particularly a flexible, silicone contact lens, is directly moulded with its final profile including a progressively tapered peripheral edge. The lens is moulded by complementary dies and an intermediate annular spacer provided on its inner periphery with a groove of concave cross-section.

### 3,761,209
### MANUFACTURE OF RIGID PHENOL-ALDEHYDE FOAMS

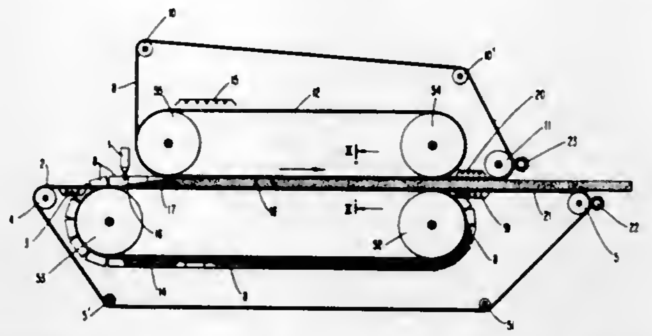
**Daniel Hanton, La Neuville Roy, France, assignor to Compagnie de Saint-Gobain, Neuilly sur Seine, France**

**Division of Ser. No. 879,040, Nov. 24, 1969. This application Mar. 28, 1972, Ser. No. 238,814**

**Claims priority, application France, Nov. 29, 1968, 68175976**

**Int. Cl. B29d** *27/04*

**U.S. Cl. 425—4 C** **7 Claims**



Phenol-aldehyde foams are made by forming first and second mixtures of the reactants of which one contains the phenolic component and the other the formaldehyde component, one or the other containing the catalyst and blowing agent. Adjuvants such as silicone oil may be added to one or the other of the mixtures. When the first and second parts are mixed, they are applied evenly to a conveyor having a nonadherent surface at a temperature favorable to reaction and foam formation. The sheet is shaped to its dimensions between upper and lower conveyors and the surfaces hardened to permit handling without distortion. Drying is by dielectric loss. Total time of manufacture is reduced by the order of 12–15 hours and a better, more uniform, and purer product substantially free of acid and moisture is produced. Novel apparatus is also described.

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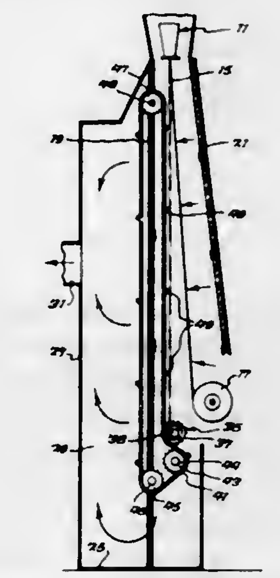
### 3,761,210
### APPARATUS FOR PRODUCING FIBERS

**Raymond C. Vaughan, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.**

**Filed July 9, 1971, Ser. No. 161,146**

**Int. Cl. B29c** *25/00;* **B65h** *54/02*

**U.S. Cl. 425—72** **7 Claims**



In an apparatus for the production of continuous fibers from a fiberizable material, a bushing with a plurality of orifices supplies streams of fiberizable material which are attenuated in the form of continuous fibers. The fibers are collected on a spool spaced from the bushing. An induced draft zone between the bushing and the collection spool is provided for flowing air evenly across the fibers so that broken fibers are removed from the collection area.

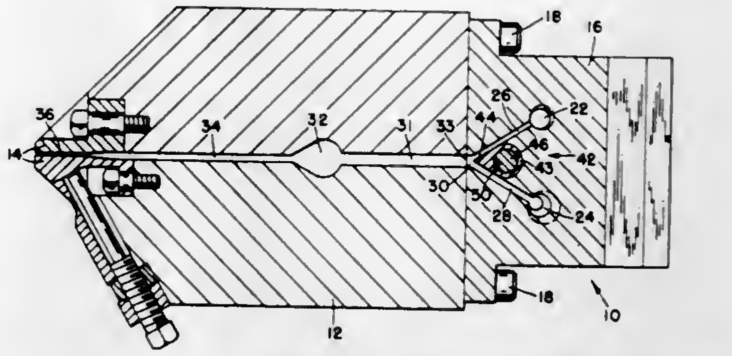
### 3,761,211
### MULTI-LAYER EXTRUSION APPARATUS

**Edward J. Parkinson, Saginaw, Mich., assignor to Crompton & Knowles Corporation, Worcester, Mass.**

**Filed Jan. 17, 1972, Ser. No. 218,445**

**Int. Cl. B29f** *3/01*

**U.S. Cl. 425—131** **6 Claims**



An extrusion apparatus die assembly for producing laminated film, the apparatus includes a die block which has a die passage leading to a pair of die lips through which thermoplastic materials can be extruded, an adaptor connected to the die block and having a main channel connected to the die passage, a pair of feed channels which converge into the main channel and a valving means located at the point of convergence of the feed channels for controlling the relative flow of thermoplastic materials from the feed channels into the main channel.

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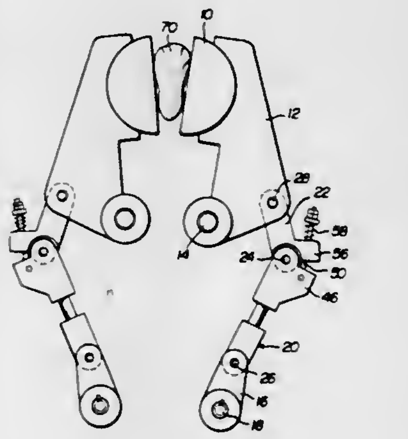
### 3,761,212
### OVERLOAD ARM FOR MOLD

**Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Jan. 7, 1972, Ser. No. 216,213**

**Int. Cl. B29c** *11/00*

**U.S. Cl. 425—154** **4 Claims**



Each mold half in a blow molding machine is caused to swing between open and closed positions by a power driven crank and an interconnecting link. The link has a toggle-like joint intermediate its ends, which is normally maintained as a rigid non-flexing joint by a compression spring. If an obstruction prevents either mold half from reaching its closed position, the spring at the joint in the associated link yields to permit the joint to flex, thereby providing a lost-motion connection between the crank and the mold half.

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### 3,761,213
### CONFECTION EXTRUSION NOZZLE

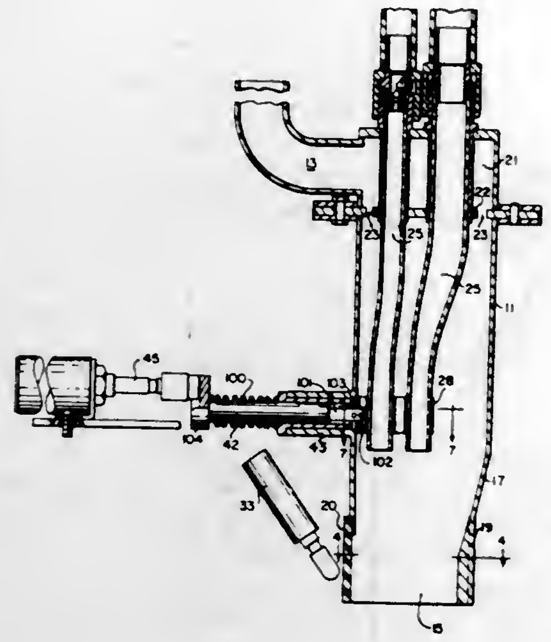
**Edward M. Wight, Austin, Tex., assignor to Glacier Industries Inc., Austin, Tex.**

**Filed June 1, 1971, Ser. No. 148,414**

**Int. Cl. A23g** *5/03;* **B29f** *3/12*

**U.S. Cl. 425—155** **10 Claims**

An extrusion nozzle for manufacturing in a continuous flow process a variety of external shapes of frozen confections or the like. A portion of the periphery of the extrusion nozzle orifice is formed of a flexible deformable wall material, the shape of this wall being controlled by the state of actuation of a series of air cylinders which indent it when actuated. Individual internal features or an array of internal features may be moved to different lateral positions during manufacture.



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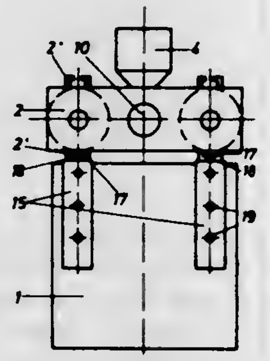
### 3,761,214
### INJECTION MOLDING MACHINE CONVERTIBLE TO SEVERAL DIFFERENT ASSEMBLY CONFIGURATIONS

**Karl Hehl, Lossburg/Wuerttg., Germany**
**Filed Mar. 13, 1972, Ser. No. 234,034**
**Claims priority, application Germany, Mar. 15, 1971, P 21 12 310.4; Mar. 15, 1971, P 21 12 317.8**
**Int. Cl. B29f** *1/00*
**U.S. Cl. 425—192** **21 Claims**



An injection molding machine whose basic operating unit are designed as standardized building blocks for conversion to several different assembly configurations, the machine consisting essentially of a rectangular block-shaped machine frame with horizontal and vertical mounting faces; a die and die-actuating unit with a rectangular block-shaped cylinder mount; at least one injection unit with centering means for axial injection in the center axis of the cylinder mount, or radial injection in the separation plane of the molding die; and depending on the desired assembly configuration, a bar-shaped, L-shaped, T-shaped, or P-shaped angular mounting bracket for the mutual attachment and alignment of the die-actuating unit, injection unit and machine frame.

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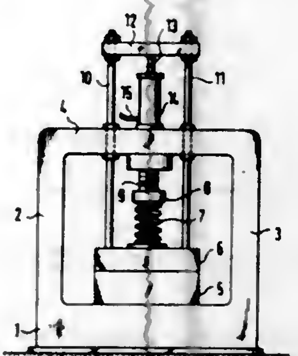
### 3,761,215
### MOLD PRESS

**Carlo F. Tondato, Strado San Vincenzo 40.10, Torino, Italy**
**Filed Nov. 18, 1970, Ser. No. 90,498**
**Claims priority, application Italy, Oct. 24, 1969, 53811 A/69**
**Int. Cl. B29c** *3/00*
**U.S. Cl. 425—193** **4 Claims**



An apparatus for molding plastics is provided with an elastic member adapted to press a mold top against a mold bottom and with a tie-rod assembly adapted to alternately move the elastic member from the mold top and to position it over the mold bottom without change in the pressure exerted by the elastic member against the mold top.

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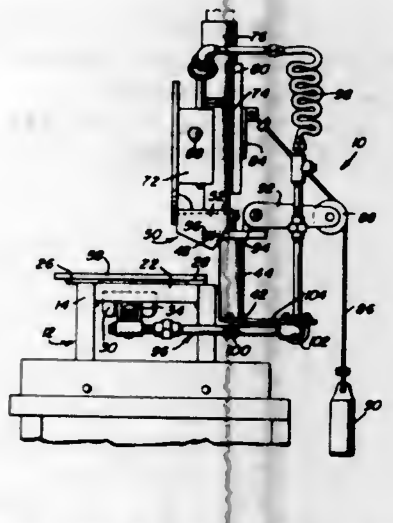
### 3,761,216
### DOUGH PRESS

**Ruben G. Duarte, and Manuel G. Duarte, both of 1012 E. Nevada St., El Paso, Tex.**
**Filed Mar. 25, 1971, Ser. No. 128,049**
**Int. Cl. A21c** *9/00*; **B30b** *1/04*
**U.S. Cl. 425—214** **3 Claims**



A fixed lower plate and a pivotally mounted upper plate selectively movable into parallel closely overlying relation to the lower plate for the pressing of dough therebetween. The lower and upper plates have gas burners mounted immediately outward thereof for a heating of the dough in conjunction with a pressing thereof.

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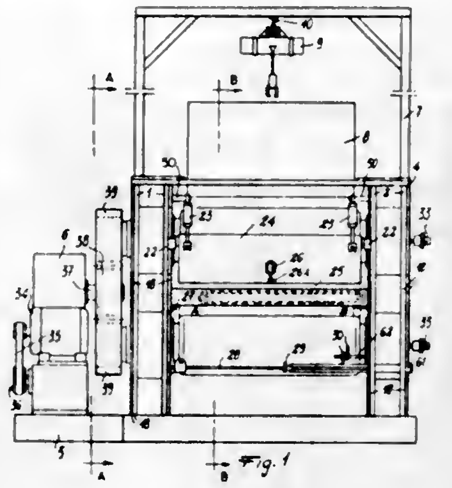
### 3,761,217
### MACHINE FOR PROCESSING PLASTIC MATERIALS

**Giancarlo Mambretti, Carnago, Italy**
**Filed Jan. 28, 1972, Ser. No. 221,593**
**Claims priority, application Italy, Feb. 1, 1971, 20010 A/71; Feb. 10, 1971, 20388 A/71**
**Int. Cl. B29d** *7/14*
**U.S. Cl. 425—224** **7 Claims**

A machine for processing plastic materials, particularly polyvinyl chloride comprising a first pair of rotating rolls,

means cooperating with one of said rolls to separate the plastic material film adhering thereto, a conveyor belt receiving at least part of the plastic material, and a second pair of rolls receiving at an end zone thereof the material carried by the conveyor belt.



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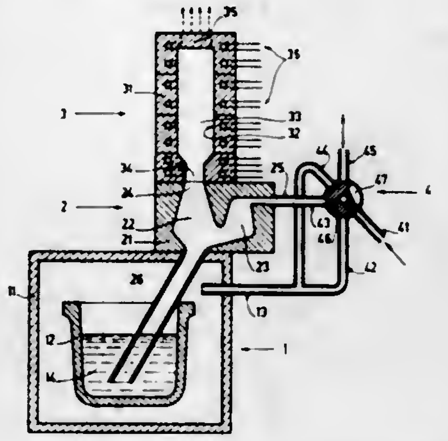
### 3,761,218
### APPARATUS FOR MOLDING THIN LAYERS

**Robert Portalier, Ville D Avray, France, assignor to Societe De Vente De L'Aluminum Pechiney, Paris, France**
**Filed July 31, 1972, Ser. No. 276,665**
**Claims priority, application France, Aug. 2, 1971, 7128190**
**Int. Cl. B29f** *1/06*
**U.S. Cl. 425—244** **9 Claims**



The invention is applied to the molding of articles having thin walls and in particular to the molding of radiator elements, caps, cases, frames, pipe members, cylinder heads, in which the molding apparatus comprises a mold which is open at its lower end, a compression chamber having two cavities connected at their upper portion respectively to the opening of the mold and to a source of compressed gas, and at their lower portion to a delivery conduit and a furnace into the bath of molten material in which the delivery conduit dips and which can be put under gas pressure by a pipe member.

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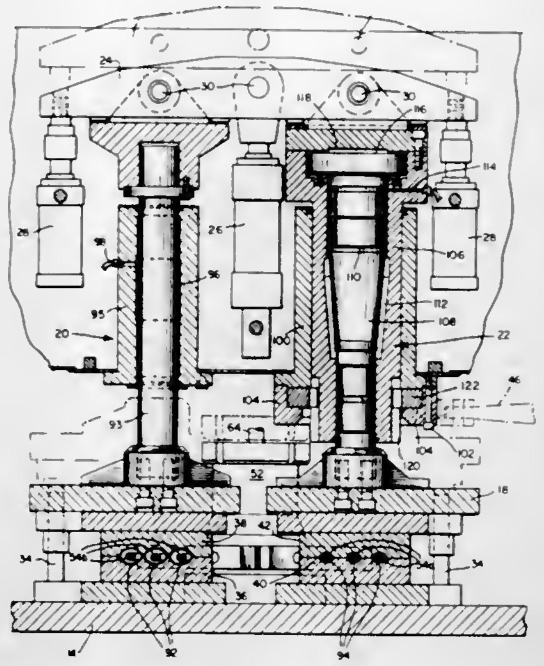
### 3,761,219
### DUAL MOLD CLAMPING APPARATUS

**Joseph C. Flynn, Bridgeton; Walter Panas, Millville, and Joseph S. Bonino, Mauricetown, all of N.J., assignors to Wheaton Industries, Millville, N.J.**
**Filed June 4, 1971, Ser. No. 150,062**
**Int. Cl. B29d** *23/03*
**U.S. Cl. 425—249** **3 Claims**

A dual mold clamping apparatus, particularly useful for simultaneously closing two sets of molds and applying additional clamping pressure to one of the sets thereof, having special application in injection blow molding machines. This apparatus comprises mounting means, with extended portions, for the movable halves of each of the mold sets, the extended portions being attached to a common member which moves the movable mold halves in unison in the mold open and mold closed directions. The apparatus further includes selectively engagable means associated with the extended portions of the mold mounting means of one of the mold sets which selectively engagable means is in turn associated with additional mold clamping pressure resistance means and a hydraulic chamber with means for introducing high pressure hydraulic fluid therein for applying additional clamping force pressure through said selectively engagable means both to said additional clamping pressure resistance means and to the movable mold mounting means.



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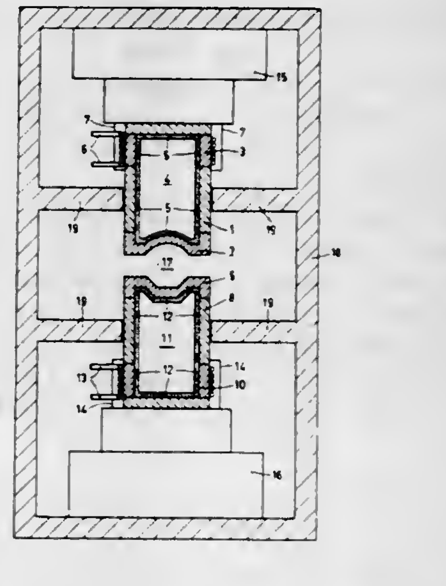
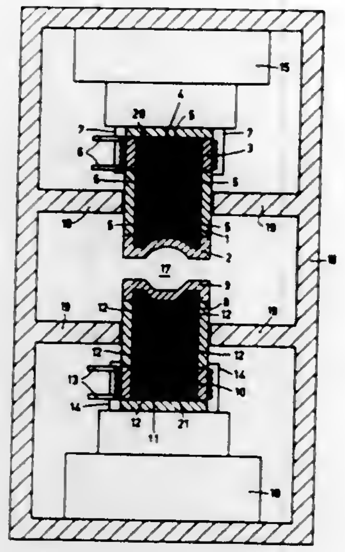
### 3,761,220
### PRESSING DEVICE

**Andrianus Petrus Dirne, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**
**Filed Sept. 7, 1971, Ser. No. 177,944**
**Claims priority, application Netherlands, Sept. 10, 1970, 7013364**
**Int. Cl. B29c** *3/00*
**U.S. Cl. 425—407** **8 Claims**



A pressing device has pressing elements which are hollow and closed, each having first and second heat transmission walls with a heat transporting medium present in the cavity within each element. The medium absorbs thermal energy from the first heat transmission wall while changing from the liquid phase into the vapor phase and delivers thermal energy to the second heat transmission wall, while changing from the vapor phase into the liquid phase, and absorbs thermal energy from the second heat transmission wall while changing from the liquid phase into the vapor phase and delivers thermal energy to the first heat transmission wall while changing from the vapor phase into the liquid phase. In each cavity a porous mass is present connecting the heat transmission walls in such manner that all the heat transporting medium condensed on the second or first heat transmission wall can flow respectively through the said mass by capillary action.



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### ERRATUM

For Class 425 – 405 H see:
Patent No. 3,761,574

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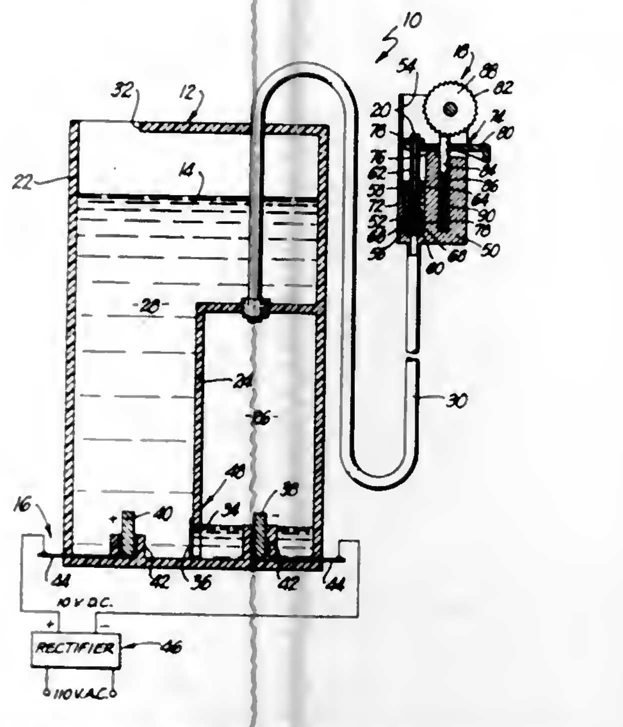
**3,761,221**
### COMBINATION COMBUSTIBLE GAS GENERATOR-BURNER
**Frederick K. Stillions, 651 E. Kingsley, Pomona, Calif.**
**Filed Oct. 13, 1971, Ser. No. 188,753**
**Int. Cl. F23n**
**U.S. Cl. 431 – 18** **2 Claims**

A combination combustible gas generator-burner for use as a cirgarette lighter and other applications. An electrolyte such as a saline water solution is electrolyzed within an electrolytic cell to produce a combustible gas such as hydrogen which is ignited at a valved gas outlet from the cell to produce a flame, as by rotating a striker wheel against a flint positioned adjacent the outlet. Electrolysis of the electrolyte is automatically stopped and started in response to the pressure of the combustible gas pressure in the cell, as by utilizing increasing gas pressure to displace the electrolyte to a level below that of the electrode at which the combustible gas is produced.



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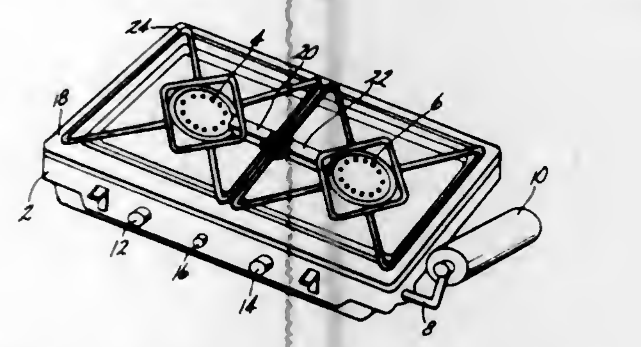
**3,761,222**
### PROPANE-PIEZOELECTRIC IGNITION SYSTEM
**Daniel W. Lapins, DeKalb, and Carl E. Finley, Sycamore, both of Ill., assignors to Olin Corporation, New Haven, Conn.**
**Filed Nov. 24, 1971, Ser. No. 201,732**
**Int. Cl. F24c** *3/10*
**U.S. Cl. 431 – 191** **5 Claims**



A spark igniter and flame flash-back system for a stove, which system is mounted on the grease tray of the stove. Flash-back tubes are mounted on the tray and serve to funnel fuel from the burners to the igniter. The igniter is of the piezoelectric type which produces a spark. The igniter primary or hot electrode is connected to the piezoelectric crystal and is held in place on the grease tray by the flash-back tubes which also include fuel deflectors to deflect the fuel flow toward the hot electrode. The deflectors also serve as the secondary electrodes to which the spark jumps from the hot electrode.

## CHEMICAL

**3,761,223**
### DETERGENT COMPOSITION FOR USE IN CLEANING PILE FABRICS
**Ryonosuke Yoshida and Itsutoshi Maeda, Kanagawa-ken, Hitoshi Akiba, Saitama-ken, and Yasunori Usuba, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan**
**No Drawing. Filed May 28, 1971, Ser. No. 148,236**
**Claims priority, application Japan, June 1, 1970, 45/46,596**
**Int. Cl. C11d** *3/32*
**U.S. Cl. 8—137** **4 Claims**

The monolithium, monosodium, and monoammonium N-lauroyl glutamates and aspartates, and the diluthium, disodium, and diammonium N-stearoyl glutamates and aspartates are superior detergents for cleaning pile fabrics such as carpets because of their good solubility in water and the strong foaming of their aqueous solutions. They leave non-sticky, powdery residues which are readily removed by vacuum cleaning.

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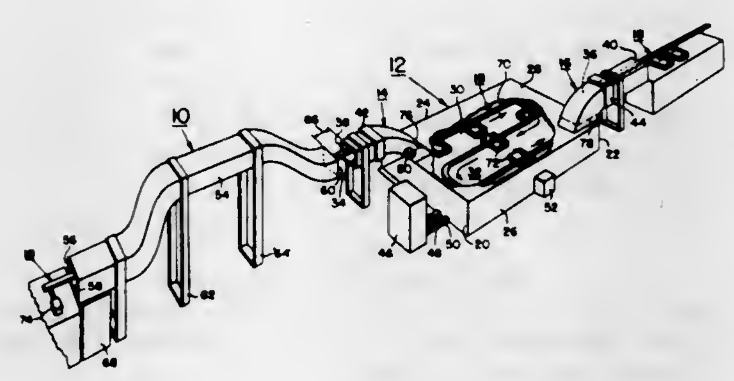
**3,761,224**
### METHOD AND APPARATUS FOR CONTINUOUS ETHYLENE OXIDE STERILIZATION
**Robert R. Ernst, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.**
**Continuation of abandoned application Ser. No. 810,540, Mar. 26, 1969. This application Sept. 25, 1972, Ser. No. 291,910**
**Int. Cl. A61l** *13/00*
**U.S. Cl. 21—58** **62 Claims**

A system for the continuous, in-line sterilization of articles with ethylene oxide gas maintained in a sterilizing chamber completely closed and sealed from atmosphere except for inlet and outlet tubes through which the articles are conveyed. The tubes extend above the chamber to prevent the heavier-than-air gas from escaping.



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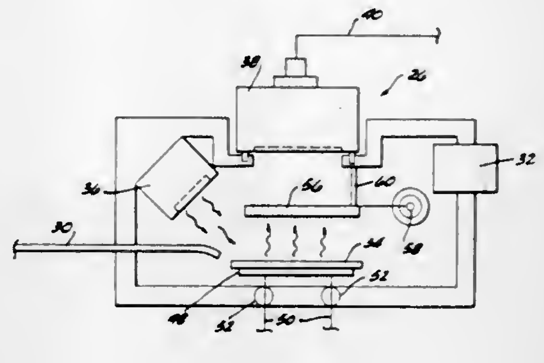
**3,761,225**
### NUCLEAR BACKSCATTER ANALYZER FOR QUANTITATIVE ANALYSIS USING ISOTOPE RATIO METHOD
**John O. Rasmussen, Jr., 207 Armory St., Hamden, Conn. 06511**
**Filed Dec. 2, 1970, Ser. No. 94,456**
**Int. Cl. G01n** *23/12*
**U.S. Cl. 23—230 R** **29 Claims**

The method and apparatus for measuring the concentration of various selected compounds in a sample by monitoring nuclear reactions resulting from irradiation of the sample by alpha particles. Prior to the irradiation, the sample is "spiked" with a measured amount of a substance containing an element of the compound to be measured in the form of a rare isotope. Backscattered alpha particles are detected and analyzed as a function of their relative energy levels. The ratio of the number of alpha particles having energy levels corresponding to the element of the compound whose concentration is to be measured, to the number of alpha particles having energy levels corresponding to the isotope of this element, is an accurate measure of the concentration of the selected compound.



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**3,761,226**
### SICKEL-CELL DIAGNOSTIC TEST
**Allan L. Louderback, Temple City, Young Youhne, Los Angeles, and Anthony J. Fontana, Glendora, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.**
**No Drawing. Filed Mar. 24, 1972, Ser. No. 237,924**
**Int. Cl. G01n** *21/06, 33/16*
**U.S. Cl. 23—230 B** **7 Claims**

A diagnostic test and reagent for the rapid identification of sickle-cell anemia and sickle-cell trait comprising reaction of unclotted blood with an admixture of $(NH_4)_2SO_4/K_2HPO_4$ buffer, pH 7–7.5, saponin and sodium dithionite and observation of the turbidometric-colormetric characteristics.

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**3,761,227**
### METHOD FOR DETECTION OF OPIUM DERIVATIVES IN URINE
**Herbert M. Conrad, Pacific Palisades, and Hilary Ashe, Los Angeles, Calif., assignors to Conrad Laboratories, Inc.**
**No Drawing. Filed Apr. 24, 1972, Ser. No. 247,008**
**Int. Cl. G01n** *21/06, 33/16*
**U.S. Cl. 23—230 B** **7 Claims**

Method for detecting morphine in a urine sample which includes adjusting the pH of the urine to 8.5–9.5, extracting the morphine into a chloroform-isopropyl alcohol solution and separating the extraction phase from the aqueous phase by means of phase separation paper. The extraction phase, if morphine is present, will develop a pink color when an indicator of ammonium molybdate in concentrated sulfuric acid is added thereto.

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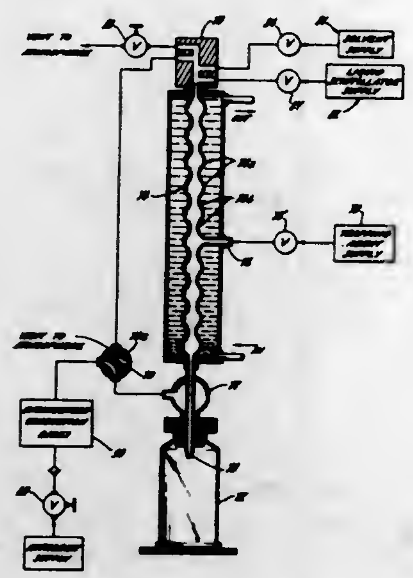
**3,761,228**
### METHOD AND APPARATUS FOR PROVIDING FRACTIONAL INTERACTION BETWEEN GASES AND LIQUIDS
**Niilo H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company, Inc.**
**Continuation-in-part of abandoned application Ser. No. 729,212, May 15, 1968. This application July 27, 1970, Ser. No. 58,635**
**Int. Cl. G01n** *31/06*
**U.S. Cl. 23—232 R** **14 Claims**

Method and apparatus for the processing of fluid materials, particularly in the preparation of samples for radioactive isotope tracer studies by combustion of starting materials containing such isotope tracers. The sample is burned in a combustion chamber and the combustion products are continuously exhausted from the combustion chamber. Oxygen is fed into the combustion chamber at a controlled rate during combustion, and after combustion nitrogen gas is fed into the combustion chamber and exhausted therefrom through the balance of the system. The radioactive isotope tracer or traces in the gases are trapped in a trapping agent in a column comprising a series of smoothly contoured chambers interconnected by smoothly contoured necked down portions. After all the gases have been passed through the column, the trapped tracers are discharged into a counting vial. A liquid scintillator, and a liquid solvent, if desired are also passed through the column.



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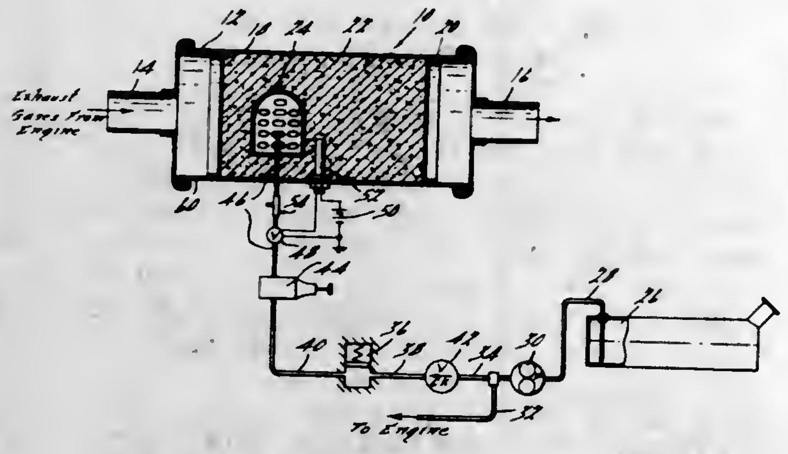
### 3,761,229
## ENGINE EXHAUST GAS PURIFICATION SYSTEM
**Charles W. Schwartz, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.**
**Filed July 19, 1971, Ser. No. 163,814**
**Int. Cl. F01n** *3/14*
**U.S. Cl. 23—288 F** **9 Claims**



Described is a system for the purification of exhaust gases emanating from an internal combustion engine. The system includes a catalytic converter and means for supplying fuel to the catalytic converter when the engine is inoperative. The system may include a fuel container, a fuel pump, a check valve, an accumulator, and a pressure regulator. Fuel from the pressure regulator may be supplied to a gas-permeable chamber positioned proximate the catalyst in the catalytic converter. Fuel supplied to the catalytic converter from the pressure regulator exothermically reacts with air. The reaction is assisted by the catalyst in the converter, and the reaction heat maintains the catalyst at an effective temperature.

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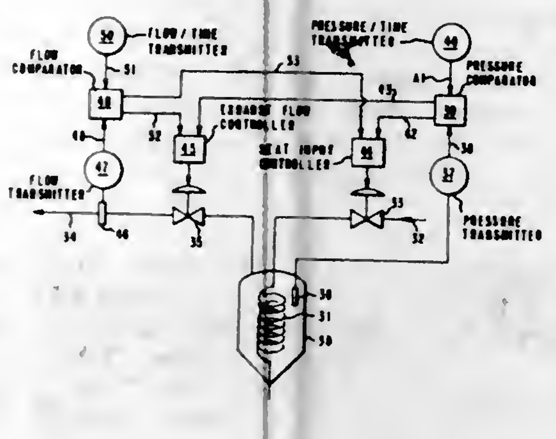
### 3,761,230
## AUTOCLAVE PRESSURE CONTROL SYSTEM
**Kashmiri L. Gupta, Kingston, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada**
**Filed Mar. 11, 1971, Ser. No. 123,303**
**Claims priority, application Canada, Mar. 26, 1970, 78,586**
**Int. Cl. B01j** *3/00*
**U.S. Cl. 23—290** **2 Claims**



A control system for the preparation of condensation polymers, such as polyhexamethylene adipamide, in a reactor chamber having a heating means and an exhaust vent, whereby a pressure measuring device measures the pressure in the reactor chamber. This pressure is compared against a predetermined pressure/time pattern and any difference in the pressure is adapted to control the heating means or the flow of exhaust gases from the exhaust vent so that the pressure in the reactor vessel follows the predetermined pattern.

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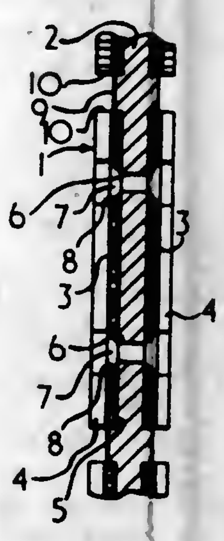
### 3,761,231
## COMPOSITE ARTICLES
**Frederick Sidney Dowell, Coventry, and Ronald Fisher, Rugby, England, assignors to The Dunlop Company Limited, London, England**
**Filed Dec. 31, 1970, Ser. No. 103,179**
**Claims priority, application Great Britain, Jan. 10, 1970, 1,310/70**
**Int. Cl. B23p** *3/00*
**U.S. Cl. 29—195 C** **12 Claims**



A composite article for use, for example, as a functional block comprising a block of non-metallic material having embedded therein a layer of porous material in the form of a three-dimensional network arranged so as to define a plurality of intercommunicating cellular spaces, the said layer extending adjacent one surface of the block but not wholly therethrough.

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### 3,761,232
## METHOD FOR ODORIZING CRYOGENIC LIQUIDS
**Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, Ill., assignors to Institute of Gas Technology, Chicago, Ill.**
**No Drawing. Filed May 10, 1971, Ser. No. 142,069**
**Int. Cl. C10l** *1/24*
**U.S. Cl. 44—52** **11 Claims**

A method for odorizing cryogenic liquids such as liquefied natural gas with sufficient levels of detectable sulfur containing odorants by the steps of first dissolving said odorant in a liquefied carrier miscible with the cryogenic liquid at concentration levels not attainable in the cryogenic liquid; and then combining said liquefied carrier with odorant and the cryogenic liquid to provide the dissolved odorant in the mixture at the desired detectable levels upon vaporization of the cryogenic liquid.

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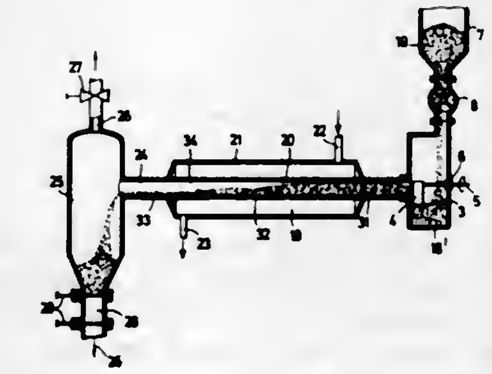
### 3,761,233
## METHOD OF GASIFYING WATER CONTAINING COAL
**Werner Wenzel and Hermann Schenck, Aachen, Germany, assignors to Rheinische Braunkohlenwerke A.G., Cologne, Germany**
**Filed Apr. 2, 1971, Ser. No. 130,622**
**Int. Cl. B65g** *53/04;* **C10j** *3/00, 3/20*
**U.S. Cl. 48—202** **3 Claims**



For gasifying coal, in particular, water containing granular raw brown coal, the material is introduced into a reaction tube, the walls of which are externally heated. The reaction tube is disposed approximately horizontally so that no spontaneous sliding of the material therein may occur; the conveying thereof is effected by means of water vapor and possibly other gases generated in the reaction tube during the heat treatment of the material.

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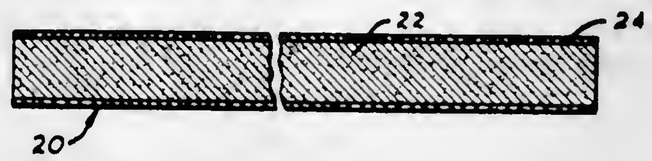
### 3,761,234
## METHOD OF MAKING FIBER OPTICAL MULTIFIBERS AND DEVICES FORMED THEREOF
**Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.**
**Original application Jan. 2, 1968, Ser. No. 694,609, now Patent No. 3,524,636. Divided and this application Apr. 27, 1970, Ser. No. 43,265**
**Int. Cl. C03b** *5/26;* **C03c** *23/20*
**U.S. Cl. 65—4** **3 Claims**

A long and relatively thin fiber optical multifier structure is formed to a rhomboidal cros-sectional shape so as to achieve maximum packing density of convolutions of a similarly shaped fiber drawn from the structure and machine wound on a drum to form a ribbon of several fiber widths for use in the construction of fiber optical image-conducting fiberscopes and the like. The fiber is helically wound with one flat side thereof against the drum using a lead no greater than that of the width of said one flat side and moving parallel to the drum in the general direction of slope, toward the drum, of adjacent sides of the fiber. It is also contemplated that the winding lead be slightly less than said width of the fiber to assure maximum packing density.



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### 3,761,235
## MARBLE-LIKE GLASS MATERIAL AND METHOD OF PRODUCING THE SAME
**Toshio Yamanaka and Shigeji Nakamura, Otsu, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan**
**No Drawing. Filed Jan. 20, 1971, Ser. No. 108,191**
**Claims priority, application Japan, Jan. 20, 1970, 45/4,903; Dec. 14, 1970, 45/110,494**
**Int. Cl. C03f** *29/00*
**U.S. Cl. 65—33** **8 Claims**

A marble-like glass material comprises more than 90% calcium oxide, aluminum oxide and silicon dioxide, the material including 15–40% CaO, 3–35% $Al_2O_3$ and 40–75% $SiO_2$.

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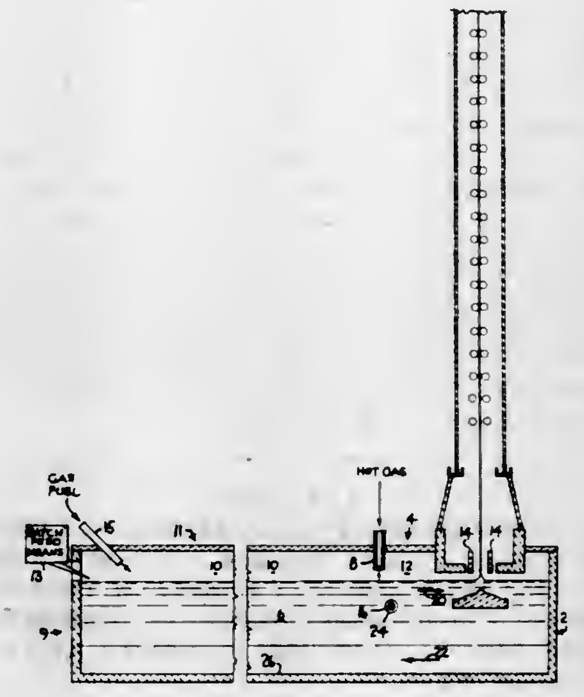
### 3,761,236
## METHOD OF MAKING SHEET GLASS
**Gerald E. Kunkle, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**
**Continuation-in-part of abandoned application Ser. No. 826,860, May 22, 1969. This application Feb. 2, 1971, Ser. No. 111,907**
**Int. Cl. C03b** *15/14, 15/02, 5/16*
**U.S. Cl. 65—83** **1 Claim**



Sheet glass of commercial quality is made by a Pittsburgh Process without using a shutoff. Instead, means are used to seal the kiln from the tank, and a water-cooled pipe is submerged in the glass and lowers suitably the flow; throughout ratio. The submerged pipe has a diameter of 1.2 to 5 inches and it is located so that it obstructs the return flow, being positioned so that its top is not above the mid-point of the depth of the glass, and so that its bottom is at least one-fifth of the depth of the glass above the bottom. In this way the benefits of having no shutoff are obtained: lower costs, and an avoidance of defects in the products caused by shutoff.

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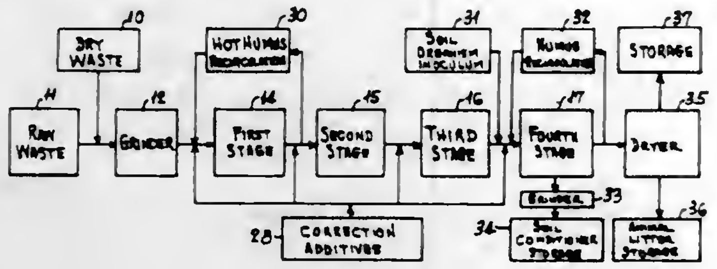
### 3,761,237
### PROCESS FOR CONVERTING ORGANIC WASTE TO HUMUS

**George A. Jeffreys, 219 Valleydale Ave., Salem, Va. 24153**

**Continuation-in-part of abandoned application Ser. No. 91,319, Nov. 20, 1970. This application Jan. 19, 1973, Ser. No. 325,169**

**Int. Cl. C05f** *11/08*

**U.S. Cl. 71—9** **5 Claims**



A continuous process of composting organic waste material while maintaining a pH ranging between 6 and 8, a moisture content ranging between 40 and 70%, and a temperature maximum of not more than 65° C., the process consisting of the steps of (a) forming a centrally disposed submerged air space within and substantially interfacially surrounded by a stationary mass of said matarial, (b) maintaining equalized air pressure in the space concurrently with spraying said air therefrom at a uniform velocity into the mass jets uniformly distributed over said interface to thereby aerate the material, provide oxygen for aerobic compositing, and prevent a temperature rise above said maximum, (c) continuing the areation until most of the available nutrients for multiplying heat-producing thermophilic and mesophilic bacteria have been utilized to cause the temperature to fall substantially, and to a level which, when inoculated with beneficial soil cultuers consisting of Streptomyces, Azotobacter and Rhizobium and other beneficial soil organisms, the temperature of the humus will allow the cultures to multiply and become an integral part thereof, and (d) recyling a portion of the final stabilized humus of which the soil cultures have become an integral part to a point in the continuous process which will allow the cultures to grow to an even higher concentration.

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### 3,761,238
### TOXICANT COMPOSITIONS FOR AQUATIC USE

**Louis A. Errede, Hatfield, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**No Drawing. Continuation-in-part of application Ser. No. 714,755, Mar. 21, 1968. This application Apr. 6, 1970, Ser. No. 26,102**

**Int. Cl. A01n** *17/08*

**U.S. Cl. 71—67** **15 Claims**

Compositions comprising an inert particulate carrier, the surface of the particles having inherent or extrinsic ion-exchange characteristics, and a normally water-soluble toxicant reversibly adsorbed in ionic form upon said surfaces. The compositions are greatly improved aquatic pesticides having the characteristic of regulated release of toxicant mediated at least in part by local environmental conditions including the presence of the undesirable species which is to be controlled. Also included are methods for using the compositions.

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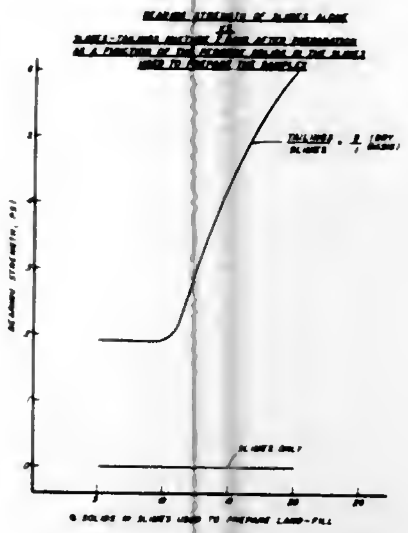
### 3,761,239
### PROCESS FOR PRODUCING LAND-FILL COMPOSITIONS

**Charles Calvin Cook, 1732 Roanoke Ave., Lakeland, Fla. 33803, and Erwin Mathew Haynsworth, 3922 Americana Drive, Tampa, Fla. 33614**

**Continuation-in-part of abandoned application Ser. No. 24,090, Mar. 31, 1970. This application Nov. 24, 1971, Ser. No. 201,898**

**Int. Cl. B01d** *21/01*

**U.S. Cl. 71—33** **14 Claims**



Waste slimes and tailings from ore, particularly phosphate rock operations containing as an example, from about 6 to about 40 parts by weight on a dry basis of slimes, from about 60 to 90 parts by weight or a dry basis of tailings, and water in an amount sufficient to provide a moisture content of 15% to 30% based on total composition by weight, about 93% by weight on a dry basis of the solid particles of the composition having a particle size of minus 16 mesh. In other examples calcium sulfate is employed.

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### 3,761,240
### PLANT GROWTH INHIBITION WITH N-ARYL-PYRID-2-ONES

**Michael C. Seidel, Levittown, Kenneth L. Viste, Warminster, and Roy Y. Yih, Doylestown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**No Drawing. Continuation-in-part of application Ser. No. 7,256, Jan. 30, 1970, which is a continuation of abandoned application Ser. No. 779,198, Nov. 26, 1968, which in turn is a continuation-in-part of application Ser. No. 698,106, Jan. 16, 1968, now Patent No. 3,503,986. This application Feb. 10, 1971, Ser. No. 114,377**

**Int. Cl. A01n** *9/22*

**U.S. Cl. 71—76** **14 Claims**

A method of regulating plant growth with compounds belonging to the class of N-aryl pyrid-2-one 4,6-dialkyl (and 4,5,6-trisubstituted)-3-carboxylic acids and their acid halides, amides, esters and physiologically acceptable salts. This includes inhibition of plant growth, control of flowering and fruiting, and hybridization.

### 3,761,241
### PHYTOTOXIC USE OF N-(1-CYCLOALKEN-1-YL) UREAS AND THIOUREAS

**John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of application Ser. No. 781,588, Dec. 5, 1968, which is a continuation-in-part of application Ser. No. 737,271, Apr. 11, 1968, which in turn is a division of application Ser. No. 523,856, Feb. 1, 1966, all now abandoned. This application Jan. 11, 1971, Ser. No. 105,710**

**Int. Cl. A01n** *9/12, 9/20*

**U.S. Cl. 71—120** **15 Claims**

Phytotoxic use of N-(1-cycloalken-1-yl)ureas and thioureas and their composition.

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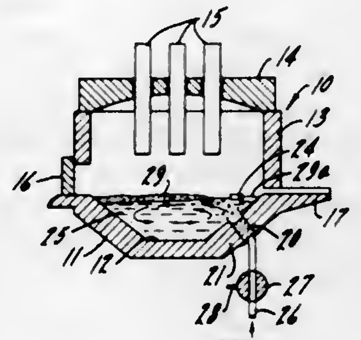
### 3,761,242
### METHOD OF TREATING MOLTEN METAL BY GAS PURGING THROUGH A POROUS PLUG

**Charles W. Finkl, Evanston, Ill., assignor to A. Finkl & Sons Co., Chicago, Ill.**

**Continuation-in-part of application Ser. No. 529,311, Feb. 23, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 340,594, Jan. 20, 1964, now Patent No. 3,337,329, which is a continuation-in-part of applications Ser. No. 186,569, Mar. 6, 1962, now Patent No. 3,292,915, and Ser. No. 176,493, Feb. 26, 1962, now Patent No. 3,236,636, which in turn is a continuation-in-part of application Ser. No. 777,664, Dec. 2, 1958, now Patent No. 3,236,635. This application Apr. 30, 1970, Ser. No. 33,282**

**Int. Cl. C21c** *5/52*

**U.S. Cl. 75—13** **3 Claims**



Steel treating process for lowering gas content of steel in which cycle time is minimized and heat loss eliminated until final portion of the cycle. Steel is pre-degassed by purging under substantially atmospheric pressure and environmental conditions while adding heat, preferably in the melting unit, and then finish degasesd by subjection to a low absolute vacuum.

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### 3,761,243
### METHOD OF QUENCHING SLAG

**John B. Kuntz, Monroeville Borough, and Anthony A. Spinola, Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation**

**No Drawing. Filed May 21, 1971, Ser. No. 145,967**

**Int. Cl. C21b** *3/06*

**U.S. Cl. 75—24** **3 Claims**

A method of reducing hyrogen sulfide emission during the quenching of hot blast furnace slag. More particularly, the addition of a metal salt to the water used to quench molten blast furnace slag to prevent the emission of hydrogen sulfide.

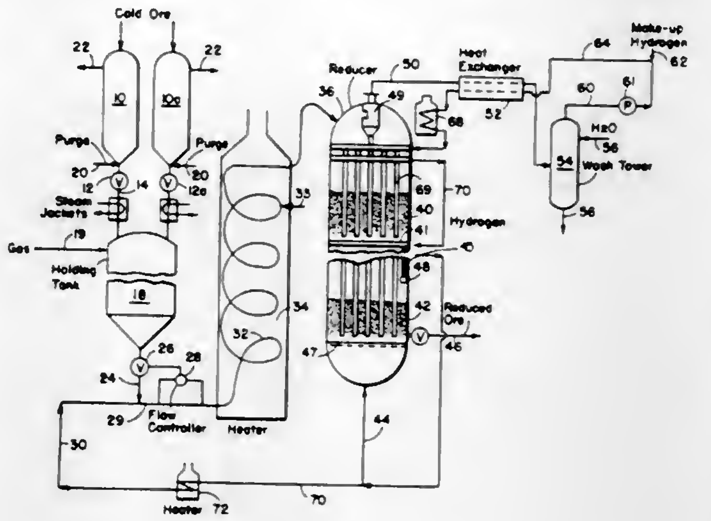
### 3,761,244
### PROCESS FOR THE CONTROLLED REDUCTION OF IRON ORES IN A HELICAL HEATING ZONE

**Franklin D. Hoffert, Mountainside, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.**

**Filed July 19, 1971, Ser. No. 163,688**

**Int. Cl. C21b** *13/14*

**U.S. Cl. 75—26** **4 Claims**



Iron oxide containing ores are continuously reduced in an upflow fluidized bed hydrogenation process. The ore is continuously fed by hot reducing gas to the reaction zone, through a heater having a helical transfer line coil so that the iron ore is preheated to about 900° F. and partially reduced prior to entering the reaction zone.

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### 3,761,245
### NICKEL SEGREGATION PROCESS USING METALLIC IRON AS REDUCTANT

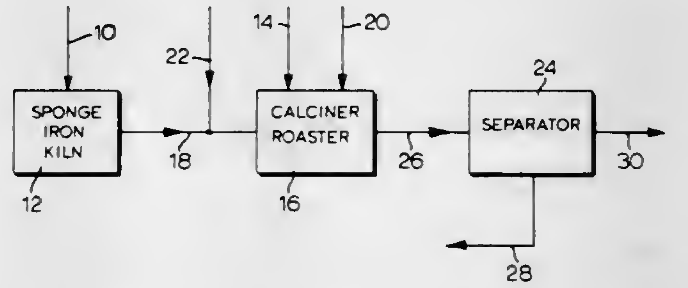
**Seymour P. Bingham, Boston, Mass., assignor to Stone & Webster Engineering Corporation, Boston, Mass.**

**Filed Sept. 9, 1970, Ser. No. 70,756**

**Claims priority, application Great Britain, Jan. 9, 1970, 1,279/70**

**Int. Cl. C22b** *23/02*

**U.S. Cl. 75—82** **22 Claims**



Nickel is recovered from nickel-containing materials by reaction with a chloride-containing material, such as calcium chloride, and a magnetic iron-containing material, such as sponge iron.

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### 3,761,246
### PROCESS OF PRECONDITIONING A CHAMBER AND DEOXIDIZING A METAL THEREIN

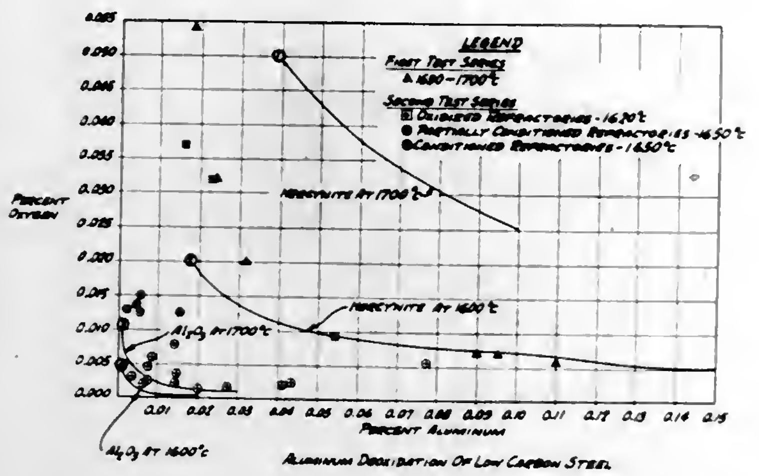
**William E. Mahin, Ashland, Oreg., and Norman A. D. Parlee, Los Altos Hills, Calif., assignors to Kaiser Industries Corporation, Oakland, Calif.**

**Continuation-in-part of application Ser. No. 65,742, Aug. 20, 1970, which is a continuation of application Ser. No. 658,162, Aug. 3, 1967, both now abandoned. This application Mar. 16, 1972, Ser. No. 235,237**

**Int. Cl. C21c** *7/10*

**U.S. Cl. 75—46** **20 Claims**

A two stage process for producing ferrous metals substantially free of oxygen-containing impurities by preliminary deoxidation in a first stage followed by second stage deoxidation with aluminum in a refractory lined vessel. A molten ferrous metal heel is supplied to the second stage vessel and the vessel refractory lining is preconditioned by deoxidation with hydrogen and/or carbon and removing reaction products until the available oxygen is determined by an equilibration test to be below a level at which hercynite forms on subsequent addition of aluminum. The metal heel is then replaced in the second stage vessel with the preliminarily deoxidized ferrous metal which is deoxidized with aluminum to obtain a final product with 0.006% or 0.002% or less oxygen. The process can be performed continuously after preconditioning. With hydrogen as a preconditioning agent and a metal heel containing less than 0.40% carbon, after preconditioning the heel can be deoxidized with aluminum, withdrawn and comprise part of the final product.



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### 3,761,247
### MAGNESIUM PRODUCTION FROM A MOLTEN OXIDE SLAG IN THE PRESENCE OF HYDROGEN

**Julian Miles Avery, 47 Old Orchard Road,**
**Chestnut Hill, Mass. 02167**

**No Drawing. Continuation-in-part of applications Ser. No. 648,856, June 26, 1967, now Patent No. 3,579,326, Ser. No. 796,214, Feb. 3, 1969, now Patent No. 3,658,-509, and Ser. No. 26,118, Apr. 6, 1970. This application May 17, 1971, Ser. No. 144,321**

**Int. Cl. C22b** *45/00*

**U.S. Cl. 75—67** **9 Claims**

Magnesium is produced by the reduction of magnesium oxide in a molten slag at elevated temperature with a molten metal reducing agent, in the presence of hydrogen at a pressure of at least about one atmosphere.

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### 3,761,248
### METALLOTHERMIC PRODUCTION OF MAGNESIUM INDUCED BY A STREAM OF INERT GAS

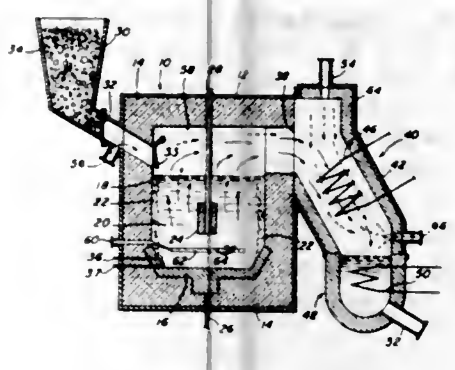
**Julian Miles Avery, 47 Old Orchard Road,**
**Chestnut Hill, Mass. 02167**

**Continuation-in-part of applications Ser. No. 648,856, June 26, 1967, now Patent No. 3,579,326, Ser. No. 796,214, Feb. 3, 1969, now Patent No. 3,658,509, Ser. No. 26,116, Apr. 6, 1970, now Patent No. 3,698,888, Ser. No. 26,117, Apr. 6, 1970, now Patent No. 3,681,053, and Ser. No. 26,118, Apr. 6, 1970. This application May 17, 1971, Ser. No. 143,866**

**Int. Cl. C22b** *45/00*

**U.S. Cl. 75—67 R** **11 Claims**

A method of producing magnesium by the reduction of magnesium oxide by means of a metallic reducing agent, in the presence of a molten oxidic slag in an electric furnace and by the condensation of magnesium vapor evolved from the furnace wherein the production of magnesium is induced in part by the passage of inert gas through the magnesium condenser.



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### 3,761,249
### COPPER EXTRACTION FROM AMMONIACAL SOLUTIONS

**Gordon Malcolm Ritcey and Bernard Henry Lucas, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**

**Filed Mar. 4, 1971, Ser. No. 121,006**

**Claims priority, application Canada, Mar. 11, 1970, 77,110**

**Int. Cl. C22b** *15/08*

**U.S. Cl. 75—101 BE** **11 Claims**

The invention relates to a solvent extraction process for separating dissolved copper from an aqueous ammoniacal solution also containing dissolved cobalt and nickel, the solution having a concentration of at least 50 grams ammonium salt per litre. The process comprises contacting said aqueous solution at pH 6.5 to 8.5 with an α-hydroxy oxime whereby the copper values are extracted from the aqueous phase into the organic phase, and separating the resultant copper loaded organic phase from the remaining aqueous raffinate phase containing the cobalt and nickel in solution.

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### 3,761,250
### PRODUCTION OF NICKEL POWDER FROM BASIC NICKEL CARBONATE

**Donald Robert Weir, Fort Saskatchewan, Alberta, and Willie Seibt, Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada**

**Filed July 2, 1971, Ser. No. 159,189**

**Int. Cl. C22b** *23/04*

**U.S. Cl. 75—108** **10 Claims**

Substantially pure nickel powder is produced from nickel and cobalt bearing aqueous ammoniacal ammonium carbonate liquor containing copper and other undesirable impurities such as zinc, magnesium and manganese by first treating the liquor to remove only sufficient cobalt to produce a nickel to cobalt molar ratio in the solution between about 100 and 200. The solution is then boiled to precipitate the nickel and residual cobalt as basic carbonates. The basic carbonates percipitate is slurried in aqueous media and is reacted with hydrogen at elevated temperature and pressure under conditions which are controlled to ensure that the pH at the end of the reduction reaction is between about 2 and about 3. Control of pH in this range avoids contamination of the nickel powder by the impurities. Specifically, pH is controlled by adjustment of the relative sulphate ion and ammonia content of the reduction feed slurry.

### 3,761,251
### PROCESS FOR PREVENTING AGGLOMERATION OF CADMIUM IN SOLUTION

**Bruno Orlandini, Kellogg, Idaho, assignor to The Bunker Hill Company, Kellogg, Idaho**

**No Drawing. Continuation of abandoned application Ser. No. 729,439, May 15, 1968. This application Apr. 21, 1971, Ser. No. 136,210**

**Int. Cl. C22b** *17/04, 19/06;* **C23b** *5/12*

**U.S. Cl. 75—109** **1 Claim**

The disclosure describes a process for controlling the agglomeration of cadmium precipitate particles during the purification of a zinc sulfate solution to prevent the buildup of large balls of cadmium particles which may damage the processing equipment. The control is provided by the addition of small amounts of solution soluble sulphurous acid generating material to a leach solution. Materials such as sulphurous acid, sulphur dioxide, and sodium sulphite are included in the sulphurous acid generating material that are capable of controlling the agglomeration of cadmium particles.

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### 3,761,252
### ALUMINUM BASE ALLOY

**Richard G. O'Rourke, Fremont, and Walter M. Shrader, Elmore, Ohio, assignors to Brush Wellman, Inc., Cleveland, Ohio**

**No Drawing. Filed Oct. 13, 1972, Ser. No. 297,209**

**Int. Cl. C22c** *21/02*

**U.S. Cl. 75—141** **12 Claims**

There is provided an aluminum base alloy characterized by a substantial amount of silicon and zinc together with copper and minor amounts of magnesium, beryllium, titanium, and impurities. This alloy is useful in making molds where hardness and replication of fine detail is required. Latent within the as-cast alloy are developable hardness, fine grain structure, and freedom from microporosity obtained by submitting the as-cast alloy to a further thermal history.

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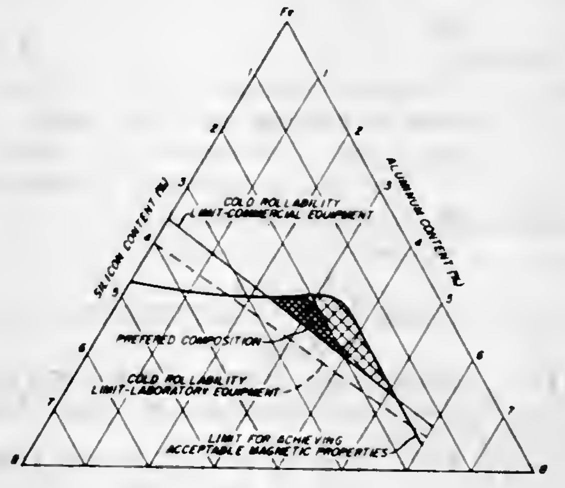
### 3,761,253
### STEEL FOR ELECTRICAL APPLICATIONS AND NOVEL ARTICLE

**Lester J. Regitz, Penn Township, Allegheny County, Pa., assignor to United States Steel Corporation**

**Continuation-in-part of application Ser. No. 882,729, Dec. 5, 1969, now Patent No. 3,657,024, which is a continuation-in-part of abandoned application Ser. No. 591,982, Nov. 4, 1966. This application Jan. 20, 1972, Ser. No. 219,377**

**Int. Cl. C22c** *37/10, 39/02*

**U.S. Cl. 75—124** **3 Claims**


Fe
1
2
3
4
5
6
7
8
SILICON CONTENT (%)
ALUMINUM CONTENT (%)
COLD ROLLABILITY LIMIT-COMMERCIAL EQUIPMENT
PREFERED COMPOSITION
COLD ROLLABILITY LIMIT-LABORATORY EQUIPMENT
LIMIT FOR ACHIEVING ACCEPTABLE MAGNETIC PROPERTIES

A ductile non-oriented electrical-sheet steel containing up to 0.025% carbon, 1.5 to 2.7% silicon, 2.2 to 5.2% aluminum with the balance iron and normal impurities, and having the combined silicon and aluminum content sufficient to satisfy the equation:

$$(\text{Percent Si})+0.37(\text{Percent Al})\leq 3.7$$

and an aluminum content equal to or greater than the silicon content. Upon a controlled atmosphere anneal, a complex oxide of iron, silicon and aluminum is formed on the sheet surface which provides a high degree of electrical resistance across the surface of the sheet.

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### 3,761,254
### ALLOY FOR SUPERCONDUCTIVE MAGNET

**Kyoji Tachikawa and Kiyoshi Inoue, Tokyo, Japan, assignors to The Director of National Research Institute for Metals, Tomoyoshi Kawada, Tokyo, Japan**

**Filed Jan. 29, 1971, Ser. No. 110,809**

**Claims priority, application Japan, Feb. 3, 1970, 45/8,949**

**Int. Cl. C22c** *15/00, 27/00*

**U.S. Cl. 75—134 V** **4 Claims**

A ternary alloy for superconductive magnet is composed of V, Hf and M where M is zirconium, chromium or tantalum.

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### 3,761,255
### MAGNETIC ALLOY HAVING HIGH MAGNETIC PERMEABILITY AND HIGH HARDNESS

**Takeshi Miyazaki, Omiya, and Yoichi Ishijima and Yoshizo Sawada, Kumagaya, Japan, assignors to Hitachi Metals, Inc., Tokyo, Japan**

**No Drawing. Filed June 29, 1971, Ser. No. 158,056**

**Claims priority, application Japan, July 1, 1970, 45/56,917**

**Int. Cl. C22c** *19/00*

**U.S. Cl. 75—170** **6 Claims**

A magnetic alloy having high magnetic permeability and high hardness containing 2 to 6 weight percent of Mo, 0.5 to 5 weight percent of Ti, 0.5 to 5 weight percent of Nb, 70 to 83 weight percent of Ni, less than 2 weight percent of Mn, and balance Fe and impurities.

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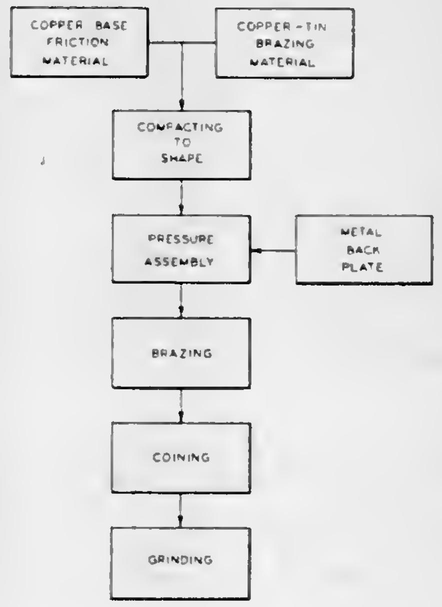
### 3,761,256
### FRICTION ARTICLES AND PROCESSES FOR MANUFACTURING AND MOUNTING SAME

**Charles E. Strom, Troy, and Leo J. Le Blanc, Jr., Waterford, N.Y., assignors to The Bendix Corporation**

**Filed June 1, 1971, Ser. No. 148,667**

**Int. Cl. B22f** *5/00, 7/04*

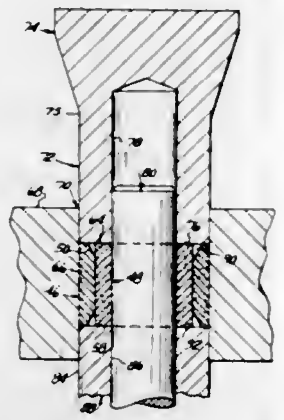
**U.S. Cl. 75—208 R** **1 Claim**



A brake or clutch friction composition comprised of a copper base friction material metallurgically bonded to a steel backing plate.

### 3,761,257
### METHOD OF MAKING A COMPOSITE HEAVY-DUTY BUSHING

**William M. Dunn, 28639 Oakpoint Drive,**
**Farmington, Mich. 48024**
**Original application June 14, 1971, Ser. No. 152,860.**
**Divided and this application Aug. 4, 1972, Ser. No. 278,109**
**Int. Cl. B22f** *7/02*
**U.S. Cl. 75—208 R** **7 Claims**



A composite heavy-duty bushing, such as a bearing bushing or bearing race (FIG. 4) consists of a high load-bearing or working portion consisting of a sleeve composed of sintered powdered high-performance alloy such as a manganese-molybdenum iron alloy and a supporting or mounting sleeve subjected to less concentrated or intense loads made of a lower-performance lighter-duty inexpensive ferrous base metal, such as sintered powdered iron. These two sleeves are separately briquetted, and then assembled telescopically. This assembly is then sintered while the sleeves are thus united, and finally hot-forged in an axial direction. This forging operation densifies the composite assembly from the sintered briquette density of about 75% to a final density of about 98% and at the same time upsets the ends of the base metal sleeve into an adjacent end bevel in the high performance alloy sleeve, thereby clinching the two sleeves inseparably to one another. Photomicrographs of longitudinal sections of these composite bushings spanning the joint between the two sleeves (FIG. 7) after subsequent carburizing and hardening heat treatment show a superior interlock therebetween resulting from a migration of the metals into one another across the interface therebetween. Torsion tests performed on such sections show adequate strengths without failure along the junction surfaces which compare favorably with the strength of similar single solid metal bushings. These photomicrographs also show that such a complete bond has been achieved along the central or axial portion of the joint, that the beveling of the ends is not essential in order to form a joint of adequate strength. Such beveling at the ends is therefore optional and is provided as an additional means of retention of the inner sleeve inside the outer sleeve.

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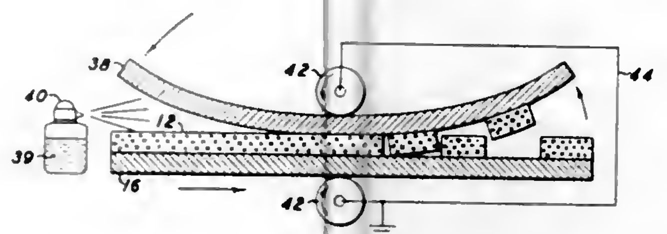
### 3,761,258
### IMAGING PROCESS EMPLOYING CHARGED DONOR AND RECEIVER SHEETS

**Elsie L. Menz, Rochester, N.Y., assignor to**
**Xerox Corporation, Stamford, Conn.**
**Filed Jan. 6, 1971, Ser. No. 104,329**
**Int. Cl. G03g** *13/14, 13/22*
**U.S. Cl. 96—1 R** **17 Claims**

An imaging system wherein an electrically photosensitive imaging layer is subjected to an initially high electrical field and while under said field exposed to electromagnetic radiation to which it is sensitive. Subsequent to said exposure, the electrical field is reduced and after such reduction the imaging layer is rendered cohesively weak, sandwiched between a donor sheet and a receiver sheet and with a further reduced electric field placed across the donor and receiver sheets the two sheets are separated. Upon separation of the sheets, the imaging layer fractures in imagewise configuration providing a positive image on one of the sheets and a negative image on the other.



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### 3,761,259
### ELECTROPHOTOGRAPHIC ELEMENT CONTAINING AN INTERMEDIATE LAYER

**Fumiaki Arai, Tokyo, Wasaburo Ohta and Junji Kurokawa, Yokohama-shi, Noriyuki Usui, Kawasaki-shi, Sakae Shimizu, Tokyo, and Tetsuo Tanaka, Kasukabe-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan**
**No Drawing. Original application June 4, 1969, Ser. No. 830,252, now Patent No. 3,682,632. Divided and this application July 5, 1972, Ser. No. 269,122**
**Claims priority, application Japan, June 14, 1968, 43/40,585; Sept. 9, 1968, 43/64,277; Oct. 2, 1968, 43/71,153; Oct. 9, 1968, 43/73,174; Oct. 12, 1968, 43/74,449**
**Int. Cl. G03g** *5/06*
**U.S. Cl. 96—1.8** **2 Claims**

An electrophotographic copying material having a photoconductive layer formed on the surface of a support, whose back is pre-coated with an electroconductive layer, with an intermediary layer between said photoconductive layer and the support, said intermediary layer comprising a printing-durable polymer consisting of the reaction product of (A) at least one member of film forming and water soluble high molecular weight substances, (B) at least one member of ethylene-type vinyl resins, and (C) N-methylol acrylamide.

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### 3,761,260
### PHOTOGRAPHIC BLEACH COMPOSITION

**Maurice Antoine de Ramaix, Hove, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium**
**No Drawing. Filed Aug. 9, 1971, Ser. No. 170,277**
**Claims priority, application Great Britain, Sept. 21, 1970, 44,875/70**
**Int. Cl. G03c** *7/16, 5/32*
**U.S. Cl. 96—60 R** **9 Claims**

A method of bleaching photographic silver images by means of a solution containing an alkali metal or ammonium dichromate and a water-soluble iodide in a weight ratio of 50:1 and 1:1, is described. By the presence of the iodide, bleaching is accelerated.

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### 3,761,261
### PHTHALOCYANINE DYE SENSITIZERS FOR ZINC OXIDE

**Hisatake Ono, Asaka, Satoru Honjo, Tokyo, and Masaaki Takimota, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.**
**No Drawing. Filed Nov. 2, 1971, Ser. No. 195,005**
**Claims priority, application Japan, Nov. 11, 1970, 45/99,335**
**Int. Cl. G03g** *5/08*
**U.S. Cl. 96—1.7** **8 Claims**

An electrophotographic sensitizing phthalocyanine dye derivative is disclosed for extending spectral response of a zinc oxide photosensitive layer into the red wavelength region, while at the same time exhibiting good chemical stability during the binder setting and handling steps used for production of the photosensitive layer.

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### 3,761,262
### PHOTOGRAPHIC COLOR DEVELOPING PROCESS

**Karl-Wilhelm Schranz, Opladen, and Erwin Schön and Wolfgang Hünicke, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**
**No Drawing. Filed Aug. 18, 1971, Ser. No. 172,891**
**Claims priority, application Germany, Aug. 20, 1970, P 20 41 325.6**
**Int. Cl. G03c** *5/00, 5/38, 5/44*
**U.S. Cl. 96—22** **6 Claims**

The formation of color fog during the bleaching step of color processing, particularly rapid color processing, is suppressed by including certain sulfhydrazides in the bleach bath, and preferably further adding a large quantity of thiosulfate as well as a color coupler that couples with developer oxidation products without forming a dye.

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### 3,761,263
### DIAZOTYPE COMPOSITIONS AND PHOTOGRAPHIC PROCESSES

**James C. Fleming and Michael D. Shea, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Filed Nov. 3, 1971, Ser. No. 195,466**
**Int. Cl. G03c** *1/58*
**U.S. Cl. 96—49** **9 Claims**

Diazotype compositions including a light-sensitive diazonium salt and a coupler compound that can react with the diazonium salt to form an azo dye, wherein the coupler is a 3′-hydroxy-2′-naphthoylurea, such as those wherein the terminal urea nitrogen atom (i.e., the nitrogen not bonded to the naphthoyl group) is substituted with members like hydrogen atoms, aryl groups, alkyl groups, or atoms which, in combination with the nitrogen atom, form 5 to 6-membered heterocyclic groups like morpholino, piperidino or pyrrolidino, produce blue dyes of increased red light opacity on development with base. Optionally, a yellow dye-forming coupler can be included in the composition to promote the formation of neutral hue (black line) images. The diazotype compositions of this type can be carried on a support to prepare composite diazotype photographic elements.

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### 3,761,264
### METHOD OF DEFINING A DETAILED PATTERN ON A SURFACE OF A BODY

**Fred Sterzer, Princeton, N.J., assignor to RCA Corporation**
**Filed Oct. 12, 1971, Ser. No. 188,185**
**Int. Cl. G03c** *11/00*
**U.S. Cl. 96—46** **7 Claims**

A detailed pattern on a photomask is defined, in reduced size, on a surface of a body by a novel photolithographic process employing two successive Fresnel diffraction printings. The surface of the body is provided with three layers, a lower photoresist, a metal, and an upper photoresist, respectively. The upper photoresist is exposed with a Fresnel diffraction pattern of the detailed pattern for a time to activate it with only the greater intensities of light of the Fresnel diffraction pattern. The developed upper photoresist defines the detailed pattern, in reduced size, on the layer of metal. The lower photoresist is similarly exposed and activated through an etched mask of the layer of metal, as defined by the upper photoresist. When developed, the lower photoresist defines the detailed pattern, still further reduced in size, on the surface of the body.

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### 3,761,265
### TREATING IMAGEWISE DISTRIBUTION OF DECOMPOSED PEROXY COMPOUNDS IN THE PRESENCE OF DYE-FORMING MATERIALS AND DYE-INTENSIFYING MATERIALS OF ALCOHOLS AND KETONES

**Reinhart Matejec, Rudolf Meyer, and Erwin Ranz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**
**No Drawing. Filed Sept. 8, 1971, Ser. No. 178,842**
**Claims priority, application Germany, Sept. 11, 1970, P 20 44 993.8**
**Int. Cl. G03c** *1/58, 5/24, 7/00*
**U.S. Cl. 96—48 R** **4 Claims**

In a process for the production of photographic images by imagewise exposure of light-sensitive layers to imagewise produce nuclei that catalytically decompose peroxy compounds, wherein the exposed layer is treated with a peroxy compound and with reaction components for a dye-forming oxidation reaction that produces the photographic image, the improvement according to which the treatment is also with an organic compound having at least one aliphatic hydroxyl group and/or an aliphatic or aromatic ketone, to intensify the dye image.

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### 3,761,266
### SILVER HALIDE EMULSIONS, PREDOMINANTLY CHLORIDE CONTAINING SILVER HALIDE GRAINS WITH SURFACES CHEMICALLY SENSITIZED AND INTERIORS FREE FROM CHEMICAL SENSITIZATION AND THE USE THEREOF IN REVERSAL PROCESSES

**Kirby Mitchell Milton, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Filed Mar. 10, 1971, Ser. No. 123,006**
**Int. Cl. G03c** *1/28, 5/24*
**U.S. Cl. 96—64** **25 Claims**

Improved processes are disclosed for obtaining positive images in unfogged, silver halide emulsions wherein a photographic element comprising a support and said emulsion are imagewise-exposed and then either (a) developed in a silver halide surface developer in the presence of a fogging agent, (b) light-flashed during development in a surface developer, (c) developed in a silver halide aerial fogging surface developer or (d) bathed in a surface-image stabilizer bath followed by light-flashing before or during development in a silver halide surface developer. In one aspect, improved silver halide emulsions wherein the halide is predominantly chloride are disclosed for use in the above process.

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### 3,761,267
### PHOTOGRAPHIC ELEMENT CONTAINING MONODISPERSED, UNFOGGED, DYE SENSITIZED SILVER HALIDE GRAINS METAL IONS SENSITIZED INTERNALLY AND THE USE THEREOF IN REVERSAL PROCESS

**Paul Brewster Gilman, Jr., Rochester, Ronald George Raleigh, Brockport, and Joseph Andrew Merrigan, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Filed Mar. 10, 1971, Ser. No. 123,007**
**Int. Cl. G03c** *1/28, 5/24*
**U.S. Cl. 96—64** **20 Claims**

Improved processes are disclosed for obtaining positive images in unfogged, silver halide emulsions. In one aspect, the silver halide emulsions of this invention comprise silver halide grains having foreign metal ions and preferably polyvalent metal ions occluded therein.

### 3,761,268

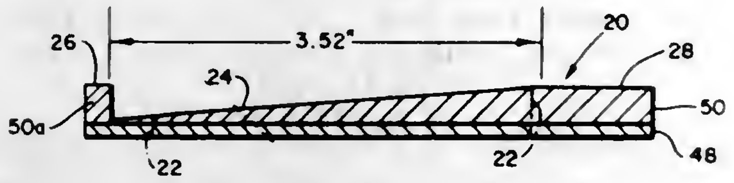
## SELF-DEVELOPING PHOTOGRAPHIC FILM ASSEMBLAGE

**Edwin H. Land, Cambridge, and Richard J. Chen, Winchester, Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed May 5, 1972, Ser. No. 250,611**

**Int. Cl. G03c** *1/48*

**U.S. Cl. 96—76 C** **38 Claims**



A photographic film assemblage of the self-developing type comprising a photosensitive layer on one of a pair of sheets including a rectangular area adapted to be exposed and processed by superposing the sheets and advancing them relative to and between a pair of juxtaposed pressure-applying members to distribute a viscous liquid processing agent in a thin layer between the sheets from the leading edge of the exposed area to the trailing edge thereof. The assemblage includes spacing layers at the lateral margins of the area, tapered in thickness from a maximum near the leading edge to a minimum near the trailing edge of the area. A preferred embodiment shown is a self-developing film unit comprising two rectangular sheets secured in face-to-face relation by a binding sheet secured to the surface of one of the sheets and having marginal sections folded around the lateral and trailing end edges of the sheets and secured to the margins of the other sheet. The binding sheet is formed with a rectangular opening through which a layer of photosensitive material between the sheets is exposed and/or a visible image formed between the sheets is viewed. The binding sheet includes a section tapered in thickness from at least the leading edge of the opening to at least the trailing edge of the opening for cooperating with the pressure-applying members to control the thickness of the layer of liquid and is formed of a uniformly thick support and a pigment-containing coating which is tapered in thickness.

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### 3,761,269

## SELF-DEVELOPING PHOTOGRAPHIC FILM UNIT WITH LIQUID TRAP AND AN ALKALI NEUTRALIZING SPACER ELEMENT

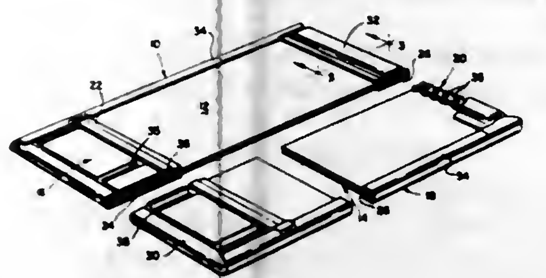
**John E. Campbell, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of application Ser. No. 643,273, June 2, 1967, now Patent No. 3,615,436, which is a continuation of abandoned application Ser. No. 309,968, Sept. 19, 1963, which in turn is a continuation-in-part of application Ser. No. 288,011, June 14, 1963. This application Sept. 27, 1971, Ser. No. 183,989**

**Int. Cl. G03c** *1/48*

**U.S. Cl. 96—76 R** **9 Claims**

A photographic film assemblage comprising a pair of sheet-like elements and a layer of a photosensitive material sandwiched between the elements including an area adapted to be exposed and processed by an aqueous alkaline processing liquid spread in a layer between the two elements to form a visible transfer image. The film assemblage includes a binding sheet secured around and to the exterior of adjacent end sections of the two elements and a spacer formed of a fibrous material contained within the film assemblage between the sheet-like elements and binding sheet. The spacer is formed with gaps which cooperate with the elements and binding sheets to provide trapping spaces for collecting and retaining excess processing liquid overrun as the end portions of the two elements are moved betwen a pair of pressure-applying members which spread the processing liquid. The two sheets



are retained together subsequent to processing and the liquid trapping and retaining spaces formed by the spacer element are located within the film assemblage very close to the area containing the visible image. To neutralize excess processing liquid collected in the trapping spaces and prevent migration of a alkali into the image area, the spacer itself is at least coated with citric acid on the side in contact with which the processing liquid is spread.

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### 3,761,270

## PHOTOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

**Richard A. de Mauriac and Richard A. Landholm, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Sept. 27, 1971, Ser. No. 184,219**

**Int. Cl. G03c** *1/02, 1/72, 1/40*

**U.S. Cl. 96—77** **32 Claims**

In a photothermographic element, composition or process for producing developed images in color employing processing with heat, a combination of (a) a color-forming coupler, (b) photosensitive silver halide, (c) an oxidation-reduction image-forming combination containing (i) silver benzotriazole, with (ii) an aminophenol reducing agent, and (d) a base-release agent, provide improved color images. After exposure, a color image can be developed by heating a photographic element containing this combination. Addenda employed in photosensitive and thermosensitive materials for processing with heat can be employed with this combination.

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### 3,761,271

## FILM ASSEMBLAGE FOR COLOR DIFFUSION TRANSFER FILM

**Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

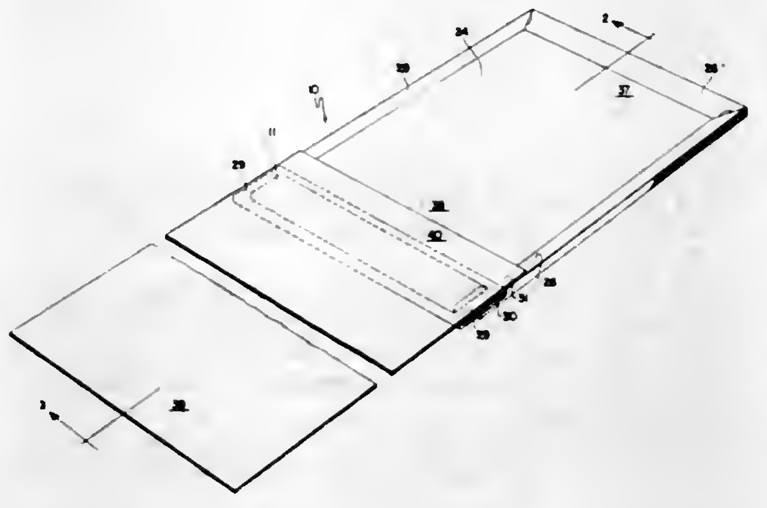
**Continuation-in-part of application Ser. No. 159,207, July 2, 1971, which is a continuation of application Ser. No. 39,646, May 22, 1970, now Patent No. 3,594,165, which is a continuation-in-part of abandoned application Ser. No. 815,585, Apr. 14, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 728,535, May 13, 1968. This application Dec. 1, 1971, Ser. No. 203,731**

**Int. Cl. G03c** *1/40*

**U.S. Cl. 96—77** **17 Claims**

The present invention is directed to a new and improved film assembly for producing diffusion transfer process color reflection prints employing a film pack or magazine type film unit.

The film assembly includes, in essence, a generally rectilinear container selectively retaining, in order, and in stacked relationship, a dark slide and a plurality of color diffusion transfer process film units constructed as detailed.



The assembly specifically comprises, in combination, a generally rectilinear container including a forward wall possessing a light-transmitting section, a side wall possessing a withdrawal orifice through which a dark slide and individual diffusion transfer process color film units are adapted to be selectively withdrawn sequentially, and means for biasing the dark slide and film units toward the light-transmitting section; a dark slide disposed substantially coextensive the light-transmitting section of the container's forward wall and including a leading edge and a trailing end section; a plurality of diffusion transfer process color film units each including a leading end and a trailing end section and comprising a photosensitive laminate containing, as essential layers, in order, a dimensionally stable transparent support layer, a layer adapted to receive a diffusion transfer process dye image-forming material diffusing thereto, an opaque layer, a photosensitive silver halide layer having associated a diffusion transfer process dye image-forming material, a transparent dimensionally stable sheet superposed substantially coextensive the surface of the laminate opposite the transparent support, and a rupturable container retaining a processing composition including an opacifying agent extending transverse the leading edge of the film unit to effect unidirectional discharge of the container's contents between the transparent sheet and the laminate, each of the film units disposed in stacked relationship within the container with its transparent sheet disposed toward the light-transmitting section and the rupturable container toward the withdrawal orifice; and a plurality of leader sheets each comprising a leading and a trailing end section and including a first leader sheet, the leading end section of which extends through the withdrawal orifice and the trailing end section of which is secured to the dark slide rearward of its leading edge, a second leader sheet interconnecting the dark slide and next succeeding film unit with the trailing end section of the leader sheet secured to the leading end section of the film unit, and third leader sheets each interconnecting a preceding film unit and next succeeding film unit in the stack with its trailing end section secured to the leading end section of the next succeeding film unit.

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### 3,761,272

## PHOTOGRAPHIC ELEMENTS CONTAINING ULTRAVIOLET-ABSORBING POLYMERS

**Marc Godfried Mannens, Mortsel, Jan Jaeken, Hove, Wilhelmus Janssens, Aarschot, and Jan Jozef Priem, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium**

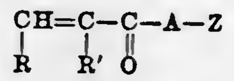
**No Drawing. Filed May 17, 1971, Ser. No. 144,251**

**Claims priority, application Great Britain, June 9, 1970, 27,977/70**

**Int. Cl. G03c** *1/84*

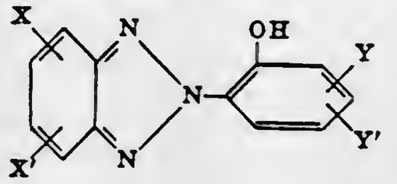
**U.S. Cl. 96—84 R** **12 Claims**

The invention claims an ultraviolet-absorbing filter layer composition formed from an aqueous solution of a hydrophilic colloid having dispersed therein a hydrophobic copolymer obtained by emulsion polymerization of at least $\alpha,\beta$-ethylenically unsaturated monomer and of an ultraviolet-absorbing, solid, water-insoluble monomer of the formula:



$$\underset{R}{CH}=\underset{R'}{C}-\underset{\overset{\|}{O}}{C}-A-Z$$

wherein Z is H or Z′, with Z′ representing a substituted benzotriazole group of the formula:



R is H, $—CH_3$, —CN, —COOH or —COAZ′
R′ is H, $—CH_3$, or $—CH_2COAZ'$
A is —O— or —NH
or A and R form together a cyclic imide group,
or A and R′ form together a cyclic imide group,

A being bound to the substituted benzotriazole group of Z′ via the carbocyclic phenyl group or via the carbocyclic benzo group.

The ultraviolet-absorbing filter layer composition may be used for the protection of light-sensitive photographic materials against ultraviolet light and for the production of ultraviolet filters and filter layers.

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### 3,761,273

## PROCESS FOR PREPARING RADIATION SENSITIVE MATERIALS

**Warren J. Miller, Rochester, and Ralph W. Baxendale, Williamson, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Oct. 1, 1971, Ser. No. 185,826**

**Int. Cl. G03c** *1/06, 1/38*

**U.S. Cl. 96—94** **27 Claims**

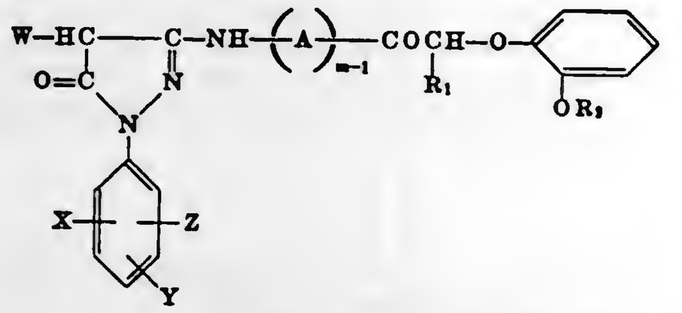
A dispersion of a radiation sensitive silver halide with a heavy metal salt of a fatty acid in a liquid medium is prepared by (A) providing an oleophilic precipitate containing a radiation sensitive silver halide and a surfactant which has the property of making the silver halide oleophilic, (B) dispersing the oleophilic precipitate in a solution of an alkali metal or ammonium salt of a fatty acid at least at a temperature at which the fatty acid salt is maintained in solution, then (C) lowering the temperature and pH of the product of (B) until substantially all of the fatty acid compound is present in the solution as a solid phase, and then (D) converting at least part of the fatty acid compound to a heavy metal salt by admixing a source of heavy metal ions with the product of (C). This method is conveniently carried out by mixing a radiation sensitive silver halide gelatino emulsion with the surfactant in (A). (A) and (B) can be carried out by precipitating the radiation sensitive silver halide in a solution of the alkali metal or ammonium salt of the fatty acid. This process eliminates the need for ball milling and permits preparation of a particulate solid suitable for mixing the components of photosensitive materials for processing with heat.

### 3,761,274
### LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

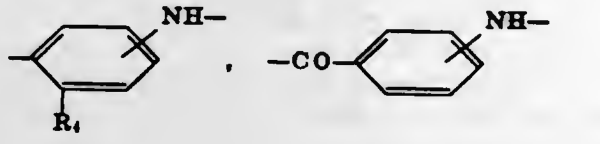
**Isaburo Inoue, Teruo Hanzawa, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan**

**No Drawing. Filed July 9, 1971, Ser. No. 161,953**
**Claims priority, application Japan, July 10, 1970, 45/59,863**
**Int. Cl. G03c** *1/40*
**U.S. Cl. 96—100** **5 Claims**

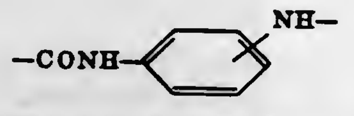
A light-sensitive silver halide color photographic material containing a compound of the general formula,



where W is a hydrogen atom, or a phenylazo group; X, Y and Z, which may be same or different, are individually a hydrogen or halogen atom, a lower alkyl group, a lower alkoxy group, a phenoxy group or a group of the formula COOR$_3$ (where R$_3$ is a lower alkyl group); A is a divalent group of the formula



or



(where R$_4$ is a hydrogen or halogen atom); *m* is an integer of 1 or 2; R$_1$ is a hydrogen atom or a lower alkyl group; and R$_2$ is an aliphatic hydrocarbon residue having 8 to 16 carbon atoms.

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### 3,761,275
### BOROŃ HYDRIDES AS REDUCTION SENSITIZERS IN DEVELOPING-OUT SILVER HALIDE EMULSIONS

**John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed Apr. 14, 1971, Ser. No. 134,086**
**Int. Cl. G03c** *1/28*
**U.S. Cl. 96—107** **18 Claims**

Photographic silver halide, negative-working, developing-out emulsions are prepared which have their sensitivity increased by the addition of at least one boron hydride in which the skeletal framework forms a polyhedron or a fragment thereof, and contains from 6 to 12 boron atoms and may contain heteroskeletal atoms selected from the group, carbon, sulfur and nitrogen.

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### 3,761,276
### PHOTOGRAPHIC ELEMENT CONTAINING MONODISPERSED UNFOGGED SILVER HALIDE GRAINS, CHEMICALLY SENSITIZED INTERNALLY AND EXTERNALLY

**Francis John Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Mar. 10, 1971, Ser. No. 123,005**
**Int. Cl. G03c** *1/28*
**U.S. Cl. 96—108** **10 Claims**

Improved processes are disclosed for obtaining positive images in an unfogged, silver halide emulsion wherein a photographic element comprising a support and said emulsion are imagewise-exposed and then either (1) developed in a surface developer in the presence of a silver halide fogging agent or (2) given a light flash development in a surface developer. In one aspect, the silver halide emulsions of this invention are internal-image emulsions comprising silver halide grains which preferably have metal dopants occluded therein and wherein said grains have been chemically sensitized on the surface thereof to a level less than that which would provide a substantial density in Kodak Developer DK–50 after an imagewise exposure when said emulsions are coated at a coverage of between 300 to 400 mg. of silver per ft.$^2$.

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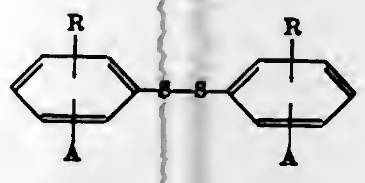
### 3,761,277
### SILVER HALIDE EMULSION CONTAINING A SULPHO SUBSTITUTED DISULPHIDE AS STABILIZER

**Antoon Leon Vandenberghe, Hove, Jozef Frans Willems, Wilrijk, Robert Joseph Pollet, Vremde, Gaston Jacob Benoy, Edegem, and Marcel Karel Van Doorselaer, Gravenwezel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium**

**No Drawing. Filed Jan. 13, 1971, Ser. No. 106,290**
**Claims priority, application Great Britain, Jan. 13, 1970, 1,664/70**
**Int. Cl. G03c** *1/34*
**U.S. Cl. 96—109** **15 Claims**

Light-sensitive silver halide emulsions are provided which comprise a disulphide compound of the formula:



wherein:

A is a sulpho group or a sulpho group carrying substituent, the sulpho group being in acid or salt form, and
R is hydrogen or a substitutent.

The emulsion has improved stability and fogging characteristics.

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### 3,761,278
### SILVER HALIDE ELEMENT CONTAINING A BENZIMIDAZOLINE - 2 - THIONE-N,N'-DICARBONIC ACID ESTER STABILIZING AGENT

**Walter Gauss, Cologne, Anita von Konig and Franz Moll, Leverkusen, Wolfgang Muller-Bardorff, Cologne, and Wilhelm Saleck, Schildgenberg-Gladbach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Aug. 25, 1971, Ser. No. 174,930**
**Claims priority, application Germany, Aug. 27, 1970, P 20 42 533.8; June 18, 1971, P 21 30 031.2**
**Int. Cl. G03c** *1/34*
**U.S. Cl. 96—109** **3 Claims**

A photographic silver halide emulsion containing a fog-stabilizing amount of a benzimidazoline-2-thione-N,N'-dicarbonic acid ester.

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### 3,761,279
### PHOTOTHERMOGRAPHIC ELEMENT

**Richard Arthur de Mauriac and Wilbur Seth Gaugh, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Sept. 8, 1970, Ser. No. 70,466**
**Int. Cl. G03c** *1/02, 1/22*
**U.S. Cl. 96—114.1** **5 Claims**

A sensitizing dye which is a merocyanine dye containing a rhodanine, thiohydantoin or 2-thio-2,4-oxazolidinedione nucleus, in combination with an image-forming combination comprising (a) a reducing agent, such as a phenolic reducing agent, and (b) an oxidizing agent, such as a heavy metal salt of an organic carboxylic acid, with (c) a catalyst for the described image-forming combination, e.g., photosensitive silver halide and preferably with (d) an activator-toning agent, such as a cyclic imide, in a photosensitive and thermosensitive composition or element, provides increased photosensitivity, especially in the blue region of the spectrum, faster development, higher maximum density, a more neutral tone and less background density due to post-processing printout. The described combination can also contain a divalent metal salt image amplifier, such as zinc acetate, an image stabilizer precursor, such as an azole thioether stabilizer precursor or a blocked azole thione stabilizer precursor, and a photographic speed increasing, onium halide.

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### 3,761,280
### PHOTOGRAPHIC COMPOSITION COMPRISING LIGHT-SENSITIVE POLYMER

**Erich Wolff, Leichlingen, Wolfgang Lässig, Munich, Eckart Seelig, Leverkusen, and Günther Kolf, Bergisch Gladbach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed June 7, 1971, Ser. No. 150,752**
**Claims priority, application Germany, June 20, 1970, P 20 30 506.0**
**Int. Cl. G03c** *1/70*
**U.S. Cl. 96—115 R** **1 Claim**

Relief images are made by imagewise exposing and thereby cross-linking a light-sensitive polymer layer. The unexposed areas remain soluble in certain solvents and are washed off. The light-sensitive polymers contain the cinnamylidene acetic acid ester structure as defined below.

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### 3,761,281
### COMPOSITION FOR MAKING MACAROON-TYPE BAKED PRODUCTS

**Aldo Ferrero, Via Ampere 9, Milan, Italy**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 767,505, Oct. 14, 1968. This application Apr. 6, 1971, Ser. No. 131,799**
**Claims priority, application Italy, Oct. 21, 1967, 21,850/67**
**Int. Cl. A21d** *13/08*
**U.S. Cl. 99—94** **4 Claims**

Macaroon-type baked products, that is baked products having a crunchy but cellular structure, of the type normally obtained by baking products using ground almonds, apricot pits, or the like are obtained by the baking of compositions of flour obtained by grinding a puffed cereal, plus an edible shortening, egg albumen and sugar.

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### 3,761,282
### FABRICATED ONION RING WITH DEHYDRATED POTATO SHELL

**Mounir A. Shatila, Blackfoot, Idaho, assignor to American Potato Company, San Francisco, Calif.**

**No Drawing. Filed Oct. 21, 1971, Ser. No. 191,336**
**Int. Cl. A23l** *1/12*
**U.S. Cl. 99—100 P** **16 Claims**

An encased onion product in any desired configuration. A process for producing an encased onion product which can be shaped in ring or other desired form. In the preferred embodiment, a starch-containing dough mixture is extruded in tubular form. A second mixture comprising onion pieces, modified starch and additives is simultaneously extruded into the hollow tubular form. The compound extrusion can be formed into rings or other configurations. The formed product can be fried directly for consumption or can be parfried, frozen, and later finish fried or reheated. Finished products have attributes not obtainable by frying coated raw onion rings or prior art fabricated onion products.

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### 3,761,283
### METHOD OF TENDERIZING MEAT

**Charles F. Snyder, Dallas, Tex., assignor to Bonanza International, Inc., Dallas, Tex.**

**No Drawing. Filed July 16, 1971, Ser. No. 163,428**
**Int. Cl. A22c** *18/00*
**U.S. Cl. 99—107** **3 Claims**

A method for the rapid tenderization of meat employing an accelerated aging process. The method comprises subjecting the meat, immediately after the animal is slaughtered, to an aging process at a temperature within the range of from about 100° to 120° F. under conditions of high relative humidity and under ultra-violet light for a period sufficient to achieve the desired degree of tenderness, thereafter chilling the meat to a temperature of about 36° to 40° F., and then subjecting the meat to a pasteurizing level of electron-beam generator radiation.

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### 3,761,284
### PRODUCING AN EXTRUDED CHEESE PRODUCT IN SNACK SIZED FORM

**Herbert G. Foster, Jr., Hazel Crest, and Charles D. Frederick, Western Springs, Ill., assignors to Swift & Company, Chicago, Ill.**

**No Drawing. Filed Nov. 9, 1971, Ser. No. 197,150**
**Int. Cl. A23c** *19/12*
**U.S. Cl. 99—117** **9 Claims**

An improved method for producing a cheese product in a novel snack sized form is disclosed whereby individual snack sized pieces of a cheese product are formed without the use of molds, casings and the like. An initially heated plastic cheese formulation is rapidly and evenly cooled, with agitation, under a high pressure of between about 165 to 195 p.s.i.g. to a sufficiently solid self-sustaining condition throughout, and is extruded and cut into snack and/or bite size pieces which have compacted homogeneous textures and smooth, glossy appearances. The cooling under the prescribed high pressure and simultaneous agitation are required to promote an even reduction of temperature throughout the product and to provide the desired compacted homogeneous texture.

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### 3,761,285
### CANNED CARBONATED SHERBET MIX

**Taro Nagasawa, Shigeo Okonogi, Saburo Oizumi, and Tatsumi Ohya, Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan**

**Continuation-in-part of abandoned application Ser. No. 855,031, Sept. 3, 1969. This application July 30, 1971, Ser. No. 167,579**
**Claims priority, application Japan, Feb. 14, 1969, 44/10,496**
**Int. Cl. A23g** *5/00*
**U.S. Cl. 99—137** **11 Claims**

A carbonated sherbet mix which is canned at a specific ratio of sherbet mixture solids and liquid with propellant gas within critical proportions and under a critical pressure correlated with the amount of the constituents as well as with the volume of the can and within critical temperature limits to produce after freezing the effect of forcing the frozen sherbet dramatically and slowly out of the can in a monolithic self-supporting structure ready for immediate consumption.

3,761,286

### CHEWING GUM COMPOSITION CONTAINING FLAVORED HOMOPOLYMERS

**Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.**

**No Drawing. Division of application Ser. No. 32,446, Apr. 27, 1970, which is a continuation-in-part of applications Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and a division of application Ser. No. 654,044, July 5, 1967, now abandoned. This application June 17, 1971, Ser. No. 154,200**

**Int. Cl. A23g** *3/00, 3/30*

**U.S. Cl. 99—135** **6 Claims**

A chewing gum composition containing a water insoluble hydrophilic polymer of a hydroxyalkyl acrylate or methacrylate having a flavor adsorbed therein.

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3,761,287

### PROCESS FOR THE MANUFACTURE OF MEAT FLAVORS

**Kurt Jaeggi, Dubendorf, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.**

**No Drawing. Filed Nov. 24, 1971, Ser. No. 202,007**
**Claims priority, application Switzerland, Dec. 23, 1970, 19,071/70**

**Int. Cl. A23l** *1/26*

**U.S. Cl. 99—140 R** **16 Claims**

A process for the manufacture of flavors and aromas for food by heating a mixture containing a pentose, a polyalcohol, proline, methionine, cysteine and possibly other amino acids.

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3,761,288

### METHOD FOR MAKING A LOW CALORIE SWEETENING COMPOSITION

**Martin Glicksman, Valley Cottage, and Bartley N. Wankier, White Plains, N.Y., assignors to General Foods Corporation, White Plains, N.Y.**

**No Drawing. Filed July 16, 1970, Ser. No. 55,561**

**Int. Cl. A23l** *1/26*

**U.S. Cl. 99—141 A** **7 Claims**

Readily soluble, sweetening compositions are produced by co-drying solutions of an edible bulking agent and a dipeptide sweetening compound.

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3,761,289

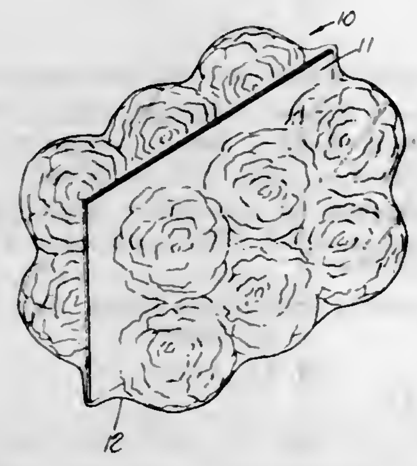
### PRODUCE PACKAGE

**Donald G. Wolf, Salinas, Calif., assignor to Inter Harvest, Inc., Salinas, Calif.**

**Filed Oct. 23, 1970, Ser. No. 83,539**

**Int. Cl. B65b** *25/04*

**U.S. Cl. 99—171 CA** **6 Claims**



A sheetlike support member includes the produce items integrally related into a package in abutting relation against the major surfaces of the support member by an overwrap. Life sustaining materials are incorporated within the support member structure. The support members can be optionally flat sheet, H-shaped or U-shaped, and the packages being stacked to rest on a support member edge. A further aspect includes incorporating a plurality of such packages within a single overwrap during shipment or storage.

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3,761,290

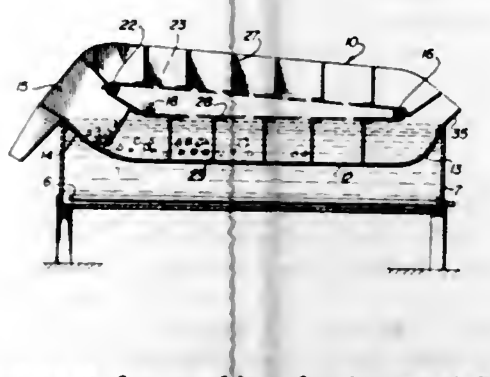
### FOOD COOKING APPARATUS

**Fred William Brunner, Eugene, Oreg., assignor to Manning's Inc., San Francisco, Calif.**

**Filed Feb. 17, 1971, Ser. No. 116,295**

**Int. Cl. A47j** *27/21*

**U.S. Cl. 99—330** **8 Claims**



An apparatus for cooking food, especially meatballs and the like on a continuous basis is disclosed. The food products, say meatballs, are progressively transported through a processing vessel located within a rectangular tank by means of transverse paddles connected to an endless conveyor device mounted in the processing vessel. The processing vessel contains water at, say, 180° to 200° F. in which the meatballs are immersed during their passage through the vessel whereby the meatballs are cooked under gentle conditions that do not disrupt them. Provision is made to remove from the processing vessel fat formed during the cooking. The cooking apparatus may be used in conjunction with a convenient packaging device that is also described.

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3,761,291

### PROCESS FOR PREPARING SYNTHETIC AGGREGATE

**Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**No Drawing. Filed Sept. 21, 1970, Ser. No. 74,229**

**Int. Cl. C08h** *13/00, 17/02;* **C08j** *1/46*

**U.S. Cl. 106—280** **11 Claims**

A synthetic aggregate is provided by (1) combining asphalt either as an emulsion or in cutback form with a silty-clay soil in a ratio of from 0.02 to 0.7 parts asphalt to 1 part of silty-clay soil, (2) thoroughly mixing the constituents, and (3) forming high compressive strength water-resistant aggregate particles of from one-quarter inch to one inch by baking at a temperature of from 250 to 600° F.

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3,761,292

### SIMULATED EMERALD GEMSTONE

**Donald A. Lepore, Florham Park, Richard C. Puttbach, Parsippany, and Richard J. De Stefano, Roselle Park, N.J., assignors to Litton Systems, Inc., Beverly Hills, Calif.**

**No Drawing. Filed Sept. 13, 1971, Ser. No. 180,176**

**Int. Cl. C04b** *35/00*

**U.S. Cl. 106—42** **2 Claims**

A simulated emerald gemstone of the single crystal garnet structure is grown by the Czochralski technique in the form of $Y_3Al_5O_{12}$, known as yttrium-aluminum garnet (YAG) and is doped with small amounts of metal oxides including chromium oxide, cobalt oxide, iron oxide, neodymium oxide to form a crystal having a deep green color with a slight bluish shade and emerald-like flaws therein.

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3,761,293

### CERAMIC COATING COMPOSITIONS FOR CONTINUOUS CLEANING SURFACES

**George F. Carini and Ernest M. Hommel, Pittsburgh, and James R. Twigger, Houston, Pa., assignors to The O. Hommel Company, Carnegie, Pa.**

**No Drawing. Filed Apr. 27, 1971, Ser. No. 137,984**

**Int. Cl. C03c** *5/02, 7/02, 7/04*

**U.S. Cl. 106—48** **9 Claims**

This invention relates to compositions and methods for forming and applying compositions which becomes durable adherent ceramic direct-on coatings with catalytically active surfaces after firing at elevated temperatures. The coatings are prepared from a batch comprising a devitrifiable base, glass or frit, a barium yielding glass or glass-forming compound such as lithium-barium-calcium-fluoroborate and either an oxide such as antimony oxide or cerium oxide or a metal such as polished aluminum powder.

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3,761,294

### MULLITE FORMATION

**Thomas Clifford Shutt, Sarnia, Ontario, Canada, assignor to Fiberglas Canada Limited, Toronto, Ontario, Canada**

**Filed Feb. 6, 1969, Ser. No. 797,210**
**Claims priority, application Canada, Feb. 9, 1968, 12,068**

**Int. Cl. C11b** *35/16*

**U.S. Cl. 106—65** **6 Claims**

The formation of mullite in clay wares is promoted and achieved at lower firing temperatures by incorporating in the clay mix about 1 to 3% of a fluorine compound.

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3,761,295

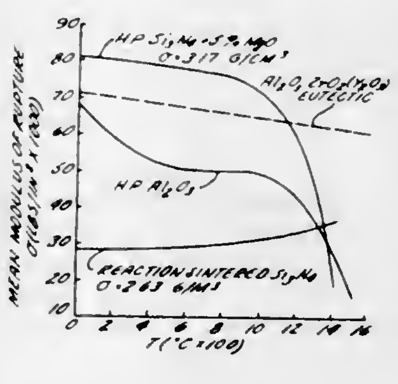
### DIRECTIONALLY SOLIDIFIED REFRACTORY OXIDE EUTECTIC

**Charles O. Hulse, Manchester, and John A. Batt, Rockville, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Filed Jan. 26, 1972, Ser. No. 220,908**

**Int. Cl. C04b** *35/10, 35/48*

**U.S. Cl. 106—73.4** **7 Claims**



The eutectic composition exisiting between alumina and zirconia modified with a stabilizing agent such as yttria is directionally cast to provide a ceramic body of very high useful strength, the alumina matrix phase being prestressed in compression by the ordered phase of stabilized zirconia.

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3,761,296

### PROCESS FOR PREPARING BITUMINOUS MIXTURES

**Emile Muntzer and Paul Muntzer, Strasbourg, France, assignors to Firma Wibau Westdeutsche Industrie- und Strassenbau Maschinen-Gesellschaft mbH, Rothenbergen, Germany**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 108,566, Jan. 21, 1971. This application July 12, 1971, Ser. No. 161,903**

**Int. Cl. C08h** *13/00, 17/10;* **C09d** *3/24*

**U.S. Cl. 106—283** **25 Claims**

The present method improves the adhesiveness between bituminous binder components and the mineral components of so called bituminous mixtures by adding to the mineral components a quantity of finely grained or powderized chromite, preferably in the form of chrome alum. The chromite may be added either prior to or simultaneously with or after the addition of the bituminous binder. The foregoing method can be further improved by mixing the moisture sensitive chromites with components which will absorb the moisture of the chromites to keep the chromite in granulation and thus most effective for improving the adhesiveness.

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3,761,297

### PROCESS FOR THE PREPARATION OF DYEING PIGMENTS

**Juan Maymo Figueras, Calle Balmes 270, Barcelona, Spain**

**No Drawing. Filed Sept. 2, 1970, Ser. No. 69,139**
**Claims priority, application Spain, Sept. 8, 1969, 371,591**

**Int. Cl. C09c** *1/36, 3/00*

**U.S. Cl. 106—289** **9 Claims**

A dyeing pigment is made by fixing an anthraquinone, indigoid or a phthalocyanine dyestuff in the form of a leuco base to a substrate. Titanium dioxide is particularly mentioned as the substrate. The dyestuff, in a colloidal dispersion in aqueous alkali, is reduced to form the leuco base, the substrate is added to it and the solution is oxidised in situ to fix the leuco base to the substrate. Separation procedures yield a paste which is dried and triturated to produce the dyeing pigment as an impalpable powder. Oxidation is described by introduction of air or oxygen into the hot solution. Further treatment of the dyeing pigment by various solvents under pressure and heat may be performed to remove dyestuff residues not firmly fixed to the substrate. The insolubility and non-toxicity of the dyeing pigments make them useful in cosmetics, foodstuffs and pharmaceuticals.

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3,761,298

### PURIFICATION OF TITANIUM SULFATE SOLUTIONS

**Arthur Delbert Coon, Savannah, Ga., Gerard Martin Sheehan, Lynchburg, Va., and Paul Montgomery Dupree, Flemington, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Filed Apr. 1, 1971, Ser. No. 130,450**

**Int. Cl. C09c** *1/36*

**U.S. Cl. 106—300** **5 Claims**

This disclosure describes the manufacture of titanium dioxide pigment of increased brightness by utilizing titanium salt solutions contacted with activated charcoal as the precursor for hydrolysis seeds and/or the hydrous titania coatings of pigment.

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3,761,299

### TREATING POLYMERIC SURFACES

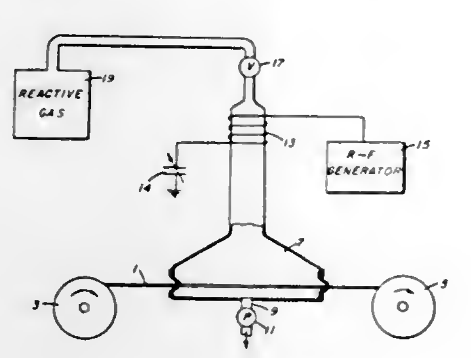
**Darrel D. Lidel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Continuation-in-part of abandoned applications Ser. No. 772,745, Nov. 1, 1968, and Ser. No. 452, Jan. 2, 1970. This application Oct. 13, 1970, Ser. No. 80,482**

**Int. Cl. B44d** *1/04;* **G03c** *1/74*

**U.S. Cl. 117—34** **10 Claims**

The surface characteristics of polymeric materials are altered by exposure to a reactive gas which has been activated by radio frequency electromagnetic radiations prior to being directed onto the surface. The reactive gas is selected from either the gases which occur naturally with 3-electron bonds (e.g., NO, $NO_2$, etc.) or from other gases capable of decomposition in the presence of an electromagnetic field to form (1) activated species which attack the polymer surface to break carbon-hydrogen bonds, forming free radical sites, and (2) free radicals which react with these sites. The process can also be practiced using separate activator and reactive gases, and when the reactive gas selected comprises organic material, the gas stream used to treat the polymeric surface is supplemented by an activator gas comprising the noble gases and nitrogen. The process can be used to change polymeric surface wettability to water or oil, to render polymer films capable of being coated directly with gelatin-containing photosensitive layers with resultant satisfactory adhesion characteristics, etc.



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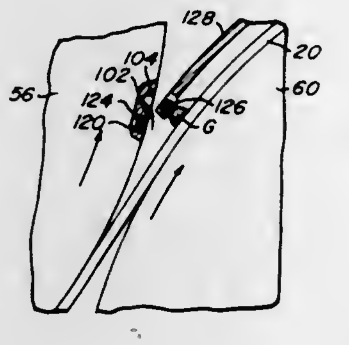
### 3,761,300
### METHOD OF DISINTEGRATING A GLUE STRING ATTACHED TO A GLUE BEAD BY MEANS OF A HEATED WIRE OR THE LIKE AND AFTER SAID BEAD IS APPLIED TO A WEB

**Harold W. Huffman, Fairfield, Ohio, and James A. Wilmer, Fort Thomas, Ky., assignors to The Hamilton Tool Company, Hamilton, Ohio**
**Filed Sept. 22, 1971, Ser. No. 182,720**
**Int. Cl. B05c** *3/20*
**U.S. Cl. 117—38** **10 Claims**



The method of disintegrating a glue string attached to a bead after application of the bead to a web.

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### 3,761,301
### PROCESSES FOR PRODUCING DUCTILE, HIGH TEMPERATURE OXIDATION-RESISTANT COMPOSITES

**Laurence Sama, 4006 Berrywood Drive, Seaford, N.Y. 11783, and George T. Pepino, 2 Pan Court, Huntington Station, N.Y. 11746**
**No Drawing. Original application Apr. 22, 1969, Ser. No. 818,462, now Patent No. 3,620,693. Divided and this application Feb. 5, 1971, Ser. No. 113,078**
**Int. Cl. C23c** *17/00*
**U.S. Cl. 117—71 M** **6 Claims**

A ductile, high temperature, oxidation-resistant metal composite is disclosed that comprises a superalloy substrate and a coating composition having the following percentages by weight of ingredients:

| | Percent |
|---|---|
| Chromium | 5 to 50 |
| Aluminum | 5 to 10 |
| Silicon | 0.5 to 3 |
| Cobalt | 0 to 5 |
| Nickel | Balance |

A process for producing the composites is also disclosed wherein the coating composition containing the foregoing ingredients as powdered metals, a fugitive organic binder and a volatile solvent for the binder is applied to a clean substrate and thereafter the coated material is dried and heated under non-oxidizing conditions for a time sufficient to create a diffusion zone between said coating and said substrate

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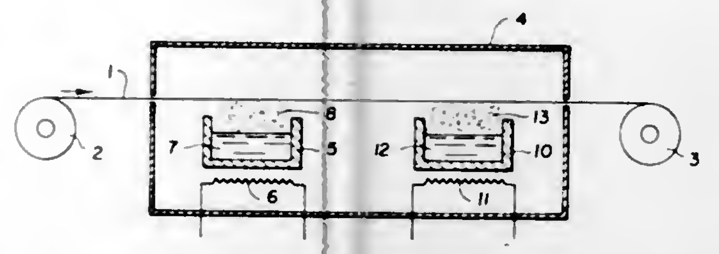
### 3,761,302
### REDUCING RE-EVAPORATION OF VACUUM VAPOR DEPOSITED COATINGS

**Irwin I. Bessen, 7320 Tangle Ridge Lane, Cincinnati, Ohio 45243, and Harold E. Farrey, 126 Bancroft Road, Lansdale, Pa. 19446**
**Continuation-in-part of application Ser. No. 12,848, Feb. 19, 1970, which is a continuation-in-part of application Ser. No. 810,910, Mar. 13, 1969, which in turn is a continuation of application Ser. No. 547,485, May 4, 1966, all now abandoned. This application July 21, 1971, Ser. No. 166,585**
**Int. Cl. C23c** *13/00*
**U.S. Cl. 117—71 M** **7 Claims**



Relatively thick vacuum vapor deposited coatings of high vapor pressure metals are produced by providing on the coating immediately after it condenses a surface layer of a substance having a vapor pressure lower than that of the coating metal.

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### 3,761,303
### METHOD FOR IMPREGNATING MICROCRACKS IN CHROMIUM PLATING

**Clinton Cox, Cookeville, Tenn., and John Pechonick, Jr., Maryland Heights, and Peter Zylstra, Jr., Ferguson, Mo., assignors to the United States of America as represented by the Secretary of the Air Force**
**Filed Dec. 7, 1971, Ser. No. 205,491**
**Int. Cl. C23f** *17/00*
**U.S. Cl. 117—71 M** **2 Claims**

A method for impregnating the microcrack surface pattern of chromium plated metal elements which includes heating the element, quenching the heated element in an epoxy resin maintained at room temperature to effect impregnation thereof and then curing the epoxy resin by heating the impregnated element.

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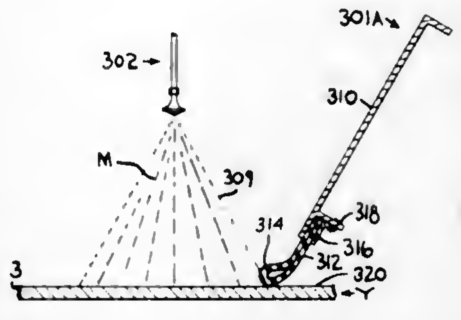
### 3,761,304
### TREATMENT OF LEATHER

**Alphonse Hansson, 13 Rue du Centre, Hennuyeres, Belgium**
**No Drawing. Filed Sept. 17, 1971, Ser. No. 181,583**
**Int. Cl. B44d** *1/32;* **C14c** *9/00*
**U.S. Cl. 117—76 R** **17 Claims**

Process for the treatment of natural leather and synthetic leather by the joint application thereon of at least one layer of an aqueous dispersion of polyurethane and at least one layer of polyurethane dissolved in at least one organic solvent.

### 3,761,305
### SQUEEGEE/SHIELD

**Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**
**Filed July 6, 1971, Ser. No. 159,747**
**Int. Cl. B44d** *1/08*
**U.S. Cl. 117—105.3** **6 Claims**



A transparent substrate to be spray coated passes beneath a squeegee/shield apparatus to avoid formation of finger-like fronts or puddles in the spray area and to prevent splashing of the spray medium onto the substrate surface.

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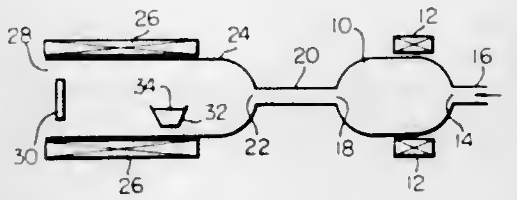
### 3,761,306
### PROCESS FOR MANUFACTURING A TERNARY MATERIAL

**Tohru Hara and Ichiro Asao, Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan**
**Filed Jan. 25, 1971, Ser. No. 109,285**
**Claims priority, application Japan, Jan. 30, 1970, 45/8,778; Dec. 29, 1970, 46/124,699, 46/124,724, 46/124,823**
**Int. Cl. C23c** *11/00, 13/00*
**U.S. Cl. 117—106 A** **9 Claims**



A process of depositing unto a substrate a film of a ternary alloy material such as $GaAs_{1-x}P_x$ containing first, second and third elements selected from the group consisting of elements from the III*a* and V*a* columns of the Periodic Table, the second and third elements being selected from the same column and the proportions of the second and third elements being varied in a direction which, comprises preparing a halide of one out of the second and third elements carried by a hydrogen gas, reacting the halide with the hydrogen gas at a first temperature which is varied in the range between 0° C. and 900° C., cooling the resultant vapour to room temperature, reacting the cooled vapour with a source material containing a compound of the first element and the other of the second and third elements at a second temperature, and evaporating the resultant vapour onto a suitable substrate maintained at a third temperature which is below the second temperature.

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### 3,761,307
### PROCESS OF MAKING POLYURETHANE PRESSURE-SENSITIVE ADHESIVE TAPE

**Rolf Dahl, West Columbia, S.C.,**
**No Drawing. Filed June 29, 1970, Ser. No. 50,953**
**Int. Cl. C09j** *7/04*
**U.S. Cl. 117—122 P** **19 Claims**

Very rapid catalytic formation and polymerization of polyurethane polymers followed by cross-linking with complex, hindered polyamines permits one-step, in-situ and continuous production of new types of pressure-sensitive adhesives and impregnated permeable materials.

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### 3,761,308
### PREPARATION OF PHOTOCONDUCTIVE FILMS

**Guido Galli, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.**
**No Drawing. Filed Nov. 22, 1971, Ser. No. 200,833**
**Int. Cl. B44c** *1/18;* **C23c** *11/00*
**U.S. Cl. 117—201** **9 Claims**

Adherent stress-free films of photoconductors are prepared on a substrate at temperatures below 150° C. by a gas phase reaction between a lower dialkyl zinc, cadmium or mercury gas and a chalcogen hydride in the presence of an inert gas diluent.

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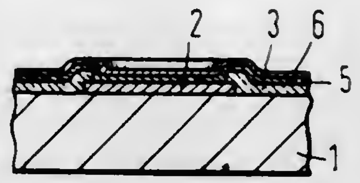
### 3,761,309
### METHOD OF PRODUCING SOFT SOLDERABLE CONTACTS FOR INSTALLING SEMICONDUCTOR COMPONENTS INTO HOUSINGS

**Detlev Schmitter and Hans Ullrich, Munich, and Rudolf Wölfle, Gilching, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich and Erlangen, Germany**
**Filed June 30, 1971, Ser. No. 158,458**
**Claims priority, application Germany, July 2, 1970, P 20 32 872.7**
**Int. Cl. B44d** *1/02*
**U.S. Cl. 117—212** **6 Claims**



The invention relates to a method for producing soft solderable contacts for the installation of semiconductor components into housings. The device containing the semiconductor component is first provided with a metallization of aluminum-titanium-gold. Thereafter, elevated gold contacts are produced through galvanic reinforcement. Finally, a coating of a solderable metal, particularly of nickel, is precipitated without current. The invention is particularly suitable for the installation of integrated circuits, into housings.

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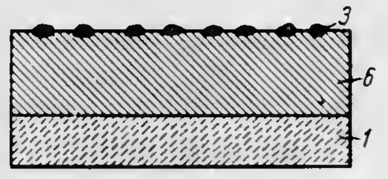
### 3,761,310
### METHOD OF OBTAINING CONTACT BETWEEN ELECTRODE METAL AND SEMICONDUCTOR MATERIAL

**Konstantin Andreevich Preobrazhentsev, ulitsa Narodnogo opolchenia 16, korpus 3, kv. 8, and Vsevolod Sergeevich Shvarov, Babiegorodsky pereulok 12, kv. 19, both of Moscow, U.S.S.R.;**
**Continuation-in-part of application Ser. No. 91,259, Nov. 16, 1970, which is a continuation of application Ser. No. 693,772, Dec. 27, 1967, both now abandoned. This application May 26, 1971, Ser. No. 147,000**
**Int. Cl. B44d** *1/14, 1/18*
**U.S. Cl. 117—217** **2 Claims**



A method of making a contact between an electrode metal, such as gold or silver, and silicon in the manufacture of semiconductor devices, by coating the silicon surface with intermediate thin layers of an active metal, such as titanium, and a corrosion-resistant metal, such as nickel. The silicon surface is held at a temperature sufficient to cause the titanium to reduce the silicon oxides on the silicon surface. The total thickness of the titanium and nickel layers does not exceed 1,000 A. The thus metallized silicon is then fused with the electrode metal (silver or gold) at a temperature at which a eutectic liquid phase is formed.

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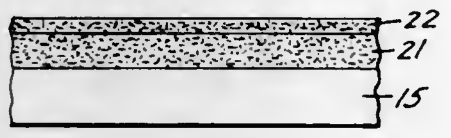
### 3,761,311
## DUAL-LAYER MAGNETIC RECORDING TAPE

**Kenneth J. Perrington, New Brighton, Peter J. Vogelgesang, Roseville, and James K. Knudsen, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation-in-part of abandoned application Ser. No. 119,190, Feb. 26, 1971. This application Aug. 23, 1971, Ser. No. 174,113**

**Int. Cl. H01f** *10/02*

**U.S. Cl. 117—239** **5 Claims**



Magnetic recording tape having a dual-layer magnetizable coating to provide improved high frequency response when used in conventional audio recording devices, especially in cassette recorders. A typical tape has an outer magnetizable layer 40 microinches in thickness and 400–550 oersteds in coercivity and an inner layer 160 microinches in thickness and 270–330 oersteds in coercivity.

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### 3,761,312
## STRIPPING OF COATED TITANIUM ELECTRODES

**John Hubert Entwisle, Anthony Scrutton, and Keith Graham Moss, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed May 27, 1971, Ser. No. 147,605**

**Int. Cl. C23g** *1/00, 1/02*

**U.S. Cl. 134—2** **3 Claims**

A method of stripping the coating from an electrode comprising a titanium support and a coating comprising a platinum group metal oxide and titanium dioxide thereon, which comprises immersing the electrode in an acid or alkaline aqueous solution containing 0.3%–3% by weight of hydrogen peroxide at a temperature of 60° C.–80° C. for at least 1½ hours and then immersing the electrode in hydrochloric acid containing 20%–30% by weight of hydrogen chloride at a temperature of 60–80° C. until the coating has become detached from the titanium support.

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### 3,761,313
## STRIPPING OF COATED TITANIUM ELECTRODES

**John Hubert Entwisle, Anthony Scrutton, and Keith Graham Moss, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**No Drawing. Filed May 27, 1971, Ser. No. 147,608**

**Claims priority, application Great Britain, June 4, 1970, 27,067/70**

**Int. Cl. C23g** *1/02*

**U.S. Cl. 134—3** **8 Claims**

A method for stripping the coating from an electrode comprising a titanium support and a coating comprising a platinum metal oxide thereon which comprises immersing the electrode in an aqueous mixture comprising at least one strong mineral acid, other than nitric acid, with hydrofluoric acid and/or a precursor compound that will react with the mineral acid to give hydrofluoric acid, at a temperature and for a time sufficient for the coating to become detached from the titanium support.

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### 3,761,314
## HIGH DISCHARGE RATE ELECTRIC CELLS AND BATTERIES

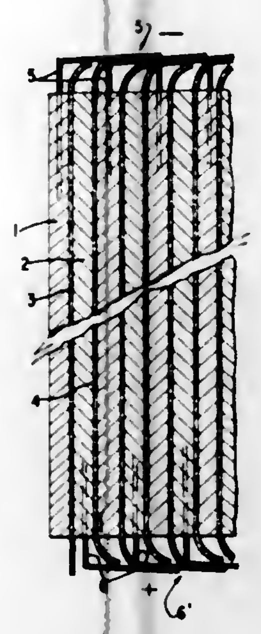
**Jean-Pierre Cailley, Ambares, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romanville, France**

**Filed June 22, 1971, Ser. No. 155,534**

**Claims priority, application France, June 23, 1970, 7023184**

**Int. Cl. H01m** *35/16*

**U.S. Cl. 136—13** **10 Claims**



High discharge rate electric cells in which an assembly of opposite polarity electrodes and separators in wound form are provided. The opposite polarity electrodes have bared conductive edge portions of their carriers which project respectively from opposite ends of the assembly. These respective projecting edge portions are slotted and folded down at the opposite ends substantially perpendicular to the surfaces of the electrodes. The projecting edge portions are of sufficient width so that when folded they extend over a distance greater than the distance between two adjacent spires of the same wound electrode. The adjacent segments of the conductive edge portions defined by the slots therein partially overlap laternally so as to form at the respective ends of the assembly a substantially plane elastically deformable surface for electrical contact with a current collector which latter may be welded at selected localities thereto, one of said collectors being the bottom of the metallic casing and the other being a metallic cover insulated from the casing and sealingly joined thereto.

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### 3,761,315
## NON-GASSING BATTERY SEPARATOR AND METHOD OF PRODUCTION

**Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.**

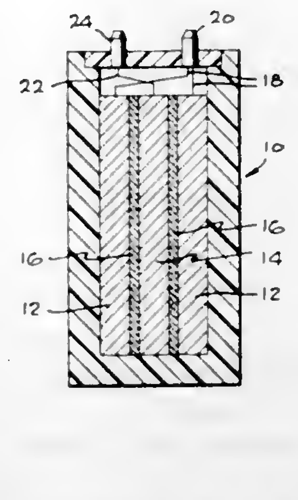
**Filed Nov. 16, 1970, Ser. No. 89,866**

**Int. Cl. H01m** *35/02*

**U.S. Cl. 136—20** **20 Claims**

Production of inorganic porous sintered battery separator essentially eliminating formation of gas when in contact with a zinc electrode, and also having a dendrite formation inhibiting effect on such zinc electrode, permitting long cycle life of a high energy density battery

such as a silver-zinc or nickel-zinc battery, and providing a sealed battery, produced according to one embodiment by initially firing a mixture of magnesium-bearing material, e.g., MgO, a substance selected from the group consisting of zinc-bearing material such as ZnO and manganese-bearing material such as MnO, lead-bearing material such as PbO, and silica ($SiO_2$), at temperature at the range of about 1,100 to about 1,400° C. to produce a magnesium silicate-zinc silicate, or magnesium silicate-manganese silicate composition, in each case containing combined lead, e.g., as lead silicate, granulating and compacting said composition into plaques, and sintering said compacted plaques at temperature ranging from about 1,000 to about 1,300° C., to produce porous sintered separator members, in the form of a sintered solid solution of magnesium silicate, zinc silicate or manganese silicate, and combined lead, e.g., in the form of lead silicate, having good transverse strength and low resistivity.



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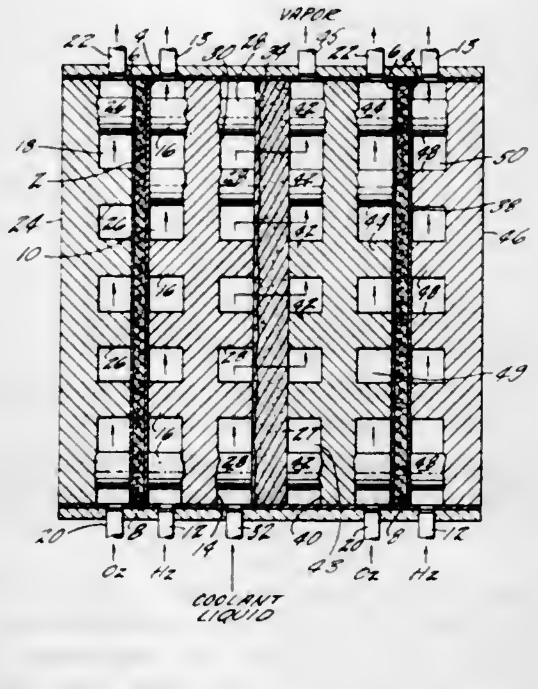
### 3,761,316
## FUEL CELL WITH EVAPORATIVE COOLING

**James K. Stedman, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed Mar. 29, 1971, Ser. No. 128,773**

**Int. Cl. H01m** *27/00*

**U.S. Cl. 136—86 R** **8 Claims**



A fuel cell assembly utilizing the waste heat of a fuel cell to provide evaporative cooling of the cell is provided by a hydrophobic separator disposed in heat conducting relationship with the fuel cell. A coolant liquid is fed under pressure to a cavity on one side of the hydrophobic separator, and as vapor evolves from the coolant liquid, it passes through the hydrophobic separator to ambient.

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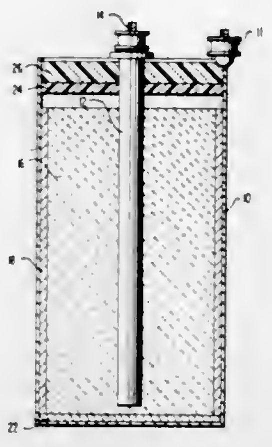
### 3,761,317
## CORROSION INHIBITOR FOR MAGNESIUM CELLS

**Louis Sena, Jr., 183 Mountain Ave., Murray Hill, N.J. 07974**

**Filed July 2, 1971, Ser. No. 159,437**

**Int. Cl. H01m** *21/00*

**U.S. Cl. 136—100 M** **4 Claims**



A corrosion inhibitor for magnesium primary cells comprising an alkali metal permanganate salt is presented. In a preferred embodiment potassium permanganate in a percentage of from 1–5 by weight is incorporated in the cathode mix with 80–86% manganese dioxide, 10–16% carbon black, and 1–3% magnesium hydroxide, buffering agent. When the cell discharges permanganate ions form a thin, stable film at the anode surface thereby preventing further corrosion and excessive gassing.

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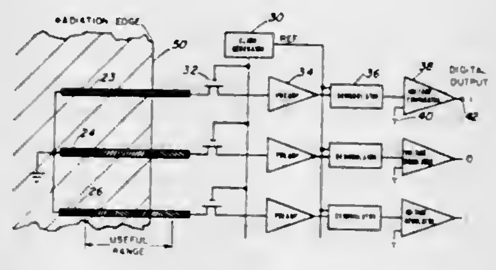
### 3,761,318
## EDGE DETECTOR UTILIZING ALL ACTIVE JUNCTION RADIATION THERMOPILES

**Thomas F. McHenry, Norwalk, Conn., assignor to Barnes Engineering Company, Stamford, Conn.**

**Filed Dec. 20, 1971, Ser. No. 209,550**

**Int. Cl. H01v** *1/00*

**U.S. Cl. 136—225** **2 Claims**



A thermopile radiation detector is provided consisting of a series of differential thermocouples with all junctions spaced and thermally insulated from their support, thus making all junctions active. By providing spaced rows of thermopiles with junctions at different intervals, each forming a separate digital channel, a variety of codes can be produced. If a beam of uniform radiance is projected onto the array of detectors, a different signal is generated for each given position of the radiation edge in the field of view of the thermopile. This is useful for edge-detecting applications.

### 3,761,319

## METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

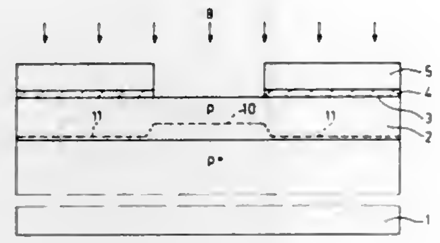
**John Martin Shannon, Reigate, England, assignor to U.S. Philips Corporation**

**Filed May 17, 1971, Ser. No. 144,009**

**Claims priority, application Great Britain, May 22, 1970, 25,029/70**

**Int. Cl. H01l** *7/54*

**U.S. Cl. 148—1.5** **30 Claims**



A method of manufacturing a semiconductor device wherein a semiconductor body comprising a boundary between a higher doped region and a lower doped region is subjected to bombardment with accelerated particles or ions which are directed towards the boundary from the lower doped side. The bombardment which is preferably effected with protons causes internal damage of the crystal structure in the vicinity of the boundary. The semiconductor body is heated during the bombardment and enhanced diffusion of impurity is produced across the boundary from the higher doped region into the lower doped region.

In one form the method is applied in the manufacture of a semiconductor integrated circuit comprising a semiconductor substrate and epitaxial layer thereon, said substrate and epitaxial layer being of different conductivity types. Proton bombardment is effected to produce enhanced impurity diffusion in determining isolation walls in the epitaxial layer and for determining the extent end location of a portion of a highly doped part of a transistor collector region lying in the epitaxial layer directly below the transistor emitter region, also for partly determining a collector contact region. In another form the method is applied in the manufacture of a semiconductor integrated circuit comprising a semiconductor substrate and epitaxial layer thereon, said substrate and epitaxial layer being of the same conductivity type. Proton bombardment is effected to produce enhanced impurity diffusion in determining a collector wall region in the epitaxial layer and in determining the extent and location of a portion of a highly doped part of a transistor collector region lying directly below the transistor emitter region.

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### 3,761,320

## ABRASION-RESISTANT ALLOY STEEL

**Arthur Light, Shaker Heights, Ohio, assignor to Curtis Noll Corporation, Cleveland, Ohio**

**No Drawing. Filed Mar. 6, 1972, Ser. No. 232,218**

**Int. Cl. C22c** *39/30, 39/36*

**U.S. Cl. 148—3** **3 Claims**

An abrasion-resistant alloy steel containing more than 1.8% and less than 2.5% manganese and lesser percentages of nickel, molybdenum, copper, silicon and carbon which is heat treated to provide a hardness of at least 300 BHN and is work-hardenable to increase the initial hardness by at least 15% to provide a superior abrasion-resistant alloy steel of relatively low manganese content whose hardness increases in use.

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### 3,761,321

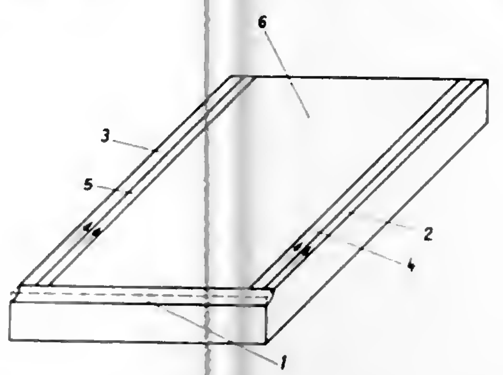
## METHOD OF EFFECTING A SMOOTH SURFACE FINISH ON CAST-IRON OBJECTS

**Damjan Schmit, 1 Rue Nicolaus Welter, Luxembourg, Germany, and Egon Evertz, 23 Vorlaunder Strasse, 565 Solingen, Germany**

**Filed Apr. 6, 1971, Ser. No. 131,693**

**Int. Cl. C21d** *1/00*

**U.S. Cl. 148—9.5** **2 Claims**



A method of surface finishing objects made of cast iron having a microstructure which contains separated graphite in non-laminar form wherein the material of the surface to be treated is first liquefied by a gas-oxygen flame after which a stream of gas consisting essentially of oxygen is blown onto said surface to form an oxide slag which is afterwards removed.

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### 3,761,322

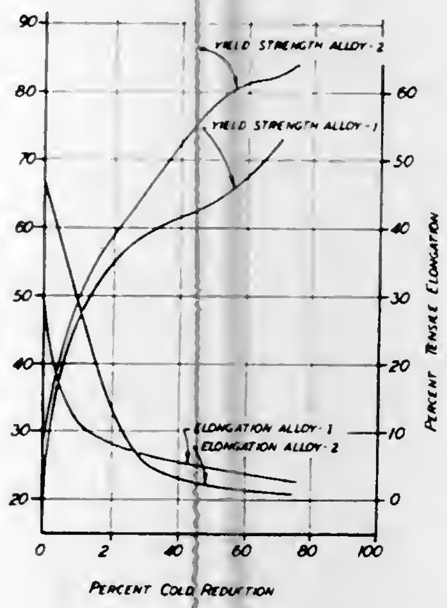
## METHOD OF PREPARING ALUMINUM CARTRIDGE CASE

**Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, Conn., assignors to Olin Mathieson Chemical Corporation**

**Original application Dec. 19, 1968, Ser. No. 785,108. Divided and this application Dec. 28, 1970, Ser. No. 102,215**

**Int. Cl. C22f** *1/04;* **F42b** *5/26*

**U.S. Cl. 148—11.5 A** **7 Claims**



The disclosure teaches a non-heat treatable aluminum alloy cartridge case and method of preparing same.

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### 3,761,323

## METHOD OF PRODUCING HIGH TENSILE STRENGTH STEEL STRAPPING

**Marion Paul Hunt, Chicago, and Alexander Buy, Palos Heights, Ill., assignors to Interlake, Inc., Chicago, Ill.**

**No Drawing. Filed June 8, 1972, Ser. No. 261,006**

**Int. Cl. C21d** *7/02, 7/14, 9/52*

**U.S. Cl. 148—12** **39 Claims**

A method of producing a high tensile strength steel strapping from a semi-killed steel, killed steel or capped steel. The steel has a manganese content in the range of from about 0.3% to about 1% by weight and a carbon content in a range of from about 0.18% to about 0.34% by weight. The steel is heated above the critical temperature thereof and hot rolled to a thickness of from about 250% to about 400% greater than the ultimate desired cold rolled thickness thereof and thereafter quenched in laminar flow water to a temperature of from about 550° F. to about 750° F. Thereafter, the quenched hot rolled steel is cold rolled to a thickness of between about 40% and about 25% of the hot rolled thickness and thereafter simultaneously cleaned and stress relieved by heating the cold rolled steel in a protective atmosphere to a temperature in the range of from about 800° F. to about 1050° F. for a time in the range of from about 5 seconds to about 15 seconds.

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### 3,761,324

## COLUMBIUM TREATED, LOW CARBON STEEL

**James A. Elias, Middletown, and Rollin E. Hook, Dayton, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio**

**Continuation-in-part of abandoned application Ser. No. 15,415, Mar. 2, 1970. This application Jan. 18, 1971, Ser. No. 107,077**

**Int. Cl. C21d** *7/14*

**U.S. Cl. 148—36** **5 Claims**

A process of producing non-aging, low carbon steel having substantially no yield point elongation in the annealed condition and freedom from critical grain growth. A molten steel having an analysis typical of steel intended for rimmed or killed drawing steel is vacuum degassed to decarburize to a maximum carbon content of about 0.015%, and columbium (niobium) is added in an amount at least sufficient to combine with the carbon present in the steel. The cast material is hot rolled, finishing at 1500°–1700° F. (about 1090°–1200° K.) and coiled at a temperature of about 1500° F. (about 1090° K.) or less. The columbium addition retards the rate of recrystallization of the cold rolled product, and a wide spectrum of mechanical properties can be obtained in the final product by control of the final annealing time and temperature within the range of 1000° to 1700° F. (about 810° to 1200° K.). A preferred product is cold rolled and annealed strip suitable for deep drawing, porcelain enameling, hot dip metallic coating and the like, containing at least about 0.025% uncombined columbium at the hot rolling stage, as determined by analysis at room temperature, which has an average plastic strain ratio of at least 1.8, and a uniform grain size between ASTM 8 and 10.

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### 3,761,325

## METHOD FOR INDUCTIVELY HEATING AND QUENCHING ELONGATED WORKPIECES

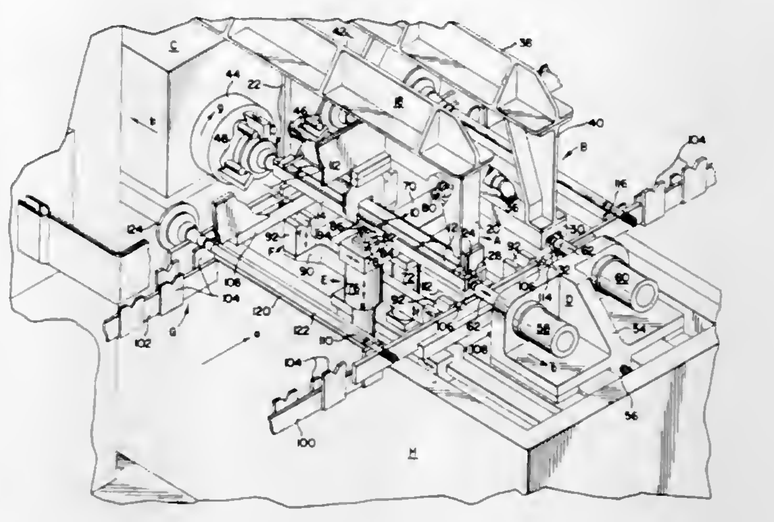
**Norbert Raymond Balzer, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio**

**Original application Dec. 14, 1970, Ser. No. 97,890. Divided and this application June 27, 1972, Ser. No. 266,638**

**Int. Cl. C21d** *1/42*

**U.S. Cl. 148—153** **3 Claims**

A method and apparatus for inductively heating and quenching an elongated shaft element over substantially the entire length thereof which apparatus includes an elongated inductor housing having a generally U-shaped cross-section with an inductor loop imbedded longitudinally therein and an elongated quenching apparatus disposed in generally parallel side-by-side relationship. The shaft element is fed to a position directly below and coextensive with the inductor housing and inductor and then raised into inductive coupling therewith while being rotated about its longitudinal axis. Following heating, the element is transferred in like manner in communication with the quenching apparatus where it is quenched while being similarly rotated.



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### 3,761,326

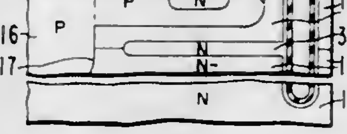
## PROCESS FOR MAKING AN OPTIMUM HIGH GAIN-BANDWIDTH PHOTOTRANSISTOR STRUCTURE

**Gene P. Weckler, Campbell, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.**

**Original application July 28, 1969, Ser. No. 845,303, now abandoned. Divided and this application May 20, 1971, Ser. No. 145,486**

**Int. Cl. H01l** *5/00, 7/64, 15/06*

**U.S. Cl. 148—175** **3 Claims**

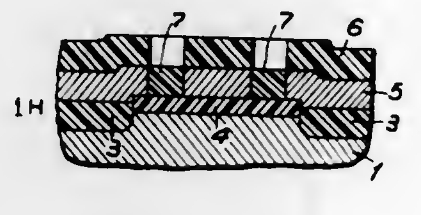


The fabrication of two semiconductor structures such as a high speed, optimum sensitivity photodiode and a maximum gain-bandwidth transistor on the same wafer is described. A thin, low resistivity layer is formed on a higher resistivity substrate and the diode junction is then formed in one part of the wafer by diffusing the junction-forming region through the layer and down into the substrate. This provides a diode of low capacitance and optimum light sensitivity. The transistor is then formed in another part of the same wafer by first diffusing the base-collector junction into the thin layer followed by a diffusion therein of the emitter-base junction. This diffusion into the layer is very shallow and results in a high gain-bandwidth transistor. The photodiode structure is affected very little by the processing required to form the transistor, thus allowing each structure to be independently optimized.

### 3,761,327
## PLANAR SILICON GATE MOS PROCESS

**Justin E. Harlow III, West Palm Beach, Richard C. G. Swann, North Palm Beach, Jack I. Penton, West Palm Beach, and Martin B. Bakker, Palm Beach Gardens, Fla., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.**
**Filed Mar. 19, 1971, Ser. No. 126,025**
**Int. Cl. H01l** *7/34*
**U.S. Cl. 148—187** **8 Claims**

This invention refers to a method of manufacturing a metal insulator semiconductor field effect transistor having a source, drain and channel region and a gate formed over the channel region. There is formed a first insulating layer on a semiconductor substrate covering the non-active regions of the transistor and then a second insulating layer is formed over the active region of the transistor. A semiconductive layer is deposited over the active and non-active regions and subsequently the gate periphery of the semiconductor layer is converted to an oxide which is subsequently etched away thus exposing the source and drain regions of the transistor and the remainder of the gate periphery to the substrate surface. The gate and source and drain regions are then diffused with a doping impurity and metal contacts are deposited to the source and drain regions and to the gate semiconductor.



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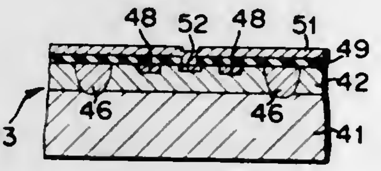
### 3,761,328
## METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

**Toshio Abe, Kanro Sato, Masami Konaka, and Takamichi Narita, Yokohama, Japan, assignors to Tokyc Shibaura Electric Co., Ltd., Kawasaki-shi, Japan**
**Filed June 23, 1970, Ser. No. 49,007**
**Claims priority, application Japan, June 24, 1969, 44/49,370**
**Int. Cl. H01l** *7/00, 7/36, 7/44*
**U.S. Cl. 148—188** **13 Claims**



An insulating film mainly composed of silicon dioxide and having at least one opening is formed on the surface of a semiconductor wafer and then a readily etchable film is applied on the exposed surface of the opening, which is mainly composed of silicon dioxide and contains an impurity element adapted to form a shallow impurity level and an additive substance which increases the etching speed of the readily etchable film after diffused with the impurity to a value higher than that of the insulating film and which does not impair the electrical characteristics of the diffused area.

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### 3,761,329
## COLOR FLARE INCLUDING POLYVINYL CHLORIDE COLOR INTENSIFIER

**Hector Joseph Zilcosky, Colebrook, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.**
**No Drawing. Filed Sept. 23, 1971, Ser. No. 183,255**
**Int. Cl. C06d** *1/10*
**U.S. Cl. 149—19.91** **7 Claims**

A pyrotechnic color flare composition consisting essentially of a color producing salt, powdered metal fuel and a perchlorate oxidizer utilizes a substantial amount of a plasticized polymeric color intensifier capable of rendering the composition formable by molding, casting, extruding and the like. The color intensifier constitutes about 20–50% by weight of the pyrotechnic charge and consists of substantial equal proportions of polyvinyl chloride resin and a plasticizer. The resultant color flare charge exhibits substantial cohesive strength, toughness and flexibility as well as improved color intensity and purity.

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### 3,761,330
## FILLER RICH POWDER AND METHOD OF MAKING

**Richard L. Lou, Rocklin, and Arthur Katzakian, Jr., and Stanley C. Burket, Sacramento, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.**
**No Drawing. Filed July 29, 1968, Ser. No. 748,568**
**Int. Cl. C06b** *11/00*
**U.S. Cl. 149—21** **8 Claims**

This invention relates to a method of modifying solid composite propellant combustion or processing properties or both whereby all or part of the solid filler is concentrated in a filler-rich powder of controlled particle size and shape which is then dispersed in a binder-rich matrix to form a composite solid propellant. This invention includes, but is not limited to, a method of forming the filler-rich powder which comprises loading a high percentage of small particle-size solid fillers in a suitable binder, forming a cake, and subsequently grinding of the cake in conventional equipment to yield a powder of any desired particle size distribution. The powder thus obtained is then formulated into a solid propellant by the use of additional binders and usually, but not necessarily, some additional filler solids.

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### 3,761,331
## BATH AND METHOD FOR ETCHING ALUMINUM

**Robert Milton McClanahan, Allendale, N.J., and Joseph F. Machacek, Long Island City, N.Y., assignors to Philip A. Hunt Chemical Corporation, Palisades, N.J.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 801,176, Feb. 20, 1969. This application Oct. 27, 1971, Ser. No. 193,142**
**Int. Cl. C23f** *3/02*
**U.S. Cl. 156—8** **44 Claims**

A bath and method for chemical machining of aluminum and for etching aluminum printing plates, aluminum circuit boards and other aluminum items at predetermined bare portions (non-imaged areas) thereof unprotected by an etch resist. The bath and method employ aqueous ferric chloride as an etchant, a special composition, i.e. mixture of compounds, to provide a filming agent that acts as an excellent banking agent for the shoulders of the resist-protected portions (imaged areas) and various materials, to wit, sulfuric acid, copper ions and thiocyanate ions to expedite the rate of etch. The filming/banking agent includes a petroleum fraction, a mixture of surfactants and cuprous thiocyanate formed in situ. The bath and method have been found to yield a rate of etch high enough for commercial competition with etching of metal substrates other than aluminum and also to yield a high etch factor and a good shoulder angle so as to permit etched plates to be used for a variety of purposes such, for instance, as printing, embossing, hot stamping and molding.

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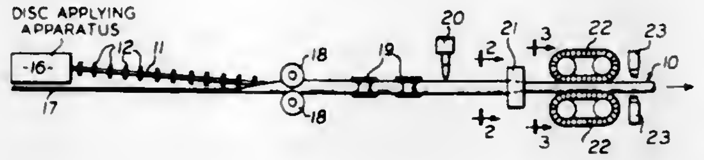
### 3,761,332
## WATERTIGHT DISC COAXIAL CABLE

**Ludwik Jachimowicz, Elizabeth, and Jerzy A. Olszewski, Bayonne, N.J., assignors to General Cable Corporation, New York, N.Y.**
**Continuation-in-part of application Ser. No. 861,792, Sept. 29, 1969, now Patent No. 3,660,589. This application June 8, 1971, Ser. No. 151,051**
**Int. Cl. B32b** *1/10;* **H01b** *13/22*
**U.S. Cl. 156—55** **10 Claims**



A method of making a coaxial cable having a plurality of discs of a dielectric synthetic resin material that bonds to metal bonded to an elongated metal center conductor at spaced intervals therealong. A tubular metal outer conductor encloses the discs and is bonded thereto so that the discs define a plurality of separate watertight compartments. An inner tubular sheath of a synthetic resin may be between, and bonded respectively to, the inside of the outer conductor and the discs. Also, a layer of synthetic resin may be bonded around the exterior of the outer tubular conductor. Better electrical characteristics are obtained by having some discs of adhesive polyethylene and others of non-adhesive polyethylene.

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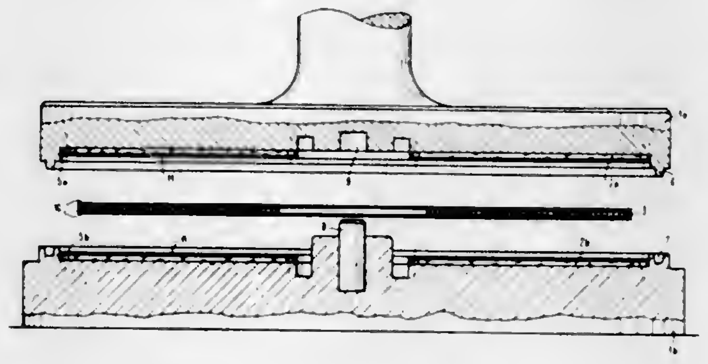
### 3,761,333
## METHOD OF AND APPARATUS FOR MANUFACTURING OF A MAGNETIC STORAGE DISK

**Erwin F. Kleinbeck, Gultlingen, and Heinz R. Pilgram, Breitenstein, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.**
**Continuation-in-part of abandoned application Ser. No. 782,385, Dec. 9, 1968. This application May 21, 1971, Ser. No. 145,952**
**Int. Cl. G01n** *3/00*
**U.S. Cl. 156—64** **6 Claims**



A method of manufacturing a magnetic storage disk adapted for use in data processing systems comprising the steps of providing die means having two removable rings, applying a magnetizable material on one side of each ring to form a magnetizable layer thereon, introducing a carrier core into the die means and between said magnetizable layer on each ring, and bonding the magnetizable layers to said carrier core. This method allows the magnetizable layer to be tested prior to being bonded to the carrier core.

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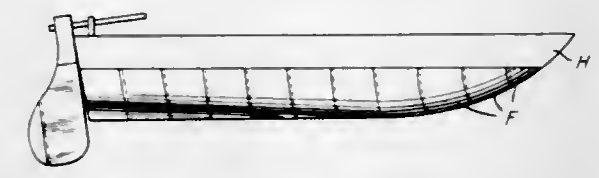
### 3,761,334
## METHOD OF PROTECTING THE HULLS OF MARINE VESSELS FROM FOULING

**Klaus Zondek, Callao 3385, Santiago, Chile**
**Filed Oct. 21, 1971, Ser. No. 191,233**
**Int. Cl. B63b** *3/10*
**U.S. Cl. 156—71** **12 Claims**



The hull of a marine vessel is protected from fouling by marine growths by a foil of anti-fouling metal such as copper or a copper alloy adhesively bonded throughout its area to the hull below the water line. The foil is conveniently applied to the hull by pressure sensitive or heat sensitive adhesive.

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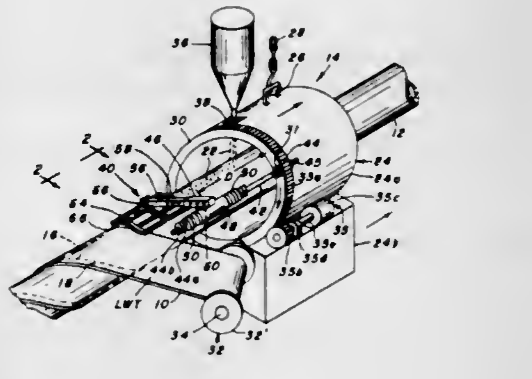
### 3,761,335
## METHOD FOR THE WIPING TRANSFER OF BONDING AGENT ONTO A LONGITUDINAL MEMBER AND AN UNDERLAPPING MARGIN OF A TAPE ON THE LONGITUDINAL MEMBER

**Sylvester A. Cichoski, Crescent Township, Allegheny County, Paul H. Damon, Monroeville Borough, Ronald J. Golembeski, Moon Township, Allegheny County, and William P. Lawler, Mount Lebanon Township, Allegheny County, Pa., assignors to United States Steel Corporation**
**Original application Feb. 26, 1970, Ser. No. 14,284, now Patent No. 3,687,778. Divided and this application Aug. 12, 1971, Ser. No. 171,051**
**Int. Cl. B31c** *1/00*
**U.S. Cl. 156—187** **20 Claims**

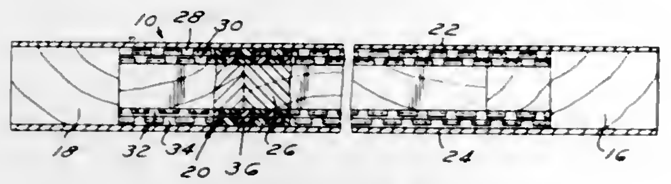


A method for the wiping transfer of a bonding agent onto a longitudinal member and onto the underlapping portions of a protective tape wrapped onto the longitudinal member is disclosed. The tape has an underlapping margin and an overlapping margin during the wrapping operation. The underlapping margin defines with the longitudinal member a transitional cavity. The tape is wrapped on the longitudinal member with a bonding agent therebetween. The overlapping margin is wrapped onto the underlapping margin with the bonding agent between and the transitional cavity is substantially filled with the bonding agent and is then covered by the overlapping margin. The tape has a last wrapped turn on the longitudinal member during the wrapping operation.

### 3,761,336

## METHOD OF MAKING A RIGID LAMINATED CORE FOR A STRUCTURAL PANEL

**Edward G. Quinif, Richmond, Ind., assignor to Walled Lake Door Co., Richmond, Ind.**
**Original application Mar. 24, 1970, Ser. No. 22,203, now abandoned. Divided and this application May 17, 1971, Ser. No. 144,344**
**Int. Cl. B31f** *1/22*
**U.S. Cl. 156—210 8 Claims**



The method of making an adhesive impregnated rigid laminated core structure for a structural panel including the steps of providing first and second corrugated sheets of compressible paper-like material, applying liquid heat-curable adhesive to the corrugated face of the first sheet to substantially fill the indentations between the ridges of the corrugated face, laying on the corrugated face of the first sheet a series of non-connected solid wood blocks in longitudinally extending rows to form a relatively thick loose assembly of wood blocks of generally rectangular configuration, applying uncured liquid heat-curable adhesive to the corrugated face of the second sheet in the same manner as the adhesive was applied to the first sheet and then placing the second sheet on the opposite side of the assembly of wood blocks with the corrugated face in contact therewith. Heat and pressure are applied simultaneously to both sides of the resultant core assembly to reduce the thickness of the sheets, impregnate each of the sheets to some extent with the adhesive, cure the adhesive and thereby secure the sheets to the assembly of wood blocks.

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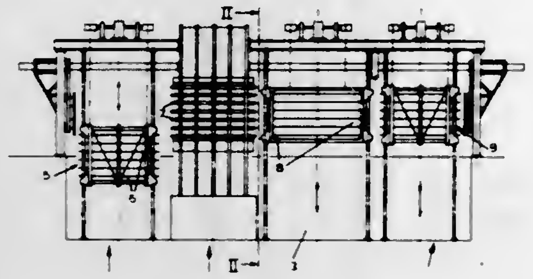
### 3,761,337

## PROCESS AND DEVICE FOR SEPARATING THE PRESS BOARDS PRESSED ON LOADING PLATES IN A PRESS, ESPECIALLY A DAYLIGHT PRESS

**Wilhelm Hütter, Krefeld, Germany, assignor to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany**
**Continuation-in-part of abandoned application Ser. No. 674,694, Sept. 25, 1967. This application Oct. 5, 1970, Ser. No. 78,163**
**Claims priority, application Germany, Sept. 26, 1966, P 16 53 258.4**
**Int. Cl. B32b** *31/16*
**U.S. Cl. 156—247 13 Claims**



A process and device for separating pressed panels from loading plates in a daylight press. After the panels have been pressed, lifting members engage with the respective panels by frictional, vacuum or mating means. While the above are thus held, the respective loading plates are removed from under the panels. The force with which the lifting members hold the pressed panels being greater than the adhesion between the loading plates and the panels permits the separation.

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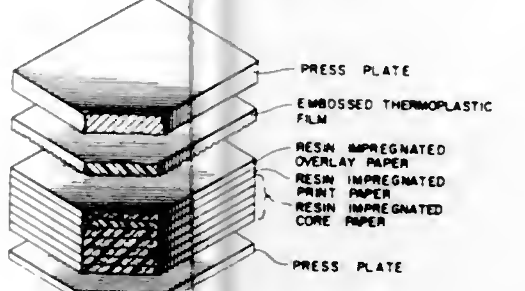
### 3,761,338

## TEXTURIZING FILM FOR THE MANUFACTURE OF HIGH PRESSURE LAMINATES

**Israel S. Ungar and Herbert I. Scher, Randallstown, Md., assignors to Esso Research and Engineering Company**
**Filed Sept. 8, 1971, Ser. No. 178,609**
**Int. Cl. B44c** *1/24*
**U.S. Cl. 156—219 2 Claims**


PRESS PLATE
EMBOSSED THERMOPLASTIC FILM
RESIN IMPREGNATED OVERLAY PAPER
RESIN IMPREGNATED PRINT PAPER
RESIN IMPREGNATED CORE PAPER
PRESS PLATE

A high pressure laminate having a textured and/or embossed surface is produced using as the embossing layer a thermoplastic film having a negative reproduction of the texture and/or embossing to be produced on the high pressure laminate. Such thermoplastic film is thin, inexpensive and is discarded after a single usage. The thermoplastic material has a heat deflection point below that at which the high pressure lamination is carried out.

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### 3,761,339

## LAMINATING PROCESS

**Robert F. Purcell, Jerry H. Hunsucker, and David K. Sausaman, Terre Haute, Ind., assignors to Commercial Solvents Corporation**
**No Drawing. Filed Apr. 7, 1971, Ser. No. 132,224**
**Int. Cl. C08g** *5/00;* **C09j**
**U.S. Cl. 156—331 8 Claims**

An improved laminating process particularly useful for laminating a structurally weak member to a structurally strong member by applying to one or both members a solution of a resinous reaction product of dimethylolpropionic acid with a lower aliphatic aldehyde and a compound selected from the group consisting of urea, phenol, alkyl phenol, and alkanolamine and mixtures thereof.

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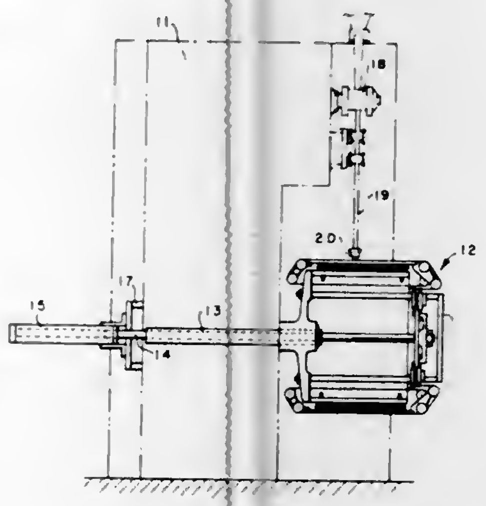
### 3,761,340

## ADJUSTABLE AUTOMATIC TIRE BELT DOFFER

**Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.**
**Filed Apr. 12, 1971, Ser. No. 133,145**
**Int. Cl. B29h** *17/02, 17/16, 17/28*
**U.S. Cl. 156—397 12 Claims**



Apparatus for removing an endless belt from a drum including a belt support surface, means for changing the distance between the support surface and the axis of the drum and means for moving a forward portion of the support surface toward the axis of the drum whereby an endless belt disposed on the support surface is advanced off the end of the drum.

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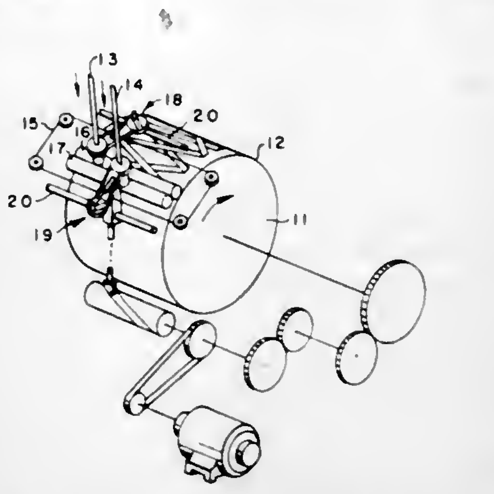
### 3,761,341

## APPARATUS FOR GUIDING A STRIP TO A SUPPORT SURFACE

**Victor W. Kimble, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.**
**Filed Apr. 12, 1971, Ser. No. 133,144**
**Int. Cl. B29h** *9/04;* **B65h** *81/08*
**U.S. Cl. 156—446 13 Claims**



Apparatus for guiding a continuous strip to a support surface including a guide member having a slot therethrough pivotably carried by a support housing, means for reducing the friction in the slot of the guide member, and means for pivoting said guide member in said support housing. Also, a novel method of producing an endless reinforcement.

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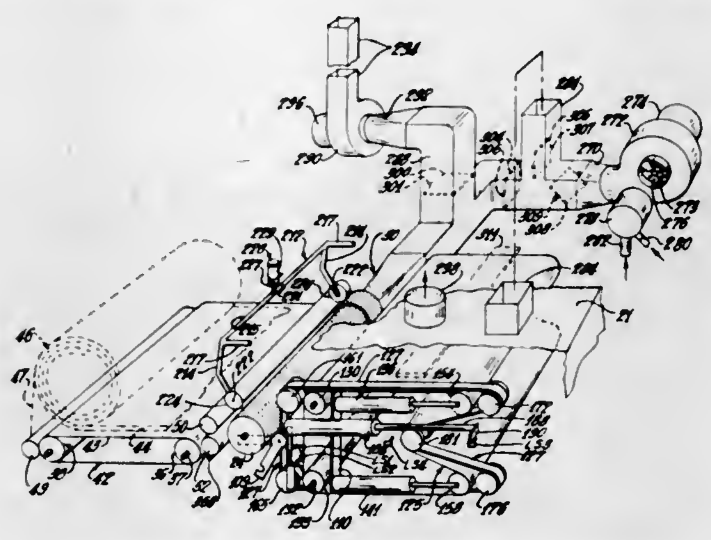
### 3,761,342

## TUBULAR FIBROUS BODY AND METHOD AND APPARATUS FOR FORMING SAME

**David O. Richards, Newark, Robert J. Beeson, Mount Gilead, and Ronald E. Kissell, Columbus, Ohio, assignors to Owens-Corning Fiberglas Corporation**
**Original application Dec. 6, 1968, Ser. No. 781,732. Divided and this application Mar. 8, 1971, Ser. No. 121,641**
**Int. Cl. B65c** *3/06, 81/00*
**U.S. Cl. 156—446 10 Claims**



The disclosure embraces a tubular fibrous body or duct section fashioned with shiplap end formations wherein the end regions of the body or section are of increased density, the disclosure including a method of and apparatus for winding a mass or mat of binder-impregnated fibers, preferably mineral fibers, into tubular formation on a foraminous mandrel, compressing the fibers during winding, establishing reduced pressure as an assist in collecting the fibrous mass or mat into tubular formation and administering a thermal treatment to the tubular body or duct section while rotating the same on the mandrel to cure the binder.

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### 3,761,343

## MEANS FOR PROVIDING A SEMI-PERMANENT IRIDESCENT DISPLAY

**Benjamin Kinberg, 425 Riverside Drive, New York, N.Y. 10025, and Richard J. Mayer, 790 Smith Road, Parsippany, N.J. 07054**
**No Drawing. Filed Sept. 13, 1971, Ser. No. 180,208**
**Int. Cl. B37b** *7/06;* **B44f** *1/14*
**U.S. Cl. 161—6 5 Claims**

Means for providing a semi-permanent iridescent display comprising a pair of overlying sheets, one being translucent with an iridescent dye and the other being opaque. The sheets having smooth surfaces forming an interface, and one of said sheets being of a pliable plastic with its interface surface tending to adhere to the interface surface of the other.

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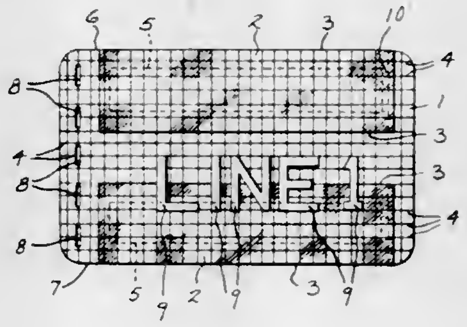
### 3,761,344

## ALIGNMENT DEVICE FOR INDIVIDUAL LABELS

**James M. Mrozek, Milwaukee, and Elliott G. Heuser, Mequon, Wis., assignors to W. H. Brady Co., Milwaukee, Wis.**
**Filed Sept. 28, 1971, Ser. No. 184,389**
**Int. Cl. B32b** *3/06, 7/06;* **B44c** *1/24*
**U.S. Cl. 161—39 7 Claims**



A reusable alignment device and method for aligning a group of individual adhesive labels and applying them to an object in their aligned condition. The alignment device includes a transparent transfer strip that is releasably carried on a backing card. The selected labels are positioned in aligned relationship on the transfer strip and the strip is then removed from the backing card to serve as means for transferring the aligned labels to the object to be labeled.

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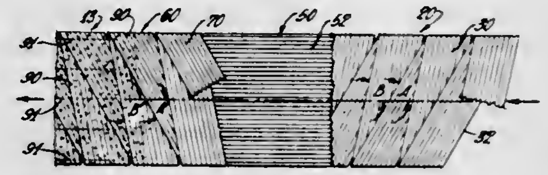
### 3,761,345

## NONWOVEN STRUCTURE FOR REINFORCING RESINOUS MATERIAL

**Roy E. Smith, 1721 Fallbrook Road, Toledo, Ohio 43614**
**Continuation of abandoned application Ser. No. 813,218, Apr. 3, 1969. This application Apr. 16, 1971, Ser. No. 134,832**
**Int. Cl. B32b** *5/12*
**U.S. Cl. 161—57 14 Claims**



A nonwoven structure and apparatus and method for making it where the structure includes successive strips of linear material extending in overlapping relation across it and where the end of each of the strips at one side of the structure is laterally offset in the same direction with respect to the end of each of the strips at the opposite side.

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3,761,346

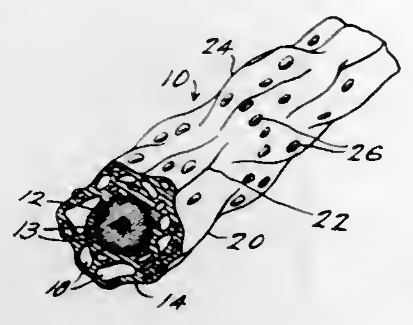
### COMPOSITE LINEAR MATERIAL AND PROCESS OF MAKING SUCH MATERIAL

**Remus F. Caroselli, Cumberland, R.I., Gerald E. Rammel, North Attleboro, Mass., and Michael J. Rooney, Lincroft, N.J., assignors to Owens-Corning Fiberglas Corporation**

**Continuation-in-part of abandoned application Ser. No. 888,707, Dec. 29, 1969. This application June 15, 1970, Ser. No. 46,389**

**Int. Cl. B32b** *5/18*

**U.S. Cl. 161—93** **28 Claims**



A composite linear material including a bundle of filaments surrounded by a flexible cellular coating of plastic composition where the outer surface of the coating is rough and nonlustrous, and the process of making such composite linear material.

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3,761,347

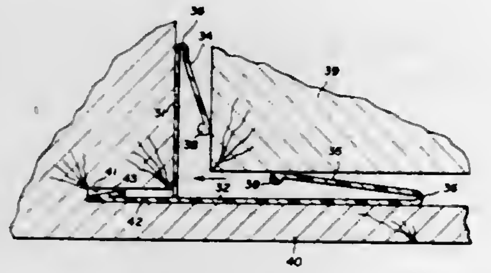
### PRESSURE-SENSITIVE WEATHERSEAL

**Charles Yackiw, Fairport, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.**

**Filed Apr. 7, 1971, Ser. No. 132,000**

**Int. Cl. B32b** *3/04;* **E06b** *7/23*

**U.S. Cl. 161—104** **4 Claims**



A pressure-sensitive weatherseal is formed of a length of resilient material having a cross-section including a pair of legs at about a right angle to each other with the free ends of the legs being curved back on themselves and having arms extending outward from the curvatures at acute angles to the adjoining legs. The arms are flexibly disposed for repeatedly moving toward and away from the adjoining legs to act as a pressure-sensitive weatherseal.

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3,761,348

### BICOMPONENT FILAMENT

**John M. Chamberlin, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation of application Ser. No. 92,904, Nov. 25, 1970, which is a continuation-in-part of application Ser. No. 826,020, May 19, 1969, both now abandoned. This application Feb. 17, 1972, Ser. No. 227,259**

**Int. Cl. A41b** *1/00;* **D02g** *3/02;* **D03d** *15/00*

**U.S. Cl. 161—173** **14 Claims**

A helically crimped bicomponent textile filament and textile products made therefrom are provided. One component is composed of an elastomeric polyurethane melt spinnable at a temperature of about 205°–240° C. and containing a block polyurethane segment melting higher than about 200° C. and below about 235° C. The other component is composed of a polymeric linear hydroxy carboxylic acid ester having a melting point in the range of 180°–240° C.

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3,761,349

### REGENERATION OF DECOKED ALKALINE SULFITE PULP LIQUOR

**Edward L. Cole, Fishkill, Howard V. Hess, Glenham, and William F. Franz, Gardiner, N.Y., assignors to Texaco Inc., New York, N.Y.**

**No Drawing. Filed June 3, 1971, Ser. No. 149,863**

**Int. Cl. D21c** *11/02*

**U.S. Cl. 162—36** **7 Claims**

Decoked alkaline sulfite pulp liquor having an excess of soluble sulfite ion is regenerated by treating with an alkaline earth oxide and/or hydroxide to precipitate excess soluble sulfite ion as insoluble alkaline earth sulfite. The sulfite precipitate is removed by filtration and the resulting liquor is recycled to the pulping operation. The alkaline earth oxide and $SO_2$ are recovered from the filter cake by heating.

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3,761,350

### THERMOSETTING WET STRENGTH RESIN

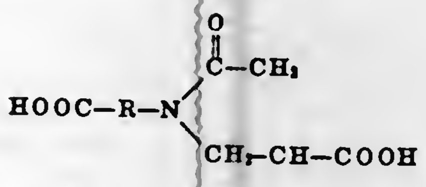
**Francis S. Munjat, Philadelphia, and Sin-Ho Kim, Haverford, Pa., assignors to E. F. Houghton & Co., Philadelphia, Pa.**

**No Drawing. Filed June 23, 1971, Ser. No. 156,127**

**Int. Cl. D21d** *3/00*

**U.S. Cl. 162—164** **14 Claims**

Cationic thermosetting resins useful in imparting wet strength to paper are prepared by reacting a heterocyclic dicarboxylic acid of the formula



$$\mathrm{HOOC{-}R{-}N}\begin{matrix}\overset{\displaystyle O}{\overset{\|}{C}}{-}CH_3\\ \\ CH_2{-}CH{-}COOH\end{matrix}$$

where R is alkylene or arylene with a diamine or polyalkylene polyamine, and epichlorohydrin to form a water-soluble polyamine polyamide polymer, and then, reacting the said polymer with further epichlorohydrin. An amino carbonyl compound may be included as a fourth reactant in forming the water-soluble polyamine polyamide polymer.

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3,761,351

### METHOD FOR THE PRODUCTION OF A NEUTRON IMPULSE FLASH AND A NUCLEAR REACTOR FOR ITS REALIZATION

**Iran Alexandrovich Gassiev, ulitsa Lenina 20, Tskhinvali, U.S.S.R.; and Gennady Iraklievich Kiknadze, prospekt V. Pshavela, 6 kvartal, 31 korpus, kv. 19; Georgy Nikolaevich Garsevanishvili, prospekt V. Pshavela, 3 kvartal, 6 korpus, kv. 7; and Vakhtang Noevich Akhobadze, ulitsa Oktyabrskaya 33, all of Tbilisi, U.S.S.R.**

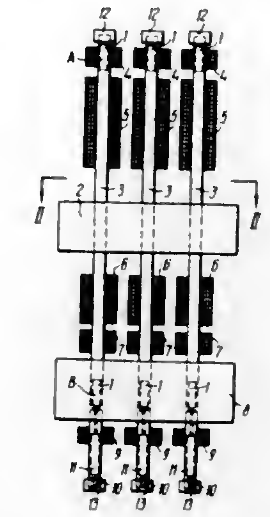
**Filed Jan. 19, 1971, Ser. No. 107,709**

**Claims priority, application U.S.S.R., Jan. 28, 1970, 1395687**

**Int. Cl. G21c** *19/02*

**U.S. Cl. 176—28** **7 Claims**

A method for the production of a neutron impulse flash, consisting in that nuclear fuel is placed outside a neutron moderator both before and after a neutron impulse flash and is shot through the moderator to produce such a flash. An apparatus for realizing the above-mentioned method used nuclear fuel and a neutron-moderator vessel having at least one through conduit for the nuclear fuel disposed in the conduit so that the fuel can be shot along the conduit by a suitable means, to produce a neutron impulse flash.



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3,761,352

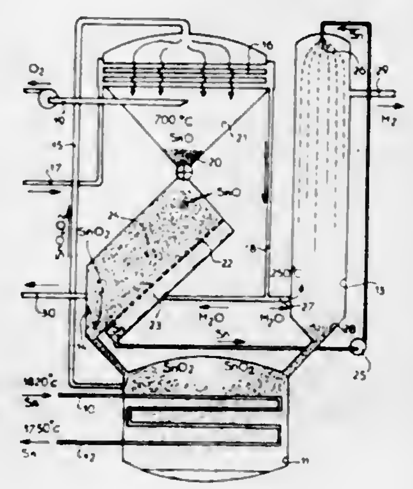
### METHOD AND DEVICE FOR THE USE OF HIGH-TEMPERATURE HEAT-ENERGY, IN PARTICULAR OF NUCLEAR ORIGIN

**Daniel Souriau, Paris, France, assignor to Gaz de France, Paris, France**

**Filed May 18, 1972, Ser. No. 254,755**

**Int. Cl. G21d** *9/00*

**U.S. Cl. 176—57** **11 Claims**



The invention relates to the recovering of the high-temperature heat-energy dissipated in the core of a nuclear reactor and using a tin cycle in which stannic oxide ($SnO_2$) is decomposed at high temperature into a gaseous mixture of stannous oxide (SnO) and oxygen ($O_2$) which, after cooling, gives solid stannous oxide (SnO) and oxygen. Then stannous oxide is allowed to dismute into stannic oxide ($SnO_2$) which is recycled and into tin which is used to decompose water steam ($H_2O$) into ($H_2$) and into amine oxide ($SnO_2$) which is recycled.

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3,761,353

### ENZYMATIC PROTEIN SOLUBILIZATION

**Frederick F. Noe, Southampton, and William T. Faith, Jr., Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**No Drawing. Continuation of abandoned application Ser. No. 772,833, Nov. 1, 1968. This application Jan. 13, 1972, Ser. No. 217,640**

**Int. Cl. A23j** *1/00, 3/00;* **C12d** *13/06*

**U.S. Cl. 195—29** **5 Claims**

Disclosed herein is a novel method of solubilizing and hydrolyzing isolated protein so as to render such useful for the preparation of food and industrial products. In accordance therewith, isolated protein is contacted with an enzymatic composition comprising a bacterial enzyme alone or in combination with a fungal enzyme.

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3,761,354

### PROCESS FOR THE PRODUCTION OF CEPHALEXIN

**Jinnosuke Abe, Shizuoka-ken, Tetsuo Watanabe, Yokohama, and Tsutomu Yamaguchi and Kunio Matsumoto, Shizuoka-ken, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka-ken, Japan**

**No Drawing. Filed Mar. 27, 1972, Ser. No. 238,517**

**Int. Cl. C12d** *9/00*

**U.S. Cl. 195—29** **2 Claims**

Cephalexin is produced by enzymatic transacylation of 7-acylamino desacetoxy cephalosporanic acid and a phenyl glycine derivative, using an enzyme derived from the microorganism *Bacillus megaterium* B–400 NRRL B–5385 in an aqueous medium.

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3,761,355

### COMESTIBLE, DIGESTIBLE PROTEIN FROM CELLULOSE

**Clayton D. Callihan and Vadake R. Srinivasan, Baton Rouge, La., and Charles E. Dunlap, Bay St. Louis, Miss., assignors to The Louisiana State University Foundation, a non-profit corp., Baton Rouge, East Baton Rouge Parish, La.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 772,357, Oct. 31, 1968. This application Aug. 11, 1971, Ser. No. 171,019**

**Int. Cl. C12b** *1/00*

**U.S. Cl. 195—33** **4 Claims**

Comestible, digestible protein is produced from the insoluble, to-man-undigestible carbohydrate cellulose, by subjecting the cellulose to a pretreatment to depolymerize or degrade the lignin present and then growing thereon a cellulase-elaborating microorganism which is subsequently recovered as a food product having a high content of desirable amino acids.

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3,761,356

### PROCESS FOR PRODUCING AN ESTERASE

**Edward G. Daniels, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**No Drawing. Filed Jan. 10, 1972, Ser. No. 216,815**

**Int. Cl. C07g** *7/02*

**U.S. Cl. 195—62** **4 Claims**

An esterase enzyme composition comprising the acetone-insoluble matter left on extracting lipids from the marine invertebrate *Plexaura homomalla* (Esper), 1792, useful for transforming esters of prostaglandins and prostaglandin-like materials to their acid forms.

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3,761,357

### BONDING OF ENZYMES TO POLYMERIC MATERIALS

**Roger Epton, Brierley Hill, Staffordshire, John Vincent McLaren, Compton, Wolverhampton, and Trevor Henry Thomas, Worcester, England, assignors to Koch-Light Laboratories Limited, Colnbrook, Buckinghamshire, England**

**No Drawing. Filed Sept. 15, 1971, Ser. No. 180,856**

**Claims priority, application Great Britain, Sept. 17, 1970, 44,515/70**

**Int. Cl. C07g** *7/02*

**U.S. Cl. 195—63** **10 Claims**

A hydrophilic water insoluble enzyme polymer is prepared by bonding an enzyme to aldehyde groups on a polymer having along its backbone additional repeating pendant side groups comprising predominately aliphatic dimethyl acetal groups or a combination of aliphatic dimethyl acetal groups and primary amide groups.

### 3,761,358

### COMBINATION COLUMN REBOILER HEAT INPUT AND OCTANE CONTROL PROCESS

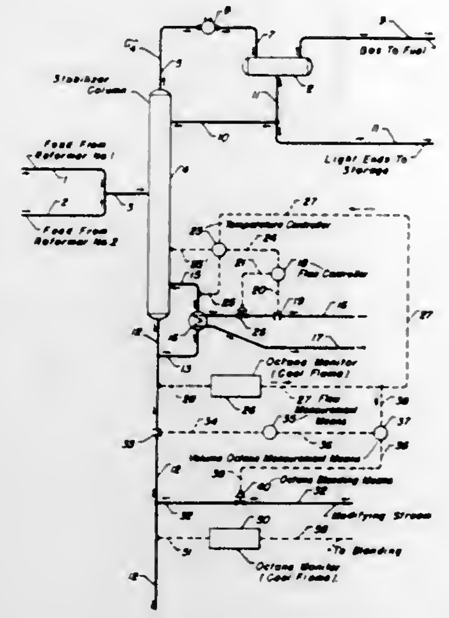
**Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of application Ser. No. 868,458, Oct. 22, 1969. This application Feb. 14, 1972, Ser. No. 226,034**

**The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed**

**Int. Cl. B01d** *3/42*

**U.S. Cl. 196—132** **33 Claims**



A process for the control of the heat input to a reboiler for a stabilizer column. The process includes a combination of an on-stream octane monitor and an octane blending means to allow the production of a blended gasoline product having an essentially constant barrel-octane number. The process is applicable to all refinery flow streams in which gasoline is desired to be stabilized. In particular, the combined process control utilizes a stabilized cool flame generator with servo-positioned flame front which receives a sample of the column bottoms and monitors its octane. A flow measurement means measures the flow of bottoms material. Both the flow measurement means and octane monitor generates signals which pass to a volumetric-octane measurement means which controls the octane blending means controlling the blending of an octane modifying stream which can comprise gasoline, tetraethyl lead aromatics with the bottoms gasoline in a manner to produce a blended gasoline product.

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### 3,761,359

### METHOD AND APPARATUS FOR HEAT-TREATING MATERIALS

**Hansjoachim von Hippel, 7771 Oberstenweiler, Germany**

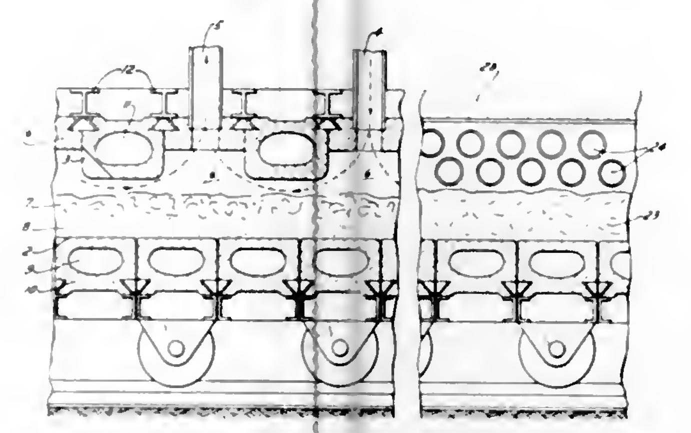
**Filed July 13, 1971, Ser. No. 162,033**

**Claims priority, application Germany, Nov. 23, 1970, P 20 57 493.0**

**Int. Cl. C10b** *49/06*

**U.S. Cl. 201—32** **21 Claims**

A tunnel furnace has an elongated furnace chamber along whose bottom a support travels in longitudinal direction. From the roof transverse partitions extend downwardly towards the support and subdivide the space above the same into a plurality of individual treating compartments. Material to be heat-treated is deposited on the support as a relatively thin layer which is advanced through the chamber so that each increment of the layer becomes exposed to the respective compartment. The compartments are provided with inlets and outlets for gas so that different atmospheres of different composition and/or different thermal values can be maintained in the respective compartments for contact with the layer.



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### 3,761,360

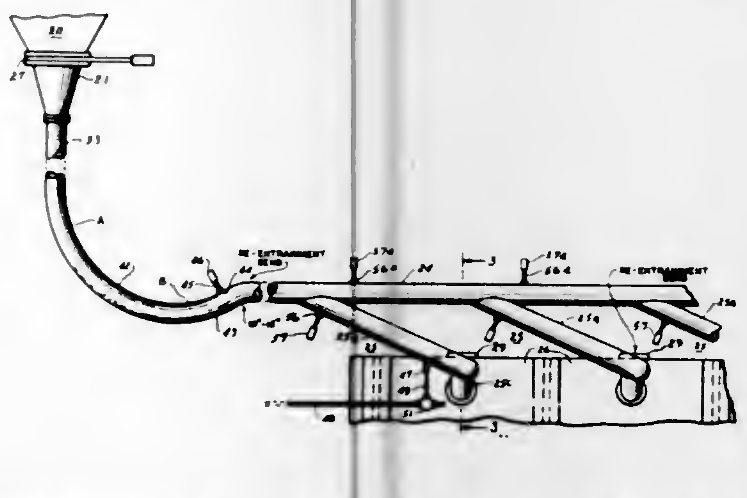
### RE-ENTRAINMENT CHARGING OF PREHEATED COAL INTO COKING CHAMBERS OF A COKE OVEN BATTERY

**Harvey S. Auvil, Ashland, Ky., and Lawrence D. Schmidt, New York, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.**

**Continuation of abandoned application Ser. No. 653,693, July 17, 1967. This application Jan. 20, 1971, Ser. No. 108,207**

**Int. Cl. C10b** *31/00*

**U.S. Cl. 201—40** **8 Claims**



The invention herein is concerned with a method and apparatus for charging preheated coal into coking chambers of a coke oven battery, wherein the coal is preheated, coarsely comminuted and conducted via pipeline under the force induced by a highly heated inert gas such as steam, with the assistance of a re-entrainment bend in the pipeline, adapted to effect sudden change in direction of the flow of coal so as to move upwardly and into the stream of gas, coal which settled out of the stream and onto the bottom, to re-enter the same.

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### 3,761,361

### PRODUCTION AND PURIFICATION OF VINYL CHLORIDE

**Henry H. Wall, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.**

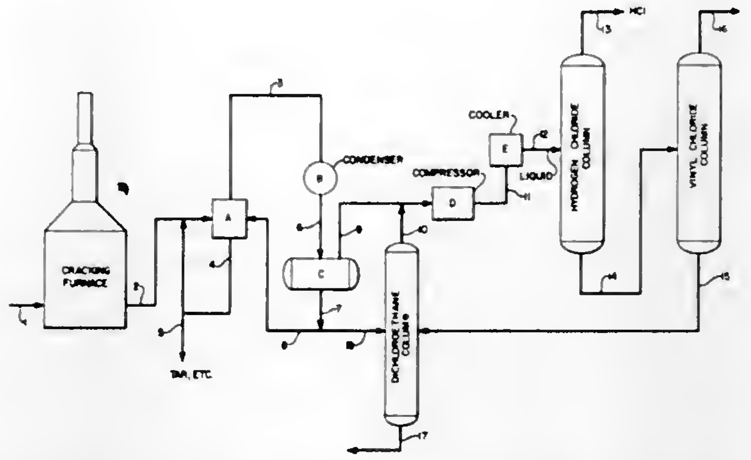
**Original application Apr. 19, 1967, Ser. No. 632,002, now abandoned. Divided and this application Dec. 7, 1970, Ser. No. 95,971**

**Int. Cl. B01d** *3/00, 3/02, 3/14*

**U.S. Cl. 202—158** **1 Claim**

This invention relates to a novel process for the production of vinyl chloride by thermal decomposition of

dichloroethane and high pressure distillation for purification of the product mixture to recover vinyl chloride. The present invention utilizes two combinations of dual distillation zones which coact to cancel the effects of "sloppy" cut distillations in each zone to achieve substantially pure product streams and a substantially pure recycle stream while still effecting a considerable refrigeration saving.



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### 3,761,362

### COLORING AN OXIDIZED COATING ON ALUMINUM AND ITS ALLOYS

**Kyuya Oida, Toyama-ken, and Tadashi Tsukiyasu, Hideo Shimizu, and Seltaro Iwata, Nagoya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**No Drawing. Filed Mar. 17, 1971, Ser. No. 125,392**

**Claims priority, application Japan, Mar. 18, 1970, 45/23,275**

**Int. Cl. C23b** *5/50, 9/02*

**U.S. Cl. 204—35 N** **10 Claims**

Coloring of anodic oxide film on aluminum and aluminum alloys is accomplished by direct current electrolysis in an electrolyte containing an acid or metal salt, using the aluminum article as cathode.

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### 3,761,363

### MICROCRACKED NICKEL PLATING BATH AND PROCESS

**Robert A. Tremmel, Woodhaven, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.**

**No Drawing. Filed June 5, 1972, Ser. No. 259,525**

**Int. Cl. C23b** *5/08, 5/46*

**U.S. Cl. 204—49** **32 Claims**

A bath for producing a microcracked nickel electrodeposit comprising an aqueous acidic solution containing nickel ions; and an effective microcracking amount of a polyamine of the formula:

$$(R)(R')N\text{—}(CH_2)_a\text{—}N(R')(R)$$

wherein R and R′ are independently selected from the group consisting of hydrogen, alkyl of from 1 to 4 carbon atoms and hydroxy substituted alkyl of from 1 to 4 carbon atoms; providing at least one of R and R′ is a hydroxy alkyl; and *a* is from 1 to 4.

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### 3,761,364

### SELF-COLORING ANODIC OXIDATION PROCESS FOR ALUMINUM AND ITS ALLOYS

**Ciro Micheletti, Novara, Italy, assignor to Societe per l'Esercizio dell'Istituto Sperimentale Metalli Leggeri, Milan, Italy**

**No Drawing. Filed Mar. 14, 1972, Ser. No. 234,682**

**Claims priority, application Italy, Mar. 15, 1971, 21,753/71**

**Int. Cl. B01k** *3/02;* **C23b** *9/02*

**U.S. Cl. 204—58** **2 Claims**

An improved self-coloring anodic oxidizing process for aluminum and its alloys by means of electrolytic baths is disclosed, wherein in the electrolytic cells used for the oxidation there is used a cooled cathode system. Preferably, the cooling of the cathodes is achieved by circulating inside said cathodes a refrigerating fluid having an inflow temperature to the cathodes below 25° C. but higher than the temperature which would cause freezing of the electrolytic solution used in the cell.

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### 3,761,365

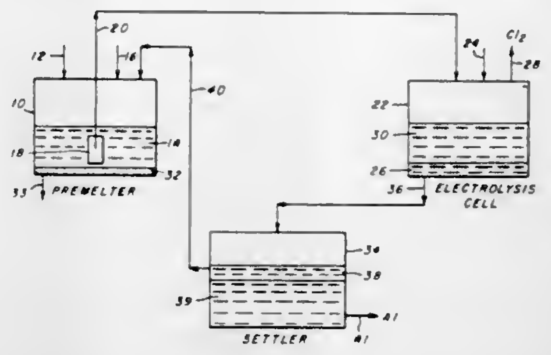
### PREPARATION OF ALKALI METAL CHLORIDE MELT FOR USE IN ELECTROLYSIS OF ALUMINUM CHLORIDE

**Warren E. Haupin and Bernard J. Racunas, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.**

**Filed Sept. 9, 1971, Ser. No. 178,898**

**Int. Cl. C22d** *1/02, 3/02, 3/12*

**U.S. Cl. 204—67** **26 Claims**



Advance preparation of alkali metal chloride melt for use in electrolysis of aluminum chloride.

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### 3,761,366

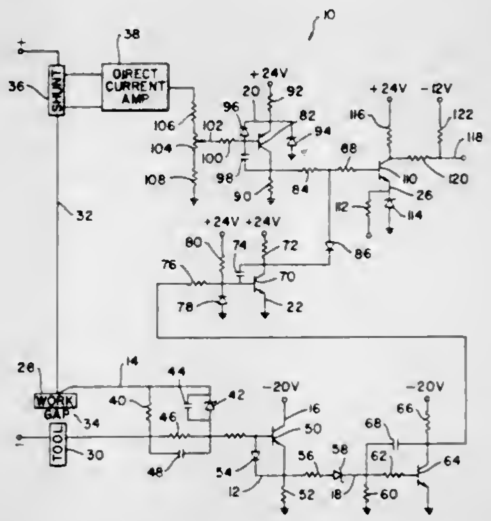
### VOLTAGE SURGE ELECTRONIC CONTROL CIRCUIT AND METHOD

**Robert W. Drushel, Farmington, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.**

**Application Nov. 18, 1966, Ser. No. 595,442, now Patent No. 3,564,528, which is a continuation-in-part of applications Ser. No. 573,999, Aug. 22, 1966, now Patent No. 3,508,115, Ser. No. 583,875, Oct. 3, 1966, now Patent No. 3,591,851, Ser. No. 585,395, Oct. 10, 1966, now Patent No. 3,521,083, and Ser. No. 595,189, Nov. 17, 1966, now Patent No. 3,471,750. Divided and this application Feb. 16, 1971, Ser. No. 115,667**

**Int. Cl. B01k** *3/00;* **B23p** *1/00*

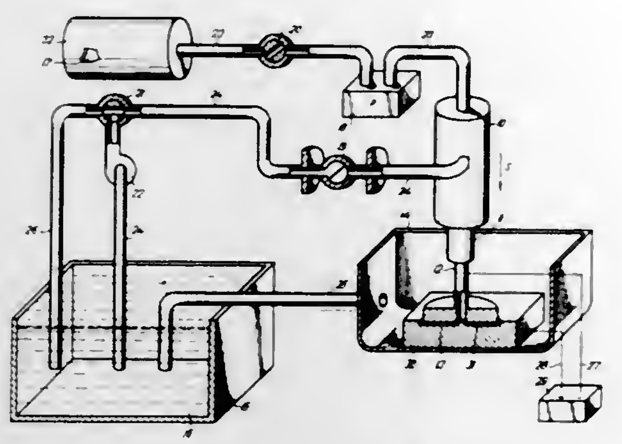
**U.S. Cl. 204—129.2** **11 Claims**



An electronic circuit and method for providing an output signal in response to a voltage surge in an electroerosion machining circuit or the like. The electronic circuit comprises a resistor connected across the gap of an electroerosion machining circuit between a workpiece and tool, a filter circuit connected across the resistor for filtering extraneous signals from sensed voltage surge signals and providing a substantially unchanged voltage surge output signal substantially immediately on occurrence of a voltage surge, an output amplifier circuit for providing a substantial output signal on receipt of a voltage surge signal of a predetermined magnitude and an alternating signal coupling circuit connected between the filter circuit and output amplifier circuit for coupling filtered voltage surge signals to the output amplifier circuit without extraneous voltage signals.

### 3,761,367
## METHOD OF ELECTROCHEMICAL WORKING OF ELECTRICALLY CONDUCTIVE MATERIAL

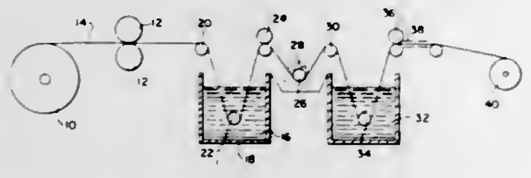
**Jan Zubak, Ostrov, Ctibor Trebichavsky, Nove Mesto nad Vahom, and Jan Augustin, Podolie, Czechoslovakia, assignors to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia**
**Filed Oct. 29, 1971, Ser. No. 193,849**
**Int. Cl. B23p** *1/00*
**U.S. Cl. 204—129.5** **5 Claims**



In electrochemical working of electrically conductive material, the amount of the liquid working medium conducting electric current passing through the interelectrode gap is varied together with variations of the magnitude of this gap so that prior to finished working a minimum interelectrode gap in direction of mutual advance of tool and workpiece is achieved.

### 3,761,368
## ARRANGEMENT FOR FORMING ELECTRODE STRIPS FOR ELECTROLYTIC DEVICES

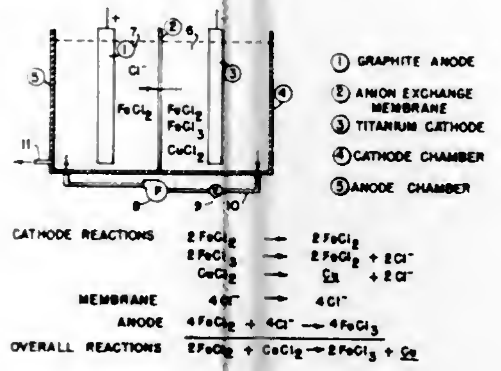
**John R. Ford, Columbia City, and Allan G. Johnson, Fort Wayne, Ind., assignors to Ion Capacitor Corporation, Columbia City, Ind.**
**Filed Oct. 6, 1971, Ser. No. 186,903**
**Int. Cl. B29c** *17/08;* **C23b** *3/02*
**U.S. Cl. 204—129.75** **13 Claims**



An electrode strip of the so-called fabricated plate type, for use in the manufacture of electrolytic capacitors and other electrolytic devices is compacted to a thickness substantially beyond the point of decreasing surface area and is then subjected to an etching operation whereby the compacted metal particles are etched away by an amount sufficient to substantially increase the capacitance per unit volume of the strip. The etching operation is terminated when the electrical conductivity of the strip reaches a predetermined value and before the capacitance per unit area of the strip begins to decrease.

### 3,761,369
## PROCESS FOR THE ELECTROLYTIC RECLAMATION OF SPENT ETCHING FLUIDS

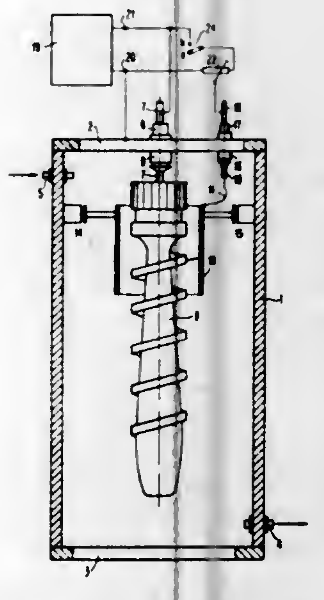
**Charles E. Tirrell, Hatboro, Pa., assignor to Electrodics, Incorporated, Philadelphia, Pa.**
**Filed Oct. 18, 1971, Ser. No. 190,147**
**Int. Cl. B01d** *13/02;* **C02c** *5/12*
**U.S. Cl. 204—151** **7 Claims**



This invention is directed to the method and apparatus for the electrolytic reclamation of spent copper etching fluids, and also to overcoming the problem of waste discharge stream pollution of aqueous solutions of iron and chromium metal, by passing the spent etchant, as the catholyte, into the cathode chamber of a two chamber electrolytic cell having an anion permselective ion exchange membrane separating said cathode chamber from the anode chamber. The chemically reduced spent etchant of a previous batch comprises the anolyte. When a direct electric current is passed through the cell, copper is reduced and deposited on the cathode, and the chemically reduced spent etching fluid is oxidized in the anode chamber to comprise the reclaimed etching fluid for further use. This invention is also directed to the electrolytic cell and the system of carrying out the invention as noted above.

### 3,761,370
## METHOD OF HARDENING THE SURFACE OF WORKPIECES MADE OF IRON AND STEEL

**Klaus Keller, 4 Paulstrasse, 5039 Cologne-Weiss, Germany**
**Filed Sept. 20, 1971, Ser. No. 181,873**
**Claims priority, application Switzerland, Sept. 21, 1970, 13,938/70**
**Int. Cl. B01k** *1/00;* **C23c** *11/16*
**U.S. Cl. 204—164** **2 Claims**



A method of selectively ionitriding a metal workpiece comprising establishing an electrical potential of one value between the workpiece and the treatment chamber and also establishing an electrical potential of a lesser value between a selected portion of the workpiece and an intermediate electrode member.

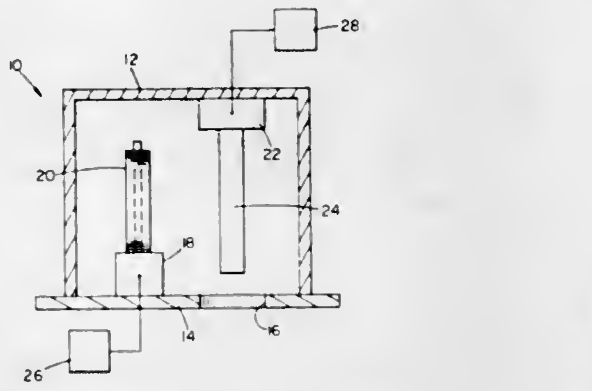
### 3,761,371
## ELECTRODEPOSITION OF COATING MATERIALS COMPRISING PARTICULATE ELASTOMERS

**Ray A. Dickie, Pleasant Ridge, Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.**
**No Drawing. Filed Dec. 21, 1970, Ser. No. 100,391**
**Int. Cl. B01k** *5/02;* **C23b** *13/00*
**U.S. Cl. 204—181** **6 Claims**

Electrodepositable coating materials are provided which comprise particulate elastomeric materials. These particulate elastomers may be (1) mechanically mixed with an electrodepositable carrier resin and electrodeposited therewith without chemical reaction therewith before or after electrodeposition, (2) mechanically mixed with a conventional electrodeposition carrier resin and chemically reacted with the resin during curing, (3) chemically reacted with an electrodepositable carrier resin prior to its electrodeposition, (4) chemically reacted with monomers or low molecular weight prepolymers which provide the resultant reaction product with ionizable surface functionality to impart polyelectrolyte behavior to the material when dispersed in a suitable aqueous medium, (5) or provided directly with such ionizable surface functionality. This invention has application in both anodic and cathodic deposition. The electrodepositable materials can be devised for conventional heat curing, air drying, or curing by ionizing radiation, e.g. exposure to an electron beam. In one embodiment, the particulate elastomers have an outer shell of a glass-like organic polymer. In one embodiment, the electrodeposited material has alpha-beta olefinic unsaturation.

### 3,761,372
## METHOD FOR PRODUCING AN IMPROVED CUTTING TOOL

**Aiyaswami S. Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.**
**Filed July 9, 1971, Ser. No. 161,158**
**Int. Cl. B26b** *21/54;* **C23c** *15/00*
**U.S. Cl. 204—192** **6 Claims**

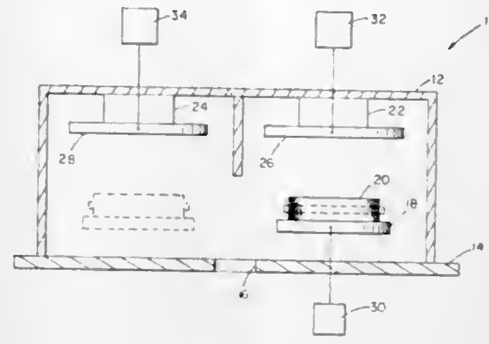


The sharpened edge of a cutting implement such as a razor blade is modified by subjecting the cutting edge to ion bombardment and strengthening material deposition steps so that a portion of the deposited strengthening material is removed, the cutting edge of the implement having a resulting tip radius of less than about 400 angstroms and added strengthening material on the flanks so that at a distance of 6,000 angstroms from the tip the added material has a total thickness of at least about 400 angstroms.

### 3,761,373
## PROCESS FOR PRODUCING AN IMPROVED CUTTING TOOL

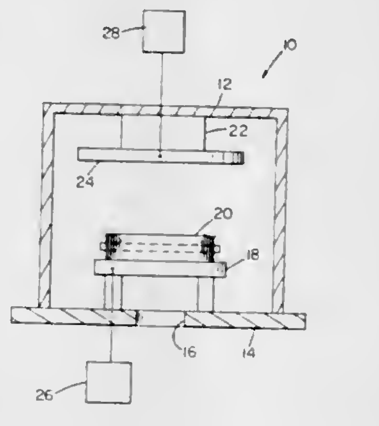
**Aiyaswami S. Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.**
**Filed July 9, 1971, Ser. No. 161,159**
**Int. Cl. B26b** *21/54;* **C23c** *15/00*
**U.S. Cl. 204—192** **12 Claims**

The sharpened edge of a cutting implement such as a razor blade is modified by depositing a layer of dielectric material on the cutting edge and then depositing a layer of electrically conductive material on the dielectric layer and then subjecting the cutting edge to DC ion bombardment so that a portion of the deposited electrically conductive material is removed and the dielectric material is exposed at the tip of the implement.



### 3,761,374
## PROCESS FOR PRODUCING AN IMPROVED CUTTING TOOL

**David J. Bromer, Watertown, and Aiyaswami S. Sastri, Stow, Mass., assignors to The Gillette Company, Gillette Park, Boston, Mass.**
**Filed July 9, 1971, Ser. No. 161,160**
**Int. Cl. B26b** *21/54;* **C23c** *15/00*
**U.S. Cl. 204—192** **8 Claims**

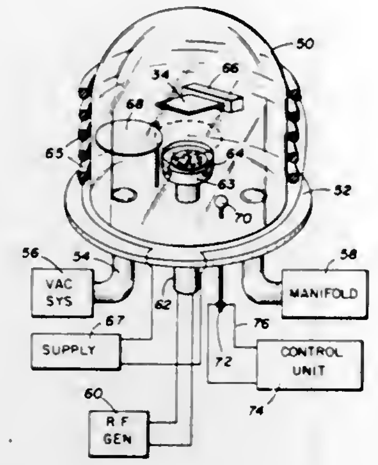


The sharpened edge of a cutting implement such as a razor blade is modified by subjecting the cutting edge to ion bombardment to modify the tip geometry of the cutting edge and concurrently depositing edge strengthening material on the cutting edge. This concurrent tip modification and deposition process produces an implement with a cutting edge average tip radius of less than about 400 angstroms while increasing the facet width in the immediate vicinity of the cutting edge (for example at a distance of 6,000 angstroms from the tip) a substantial amount by the deposition of strengthening material thereon.

### 3,761,375
## PROCESS FOR FABRICATING VIDICON TUBE TARGET HAVING A HIGH RESISTANCE SPUTTERED SEMI-INSULATING FILM

**Joe T. Pierce, Richardson, and Craig P. Stephens, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**
**Continuation of abandoned application Ser. No. 806,900, Mar. 13, 1969. This application Jan. 19, 1972, Ser. No. 219,049**
**Int. Cl. C23c** *15/00*
**U.S. Cl. 204—192** **4 Claims**

Semiconductor substrates may be coated with a high resistance film by an R.F. sputtering process. The high resistance film is a compound of a ceramic and a metal, e.g. chrome and quartz. Preferably, the high resistance ceramic-metal film is formed in a vacuum chamber with the ceramic wafer supported on a sputtering electrode. A predetermined amount of metal chips are placed on the ceramic wafer and particles of both intimately mix during the sputtering operation. In one application, the high resistance film is deposited over the insulating layer and diode junctions of a vidicon tube target. In this application, the high resistance film functions as a charge carrier path.



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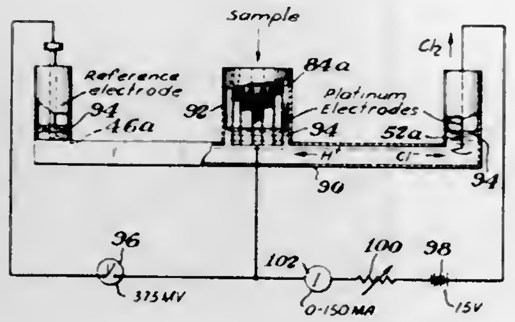
## 3,761,376
## COULOMETRIC ANALYZER

**Ormond E. Barstow, Midland, and William H. Parth, Saginaw, Mich., assignors to The Dow Chemical Company, Midland, Mich.**
**Filed Sept. 2, 1971, Ser. No. 177,311**
**Int. Cl. G01n** *27/46*
**U.S. Cl. 204—195 R** **6 Claims**



The invention is a controlled potential coulometric analyzer used in measuring the concentration of chlorine in a gas. The analyzer utilizes working and auxiliary electrodes of platinum and an electrolyte of hydrochloric acid solution. The cathode or working electrode compartment is connected by liquid passages to separate compartments containing the auxiliary electrode or anode and reference electrode. When the working electrode is maintained at a potential of +375 mv. with respect to a saturated calomel electrode, the cell current is zero in the absence of chlorine.

When a volume of sample gas containing chlorine is introduced into the gas space above the cathode, the chlorine dissolves in the thin film of electrolyte, wetting the platinum gauze cathode and is reduced at the cathode. The integrated current or total charge that flows as a result of the electrolysis is proportional to the chlorine reduced, and such charge is read on suitable readout equipment.

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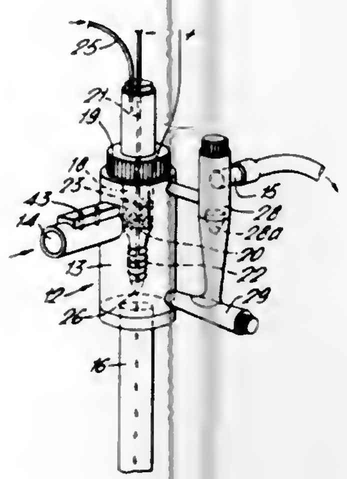
## 3,761,377
## ATMOSPHERIC CHLORINE DETECTION APPARATUS

**Oswald Karl Clarence Mang, Box 802, Regina, Saskatchewan, Canada**
**Filed Apr. 4, 1972, Ser. No. 241,039**
**Claims priority, application Canada, Nov. 5, 1971, 126,987**
**Int. Cl. G01n** *27/46*
**U.S. Cl. 204—195 R** **10 Claims**



An electronegative gas, such as chlorine, is detected in a gaseous mixture by passing an aqueous electrolyte across the surfaces of first and second spaced electrodes in the direction from the first electrode to the second electrode, the electrodes being externally connected by a current detection circuit, and passing the gaseous mixture across the second electrode, the electronegative gas component dissolving in the electrolyte with the formation of negative ions thereby to cause a current to flow through the current detection circuit.

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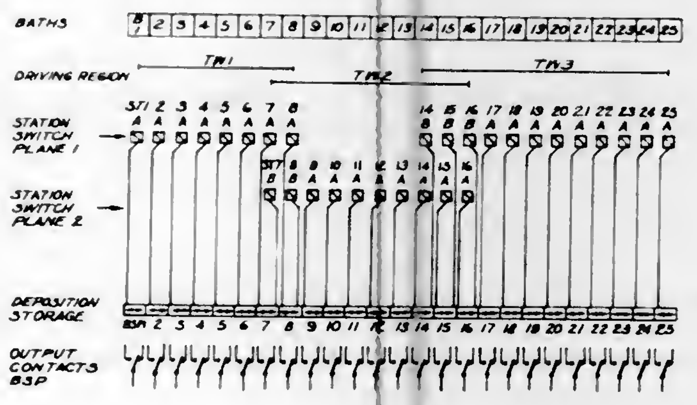
## 3,761,378
## ARRANGEMENT FOR CONTROLLING DEPOSITION OF PLATING BATHS

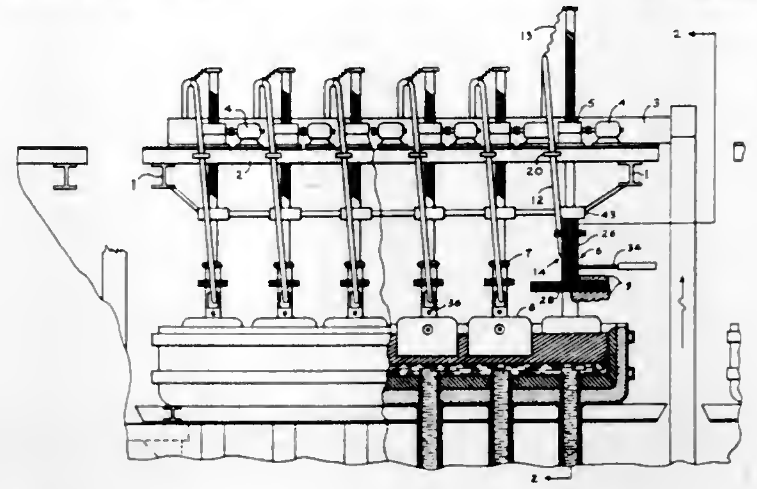
**Karl-Heinz Sturm, Feucht, Germany, assignor to Schering AG, Berlin, Germany**
**Filed June 22, 1971, Ser. No. 155,457**
**Int. Cl. B01k** *3/00;* **C23b** *5/68*
**U.S. Cl. 204—202** **7 Claims**



An arrangement for controlling the deposition state in plating baths. The baths are equipped with fully automatic plating installations, material dispatching centers, transport arrangements, and drop-off locations. A central control unit has its circuit elements logically interconnected with circuit elements in the transport arrangement and the drop-off locations. Storage devices in the central control unit store the deposition information of each location.

## 3,761,379
## ALUMINUM-PRODUCTION APPARATUS

**Charles Henry Elliott, 212 Jeff Davis Ave., Waveland, Miss. 39576**
**Filed July 20, 1971, Ser. No. 164,324**
**Int. Cl. B01k** *3/00;* **C22d** *3/02*
**U.S. Cl. 204—225** **14 Claims**



Apparatus having a pot in which alumina and cryolite are electrically heated, comprising: twin carbonaceous anode blocks, having aligned horizontal bores; steel carbon-block holding, vertical stems; and a joined horizontal steel pin that fits in the aligned bores, with a slip-fit clearance in assembly at room temperature, and tight, current-conducting contact when in the heated materials. The invention comprises: means for manually or automatically jacking anodes up or down, separately or together; means for maintaining a predetermined voltage across each pot of a pot line, each of these voltages being set for efficiency of a particular pot; a carbon-block anode having a vertical face for fitting against the similar face of a twin block, and a pin-fitting, horizontal bore terminating at the vertical face; and a method of replacement of a heat-worn carbon-block butt by jacking it up, cooling the pin until it has clearance in the bore, removing the butt, and replacing a block on the pin.

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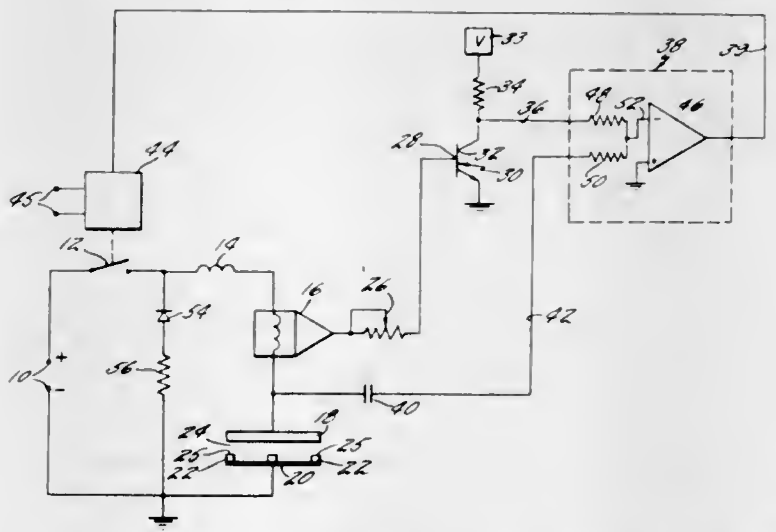
## 3,761,380
## ADAPTIVE SPARK DETECTION SYSTEM FOR AN ELECTROCHEMICAL MACHINING APPARATUS

**Norman D. Ballard, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**
**Filed Nov. 24, 1971, Ser. No. 201,884**
**Int. Cl. B01k** *3/00*
**U.S. Cl. 204—228** **3 Claims**



Apparatus for terminating an electrochemical machining process is concurrently responsive to the electrolyzing current and changes of voltage in the gap between one or more electrodes and the workpiece, the invention thereby automatically adapting itself to a plurality of electrochemical processes.

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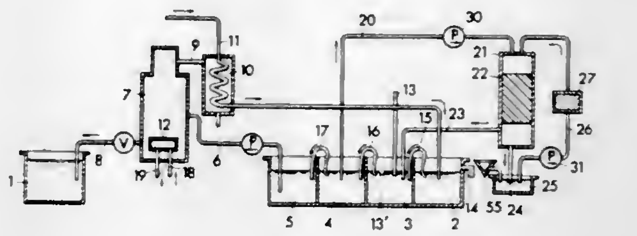
## 3,761,381
## PLATING WASTE RECOVERY UNIT

**Aisaburo Yagishita, 50 Kamejima-cho, 3-chome, Nakamura-ku, Nagoya, Japan**
**Continuation-in-part of abandoned application Ser. No. 66,397, Aug. 24, 1970, which is a division of application Ser. No. 587,607, Oct. 18, 1966, now Patent No. 3,542,651. This application Aug. 16, 1972, Ser. No. 281,055**
**Int. Cl. B01k** *3/00;* **C02b** *1/42*
**U.S. Cl. 204—238** **5 Claims**



In a unit for reclaiming plating wastes containing chromic acid and the like, the rinse liquid, from one of a plurality of wash tubs into which plated articles are dipped successively to rinse off the plating solution, is circulated through an ion exchange column, where it passes through a resin layer that removes chromic acid and other impurities before the liquid is returned to the wash tub. Periodically, or when the resin becomes saturated with chromic acid, it is regenerated by pumping a solution of caustic soda through the exchange column, thus producing a sodium chromate solution to which barium hydroxide is added to produce barium chromate, which is filtered out of the caustic soda solution before the latter is again used for regeneration purposes.

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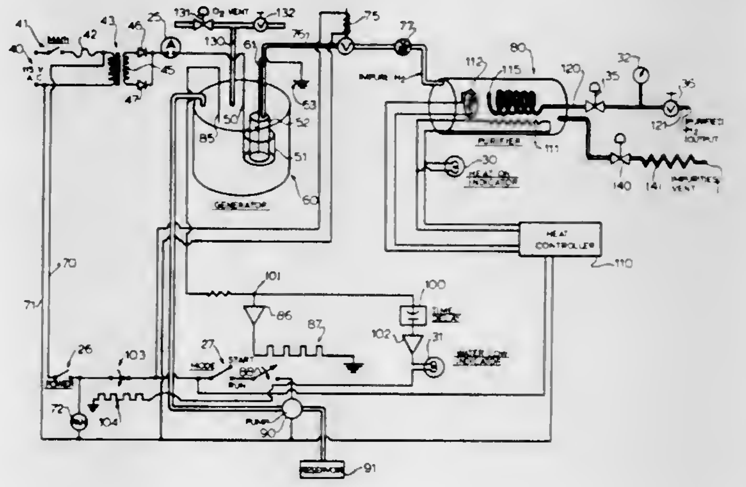
## 3,761,382
## APPARATUS FOR GENERATING, PURIFYING AND DELIVERING HYDROGEN FOR ANALYZERS AND THE LIKE

**James C. Hammond, Charles D. Jamerson, Jr., and Michael E. Kiefer, Raleigh, N.C., assignors to Trienco, Inc., Raleigh, N.C.**
**Filed June 21, 1972, Ser. No. 264,957**
**Int. Cl. B01k** *3/10*
**U.S. Cl. 204—266** **9 Claims**



Hydrogen and oxygen are generated by electrolytic disassociation of water in a unitary apparatus having means to purify and regulate the delivery of the hydrogen and to control the generation. The oxygen produced is discharged to atmosphere under controlled pressure regulation. The hydrogen produced is fed to a separate temperature controlled palladium purifier assembly having an ultrapure hydrogen output useful in analytical apparatus and the like and an output of gas impurities which is discharged to atmosphere under controlled pressure.

### 3,761,383

### PACKED BED ELECTROCHEMICAL CELL INCLUDING PARTICULATE BIPOLAR ELECTRODES SEPARATED BY NON-CONDUCTING PARTICLES

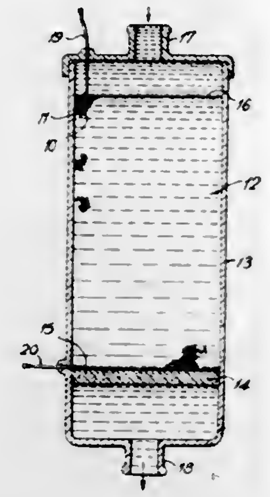
**John Rayner Backhurst, Corbridge, Francis Goodridge, Ponteland, Martin Fleischmann, Eastleigh, and John Wilfred Oldfield, Sutton Coldfield, England, assignors to National Research Development Corporation, London, England**

**Filed Sept. 27, 1971, Ser. No. 184,001**

**Claims priority, application Great Britain, Sept. 28, 1970, 45,999/70**

**Int. Cl. B01k** *3/00*

**U.S. Cl. 204—268** **11 Claims**



A packed bed type of electrochemical cell comprises a large number of isolated conducting units separated by non-conducting means, the bed being arranged between two electrodes and electrolyte made to flow through the bed. In consequence the cell, in operation, comprises a multiplicity of small bipolar cells distributed throughout the bed.

The bed may be cylindrical or rectangular or of any desired form and may comprise a mixture of conducting and non-conducting particles. If the particles are of similar size or size distribution, then about twice the quantity (volume) of non-conducting particles as conducting particles are probably required.

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### 3,761,384

### ANODE ASSEMBLY FOR ELECTROLYTIC CELLS

**Walter W. Ruthel, Niagara Falls, Jon C. De Long, Grand Island, and Richard L. Evans, Niagara Falls, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.**

**Filed June 30, 1971, Ser. No. 158,238**

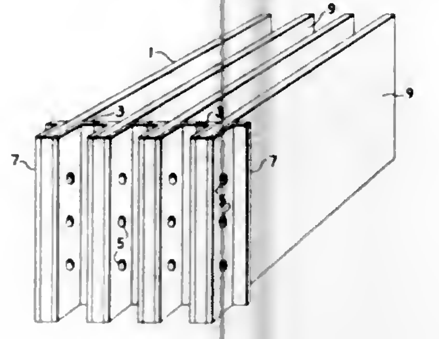
**Int. Cl. B01k** *3/04;* **B23p** *3/22*

**U.S. Cl. 204—288** **6 Claims**

An anode assembly suitable for use in a cell for the electrolysis of alkali metal halide solutions which comprises

(1) a plurality of substantially parallelly disposed plate-like electrodes, each of which have a pair of substantially parallel plate-like faces, said electrodes having an outer surface of a valve metal, coated with an electrically active material, each of said electrodes further having two sets of substantially oppositely disposed sides,

(2) a plurality of mounting members, one of said mounting members being secured to each face of each electrode at a point adjacent one side of one of said sets of sides and extending between the two oppositely disposed sides of said other set, said mounting members each being substantially perpendicular to the face of the electrode to which it is secured and extending therefrom a distance which is about one-half the desired distance between two adjacent electrodes in the final anode assembly, said mounting member on the face of one electrode being secured to the corresponding mounting member on the face of an adjacent electrode so as to form a unitary anode assembly and



(3) electrical connection means on said plate-like electrodes, adjacent the said mounting members.

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### 3,761,385

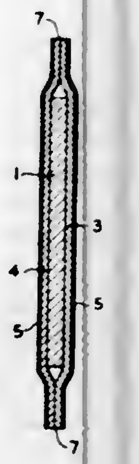
### ELECTRODE STRUCTURE

**Walter W. Ruthel, Niagara Falls, and Jon C. De Long, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.**

**Filed June 30, 1971, Ser. No. 158,414**

**Int. Cl. B01k** *3/04;* **B23p** *3/22*

**U.S. Cl. 204—290 F** **7 Claims**



An electrode, suitable for use in an anode assembly of a cell for the electrolysis of alkali metal halide solutions which comprises a multi-layered, plate-like structure, substantially rectangular in shape. This structure is formed of an inner plate of an electrically conductive material, such as aluminum, copper, or iron. This inner plate is encapsulated within two outer plates of a valve metal, such as titanium, tantalum, or niobium. The two outer plates are discontinuously bonded to the inner plate by effecting a fusion of that portion of the inner plate at the bond to the outer plate, with no substantial fusing of the outer plate. The exterior of these outer plates is covered with an electrically active coating of a noble metal, noble metal alloy, noble metal oxide, or mixtures thereof.

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### 3,761,386

### NOVEL MEMBRANE SPACER

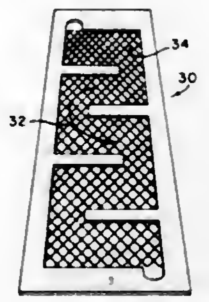
**Jack D. Smith, Boston, Mass. (% Process Research, Inc., 56 Rogers St., Cambridge, Mass. 02142)**

**Filed Aug. 2, 1971, Ser. No. 168,335**

**Int. Cl. B01d** *13/02*

**U.S. Cl. 204—301** **5 Claims**

A novel spacer suitable for use in electrodialysis processes and novel electrodialysis apparatus utilizing the spacer. The spacer comprises a tortuous flow path having a turbulence-promoting grid therein wherein said flow path is formed in a sheet of material and wherein said grid extends beyond said flow path into said sheet, thereby reinforcing the sheet.



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### 3,761,387

### PROCESS FOR PRODUCING AN ELECTRODE PITCH WHICH CAN BE EASILY GRAPHITIZED

**Otto Wegener, Mulheim-Speldorf, Heinrich Louis, Duisburg-Hamborn, and Rudolf Oberkobusch and Gerd Collin, Duisburg-Meiderich, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany**

**No Drawing. Filed Nov. 17, 1971, Ser. No. 199,774**

**Claims priority, application Germany, Nov. 30, 1970, P 20 58 751.3**

**Int. Cl. C10c** *3/02*

**U.S. Cl. 208—45** **7 Claims**

Dissolving a coal tar pitch in an aromatic rich oil fraction containing naphthalene and its homologs as its main ingredients and having a boiling range of 200 to 300° C., in a weight ratio pitch to oil fraction of 1:1 to 1:4 to produce a suspension; separating the solid content from the suspension; distilling off said oil fraction from the filtrate at such a sump temperature and with such time of stay for the pitch forming the sump product of the distillation column that the content of $\beta$-resins is increased without forming of additional $\alpha$-resins.

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### 3,761,388

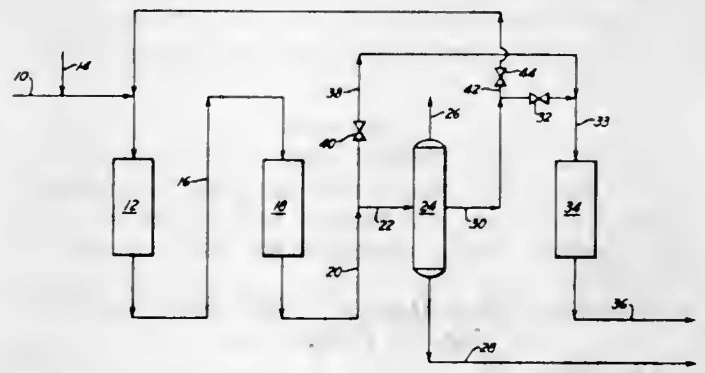
### LUBE OIL HYDROTREATING PROCESS

**Millard C. Bryson, Conway, Harry C. Stauffer, Cheswick, and Thomas M. Torkos, McKeesport, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

**Filed Oct. 20, 1971, Ser. No. 190,960**

**Int. Cl. C10g** *13/00*

**U.S. Cl. 208—59** **5 Claims**



A process for producing lubricating oils with an improved yield and viscosity-viscosity index distribution from a wide boiling range crude lubricating oil by subjecting the crude lubricating oil to a hydrotreatment in a series of reaction zones. A portion of the effluent from the earlier zones in the series is removed for the recovery of heavier lubricating oil stock therefrom while the balance of the effluent is passed to the remaining reaction zones in the series for the production of lighter lubricating oil stocks.

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### 3,761,389

### PROCESS OF CONVERTING ALIPHATICS TO AROMATICS

**Louis Deane Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation**

**No Drawing. Filed Aug. 28, 1972, Ser. No. 284,020**

**Int. Cl. C10g** *35/06*

**U.S. Cl. 208—64** **10 Claims**

Improvements in the known process for converting $C_2$ to 400° F. aliphatic streams by contacting such stream with a ZSM-5 type of catalyst at elevated temperatures and under relatively severe reaction conditions sufficient to convert at least 70% of the feed to a product with an aromatics yield of at least 20 grams per 100 grams of aromatizable feed; which improvement envisions carrying out the aromatization reaction in two stages in order to increase the proportion of alkyl substituted benzenes at the expense of benzene itself thereby increasing the weight yield of high octane products.

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### 3,761,390

### CONTINUOUS REFORMING-REGENERATION PROCESS

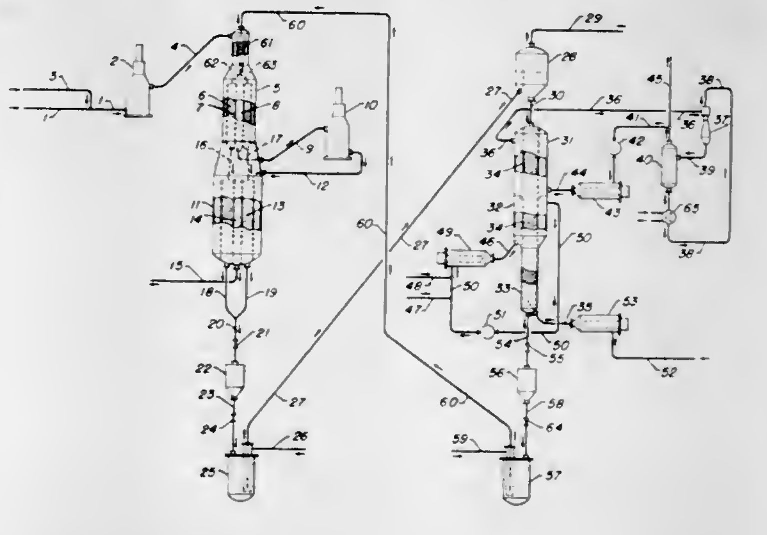
**Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of application Ser. No. 860,905, Sept. 25, 1969, now Patent No. 3,647,680. This application Oct. 19, 1971, Ser. No. 190,500**

**The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed**

**Int. Cl. C10g** *39/00*

**U.S. Cl. 208—65** **19 Claims**

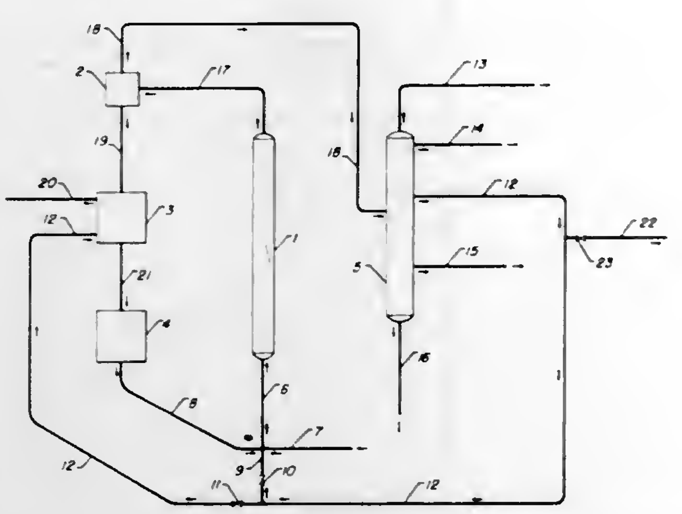


A method of operating a continuous reforming-regeneration process comprising one or more reforming reactors and employing a platinum catalyst wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without the removal of any reactor from the process stream.

**3,761,391**

### PROCESS FOR THE PRODUCTION OF GASOLINE AND LOW MOLECULAR WEIGHT HYDROCARBONS

**Algie J. Conner, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**Filed July 26, 1971, Ser. No. 166,048**
**Int. Cl. C10g** *11/18, 37/06*
**U.S. Cl. 208—76 3 Claims**



A process for the production of gasoline and low molecular weight hydrocarbons from a gas oil feed stock which process comprises a riser type cracking step performed on a gas oil feed and the cracking of recycle gasoline materials which may take place in either a riser type reaction zone or a fluidized dense bed reaction zone. The recycle gasoline is cracked by contacting a partially deactivated cracking catalyst which has previously contacted fresh oil feed. The gas oil is cracked by contacting a freshly regenerated cracking catalyst. The process of recycling gasoline allows a higher production of olefinic $C_3$ and $C_4$ hydrocarbons which can be converted to high octane components and the increased production of $C_3$ and $C_4$ saturates which may be valuable in the production of LPG fuel.

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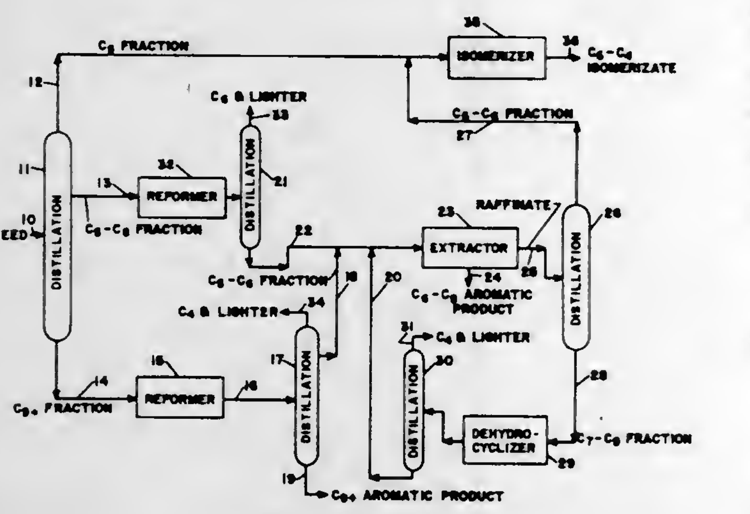
**3,761,392**

### UPGRADING WIDE RANGE GASOLINE STOCKS

**André W. Pollock, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**
**Filed May 8, 1972, Ser. No. 251,020**
**Int. Cl. C10g** *39/00*
**U.S. Cl. 208—93 3 Claims**



A process for upgrading wide range gasoline stocks is disclosed wherein the feed is separated into $C_5$, $C_6$–$C_8$ and $C_9$+ fractions, the $C_6$–$C_8$ and $C_9$+ fractions are separately reformed, reformate from the $C_9$+ fraction is distilled to remove $C_5$–$C_8$ material and yield a heavy aromatic product of high antiknock value, said $C_5$–$C_8$ material is combined with reformate from said $C_6$–$C_8$ fraction and with aromatic dehydrocyclizate from a subsequent step, the resulting mixture is extracted with an aromatic-selective solvent to yield a raffinate and $C_6$–$C_8$ aromatic product of high purity and antiknock value, the raffinate is distilled to obtain a $C_5$–$C_8$ paraffinic fraction and a heavy paraffinic fraction, the latter is catalytically dehydrocyclized to yield said aromatic dehydrocyclizate, the $C_5$–$C_8$ paraffinic fraction is combined with said $C_5$ fraction and the mixture is catalytically isomerized.

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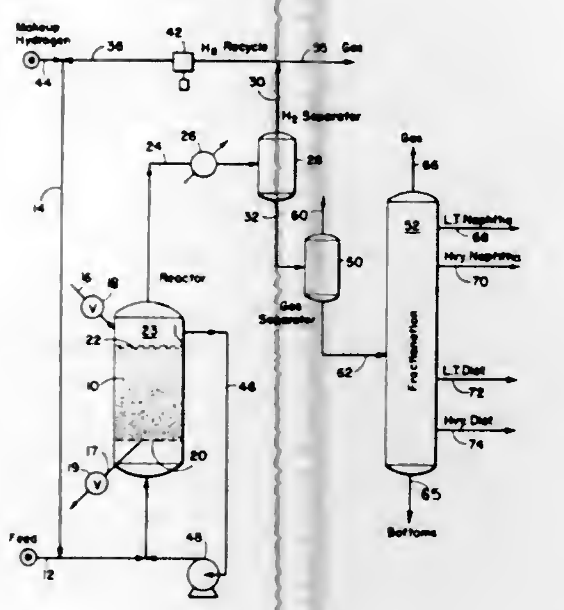
**3,761,393**

### HIGH CONVERSION LEVEL HYDROGENATION

**Ronald H. Wolk, Trenton, and Michael C. Chervenak, Pennington, N.J., and Seymour B. Alpert, Los Altos, Calif., assignors to Hydrocarbon Research, Inc., New York, N.Y.**
**Filed Mar. 17, 1972, Ser. No. 235,750**
**Int. Cl. B01j** *11/82;* **C10g** *13/02*
**U.S. Cl. 208—108 3 Claims**



Hydrodesulfurization catalysts which are normally manufactured for use in the hydroconversion of residual oils to lighter boiling products consist of mixtures of relatively porous and relatively nonporous catalyst particles as a function of the manufacturing procedure. In the ebullated process, for high conversion level operations, there is a critical limit to the amount of nonporous catalyst particles that can exist in a mixture before the defluidization of the catalyst system occurs. In using microspheroidal or extrudate catalyst, the amount of nonporous catalyst contained in the catalyst bed to the unit is limited to about 10% before defluidization of the catalyst system sets in when operating at conversion levels exceeding 60%.

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**3,761,394**

### CATALYTIC CRACKING OF NAPHTHA

**David L. Reynolds, Nederland, Douglas J. Youngblood, Groves, and Levi C. Parker and James H. Colvert, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Filed Dec. 31, 1969, Ser. No. 889,714**
**Int. Cl. C10g** *11/04*
**U.S. Cl. 208—120 3 Claims**

Low octane naphthas are catalytically cracked with a zeolitic catalytic cracking catalyst containing zeolite X or zeolite Y yielding products boiling below the initial boiling point of the naphtha and a naphtha having an increased octane rating.

**3,761,395**

### JET FUEL AND MOTOR FUEL PRODUCTION BY HYDROFINING AND TWO-STAGE HYDROCRACKING

**Edward T. Child, Fishkill, Donald A. Messing and Robert M. Suggitt, Wappingers Falls, and Thomas M. Liden, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Continuation of abandoned application Ser. No. 739,140, June 24, 1968. This application Nov. 13, 1970, Ser. No. 89,517**
**Int. Cl. C10g** *23/02*
**U.S. Cl. 208—89 7 Claims**

High quality jet and motor fuels are prepared by hydrotreating a hydrocarbon oil charge stock, passing the effluent from the hydrotreating zone into contact with a hydrocracking catalyst comprising a Group VIII metal supported on a modified zeolite and at least one amorphous inorganic oxide, recovering a motor and a jet fuel fraction and contacting that portion of the product boiling above the jet fuel range with a nickel hydrocracking catalyst.

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**3,761,396**

### HYDROCARBON CONVERSION PROCESSES USING SUPERSILICEOUS ZEOLITES AS CATALYSTS

**Paul E. Pickert, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**
**No Drawing. Original application Dec. 17, 1969, Ser. No. 885,981, now Patent No. 3,640,681. Divided and this application Aug. 20, 1971, Ser. No. 173,651**
**Int. Cl. C01b** *33/28;* **C10g** *13/02*
**U.S. Cl. 208—111 3 Claims**

Hydrocarbon conversion processes are carried out using catalyst prepared by extracting framework aluminum from crystalline zeolitic molecular sieves, using acetylacetone as the extracting agent. Prior to contact with the acetylacetone, the zeolite must be rendered substantially cation deficient and be at least partially dehydroxylated. Other metal values can be substituted for the framework aluminum by contacting the zeolite either before or after acetylacetone extraction with a metal acetylacetonate.

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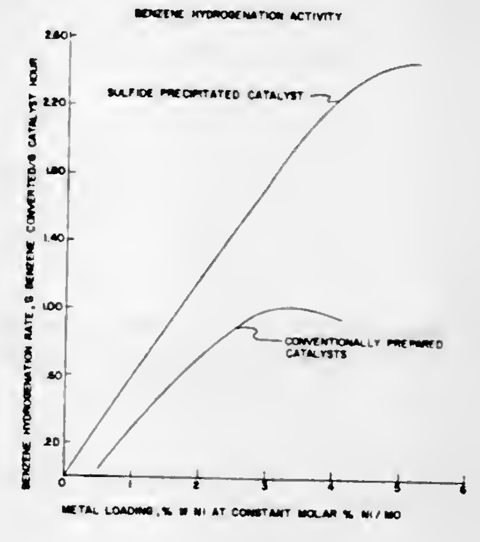
**3,761,397**

### SULFIDE PRECIPITATED CATALYSTS

**Anthony R. Gatti, Pasadena, Tex., assignor to Shell Oil Company, New York, N.Y.**
**Original application July 6, 1970, Ser. No. 52,323, now Patent No. 3,686,137. Divided and this application Apr. 5, 1972, Ser. No. 241,172**
**Int. Cl. C10g** *23/02*
**U.S. Cl. 208—143 9 Claims**



A supported metal sulfide catalyst prepared by impregnating a porous solid catalyst support with an aqueous solution of a salt of a hydrogenation metal component selected from the group consisting of molybdenum, tungsten, iron group metals, and mixtures thereof, precipitating the respective metal sulfides and subsequently drying in an inert atmosphere possesses improved hydrogenation, denitrification and desulfurization activity.

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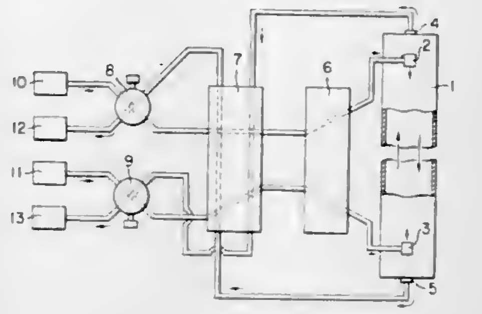
**3,761,398**

### METHOD OF TREATING SULFUR-CONTAINING MINERAL OILS TO REDUCE THEIR SULFUR CONTENT

**Eiji Munekata, Tokyo, and Eisuke Munekata, Toyonaka, Japan; said Eisuke Munekata assignor to said Eiji Munekata**
**Filed Jan. 26, 1971, Ser. No. 109,892**
**Claims priority, application Japan, Feb. 16, 1970, 45/12,664; May 28, 1970, 45/45,179**
**Int. Cl. C10g** *17/08, 29/08*
**U.S. Cl. 208—208 5 Claims**



A method of treating sulfur-containing mineral oils to reduce their sulfur content is disclosed in which the oil is contacted with superheated water, for example, by counter-current extraction technique.

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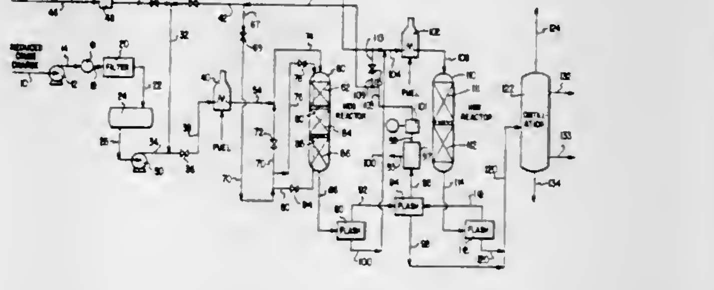
**3,761,399**

### TWO-ZONE HYDRODESULFURIZATION OF ASPHALTIC FUEL OIL

**Joel D. McKinney and John A. Paraskos, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**
**Filed Dec. 8, 1971, Ser. No. 206,076**
**Int. Cl. C10g** *23/02*
**U.S. Cl. 208—210 7 Claims**



Asphalt-containing oils are hydrodesulfurized to below a refractory, one percent sulfur level without excessively converting the asphaltenes and resins present by employing a two-stage hydrodesulfurization process with interstage hydrogen sulfide and light oil removal, wherein the sulfur-containing asphaltenes and resins present in the asphaltic oil are solubilized and thereby rendered more easily desulfurized by an aromatic-containing light oil that is both produced in situ in the hydrodesulfurization zones and is obtained from feed and product streams within the system.

**3,761,400**

### CATALYST REJUVENATION

**David S. Mitchell, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**No Drawing. Filed Aug. 5, 1970, Ser. No. 61,409**

**Int. Cl. C10g** *17/00*

**U.S. Cl. 208—216** **9 Claims**

In a process for hydrotreating heavy oils containing soluble organometallic compounds wherein the heavy oil is contacted, at an elevated temperature and pressure and in the presence of hydrogen, with valuable hydrotreating catalyst solid particles and the hydrotreating catalyst loses activity at least in part due to metals fouling of the catalyst, the improvement which comprises rejuvenating the metals fouled catalyst by attriting away at least a portion of the outside skin of the catalyst particles so as to extend the useful life of the catalyst particles for hydrotreating.

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**3,761,401**

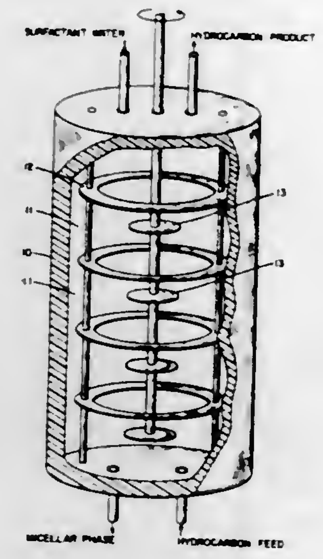
### HYDROCARBON EXTRACTION PROCESS USING MICELLAR SYSTEMS

**John R. Coleman, Jr., Burghausen, Germany, and Mark A. Plummer, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio**

**Filed Apr. 26, 1971, Ser. No. 137,383**

**Int. Cl. C07c** *7/10;* **C10g** *17/04*

**U.S. Cl. 208—311** **15 Claims**



An extraction process for separating hydrocarbons according to type (e.g., aromatics from paraffins) by (a) intimately contacting a mixture of the hydrocarbon types with water plus a surfactant to form a micellar system, (b) allowing a separate organic phase to form above or below said micellar system, said organic phase being enriched in one of the types of hydrocarbons, and (c) separating the organic phase from the micellar system. The process may be repeated for further enrichment. Various electrolytes and cosurfactants may additionally be used in forming the micellar system, which hydrocarbon is enriched in the organic phase, can be controlled by varying the equivalent weight of the surfactant employed.

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**3,761,402**

### PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A MIXED HYDROCARBON FEEDSTOCK

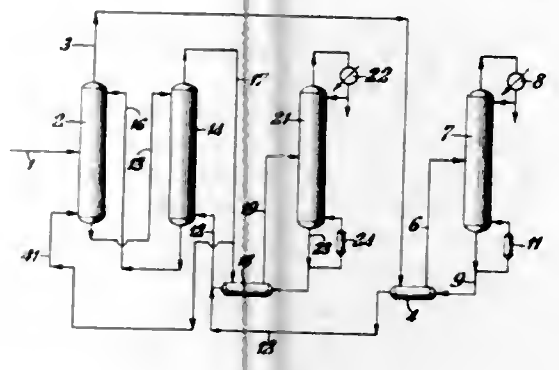
**Gilbert R. Atwood, Briarcliff Manor, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed May 26, 1971, Ser. No. 146,952**

**Int. Cl. C07c** *7/10;* **C10g** *21/02*

**U.S. Cl. 208—314** **3 Claims**

Aromatic hydrocarbons are separated from a mixture containing the same together with nonaromatic hydrocarbons. The mixture is first contacted with a solvent which selectively dissolves the aromatic fraction and the extract from this step which contains the aromatic hydrocarbon dissolved in the solvent is subjected to a secondary extraction step using a solvent which has a higher boiling point than and is non-azeotropic with the original feed mixtures. Thereafter the aromatic hydrocarbons are recovered by a series of distillation steps. A portion of the extract recovered from the secondary extraction step is branched off before being distilled and is recycled to the first solvent extraction step as a reflux stream.



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**3,761,403**

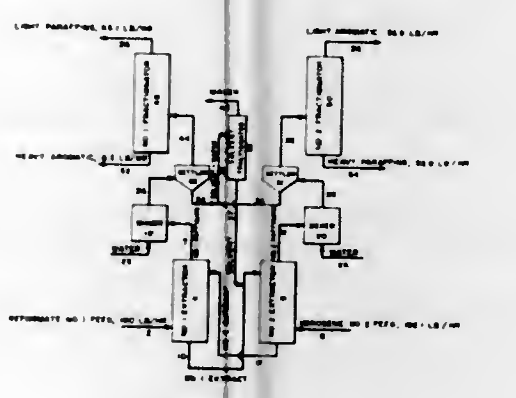
### SIMULTANEOUS EXTRACTION OF MIXTURES OF SUBSTITUTED AND UNSUBSTITUTED AROMATICS

**Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio**

**Filed Jan. 24, 1972, Ser. No. 220,075**

**Int. Cl. C10g** *21/04*

**U.S. Cl. 208—317** **11 Claims**



Mixtures of sulfolane ("tetramethylene sulfone"), tetrahydrofurfuryl alcohol, and water have been discovered to be superior solvents for simultaneous extraction of feed streams containing both substituted and unsubstituted aromatics.

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**3,761,404**

### LUBRICANT COMPOSITIONS

**John R. B. Calow, 3 Redstone Hill, Helsby, England; Norman J. H. Small, Meliden, The Park, Christleton, England; and Brian Bull, 67 Peel Crescent, Ashton, England**

**No Drawing. Filed Sept. 9, 1971, Ser. No. 179,153**

**Claims priority, application Great Britain, Sept. 14, 1970, 43,751/70**

**Int. Cl. C10m** *5/12, 7/16*

**U.S. Cl. 252—39** **11 Claims**

A lubricant composition especially useful in diesel engines containing a major amount of a lubricating oil, an amount of a salt of a divalent metal and an alkylsalicylic acid, as dispersant, effective to disperse deposit forming materials in the oil medium, and a viscosity improving amount of a hydrogenated random copolymer of butadiene and styrene containing substantially only aromatic unsaturation.

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**3,761,405**

### ANTI-OXIDANTS

**Graham James Jervis, Abingdon, and Robert Robson, Wantage, England, assignors to Esso Research and Engineering Company**

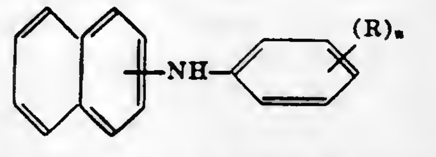
**No Drawing. Filed Mar. 24, 1972, Ser. No. 237,945**

**Claims priority, application Great Britain, Mar. 31, 1971, 8,272/71**

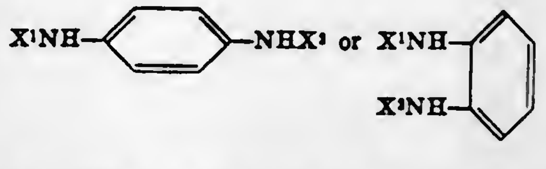
**Int. Cl. C10m** *3/20, 3/26*

**U.S. Cl. 252—51.5 R** **13 Claims**

A non-corrosive antioxidant mixture suitable for addition to an aircraft lubricating oil comprising (A) two to ten parts by weight of a compound of the formula



where *n* is an integer, and R is an alkyl group containing at least three carbon atoms (e.g. octyl phenyl-$\beta$-naphthylamine), and (B) one part by weight of a phenylene diamine of the formula



where $X^1$ and $X^2$ are a hydrocarbyl group or the group $R^1COOR^4$— where $R^1$ and $R_4$ are hydrocarbyl groups (e.g. N-phenyl, $N^1$-cyclohexyl-p-phenylene diamine).

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**3,761,406**

### FLOCCULATION AND DEMULSIFICATION USING CATIONIC POLYVINYL ALCOHOLS

**Andrew G. Tsuk, Laurel, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**No Drawing. Original application July 23, 1969, Ser. No. 844,196, now abandoned. Divided and this application Jan. 8, 1971, Ser. No. 105,133**

**Int. Cl. B01d** *21/01*

**U.S. Cl. 210—52** **9 Claims**

Cationic polyvinyl alcohol polymers of the class N,N-dialkylethylamino polyvinyl alcohol are useful fluocculants for clays and demulsifiers for oil-water emulsions. Cellulose may also be flocculated by the addition of these polymers along with a borate and adjusting the pH to greater than 7.

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**3,761,407**

### QUATERNIZED N-AMINOALKYL ACRYLAMIDE POLYMERS IN FLOCCULATION OF SUSPENDED SOLIDS FROM WATER

**Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio**

**No Drawing. Continuation-in-part of application Ser. No. 203,853, Dec. 1, 1971, which is a division of application Ser. No. 832,412, June 11, 1969, now Patent No. 3,666,810. This application Sept. 27, 1972, Ser. No. 292,697**

**Int. Cl. B01d** *21/01*

**U.S. Cl. 210—54** **7 Claims**

N-3-aminoalkyl propionamides with an ether substituent on the beta carbon atom are prepared by the reaction of analogous N-3-oxohydrocarbon-substituted amides with an amine in the presence of a reducing agent, preferably hydrogen and a hydrogenation catalyst. The resulting compounds can be converted to acrylamides by pyrolysis in the presence of a strong base. The latter compounds may also be prepared by the reaction of a $\beta,\gamma$-unsaturated amine with an acrylonitrile in the presence of sulfuric acid. They are useful for improving dyeability of fiber-forming polymers and may be polymerized to form compositions which are useful in paper manufacture and (in their quaternized form) are excellent flocculants.

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**3,761,408**

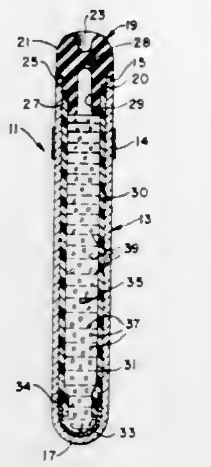
### METHOD AND APPARATUS FOR SEPARATING BLOOD CONSTITUENT COMPONENTS

**Jae Yoon Lee, 504 Mahoning Court, Columbus, Ohio 43210**

**Continuation-in-part of abandoned application Ser. No. 127,312, Mar. 23, 1971. This application May 8, 1972, Ser. No. 250,891**

**Int. Cl. B01d** *27/04*

**U.S. Cl. 210—23** **8 Claims**



A method and apparatus for separating blood into constituent components for medical blood tests. An impervious container having an open mouth is fitted with a selectively removable closure covering the open mouth for sealing the container. The sealed container is preferably evacuated and includes a flexible membrane therewithin which is sealingly secured to the closure and forms a blood collection bag. The membrane has at least a portion thereof effective to permit the passage of blood plasma or serum and protein free filtrate having particles less than predetermined sizes into the container and traps the remaining blood constituent components within the flexible membrane during a centrifuging operation and upon removal of the closure including the flexible membrane.

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**3,761,409**

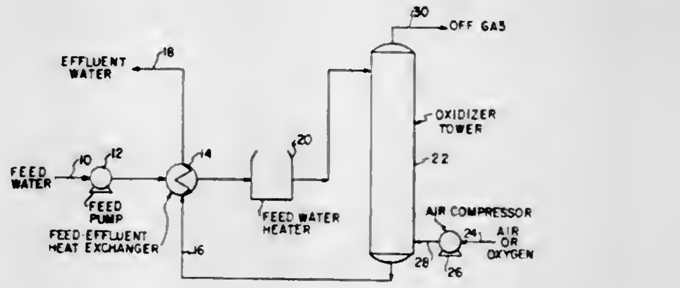
### CONTINUOUS PROCESS FOR THE AIR OXIDATION OF SOUR WATER

**Drew E. McCoy, Robert M. McEachern, and Roger M. Dille, Richmond, Va., assignors to Texaco Inc., New York, N.Y.**

**Filed Oct. 6, 1971, Ser. No. 186,893**

**Int. Cl. C02c** *5/04*

**U.S. Cl. 210—63** **9 Claims**



A continuous process for the liquid phase, non-catalytic, air oxidation of sour water in which the sulfur compounds in the water are converted to non-polluting, non-oxygen demanding compounds involves heating the water and oxidizing the heated water with countercurrent or co-current flow of the water and oxidizing medium. The process rapidly converts objectionable sulfides and intermediate sulfur compounds such as thiosulfates, tetrathionates, polythionates, sulfites and polysulfides to sulfate.

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### 3,761,410
### COMPOSITION AND PROCESS FOR INCREASING THE LUBRICITY OF WATER BASE DRILLING FLUIDS

**Thomas C. Mondshine and Kenneth E. Watson, Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.**
**Filed Mar. 22, 1971, Ser. No. 126,409**
**Int. Cl. C10m** *3/18, 3/32*
**U.S. Cl. 252—8.5 C** **12 Claims**

The present invention provides water base drilling fluids having enhanced lubricating properties under low load, non-extreme pressure conditions by incorporating therein a material selected from the group consisting of vegetable oils, animal fats, fatty acids, fatty acid esters, fatty amides, their sulfurized or sulfated reaction products, and mixtures thereof, and a water insoluble alcohol having from four to fifteen carbon atoms. Another aspect of the invention provides a novel lubricating composition and process for synergistically increasing the lubricity of water base drilling fluids and the like.

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### 3,761,411
### NON-AQUEOUS SOLUTIONS OF MAGNESIUM SALTS

**Charles R. Dickey, 480 W. Rowland Ave., Covina, Calif. 91722**
**Filed June 21, 1971, Ser. No. 154,856**
**Int. Cl. C10m** *1/32, 1/54*
**U.S. Cl. 252—42.7** **10 Claims**

Magnesium metal is dissolved in methanol and, simultaneously or immediately thereafter, the solution is carbonated to produce a stable, clear solution free of flocculent insoluble magnesium hydrates. The clear solution can be blended with oils containing surface active agents such as magnesium sulfonate, then stripped free of methanol, to give clear, basic solutions without filtering; suitable for lubricating oil additives.

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### 3,761,412
### POLYELECTROLYTE BUILDER AND DETERGENT COMPOSITIONS

**Charles J. Lancelot, Hightstown, N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.**
**No Drawing. Original application May 1, 1970, Ser. No. 33,914. Divided and this application Nov. 1, 1971, Ser. No. 194,760**
**Int. Cl. C11d** *1/08, 1/14*
**U.S. Cl. 252—550** **3 Claims**

A novel class of polyelectrolytes having the form of poly-$\beta$-ketoacids and their salts is described, as in the use of these polyelectrolytes as builders in detergent formulations.

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### 3,761,413
### XEROGRAPHIC TONER COMPOSITION

**Lauren L. Hulse, Saratoga, Calif., assignor to Memorex Corporation**
**No Drawing. Filed Nov. 1, 1971, Ser. No. 194,697**
**Int. Cl. G03g** *9/02*
**U.S. Cl. 252—62.1** **3 Claims**

A xerographic toner composition consisting essentially of finely divided resin particles produced by copolymerizing a mixture of methylmethacrylate, styrene and n-butylmethacrylate having a colorant intimately dispersed in the resin particles and a minor amount in the range about 0.2 to 1.0 percent by weight based on the weight of the resin particles of a polymer or copolymer of fluorocarbons containing two or three carbon atoms per molecule.

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### 3,761,414
### SULFURIZED CALCIUM ALKYLPHENOLATE LUBRICANTS

**Haakon Haugen, Beacon, and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.**
**No Drawing. Filed Sept. 15, 1971, Ser. No. 180,829**
**Int. Cl. C10m** *1/20*
**U.S. Cl. 252—42.7** **6 Claims**

A lubricating oil composition containing sulfurized normal calcium alkylphenolate detergent dispersant of improved anticorrosive properties and resistance to oxidation, said dispersant prepared by a three-step procedure comprising (1) reacting at a temperature between about 200 and 425° F. in the presence of a hydrocarbon lubricating oil an alkylphenol with a first addition of calcium alkoxyalkoxide utilizing between about 45 and 90 wt. percent of the stoichiometric amount required to convert the alkylphenol to calcium alkylphenolate, (2) contacting at a temperature between about 350 and 425° F. the resultant reaction mixture with sulfur utilizing a mole ratio of sulfur to initial alkylphenol of between about 0.5:1 and 8:1 while passing an inert gas through the reaction mixture at a rate of between about 0.1 and 10 s.c.f.h./gallon at between about 350 and 425° F. until hydrogen sulfide content of less than about 3 p.p.m. is obtained, (3) reacting the blown mixture with a second addition of calcium alkoxyalkoxide at a temperature of between about 350 and 425° F., said first and second addition totaling between about 100 and 120% of the stoichiometric amount of calcium alkoxyalkoxide to form said calcium alkylphenolate, said composition preferably containing a supplementary detergent dispersant comprising an ethylene oxide derivative of an inorganic phosphorus acid free, steam hydrolyzed, polybutene-$P_2S_5$ reaction product.

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### 3,761,415
### METHOD FOR PHOSPHATE-FREE, SYNTHETIC DETERGENT-BASED CLEANSING COMPOSITION FOR USE THEREIN

**Lawrence P. Gould, Syracuse, N.Y., assignor to Aspen Industries Inc., Tully, N.Y.**
**No Drawing. Filed Oct. 14, 1970, Ser. No. 80,772**
**Int. Cl. C11d** *9/12*
**U.S. Cl. 252—89** **5 Claims**

A method for phosphate-free, synthetic detergent-based cleansing in hard water in the presence of an alkalizing agent wherein the method comprises the addition of a suitable, water soluble, synthetic detergent and a water soluble alkalizing agent to relatively hard water containing significant quantities of at least calcium and magnesium ions wherein a water soluble source of citrate ions have been added to the water in such a form of character that citrate ions are released prior to the release of anion from the alkalizing agent in quantities sufficient to inhibit, to the extent desired, the formation of relatively water insoluble salts derived from the anions of the alkalizing agent.

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### 3,761,416
### COMPOSITE PARTICLES AND PROCESS FOR PREPARING SAME

**Norman E. Stahlheber, Columbia, Ill., assignor to Monsanto Company, St. Louis, Mo.**
**No Drawing. Continuation-in-part of abandoned applications Ser. No. 888,841 and 888,842, both Dec. 29, 1969. This application Apr. 19, 1971, Ser. No. 135,455**
**Int. Cl. C11d** *7/56*
**U.S. Cl. 252—99** **8 Claims**

Granular composite particles comprising a buffered chlorocyanurate and partially hydrated sodium tripolyphosphate are resistant to chemical and physical degradation and are particularly useful as ingredients of detergent formulations and are readily prepared by spraying an aqueous slurry of a chlorocyanurate buffered to a pH of 5 to 8 onto a fluidized bed of hydrateable sodium tripolyphosphate.

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### 3,761,417
### DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS

**John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**
**No Drawing. Original application Sept. 27, 1967, Ser. No. 671,117, now Patent No. 3,580,853. Divided and this application Mar. 11, 1971, Ser. No. 123,402**
**Int. Cl. C11d** *1/62, 3/48*
**U.S. Cl. 252—106** **5 Claims**

Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and certain cationic polymers which serve to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

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### 3,761,418
### DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS

**John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**
**No Drawing. Original application Sept. 27, 1967, Ser. No. 671,117, now Patent No. 3,580,853. Divided and this application Mar. 11, 1971, Ser. No. 123,457**
**Int. Cl. C11d** *1/62, 3/48*
**U.S. Cl. 252—106** **5 Claims**

Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and certain cationic polymers which serves to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

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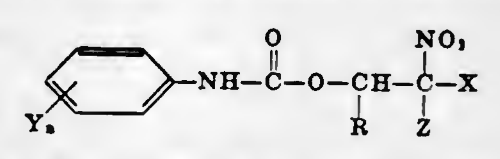
### 3,761,419
### ANTIMICROBIC WASHING AGENTS, WASHING ADJUVANTS AND CLEANING AGENTS

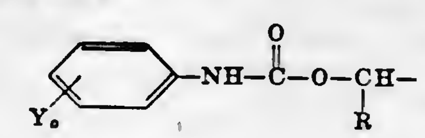
**Heinz Gunter Nosler, Monheim, Rhineland, Richard Wessendorf, Essen-Heisingen, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany**
**No Drawing. Continuation-in-part of application Ser. No. 774,183, Nov. 7, 1968, now Patent No. 3,668,135, which is a continuation-in-part of application Ser. No. 747,453, July 25, 1968, now Patent No. 3,592,928. This application Mar. 20, 1972, Ser. No. 236,338**
**Claims priority, application Germany, June 4, 1968, P 17 67 684.5; July 25, 1967, P 16 68 195.1**
**Int. Cl. C11d** *3/48*
**U.S. Cl. 252—107** **15 Claims**

Antimicrobic washing agents and adjuvants and cleaning compositions comprising (a) 0.2 to 30% by weight of a nitroalkyl-N-phenylcarbamate of the formula



(I)

wherein Y is selected from the group consisting of fluorine, chlorine, bromine, trifluoromethyl and nitro, *n* is a whole number from 0 to 2, R is selected from the group consisting of hydrogen and methyl, X is selected from the group consisting of hydrogen and bromine and Z is the group of the formula



wherein Y, R and *n* have the above definitions (b) at least 5% by weight of an alkaline builder having calcium carbonate binding capacity in the Hampshire test of not more than 230 mg. per gm. of builder and (c) and optionally other common components of washing agents, washing adjuvants or cleaning compositions.

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### 3,761,420
### STABILIZED LIQUID ENZYME STAIN REMOVER

**Rodger E. Bogardus, Winchester, Mass., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.**
**No Drawing. Filed June 8, 1970, Ser. No. 44,630**
**Int. Cl. C09d** *9/04*
**U.S. Cl. 252—171** **3 Claims**

A stabilized enzyme composition dispersed in an aqueous solution which is particularly suitable for removing stains from fabrics, especially from washable items such as cottons, permanent press synthetic-cotton blends and similar washable fabrics.

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### 3,761,421
### DIISOPHORONE DERIVATIVES AND COMPOSITIONS CONTAINING SAME

**Carl Bordenco, Ponte Verda Beach, Fla., assignor to SCM Corporation, Cleveland, Ohio**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 661,493, July 26, 1967. This application July 23, 1970, Ser. No. 57,752**
**Int. Cl. F21v** *9/06;* **G02b** *5/24*
**U.S. Cl. 252—300** **8 Claims**

Diisophorone derivatives and ultraviolet radiation screening compositions containing the diisophorone derivatives have been prepared and are described.

Stable compositions comprising insecticidally active cyclopropane carboxylic acid compounds such as pyrethrinoids which are degradable by ultraviolet radiation and diisophorone derivatives which are resistant to decomposition by ultraviolet radiation are described.

The ultraviolet radiation screening properties and the resistance to degradation by ultraviolet light of the diisophorone derivative are shown. The stabilization of cyclopropane carboxylic acid compounds and the synergizing effects of diisophorone hydrazone on the insecticidal activity of pyrethrinoids are demonstrated.

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### 3,761,422
### PHOTOCHROMIC PLASTISOL COMPOSITIONS, METHOD OF PRODUCING PHOTOCHROMIC POLYVINYL CHLORIDE FILMS THEREFROM AND THE RESULTANT FILMS

**Philip Silver, Brooklyn, N.Y., assignor to Nuclear Research Associates, Inc., New Hyde Park, N.Y.**
**No Drawing. Filed Jan. 31, 1972, Ser. No. 222,364**
**Int. Cl. G02b** *5/20, 9/02*
**U.S. Cl. 252—300** **21 Claims**

A photochromic plastisol composition consisting essentially of: 35% to 80% by weight of an essentially pure polyvinyl chloride resin containing less than 2.5% by weight of methanol extractables and less than 1% by weight of volatile constituents; 32 to 60% by weight of at least one of dioctyl phthalate and tricresyl phosphate; 0.7 to 1.6% by weight of tin maleate; and 0.02 to 0.2% by weight of at least one of mercuric, zinc or lead bis-diphenylthiocarbazone. These compositions may be formed into films.

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### 3,761,423
### PRODUCTION OF WET PROCESS PHOSPHORIC ACID

**Denis Hey, Mississauga, Ontario, and Alfred Johannes Dieterman, Clarkson, Ontario, Canada, assignors to Emery Industries (Canada), Ltd., Toronto, Ontario, Canada**
**No Drawing. Original application Aug. 29, 1969, Ser. No. 854,317, now Patent No. 3,653,827. Divided and this application Sept. 10, 1971, Ser. No. 179,577**
**Int. Cl. B01d** *17/00*
**U.S. Cl. 252—358** **3 Claims**

The yield of phosphoric acid in the "wet process" synthesis of said acid is improved by adding to the phosphate rock-sulfuric acid reaction medium a small but effective amount of a "processing aid," which also serves as a defoaming agent, comprised of a mixture of (1) an amide of a lower alkanol amine and fatty acid and (2) fatty acid, in specifically defined proportions as determined by the specific components of the composition.

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### 3,761,424

### CATALYSTS FOR THE OXIDATION OF ALKENES

**Edgar Koberstein, Alzenau, Theodor Lussling, Grossauheim, Ewald Noll, Grosskrotzenburg, Helmut Suchsland, Grossauheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany**
**No Drawing. Continuation-in-part of application Ser. No. 852,932, Aug. 25, 1969, now Patent No. 3,639,269. This application Oct. 8, 1971, Ser. No. 187,875**
**Claims priority, application Germany, Aug. 31, 1968, P 17 92 424.2; Oct. 9, 1970, P 20 49 583.4**
**The portion of the term of the patent subsequent to Feb. 1, 1989, has been disclaimed**
**Int. Cl. B01j** *11/82*
**U.S. Cl. 252—437** **11 Claims**

A catalyst for the oxidation of alkenes to unsaturated aldehydes and carboxylic acids containing Ni, Co, Fe, Bi, P, Mo and O is improved by adding tantalum oxide or samarium oxide and employing as a carrier a mixture of lattice layer silicate and highly dispersed silica.

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### 3,761,425

### PROCESS FOR PREPARING SULFIDED PLATINUM ON CARBON CATALYSTS

**Konrad Baessler, Frankfurt am Main, and Kurt Mayer, Burgkirchen an der Alz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**
**No Drawing. Filed Feb. 19, 1971, Ser. No. 117,078**
**Int. Cl. B01j** *11/74*
**U.S. Cl. 252—439** **12 Claims**

Sulfided platinum on carbon catalyst being useful in the selective hydrogenation of halonitroaromates are obtained by saturating a particulate platinum on carbon catalyst with hydrogen in an acidic aqueous medium and treating it with defined amounts of a sulfidizing agent. Said catalysts maintain their activity and selectivity for numerous hydrogenations.

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### 3,761,426

### BIMETALLIC CATALYTIC COMPOSITE

**Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 835,218, June 20, 1969. This application June 16, 1971, Ser. No. 153,870**
**Int. Cl. B01j** *11/74*
**U.S. Cl. 252—439** **10 Claims**

A catalytic composite comprising a combination of a platinum component, a lead component and a halogen component with a porous carrier material is disclosed. The platinum and halogen components are present in the composite in amounts, calculated on an elemental basis, of about 0.01 to about 2 wt. percent platinum and about 0.1 to about 3.5 wt. percent halogen, and the lead component is present in an atomic ratio to the platinum component of about 0.05:1 to about 0.9:1. Moreover, both the platinum component and the lead component are uniformly dispersed throughout the porous carrier material, and substantially all of the platinum is present as the elemental metal and substantially all of the lead is present in an oxidation state above that of the elemental metal. The principal utility of the subject composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specific example of the catalyst disclosed is a combination of a platinum metal component, a lead oxide component and a halogen component with an alumina carrier material wherein the platinum and lead components are uniformly dispersed throughout the carrier material and wherein the composite contains 0.01 to 2 wt. percent platinum, 0.1 to 3.5 wt. percent halogen, and an atomic ratio of lead to platinum of 0.05:1 to 0.9:1.

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### 3,761,427

### OLEFIN DISPROPORTIONATION CATALYST AND PROCESS FOR USING SAME

**Robert B. Regier, Bartlesville, Okla., assignor to Phillips Petroleum Company**
**No Drawing. Filed Mar. 29, 1971, Ser. No. 129,201**
**Int. Cl. B01j** *11/78*
**U.S. Cl. 252—441** **6 Claims**

An olefin disproportionation catalyst is provided comprising a minor amount of tungsten oxide or molybdenum oxide, about 0.01 to 1 weight percent of fluorine, the remainder of the catalyst substantially being silica. The process of using this catalyst to disproportionate unsaturated materials is also claimed.

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### 3,761,428

### CATALYSTS FOR CONVERTING HYDROCARBONS

**André Sugier, Rueil Malmaison, and Jean Miquel, Paris, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France**
**No Drawing. Filed Feb. 16, 1971, Ser. No. 115,852**
**Claims priority, application France, Feb. 23, 1970, 7006454**
**Int. Cl. B01j** *11/12*
**U.S. Cl. 252—466 PT** **11 Claims**

A catalyst which comprises a carrier, from 0.005 to 1% of platinum and from 0.005 to 1% of iridium with respect to the carrier with a substantially homogeneous distribution of platinum and iridium. This catalyst may be used for conversion, for example by reforming, of hydrocarbons. Its process of manufacture comprises the use of an aqueous solution of both platinum and iridium compounds and an aminoalcohol at a pH not in excess of 4.

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### 3,761,429

### CLEANING AGENT FOR REMOVAL OF STICKY MATERIAL AND METHOD OF MAKING SAME

**Toshiyuki Yamano, 880 Kugahara, Ota-ku, Tokyo, and Yoshio Ito, 18–24 Saiwai-cho, Chigasaki-shi, Kanagawa-Prefecture, Japan**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 716,331, Mar. 27, 1968. This application Mar. 31, 1971, Ser. No. 130,033**
**Int. Cl. C11d** *1/62, 3/44*
**U.S. Cl. 252—547** **4 Claims**

A process for manufacturing a cleaning agent in which a non-ionic surfactant represented by an ester of propylene glycol and a fatty acid, polyoxyethylene nonyl phenyl ether and a cationic surfactant such as lauryl trimethyl-ammonium chloride are added to water and an organic solvent such as propylene glycol, hexylene glycol and ethyl acetate.

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### ERRATA

For Classes 252—39 and 252—51.5 R see:
Patents Nos. 3,761,404 and 3,761,405

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### 3,761,430

### COMPOSITION COMPRISING A POLYIMIDE REACTION PRODUCT AND FILLED COMPOSITION MADE THEREFROM

**John M. Witzel, Ballston Spa, N.Y., assignor to General Electric Company**
**No Drawing. Filed Oct. 7, 1971, Ser. No. 187,535**
**Int. Cl. C08g** *20/00*
**U.S. Cl. 260—2.5 B** **6 Claims**

Polyimides prepared from the reaction of unsaturated bisimides and polyamines are provided which have good flow characteristics, are readily workable and are characterized by good electrical and physical properties including good compressive strength, resistance to humidity and elevated temperatures.

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### 3,761,431

### BAGASSE REINFORCED VINYL ROOFING COMPOSITION

**Roland Botz, Mercedita, Puerto Rico, assignor to Plasti-Fiber Formulations, Inc., Mercedita, Puerto Rico**
**No Drawing. Filed Apr. 16, 1971, Ser. No. 134,907**
**Int. Cl. C08g** *45/18*
**U.S. Cl. 260—17.4 CL** **7 Claims**

A roofing composition based on a vinyl acetate polymer, a fibrous bagasse filler and a pigment.

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### 3,761,432

### METHOD FOR THE PRODUCTION OF ALUMINUM COATINGS

**Peter Fritsche, Hiltrup, Germany, assignor to Glasurit-Werke M. Winkelmann GmbH, Hamburg-Wandsbek, Germany**
**No Drawing. Filed June 3, 1971, Ser. No. 149,751**
**Claims priority, application Germany, June 4, 1970, P 20 27 427.5**
**Int. Cl. C08g** *5/20*
**U.S. Cl. 260—19** **7 Claims**

Improved film-forming organic resin paint aqueous binder replenishment concentrated composition adapted for dispersing in an aqueous electrocoating bath containing suspended aluminum powder and sufficient additional water-soluble amino compound to impart anionic polyelectrolyte behavior in said bath to resin in said binder concentrate composition, said binder concentrate composition comprising:

(I) about 10–50 percent weight of a non-heat reactive phenol-aldehyde resin; and
(II) about 50–90 percent by weight of a copolymer, said copolymer comprising:
  (A) about 50–85 percent by weight of an ester of methacrylic acid or acrylic acid with an alcohol having 1–10 carbon atoms;
  (B) about 5–20 percent by weight of drying oils or drying oil fatty acids containing olefinically unsaturated fatty acids;
  (C) about 5–15 percent by weight of an $\alpha,\beta$-olefinically unsaturated carboxylic acid having 3–5 carbon atoms;
  (D) about 3–20 percent by weight of methacrylamide, acrylamide, methylol methacrylamide, methylol acrylamide, an ether of methylol methacrylamide with an alcohol having 1–8 carbon atoms, an ether of methylol acrylamide having 1–8 carbon atoms or a mixture thereof; and optionally
  (E) up to 20 percent by weight of further copolymerizable olefinically unsaturated compoumds.

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### 3,761,433

### COMPOSITION AND METHOD OF COATING OILY SURFACES WITH WATER REDUCIBLE PAINT

**Gerald Stanfield High, Detroit, Mich., assignor to The Sherwin-Williams Company, Cleveland, Ohio**
**No Drawing. Filed Sept. 1, 1971, Ser. No. 177,137**
**Int. Cl. C09d** *3/48, 5/02*
**U.S. Cl. 260—22 A** **21 Claims**

A method of coating oily surfaces with water reducible paint and a new coating composition which includes a water reducible resin vehicle and a special additive material included in the composition for effecting an adherent coating on said oily surfaces.

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### 3,761,434

### PETROLEUM HYDROCARBON COMPOSITIONS

**Paul M. Kerschner, Trenton, and Alphonso W. Marcellis, Boonton, N.J., assignors to Cities Service Oil Company, Cranbury, N.J.**
**No Drawing. Filed Apr. 30, 1971, Ser. No. 139,142**
**Int. Cl. C08g** *17/10, 22/10*
**U.S. Cl. 260—22 R** **7 Claims**

An additive having detergency and lubricity properties for incorporation in petroleum hydrocarbon and petroleum hydrocarbon compositions containing said additive. The additive is the condensation product of a polyether-polyester polyol containing from 2 to about 12 hydroxyl groups and a monocarboxylic acid wherein about 85–100% of the hydroxyl groups of the polyol are esterified by condensation with the monocarboxylic acid. The additive is generally incorporated in hydrocarbon fuels and hydrocarbon lubricating oils, but its greatest utility is in hydrocarbon lubricating oils. The preferred lubricating oil composition is a 2-cycle engine oil comprising a major proportion of a hydrocarbon lubricating oil and a minor proportion of the additive of this invention.

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### 3,761,435

### POLYMERS OF ACRYLIC ESTER AND VINYL HALIDE MONOMERS WITH ALKYD MONOMERS

**Richard H. Backderf, Richfield, George J. Antlfinger, Avon Lake, and Maynard C. Bodzash, Elyria, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.**
**No Drawing. Filed Oct. 28, 1971, Ser. No. 193,536**
**Int. Cl. C08c** *17/18;* **C08d** *13/18*
**U.S. Cl. 260—22 CB** **10 Claims**

Polymers of acrylic esters and vinyl halides containing alkyd monomers copolymerized therewith are useful as binders for paper and other nonwoven materials. The materials bound with such polymers exhibit increased wet tensile strength and increased heat stability to discoloration.

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### 3,761,436

### CATALYTIC CONVERSION OF AMINOALKYL LACTAMS TO DIAZABICYCLOALKENES

**Sei Hashimoto, Keizo Nakatani, Shoji Suzuki, Hiroshi Daigo, and Kiyohiko Sugiura, Kyoto, Japan, assignors to San-Abbott Limited, Kyoto, Japan**
**No Drawing. Filed May 7, 1971, Ser. No. 143,684**
**Int. Cl. C07d** *51/46*
**U.S. Cl. 260—251 A** **6 Claims**

Diazabicycloalkenes are prepared from N-(aminoalkyl)-lactams by dehydration in the presence of tin oxides or antimony oxides.

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### 3,761,437

### LASER ENERGY ABSORBING COMPOSITION CONTAINING A COPPER SALT

**Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 861,447, Sept. 26, 1969. This application July 13, 1971, Ser. No. 162,298**
**Int. Cl. C08f** *45/56*
**U.S. Cl. 260—29.1 R** **15 Claims**

A laser energy absorbing composition for use in ink to render the same erasable by use of a laser beam. A copper salt is dissolved in the ink. The $Cu^{++}$ ion absorbs radiation in the infrared region and a laser emitting such infrared radiation will effectively erase ink containing the copper ion.

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### 3,761,438

## AQUEOUS SURFACE-ACTIVE COMPOSITIONS BASED ON COPOLYMERS OF METHYL VINYL ETHERS

**Herman S. Schultz, Easton, Pa., assignor to GAF Corporation, New York, N.Y.**

**No Drawing. Filed Apr. 2, 1971, Ser. No. 130,761**

**Int. Cl. C08f** *45/24*

**U.S. Cl. 260—29.6 R** **4 Claims**

Copolymers of methyl vinyl ether with alkyl vinyl ethers having 2–8 carbon atoms in the alkyl moiety are disclosed. Such copolymers, prepared by using a cationic catalyst system, have excellent surfactant properties in aqueous systems.

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### 3,761,439

## THERMOPLASTIC POLYURETHANES SOLUBLE IN METHYL ETHYL KETONE BASED ON POLY (CAPROLACTONE) DIOLS

**Robert J. Ward, Somerville, N.J., and Frank E. Critchfield, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Filed Oct. 15, 1971, Ser. No. 189,722**

**Int. Cl. C08g** *22/06, 22/44, 51/34*

**U.S. Cl. 260—32.8 N** **5 Claims**

This invention relates to improved thermoplastic polyurethanes which are soluble in methyl ethyl ketone at room temperature. Such polyurethanes exhibit improved elevated temperature performance especially in the adhesive area. They are prepared by reacting poly(oxycaproyl) diol, p,p′-diphenylmethane diisocyanate, and a defined mixture of alpha, omega-alkanediols.

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### 3,761,440

## PIGMENTED POLYCARBONATES WITH IMPROVED PROPERTIES

**Dieter Margotte and Hugo Vernaleken, Krefeld, and Günter Peilstöcker, Krefeld-Bochum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 134,863, Apr. 16, 1971. This application Aug. 27, 1971, Ser. No. 175,735**

**Claims priority, application Germany, Apr. 22, 1970, P 20 19 325.3; Feb. 5, 1971, P 21 05 487.5**

**Int. Cl. C08g** *51/04, 51/08*

**U.S. Cl. 260—37 PC** **10 Claims**

Pigmented aromatic polycarbonates are provided which contain from about 5 to about 100 percent by weight relative to the weight of the pigment of copolymers containing epoxide groups or of a vinyl polymer free of epoxide groups.

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### 3,761,441

## THERMOSETTING FRICTION COMPOSITIONS AND FRICTION ELEMENTS THEREOF CONTAINING AN ACRYLIMIDE RESIN

**William J. D'Alessandro, East Brunswick, and George L. Brode, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.**

**Continuation-in-part of abandoned application Ser. No. 199,444, Nov. 17, 1971. This application Feb. 2, 1972, Ser. No. 222,980**

**Int. Cl. C08g** *51/10, 51/12*

**U.S. Cl. 260—37 N** **15 Claims**

Thermosetting friction compositions have been developed by combining particulate friction materials with thermosetting binders consisting of either an arylimide resin alone or a combination of an arylimide resin and a phenol-aldehyde condensation resin.

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### 3,761,442

## METHOD OF PIGMENTING VINYL TILE

**Lindo Paul Nangeroni, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Continuation of abandoned application Ser. No. 762,373, Sept. 16, 1968. This application May 27, 1971, Ser. No. 147,699**

**Int. Cl. C08f** *45/04, 45/10*

**U.S. Cl. 260—41 B** **3 Claims**

A process for making moldable compositions which comprises mixing titanium dioxide pigment with a polymer composition in the presence of water to obtain a homogeneous blend and heating the blend to remove the water therefrom. The vinyl composition is comprised of a vinyl polymer and asbestos.

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### 3,761,443

## DIELS-ALDER ADDUCT FLAME RETARDANTS FOR POLYMERS

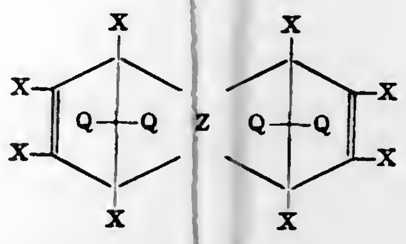
**Jack Newcombe, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 115,081, Feb. 12, 1971. This application Aug. 18, 1972, Ser. No. 281,691**

**Int. Cl. C08f** *45/58*

**U.S. Cl. 260—45.75 B** **10 Claims**

A normally flammable organic polymer is rendered flame retardant by the incorporation of a compound corresponding to the formula:



wherein X is chloro or bromo, Q is halo, hydrogen, or a hydrocarbyl or hydrocarbyloxy group, and Z is a tetravalent saturated cyclic polybromohydrocarbon group containing 7–20 carbon atoms and 2–6 bromine atoms which are paired in vicinal positions. Such flame retardants include, e.g., the dibrominated 2:1 Diels-Alder adduct of hexachlorocyclopentadiene and cyclododecatriene-1, 5, 9. If desired, the flame retardant may be employed in conjunction with a synergist, such as antimony trioxide.

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### 3,761,444

## EQUILIBRATION OF EPOXY SUBSTITUTED SILOXANES IN PRESENCE OF WATER AND SILANOL

**Frank D. Mendicino, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Filed Aug. 18, 1969, Ser. No. 851,045**

**Int. Cl. C08f** *11/04*

**U.S. Cl. 260—46.5 Y** **3 Claims**

This invention is an improvement in the manufacture of epoxy substituted siloxanes. Lower molecular weight epoxy substituted siloxanes are equilibrated with other siloxanes to produce siloxane copolymers containing the substituents of both the epoxy siloxane and the other siloxanes. This is accomplished with a basic equilibration catalyst and in the presence of small quantities of water and silanol.

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### 3,761,445

## PROCESS FOR THE PREPARATION OF MOLDING POWDERS OF HEAT-STABLE ANHYDRIDE POLYCONDENSATES

**Maurice Balme, Sainte-Foy-Les-Lyon, and Maurice Ducloux, Irigny, France, assignors to Rhone-Poulenc S.A., Paris, France**

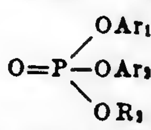
**No Drawing. Filed Jan. 22, 1971, Ser. No. 109,041**

**Claims priority, application France, Jan. 26, 1970, 7002648**

**Int. Cl. C08g** *20/30, 20/32, 33/02*

**U.S. Cl. 260—47 CP** **8 Claims**

Moulding powders obtained by heating an azophthalic anhydride/mono- or poly-hydroxyaromatic compound pre-polycondensate with a diprimary aromatic diamine in an orthophosphate of the formula:



in which the symbols $Ar_1$ and $Ar_2$, which may be identical or different, represent a phenyl, tolyl or xylyl radical and the symbol $R_2$ represents an alkyl or chloroalkyl radical having 1 to 8 carbon atoms or one of the radicals represented by $Ar_1$ and $Ar_2$, as diluent.

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### 3,761,446

## HALOGENATED ARYLAMINE EPOXY CURING AGENTS

**Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**No Drawing. Filed May 5, 1972, Ser. No. 250,584**

**Int. Cl. C08g** *30/14*

**U.S. Cl. 260—47 EN** **10 Claims**

Halogenated arylamines prepared from p-aminophenol and halogenated aromatic hydrocarbons serve as unique curing agents for bis(2,3-epoxycyclopentyl)ether as well as curable copolymers of bis(2,3-epoxycyclopentyl)ether with a polyol. The resultant cured epoxy resins have not only enhanced heat distortion temperatures, and reduced flammabilities but enhanced resistance to water as well.

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### 3,761,447

## POLYTHIAZOLES AND METHOD OF PREPARATION FROM DIPHENOLS AND DIHALIDE DIBENZOTHIAZOLIC COMPOUNDS

**Christian Blaise, Jarville, Pierre Lochon, Nancy, and Jean Neel, Villers les Nancy, France, assignors to Societe Anonyme dite: Aquitaine Total Organico, Courbevoie, France**

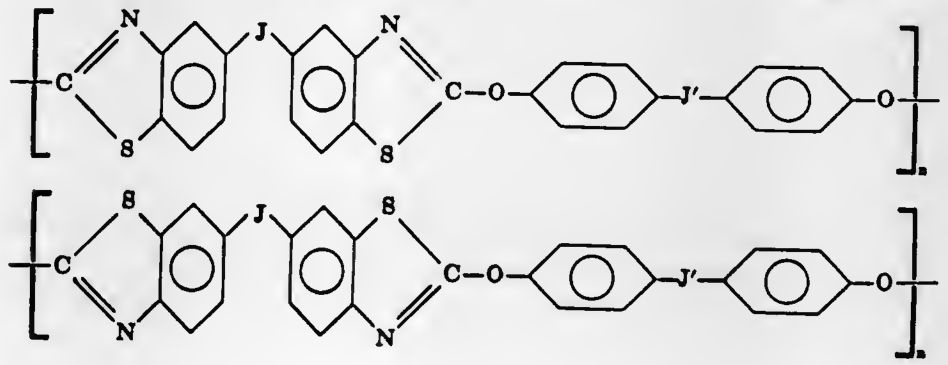
**No Drawing. Filed Aug. 4, 1971, Ser. No. 169,136**

**Claims priority, application France, Aug. 7, 1970, 7029213**

**Int. Cl. C08g** *33/02*

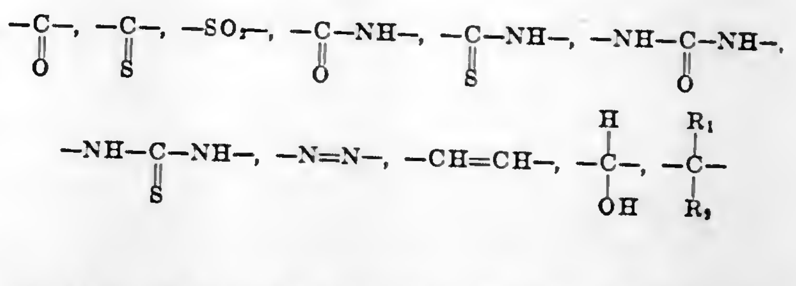
**U.S. Cl. 260—49** **10 Claims**

New polycondensates resulting from the condensation of dibenzothiazolic dihalogenated derivative A with biphenols B with the general formula



where J and J′ are junctions which may be selected from the following list:

a simple covalent bond;
a bivalent atom such as —O—, —S—, —Se—;
a bivalent group such as



$$-\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-,\ -\underset{\underset{\mathrm{S}}{\|}}{\mathrm{C}}-,\ -\mathrm{SO_2}-,\ -\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{NH}-,\ -\underset{\underset{\mathrm{S}}{\|}}{\mathrm{C}}-\mathrm{NH}-,\ -\mathrm{NH}-\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{NH}-,$$

$$-\mathrm{NH}-\underset{\underset{\mathrm{S}}{\|}}{\mathrm{C}}-\mathrm{NH}-,\ -\mathrm{N{=}N}-,\ -\mathrm{CH{=}CH}-,\ -\overset{\overset{\mathrm{H}}{|}}{\underset{\underset{\mathrm{OH}}{|}}{\mathrm{C}}}-,\ -\overset{\overset{R_1}{|}}{\underset{\underset{R_2}{|}}{\mathrm{C}}}-$$

where $R_1$ and $R_2$ are hydrogen atoms or aliphatic, alicyclic or aromatic radicals.

A process for synthesizing these polycondensates, consisting of heating an equimolecular mixture of A and B, dissolved in an anhydrous, inert solvent, to between 130 and 180° C., in the presence of an excess of acid acceptor, under strictly anhydrous conditions and in a nitrogen atmosphere for 100 to 150 hours, while being stirred vigorously.

The application of these polycondensates to the preparation of films and varnishes.

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### 3,761,448

## RESIN OIL MODIFIED RESOLES

**George J. Anderson, Indian Orchard, and Ronald H. Dahms, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of applications Ser. No. 588,310, Oct. 21, 1966, Ser. No. 676,043, Oct. 18, 1967, Ser. No. 738,812, June 21, 1968, all now abandoned, and Ser. No. 122,525, Mar. 9, 1971, now Patent No. 3,691,121. This application Aug. 1, 1972, Ser. No. 276,944**

**Int. Cl. C08g** *37/10, 51/34;* **C09v** *5/08*

**U.S. Cl. 260—53 R** **6 Claims**

The invention relates to resole resins produced by reacting under basic aqueous conditions formaldehyde with a phenol which has been previously prepared by partial alkylation of phenol with a specific mixture of carbocyclic compounds containing between 8 and 13 carbon atoms. The resole resin has utility in the manufacture of impregnated sheets, laminates, and other reinforced plastics.

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### 3,761,449

## HIGH MOLECULAR WEIGHT POLYALKYLARYL ETHERS

**Martin H. Kaufman, 308 Blue Ridge Road, China Lake, Calif. 93555**

**No Drawing. Filed Nov. 23, 1971, Ser. No. 201,495**

**Int. Cl. C08g** *23/00*

**U.S. Cl. 260—61** **8 Claims**

This invention is for improved moldable high molecular weight polymer compositions consisting of polyalkylarylethers and the process for preparation thereof which briefly involves reacting reactive-chlorine difunctional chloromethyl derivatives with diphenolic compounds in an inert solvent for the polymer product. This composition provides high molecular weight polymers, the low melting polymers being useful as emulsifiers, plasticizers, and for cosmetic preparations, the high melting polymers being useful in molded reinforced plastics, synthetic fibers, and synthetic films.

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## 3,761,450

### SALTS OF POLYCARBOXYLIC ACIDS AS NUCLEATING AGENTS IN POLYESTERS

**Walter Herwig, Frankfurt am Main, and Günter Freund, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Continuation of abandoned application Ser. No. 68,542, Aug. 31, 1970. This application July 3, 1972, Ser. No. 268,837**

**Claims priority, application Germany, Sept. 11, 1969, P 19 45 267.7**

**Int. Cl. C08g** *39/04*

**U.S. Cl. 260—75 T** **10 Claims**

Molding compositions based on linear saturated polyesters and the lithium and/or sodium salts of polycarboxylic acids, which molding compositions may be worked up in the thermoplastic state and from which molded articles having a high dimensional stability can be made. In the manufacture of molded articles, already small amounts of the said salts bring about a high crystallinity in the heated mold after a short time.

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## 3,761,451

### AMINO ACID-URETHANE POLYMER SOLUTIONS AND SHAPED PRODUCTS

**Yasuo Fujimoto, Yokohama, and Masayuki Teranishi, Tokyo, Japan, assignors to Kyowa Kakko Kogyo Co., Ltd., Tokyo, Japan**

**No Drawing. Filed May 14, 1971, Ser. No. 143,636**

**Claims priority, application Japan, May 20, 1970, 45/42,410**

**Int. Cl. C08g** *22/00*

**U.S. Cl. 260—77.5 CA** **13 Claims**

Improved amino acid-urethane polymer compositions characterized by treating the reaction product of an intermediate polymer obtained by the reaction of a polyether polyol or a polyester polyol with a polyisocyanate compound and an amino acid N-carboxy anhydride or a polyamino acid or the shaped products manufactured therefrom with water, polyols or polyamines; and processes for their preparation.

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## 3,761,452

### EPOXY POLYURETHANE PREPOLYMER COMPOSITIONS WHICH ARE SELF-CURING UPON APPLICATION OF HEAT

**Robert Louis Dawson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**No Drawing. Filed Feb. 16, 1968, Ser. No. 705,895**

**Int. Cl. C08g** *22/16*

**U.S. Cl. 260—77.5 AP** **12 Claims**

A heat curable polyurethane prepolymer prepared by reacting (A) a polyol, (B) an excess of an organic polyisocyanate, and (C) about

$$\frac{B-A}{2}$$

equivalents of a 2,3-epoxyalcohol wherein B and A represent the number of equivalents of the B and A components used. Cured polyurethanes prepared by heating the aforementioned prepolymers are also disclosed.

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## 3,761,453

### NITROSO PERFLUORO ADDITION POLYMERS

**Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.**

**No Drawing. Filed Oct. 27, 1972, Ser. No. 301,284**

**Int. Cl. C08f** *15/34, 15/40, 27/10*

**U.S. Cl. 260—78.5 R** **9 Claims**

Highly stable compliant polymers are made by reacting a perfluoro alkylene reactant with difluoromaleic anhydride and trifluoronitrosomethane in the presence of a catalyst. These linear perfluoro polymers may be modified by including in the backbone chain a perfluoro compound having a pendant oxy structure. Further modification of linear resins may be obtained by reaction with amine terminated or diisocyanate terminated perfluoro cross-linking compounds to give cured elastomers. Polymerization by simple addition reaction is made to occur by the application of peroxide catalyst. These perfluoro polymers may be used for applications as seals, sealants, films, coatings, and fibers.

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## 3,761,454

### VULCANIZABLE FLUORINATED POLYMER COMPOSITIONS, PROCESS FOR VULCANIZATION, AND VULCANIZED ELASTOMERS OBTAINED THEREFROM

**Sergio Geri, Angelo Miglierina, and Giovanni Ceccato, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy**

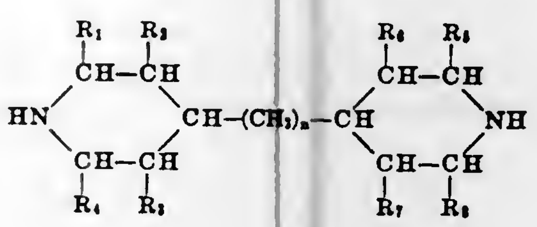
**No Drawing. Filed July 6, 1971, Ser. No. 162,173**

**Claims priority, application Italy, July 6, 1970, 27,046/70**

**Int. Cl. C08f** *15/06, 15/32, 15/40*

**U.S. Cl. 260—80.77** **9 Claims**

Vulcanizable composition comprising (A) a fluorinated interpolymer and (B) a vulcanizing system which comprises (1) a carbamate, oxalate, formate or acetate of either piperazine or of an alkylenedipiperidine of the formula



wherein each of $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$ and $R_8$ independently is hydrogen, halogen, or an alkyl containing from 1 to 3 carbon atoms; *n* is a whole number from 1 to 12; and (2) a bivalent metal oxide, i.e., magnesium oxide, calcium oxide, or lead monoxide.

## 3,761,455

### METHOD FOR COAGULATING RUBBER LATEX

**Takashi Tanaka, Haruhiko Yusa, and Yukihiro Ochiai, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**No Drawing. Filed Oct. 7, 1971, Ser. No. 187,518**

**Int. Cl. C08d** *7/00*

**U.S. Cl. 260—85.1** **3 Claims**

Coagulation of rubber latex to obtain rubber particles of desired size can be attained by alternate or simultaneous addition of acidic and alkaline substances to the latex maintained at a specific pH value.

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## 3,761,456

### PROCESS FOR THE POLYMERIZATION OF UNSATURATED POLYMERIZABLE COMPOUNDS

**Kazuo Saito, Kyoto, and Shoji Okami, Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Nakanoshima, Kita-ku, Osaka, Japan**

**No Drawing. Continuation of abandoned application Ser. No. 792,894, Dec. 30, 1968. This application Jan. 24, 1972, Ser. No. 220,420**

**Claims priority, application Japan, Dec. 30, 1967, 43/85,227; Apr. 9, 1968, 43/23,561**

**Int. Cl. C08f** *1/28, 1/56*

**U.S. Cl. 260—87.3** **16 Claims**

A process for the polymerization of unsaturated polymerizable compounds with the catalyst which is composed of (a) salts of metals belonging to the I–A and II groups of the periodic table, (b) aluminum organic compounds and (c) gem-polyhalogen compounds.

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## 3,761,457

### PROCESS FOR BETA-PINENE-DIPENTENE COPOLYMERS

**Herbert George Arlt, Jr., Ridgefield, and Erwin Richard Ruckel, Darien, Conn., assignors to Arizona Chemical Company, New York, N.Y.**

**No Drawing. Filed July 2, 1971, Ser. No. 159,510**

**Int. Cl. C08f** *7/02, 19/02*

**U.S. Cl. 260—88.2 C** **12 Claims**

A process is given for preparing polyterpene resins by adding catalyst to a small amount of monomer solvent solution, adjusting the temperature, and subsequently adding the monomer feed at a controlled rate until the desired polyterpene resins are formed.

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## 3,761,458

### POLYMERIZATION PROCESS AND PRODUCTS

**Howard V. Holler, Oakland, and Edward A. Youngman, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.**

**No Drawing. Continuation of abandoned application Ser. No. 444,445, Mar. 31, 1965. This application Oct. 3, 1969, Ser. No. 866,423**

**Int. Cl. C08f** *3/00, 3/84, 15/00*

**U.S. Cl. 260—89.7 N** **4 Claims**

Methods are disclosed for homopolymerization of a large variety of polar-substituted alpha-monoolefins and for the random copolymerization and block copolymerization of polar-substituted alpha monoolefin with alpha monoolefin hydrocarbons.

## 3,761,459

### POLYPEPTIDE

**Janos Pless, Basel, Stephan Guttmann, Allschwil, and Roger Boissonnas, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland**

**No Drawing. Filed July 20, 1966, Ser. No. 566,476**

**Claims priority, application Switzerland, Aug. 24, 1965, 11.898/65**

**Int. Cl. C07c** *103/52;* **C07g** *7/00*

**U.S. Cl. 260—112.5** **1 Claim**

The invention describes a new pentacosapeptide of the formula D-seryl-L-tyrosyl-L-seryl-L-norleucyl-L-glutamyl-L-histidyl - L - phenylalanyl-L-arginyl-L-tryptophanyl-glycyl-L-lysyl-L-prolyl-L-valyl-glycyl - L - lysyl-L-lysyl-L-arginyl-L-arginyl - L - prolyl - L - valyl-L-lysyl-L-valyl-L-tyrosyl-L-prolyl-L-valinamide, its therapeutically active acid addition salts and heavy metal complexes. The polypeptide of the invention, also named D-Ser$^{1}$-Nle$^{4}$-Val—NH$_{2}^{25}$-$\alpha^{1-25}$—ACTH, is pharmaceutically useful because of its high adrenocorticotropic effect.

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## 3,761,460

### TETRACOSAPEPTIDES

**Janos Pless, Basel, Stephan Guttmann, Allschwil, and Roger Boissonnas, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland**

**No Drawing. Filed Dec. 27, 1966, Ser. No. 604,537**

**Claims priority, application Switzerland, Dec. 29, 1965, 18,028/65**

**Int. Cl. C07c** *103/52*

**U.S. Cl. 260—112.5** **5 Claims**

A new tetracosapeptide is provided of the formula D-seryl-L-tyrosyl - L - seryl - L - norleucyl-X-L-histidyl-L-phenylalanyl-L-arginyl - L - tryptophanyl-glycyl-L-lysyl-L - prolyl - L - valyl - glycyl - L - lysyl - L - lysyl - L-arginyl-L-arginyl - L - prolyl - L - valyl - L - lysyl - L-valyl-L-tyrosyl-Y, wherein X is L-glutamyl or L-glutaminyl and Y is L-proline or L-prolinamide, their therapeutically active acid addition salts and heavy metal complexes. The polypeptides disclosed, also named D-Ser$^{1}$-Nle$^{4}$-$\alpha$-$^{1-24}$-A.C.T.H., D-Ser$^{1}$-Nle$^{4}$-$\alpha^{1-24}$-A.C.T.H.-amide, D-Ser$^{1}$-Nle$^{4}$-Gln$^{5}$-$\alpha^{1-24}$-A.C.T.H. and D - Ser$^{1}$ - Nle$^{4}$-Gln$^{5}$-$\alpha$-$^{1-24}$-A.C.T.H.-amide, are pharmaceutically useful due to their high corticotropic effects.

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## 3,761,461

### D-Ser$^{1}$-Nle$^{4}$-Lys$^{17}$-Lys$^{18}$-Val-NH$_{2}^{25}$-$\alpha$-$^{1-25}$ ACTH AND DERIVATIVES THEREOF

**Janos Pless, Basel, Stephan Guttmann, Allschwil, and Roger Boissonnas, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland**

**No Drawing. Filed Jan. 10, 1967, Ser. No. 608,448**

**Claims priority, application Switzerland, Jan. 12, 1966, 392/66**

**Int. Cl. C07c** *103/52*

**U.S. Cl. 260—112.5** **3 Claims**

The present invention provides the pentacosapeptides of general formula D-seryl-L-tyrosyl-L-seryl-L-norleucyl-X - L - histidyl - L - phenylalanyl - L - arginyl - L-tryptophanyl - glycyl - L - lysyl - L - prolyl - L - valyl-glycyl-L - lysyl - L - lysyl - L - lysyl - L - lysyl - L - prolyl-L-valyl - L - lysyl - L - valyl - L - tyrosyl-L-prolyl-L-valinamide, in which X signifies an L-glutamyl or L-glutaminyl radical, their therapeutically active acid addition salts and heavy metal complexes. The pentacosapeptides of the above formula, their salts and heavy metal complexes exhibit a high adrenocorticotropic effect. The production of these peptides is furthermore described.

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### 3,761,462

## QUATERNARY AZO DYESTUFFS FROM SUBSTITUTED BENZISOTHIAZOLES AND AMMONIUM CONTAINING AROMATIC CARBOCYCLIC COUPLERS

**Karl-Ludwig Moritz, Cologne-Stammheim, and Carl Taube, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

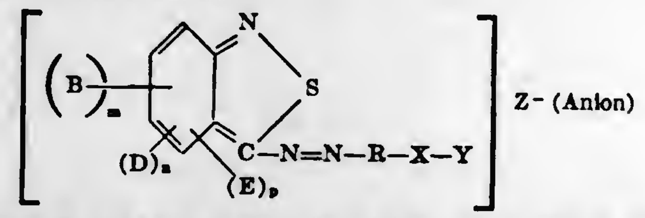
**No Drawing. Continuation of abandoned application Ser. No. 673,280, Oct. 6, 1967. This application Dec. 22, 1970, Ser. No. 100,799**

**Claims priority, application Germany, Oct. 15, 1966, F 50,454**

**Int. Cl. C09b** *29/08;* **D06p** *1/08*

**U.S. Cl. 260—158** **9 Claims**

Azo dyestuffs free of sulphonic acid and carboxylic acid groups of the formula



wherein B, D and E stand for substituents, R stands for an aromatic carbocyclic radical, X stands for a bridge and Y stands for an ammonium group, and *m*, *n* and *p* are 0 or 1. These dyestuffs are eminently suited for dyeing and printing tanned cotton, fibers of aromatic polyesters, especially those containing sulphonic acid groups such as ethylene glycol and sulphophthalic acid, polyamide fibers, polyurethane fibers, polyacrylonitrile fibers, dicyanoethylene fibers. The dyeings are characterized by superior fastness properties, especially to light and wet processing, as well as ironing, sublimiation and decatizing.

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### 3,761,463

## METHOD OF EXTRACTING PECTIN

**Joseph M. G. Haung, East Windsor, N.J., assignor to NL Industries, Inc., New York, N.Y.**

**No Drawing. Filed July 21, 1972, Ser. No. 273,861**

**Int. Cl. C08b** *19/12*

**U.S. Cl. 260—209.5** **16 Claims**

An improved method of extracting pectin from citrus peel is described which includes the steps of forming a heated aqueous slurry of citrus peel and an ion exchange agent at a pH of between 1.3 and 1.6, separating the peel and ion exchange agent from the slurry and recovering an aqueous pectin extract. Improved yields and quality factors of pectin are obtained by this process with gel grades maintained at high levels. The pectin obtained is useful in aiding the viscosity and gel strength of processed foods.

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### 3,761,464

## CARDIO-ACTIVE PYRANOSIDES OF 3β-HYDROXY-4-CHLORO-CARDA-4,20(22)-DIENOLIDES

**Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Filed Jan. 25, 1971, Ser. No. 109,703**

**Claims priority, application Germany, Jan. 26, 1970, P 20 03 315.2**

**Int. Cl. C07c** *173/00*

**U.S. Cl. 260—210.5** **2 Claims**

Cardio-active pyranosides of 3β-hydroxy-4-chloro-carda-4,20(22)-dienolides and process for their manufacture by reacting corresponding 3β-hydroxy steroids with acylated-1-halogeno-pyranoses in the presence of silver carbonate.

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### 3,761,465

## PREPARATION OF WATER-SOLUBLE DERIVATIVES OF CELLULOSE, AND COMPOSITIONS THEREOF

**Clayton D. Callihan, 9524 Greenbriar Drive, Baton Rouge, La. 70815**

**No Drawing. Filed Sept. 30, 1971, Ser. No. 185,350**

**Int. Cl. C08b** *11/00*

**U.S. Cl. 260—231** **10 Claims**

A process for the preparation of water-soluble cellulose derivatives, principally carboxy methyl cellulose, by reaction between partially hydrolyzed or solvated cellulose, by reaction between partially hydrolyzed or solvated cellulose and a monohaloacetonitrile. In a preferred reaction, e.g., monochloroacetonitrile is reacted with alkali cellulose at relatively low temperatures, with or without a carrier solvent, to obtain water-soluble cellulose derivatives, including particularly carboxy methyl cellulose and mixed ethers of carboxy methyl cellulose and carbamyl methyl cellulose.

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### 3,761,466

## 6-[α-(ARYL SUBSTITUTED)-ω-AMINO-ω-CARBOXYACYLAMINO]PENICILLANIC ACIDS AND DERIVATIVES THEREOF

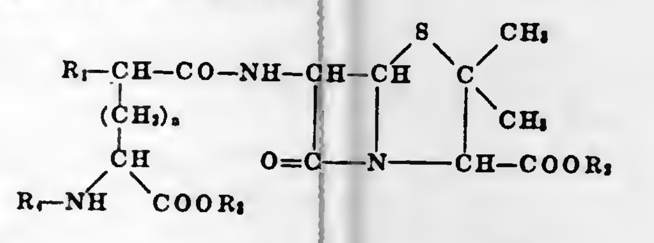
**Gene M. Bright, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.**

**No Drawing. Filed July 9, 1971, Ser. No. 161,951**

**Int. Cl. C07d** *99/16*

**U.S. Cl. 260—239.1** **10 Claims**

A novel series of antibacterial agents; namely, 6-[α-(aryl substituted)-ω-amino-ω-carboxyacylamino]penicillanic acids of the formula:



(I)

and the non-toxic, cationic salts thereof wherein:

$R_1$ is thienyl, phenyl and substituted phenyl;
$R_2$ is hydrogen and acyloxy lower alkyl;
$R_3$ is hydrogen, lower alkyl and benzyl;
$R_4$ is selected from the group consisting of hydrogen and carbobenzoxy; and
*n* is 0 or 1.

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### 3,761,467

## RECOVERY OF ε-CAPROLACTAM

**Billy G. Williams, Petersburg, Va., and Francis Lewis Bohn, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Feb. 11, 1971, Ser. No. 114,436**

**Int. Cl. C07d** *41/06*

**U.S. Cl. 260—239.3 A** **11 Claims**

A process for separating ε-caprolactam from an aqueous solution highly concentrated in both color-forming and oxidizable impurities whereby the solution is first extracted with an organic, water-immiscible solvent for ε-caprolactam, thereby separating the ε-caprolactam from the color-forming impurities and the resultant organic ε-caprolactam solution is extracted with an aqueous solution, thereby separating the ε-caprolactam from the oxidizable impurities.

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### 3,761,468

## RIFAMYCIN

**Nicola Maggi, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 785,377, Dec. 19, 1968. This application Feb. 16, 1971, Ser. No. 115,840**

**Claims priority, application Italy, Dec. 19, 1967, 24,080/67**

**Int. Cl. C07d** *41/06*

**U.S. Cl. 260—239.3 P** **10 Claims**

A new class of rifamycins, containing a dihydroquinazoline ring, is described. The compounds display a high anti-bacterial activity against pathogenic Gram-positive and Gram-negative microorganisms, and are prepared by reacting a Mannich base of rifamycin S with a lower alkonoic acid.

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### 3,761,469

## PROCESS FOR THE MANUFACTURE OF STEROID CHLOROHYDRINS

**Percy Lavon Julian and Arnold Lippert Hirsch, Oak Park, Ill., assignors to Ciba-Geigy AG, Basel, Switzerland**

**No Drawing. Filed May 15, 1972, Ser. No. 253,071**

**Int. Cl. C07c** *169/16, 169/30*

**U.S. Cl. 260—239.55 A** **7 Claims**

The present invention concerns a new process for the manufacture of 6β,5α-steroid chlorohydrins by treating 5α,6β-dihydroxy-steroids with an aliphatic or aromatic sulfonic acid chloride at 30–120° in the presence of an organic nitrogen base.

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### 3,761,470

## 2-(4-STYRYLPHENYL)-2H-1,2,3-TRIAZOLE BRIGHTENERS, INTERMEDIATES THEREFOR AND COMPOSITIONS CONTAINING THE SAME

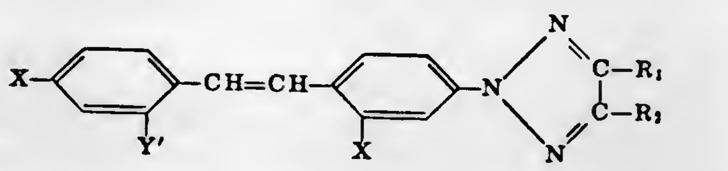
**Albert F. Strobel and Maynard L. Whitehouse, Delmar, N.Y., assignors to GAF Corporation, New York, N.Y.**

**No Drawing. Filed June 17, 1970, Ser. No. 47,119**

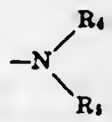
**Int. Cl. C07d** *55/02*

**U.S. Cl. 260—240 CA** **7 Claims**

2-(4-styrylphenyl)-2H-1,2,3-triazoles of the formula:



wherein $R_1$ is alkyl, benzyl or phenyl which may be substituted by halo, lower alkyl or lower alkoxy; $R_2$ is CN or $COX_1$ wherein $X_1$ is O alkyl, —O aryl or



wherein $R_4$ and $R_5$ are each independently selected from hydrogen, phenyl or alkyl which may be substituted by halo or lower alkoxy; and additionally $R_4$ and $R_5$ together form a 5- or 6-membered heterocyclic ring with the amido nitrogen atom; X is hydrogen, halo, CN, sulfonamide, mono and dialkyl and aryl substituted sulfonamide, alkyl sulfonyl or $COX_2$, wherein $X_2$ is the same as $X_1$ described above; Y and Y′ are hydrogen and $OR_3$, one of Y and Y′ being $OR_3$, wherein $R_3$ is alkyl or benzyl.

The triazoles are employed as brightening agents for resinous or plastic fibers, films, sheets, molded articles, etc., particularly polyamide fibers and films.

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### 3,761,471

## BENZALACETONE OR ACETOPHENONE AMIDINOHYDRAZONE DERIVATIVES AND THE PRODUCTION THEREOF

**Tamio Nishimura, Tokyo, Shin Yoshii, Kawasaki, Hiroshige Toku, Tokorozawa, and Bunzo Nomiya, Tokyo, Japan, assignors to Tamio Nishimura, Tokyo, Japan**

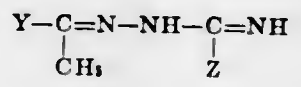
**No Drawing. Filed Aug. 17, 1971, Ser. No. 172,598**

**Claims priority, application Japan, Nov. 16, 1970, 45/100,214, 45/100,215, 45/100,216**

**Int. Cl. C07c** *133/00*

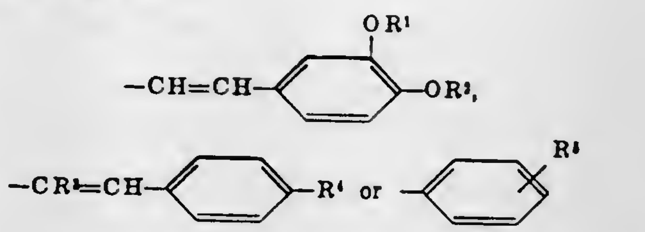
**U.S. Cl. 260—240 F** **1 Claim**

A benzalacetone or acetophenone amidinohydrazone derivative of the general formula:



$$\underset{\displaystyle CH_3}{Y-\underset{|}{C}}=N-NH-\underset{\displaystyle Z}{\underset{|}{C}}=NH$$

wherein Y is a group



in which $R^1$ and $R^2$ are each a hydrogen atom or an alkyl group of 1–12 carbon atoms, $R^3$ is a hydrogen atom or a methyl group and $R^4$ is a hydrogen atom or a nitro, hydroxyl or an alkoxyl group of 1–16 carbon atoms, $R^5$ is a hydrogen atom, a nitro or an alkoxyl group of 1–16 carbon atoms; and Z is an amino, N,N-tetramethyleneamino, N,N-pentamethyleneamino or N,N-anhydrobis-(2-hydroxyethyl)-amino group are produced as new compounds which are useful as anti-viral agent particularly effective against influenza viruses.

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### 3,761,472

## CONTINUOUS PROCESS FOR THE PRODUCTION OF CYANURIC CHLORIDE

**Jean Riethmann, Allschwil, Basel-Land, Claude Gremmelmaier, Aesch, Basel-Land, and Leo Scheck, Benken, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Feb. 3, 1971, Ser. No. 112,383**

**Claims priority, application Switzerland, Feb. 13, 1970, 2,099/70**

**Int. Cl. C07d** *55/42*

**U.S. Cl. 260—248 C** **7 Claims**

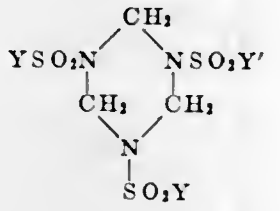
A process for the production of cyanuric chloride by trimerizing cyanogen chloride in the vapor phase wherein the cyanuric chloride formed is separated in liquid form and the residual gases containing untrimerized cyanogen chloride are returned into the reactor. The process affords a considerable improvement of the space time yield in the production of cyanuric chloride which is a valuable intermediate, for example, in the production of herbicides.

### 3,761,473
### SUBSTITUTED SULFONYL TRIAZINES

**Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard N. Ring, Woodridge, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.**

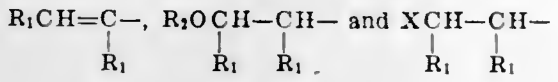
**Filed July 23, 1970, Ser. No. 63,990**
**Int. Cl. C07d** *55/14*
**U.S. Cl. 260—248 NS** **2 Claims**

Sulfonamide compounds of the formula



wherein

Y and Y′ are members selected from the group consisting of



$$R_1CH{=}\underset{\underset{R_1}{|}}{C}-,\ R_2O\underset{\underset{R_1}{|}}{C}H-\underset{\underset{R_1}{|}}{C}H-\ \text{and}\ X\underset{\underset{R_1}{|}}{C}H-\underset{\underset{R_1}{|}}{C}H-$$

wherein

$R_1$ and $R_2$ are members selected from the group consisting of hydrogen and lower alkyl, and

X is the conjugate base of a Lowry-Bronsted acid which has a dissociation constant in water of between $5 \times 10^{-2}$ and $5 \times 10^{-6}$.

These compounds can be used for reaction with active hydrogen containing polymeric material such as for the treatment of cellulosic textiles.

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### 3,761,474
### PURIFICATION OF CRUDE CYANURIC ACID

**Raymond N. Mesiah, Somerset, N.J., assignor to FMC Corporation, New York, N.Y.**

**Filed Mar. 22, 1971, Ser. No. 127,021**
**Int. Cl. C07d** *55/36*
**U.S. Cl. 260—248 A** **6 Claims**

Crude cyanuric acid obtained by pyrolysis of urea is purified by extracting the impurities with an extraction acid solution. The extraction acid solution containing the impurities can then be digested to convert the impurities to cyanuric acid without any of the difficulties associated with digesting crude cyanuric acid in an acid slurry.

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### 3,761,475
### POLYCYANODITHIINO AROMATIC N-HETEROCYCLIC COMPOUNDS

**Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Jan. 7, 1971, Ser. No. 104,799**
**Int. Cl. C07d** *51/76, 51/78*
**U.S. Cl. 260—250 R** **4 Claims**

Novel polycyanodithiino aromatic N-heterocyclic compounds are prepared. These are useful as fungicides and bactericides.

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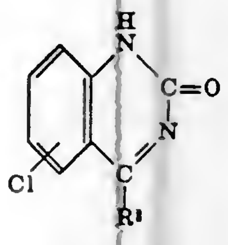
### 3,761,476
### METHOD OF PREPARATION OF QUINAZOLINE COMPOUNDS

**Stanley C. Bell, Penn Valley, and George L. Conklin, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

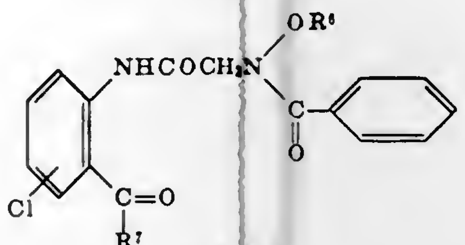
**Continuation-in-part of Ser. No. 786,404, Dec. 23, 1968, abandoned, which is a division of Ser. No. 457,158, May 19, 1965, Pat. No. 3,452,041. This application Nov. 20, 1970, Ser. No. 91,602**
**Int. Cl. C07d** *51/48*
**U.S. Cl. 260—251 QB** **1 Claim**

The disclosure is directed to a method of preparing quinazolinone compounds having the formula



XIII

by treating with base a compound having the formula



XII

where $R^6$, $R^7$ and $R^8$ are as described below, followed by cooling, and acidifying the reaction mass.

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### 3,761,477
### PYRAZINEACETIC ACIDS, LOWER ALKYL ESTERS, AMIDES AND SALTS

**Norman Schwartz, Philadelphia, and Richard J. Mohrbacher, Fort Washington, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.**

**Filed Nov. 8, 1968, Ser. No. 774,486**
**Int. Cl. C07d** *51/76*
**U.S. Cl. 260—250 R** **16 Claims**

The compounds are of the class of pyrazine, arylpyrazine, diphenylpyrazine, and cycloalkylpyrazine malonates, acetates, acetamides, and acetic acids, useful for their ultraviolet light absorption properties.

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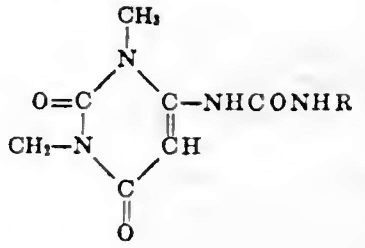
### 3,761,478
### URACIL UREAS

**Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.**

**Continuation of Ser. No. 849,889, Aug. 13, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,329The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.**
**Int. Cl. C07d** *51/38*
**U.S. Cl. 260—256.4 C** **10 Claims**

Uracil ureas having the general formula



wherein R is selected from the group consisting of lower alkyl having from one to four carbon atoms, allyl, cyclohexyl and 2-methylphenyl. Said compounds are useful central nervous system anti-depressants.

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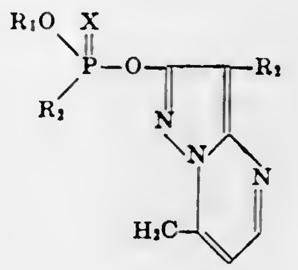
### 3,761,479
### O-PYRAZOLO-PYRIMIDINE-(THIONO)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

**Hellmut Hoffman, Wuppertal-Elberfeld; Ingeborg Hammann; Wolfgang Behrenz, both of Koln; Bernhard Homeyer, Opladen, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed June 29, 1971, Ser. No. 158,046**
**Claims priority, application Germany, July 8, 1970, P 20 33 947.3**
**Int. Cl. C07d** *57/16*
**U.S. Cl. 260—256.5 R** **8 Claims**

O-pyrazolo-pyrimidine-(thiono)-phosphoric (phosphonic)acid esters of the general formula



(I)

in which

$R_1$ is an alkyl radical with 1 to 6 carbon atoms,

$R_2$ is an alkyl radical with 1 to 4 carbon atoms or an alkoxy radical with 1 to 6 carbon atoms,

$R_3$ is hydrogen, chlorine or bromine, and

X is oxygen or sulfur,

which possess insecticidal, acaricidal, nematocidal, fungicidal and molluscicidal properties.

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### 3,761,480
### PROCESS FOR THE PREPARATION OF 3-ARYL-6-SULFAMYL-7-HALO-1,2,3,4-TETRAHYDRO-4-QUINAZOLINONES

**Bola Vithal Shetty, Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.**

**Continuation of Ser. No. 874,960, Nov. 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 743,615, July 10, 1968, Pat. No. 3,567,746. This application Mar. 15, 1972, Ser. No. 235,087**
**Int. Cl. C07d** *51/48*
**U.S. Cl. 260—256.5 R** **9 Claims**

3-Aryl-6-sulfamyl-7-halo-1,2,3,4-tetrahydro-4-quinazolinones useful as diuretics and saluretics are prepared by reacting a 2-amino-4-halo-5-sulfamyl-N-(aryl) benzamide with an acetal, aldehyde, or ketone. For example, 2-amino-4-chloro-5-sulfamyl-N-(o-tolyl) benzamide is reacted with dimethyl acetal to give 2-methyl-3-(o-tolyl)-6-sulfamyl-7-chloro-1,2,3,4-tetrahydro-4-quinazolinone.

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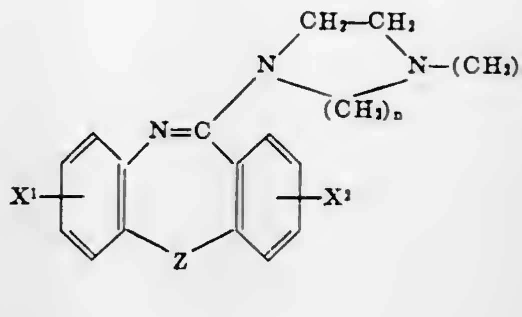
### 3,761,481
### 11-(4-HETEROCYCLIC ALKYL SUBSTITUTED-1-PIPERAZINYL) DIBENZOOXAZEPINES

**Michio Nakanishi, Oita; Tomohiko Munakata, Fukuoka; Yutaka Maruyama, Tokyo, and Shinro Setoguchi, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan**

**Filed July 31, 1970, Ser. No. 60,139**
**Claims priority, application Japan, July 31, 1969, 44/60651; Sept. 25, 1969, 44/76775; Oct. 2, 1969, 44/79478**
**Int. Cl. C07d** *51/70*
**U.S. Cl. 260—268** **6 Claims**

Piperazine derivatives having the formula



wherein each of $X^1$ and $X^2$ is H, Cl, $CH_3$, $CH_3O$ or $CF_3$; Y is thienyl, furyl, pyridyl, thiazolyl, phenyl or substituted phenyl, in which the phenyl substitutents are 1 or 2 groups selected from the group consisting of Cl, $CH_3$, $CH_3O$ and $CF_3$; Z is -S-, -$SO_2$-, -O-, -NR- or -$SO_2$-NR-, in which R is an alkyl group having from 1 to 4 carbon atoms; n is 2 or 3; and m is 0, 1 or 2; and the pharmaceutically acceptable acid addition salts thereof are disclosed. The piperazine derivatives and their pharmaceutically acceptable addition salts are useful as anti-allergics, psychotropics and analgesics.

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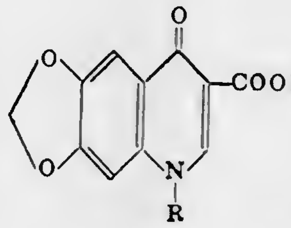
### 3,761,482
### PROCESS AND INTERMEDIATES FOR THE PREPARATION OF N-SUBSTITUTED 6,7-METHYLENEDIOXY-4-QUINOLONE DERIVATIVES

**Takenari Nakagome; Hideo Agui, both of Osaka; Toru Mitani, and Mitsuo Nakashita, both of Hyogo, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan**

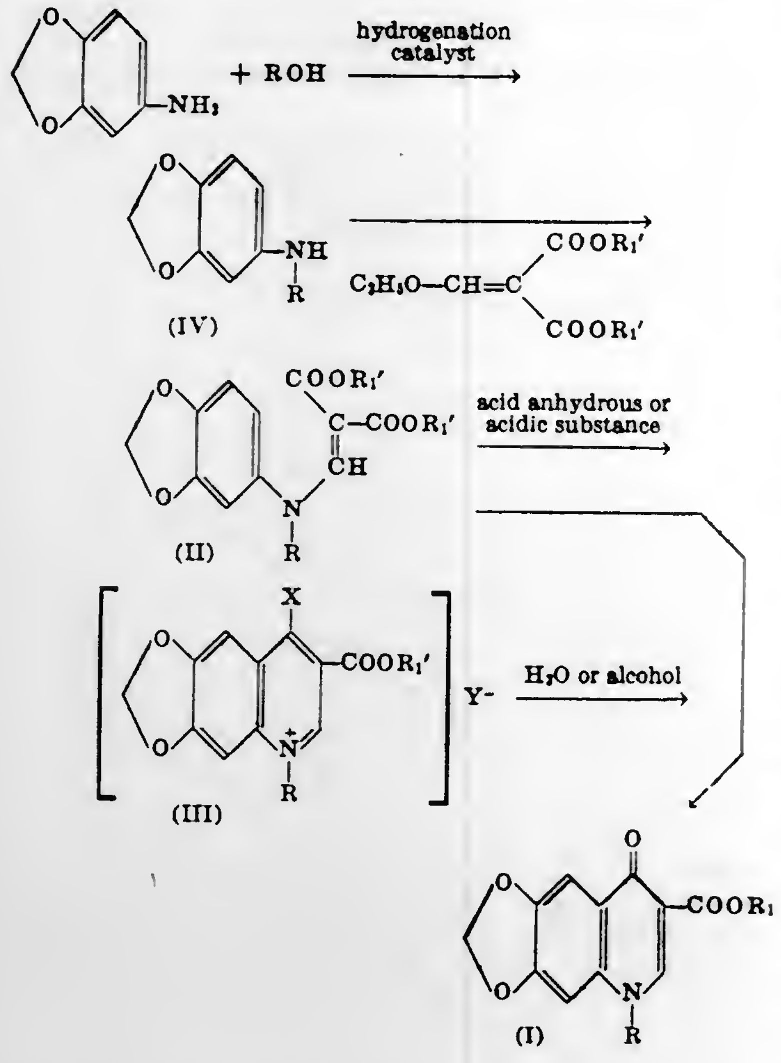
**Filed July 9, 1970, Ser. No. 53,706**
**Claims priority, application Japan, July 10, 1969, 44/54890; Oct. 2, 1969, 44/79408; Oct. 2, 1969, 44/79409; Oct. 2, 1969, 44/79410; Nov. 12, 1969, 44/90957; July 9, 1969, 44/54661; Feb. 23, 1970, 45/15722**
**Int. Cl. C07d** *33/48*
**U.S. Cl. 260—287 R** **1 Claim**

Novel process for producing antimicrobial 1-substituted-6,7-methylenedioxy-4-quinolone-3-carboxylic acid derivatives of the formula,



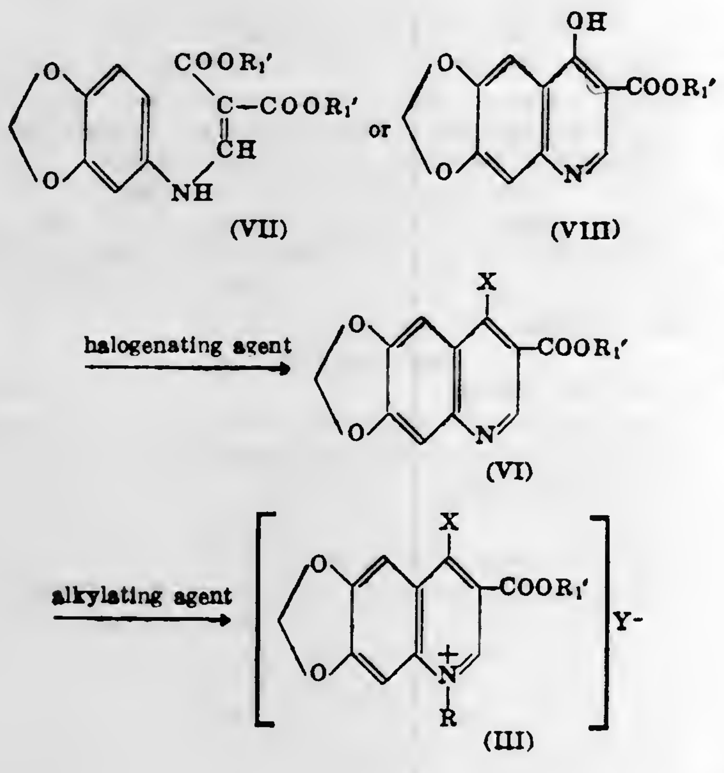
(I)

wherein R is alkyl or alkenyl, and $R_1$ is hydrogen or alkyl. The novel process is shown by the following reaction schema:



wherein R and $R_1$ are as defined above; $R_1'$ is alkyl; X is halogen; and Y is, for example, halogen. The 1-substituted-6,7-methylenedioxy-4-quinolone-3-carboxylic acid derivative of the formula (I) can be also produced directly from the compound of the formula (II) by the reaction with the acid anhydrous or acidic substance.

The quinolinium salt of the formula (III) can be, alternatively produced by the process as shown below:



wherein R, $R_1'$, X and Y is as defined above.

### 3,761,483
### PROCESS FOR OBTAINING OCHROPAMINE

**Jean Alfred Alphonse Joseph Hannart, Brussels, Belgium, assignor to Forschag Forschungsune Chemie AG, Basle, Switzerland**

**Filed Sept. 24, 1971, Ser. No. 183,693**
**Int. Cl. C07d** *57/00*

**U.S. Cl. 260—293.55** **1 Claim**

The invention mainly pertains to a process for obtaining Ochropamine which comprises the steps of exhausting a vegetal drug by means of a solvent in an alkaline environment, separating the bases contained in the solvent by means of acid water, treating said acid water with a view to extracting therefrom the total alkaloids, and isolating the Ochropamine by chromatography, characterized in that said vegetal drug is the Cabucala Striolata Caudata.

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### 3,761,484
### 4-PHENYL-1-PIPERIDINEALKANONITRILES

**Peter K. Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.**

**Filed Dec. 23, 1971, Ser. No. 211,684**
**Int. Cl. C07d** *29/32*

**U.S. Cl. 260—293.75** **3 Claims**

4-Phenyl-1-piperidinealkanonitriles are described herein. They are prepared from 4-phenylpiperidine and an appropriate haloalkanonitrile. These compounds are useful as anti-depressants.

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### 3,761,485
### 3-(5-CHLORO-2-PYRIDYL)RHODANINE AND 3-(5-CHLORO-2-PYRIDYL)-5-(LOWER ALKYL)RHODANINES

**Alexander Erdelyi, Vaucluse, N. S. W., Australia, and David B. Capps, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.**

**Filed Sept. 7, 1971, Ser. No. 178,468**
**Int. Cl. C07d** *31/50*

**U.S. Cl. 260—294.8 D** **5 Claims**

3-(5-Chloro-2-pyridyl)rhodanine and 3-(5-chloro-2-pyridyl)-5-(lower alkyl)rhodanines. The compounds are anti-parasitic agents having nematocidal activity. They can be produced by cyclization of 5-chlorodithio-2-pyridinecarbamic acid, 1-carboxyalkyl esters. The latter compounds can be produced by reacting a tertiary amine salt of 5-chlorodithio-2-pyridinecarbamic acid with a haloalkanoic acid salt followed by acidifying the product. Tertiary amine salts of 5-chlorodithio-2-pyridinecarbamic acid can be produced by reacting 2-amino-5-chloropyridine with carbon disulfide and a tertiary amine.

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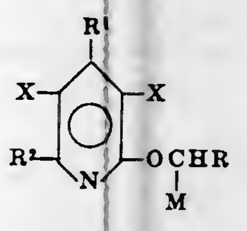
### 3,761,486
### AMINOHALOPYRIDYLOXY ACIDS AND DERIVATIVES THEREOF

**Stanley D. McGregor, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed July 26, 1971, Ser. No. 166,257**
**Int. Cl. C07d** *31/40*

**U.S. Cl. 260—294.9** **11 Claims**

Compounds corresponding to the formula



wherein X represents chloro, bromo, or fluoro; R represents one of cyano (-CN), carbamoyl (-$CONR^3R^4$) or carboxy (-COOH) or the carboxylic acid salts thereof; each of $R^3$ and $R^4$

independently represents hydrogen or alkyl of 1 to 8 carbon atoms: M represents hydrogen or loweralkyl; $R^1$ represents hydrogen, loweralkyl, amino or loweralkyl-amino of 1 to 4 carbon atoms; and $R^2$ represents hydrogen, X, loweralkyl, amino or loweralkylamino, with the proviso that one of $R^1$ or $R^2$ is always amino or loweralkylamino and the other of $R^1$ and $R^2$ is always other than amino or loweralkylamino are prepared. These compounds are useful as herbicides and as active agents in compositions used as herbicides.

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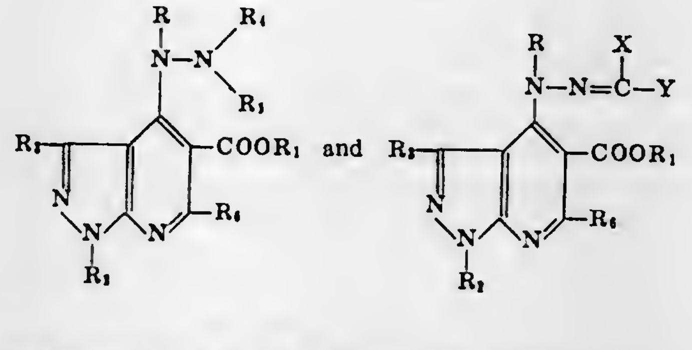
### 3,761,487
### HYDRAZINES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

**Hans Hoehn, Tegernheim, Germany, and Mark Chasin, Englishtown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Continuation-in-part of Ser. No. 42,415, June 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 833,672, June 16, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,409**
**Int. Cl. C07d** *31/36*

**U.S. Cl. 260—295.5 B** **11 Claims**

New hydrazines, hydrazides and hydrazones of pyrazolopyridine carboxylic acids and esters having the general formula



and salts thereof which are antimicrobial agents and central depressants are the subject of this invention.

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### 3,761,488
### 3-ISOTHIAZOLONES

**Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,780, March 9, 1967, abandoned. This application June 25, 1969, Ser. No. 836,660**
**Int. Cl. C07d** *91/10*

**U.S. Cl. 260—302** **29 Claims**

Disclosed herein are certain novel compounds which are most properly designated as 3-isothiazolones. These compounds and compositions containing them exhibit a broad spectrum of biocidal properties and are particularly effective for the control of microorganisms.

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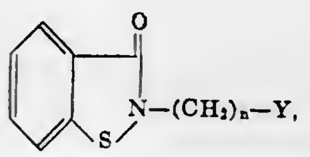
### 3,761,489
### SUBSTITUTED N-ALKYL BENZISOTHIAZOLINONES

**John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio**

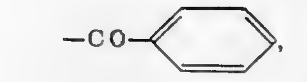
**Continuation-in-part of Ser. No. 199,007, Nov. 15, 1971. This application Dec. 20, 1971, Ser. No. 210,198**
**Int. Cl. C07d** *91/10*

**U.S. Cl. 260—304** **6 Claims**

A novel class of benzisothiazolinones having the structural formula:



where *n* is 1 or 2 and Y is selected from —CN, —SCN,



and $—CH(OCH_3)_2$. These compounds are useful as microbiocides, particularly for control of fungi.

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### 3,761,490
### CYCLOPROPANE-CARBOXYLIC ACID BENZOTHIAZYLAMIDES

**Werner Schafer, Leverkusen; Klaus Sasse, Schildgen; Ludwig Eue, and Helmuth Hack, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

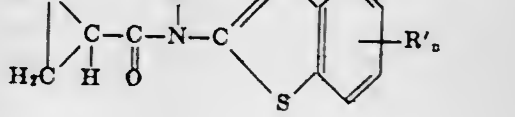
**Filed Oct. 15, 1970, Ser. No. 81,117**

**Claims priority, application Germany, Oct. 23, 1969, P 19 53 357.4**

**Int. Cl. C07d** *91/46*

**U.S. Cl. 260—305** **15 Claims**

Cyclopropane-carboxylic acid benzothiazylamides of the formula



wherein

R is hydrogen or alkyl of from one to four carbon atoms;

R′ is halogen, alkyl or from one to four carbon atoms and/or alkoxy of from one to two carbon atoms; and

*n* is 0, 1 or 2

exhibit exceptional herbicidal activity including selective herbicidal activity.

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### 3,761,491
### 1-SUBSTITUTED-5-NITROIMIDAZOL-2-YLALKYL-(N-SUBSTITUTED)-CARBAMATES

**John A. Carlson, Nassau, N.Y.; Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co., Inc., Rahway, N.J.**

**Division of Ser. No. 855,765, Sept. 5, 1969, Pat. No. 3,646,027, which is a continuation-in-part of Ser. No. 550,932, May 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 470,239, July 7, 1965, abandoned. This application Nov. 12, 1971, Ser. No. 198,438**
**Int. Cl. C07d** *49/36*

**U.S. Cl. 260—309** **9 Claims**

1-Substituted-5-nitroimidazol-2-ylalkyl carbamates containing N-acyl substituents, and acid addition salts thereof are prepared from 1-substituted-5-nitroimidazoles having at the 2-position of the imidazole ring an hydroxyalkyl, mercaptoalkyl, haloalkyl, halo-carbonylalkyl or halothiocarbonyloxyalkyl radical. The 1-substituted-5-nitroimidazol-2-ylalkyl-(N-substituted)-carbamates are useful in the treatment of parasitic diseases. Antiparasitic compositions in which the active ingredient is a 1-substituted-imidazol-2-ylalkyl-(N-substituted)-carbamate are also provided.

**3,761,492**

### THIOSEMICARBAZONES

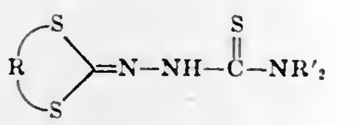
**Roger Williams Addor, Pennington, and Glentworth Lamb, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Feb. 17, 1972, Ser. No. 227,287**

**Int. Cl. A61k** *27/00;* **C07d** *71/00*

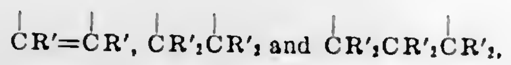
**U.S. Cl. 260—327 M** **12 Claims**

The present invention relates to novel compounds of the formula:



I

wherein R is a member selected from the group consisting of



$$\overset{|}{C}R'=\overset{|}{C}R',\ \overset{|}{C}R'_2\overset{|}{C}R'_2 \text{ and } \overset{|}{C}R'_2CR'_2\overset{|}{C}R'_2,$$

and the R's are independently hydrogen or lower alkyl of $C_1$–$C_4$. It further relates to controlling fungi and protecting crops from attach by fungus organisms with the above compound.

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**3,761,493**

### 3-DIBROMOMETHYLPHTHALIC ANHYDRIDE

**Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 889,795, Dec. 15, 1969, Pat. No. 3,624,108, which is a division of Ser. No. 729,487, April 23, 1968, Pat. No. 3,539,567, which is a continuation-in-part of Ser. Nos. 583,980, Oct. 3, 1966, abandoned, and Ser. No. 539,303, April 1, 1966, abandoned, and Ser. No. 445,762, April 5, 1965, abandoned, said Ser. No. 539,303, is a continuation of Ser. No. 445,762, , said Ser. No. 583,980, is a continuation-in-part of Ser. No. 539,303, , and Ser. No. 445,762,. This application Oct. 15, 1970, Ser. No. 81,114**

**Int. Cl. C07c** *63/14*

**U.S. Cl. 260—346.3** **1 Claim**

Various derivatives of 8-carboxy-1(2H)phthalazinones are anti-inflammatory agents and chemical intermediates for the preparation of 3-keto-2,3-dihydro-),2,8,9-tetraazaphenalenes.

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**3,761,494**

### 5-(2-METHYLENE-ACYL)-BENZOFURAN-2-CARBOXYLIC ACIDS AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

**Ernst Habicht, Oberwil/Basel, Switzerland, and Bernard Libis, Saint-Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation-in-part of Ser. No. 827,883, May 26, 1969, abandoned. This application Nov. 5, 1970, Ser. No. 87,339**

**Claims priority, application Switzerland, May 30, 1968, 8032/68; Nov. 20, 1969, 17272/69**

**Int. Cl. C07d** *5/36*

**U.S. Cl. 260—346.2 R** **9 Claims**

5-(2-Methylene-acyl)-benzofuran-2-carboxylic acids, 5-(2-methylene-acyl)-benzothiophene-2-carboxylic acids and pharmaceutically acceptable salts thereof with bases, which compounds have valuable simultaneous diuretic and saluretic activity, therapeutic compositions containing such compounds or their pharmaceutically acceptable salts with bases as well as a method for producing simultaneous diuretic and saluretic effects in mammals. An illustrative embodiment is 5-(2-methylene-butyryl)-6-methyl-2,3-dihydro-benzofuran-2-carboxylic acid.

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**3,761,495**

### EPOXIDIZED HYDROCARBON ACID ESTERS HAVING JUVENILE HORMONE ACTIVITY

**John A. Findlay, 682 George St., Fredericton, New Brunswick, Canada**

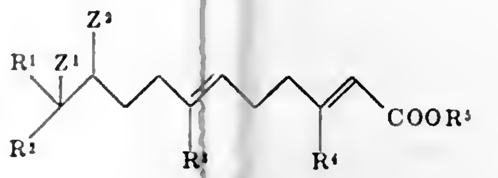
**Filed Aug. 4, 1971, Ser. No. 169,126**

**Claims priority, application Canada, Oct. 13, 1970, 095,437**

**Int. Cl. C07d** *1/22*

**U.S. Cl. 260—348 A** **2 Claims**

A process is disclosed herein for the preparation of hydrocarbon acid esters of formula,



in which $R^1$ and $R^2$ are alkyl groups containing two to four carbon atoms or $R^1$ and $R^2$ together are a polymethylene group containing four to five carbon atoms forming a cyclopentane or cyclohexane ring, $R^3$, $R^4$ and $R^5$ are alkyl groups containing 1 – 2 carbon atoms and $Z^1$ and $Z^2$ together are a carbon-carbon double bond or an epoxide; whereby the appropriate ketone of formula $R^1R^2C = O$ is condensed with the ylid generated from either 4-oxopentyl-1-triphenylphosphonium iodide ethylene ketal or 4-oxohexyl-1-triphenylphosphonium iodide ethylene ketal, followed by acid treatment to remove the ketal, and yield the appropriate ketonic intermediate, which is treated successively with either of the preceding ylids and then acid treatment to yield a ketone of formula $R^1R^2C = CHCH_2CH_2CR^3{=}CHCH_2CH_2COR^4$; the last said compound is then treated with the anion prepared from a dialkylcarbomethoxymethyl or a dialkylcarboethoxymethyl phosphonate to yield the hydrocarbon acid esters of the above formula in which $Z^1$ and $Z^2$ together are a carbon-carbon double bond, said last compounds are oxidized to yield the hydrocarbon acid esters of the above formula in which $Z^1$ and $Z^2$ together are an epoxide. The hydrocarbon acid esters of this invention are useful for the control of insect populations and methods for their formulation and use for this purpose are given.

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**3,761,496**

### PROCESS FOR THE ACYLATION OF 17β-HYDROXYSTEROIDS CONTAINING AN ENOLIZABLE OXO-GROUP

**Zoltan Tuba; Maria Bor nee Szabo; Karoly Molnar, and Sandor Gorog, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary**

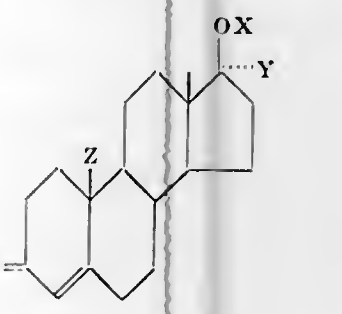
**Filed July 6, 1971, Ser. No. 160,085**

**Claims priority, application Hungary, July 29, 1970, RI-399**

**Int. Cl. C07c** *167/28*

**U.S. Cl. 260—397.4** **7 Claims**

This invention relates to the acylation of 17β-hydroxysteroids containing an enolizable oxogroup in the A-ring having the general formula I



(I)

wherein

X represents a straight-chain, branched-chain or cyclic acyl group of one to eight carbon atoms or a haloacyl group of one to three carbon atoms,

Y represents ethynyl, vinyl, allyl group or an alkyl group of one to four carbon atoms, and

Z represents hydrogen group or methyl.

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**3,761,497**

### METHOD OF PRODUCING RACEMIC ESTRADIOL-3,17β

**Tatyana Andreevna Serebryakova, ulitsa Mosfilmovskaya, 41, kv. 58; Ardalion Vladimirovich Zakharychev, ulitsa Zatonnaya, 9, korpus 5, kv. 77; Margarita Alexandrovna Nekrasova, ulitsa Junnatov, 15, korpus B, kv. 10; Sofya Nikolaevna Ananchenko, Leninsky prospekt, 40, kv. 36, and Igor Vladimirovich Torgov, ulitsa Obrucheva, 16, kv. 34, all of Moscow, U.S.S.R.**

**Filed Apr. 23, 1971, Ser. No. 137,090**

**Int. Cl. C07c** *169/08*

**U.S. Cl. 260—397.5** **5 Claims**

A method of producing racemic estradiol-3,17β wherein 6-methoxytetralone is demethylated by hydrobromic acid in the medium of acetic acid while boiling, the resultant 6-hydroxytetralone is reacted with vinylmagnesiumbromide to form into 1-vinyl-1,2,3,4-tetrahydronaphthalene-1,6-diol which is condensed with 2-methylcyclopentane-1,3-dione; the thus-obtained $\Delta^{1,3,5(10),9(11)}$-8,14-seco-estratetraen-3-o1-14,17-dione is subjected to cyclization, the resulting $\Delta^{1,3,5(10),8(9),14(15)}$-estrapentaen-3-o1-17-one is hydrogenated into $\Delta^{1,3,5(10),8(9)}$-estratetraen-3-o1-17-one then reduced by sodiumborohydride and the thus-produced $\Delta^{1,3,5(10),8(9)}$-estratetraene-3,17β-diol is subjected to ionic reduction by triethylsilane and trifluoroacetic acid in the medium of an organic solvent followed by the isolation of the final product.

The thus-obtained racemic estradiol-3,17β finds application in medical practice as a pharmaceutical preparation in the treatment of genital disorders, and therapy of hormone-dependent tumors, as well as a component in contraceptive prescriptions.

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**3,761,498**

### NEW PROCESS OF PREPARATION OF STEROIDS

**Ivan Villax, Lisbon, Portugal, assignor to Plurichemie Anstalt, Vaduz, Liechtenstein**

**Filed May 26, 1972, Ser. No. 257,358**

**Claims priority, application Portugal, June 5, 1971, 55886**

**Int. Cl. C07c** *169/34*

**U.S. Cl. 260—397.45** **10 Claims**

A new process for the preparation of 16β-methyl-17α-hydroxy-1,4,9(11)-pregnatriene-3,20-dione is characterized in that 16α, 17α-epoxy-5β-pregnane-3,11,20-trione is reacted with ethylene glycol to form 16α, 17α-epoxy-3,20-bis-ethylenedioxy-5β-pregnane-11-one, which is reacted with a borohydride to form 16α,17α-epoxy-3,20-bis-ethylenedioxy-11β-hydroxy-5β-pregnane, which is reacted with methanesulfonyl chloride to form 16α,17α-epoxy-3,20-bis-ethylenedioxy-5β-pregn-9(11)-ene, which in turn is reacted with a Grignard reagent to form 16β-methyl-17α-hydroxy-3,20-bis-ethylene-dioxy-5β-pregn-9(11)-ene and then with an aqueous acid solution to form 16β-methyl-17α-hydroxy-5β-pregn-9(11)-ene-3,20-dione which is brominated to form the levo rotatory 1,4-dibromo derivative and then debrominated to form the desired compound.

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**3,761,499**

### ANIMAL FAT CLEANING COMPOSITION AND METHOD

**William H. Jennings, P.O. Box 851, Virginia Beach, Va.**

**Division of Ser. No. 640,775, May 8, 1967, Pat. No. 3,557,008. This application Sept. 25, 1970, Ser. No. 75,664**

**Int. Cl. C09f** *5/10*

**U.S. Cl. 260—424** **6 Claims**

The present invention relates to the process and composition for removal of proteinaceous fines from crude fat derivatives obtained by a rendering of animals, fowl, and the like by addition of certain compounds thereto capable of forming silicic acid in situ by reaction with fatty acids present in the fatty derivatives. The formed silicic acid settles through the fat derivatives to entrain and carry the proteinaceous fines downwardly leaving the clean fatty materials as a top layer.

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**3,761,500**

### LIQUID DOUBLE ALKOXIDES

**Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation-in-part of Ser. No. 40,702, May 26, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 240,232**

**Int. Cl. C07f** *5/06*

**U.S. Cl. 260—448 AD** **7 Claims**

Double alkoxides of the type represented by the formula $MgAl_2(OR)_8$, or alternatively represented by the formula $Mg[Al(OR)_4c0]\ _{,2}$wherein the OR group designates a seconda alkoxy group containing 4 to 7 carbon atoms, are provided. These alkoxides are liquids at 25° C. and one atmosphere of pressure. Particularly preferred alkoxides are the magnesium aluminum double alkoxides of the type represented by the formula $Mg[Al(OR)_4]_2$, wherein R is

$$CH_3C(H)CH_2CH_3,\ C_2H_5C(H)C_2H_5,$$

$$CH_3C(H)(CH_2)_2CH_3,\ CH_3C(H)(CH_2)_3CH_3,$$

$$C_2H_5C(H)(CH_2)_2CH_3, \text{ or } CH_3(CH_2)_2C(H)(CH_2)_2CH_3$$

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**3,761,501**

### PERFLUOROALKYL CYANATES

**Cyril Woolf; Robert E. A. Dear, both of Morristown, and David E. Young, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed June 2, 1971, Ser. No. 149,347**

**Int. Cl. C07c** *119/04*

**U.S. Cl. 260—453 AL** **5 Claims**

Tertiary perfluoroalkyl cyanates are prepared by reacting the corresponding tertiary perfluoroalkoxide with cyanogen chloride or cyanogen bromide. The cyanates are novel compounds useful as intermediates in the preparation of low surface energy compounds useful as repellent coatings.

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**3,761,502**

### PREPARATION OF LIQUID CARBODIIMIDE-CONTAINING ORGANIC POLYISOCYANATES

**Peter T. Kan, Livonia, and Moses Cenker, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Filed Aug. 13, 1971, Ser. No. 171,725**

**Int. Cl. C07c** *119/04*

**U.S. Cl. 260—453 P** **6 Claims**

An organic polyisocyanate containing a controlled amount of carbodiimide linkages and which is useful in the preparation of rigid urethane foams.

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**3,761,503**

### SUBSTITUTED-3,5-SECO-A-NOR-PREGNAN-3-OIC-ACIDS

**Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 499,094, Oct. 20, 1965, Pat. No. 3,574,761, which is a continuation-in-part of Ser. No. 400,206, Sept. 29, 1964, Pat. No. 3,412,107. This application June 13, 1968, Ser. No. 736,568**

**Int. Cl. C07d** *15/00*

**U.S. Cl. 260—456 R** **5 Claims**

This invention is directed to substituted-3,5-seco-A-nor-pregnan-3-oic-acids and derivatives thereof which are useful as intermediates in the synthesis of known 9β,10α-steroids of the pregnane series. The latter compounds can be utilized as both progestational and salt-retaining agents.

### 3,761,504

### 11-SUBSTITUTED-3, 5-SECO-A-NORANDROSTAN-3-OIC ACIDS

**Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 737,289, June 17, 1968, abandoned, which is a division of Ser. No. 499,094, Oct. 20, 1965, Pat. No. 3,574,761, which is a continuation-in-part of Ser. No. 400,206, Sept. 29, 1964, Pat. No. 3,412,107. This application Dec. 15, 1971, Ser. No. 208,452**

**Int. Cl. C07c** *143/02*

**U.S. Cl. 260—456 R** **3 Claims**

This invention is directed to 11-substituted-3,5-seco-A-norandrostan-3-oic acids and derivatives thereof which are useful as intermediates in the synthesis of known $9\beta,10\alpha$ steroids of the androstane series. The latter compounds can be utilized as anabolic and anti-androgenic agents.

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### 3,761,505

### CYANO-CARBOXY-CYCLOPROPANE DERIVATIVES USEFUL AS INTERMEDIATES IN THE PREPARATION OF CHRYSANTHEMIC ACID

**Marc Julia, Paris, France, assignor to Rhone-Poulenc, Paris, France**

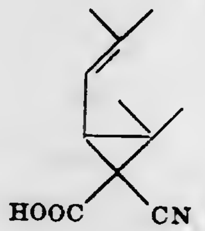
**Division of Ser. No. 673,929, Oct. 9, 1967, Pat. No. 3,658,879. This application Apr. 27, 1971, Ser. No. 138,003**

**Claims priority, application France, Oct. 12, 1966, 6679723; Feb. 24, 1967, 6796478**

**Int. Cl. C07c** *121/02, 121/48*

**U.S. Cl. 260—464** **8 Claims**

The acid of the formula:



and its lower alkyl esters are useful intermediates in the preparation of chrysanthemic acid.

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### 3,761,506

### CYCLOPROPANE CARBOXYLIC ACID ESTERS

**John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, both of England, assignors to Hoffman-La Roche Inc., Nutley, N.J.**

**Filed Apr. 27, 1971, Ser. No. 139,296**

**Int. Cl. C07c** *69/74*

**U.S. Cl. 260—468 H** **10 Claims**

Cyclopropane carboxylic acid esters of phenoxybutynyl alcohols. The phenyl ring may include a chloro or lower alkyl substituent. The esters are useful as insecticides.

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### 3,761,507

### PROCESS FOR THE PREPARATION OF HEXAHYDROINDAN-4-CARBOXYLIC ACID ESTER DERIVATIVES

**Ulrich Eder, Berlin, and Hans Peter Lorenz, Unna, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany**

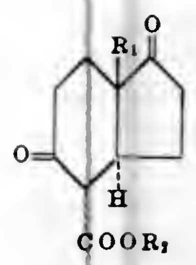
**Filed June 15, 1972, Ser. No. 263,226**

**Claims priority, application Germany, June 18, 1971, P 21 31 230.1**

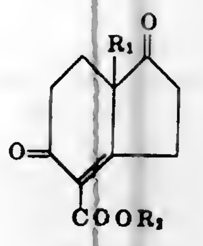
**Int. Cl. C07c** *69/74*

**U.S. Cl. 260—468 G** **7 Claims**

In a process for the preparation of hexahydroindan-4-carboxylic acid derivatives of the formula



wherein $R_1$ is alkyl group of one to six carbon atoms and $R_2$ is hydrogen or a hydrocarbon residue of one to eight carbon atoms, by hydrogenating a tetrahydroindan-4-carboxylic acid derivative of the formula



wherein $R_1$ and $R_2$ have the above-indicated meanings with hydrogen in the presence of a palladium- or rhodium-containing hydrogenation catalyst, the improvement which comprises conducting the hydrogenation reaction in the presence of a stereospecific amount of a tertiary amine.

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### 3,761,508

### HERBICIDAL ALANINE DERIVATIVES

**Ernest Haddock, Sheppey, England, assignor to Shell Oil Company, New York, N.Y.**

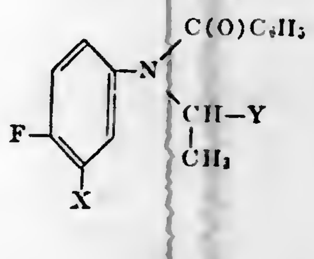
**Filed Feb. 25, 1971, Ser. No. 118,986**

**Claims priority, application Great Britain, Mar. 4, 1970, 10,375/70**

**Int. Cl. C07c** *103/30*

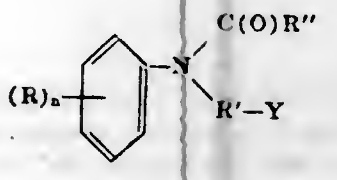
**U.S. Cl. 260—471 A** **5 Claims**

N,N-disubstituted alanine derivatives of the formula



wherein X is H or Cl and Y represents a carboxyl group or the salts or alkyl esters thereof, and compositions containing them are useful for controlling undesirable plant growth.

British Patent No. 1,164,160 describes and claims novel amino acid derivatives of the formula:



wherein R represents a halogen atom, preferably a chlorine atom, or an alkyl or alkoxy group; *n* represents 0 or an integer from 1-5, and when *n* is greater than 1 each R group may be the same or different; R′ represents an alkylene group, preferably an ethylidene group; R″ represents an alkyl, alkoxy, aryl or an aryloxyalkylene group; and Y represents a carboxy group or salts or esters thereof, or a carbamoyl group optionally mono- or di-N-substituted. The derivatives N-benzoyl-N-(3,4-dichlorophenyl) alanine and its ethyl ester are named as particularly preferred compounds by reason of their selective herbicidal action in controlling the growth of wild oats.

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### 3,761,509

### N,N′-ALKYLENEBIS (4-SUBSTITUTED-BENZAMIDES)

**George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 756,403, Aug. 30, 1968, abandoned. This application Feb. 25, 1971, Ser. No. 119,028**

**Int. Cl. C07c** *125/06*

**U.S. Cl. 260—471 C** **10 Claims**

N,N′-alkylenebis(4-Q-benzamides) where alkylene has from seven to 10 carbon atoms inclusive, having endocrinological properties, are prepared preferably by reacting an alkylenediamine with a 4-Q-benzoyl halide where Q is lower-alkyl, trifluoromethyl, trichloromethyl, trifluoromethylthio, trichloromethylthio, lower-alkylamino, di-(lower-alkyl)amino or N-(benzyloxycarbonyl)-N-(lower-alkyl)-amino.

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### 3,761,510

### PROCESS FOR PREPARING ALKYL NITROACETATES AND INTERMEDIATES THEREFOR

**Stylianos Sifniades, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed June 2, 1971, Ser. No. 149,344**

**Int. Cl. C07c** *79/42*

**U.S. Cl. 260—478** **32 Claims**

Improved process for preparing alkyl nitroacetates by reaction of an acyl nitrate and an alkyl acetoacetate in the presence of an acid catalyst at low temperatures to form an alkyl nitroacetoacetate intermediate which can be cleaved with a nucleophile to form an alkyl nitroacetate.

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### 3,761,511

### PROCESS FOR POLYMERIZING ε-CAPROLACTONES

**Yasuji Nakahara; Kiyoshi Ichikawa, and Kaoru Osonoi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Aug. 6, 1970, Ser. No. 61,811**

**Int. Cl. C07c** *125/06*

**U.S. Cl. 260—482 B** **8 Claims**

Process for preparing poly-ε-caprolactones which comprises heating ε-caprolactones using hydrazine as the polymerization initiator at a temperature between the melting point of ε-caprolactones and about 35° C. at the first step of polymerization and subsequently at a temperature from 120° to 250° C. at the second step of polymerization until polymerization of the ε-caprolactones is completed.

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### 3,761,512

### ANTI-VIRAL COMPOUNDS

**Antony Borrow; Douglas Broadbent; Stephen Barnaby Carter; Gillian Margaret Evans; Harold George Hemming; Barrie Hesp, and Carol Parton, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Feb. 28, 1972, Ser. No. 230,140**

**Int. Cl. C07c** *35/44, 69/20, 69/40*

**U.S. Cl. 260—485 G** **2 Claims**

Cyclohepta[a]naphthalene derivatives and processes for their preparation. Compounds are mitotic suppressants and active against DNA viruses, for example *Herpes simplex*.

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### 3,761,513

### PROCESS FOR THE MANUFACTURE OF VINYL ACETATE

**Kurt Sennewald; Wilhelm Vogt, both of Knapsack near Cologne, and Hermann Glaser, Lechenich, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany**

**Continuation-in-part of Ser. No. 553,721, May 31, 1966, abandoned. This application Apr. 14, 1969, Ser. No. 816,121**

**Claims priority, application Germany, June 25, 1965, K 56472; July 20, 1965, K 56658; Apr. 1, 1966, K 58898**

**Int. Cl. C07c** *67/04, 69/14*

**U.S. Cl. 260—497 A** **8 Claims**

An improved process for the catalytic, vapor phase production of vinyl acetate from ethylene, acetic acid and molecular oxygen is shown. A catalyst for the synthesis reaction comprising metallic palladium and an alkali metal acetate or formate supported on an inert carrier is activated by including metallic gold therein. A preferred catalyst composition which shows substantially improved operating characteristics includes metallic palladium, an alkali metal acetate and metallic gold. Another preferred catalyst composition includes a low melting mixture of at least two alkali metal acetates.

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### 3,761,514

### dl-DODECAHYDRO-8β-(t-BUTOXY OR BENZYLOXY)-8aβ-LOWER ALKYL-2-OXO-PHENANTHRENE-ALKANOIC ACIDS

**Marinus Los, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

**Division of Ser. No. 372,690, June 4, 1964, Pat. No. 3,446,849. This application Jan. 6, 1969, Ser. No. 789,421**

**Int. Cl. C07c** *61/32*

**U.S. Cl. 260—514.5** **2 Claims**

This disclosure describes compounds of the class of dl-2,3,4,4a$\beta$,4b$\alpha$,5,6,7,8,8a,9,10-dodecahydro-8a$\beta$-lower alkyl--8$\beta$-(t-butoxy or benzyloxy)-2-oxo-1-substituted-phenanthrenes useful as intermediates in the synthesis of biologically active steroid moieties.

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### 3,761,515

### PREPARATION OF POTASSIUM TEREPHTHALATE

**Wilton H. Lind, and Robert W. Campbell, both of Petaluma, Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed Oct. 21, 1971, Ser. No. 191,341**

**Int. Cl. C07c** *63/26*

**U.S. Cl. 260—515 P** **4 Claims**

Potassium terephthalate is prepared by conversion of mixture of potassium benzoate and potassium orthophthalate.

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### 3,761,516

### PROCESS FOR PRODUCING UNSATURATED ACIDS FROM THE CORRESPONDING UNSATURATED ALDEHYDES

**Sargis Khoobiar, Clifton, N.J., assignor to Halcon International, Inc., New York, N.Y.**

**Filed Sept. 28, 1971, Ser. No. 184,588**

**Int. Cl. C07c** *57/04, 51/32*

**U.S. Cl. 260—530 N** **10 Claims**

A catalyst useful for the oxidation of unsaturated aldehydes, particularly the oxidation of acrolein and methacrolein, to produce the corresponding unsaturated acids, comprises the combination of molybdenum, phosphorus and arsenic on a support or carrier which is characterized by external macro pores. A preferred form of the catalyst further includes a promoter which is aluminum, copper or cobalt.

### 3,761,517
### PROCESS FOR THE CONTINUOUS PRODUCTION OF SATURATED ALIPHATIC DICARBOXYLIC ACIDS

**Hermann Rohl; Werner Eversmann; Peter Hegenberg, and Gerhard Hellemanns, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany**

**Filed Apr. 15, 1970, Ser. No. 28,564**

**Claims priority, application Germany, Apr. 16, 1969, P 19 19 228.0**

**Int. Cl. C07c** *55/04*

**U.S. Cl. 260—531 R** **17 Claims**

Process for the production of adipic acid and other aliphatic dicarboxylic acids by the continuous catalytic nitric acid oxidation of cyclohexanol or cyclohexanon and other cycloalkanols and cycloalkanones in which the weight ratio of nitric acid to organic compound is 5 : 1 to 20 : 1, the oxidation temperature is 20° to 50° C., the residence time is 20 to 70 minutes and the nitrogen oxides produced in the oxidation are recycled.

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### 3,761,518
### 2-HYDROXY-4-METHYLSULFINYL-BUTYRIC ACID AND DERIVATIVES

**Frank R. Haglid, Wilmington, Del., assignor to E. I. du Pont de Nemours, Wilmington, Del.**

**Filed Mar. 12, 1971, Ser. No. 123,848**

**Int. Cl. C07c** *147/14*

**U.S. Cl. 260—535 R** **3 Claims**

This invention relates to 2-hydroxy-4-methyl-sulfinylbutyric acid and salts, esters, and amides thereof, that can be incorporated in the diet of animals to increase feed efficiency.

Disclosed are methods for the preparation of the new sulfoxide compounds as well as feed compositions and feed concentrates containing them.

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### 3,761,519
### HYDROXY-PHENYL FORMYLHYDRAZIDES

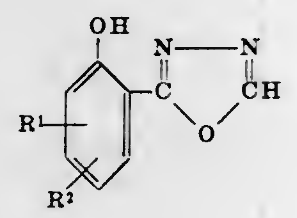
**William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio**

**Division of Ser. No. 832,429, June 11, 1969, Pat. No. 3,641,045. This application Apr. 15, 1971, Ser. No. 134,509**

**Int. Cl. C07c** *103/30*

**U.S. Cl. 260—559 H** **3 Claims**

Oxadiazoles of the formula:



wherein $R^1$ and $R^2$ are hydrogen, halogen or hydrocarbyl providing that both Rs are not hydrogen, and novel hydrazide and formylhydrazide intermediates. The oxadiazoles are useful as bacteria growth inhibitors.

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### 3,761,520
### REARRANGEMENT OF N-ALKYL AROMATIC AMINES

**John P. Napolitano, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.**

**Filed Feb. 14, 1969, Ser. No. 799,523**

**Int. Cl. C07c** *87/28, 87/50*

**U.S. Cl. 260—578** **9 Claims**

N-alkyl secondary aromatic amines having at least one unsubstituted ortho position are converted to orthoalkyl primary aromatic amines by heating to a temperature of 275°–400° C. in the presence of an aluminum anilide catalyst and an olefin which corresponds in structure to the N-alkyl group, but which contains olefinic unsaturation.

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### 3,761,521
### HYDROGENATION OF AROMATIC NITRO COMPOUNDS

**Louis Alheritiere; Georges Gobron; Claude Falize; Jean Diet; Bernard Roux, and Roland Bouchet, all of Melle, France, assignors to Melle-Bezons, Melle, France**

**Filed Oct. 16, 1969, Ser. No. 867,037**

**Claims priority, application France, Oct. 17, 1968, 68497**

**Int. Cl. C07c** *85/10, 85/12*

**U.S. Cl. 260—580** **3 Claims**

Process and apparatus for carrying out continuous chemical reactions, for example the hydrogenation of aromatic nitro compounds to aromatic amines, without the use of pumps and filters in which circulation is effected by control of the specific weights of various components as they circulate through the apparatus.

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### 3,761,522
### CONTROLLED MOLECULAR WEIGHT AZIRIDINE POLYMERS

**James G. Schneider, Angleton; Clarence R. Dick, and George E. Ham, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 558,555, June 20, 1966, Pat. No. 3,519,687. This application Apr. 1, 1970, Ser. No. 24,813**

**Int. Cl. C07c** *85/00, 87/20, 87/28*

**U.S. Cl. 260—583 P** **3 Claims**

Novel branched polyalkylenepolyamine compounds having a molecular weight of from about 300 to about 3,000 are prepared by reacting an aziridine with a compound having one or more primary and/or secondary amino groups. They are useful as epoxy curing agents.

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### 3,761,523
### PROCESS FOR PREPARING BIS-(HYDROXYALKYL) SECONDARY ALKYL AMINES

**Robert E. Reid, Glenham; Ting P. Chen, Wappingers Falls, and Frank K. Ward, Hopewell Junction, all of N.Y., assignors to Texaco, Inc., New York, N.Y.**

**Filed Jan. 7, 1972, Ser. No. 216,251**

**Int. Cl. C07c** *89/02*

**U.S. Cl. 260—584 R** **2 Claims**

A process for preparing bis-(hydroxyalkyl) secondary alkyl amines which comprises reacting, at elevated temperatures and pressures, secondary alkyl primary amines with alkylene oxides in the presence of a phenol catalyst.

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### 3,761,524
### ETHERIFICATION PROCESS

**Ross C. Terrell, Plainfield, and Alex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., New York, N.Y.**

**Filed May 3, 1971, Ser. No. 139,904**

**Int. Cl. C07c** *43/00, 41/00*

**U.S. Cl. 260—614 F** **9 Claims**

Trifluoroethanol and chlorodifluoromethane are reacted in the presence of an alkali metal hydroxide and a co-solvent system comprising water and one or more of N-methyl pyrrolidone, dimethyl sulfoxide, tetramethylene sulfone or diethyleneglycol dimethyl ether, to yield 2,2,2-trifluoroethyl difluoromethyl ether. N-methyl pyrrolidone is a preferred solvent.

### 3,761,525
### NON-DISCOLORING ANTIDEGRADANTS

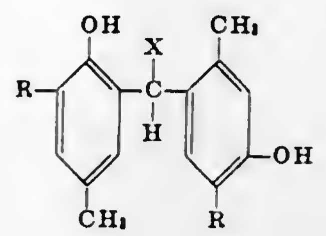
**Evan Johnson Young, and Charles Gene Summers, both of Medina, Ohio, assignors to Monsanto Company, St. Louis, Mo.**

**Division of Ser. Nos. 609,335, Jan. 16, 1967, Pat. No. 3,505,287, and Ser. No. 871,106, Aug. 1, 1969. This application Jan. 4, 1971, Ser. No. 103,811**

**Int. Cl. C07c** *39/16*

**U.S. Cl. 260—619 A** **1 Claim**

Compounds of the formula



where R is secondary of tertiary alkyl and X is straight or branched chain primary, secondary, or tertiary alkyl which are excellent non-discoloring antidegradants for rubber polymers.

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### 3,761,526
### ARYL AND CYCLOALKYL SUBSTITUTED NAPHTHOLS

**William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander Inc., Hanover, N.J.**

**Filed Apr. 14, 1971, Ser. No. 134,040**

**Int. Cl. C07c** *39/14*

**U.S. Cl. 260—619 F** **5 Claims**

Aryl and cycloalky substituted naphthols, e.g., 3-p-chlorophenyl-1-naphthol or 1,2,3,4-tetrahydroanthracen-9-ol are prepared by the acid rearrangement of benzoic acid lactones and are useful as antimicrobial agents.

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### 3,761,527
### PROCESS FOR OXIDATION OF 4-NITROSO-M-CRESOL

**Roger A. Baldwin, Oklahoma City, Okla., and Ming T. Cheng, Buena Park, Calif., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.**

**Filed June 3, 1970, Ser. No. 43,225**

**Int. Cl. C07c** *79/24*

**U.S. Cl. 260—622 R** **6 Claims**

The invention provides an oxidation process for converting 4-nitroso-m-cresol to the corresponding 4-nitro-m-cresol by reacting the nitroso compound with an oxidizing agent in the presence of a catalyst at reflux temperatures in a reaction solvent solution including lower aliphatic and alicyclic ketones. The mixture thereafter is cooled and the 4-nitro-m-cresol is recovered from the solvent solution.

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### 3,761,528
### NOVEL CHEMICAL COMPOSITIONS AND THEIR PREPARATION AND USES

**Gottfried J. Brendel, and Lawrence H. Shepherd, Jr., both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.**

**Division of Ser. No. 78,213, Oct. 5, 1970, Pat. No. 3,692,847, which is a division of Ser. No. 771,651, Oct. 29, 1968, Pat. No. 3,631,065. This application May 25, 1972, Ser. No. 257,048**

**Int. Cl. C07c** *31/34*

**U.S. Cl. 260—633** **3 Claims**

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organo-aluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organo-aluminum compound to hydrolysis, one or more olefins may be produced. To prepare branched chain alkenols, the cyclic organo-aluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5 membered ring. Thereupon the reaction mixture is subjected to hydrolysis. The following novel compounds were prepared by this procedure:

1-chloromethyl-3,4-dimethyl-4-penten-1-ol
1-chloromethyl-3,3-dimethyl-4-penten-1-ol
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol
1,5,5-trimethyl-6-hepten-1-ol
1,5,6-trimethyl-6-hepten-1-ol
4,5,6-trimethyl-6-hepten-1-ol
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran

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### 3,761,529
### METHOD OF PURIFYING ALKALI METAL ALKOXIDES

**Lim Drahoslav; Jiri Coupek, and Lubomir Lochmann, all of Praha, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Praha, Czechoslovakia**

**Filed July 15, 1970, Ser. No. 55,242**

**Claims priority, application Czechoslovakia, July 28, 1969, 5241/69**

**Int. Cl. C07c** *29/24, 31/30;* **C08f** *3/66*

**U.S. Cl. 260—643 A** **7 Claims**

A method of purifying alkali metal alkoxides which comprises dissolving said alkoxides in a solvatizing solvent capable of forming, together with said alkoxides, crystalline adducts or solvates, such as, for example, of pyridine or tetrahydrofuran, allowing the filtered adduct solution to crystallize preferably at temperatures of below zero degrees centigrade, and decomposing the crystals obtained by heating the same, under reduced partial or absolute pressure, to form a pure alkoxides and vapors of the aformentioned solvatizing solvent, the vapors being then separated off. In the process of crystallizing and washing the crystals there may be added a poor solvent for the adduct, such as, e.g., an aliphatic hydrocarbon, which solvent, however, is fairly miscible with the adduct forming solvent.

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### 3,761,530
### PREPARATION OF POLYCYCLIC AROMATIC COMPOUNDS

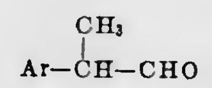
**John J. Van Venrooy, Media, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.**

**Filed May 31, 1972, Ser. No. 258,282**

**Int. Cl. C07c** *15/24*

**U.S. Cl. 260—668 F** **5 Claims**

A method for the preparation of 1,3-dimethyl substituted polycyclic aromatic compounds which comprises (1) subjecting a compound of structure



$$\mathrm{Ar-\overset{\displaystyle CH_3}{\overset{|}{C}}H-CHO}$$

where Ar is an aromatic or substituted aromatic group, to a mixed aldol condensation with propionaldehyde to form a 4-Ar-2-methyl-2-pentenal, and (2) subjecting said pentenal to a ring closure catalyzed by a halogen acid.

### 3,761,531
## DEHYDROGENATION WITH A MULTICOMPONENT CATALYST

**Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 50,333, June 26, 1970, Pat. No. 3,682,838. This application June 1, 1972, Ser. No. 258,595**

**Int. Cl. C07c** *5/18, 15/10*

**U.S. Cl. 260—668 D** **28 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a Group IVA metallic component, a Group VA metallic component and an alkali or alkaline earth metallic component with an alumina carrier material. A specific example of the disclosed method is a method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon at dehydrogenation conditions with a catalyst comprising a combination of catalytically effective amounts of a platinum component, a germanium or tin component, an arsenic component and an alkali or alkaline earth metallic component with an alumina carrier material. Disclosed method is particularly useful for the dehydrogenation of long chain normal paraffins to produce normal mono-olefins of the same carbon number.

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### 3,761,532
## ORTHO DIALKYL BENZENE PREPARATION VIA DEHYDROCYCLIZATION PROCESS

**Arnaud Marie Jose De Gramont, Bougival; Jean Maurin, Montivilliers, and Joseph Edouard Weisang, Le Havre, all of France, assignors to Compagnie Francaise De Raffinage, Paris, France**

**Filed Mar. 24, 1970, Ser. No. 22,337**

**Claims priority, application France, Mar. 26, 1969, 6908911**

**Int. Cl. C07c** *5/22*

**U.S. Cl. 260—673.5** **1 Claim**

Salts of orthodialkyl benzene sulfonates have been disclosed as having excellent detersive and biode-gradability properties. A process for manufacturing these compounds has also been disclosed. In this process, paraffinic stock of certain carbon atom range is reacted with the aid of a dehydrocyclization catalyst to produce the dialkyl benzene precursors.

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### 3,761,533
## SEPARATION PROCESS OF COMPONENTS OF FEED MIXTURE UTILIZING SOLID SORBENT

**Seiya Otani; Takao Iwamura; Kiichiro Sando; Masazumi Kanaoka; Kiichiro Matsumura; Shoichi Akita, all of Yokohama; Takeya Yamamoto, Kawasaki; Ikuyoshi Takeuchi, Yokohama; Tasuaki Tsuchiya, Yokohama; Yoshio Noguchi, and Toshio Mori, Yokohama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan**

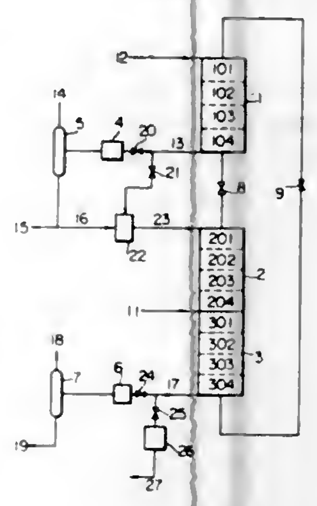
**Filed July 20, 1971, Ser. No. 164,345**

**Claims priority, application Japan, July 23, 1970, 45/63961; Aug. 3, 1970, 45/67613**

**Int. Cl. C07c** *7/12;* **C10g** *25/04*

**U.S. Cl. 260—674 SA** **7 Claims**

A process for continuously separating, in the liquid phase, the components of a feed mixture by contact with a solid sorbent utilizing a simulated countercurrent flow system wherein a liquid stream flows through serially and circularly interconnected desorption, rectification and sorption zones, in which process the flow of liquid stream is interrupted between both the desorption and rectification zones, and the first portion of effluent from the desorption zone, the portion being rich in sorbate, is directly circulated, and the second portion of the same comprising sorbate of high purity and desorbent is fed to a distillation apparatus from which one portion of the sorbate distillate is circulated, both as reflux into the rectification zone, to maximize the sorbate product purity at a reduced cost.



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### 3,761,534
## REMOVAL OF ACIDIC CONTAMINANTS FROM PROCESS STREAMS

**Yun Chung Sun, and Richard T. Dickerson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Dec. 29, 1971, Ser. No. 213,752**

**Int. Cl. C07c** *7/00;* **C10g** *19/00*

**U.S. Cl. 260—674 A** **8 Claims**

Acidic contaminants such as sulfuric acid, HCl, $H_2S$, mercaptans and organic acids are efficiently removed from organic process streams by contacting the acid-containing streams with a porous granular alkali composed of 5–95 percent NaOH and 95–5 percent CaO or $Ca(OH)_2$. The process is preferably carried out by introducing the organic stream at the bottom of a column of alkali with a sump or reservoir below the bottom.

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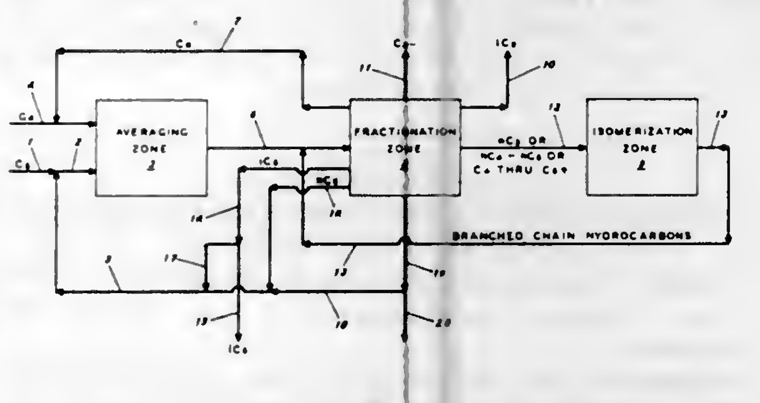
### 3,761,535
## PROCESS FOR CONNECTING BUTANE AND HEXANE INTO ISOPENTANE BY ISOMERIZATION AND AVERAGING

**Robert P. Sieg, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Oct. 15, 1970, Ser. No. 80,962**

**Int. Cl. C07c** *9/00*

**U.S. Cl. 260—676 R** **13 Claims**



A process for converting butane and hexane into isopentane which comprises (a) isomerizing a $C_6$ rich hydrocarbon stream in an isomerization zone by contacting the $C_6$ rich hydrocarbon stream with an isomerization catalyst at a hydrogen partial pressure between 10 psig and 3,000 psig and a temperature between 100° and 900° F. to obtain a $C_6$ rich effluent stream of increased isohexane content, and (b) averaging at least a portion of the $C_6$ rich effluent stream with butane in an averaging zone by contacting the $C_6$ and butane hydrocarbons with an averaging catalyst having a component which has catalytic activity for alkane dehydrogenation and a component which has catalytic activity for olefin averaging to obtain an $iC_5$ rich stream. Preferably the isomerization step is utilized to simultaneously purify a sulfur contaminated feedstock and isomerize the feedstock before it is fed to the averaging step.

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### 3,761,536
## PROCESS FOR COUPLING PROPYLENE AND ISOBUTYLENE

**John E. Bozik, Plum Borough, Pa.; John A. Ondrey, Tyler, Tex., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 660,901, Aug. 16, 1967, abandoned, which is a continuation-in-part of Ser. No. 588,311, Oct. 21, 1966, abandoned. This application Dec. 16, 1971, Ser. No. 208,980**

**Int. Cl. C07c** *3/20*

**U.S. Cl. 260—680 R** **6 Claims**

Propylene and isobutylene are oxydehydrodimerized at elevated temperatures in a continuous, non-cyclic process using a molar ratio of olefin to oxygen of about 1:2 to 2:1 in the presence of bismuth oxide.

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### 3,761,537
## DISMUTATION OF OLEFINS

**Edwin H. Homeier, Maywood, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 18, 1971, Ser. No. 200,238**

**Int. Cl. C07c** *3/62*

**U.S. Cl. 260—683 D** **12 Claims**

Olefinic hydrocarbons are subjected to a dismutation process by treatment with a catalyst comprising a metal oxyhalide in which the metal is present in an intermediate valence state to form dissimilar olefins which contain one or more carbon atoms less and one or more carbon atoms more than the original olefinic hydrocarbon.

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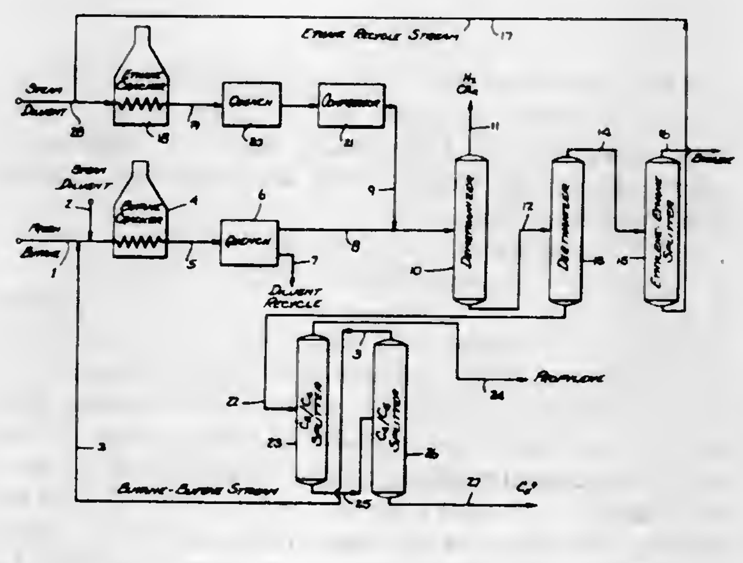
### 3,761,538
## BUTANE CRACKING

**Ramon L. Espino, New York, N.Y.; Martin B. Sherwin, Paramus, and Gerald Sugerman, Parsippany, both of N.J., assignors to Chem Systems, Inc., New York, N.Y.**

**Filed Feb. 11, 1971, Ser. No. 114,528**

**Int. Cl. C07c** *3/30*

**U.S. Cl. 260—683 R** **10 Claims**



A process for the preparation of ethylene and propylene wherein *n*-butane is cracked at high pressure in the presence of steam, preferably with ammonia in a reactor containing a solid support, at a temperature of from 550° to 750°C. for a residence time of 0.2 to 15 seconds to convert 40 to 90 percent of the n-butane. The reaction product is cooled and methane separated therefrom at a pressure not greater than that in the cracking reaction. The $C_4$ fraction separated from the reaction product is recycled to the cracking step.

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### 3,761,539
## PRETREATMENT OF DEHYDROGENATION FEEDS WITH GROUP VIII METAL OXIDES

**Lewis E. Drehman; Floyd E. Farha, Jr., and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed June 16, 1971, Ser. No. 153,821**

**Int. Cl. C07c** *5/18*

**U.S. Cl. 260—683.3** **7 Claims**

A process for removing dehydrogenation catalyst poisons from paraffin and steam feedstreams by pretreating the feedstreams with Group VIII metal oxides. Undesirable silica is removed from turbo-electric generator steam feedstreams through the process of pretreating said steam with Group VIII metal oxide.

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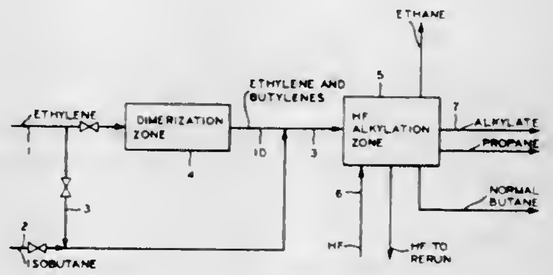
### 3,761,540
## ALKYLATION OF ISOPARAFFIN WITH ETHYLENE AND A HIGHER OLEFIN

**Thomas Hutson, Jr., and Cecil O. Carter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Continuation-in-part of Ser. No. 79,405, Oct. 12, 1970, abandoned. This application Apr. 30, 1971, Ser. No. 138,991**

**Int. Cl. C07c** *3/54*

**U.S. Cl. 260—683.51** **12 Claims**



An isoparaffin, e.g., isobutane and/or isopentane are alkylated with ethylene in presence of a higher olefin, e.g., propylene, a butylene, etc., using hydrogen fluoride catalyst to produce high octane value alkylate with little or no or some formation of ethyl fluoride. Alkylate of 97 plus, TEL-free, Research Octane can be produced from isobutane, propylene and ethylene. Alkylate of one hundred Research Octane with no tetraethyl lead can be produced with approximately equal parts by weight of ethylene and isobutylene in an alkylation of isobutane, in presence of virtually anhydrous HF catalyst at a temperature of the order of about 75° F., and a catalyst to total hydrocarbon ratio of about four. At isobutane to total olefin (ethylene plus higher olefin) mol ratio of less than about four to one, a small proportion of $BF_3$ is required in the HF catalyst to produce alkylate in practical quantities of sufficiently high Research Octane (clear) and with minimized production of ethyl fluoride.

### 3,761,541
### STABILIZED POLYPHENYLENE ETHERS

**Arthur Katchman, Delmar, N.Y., and Robert M. Summers, Arlington, Mass., assignors to General Electric Company, Pittsfield, Mass.**

**Continuation-in-part of Ser. No. 01,542, Jan. 8, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 188,424**
**Int. Cl. C08g** *51/56, 51/58, 51/60*
**U.S. Cl. 260—874** **28 Claims**

A stabilized polyphenylene ether composition consisting of a major portion of a polyphenylene ether or a blend of a polyphenylene ether and a second resinous component and a minor portion of a stabilizer combination comprising an alkanolamine alone or in combination with an inorganic sulfide, an organic phosphite and mixtures thereof.

A preferred composition comprises a blend of a poly(2,6-dialkyl-1,4-phenylene)ether and a polystyrene stabilized with a mixture of the alkanolamine, organic phosphite and inorganic sulfide as the combination of stabilizers appears to provide a synergism resulting in substantially increased resistance to oxygen containing atmospheres. Oxides of metals such as zinc may be added to the compositions which contain inorganic sulfides to provide additional stability.

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### 3,761,542
### GRAFT POLYMER OF VINYL CHLORIDE AND METHOD OF PRODUCING SAME

**Yujiro Kosaka; Masaru Uemura; Mitsutaka Saito; Yuji Suzuki, and Kunio Takamoto, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan**

**Continuation-in-part of Ser. No. 6,299, Jan. 27, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,959**
**Claims priority, application Japan, Jan. 27, 1969, 44/5846**
**Int. Cl. C08f** *15/00*
**U.S. Cl. 260—878 R** **13 Claims**

A graft polymer prepared by polymerizing vinyl chloride onto chlorinated polyethylene, ethylene-vinyl acetate copolymer and/or chlorinated ethylene-vinyl acetate copolymer in the presence of methyl methacrylate homopolymer or copolymer. The polymer possesses favorable transparency and superior impact resistance. The process for producing such a graft polymer is also contemplated.

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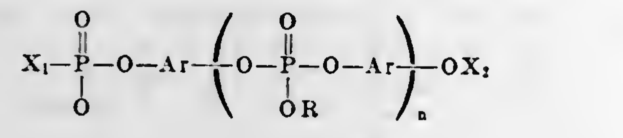
### 3,761,543
### POLYPHOSPHORUS ESTERS

**Jeffrey A. Gunsher, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 863,704, Oct. 3, 1969. This application July 14, 1972, Ser. No. 272,003**
**Int. Cl. C07f** *9/08, 9/14*
**U.S. Cl. 260—929** **4 Claims**

Compounds having the general formula



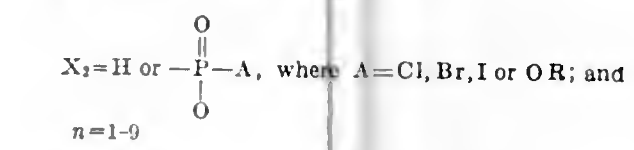
$$X_1-\overset{\overset{O}{\|}}{\underset{\underset{O}{|}}{P}}-O-Ar-\left(O-\overset{\overset{O}{\|}}{\underset{\underset{OR}{|}}{P}}-O-Ar\right)_n-OX_2$$

wherein

R = neopentyl, halogenated neopentyl, phenyl or halogenated phenyl; wherein each halogen is independently Br or Cl;

Ar = isopropylidenediphenylene, halogenated isopropylidenediphenylene, oxydiphenylene, halogenated oxydiphenylene, biphenylene, halogenated biphenylene, phenylene and halogenated biphenylene; wherein each halogen is independently Br or Cl; provided that at least one R or Ar is halogenated;

$X_1$=Cl, Br, I, OR, OArOH;



$$X_2=H \text{ or } -\overset{\overset{O}{\|}}{\underset{\underset{O}{|}}{P}}-A, \text{ where } A=Cl, Br, I \text{ or } OR; \text{ and}$$

$n$=1-9

are excellent fire retardants and may be prepared from phosphorus oxyhalide by a two step addition.

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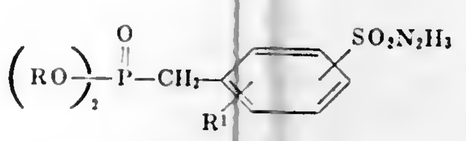
### 3,761,544
### PHOSPHORUS-CONTAINING SULFONYLCHLORIDES

**John E. Herweh, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.**

**Division of Ser. No. 847,715, Aug. 5, 1969. This application June 14, 1971, Ser. No. 153,039**
**Int. Cl. C07f** *9/40;* **C08f** *47/10*
**U.S. Cl. 260—947** **3 Claims**

A new class of phosphorus-containing sulfonylhydrazides of the formula:



In addition to a new class of chlorosulfonated phosphorus-containing compounds useful as organic intermediates in the preparation of the hydrazides is described. The phosphorus-containing sulfonylhydrazides are useful as blowing agents for resinous blends.

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### 3,761,545
### PROCESS FOR THE FORMATION OF PHOSPHORAMIDATES

**Elmer J. Badin, Hightstown, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.**

**Filed July 23, 1971, Ser. No. 165,581**
**Int. Cl. C07f** *9/02*
**U.S. Cl. 260—984** **8 Claims**

Hydrocarbyl phosphorus acids, preferably hydrocarbyl orthophosphoric acids and hydrocarbyl pyrophosphoric acids are converted to the corresponding phosphoramidates by direct reaction with urea. The phosphoramidates, alone or with a hydrocarbyl phosphorus acid, are useful as additives in petroleum hydrocarbon compositions to which they impart such desirable properties as corrosion resistance.

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### 3,761,546
### METHOD OF MAKING URANIUM DIOXIDE BODIES

**Harley A. Wilhelm, and James K. McClusky, both of Ames, Iowa, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed May 22, 1972, Ser. No. 255,603**
**Int. Cl. C01g** *43/02*
**U.S. Cl. 264—0.5** **7 Claims**

Sintered uranium dioxide bodies having controlled density are produced from $U_3O_8$ and carbon by varying the mole ratio of carbon to $U_3O_8$ in the mixture, which is compressed and sintered in a neutral or slightly oxidizing atmosphere to form dense slightly hyperstoichiometric uranium dioxide bodies. If the bodies are to be used as nuclear reactor fuel, they are subsequently heated in a hydrogen atmosphere to achieve stoichiometry. This method can also be used to produce fuel elements of uranium dioxide — plutonium dioxide having controlled density.

### 3,761,547
### PROCESS FOR CONTROLLING SURFACE AREA OF CERAMIC POWDERS

**Leonard N. Grossman, and Donald A. Brigham, both of Livermore, Calif., assignors to General Electric Company, San Jose, Calif.**

**Filed July 17, 1970, Ser. No. 55,999**
**Int. Cl. G21c** *21/00*
**U.S. Cl. 264—0.5** **10 Claims**

Process for controlling the surface area of ceramic powder to be thermally treated comprises controlling the moisture content of the powder before the powder is thermally treated.

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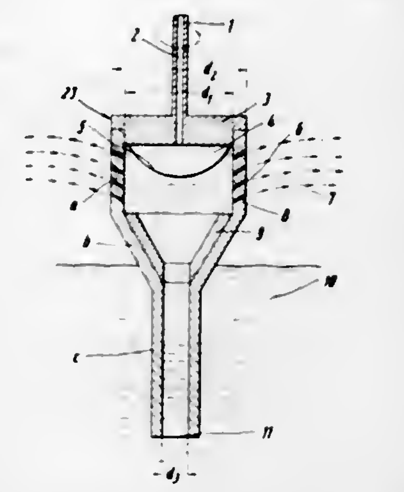
### 3,761,548
### METHOD OF PRODUCING METAL PARTICLES

**Heinrich Winter, Kurt Schumacher-strasse 4, Eschborn, and Wilhelm Schuster, Fichardstrasse 49, Frankfurt am Main, both of Germany**

**Filed Nov. 4, 1970, Ser. No. 86,837**
**Claims priority, application Great Britain, Nov. 4, 1969, 54,026/69**
**Int. Cl. B01j** *2/02*
**U.S. Cl. 264—8** **1 Claim**



A method of producing metal particles and especially smooth-surfaced round or elongated metal particles having a low surface-volume ratio whereby a rotating cylinder with perforated parts has a riser reaching into a bath of the liquid and is rotated at a speed such that molten metal cast from the perforations of the cylinder is replaced by a rising current of the molten metal.

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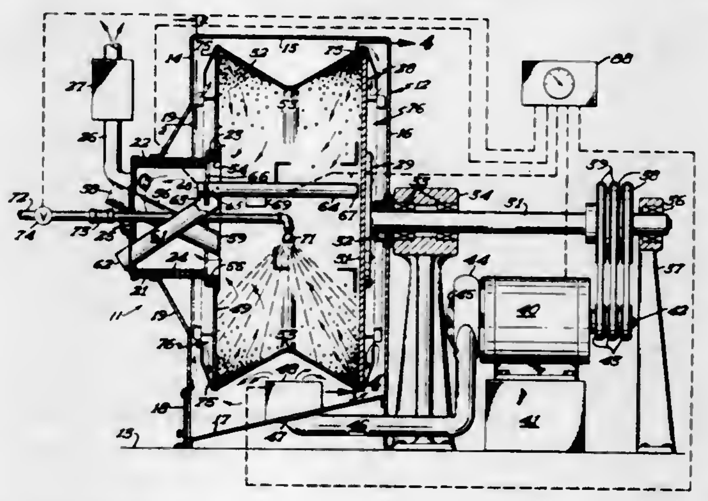
### 3,761,549
### METHOD FOR PRODUCING LAUNDRY PRODUCTS

**Donald E. Marshall, 4904 Sunnyside Rd., Edina, Minn.**

**Division of Ser. No. 773,585, Nov. 5, 1968, Pat. No. 3,588,950. This application Mar. 17, 1971, Ser. No. 125,319**
**Int. Cl. B01j** *2/16*
**U.S. Cl. 264—15** **7 Claims**



A method for producing a laundry product comprising generally spherical beads formed from particles of soap, synthetic detergent, or the like. In the method of this invention, the particles are formed into an annular fluidized bed of particles and gas in a rotatable chamber as a result of relative high speed rotation of the chamber and continuous introduction of gas into the rotating chamber. Periodically the particles are tumbled in the chamber by abruptly reducing the rotational speed of the chamber. The particles may be treated in the chamber by the introduction of fluids onto the particles in the rotating chamber.

The generally spherical beads of soap, synthetic detergent or the like produced by the method of this invention are relatively dense, have a relatively low moisture content and may include one or more outer layers or coatings of solidified treating fluid, with each bead containing substantially the same materials and proportion of materials as are in the other beads.

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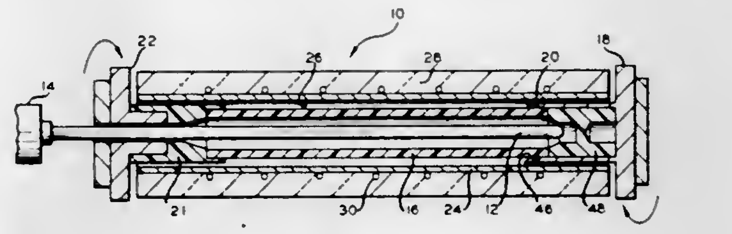
### 3,761,550
### INTERNAL HEATING OF ROTATING PARISON

**Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 783,604, Dec. 13, 1968, Pat. No. 3,594,862. This application Mar. 1, 1971, Ser. No. 119,560**
**Int. Cl. B29c** *17/07;* **F24j** *3/04*
**U.S. Cl. 264—25** **12 Claims**



A rotating parison is heated with an internal radiant heating means, said parison being disposed within a sleeve during the heating step to allow supplemental heat to be added from the outside of the parison. A shield, tapering toward the ends, can be provided around the heating means to provide even heating, or if controlled variation in heating along the axis is desired, the heating means can comprise a member having variable turns of resistance wire along its axis or variable axially disposed loops.

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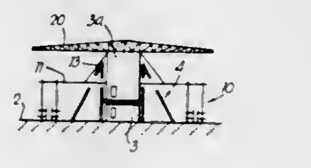
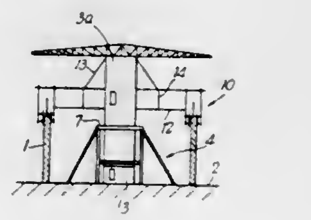
### 3,761,551
### METHOD OF CONSTRUCTING CONCRETE CHIMNEYS

**Youji Ogata, and Matsuo Matsuda, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed June 15, 1971, Ser. No. 153,275**
**Claims priority, application Japan, June 30, 1970, 45/57059**
**Int. Cl. E04b** *1/16*
**U.S. Cl. 264—33** **10 Claims**





A chimney is constructed by simultaneously forming an outer concrete sheath thereof and adding sections to an inner cylindrical body thereof. In a first embodiment an uppermost section of the body supports a slip form for forming the outer sheath and is stepwise hoisted by a hoist mounted on a foundation. Periodically, as the uppermost section is sufficiently hoisted, new sections are added and joined to the uppermost section, thus forming newly joined uppermost sections. In a second embodiment, a lowermost section of the body supports a crane which supports a slip form for forming the outer sheath. The crane is stepwise hoisted upwardly along the lowermost section, and periodically as the crane reaches the top of the lowermost section, additional sections are joined to the top of the lowermost section, thus forming newly joined lowermost sections.

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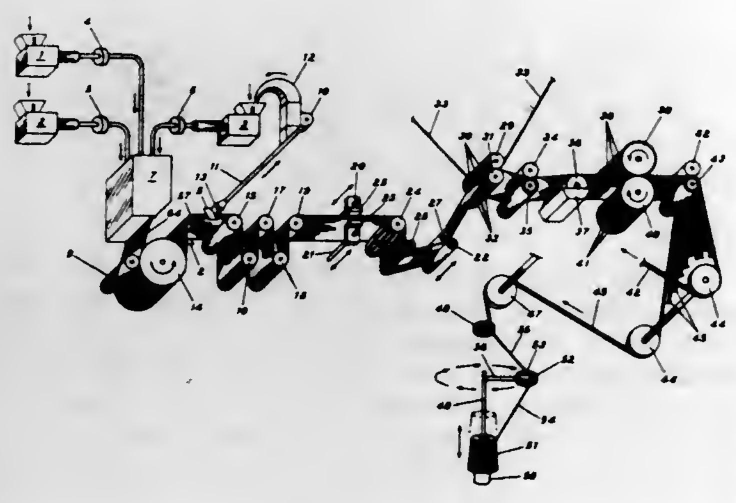
### 3,761,552
## PROCESS FOR MAKING MORESQUE YARN FROM POLYMER FILM

**Leonard Chill, Waynesboro, Va.; Gordon B. Johnson, Sausalito, and Carl S. Weisner, Pleasant Hill, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed Feb. 12, 1971, Ser. No. 114,796**
**Int. Cl. B29c** *17/14;* **B29f** *3/12*
**U.S. Cl. 264—37** **5 Claims**



A process and apparatus is disclosed for preparing Moresque (multicolored) yarn from thermoplastic polymers. An elongated flat die is utilized to extrude parallel streams of molten polymers of alternating colors onto a casting roll to form a thermoplastic polymer film. Desired color combinations can be obtained by preselecting the colors of the molten polymer streams. The congealed film is oriented in the longitudinal direction to increase the longitudinal strength. The stretched film is cut in strips of uniform width by means of a cutting tool with a series of cutting heads. In order to obtain a random color distribution on the edges of individual strips, the film is oscillated across the direction of the longitudinal axis prior to cutting. These strips are fibrillated to produce a fibrous network which upon twisting simulates natural yarns suitable for indoor-outdoor carpets or general commercial textile use.

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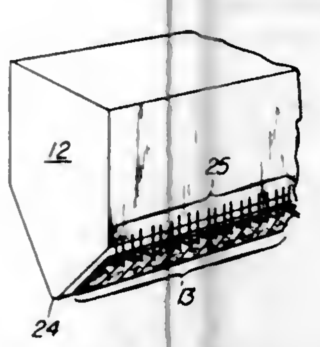
### 3,761,553
## METHOD FOR PRODUCING UNIFORM DRAWN FILMS

**Jerry Grant Richardson, Simpsonville, S.C., assignor to Celanese Corporation, New York, N.Y.**

**Filed June 28, 1971, Ser. No. 157,216**
**Int. Cl. B29d** *7/24;* **B29f** *3/08*
**U.S. Cl. 264—40** **6 Claims**

An improved method for producing a biaxially drawn thermoplastic film of substantially uniform thickness throughout its width has been discovered by controlling heat at the die opening where film is extruded by employing a plurality of heaters which do not exceed 3 inches in width mounted along the edge of the die opening, said heaters being responsive in relation to the thickness measurement of a plurality of loci across the width of the drawn sheet to maintain thickness of the film substantially constant.



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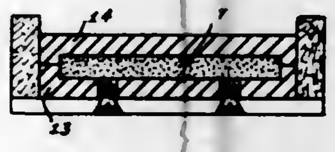
### 3,761,554
## METHOD OF MAKING PLASTIC ARTICLES WITH A SUBSTANTIALLY ENVELOPED CORE

**Stanley Ronald Barnette, 90 Cherokee St., Miami Springs, Fla.**
**Continuation of Ser. No. 609,642, Jan. 16, 1967, which is a division of Ser. No. 251,260, Jan. 14, 1963, Pat. No. 3,298,894, which is a continuation-in-part of Ser. No. 808,599, April 24, 1959, Pat. No. 3,072,973. This application Oct. 27, 1969, Ser. No. 869,950**
**Int. Cl. B29d** *3/00*
**U.S. Cl. 264—69** **12 Claims**



A monolayered plastic casting means for substantially enveloping and interlocking a substantially rigid core formed means utilizing an isotropic producing principle by providing a cavity space making element means, said element means utilized to permit substantially equal quan-tities of curable material to be formed on the front and back face sides of said core means, and wherein said curable material has at least one side that has a deep dimensional decorative surface appearance.

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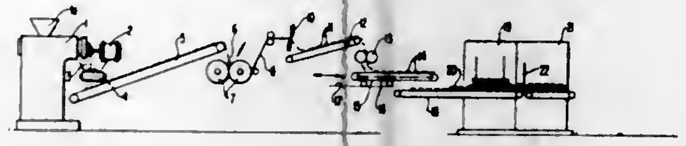
### 3,761,555
## PROCESS FOR THE MANUFACTURE OF THERMOPLASTIC PLATES

**Michael Wienand, Siegburg; Hans Brinkmann, Troisdorf; Peter Rheinfeld, Troisdorf, and Ernst Juch, Troisdorf, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany**

**Filed Mar. 25, 1970, Ser. No. 22,579**
**Int. Cl. B01j** *2/22*
**U.S. Cl. 264—105** **16 Claims**



A process for the production of thermoplastic plates from chips of a thermoplastic material which includes the steps of calendering a granulated synthetic polymeric thermoplastic material into at least one crude sheet, cuttting the crude sheet into transverse strips, cutting the transverse strips longitudinally into chips, each having an approximately rectangular configuration, stacking the chips in a uniform distribution up to the level of the desired rough block, heating the stacked chips and then subdividing the stack into the dimensions of the rough block desired. Thereafter, the rough block is placed in a mold where it is compressed with heating and subsequently cooled and then divided into plates.

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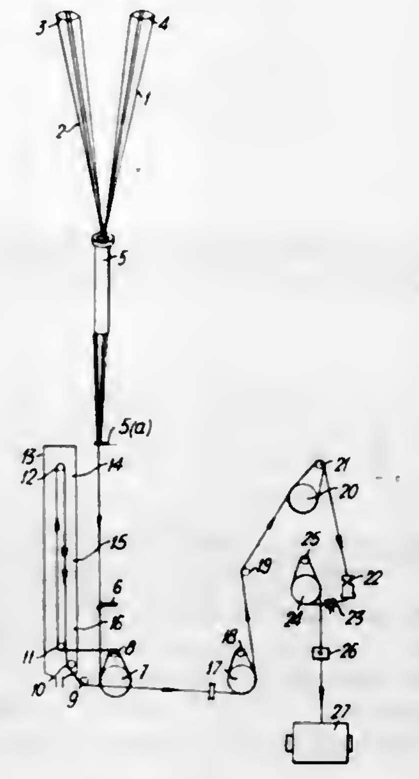
### 3,761,556
## THE MANUFACTURE OF BULKED YARN

**Derek Walter Thom, and Nigel Ward Hayman, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Aug. 23, 1971, Ser. No. 173,933**
**Claims priority, application Great Britain, Aug. 25, 1970, 40,857/70**
**Int. Cl. D01d** *3/10*
**U.S. Cl. 264—210 F** **9 Claims**



A process for producing a bulked nylon 6.6 filament yarn by the steps of continuously spinning, drawing and crimping in which the filaments, after melt spinning are subjected to a two-stage steaming process, the second stage of which is for a period of at least 5 seconds maintaining the yarn temperature at at least 55° C and raising the moisture content of the yarn to at least 9 percent. Crimping is performed by a steam injection stuffer-box crimping treatment as described in British Pat. No. 1,034,418. Desirably the yarn is intermingled after crimping and wound up without the insertion of twist.

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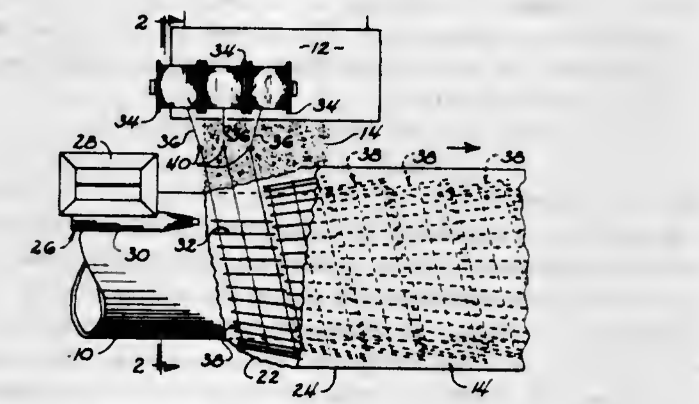
### 3,761,557
## METHOD OF REINFORCING PIPE COATINGS

**Arthur D. Werner, 6303 Kury, Houston, Tex.**

**Filed May 6, 1971, Ser. No. 140,655**
**Int. Cl. B28b** *1/32*
**U.S. Cl. 264—228** **6 Claims**



Reinforcement for pipe coatings comprising helically wound reinforcing wire imbedded in the pipe coating material and a plurality of relatively short, elongated wires or rods extending longitudinally of the pipe and transverse to the helical windings. The rods are spaced apart circumferentially of the pipe and are initially held in place in the coating material by the helical windings.

The rods may be projected onto the coating material simultaneously with the application of the coating and with the application of the helically wound reinforcing wire. Alternatively, the rods can be carried onto the coating with the helical windings. In another embodiment, the rods are attached to a pair of spaced apart, elongated wires so that the pre-formed rod and wire assembly may be wound on the pipe during the coating operation.

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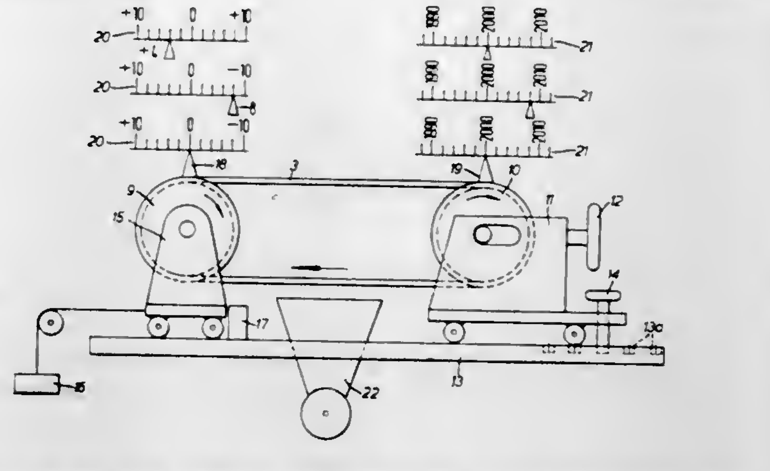
### 3,761,558
## VEE BELT MANUFACTURE

**Josef A. Hnatek, Weinbergstrasse 17, Hoxter/Weser, Germany**
**Continuation-in-part of Ser. No. 783,076, Oct. 14, 1968, abandoned. This application June 8, 1971, Ser. No. 151,099**
**Int. Cl. B29h** *7/22*
**U.S. Cl. 264—231** **5 Claims**



A method of treating a conventional vee-belt (having a polyester reinforcement) to stabilize the belt at a required nominal length includes the steps of pre-vulcanizing the otherwise completed belt on a heating drum around which the vee-belt is passed without tension being applied. The belt is prepared for vulcanization under tension so as to eliminate shrinkage caused by the pre-vulcanization step and bring the belt back to its original length. Subsequently the belt is stretched over two rollers under a standard load and when the required length is achieved, is given a permanent set by immediate cooling.

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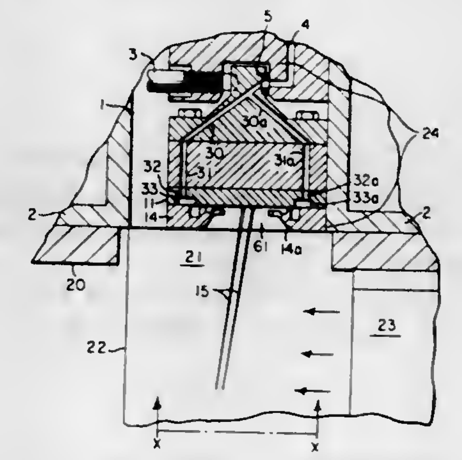
### 3,761,559
## OPPOSED FLOW SPINNERET BLANKETER

**Robert Sherwood Heckrotte, and John Alexander Scott, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Apr. 24, 1972, Ser. No. 247,162**
**Int. Cl. B29c** *25/00*
**U.S. Cl. 264—237** **2 Claims**



A spinneret blanketer in which heated inert gas is passed through a spinning pack to two channels which direct opposed inert gas streams across the spinneret face. The channels are bounded on their upper side by the spinneret face and on the lower side by a spinneret retainer having a lip whose lower face forms an angle of less than 45° to the spinneret face. The lip serves to deflect the normally present current of upward flowing ambient air so that it flows at an angle of less than 45° to the spinneret face where it approaches the inert gas stream. Preferably, the opposed inert gas streams are of unequal velocities so that the streams will meet at a front remote from the filaments.

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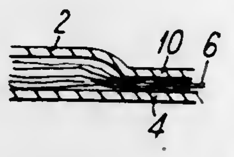
### 3,761,560
### FIBRE-GLASS MOULDING PROCESS

**Brian Newlove, Hillside, Whitwell, Norfolk, England**
**Filed Apr. 28, 1971, Ser. No. 138,190**
**Claims priority, application Great Britain, Apr. 29, 1970, 20,638/70**
**Int. Cl. B29d** *3/02*
**U.S. Cl. 264—257** **6 Claims**



A process for making glass fibre reinforced mouldings, in which the moulding resin is injected into the space between a pair of dies defining between them the shape to be moulded, and in which space is located a glass fibre mat with its edges pinched between the edges of the dies, the opening between the dies at the edges where the mat is so pinched being such as to allow air to escape while providing an impedence to the flow of resin therethrough.

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### 3,761,561
### PROCESS FOR THE PHOTOPOLYMERIZATION OF UNSATURATED POLYESTER RESINS ON A LIQUID METAL SUPPORT

**Philippe Borrel, and Jean Lehureau, both of Lyon, France, assignors to Progil, Paris, France**
**Filed Dec. 1, 1970, Ser. No. 94,158**
**Claims priority, application France, Jan. 21, 1970, 7002013**
**Int. Cl. B29d** *9/00;* **B01j** *1/10*
**U.S. Cl. 264—298** **5 Claims**

Photopolymerization of an unsaturated polyester resin is carried out on a liquid metal support which improves control of heat released during the polymerization.

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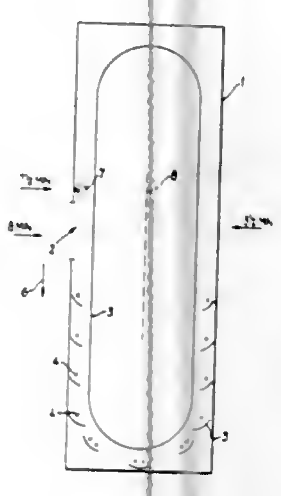
### 3,761,562
### METHOD OF HEAT SETTING FOOTWEAR

**Ronald Walter Thomas Skelham, Kettering, England, assignor to The Shoe and Allied Trades Research Association, Kettering, Northamptonshire, England**
**Filed Aug. 5, 1970, Ser. No. 61,323**
**Claims priority, application Great Britain, Aug. 5, 1969, 39,113/69**
**Int. Cl. B29c** *25/00*
**U.S. Cl. 264—346** **7 Claims**

A method and apparatus for heat setting polymeric components of footwear such as lasted shoe uppers which is characterized in that the material is brought from its hot condition to a handling condition by forced cooling within 1½ minutes; the apparatus comprises an enclosure with radiant heaters and a conveyor so that the articles to be treated are irradiated and subsequently subjected to hot gas trapped in the enclosure and thereafter to forced cooling by water sprays.



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### 3,761,563
### REACTING METAL OXIDES WITH A SULFATE AND PYROSULFATE MIXTURE

**Gunter Kaiser, and Erich Zimmer, both of Julich, Germany, assignors to Kernforschusanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany**
**Filed Apr. 20, 1971, Ser. No. 135,802**
**Claims priority, application Germany, Apr. 21, 1970, P 20 18 953.1**
**Int. Cl. C01g** *56/00*
**U.S. Cl. 423—5** **6 Claims**

The invention relates to a process for converting oxides to sulfates. The contemplated oxides are slowly soluble or insoluble in acids and/or lyes, particularly the oxides found in nuclear fuel and/or breeder material. The oxides are mixed with a sulfate and a disulfate (pyrosulfate) and heated to between about 650° C and 800° C for a comparatively short time. The amount of disulfate should be at least stoichiometric.

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### 3,761,564
### SEPARATION OF CALIFORNIUM FROM OTHER ACTINIDES

**James C. Mailen, Oak Ridge, and Leslie M. Ferris, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**
**Filed Jan. 24, 1972, Ser. No. 220,076**
**Int. Cl. C01g** *56/00*
**U.S. Cl. 423—5** **3 Claims**

A method is provided for separating californium from a fused fluoride composition containing californium and at least one element selected from the group consisting of plutonium, americium, curium, uranium, thorium, and protactinium which comprises contacting said fluoride composition with a liquid bismuth phase containing sufficient lithium or thorium to effect transfer of said actinides to the bismuth phase and then contacting the liquid bismuth phase with molten LiCl to effect selective transfer of californium to the chloride phase.

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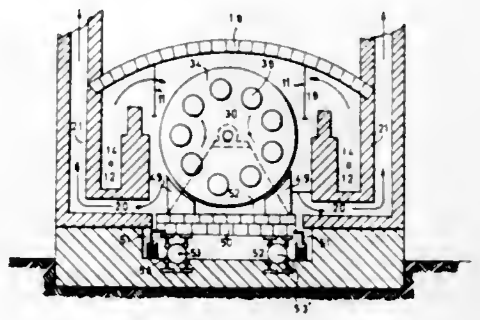
### 3,761,565
### METHOD OF ROASTING SULPHIDE ORES

**Carlos Arrizaga, Alameda Bernardo O'Higgins 1146, and Anibal Gajardo, Sebastian del Piombo 7691, both of Santiago, Chile**
**Division of Ser. No. 760,273, Sept. 17, 1968, Pat. No. 3,554,510. This application Sept. 9, 1970, Ser. No. 70,860**
**Int. Cl. C01g** *39/00*
**U.S. Cl. 423—59** **7 Claims**



Sulphide ore is roasted in small batches in a reverbatory furnace while contact between the combustion gases and the ore is prevented.

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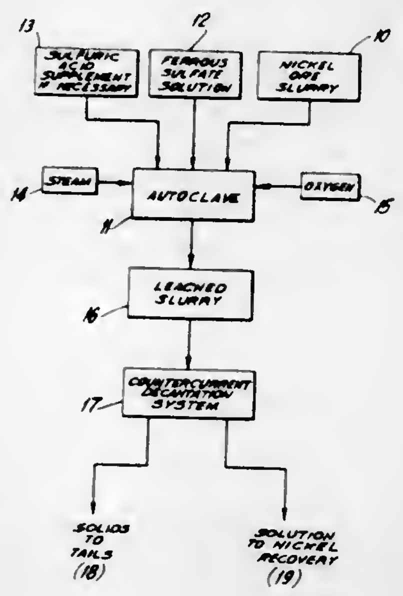
### 3,761,566
### LEACHING OF NICKEL LATERITIC ORES WITH WASTE IRON SULFATE SOLUTIONS

**Eugene J. Michal, Wilton, Conn., assignor to American Metal Climax, Inc., New York, N.Y.**
**Filed Sept. 13, 1971, Ser. No. 179,765**
**Int. Cl. C22d** *23/00;* **C01g** *51/10*
**U.S. Cl. 423—141** **15 Claims**



Oxidic nickel or nickel-cobalt containing materials, e.g. lateritic nickel ores, are leached at superatmospheric pressure and elevated temperature with ferrous sulfate under conditions in which the ferrous sulfate is oxidized to ferric sulfate which is caused to hydrolyze to provide free sulfuric acid for leaching the ore. The invention lends itself most suitably to a process in which the sulfuric acid leaching of oxidic titaniferous iron-containing ore is coordinated with the leaching of oxidic nickel ore, such that the iron sulfate solution resulting from the titanium leach is employed as the leaching solution for the nickel ore by utilizing the hydrolysis of ferric sulfate under superatmospheric pressure and elevated temperature to regenerate free sulfuric acid in situ for leaching the ore, whereby the same leaching reagent is employed economically in the sequential leaching of both the titanium and nickel ores.

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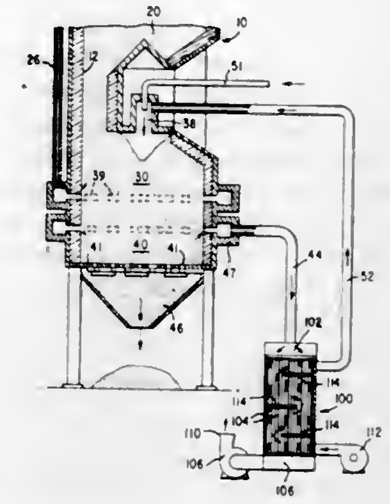
### 3,761,567
### VERTICAL KILN SYSTEM AND PROCESS

**Marshall F. Parsons, 5410 Waneta Rd., Washington, D.C.**
**Continuation of Ser. No. 868,189, Oct. 21, 1969, abandoned. This application Jan. 5, 1972, Ser. No. 215,975**
**Int. Cl. F27b** *1/00*
**U.S. Cl. 423—175** **6 Claims**



In a continuously operating, vertical calcining kiln in which substantially complete calcining is obtained by preheating supply materials with exhaust gases, and co-current, combustion supporting fluid at an elevated temperature is supplied to a combustion zone above the calcining chamber and counter-current combustion supporting fluid is supplied beneath the calcining zone, a heat exchanger in communication with the exhaust air drawn through the calcining zone for effecting counter-current heating of atmospheric air as it is pumped through and heated in the exchanger, with minimum contaminates, whereby the available static pressure is improved at the combustion zone permitting more efficient production quantitatively as well as cooler-operation and maintenance-free air pumps operating more efficiently at lower temperatures.

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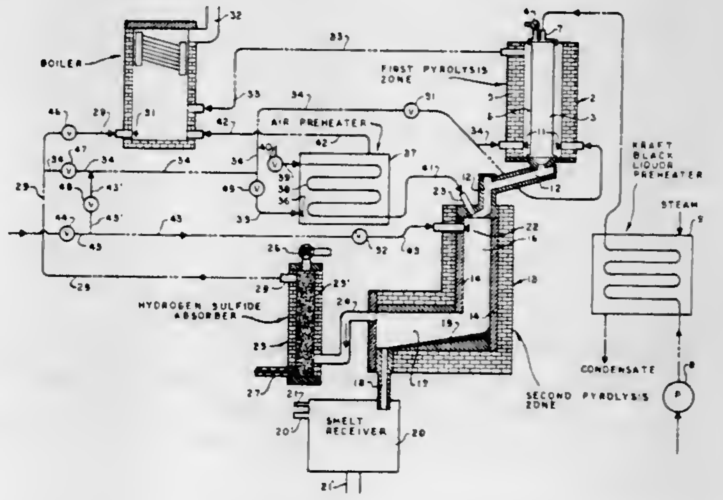
### 3,761,568
### METHOD AND APPARATUS FOR THE DESTRUCTIVE DECOMPOSITION OF ORGANIC WASTES WITHOUT AIR POLLUTION AND WITH RECOVERY OF CHEMICAL BYPRODUCTS

**David L. Brink, and Jerome F. Thomas, both of Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.**
**Continuation-in-part of Ser. No. 795,288, Jan. 30, 1969. This application Feb. 16, 1971, Ser. No. 115,589**
**Int. Cl. C01b** *17/22;* **B01j** *1/00;* **C07b** *5/00*
**U.S. Cl. 423—207** **18 Claims**



Organic material, such as kraft black liquor, wood residues, organic fuels and garbage or other organic wastes, is destructively distilled and pyrolyzed at elevated temperatures and for a time sufficient to break down the material to non-combustible solids and a stable, clean-burning gaseous fuel. Said destructive distillation and pyrolysis steps can be effected in a single stage, though preferably they are conductive in successive stages. Valuable organic products can be recovered from the first stage effluent by condensation or otherwise between these stages. The temperature during pyrolysis is maintained at a high enough level and for a time sufficient to preclude undesirable recombination of intermediate products, formed during pyrolysis, to compounds which would otherwise pollute the atmosphere. A controlled amount of oxygen, which can take the form of malodorous emission gases such as those engendered in the operation of a kraft mill or other industrial plant, for example, is continuously introduced during pyrolysis to provide energy by exothermic oxidative reactions. However, the oxygen so employed is insufficient to effect stoichiometric or, in other words, complete combustion of the reaction mixture. Further, the content of water vapor in the pyrolysis zone where cracking is occurring is maintained at a level high enough to insure that carbon particles in said zone will react with water to form hydrogen and carbon monoxide.

The invention described herein was made in the performance of work under research grants from the United States Public Health Service.

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### 3,761,569
## METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES

**El-Ahmadi Ibrahim Heiba, and Sundaresa Srinivasan, both of Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Jan. 28, 1971, Ser. No. 110,778**
**Int. Cl. B01d** *53/34*
**U.S. Cl. 423—224** **9 Claims**

A method for removing hydrogen sulfide from a gas stream involves passing the hydrogen sulfide-containing gas through a solution of cupric ions in a strong acid in the presence of oxygen.

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### 3,761,570
## PROCESS FOR REMOVING SULFUR COMPOUNDS FROM GAS

**Norbert Lowicki, Duisburg-Hamborn, and Gernot Hanig, Dinslaken-Hiesfeld, both of Germany, assignors to Grillo-Werke Aktiengesellschaft, Duisburg-Hamborn, Germany**

**Filed Dec. 17, 1969, Ser. No. 886,017**
**Claims priority, application Germany, Dec. 13, 1969, P 19 62 586.5**
**Int. Cl. B01d** *53/34*
**U.S. Cl. 423—225** **24 Claims**

Sulfur compounds are removed from gases by contacting the gas with an aqueous suspension of a hydrolyzed admixture of an amphoteric component, more particularly oxide, hydrated oxide or hydroxide of aluminum, zinc, iron or manganese, and a basic component, more particularly an oxide or hydroxide of an alkali metal or alkaline earth metal.

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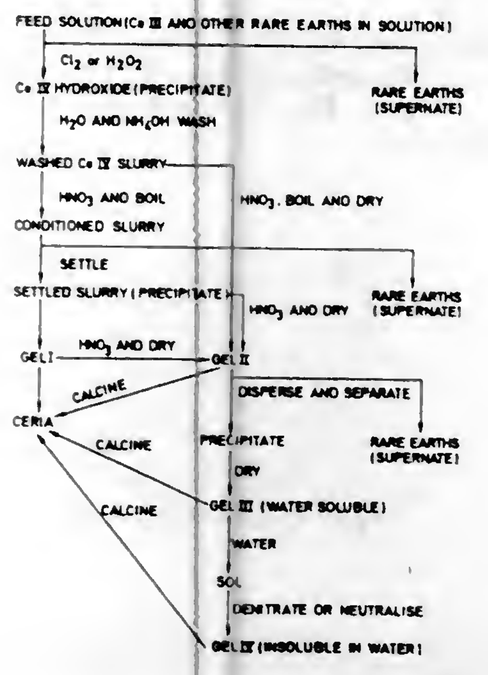
### 3,761,571
## PRODUCTION OF CERIA

**James Louis Woodhead, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England**

**Filed Feb. 4, 1971, Ser. No. 112,783**
**Claims priority, application Great Britain, Feb. 10, 1970, 6,440/70**
**Int. Cl. C22b** *59/00*
**U.S. Cl. 423—263** **14 Claims**

Control over physical characteristics of product ceria is provided by a new process in the manufacture of ceria from cerium IV hydroxide. A slurry of the cerium IV hydroxide in water is treated with nitric acid and heated until the pH, which is controlled to be ultimately less than 5.4, reaches a steady value. The slurry thus conditioned is dried to give a dry gel powder.



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### 3,761,572
## PALLADIUM PHOSPHIDE CHALCOGENIDES

**Tom Allen Bither, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.**

**Filed Sept. 12, 1969, Ser. No. 857,562**
**Int. Cl. C01b** *25/14, 25/00;* **H01b** *1/00*
**U.S. Cl. 423—303** **3 Claims**

Crystalline palladium phosphide chalcogenides having the formula $PdPS_xSe_{1-x}$ wherein $x$ is from 0 to 1 inclusive can be prepared by heating together stoichiometric amounts of the requisite elements or their binary compounds. These compounds have X-ray diffraction patterns that can be indexed on the basis of similar orthorhombic unit cells. They are semiconductors useful in solid state electronic devices, and also as catalysts for the replacement of aromatic hydrogen with halocarbonyl groups.

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### 3,761,573
## PRODUCTION OF GRANULAR ALKALI METAL TRIPOLYPHOSPHATE OF HIGH ABRASION RESISTANCE AND HIGH APPARENT DENSITY

**Arnulf Hinz, Knapsack, and Heinz Harnisch, Lovenich, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany**

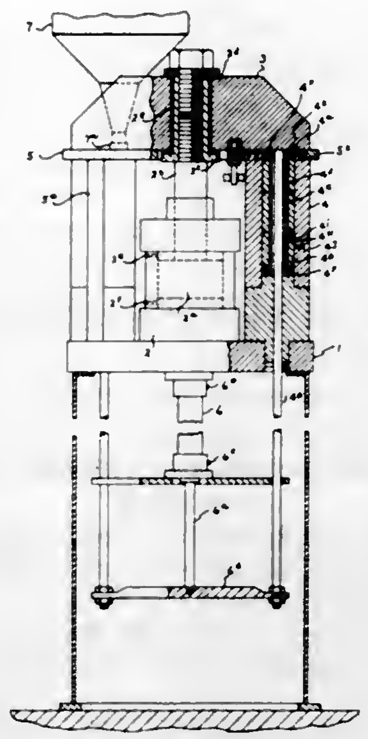
**Filed Feb. 9, 1971, Ser. No. 114,048**
**Claims priority, application Germany, Feb. 24, 1970, P 20 08 495.1**
**Int. Cl. C01b** *15/16, 25/26*
**U.S. Cl. 423—315** **9 Claims**

Production of granular alkali metal tripolyphosphate of high abrasion resistance and high apparent density. An alkali metal tripolyphosphate of which between 10 and 40 percent of its particles have a size smaller than 0.03 mm, the balance particles having a size of between 0.03 and 0.4 mm, is granulated by spraying an alkali metal orthophosphate solution thereonto; the resulting granules are dried; undersize and oversize particle fractions are separated from the dried granules; and the remaining fraction of particles is annealed at temperatures of between 300 and 600°C.

### 3,761,574
## ISOSTATIC CLAMP PRESS

**Norman G. Rietmann, Erie, Pa., assignor to Autoclane Engineers, Inc., Erie, Pa.**

**Filed Mar. 24, 1972, Ser. No. 237,799**
**Int. Cl. B30b** *5/02, 11/00*
**U.S. Cl. 425—405** **6 Claims**



A multicavity isostatic hydraulic clamp press where the clamp cylinder and piston rod act as the press frame and which is adapted to fully automatic operation.

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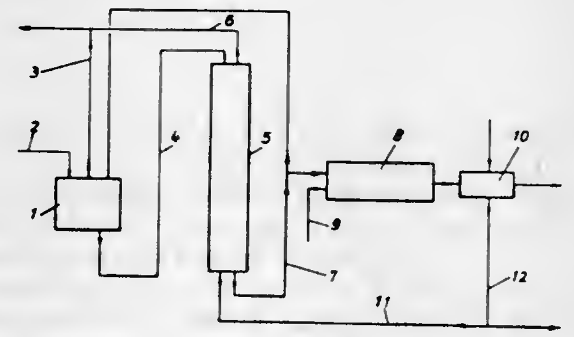
### 3,761,575
## PROCESS FOR THE CRACKING OF AMMONIUM SULFATE

**Herbert Furkert, Grosskonigsdorf, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co. KG, Cologne, Germany**

**Filed Mar. 3, 1972, Ser. No. 231,533**
**Claims priority, application Germany, Mar. 3, 1971, P 21 10 036.7**
**Int. Cl. C01c** *1/02, 1/24;* **C01l** *17/50*
**U.S. Cl. 423—356** **14 Claims**



For converting ammonium sulfate into ammonia and sulfur dioxide, the steps of: (a) heating ammonium sulfate to 300°–500$\pi\zeta$ c. to produce ammonia and ammonium bisulfate and (b) burning resultant ammonium bisulfate at 850°–1,250° C. with a carbon-containing fuel and sufficient oxygen to maintain the gases exiting from the combustion chamber, at an oxygen concentration of between 1 and 8% by volume.

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### 3,761,576
## PREPARATION OF TITANIUM CARBIDE

**Franklin E. Groening, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Aug. 24, 1970, Ser. No. 66,175**
**Int. Cl. C01b** *31/30;* **C22b** *29/00*
**U.S. Cl. 423—440** **8 Claims**

Titanium carbide, predominantly in the form of submicron small cubic crystals, is formed by reacting, in the vapor state, titanium halide, reducing agent and carbon source at carbide-forming temperatures. High surface area titanium carbide is produced by establishing a stream of hot hydrogen and introducing titanium halide into said hydrogen stream at a point upstream of the point at which the carbon source is introduced into the hydrogen stream. When the order of introduction is reversed, the titanium carbide product surface area decreases.

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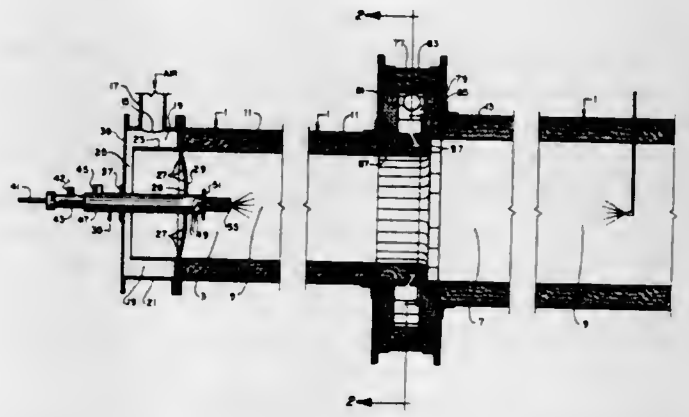
### 3,761,577
## SECONDARY COMBUSTION PROCESS AND APPARATUS FOR THE MANUFACTURE OF CARBON BLACK

**Karel R. Dahmen, Houston, and William B. Crull, Dumas, both of Tex., assignors to Continental Carbon Company, Houston, Tex.**

**Filed July 6, 1971, Ser. No. 159,606**
**Int. Cl. C09c** *1/50*
**U.S. Cl. 423—450** **24 Claims**



Relatively large particle-size, low structure carbon black is manufactured by applying primary heat in conventional fashion to a hydrocarbon oil feedstock and then applying secondary heat in the form of hot combustion gases introduced into the reactor downstream of the primary reaction zone. The flow of these secondary combustion gases is longitudinal with respect to the axis of the reactor and is introduced into the reactor in a plurality of streams directed in downstream flow in close proximity with the outer periphery of the secondary reaction zone. The reactor is of enlarged diameter just downstream of the point of introduction of the secondary combustion gases in order that the concentration and linear downstream velocity of the combustion products is essentially unaltered.

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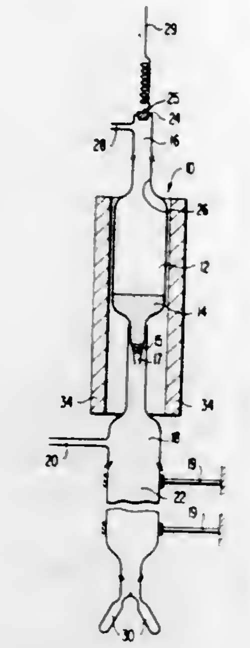
### 3,761,578
## METHOD OF PREPARING PURIFIED LITHIUM ALUMINUM CHLORIDE

**Scott Anderson, 1116 W. Church St., Champaign, Ill.**

**Filed Mar. 9, 1972, Ser. No. 233,088**
**Int. Cl. C01d** *11/02;* **C01f** *7/56*
**U.S. Cl. 423—463** **38 Claims**

Purified lithium aluminum chloride ($LiAlCl_4$) is prepared by passing hydrogen chloride gas through a melt of lithium aluminum chloride containing impurities such as water, hydroxides or other inorganic oxygen-containing salts, carbon and iron, to remove at least a portion of the water and oxygen-containing impurities. Thereafter, the melt is heated to a temperature of from about 425° to about 540° C. and chlorine gas is passed through the melt to remove carbon impurities. The melt is cooled to about 190°C. to 260° C. and contacted with aluminum to replace the iron in solution because of its higher electrochemical potential. The purified melt is filtered and cooled. Analysis of a typical product shows less than 300 parts per billion of impurities. The starting lithium aluminum chloride may advantageously be prepared by melting admixture of reagent grade lithium chloride and reagent grade aluminum chloride. Mixture of lithium aluminum chloride and aluminum chloride can be prepared using an excess of reagent grade aluminum chloride reactant.



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### 3,761,579
### HYDROGEN IODIDE

**Burnell P. Curtis, Jr.; Loyd W. Fannin, both of Dickinson, Tex.; Frank E. Paulik, Creve Coeur, Mo., and Jerry L. Price, Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.**

**Filed Sept. 1, 1971, Ser. No. 177,098**
**Int. Cl. C01b** *7/18, 7/12, 7/08*
**U.S. Cl. 423—486** **10 Claims**

Aqueous hydrogen iodide is prepared by the reaction of iodine, water and carbon monoxide in a reaction medium containing a strong acid at temperatures in the range from about 75° to about 200° C and pressures from about 25 to about 500 psig employing a rhodium- or iridium-containing catalyst.

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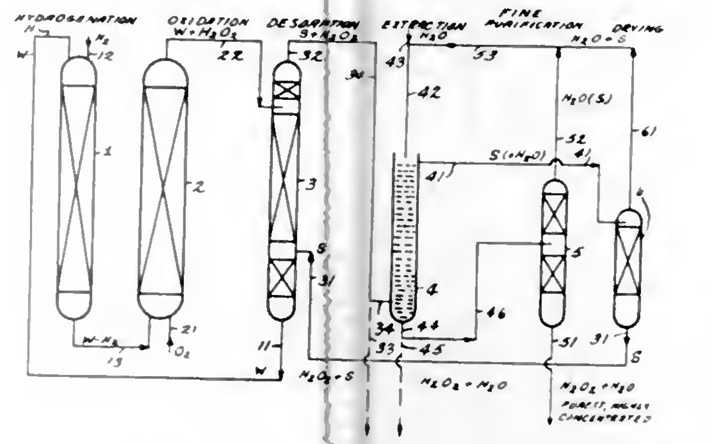
### 3,761,580
### PROCESS FOR THE PRODUCTION OF VERY PURE, AQUEOUS HYDROGEN PEROXIDE SOLUTIONS

**Gerd Schreyer; Ferdinand Theissen, both of Grossauhein; Otto Wieberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany**

**Filed Aug. 24, 1971, Ser. No. 174,425**
**Claims priority, application Germany, Aug. 27, 1970, P 20 42 522.3**
**Int. Cl. C01b** *15/02;* **C07c** *49/68*
**U.S. Cl. 423—588** **13 Claims**

The hydrogen peroxide containing working solution in the anthraquinone process is stripped under reduced pressure with vapors of an organic solvent which is poorly miscible with water. Then the desorbate which results in condensed and extracted with water to obtain a very pure aqueous hydrogen peroxide solution.



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### 3,761,581
### PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

**Gerhard Kabisch, and Rudolf Trube, both of Rheinfelden, Germany, assignors to Deutsch Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany**

**Filed Sept. 2, 1970, Ser. No. 69,151**
**Claims priority, application Germany, Sept. 10, 1969, P 19 45 705.2**
**Int. Cl. C01b** *15/02;* **C07c** *49/68*
**U.S. Cl. 423—589** **9 Claims**

Hydrogen peroxide is prepared according to the anthraquinone process using as the solvent for the reaction carrier 5 to 95 percent of T-butyl benzene. Preferably the other solvent is a phosphate or phosphonate ester having a total of 12 to 27 carbon atoms in aryl or alkyl groups.

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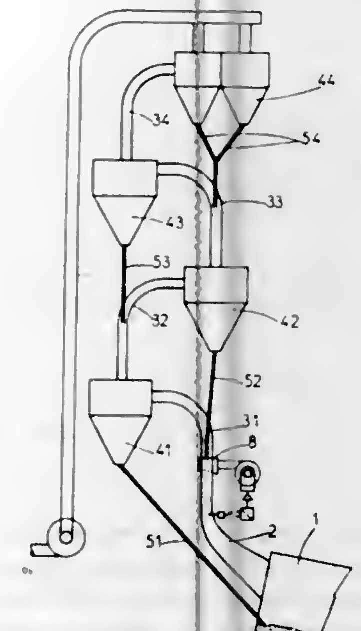
### 3,761,582
### METHOD AND APPARATUS FOR CONTROLLING THE DEGREE OF PREPARATION OF RAW MATERIAL FOR CEMENT

**Jean Pierre Lippmann, Soisy Sous Montmorency, France, assignor to Creusot-Loire, Paris, France**

**Filed July 29, 1971, Ser. No. 167,294**
**Claims priority, application France, Oct. 13, 1970, 7036935**
**Int. Cl. F27b** *15/00*
**U.S. Cl. 423—659** **13 Claims**



Method and apparatus for controlling the degree of preparation of raw material for cement to be fed to a rotary kiln from a pre-heating zone comprising a series of ducts and separation chambers wherein, when the raw material has reached a temperature intermediate the decomposition temperatures of magnesium carbonate and calcium carbonate, the raw material is subjected to a rapid temperature drop capable of delaying calcium carbonate decomposition until the raw material has entered the rotary kiln.

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### 3,761,583
### CUPROUS THIOCYANATE DENTIFRICE COMPOSITION

**Shaul Gladstone, Wilmington, Del., assignor to Witco Chemical Corporation, New York, N.Y.**

**Filed Mar. 8, 1971, Ser. No. 122,209**
**Int. Cl. A61k** *7/16*
**U.S. Cl. 424—48** **10 Claims**

A plaque inhibiting and reducing mixture is formed of cuprous thiocyanate and any of the conventional dentifrices including powder, paste, chewing gums, permanent or temporary coatings and liquids. So utilized, the active ingredient cuprous thiocyanate has the ability to inhibit and reduce plaque and hence calculus and thereby affords a reduction in the possibility of periodontal diseases and dental caries.

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### 3,761,584
### PHENETHYL PROPIONATE AND EUGENOL, A POTENT ATTRACTANT FOR THE JAPANESE BEETLE (POPILLIA JAPONICA NEWMAN)

**Terrence P. McGovern, Bowie; Morton Beroza, Silver Spring, both of Md., and Thyrll L. Ladd, Willingboro, N.J., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Dec. 9, 1970, Ser. No. 96,607**
**Int. Cl. A01n** *17/14*
**U.S. Cl. 424—84** **6 Claims**

Phenethyl propionate when formulated with eugenol was up to 8.7 times more attractive than phenethyl butyrate and eugenol (9:1), the standard survey lure in present use.

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### 3,761,585
### VACCINES CONTAINING MODIFIED ALLERGENIC MATERIAL

**Noel Austin Mullan, and Brian G. Overell, both of Dorking, England, assignors to Beecham Group Limited, Middlesex, England**

**Division of Ser. No. 59,745, July 30, 1970. This application Apr. 5, 1971, Ser. No. 131,500**
**Int. Cl. A61k** *27/14*
**U.S. Cl. 424—91** **16 Claims**

Pharmaceutical preparations for parenteral administration are provided from modified allergenic material and a parenterally acceptable carrier. An adjuvant such as tyrosine may be included.

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### 3,761,586
### HEMOSTATIC AGENT AND THE PROCESS OF PREPARING SAME

**Yoshito Matsumoto, Tokyo; Kenji Koyama, Saitama, and Yasuko Takeda, Chiba, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan**

**Continuation-in-part of Ser. No. 836,936, June 26, 1969, abandoned. This application Mar. 2, 1971, Ser. No. 120,302**
**Claims priority, application Japan, June 26, 1968, 43/43936; Aug. 6, 1968, 43/55284**
**Int. Cl. A61k** *17/00*
**U.S. Cl. 424—98** **4 Claims**

The hemostatic agent of the present invention is obtained by the following process: An aqueous solution of *Trimeresurus okinavensis* venom is treated with almost the same volume of an organic solvent such as chloroform, ether and ethyl acetate to remove lipids, and the water layer is collected and dialysed against a distilled water. Dyalysate is passed through dextran gel column, said dextran gel having a molecular weight fractionation range of 1,000 to 50,000, to adsorb thereon and eluted with phosphate buffered solution (pH 7 – 8). The fraction having strong coagulating activity is collected in the recalcification test and passed through a column filled with a basic ion exchange resin to allow the active substance to adsorb thereon and eluted with ethyl acetate (pH about 7). The fraction having the highest blood coagulating activity is collected in the recalcification test, and lyophilised.

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### 3,761,587
### ANTIBIOTIC THIOPEPTIN AND PROCESS OF PRODUCTION

**Norimasa Miyairi, Suita; Toshio Miyoshi, Ibaraki; Masanobu Kohsaka, Suita; Koichi Ikushima, Toyonaka, and Hiroshi Imanaka, Ikeda, all of Japan, assignors to Fujisama Pharmaceutical Co., Ltd., Osaka, Japan**

**Continuation-in-part of Ser. No. 829,900, June 3, 1969, abandoned, and a continuation-in-part of Ser. No. 91,308, Nov. 20, 1970, abandoned. This application Feb. 23, 1971, Ser. No. 118,152**
**Int. Cl. A61k** *21/00*
**U.S. Cl. 424—117** **9 Claims**

The antibiotic thiopeptin of the present invention comprising thiopeptins $A_1$, $A_2$, $A_3$, $A_4$ and B is produced by culturing *Streptomyces tateyamensis* A.T.C.C. 21,389 in an aqueous nutrient medium under submerged aerobic conditions. It exhibits antimicrobial activities against a variety of microorganisms and is useful as an animal feed supplement.

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### 3,761,588
### ANTIBIOTICS AND PRODUCTION THEREOF

**Takashi Tsuruoka, Kawasaki-shi; Takashi Shomura; Norio Ezaki, both of Yokohama-shi; Eiichi Akita, Tokyo; Shigeharu Inoue, Yokohama-shi; Shunzo Fukatsu, Tokyo; Shoichi Amano, Kawasaki-shi; Hiroshi Watanabe, and Taro Niida, both of Yokohama-shi, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan**

**Filed Jan. 19, 1970, Ser. No. 3,809**
**Claims priority, application Japan, Feb. 6, 1969, 44/8588; Sept. 25, 1969, 44/75845**
**Int. Cl. A61k** *21/00*
**U.S. Cl. 424—121** **6 Claims**

New and useful antibiotic substances which are called the SF-837 substance, SF-837-$A_2$ substance, SF-837-$A_3$ substance and SF-837-$A_4$ substance, respectively and which are all valuable for the treatment of infections by Gram-positive pathogenic bacteria may be isolated from the culture of a new micro-organism Streptomyces mycarofaciens.

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### 3,761,589
### PESTICIDAL PHOSPHOROTHIOATE COMPOSITIONS AND METHODS OF PREPARING THEM

**Leslie L. Balassa, Blooming Grove, N.Y., assignor to Balchem Corporation, Slate Hill, N.Y.**

**Continuation-in-part of Ser. No. 795,073, Jan. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 660,237, Aug. 14, 1967, abandoned. This application Jan. 22, 1971, Ser. No. 109,062**
**Int. Cl. A01n** *9/36*
**U.S. Cl. 424—200** **18 Claims**

The phosphorothioate pesticidal compositions O, O-diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate, O,O-dimethyl S-(1,2-dicarbethoxyethyl) phosphorodithioate and O,O-diethyl O-p-nitrophenyl phosphorothioate are well known as agricultural pesticides; however, their high volatility and ready hydrolysis under ambient field conditions leads to substantial loss of the pesticide with a corresponding reduction in its effectiveness. The introduction of certain normally solid solutes having melting points below about 100° C into the pesticidal composition and the absorption of the resulting solution onto an inert porous carrier significantly reduces this problem. In addition, these and higher melting solutes may be dissolved in a volatile solvent, the phosphorothioate may be dissolved in a volatile solvent, the resulting solution may be absorbed onto an inert porous carrier, and the solvent volatized to provide useful phosphorothioate pesticidal compositions.

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### 3,761,590
### SILVER SULFADIAZINE USED IN THE TREATMENT OF BURNS

**Charles L. Fox, Jr., New York, N.Y., assignor to Research Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 653,830, July 17, 1967, abandoned. This application May 18, 1970, Ser. No. 38,031**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—228** **6 Claims**

Silver sulfadiazine has been found to be useful in burn therapy by applying to the affected surface silver sulfadiazine, preferably dispersed in a water-dispersible hydrophilic carrier.

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### 3,761,591
### NOVEL PREGNADIENE

**Julien Warnant, Neuilly S/Seine, and Andre Farcilli, Romy-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France**

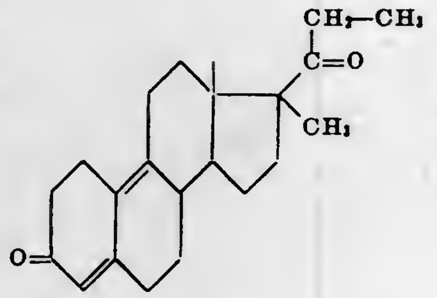
**Division of Ser. No. 112,387, Feb. 3, 1971, Pat. No. 3,679,714. This application Feb. 29, 1972, Ser. No. 230,507**

**Claims priority, application France, Feb. 20, 1970, 7006179**

**Int. Cl. A61k** *17/00*

**U.S. Cl. 424—242** **5 Claims**

17α,21-dimethyl-19-nor-$\Delta^{4,9}$-pregnadiene-3,20-dione of the formula



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having antigonado-hypophysial, progestomimetic and progestative activity and its preparation.

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### 3,761,592
### QUINOLINE DERIVATIVES EXHIBITING GROWTH PROMOTING AND ANTICOCCIDIAL EFFECTS

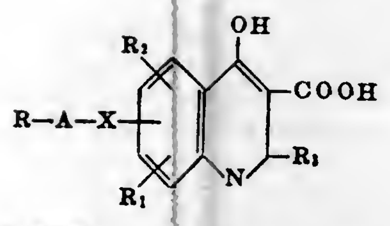
**Renat Herbert Mizzoni, 90 Valley Brook Road, Long Valley, N.J., and George De Stevens, 2 Warwick Road, Summit, N.J.**

**Continuation-in-part of Ser. No. 808,333, March 18, 1969, Pat. No. 3,496,184, which is a continuation-in-part of Ser. Nos. 736,962, June 14, 1968, abandoned, and Ser. No. 770,426, Oct. 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 753,731, Aug. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 669,730, Sept. 22, 1967, abandoned, which is a continuation-in-part of Ser. No. 661,541, Aug. 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 650,655, July 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 629,085, April 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 583,101, Sept. 29, 1966, abandoned. This application Oct. 14, 1969, Ser. No. 866,378**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—258** **14 Claims**

Cycloaliphatyloxy- or -mercapto-4-hydroxy-3-quinolinecarboxylic acids, e.g. those of the formula



R = cycloaliphatic radical
$R_{1,2}$ = H, alkyl, alkenyl, aralkyl, free, etherified or esterified OH or SH, $CF_3$, $NO_2$ or amino
A = direct bond or aliphatic radical
$R_3$ = H or alkyl
X = O or S

functional derivatives, tautomeric N-derivatives and salts thereof, exhibit anticoccidial and growth promoting effects.

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### 3,761,593
### "METHODS OF CONTROLLING NEMATODES AND FUNGI USING 3,4-DICHLOROFUROXAN"

**Johannes Thomas Hackmann, Enschede, and Johannes Kuipers, Weesp, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed July 28, 1971, Ser. No. 166,982**

**Claims priority, application Netherlands, July 29, 1970, 7011186**

**Int. Cl. A01n** *9/22, 9/28*

**U.S. Cl. 424—272** **2 Claims**

It has been found that the known substance 3,4-dichlorofuroxan exerts a strong biocidal activity on nematodes and soil fungi. After being worked up into a pesticidal preparation the substance may be used for controlling these micro-organisms in doses which may vary between 4 kg to 40 kg of active substance per hectare.

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### 3,761,594
### COMPOSITION FOR CONTROL OF COCCIDIOSIS CONTAINING A COCCIDIOSTIATICALLY ACTIVE 4-HYDROXY-QUINOLINE AND METICLORPINDOL

**John R. Challey, Ashland, Ohio, assignor to Rhodia Inc., New York, N.Y.**

**Filed Jan. 28, 1971, Ser. No. 110,767**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—258** **7 Claims**

Coccidiostatic 4-hydroxyquinolines and coccidiostats of the meticlorpindol type are both active by preventing development of the first schizogenous generation of Eimeria in the intestinal mucosa of poultry and act prophylactically in controlling the development of pathogenic species of this organism but, while Eimeria species become resistant to both types of coccidiostats after a period of continued exposure, it has been unexpectedly found that when the species becomes resistant to one type they become more sensitive to the other, and accordingly a mixture of the two has a greater prophylactic effect than either coccidiostat alone and a lower total amount of coccidiostat can be used in preventing further development of the organism. The invention includes a mixture of the two types of coccidiostats in poultry rations and premixes for the preparation of poultry rations and to a method of controlling coccidiosis in poultry by administering a mixture of the two types of coccidiostats in their feed.

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### 3,761,595
### TREATING SKIN AND SCALP CONDITIONS

**Philippe Pfeffer, c/o Plant, Ltd., Industrial Zone, Nathanya, Israel**

**Continuation of Ser. No. 649,104, June 27, 1967, abandoned. This application Mar. 25, 1970, Ser. No. 20,473**

**Claims priority, application Israel, July 3, 1966, 26,082**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—273** **6 Claims**

Pilosine compounds are received by extraction from the leaves of Jaborandi Microphylous.

Dermatological preparations containing a pilosine compound as an active ingredient and the method of treating various diseases of the skin and scalp by application to the afflicted areas of such a dermatological preparation.

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### 3,761,596
### FUNGICIDAL COMPOSITIONS CONTAINING MALONIC ESTERS

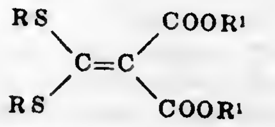
**Kuniaki Taninaka, Ibargi; Osamu Shioyama, Osaka, and Kikuzo Murata, Kawachinagano, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan**

**Filed Feb. 2, 1971, Ser. No. 112,054**

**Int. Cl. A01n** *9/12*

**U.S. Cl. 424—277** **6 Claims**

A compound represented by the formula,



wherein R signifies a lower alkyl group having 2 to 4 carbon atoms, allyl group, or dichloroallyl group, R¹ signifies a lower alkyl group or allyl group, and the pair of R may be joined together to form a lower alkylene radical having 1 to 3 carbon atoms is used in a fungicidal composition for agricultural and horticultural use wherein said compound is the active ingredient.

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### 3,761,597
### 1-AMIDINO-3-(SUBSTITUTED-PHENYL) UREA ANTIMALARIAL COMPOSITION AND METHOD OF USE

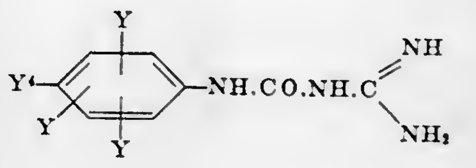
**Leslie Percy Walls, 183-193 Euston Rd., London, England**

**Continuation-in-part of Ser. No. 650,225, June 30, 1967, Pat. No. 3,539,616. This application June 30, 1970, Ser. No. 51,322**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—304** **14 Claims**

Compositions for use as antimalarials which comprise a 1-amidino-3-(substituted-phenyl)urea compound of the formula



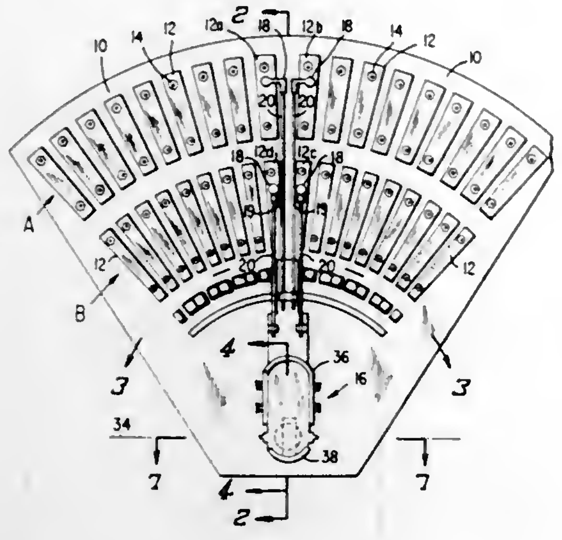
or a pharmaceutically acceptable acid addition salt thereof wherein Y⁴ is halogen, trifluoromethyl, cyano or nitro, and the Y's are selected from halogen, trifluoromethyl, cyano, nitro, methyl and hydrogen, provided that at least one of the Y's is a substituent other than hydrogen except where Y⁴ is cyano or trifluoromethyl, and provided that Y⁴ and any one of the Y's are not the same substituent when any one of them is selected from cyano, nitro, trifluoromethyl and methyl, and further provided that not more than two of the Y's is a substituent other than hydrogen, and a pharmaceuticaly acceptable carrier.

And a method for treatment or prophylaxis of malaria in mammals which comprises administering an effective antimalarial amount of a 1-amidino-3-(substituted-phenyl)urea compound as herein defined or a pharmaceutically acceptable acid addition salt thereof.

# ELECTRICAL

### 3,761,598
### FOOT-OPERATED CHORD XYLOPHONE

**Ernest Haile, 30 Cadwalader Ter., Trenton, N.J.**
**Filed Aug. 3, 1971, Ser. No. 168,639**
**Int. Cl. G10c** *3/12*
**U.S. Cl. 84—444** **3 Claims**



A foot-operated musical instrument is herein provided for simultaneously generating a plurality of musical notes which may comprise a musical chord. A plurality of note-sounding members are mounted on a support structure having a pedal assembly journaled thereon for rotating and rocking movement with respect thereto. A plurality of hammers are cantilevered from the pedal assembly and are arranged in a predetermined pattern to strike a corresponding pattern of note-sounding members comprising a musical chord. A stop device consisting of a snubber-like projection is arranged with respect to the pedal assembly so that an operator may thrust the pedal assembly against the snubber-like projection to effect the movement of the plurality of hammers to sharply strike the predetermined pattern of note-sounding members. A series of cams is provided to form a detent arrangement for guiding the pedal into any one of a plurality of preselected positions corresponding with preselected musical chords.

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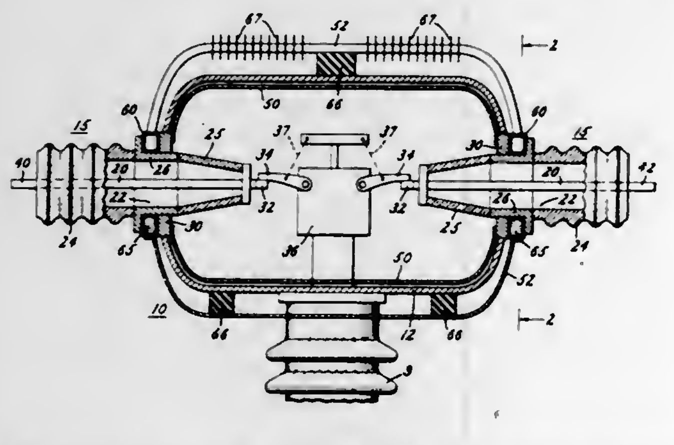
### 3,761,599
### MEANS FOR REDUCING EDDY CURRENT HEATING OF A TANK IN ELECTRIC APPARATUS

**John W. Beatty, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.**
**Filed Sept. 5, 1972, Ser. No. 286,470**
**Int. Cl. F28d** *15/00;* **H01f** *27/28*
**U.S. Cl. 174—15 R** **8 Claims**



Eddy-current heating of a tank wall is reduced by providing the tank wall with shorting members forming a secondary loop around a portion of the tank wall. One of the shorting members is located outside the tank and is a tube forming a portion of a heat pipe. This heat pipe also comprises a reservoir communicating with the tube and containing liquid refrigerant that is in good heat-exchange relationship with a portion of the tank wall.

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### 3,761,600
### ABOVE GROUND GAS-INSULATED PIPE TYPE TRANSMISSION CONFIGURATION

**Elijah Robert Perry, Scottdale, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.**
**Filed Jan. 11, 1973, Ser. No. 322,718**
**Int. Cl. H01b** *9/06*
**U.S. Cl. 174—16 B** **2 Claims**

An arrangement for both supporting and protecting pipe enclosed bus runs of the multi-phase type. A single vertical support with appropriate support arms maintains the conduits in a delta arrangement. Protective baffle plates envelop the delta-configured bus housings to shield them from sunlight and hence maintain them at cooler temperatures, to protect the bus runs against damage and to promote convection cooling.

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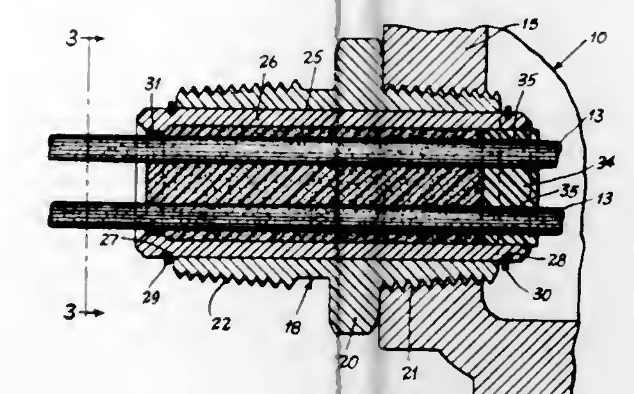
### 3,761,601
### REMOVABLE FLAME-PROOF POTTED FITTING

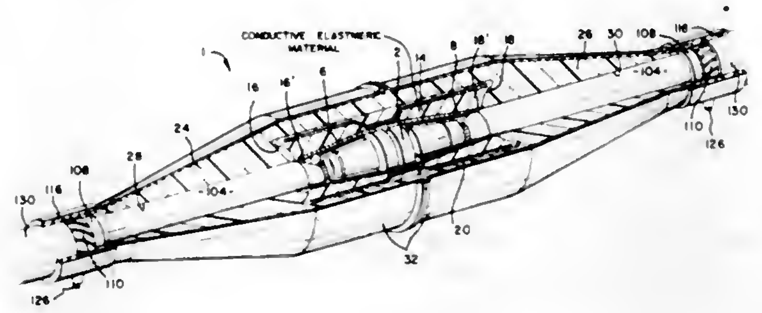
**Glenda F. Kaesser, St. Louis, and Marshall G. Zavertnik, Manchester, both of Mo., assignors to Killark Electric Manufacturing Company, St. Louis, Mo.**
**Filed Oct. 4, 1971, Ser. No. 186,095**
**Int. Cl. H05k** *5/02;* **H01h** *9/04*
**U.S. Cl. 174—52 R** **8 Claims**



A removable flame-proof potted fitting consisting of a coupling assembly for carrying wires through the wall of a box, the assembly having an outer bushing externally threaded for a flame-proof engagement into the wall of the box and having a smooth cylindrical inner surface, a cylindrical sleeve having a smooth outer surface removably slipped through the outer fitting with an engagement close and long enough to prevent passage of flame, removable retaining rings to hold the sleeve in the fitting, an elastomer gasket engageable into one end of the sleeve having openings to receive wires that extend through the sleeve, and potting compound filling the sleeve about the wires to prevent passage of flame, the sleeve with the wires being removable from the outer fitting without destroying that fitting or the potting of the wires, the bushing also being removable so that the entire device is removable easily as an entirety.

### 3,761,602
### METHOD AND CONNECTOR HAVING CONDUCTIVE ELASTOMERIC MATERIAL ENCIRCLED BY A CONTINUOUS LAYER OF INSULATION IN INTIMATE CONTACT THEREWITH

**Frederick Carl De Sio, Hershey, and Walter Myers Werner, Downingtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.**
**Filed Jan. 12, 1972, Ser. No. 217,616**
**Int. Cl. H02g** *15/08*
**U.S. Cl. 174—73 SC** **6 Claims**



An electrical connector comprising: an explosive charge and a plurality of radially movable electrically conducting jaws contained within an electrically conducting housing. The housing is completely encircled by and bonded to a continuous insulation layer which is impervious to moisture. The bared conductor ends of two lengths of high voltage electrical cable are inserted through the insulation layer, between the jaws and in engagement with electrical contact rivets protruding from the propellant charge. The conductor of one of the cable lengths is grounded to its outer shielding. The second length of cable is provided with a current source impressed between its conductor and cable shielding. As a result, an electrical path for the current source is provided through the contact rivets and through the propellant charge. The charge is thereby detonated to propel the jaws into radial engagement on the cable conductors and in mechanical and electrical contact with the housing. The insulation layer remains undisturbed and bonded to the housing. This advantageously allows detonation of the propellant charge without entry through the insulation layer, or, in the alternative, requiring a multiple piece insulation layer which must be assembled over the cable subsequent to termination.

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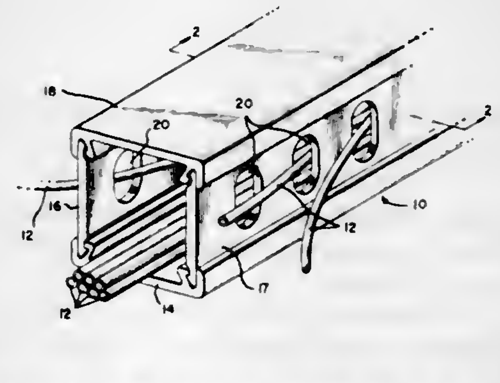
### 3,761,603
### WIRING RACEWAY

**Kenneth Scott Hays, Exton, Pa., and Gustaf Rudolph Lawson, Willingboro, N.J., assignors to AMP Incorporated, Harrisburg, Pa.**
**Filed Nov. 14, 1972, Ser. No. 306,473**
**Int. Cl. H02g** *3/04;* **F16l** *9/22*
**U.S. Cl. 174—101** **28 Claims**



A wiring raceway has identical, relatively flat, elongated base and cover members and a pair of identical, relatively flat, elongated side members. The base and cover members have resiliently deformable marginal channels shaped to receive either of a pair of opposite edges of each of the side members. A first edge of each of the side members is shaped to be received and retained within its respective marginal channel of the base member while a second edge of each of the side members is shaped to be received within its respective marginal channel of the cover member but to allow removal of the cover member from the side members for access to the interior of the wiring raceway without separating the side members from the base member. All members are shaped to facilitate cutting or mitering on location during installation.

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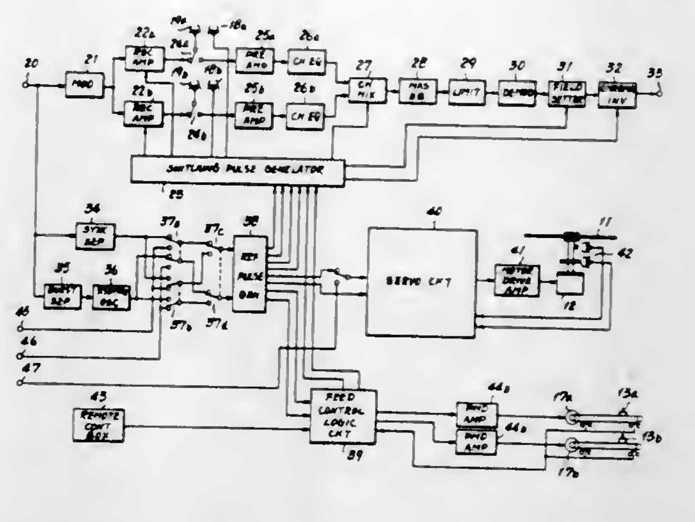
### 3,761,604
### RECORDING AND REPRODUCING SYSTEM IN A ROTARY MAGNETIC MEDIUM RECORDING AND REPRODUCING APPARATUS

**Keiji Ozawa, Asahi-ku, Yokohama; Seiichi Takashima, Kanagawa-ken, Kamakura, and Hisao Kinjo, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ken, Japan**
**Filed Sept. 3, 1971, Ser. No. 177,795**
**Claims priority, application Japan, Sept. 5, 1970, 45/78016**
**Int. Cl. H04n** *5/78*
**U.S. Cl. 178—5.4 CD** **14 Claims**



A recording system comprises means for producing a frame pulse and a color frame pulse from an input NTSC system video signal. Track indication pulses consist of a feed pulse and a two bit feed pulse which cause magnetic heads to move in an intermittent stepping movement and. From the feed pulse is produced a record switching pulse which switches recording of the magnetic head. A reproducing system comprises a field setting means for effecting a H/2 processing and a chroma inverting means for inverting the phase of a subcarrier.

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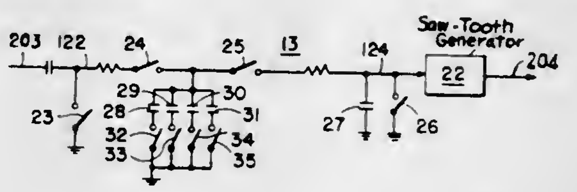
### 3,761,605
### PHASE ERROR CORRECTION SYSTEM FOR A VIDEO TAPE RECORDER

**Satoshi Makara; Toshiro Kitazaki, and Masao Inaba, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan**
**Filed Oct. 8, 1971, Ser. No. 187,644**
**Int. Cl. G11b** *5/44;* **H04n** *5/78, 9/02*
**U.S. Cl. 178—5.4 CD** **6 Claims**



A phase error correction system for a color video tape recorder having a plurality of recording/reproducing heads is disclosed in which the color video signal to be phase-corrected is phase-compared with a stable reference signal at the line intervals to produce coarse correction signals. Fine correction signals in the Nth through the last lines in each head channel are obtained by the coarse correction signals for one line and the imediately preceding line. Fine correction signals are obtained in the first (N-1) lines from the coarse correction signals in the Nth line before one revolution of the head drum. The coarse correction signals are added to the fine correction signals to produce a phase correction signal which is used to phase compensate the color video signal.

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### 3,761,606
## COLOR TELEVISION RECEIVER FOR USE IN PAL SYSTEM

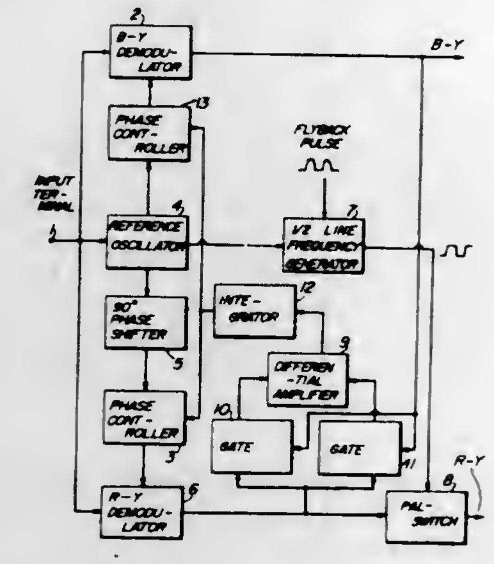
**Harunobu Hori, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Jan. 31, 1972, Ser. No. 222,191**

**Claims priority, application Japan, Feb. 10, 1971, 46/5770; June 18, 1971, 46/44341; June 18, 1971, 46/44342**

**Int. Cl. H04n** *9/38*

**U.S. Cl. 178—5.4 P** **6 Claims**



A color television receiver for use in a PAL system comprising a demodulation circuit wherein means is provided for detecting the difference between the amplitude of the demodulated chrominance signal when a 180° phase-shift of the chrominance signal is effected and the demodulated chrominance signal when there is no phase shift effect. The demodulation axis is phase-controlled by the detected difference so as to greatly reduce the distortion of the hue and saturation of the reproduced color images.

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### 3,761,607
## VIDEO MONOCHROM TO COLOR CONVERSION

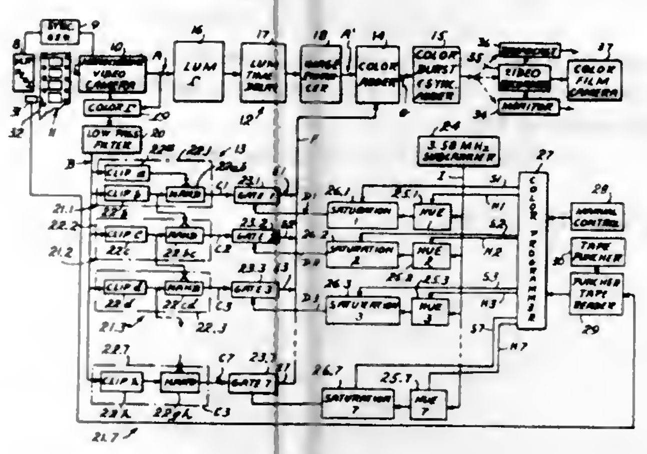
**Carl Hanseman, Burbank, Calif., assignor to Technicolor, Inc., Hollywood, Calif.**

**Continuation of Ser. No. 873,194, Nov. 3, 1969, abandoned. This application Feb. 15, 1972, Ser. No. 226,523**

**Int. Cl. H04n** *9/04*

**U.S. Cl. 178—5.4 R** **17 Claims**

Apparatus and method for synthesizing a color video signal from a black and white video signal. The various amplitude levels of the black and white signal are separated by threshold detectors to produce separate gating signals during the interval of each amplitude level. Color signals of selected hue and saturation are provided for each amplitude level by modifying the phase and amplitude of the signal provided by a 3.58 mhz subcarrier generator. In the appropriate intervals the gating signals pass the color signals to an adder, where they are combined with the black and white signals to furnish a color composite video signal suitable for broadcasting or recording.



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### 3,761,608
## PHASE DETECTOR

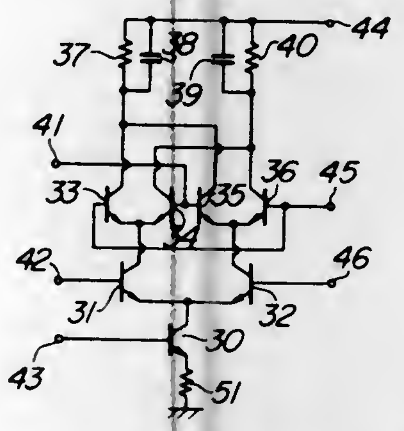
**Katsuo Mouri, Yokohama, and Gentaro Miyazaki, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed June 22, 1971, Ser. No. 155,490**

**Claims priority, application Japan, June 24, 1970, 45/54405**

**Int. Cl. H04n** *9/46*

**U.S. Cl. 178—5.4 SY** **3 Claims**



A phase detector is disclosed, which is constructed such that a television signal including chrominance signal and color burst signal and a local color subcarrier signal are phase compared to each other by a differential amplifier of transistors. The emitter connected in common of the differential amplifier transistors are connected to a gating circuit, which is on-off controlled such that it is open only during the period of presence of the color burst signal in the television signal. A detection voltage according to the phase difference between the color burst signal and the color subcarrier signal appears at the collector of the transistor differential amplifier.

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### 3,761,609
## METHOD AND APPARATUS FOR RECORDING AND REPRODUCING IMAGES ON CONTINUOUSLY MOVING CINEMATOGRAPHIC FILM

**Richard Wick, Munchen, and Friedrich Bestenreiner, Grunwald, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany**

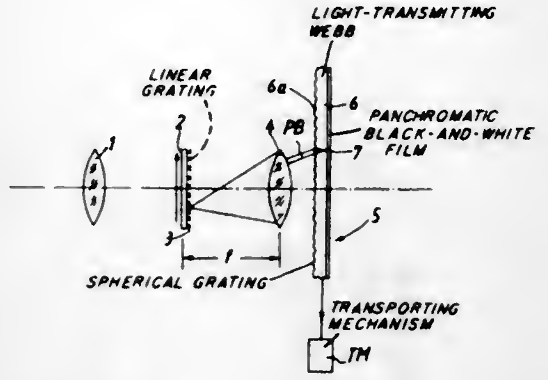
**Filed Feb. 7, 1972, Ser. No. 224,162**

**Claims priority, application Germany, Feb. 12, 1971, P 21 06 782.3**

**Int. Cl. G03b** *33/14;* **H04n** *5/84, 9/00*

**U.S. Cl. 178—5.4 CD** **10 Claims**

A continuously moving web of motion picture film the rear side of which is provided with a layer of black-and-white photosensitive material and the front side of which is provided with a spherical grating is exposed to light which is projected by a transformation lens whose front focal plane coincides with the plane of a ground glass plate. A lens focusses an intermediate image of a subject or scene onto the ground glass plate and two color components of the intermediate image are modulated by the rasters of a linear grating which is placed immediately in front of or immediately behind the ground glass plate. The exposed layer is thereupon developed and the web is moved at a constant speed in a reproducing apparatus wherein a light source directs light against an aperture which is adjacent to the path of the web. The lenticules of the spherical grating project minute images onto a retransformation lens which focusses a composite of such minute images onto the photocathode of a black-and-white television tube. The photocathode is scanned and the thus obtained information is converted into a color television signal.



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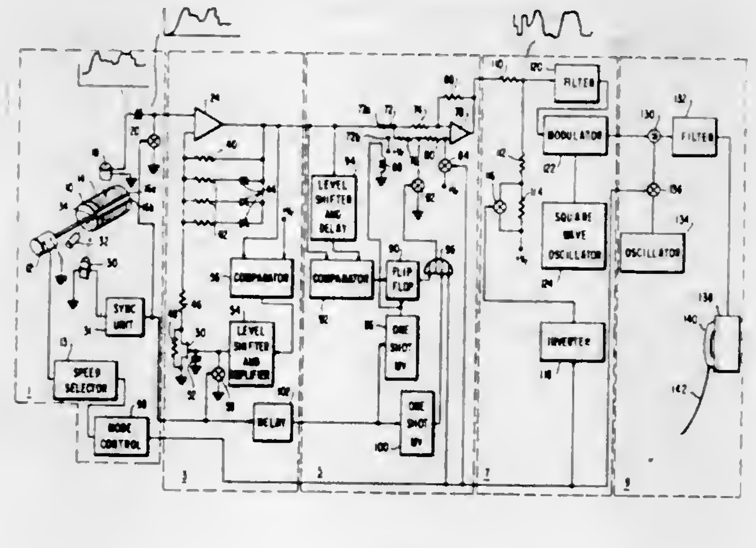
### 3,761,610
## HIGH SPEED FASCIMILE SYSTEMS

**Robert E. Krallinger, New Milford; Donald T. Dolan, Ridgefield; Kenneth Wittmer, Newton, and Jerry W. Terrell, New Milford, all of Conn., assignors to Graphics Sciences, Inc., Danbury, Conn.**

**Filed Feb. 16, 1971, Ser. No. 115,189**

**Int. Cl. H04n** *1/40, 7/12*

**U.S. Cl. 178—6** **32 Claims**



A facsimile system bandwidth-compresses a source signal, derived from scanning a document whose contents are to be transmitted to a remote location, by reversing the polarity of alternate segments of the signal to thereby form a modified signal of lesser frequency content. Background suppression is provided to enhance image contrast, and automatic gain control compensates for the variable attenuation of the transmission medium. The system is also capable of operating in a non bandwidth-compressed ("slow") mode to accommodate slower transceivers.

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### 3,761,611
## VIDEO FILE SYSTEM

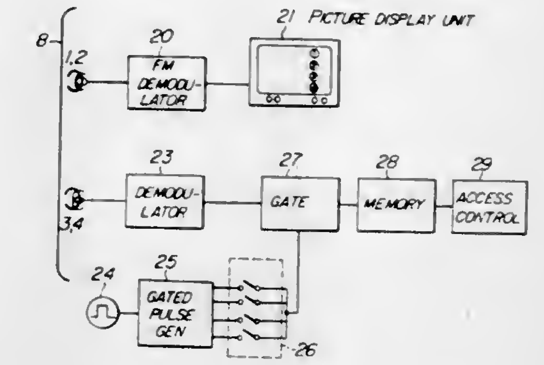
**Hisashi Nakamura, Hachioji-shi; Masao Hibi, Kodaira-shi; Toshimichi Terada, Hachioji-shi, and Chikafusa Hirano, Minamitama-gun, Tokyo, all of Japan, assignors to Hitachi Ltd. and Hitachi Electronics Co., Ltd., Tokyo, Japan**

**Filed June 18, 1971, Ser. No. 154,563**

**Claims priority, application Japan, June 23, 1970, 45/54628**

**Int. Cl. G11b** *15/00, 27/32;* **H04n** *1/28*

**U.S. Cl. 178—6.6 A** **7 Claims**



A magnetic recording and reproducing system for recording video signal information for many scenes in groups on a magnetic recording medium as well as recording control signals in the neighborhood of the individual groups of the video signal information. A desired one of said control signals may be extracted in accordance with external instructions, and the system itself operates to select other specified video signal information in accordance with the extracted control signal and couple the selected information to other apparatus.

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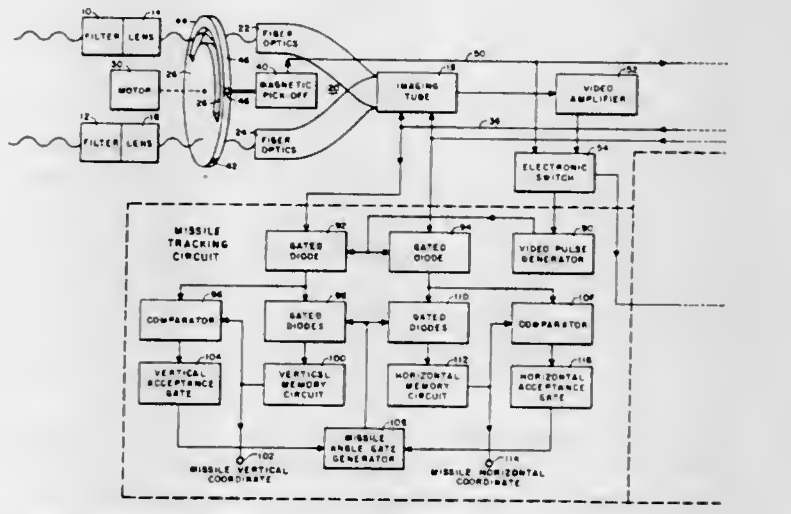
### 3,761,612
## SIMULTANEOUS MISSILE AND TARGET ELECTRO-OPTICAL TRACKING SYSTEM

**Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Feb. 18, 1965, Ser. No. 434,741**

**Int. Cl. H04n** *3/04*

**U.S. Cl. 178—6.8** **6 Claims**



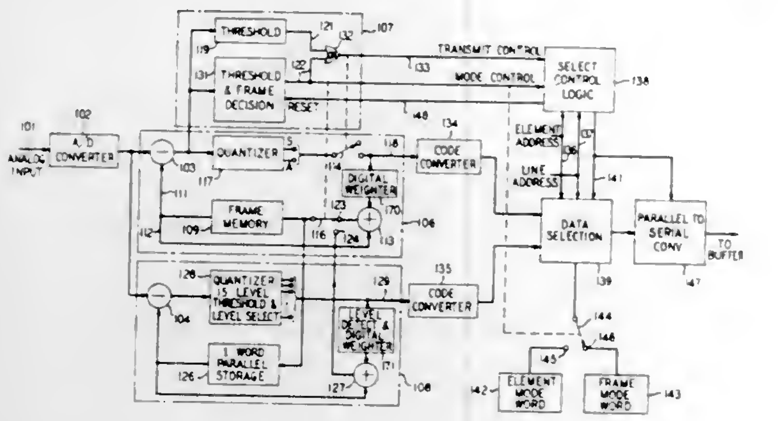
A missile and target electro-optical tracking system which utilizes the same imaging tube and scanning signal for deriving both target and missile angular coordinate information. A two channel optical system is positioned in front of the imaging tube and each image is alternately allowed to pass to the face of the imaging tube.

### 3,761,613
### DUAL MODE VIDEO ENCODER

**John Ormond Limb, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**

**Filed June 20, 1972, Ser. No. 264,650**
**Int. Cl. H04n** *7/12*

**U.S. Cl. 178—7.1** **7 Claims**



A pair of differential encoders operate in conjunction with one another to achieve improved transmission characteristics. A frame-to-frame encoder including a frame memory operates in the standard manner during stationary portions of the picture. Control circuitry monitors the magnitudes of frame differentials, and responsively thereto identifies moving portions of the picture. For those portions identified as having motion, an output code is produced by an element-to-element encoder which differentially encodes consecutive elements in the line. Whenever the element-to-element mode is utilized, the frame memory is replenished by means of the element-to-element differentials.

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### 3,761,614
### ELECTRON-OPTICAL IMAGE TUBES AND IMAGE TUBE STREAK CAMERAS

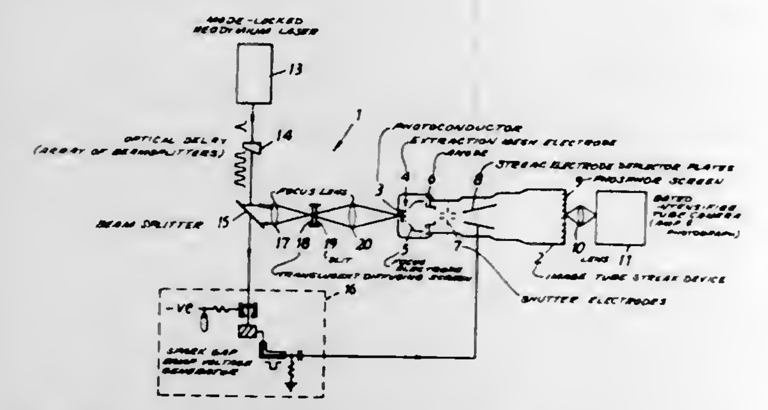
**Daniel Joseph Bradley, 7 Piney Hills, Belfast, Ireland**

**Filed June 24, 1971, Ser. No. 156,426**

**Claims priority, application Great Britain, June 26, 1970, 31,167/70**

**Int. Cl. H01j** *31/26, 39/04*

**U.S. Cl. 178—7.2** **11 Claims**



An electron-optical image tube is made capable of providing direct measurement of luminous events having durations as short as one picosecond and with a time resolution in the picosecond range by providing a metallic mesh extraction electrode in close proximity to the photo-cathode of the image tube and connecting this extraction electrode to a source of positive potential of variable voltage. An image tube streak camera incorporating such an image tube provides means whereby the photo-electrons in the image tube are deflected by a pulsed electric field of rapid rise time to produce a streaked record. The image tube is particularly suited for use in the analysis of laser beam pulses.

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### 3,761,615
### TEMPERATURE IMAGE CAMERA WITH MEANS FOR MOVING THE IMAGE IN THE IMAGE PLANE

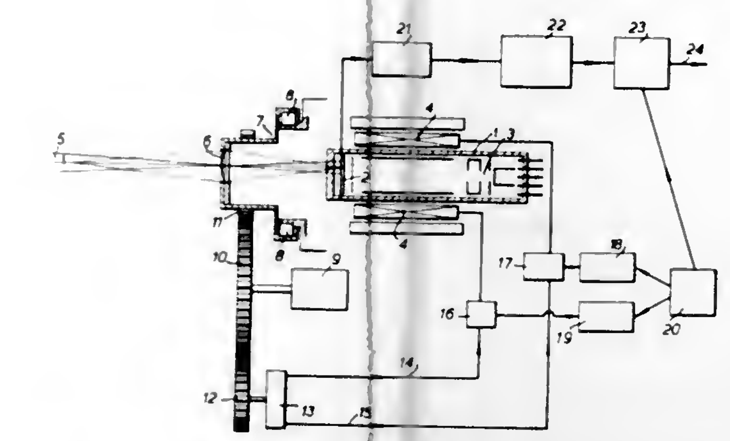
**William Michael Wreathall, Writtle, Essex, Chelmsford, England, assignor to English Electric Valve Company Limited, Essex, England**

**Filed Feb. 3, 1972, Ser. No. 223,109**

**Claims priority, application Great Britain, Mar. 19, 1971, 7,384/71**

**Int. Cl. H04n** *5/30*

**U.S. Cl. 178—7.2** **8 Claims**



The image of an object is focussed onto the pyro-electric target of a camera tube by a lens whose axis is continously rotated about the axis of the tube by rotating eccentric lens mounting arrangement. To compensate for the resultant movement of the image in the plane of the target, compensating voltages are derived from a resolver rotated in synchronism with the lens axis rotation and are superimposed on the line and field scanning voltage waveforms so that there is no relative movement between the image and the scanning raster.

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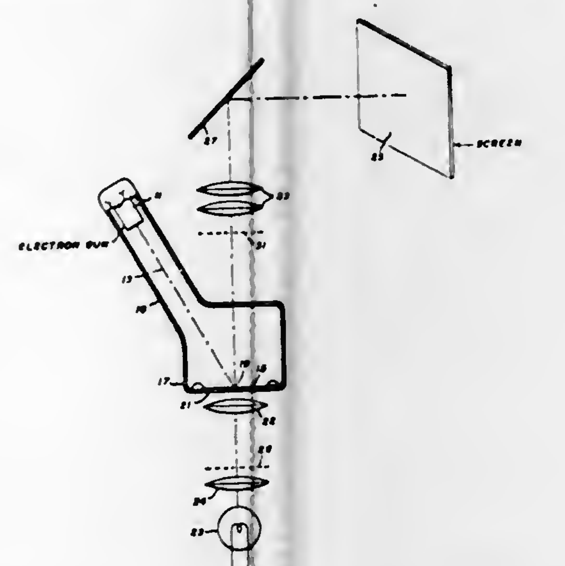
### 3,761,616
### PROJECTION SYSTEM

**Charles E. Timberlake, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.**

**Continuation of Ser. No. 766,880, Oct. 11, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 92,178**
**Int. Cl. H04n** *3/16*

**U.S. Cl. 178—7.5 D** **9 Claims**



Improved electronic projection systems having a container with a conducting interior and a deformable medium in the container which decreases in resistivity with decreases in thickness in the presence of electrical charge on the surface of the medium are provided by using as the deformable medium the polymeric reaction product of benzyl alcohol and aromatic hydrocarbons using as a catalyst an acidic material.

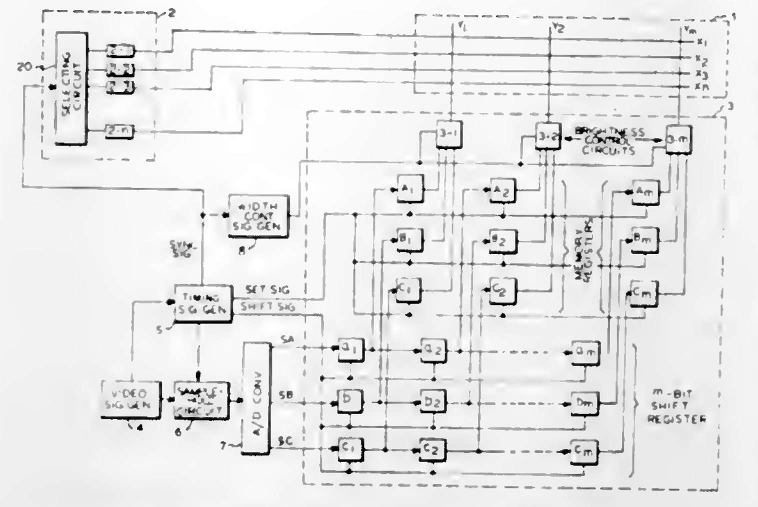
### 3,761,617
### DC ELECTROLUMINESCENT CROSSED-GRID PANEL WITH DIGITALLY CONTROLLED GRAY SCALE

**Mitsuharu Tsuchiya, Osaka; Teruo Sato, Kyoto; Hitoshi Takeda, and Masami Yoshiyama, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed June 17, 1971, Ser. No. 153,946**

**Claims priority, application Japan, June 20, 1970, 45/53619; June 23, 1970, 45/54893; June 23, 1970, 45/54894**
Int. Cl. **H04n** *5/30*

**U.S. Cl. 178—7.3 D** **6 Claims**



A scanning apparatus for a DC electroluminescent crossed-grid panel has an X-line driving circuit, a Y-line driving circuit, a video signal generator, a timing signal generator, a sample-hold circuit, an analog-to-digital converter, and a width-control signal generator. The Y-line driver has a set of first memory circuits for writing sequentially coded video signals for one horizontal line period, a set of second memory circuits for simultaneously holding the coded video signals during one horizontal line period, and a set of brightness control circuits for supplying Y-line driving pulses to corresponding Y-lines in response to the coded video signals.

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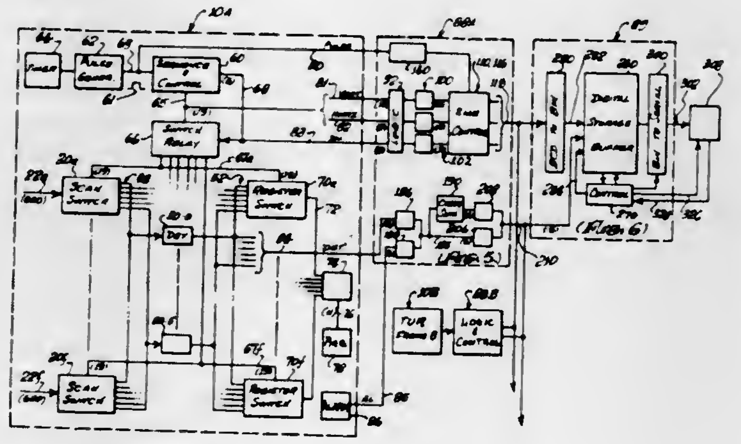
### 3,761,618
### TRAFFIC USAGE ENCODER

**Russell M. Alston, West Covina; John R. Watson, Glendora, and James E. Westbrook, Covina, all of Calif., assignors to Conrac Corporation, New York, N.Y.**

**Filed July 26, 1972, Ser. No. 275,207**
**Int. Cl. H04m** *15/26*

**U.S. Cl. 179—8 A** **8 Claims**



Electronic encoding of detailed traffic usage information for up to 28,800 distinct communication lines is accomplished economically by utilizing the line scanning capability of existing electromechanical Traffic Usage Recorders (TUR). A relatively small number of digital signals, typically 32, are extracted from selected points of each electromechanical TUR "frame" and are processed electronically. That processing typically includes time adjustment of 24 position signals to eliminate overlapping within each of three groups, conversion of each group to binary coded decimal form, and differential time gating of those position signals relative to six detector signals, all performed by separate circuitry for each TUR frame. The resulting time adjusted signals from all TUR frames are then supplied on a time sharing basis to common circuitry which typically converts the position signals from BCD to binary code, separately stores each signal group, and finally converts the stored signals to serial code for delivery to any desired data processing center. The system typically includes provision for increasing circuit reliability, as by checksum computation for the detector signals and production of a parity bit for each serial word as finally delivered. Further information of arbitrary type can be inserted, for example as additional bits in each word or additional words following each scan cycle.

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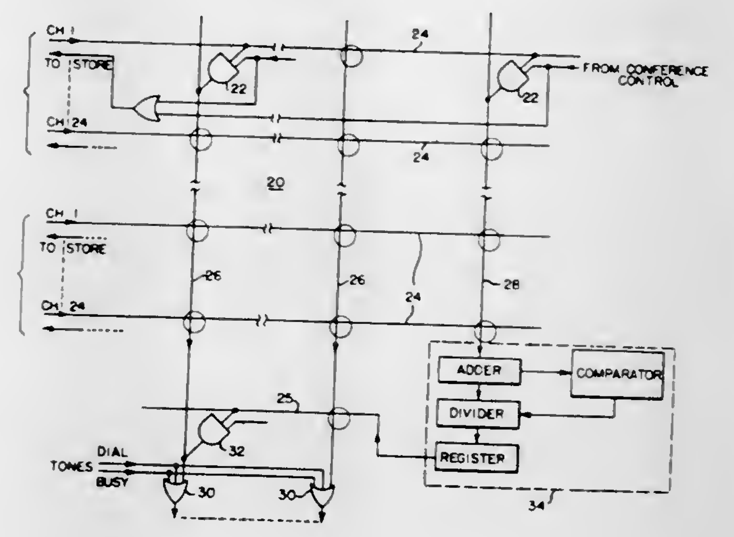
### 3,761,619
### DIGITAL CENTRAL SWITCHING OFFICE FOR TELEPHONE SYSTEM

**Uwe A. Pommerening, 251 Raphael Dr., Webster, N.Y.**

**Continuation of Ser. No. 96, Jan. 2, 9170, abandoned. This application Mar. 10, 1972, Ser. No. 233,703**
**Int. Cl. H04j** *3/00*

**U.S. Cl. 179—15 AT** **4 Claims**



A digital switching office for a time division multiplexed, pulse code modulated signalling system. Switching is done through a matrix of gates on a space divided basis in one coordinate direction and on a combined space and time divided basis in the other coordinate direction. Each channel to be served is assigned an input highway through the matrix in one direction. Each transmitter is assigned an output highway in the other direction, and each output highway is time-shared among all the channels served by one transmitter. The matrix and all the associated central office functions are controlled by a stored program system.

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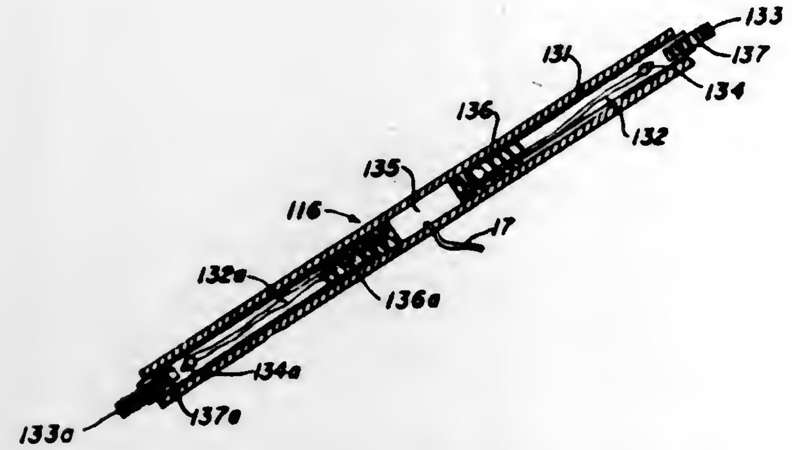
### 3,761,620
### PEN LIGHT, A GRAPHICAL INPUT DEVICE FOR A COMPUTER

**Robert M. Graven, 203 Holly Lane, Orinda, Calif.**

**Division of Ser. No. 33,855, May 1, 1970, which is a continuation-in-part of Ser. No. 644,756, May 25, 1967, abandoned. This application Feb. 1, 1971, Ser. No. 111,659**
**Int. Cl. G08b** *5/36*

**U.S. Cl. 178—18** **4 Claims**

A two-dimensional matrix of semiconductors is arranged in ordered array as a flat, light emitting and light sensing device for input and read-out of information from a computer. A pen-light is used to activate the light sensing semiconductors to achieve a graphical input. Operation of the device can be either incremental or random.



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### 3,761,621
### METHOD FOR THE TRANSMISSION OF INFORMATION USING TIME MULTIPLEX PRINCIPLES

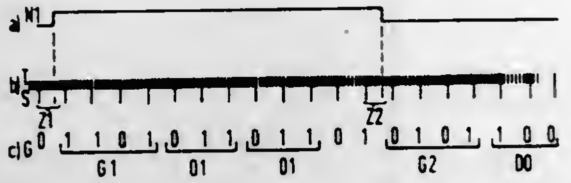
**Werner Vollmeyer, and Hans-Heinrich Voss, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Dec. 2, 1971, Ser. No. 204,146**

**Claims priority, application Germany, Dec. 2, 1970, P 20 59 411.0**

**Int. Cl. H04j** *3/00*

**U.S. Cl. 178—50** **2 Claims**



A method is described for transmitting a plurality of, for example, binary coded messages issuing from a plurality of message channels over a common transmission channel using time multiplex techniques. Even the code element of a message of the shortest duration is scanned repeatedly. For each change in the condition of the modulation waveform of a given message signal, a coresponding signal is transmitted in the form of a binary coded pulse group. The binary coded pulse group is coded to contain information as to the elapsed time between the last preceeding scan of the given message signal and the change in the modulation waveform. The transmission of the aforementioned indicating signal begins simultaneously with the occurrence of the scan of the given message signal next following the change in the modulation waveform. The binary coded pulse group for each modulation waveform is transmitted for the entire duration of the associated given message signal waveform condition. The groups of pulses for each message waveform condition are constituted by the same number of pulses, but each has a different number of pulses of a given polarity.

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### 3,761,622
### AMPLITUDE MODULATED TELEMETERING SYSTEM

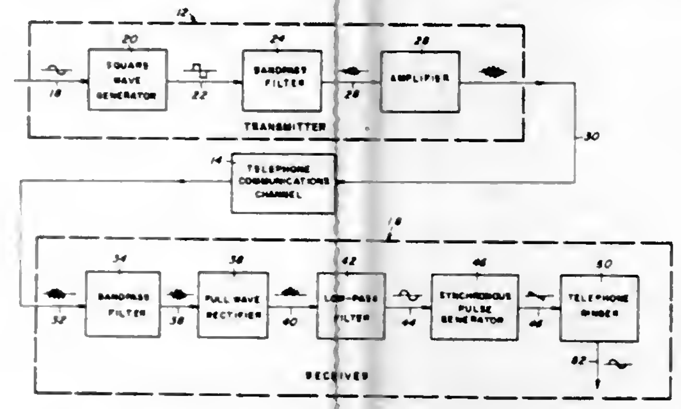
**Robert A. Stucklen, Montrose, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed Nov. 23, 1970, Ser. No. 92,116**

**Int. Cl. H04l** *27/10*

**U.S. Cl. 178—66 R** **14 Claims**

Power system phase and frequency are telemetered by amplitude modulating a carrier wave. In the modulating process a sinusoidal input is shaped to a square waveform and filtered through a band-pass filter. The filter output is a high frequency carrier wave ringing at the input frequency. For demodulation, the carrier wave is rectified and filtered through a low-pass filter, resulting in an approximately sinusoidal signal at the input frequency. After conversion to a sawtooth wave, the signal synchronizes an electronic telephone ringer, generating an output signal at station service voltage and frequency.



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### 3,761,623
### APPARATUS FOR EXAMINING THE INNER SURFACE OF PIPES

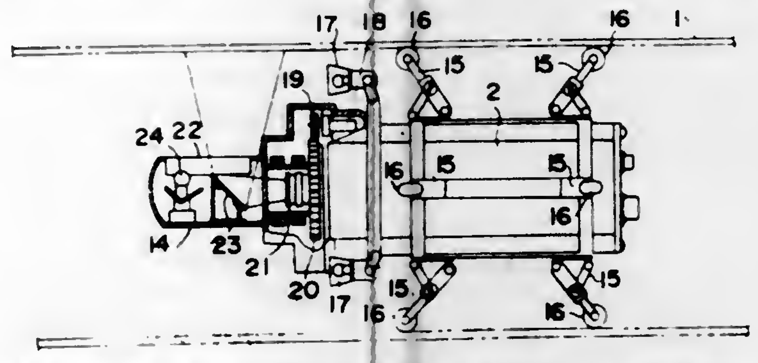
**Atsushi Hara, and Yoshitaka Ohno, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed Feb. 25, 1972, Ser. No. 229,288**

**Claims priority, application Japan, Mar. 3, 1971, 46/10786; Mar. 3, 1971, 46/12990; May 7, 1971, 46/36163**

**Int. Cl. H04n** *7/18*

**U.S. Cl. 178—6.8** **9 Claims**



Apparatus for circumferentially scanning the inner surface of a pipe by means of a television camera and for displaying the image on a monitor outside of the pipe includes a rollable carriage adapted to be pushed in the pipe, means for driving the carriage axially of the pipe, a television camera conveyed by the carriage, a camera head including a window on one side thereof and rotatably mounted on the camera, a source of light contained in the camera head to illuminate the inner surface of the pipe through the window, a reflective mirror disposed in the camera head at an angle with respect to the optical axis of the lens of the television camera so as to receive the light reflected from the inner surface through the window and to reflect the light toward the lens of the camera, means to rotate the camera head about the optical axis and means for converting the photographic image into an electrical signal which is sent to the monitor.

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### 3,761,624
### TIME DIVISION SIGNAL TRANSFER NETWORK

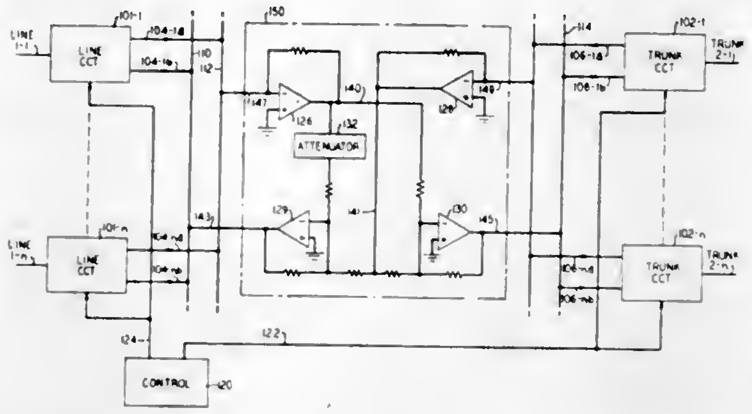
**Theras Gordon Lewis, Boulder, and Patrick Alban Vachon, Arvada, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**

**Filed July 31, 1972, Ser. No. 276,898**

**Int. Cl. H04j** *3/02*

**U.S. Cl. 179—15 AA** **7 Claims**

A time division communication system serves a plurality of lines and trunks and includes first and second line buses and first and second trunk buses. Each line has an associated circuit operative in response to a control signal to apply the line signal to the first line bus and to receive a signal from the second line bus. Each trunk has an associated circuit operative in response to said control signal to apply the trunk signal to the first trunk bus and to receive a signal from the second trunk bus. The control signal is applied to selected line and trunk circuits in a distinct time slot. A network interconnecting the buses includes a first device connected to the first line bus for summing all selected line circuit signals, and a second device connected to the first trunk bus for summing all selected trunk signals. The summed trunk signals are added to the summed line circuit signals in a third device which is connected to the second trunk bus. The summed line signals are attenuated and the attenuated summed line signals are added to the summed trunk circuit signals in a fourth device which is connected to the second line bus.



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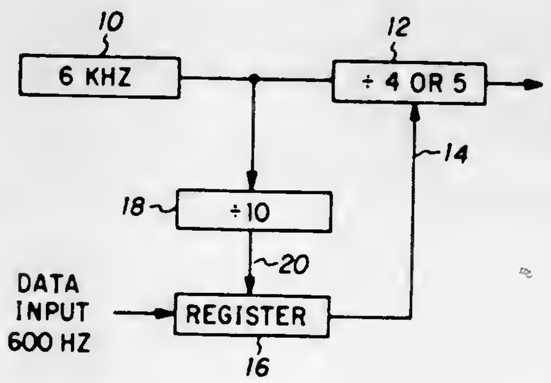
### 3,761,625
### DIGITAL METHOD AND MEANS FOR FREQUENCY SHIFT KEYING

**Warren B. Bruene, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.**

**Filed Mar. 15, 1972, Ser. No. 234,961**

**Int. Cl. H04l** *27/12*

**U.S. Cl. 178—66 A** **3 Claims**



Frequency shift keying of input data by means of a variable divider which divides a frequency source by one of two integers depending on the information content of said input data. Source, variable divider, and synchronization means lends itself to large scale integration.

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### 3,761,626
### METHOD AND APPARATUS FOR DISTORTION MEASUREMENT IN DATA TRANSMISSION NETWORKS

**Fritz Rosenhaupt, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

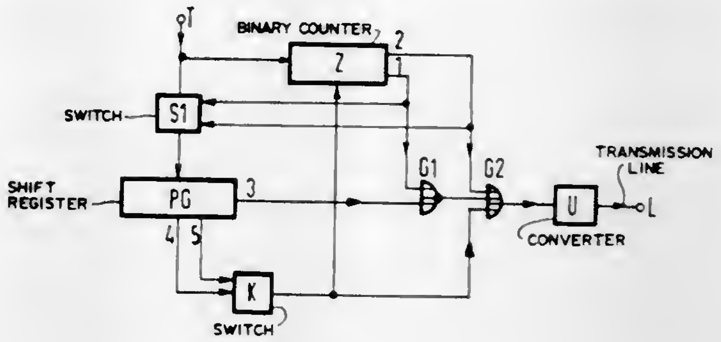
**Filed June 2, 1971, Ser. No. 149,166**

**Claims priority, application Germany, June 3, 1970, P 20 27 291.7**

**Int. Cl. H04l** *25/02*

**U.S. Cl. 178—69 A** **6 Claims**

A process is described for accomplishing distortion measurements, particularly of start-stop distortion in transparent data networks wherein a fixed number of specific pulses are repeatedly synchronously transmitted by a sending station. A fixed sequence and number of pulses ($2^n$—1) are formed using a shift register. In the sending station a series of start-stop pulses are generated with the time interval between the start and stop pulses being adjusted in accordance with the code frame used. The start-stop pulses are inserted in the aforementioned pulse sequence, and the start-stop code signals are transmitted. Distortion measurements of the start-stop signal are made in the known manner in a receiving station.



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### 3,761,627
### ARRANGEMENT FOR SYNCHRONIZING TELEVISION CAMERAS

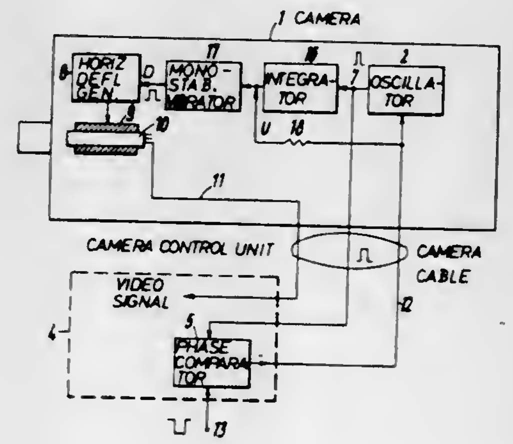
**Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany**

**Continuation-in-part of Ser. No. 30,428, April 21, 1970, Pat. No. 3,655,913. This application Dec. 16, 1971, Ser. No. 208,810**

**Claims priority, application Germany, Apr. 25, 1969, P 19 21 104.2; Dec. 19, 1970, P 20 62 749.0**

**Int. Cl. H04n** *5/04*

**U.S. Cl. 178—69.5 TV** **11 Claims**



A synchronizing arrangement for television cameras in which a controllable oscillator is connected to an integrating circuit which generates a saw-tooth signal. This saw-tooth signal is, in turn, applied to a monostable multivibrator. The amplitude of the saw-tooth signal is varied by a control signal derived from a phase comparator which compares the phase of the output signal from the oscillator with a reference signal. The amplitude of the saw-tooth signal is varied so that the output signal of the monostable multivibrator is compensated against time dependent variations of oscillator output signal.

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## ERRATA

For Classes 179—8 A, 179—15 AT and 179—15 AA see:
Patents Nos. 3,761,618, 3,761,619 and 3,761,624

### 3,761,628

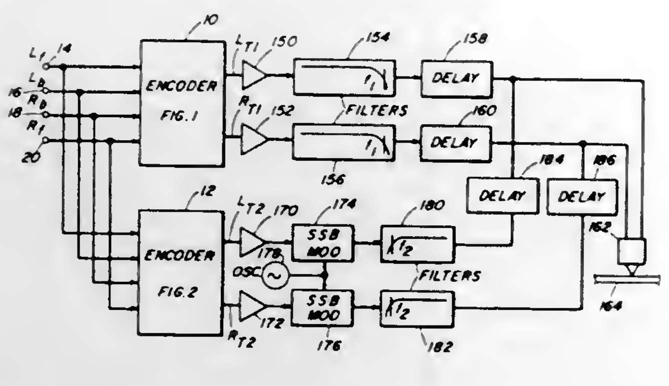
### STEREO-QUADRAPHONIC MATRIX SYSTEM WITH MATRIX OR DISCRETE SOUND REPRODUCTION CAPABILITY

**Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.**

**Filed Apr. 13, 1972, Ser. No. 243,800**

**Int. Cl. H04r** *5/00*

**U.S. Cl. 179—1 GQ** **19 Claims**



A sound system for producing at least four discrete sound outputs from respectively different directions from a listener wherein the audio and directional information representing the sound outputs are recorded on a stereophonic disc record, or similar record medium having a two-track capability. The system includes recording apparatus having two matrix encoders for separately and differently matrixing four input signals to produce two pairs of composite signals each containing three of the input signals with preselected amplitude and phase relationships, at least one of the signals having a different phase in each of the composite signals of a pair. The amplitude and phase relationships are such that four combinations of the two composite signals of each pair will yield four separate signals in which respective ones of the four input signals are predominant. The two composite signals produced by one of the encoders are recorded at baseband frequency on respective walls of a stereophonic disc record, and the two composite signals from the other encoder, which have different phase relationships than the corresponding composite signals of the other pair, are utilized to amplitude modulate respective carrier signals which are also recorded on the walls of the record groove.

Apparatus for reproducing the record includes filters for separating the baseband frequencies from the carrier frequencies, detectors for recovering the modulation from the carriers, and a pair of decoders, one for decoding the baseband frequency signals and the other for decoding the two composite signals recovered from the carriers. Each decoder delivers four output signals in which respective ones of the four input signals are predominant and each containing unwanted signal components. Corresponding signals from the two encoders are combined, and by virtue of differences in the initial encoding, the desired predominant signals are enhanced and the unwanted signal components are canceled, thereby to produce four discrete output signals, corresponding in all respects to the input signals, for application to respective loudspeakers suitably positioned in a listening area.

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### 3,761,629

### APPARATUS FOR PROVIDING DELAY OF AN ELECTRICAL SIGNAL

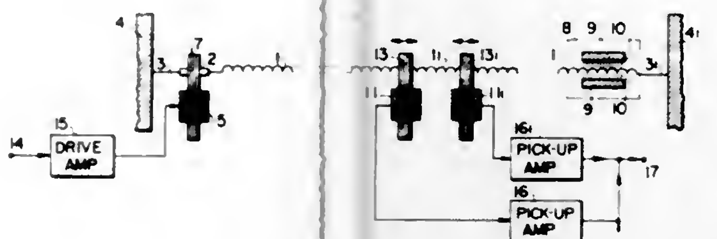
**Akihisa Suzuki, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan**

**Filed Sept. 29, 1970, Ser. No. 76,358**

**Claims priority, application Japan, Sept. 30, 1969, 44/93334; Sept. 30, 1969, 44/93335; Sept. 30, 1969, 44/93336; Sept. 30, 1969, 44/93337; Oct. 25, 1969, 44/101374; Oct. 31, 1969, 44/103493; Oct. 31, 1969, 44/103494; Oct. 31, 1969, 44/103495; Oct. 31, 1969, 44/103496; Oct. 31, 1969, 44/103497**

**Int. Cl. G10h** *1/02*

**U.S. Cl. 179—1 J** **5 Claims**



In audio signal delaying apparatus including a vibration transmission coil spring, an electro-mechanical driver means provided in the vicinity of one end of the spring, and a mechano-electrical pickup means for detecting a signal from the motion of the spring driver due to an input signal through the driver means, the improvement comprises a vibratile motion terminating means provided between the other end of the spring and the pickup means so as to prevent a reflection of vibration at the other end of the spring, said pickup means being movable along the length of the spring, and said coil spring being magnetized. The arrangement can improve the frequency characteristics of the detected signal and enables the provision of an output signal having any delay time.

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### 3,761,630

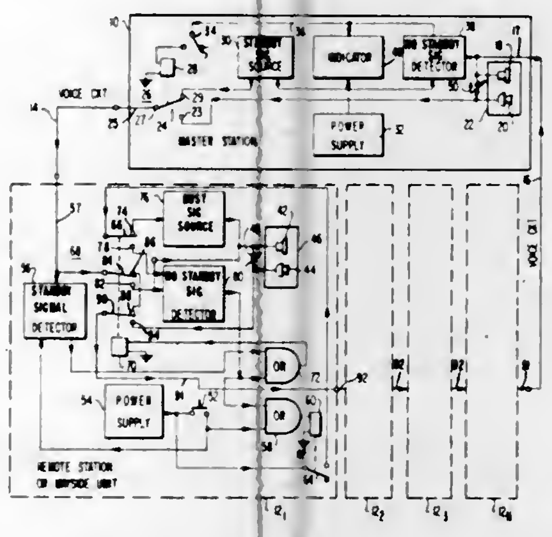
### UNIDIRECTIONAL COMMUNICATION SYSTEM FOR TWO-WAY COMMUNICATIONS

**Peter Sillitch, Riverdale, Md., assignor to United Communications Industries, Inc., Reston, Va.**

**Filed Apr. 21, 1971, Ser. No. 136,130**

**Int. Cl. H04m** *9/02*

**U.S. Cl. 179—1 H** **14 Claims**



A series coupled communication system providing two-way communication between one of a plurality of series connected remote stations or wayside units and a master station while using a one-way signal path or communication link. Communication is initiated by one of the wayside units whereupon the master unit answers and in doing so prevents all other remote stations from breaking in until the master station releases the calling remote station.

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### 3,761,631

### SYNTHESIZED FOUR CHANNEL SOUND USING PHASE MODULATION TECHNIQUES

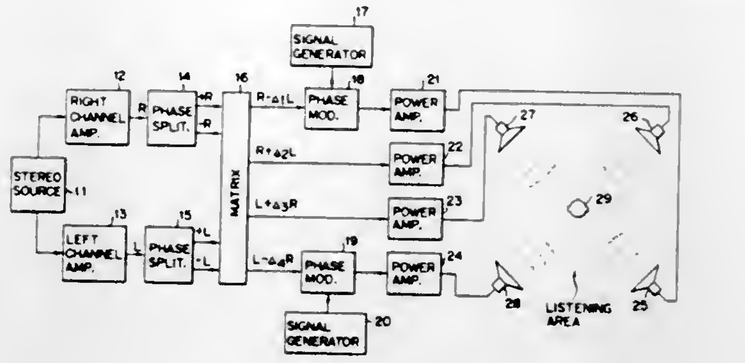
**Ryosuke Ito, and Toshiaki Ishida, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan**

**Filed May 17, 1971, Ser. No. 144,015**

**Claims priority, application Japan, May 21, 1970, 45/43009; May 21, 1970, 45/43011; June 24, 1970, 45/54487; June 24, 1970, 45/54488; June 24, 1970, 45/54489; June 24, 1970, 45/54491; June 24, 1970, 45/54492; June 24, 1970, 45/54493; June 24, 1970, 45/54494; Sept. 25, 1970, 45/83699**

**Int. Cl. G10k** *11/00*

**U.S. Cl. 179—1 GO** **3 Claims**



A sound reproduction system comprising a plurality of loudspeakers producing sounds corresponding to audio signals having a desired stereophonic relationship, at least one of which is phase modulated according to signals of ultralow frequency generated by a signal generator, sounds from all said loud-speakers being so designed as to converge into the same listening area.

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### 3,761,632

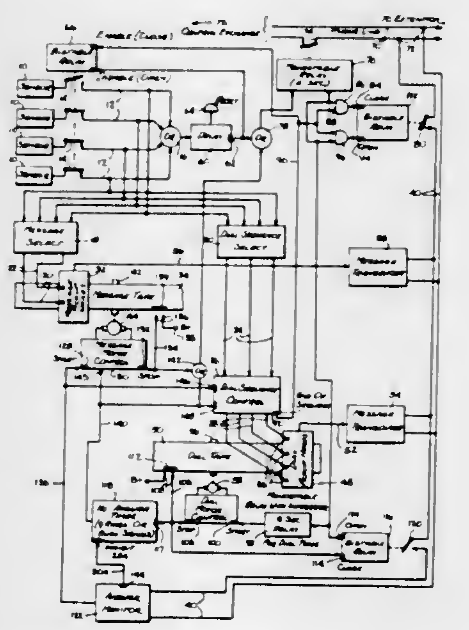
### AUTOMATIC TELEPHONE ALARM SYSTEM RESPONSIVE TO ANSWERING OF THE CALLED TELEPHONE

**Robert Colman, New York, N.Y., assignor to General Alarm Corporation, New York, N.Y.**

**Filed Dec. 15, 1971, Ser. No. 208,113**

**Int. Cl. H04m** *11/04*

**U.S. Cl. 179—5 P** **9 Claims**



An automatic telephoning system such as for broadcasting fire or burglary messages to preselected telephones and responsive to the interruption of the regular sequence of ring-back signals following dialing of a telephone number to sense the answering of the called telephone and to begin the playout of a prerecorded message.

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### 3,761,633

### TIME MULTIPLEX COUPLING ARRANGEMENT FOR THE CONNECTION OF MULTIPLE BUSES OF A TIME MULTIPLEX TELEPHONE EXCHANGE

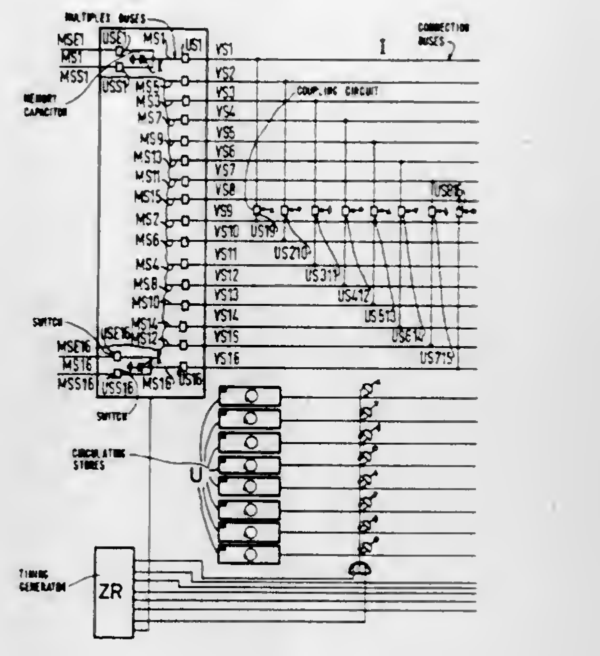
**Max Schlichte, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

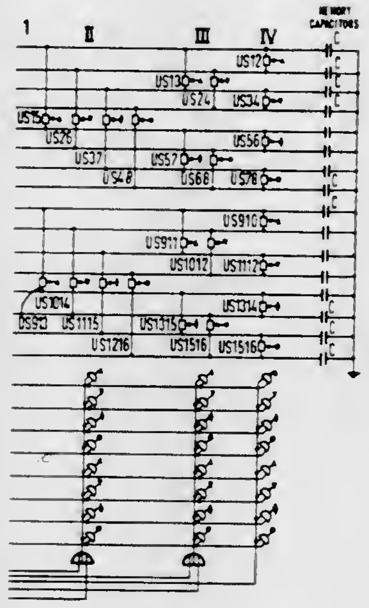
**Filed July 19, 1971, Ser. No. 163,584**

**Claims priority, application Germany, July 21, 1970, P 20 36 115.3**

**Int. Cl. H04j** *3/00*

**U.S. Cl. 179—15 AA** **6 Claims**





A time multiplex coupling arrangement for telecommunications exchange installations is described. The coupling arrangement permits transmission of time multiplex signals, particularly pulse code modulated (PCM) signals. N multiplex buses are provided and have individually associated therewith N connection buses. The connection buses are terminated at one end with a storage capacitor. A predetermined number coupling stages are formed, and each of these have a related number of coupling circuits, which coupling circuits are formed as capacitive cross-charging circuits. The coupling circuits may have recharging circuits connected on either side of a coupling point switch.

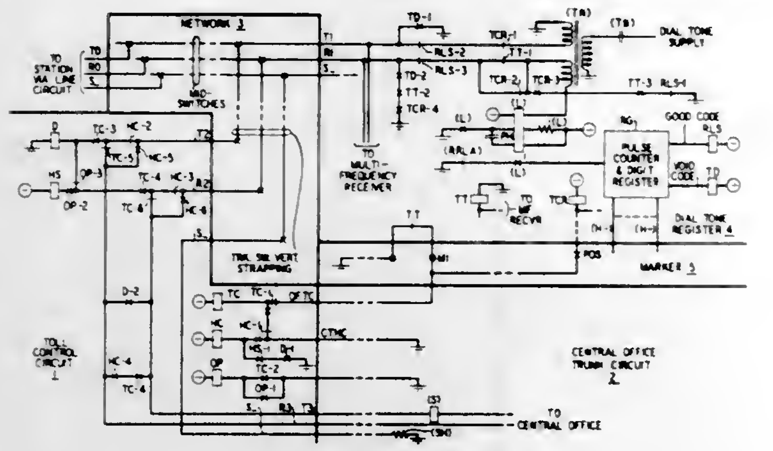
### 3,761,634
### TOLL DIVERSION CONTROL ARRANGEMENT

**Edward Walter Sobanski, Boulder, and Olgerts Stauers, Lakewood, both of Colo., assignors to Western Electric Company, Incorporated, New York, N.Y.**

**Filed May 30, 1972, Ser. No. 257,947**

**Int. Cl. H04m** *1/66*

**U.S. Cl. 179—18 DA** **10 Claims**



A toll diversion arrangement for private branch exchanges is disclosed in which a dial tone register circuit serves to monitor connections between restricted stations and central office trunk circuits for screening toll traffic. The arrangement includes a toll control circuit which is interposed between each central office trunk circuit and its associated network appearance for cooperating with the bridged dial tone register circuit in screening toll calls.

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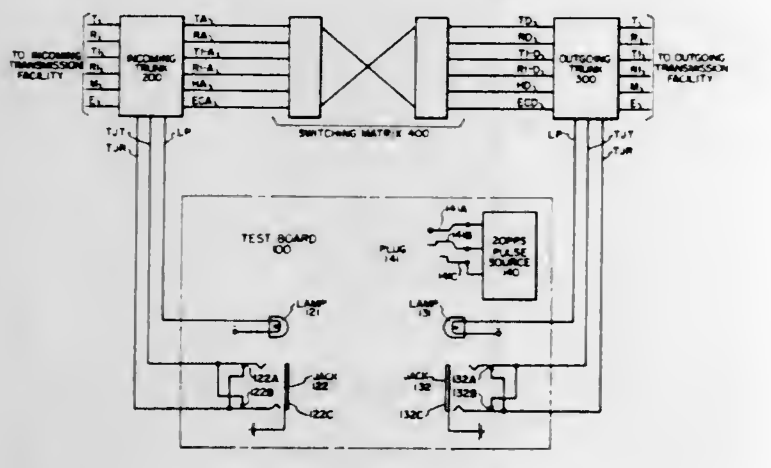
### 3,761,635
### TRUNK CIRCUIT IDENTIFICATION

**John C. Gibson, Oak Lawn; Siegfried H. Fuchs, Chicago, and Robert S. Vaniman, Palatine, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed May 15, 1972, Ser. No. 253,216**

**Int. Cl. H04m** *3/22*

**U.S. Cl. 179—18 FH** **5 Claims**



A technique for tracing calls involving two trunk circuits located in the same telephone switching center. Means are provided whereby an unknown outgoing trunk connected to a known incoming trunk may be identified, or an unknown incoming trunk connected to a known outgoing trunk may be identified.

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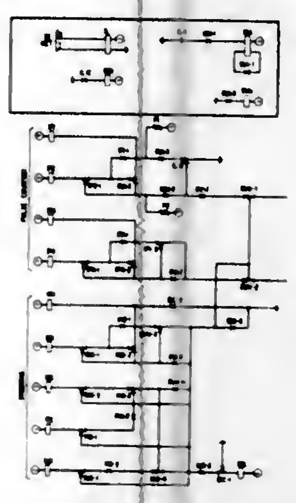
### 3,761,636
### DIAL PULSE REGISTER CIRCUIT

**Olgerts Stauers, Lakewood, Colo., assignor to Western Electric Company, Incorporated, New York, N.Y.**

**Filed May 15, 1972, Ser. No. 253,284**

**Int. Cl. H04q** *3/08*

**U.S. Cl. 179—18 EB** **13 Claims**



A register circuit is disclosed for connection to stations, interoffice trunks and operator circuits to count and store successively pulsed digits. The circuit comprises a common pulse counting stage which is combined with a different one of a plurality of storage stages prior to receipt of each pulsed digit. The combined stages function as a unitary pulse counter. At the end of each train of pulses the stages are separated leaving the dialed number encoded on operated relays of the storage stage.

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### 3,761,637
### INTERFACE BETWEEN ANALOG OR DIGITAL LINES AND A PULSE CODE MODULATION CIRCUIT

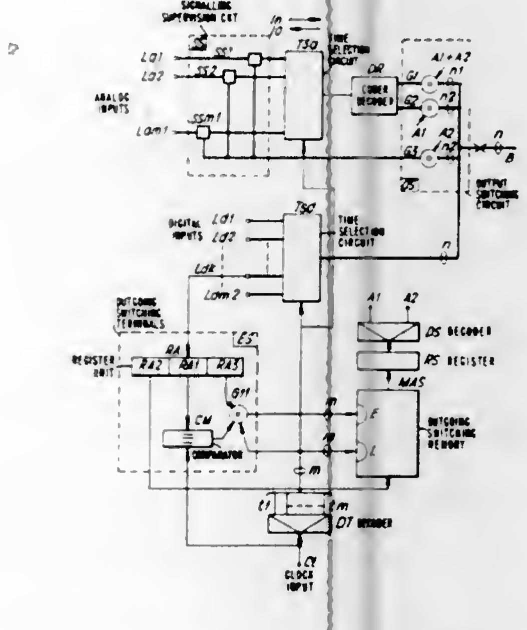
**Michel Andre Robert Henrion, Boulogne-Billancourt, France, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Mar. 22, 1971, Ser. No. 126,844**

**Claims priority, application France, Apr. 7, 1970, 7012469**

**Int. Cl. H04j** *3/00*

**U.S. Cl. 179—15 AT** **2 Claims**



A PCM interface circuit is disclosed which allows bidirectional transmission of supervisory signals in analog form and data signals in digital form. Analog information is coded or decoded as needed, and the type of connection necessary is determined by the type of signalling used — A.C., D.C. or multi-frequency.

### 3,761,638
### PROCESS AND DEVICE FOR IDENTIFYING CONNECTIONS IN A SWITCHING NETWORK

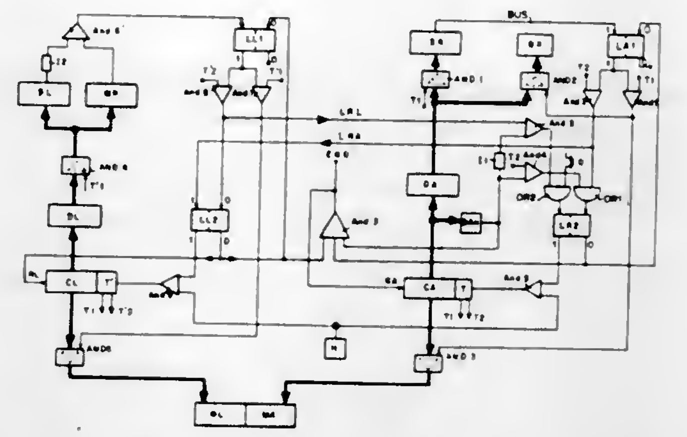
**Pe Tsi Chu; Bernard Corby; Andre Ernest James; Robert Leblanc, all of Vence, and Andrzej Tadeusz Milewski, Lagaude, all of France, assignors to International Business Machines Corporation, New York, N.Y.**

**Filed Dec. 30, 1971, Ser. No. 214,049**

**Claims priority, application France, Dec. 30, 1970, 7047685**

**Int. Cl. H04m** *3/24*

**U.S. Cl. 179—18 FG** **8 Claims**



A process and apparatus for identifying connections between input lines and output lines in a switching network having current sources associated with each output line to feed a connection path between an input line and an output line. The output lines are scanned until one is found ON, and then its current source is disconnected and the input lines are scanned to determine which has changed status. The results are recorded and the process is continued through the series of output lines.

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### 3,761,639
### TELEPHONE DIALS

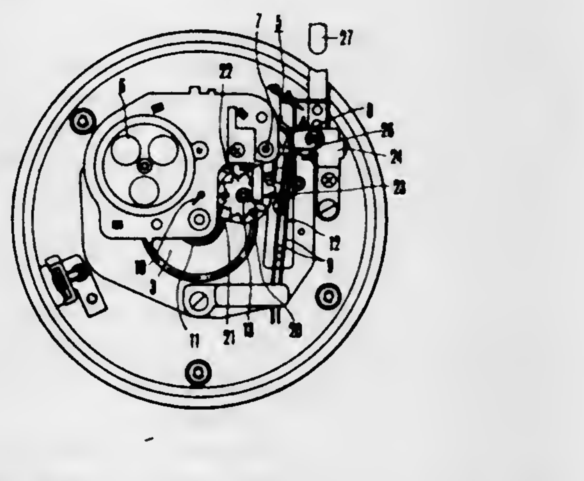
**Ken Uno, Sagamihara, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan**

**Filed Dec. 29, 1971, Ser. No. 213,322**

**Claims priority, application Japan, Dec. 31, 1970, 45/123292**

**Int. Cl. H04m** *1/36*

**U.S. Cl. 179—90 D** **2 Claims**



In a telephone dial wherein dial impulses corresponding to the digits dialed are transmitted by a dial pulse generating means, there are provided a rotary disc having a plurality of projections of the number and positions corresponding to predetermined first digits of the called numbers, the call thereof being precluded, and means to rotate the disc in response to the dialing of these unwanted first digits to bring the projection to a position to disenable dial impulse generating means.

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### 3,761,640
### TELEPHONE DIALER WITH TWO DIFFERENT PULSE RATES

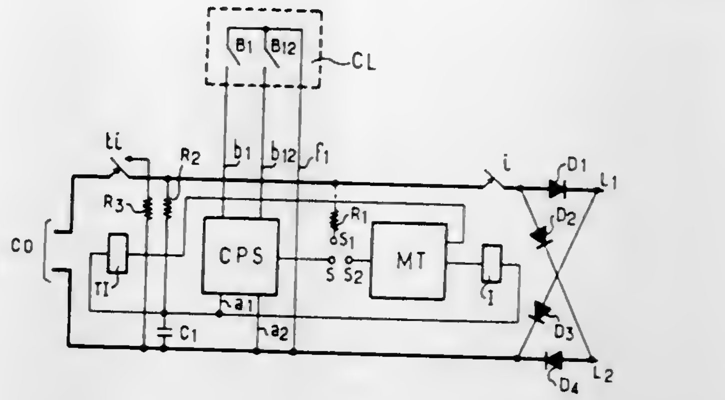
**Claude Monin, Villennes-sur-Seine, France, assignor to C.I.T. Compagnie Industrielle Des Telecommunications, Paris, France**

**Filed Nov. 13, 1970, Ser. No. 89,221**

**Claims priority, application France, Nov. 13, 1969, 6939051**

**Int. Cl. H04m** *1/28*

**U.S. Cl. 179—90 K** **14 Claims**



A pulse source, primarily for use with a keyboard in a telephone network, for providing a pulse output compatible with both keyboard and dial telephone networks. The telephone keyboard activates a pulse generator which produces an output compatible with keyboard telephone networks. If the network is of the keyboard type then the output of the generator is applied directly to the telephone network. If the network is of the dial type then the output of the pulse generator is applied to a memory device which stores the output of the pulse generator and generates in response thereto a pulse train at a second rate compatible with a dial network and which corresponds to the output of the keyboard.

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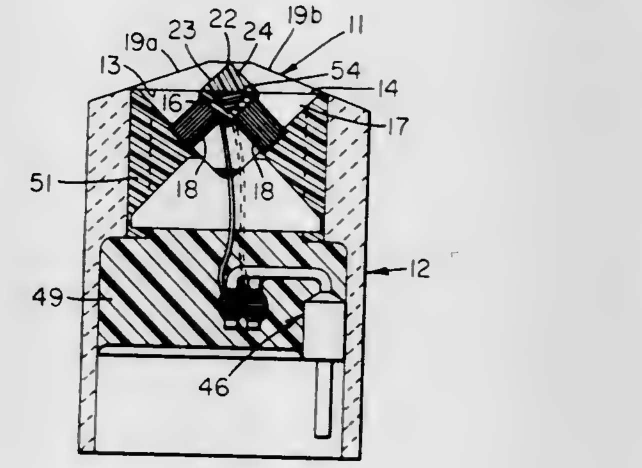
### 3,761,641
### MAGNETIC HEAD WITH DEMOUNTABLE FACE PART ASSEMBLY

**Tony A. Mlinaric, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed June 25, 1971, Ser. No. 156,802**

**Int. Cl. G11b** *5/20, 5/24, 5/42*

**U.S. Cl. 179—100.2 C** **5 Claims**



The fabrication of a multi-track magnetic head assembly is disclosed wherein the assembly is initially formed in two distinct parts, a core housing part carrying a plurality of magnetic core elements and associated winding means, and a face part which carries the transducer pole tips and serves as the head-to-tape transducing surface. The union between the face part of the assembly and the core housing is formed by lapping the surfaces to be joined to a fine finish and assembling the parts such that the respective magnetic components engage one another to complete a magnetic circuit extending from the core element to the associated pole tips and thus through the transducing gaps defined thereby. In order to facilitate reworking of the assembly, the face part is secured to the core housing by only a strip of epoxy adhesive occupying a longitudinal groove in the surface of the core housing adjacent the mated surface of the face part. The face part may be removed for replacement by a simple cutting operation which releases the epoxy bond.

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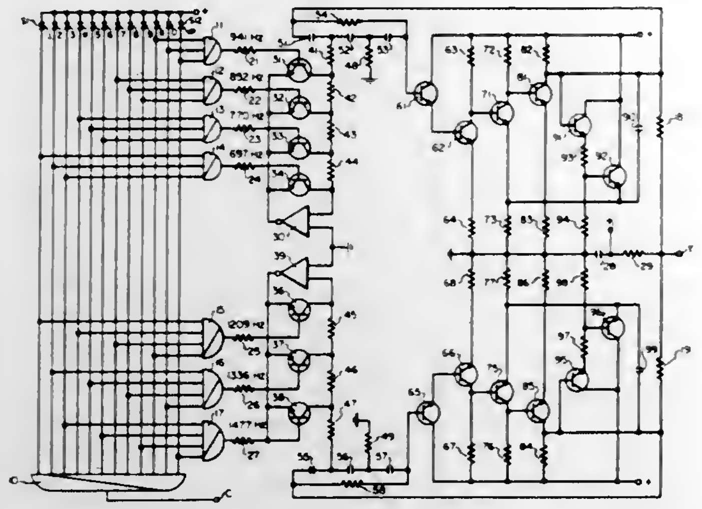
### 3,761,642
### TOUCH-CALLING TONE GENERATOR

**Paul U. Lind, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Feb. 11, 1972, Ser. No. 225,440**

**Int. Cl. H04m** *1/51*

**U.S. Cl. 179—90 K** **12 Claims**



A pushbutton operated calling device usable in telephone subscriber's instruments. Intended for implementation with integrated circuitry, the use of varistors and thermistors are eliminated while still providing stable operation over a wide range of temperatures. Mechanical components are limited to a single make switch contact associated with each pushbutton.

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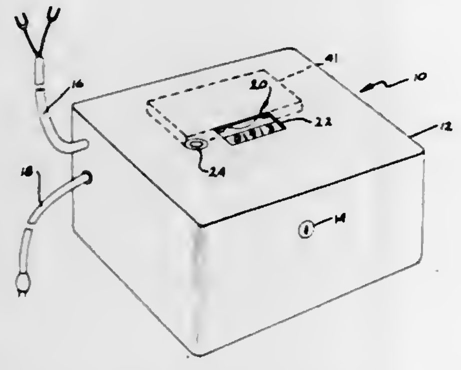
### 3,761,643
### VIDEO PLAYBACK UNIT IN INACCESSIBLE CONTAINER

**Miner S. Keeler, II, 2525 Indian Tr., S. E., Grand Rapids, Mich.**

**Filed July 16, 1971, Ser. No. 163,236**

**Int. Cl. G11b** *15/04, 23/04*

**U.S. Cl. 179—100.2 S** **11 Claims**



A cassette type video playback unit is mounted in a non-accesible case having only a signal output lead and a power cord extending from the case for transmitting the signals to the display and controlling the operation of the playback mechanism. Included in the playback unit is a control circuit and indicator for providing a visual indication when the tape unit has completed one playback cycle and for automatically stopping the unit at the end of one playback cycle. The indicating means additionally provides a visual indication of the number of completed cycles and the position of the playback tape at any given time during a playback cycle. The playback unit provides composite television signals which can be coupled directly to the antenna terminals of a conventional television receiver by means of the signal output lead, and is particularly well suited for rental use since the tape playback mechanism is inaccessible, and the operation is simplified by being solely controlled by plugging and unplugging the power cord for initiating and terminating operation.

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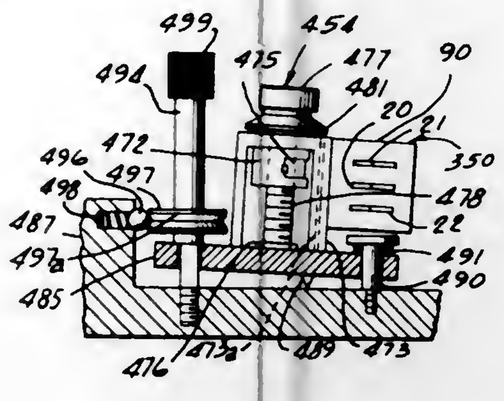
### 3,761,644
### MOUNTING STRUCTURE FOR TRANSDUCER HEADS

**Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.**

**Division of Ser. No. 528,934, Feb. 21, 1966, abandoned. This application Apr. 21, 1970, Ser. No. 30,564**

**Int. Cl. G11b** *21/24*

**U.S. Cl. 179—100.2 CA** **1 Claim**



A mounting structure for the transducer head of a transducing system of the type having a plurality of laterally spaced head units aligned on a transverse axis and arranged for simultaneous scanning of respective, discrete channels of a tape record medium, and in which the head is mounted on a fixed support for pivotal movement about an axis perpendicular to a plane of movement of the tape record medium across said head; biased in one direction about such pivot axis and adjustment means for adjusting the angle of disposition of the transverse axis of such head relative to the direction of movement of the tape record medium across such head including a threaded member threadedly engaging into the support and having a manually grippable portion to enable manual, threaded adjustment of the member relative to the fixed support, and means movable with said threaded portion and having an annular, V-shaped groove formed therein by radial, sloping annular walls, and a spring biased detent ball entering said groove for cooperation with said groove walls.

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### 3,761,645
### APPARATUS AND PROCESS FOR THERMOMAGNETICALLY REPLICATING MAGNETIC RECORDINGS USING A SCANNING BEAM OF RADIANT ENERGY

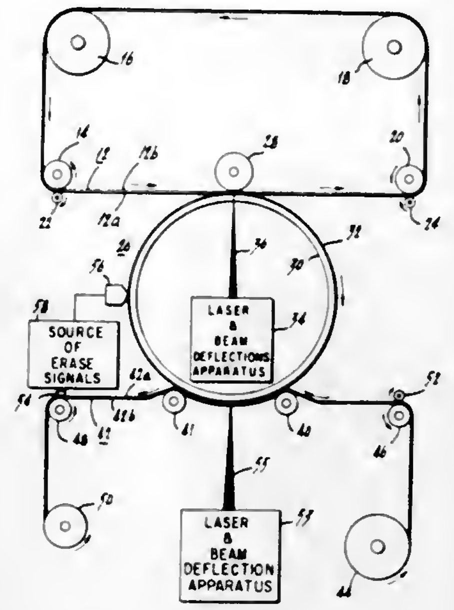
**Albert Lee Stancel, Jr., and Warren Rex Isom, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.**

**Continuation of Ser. No. 120,149, March 2, 1971, abandoned. This application Mar. 31, 1972, Ser. No. 240,108**

**Int. Cl. G11b** *5/86;* **H01v** *3/04*

**U.S. Cl. 179—100.2 E** **20 Claims**

In a process and apparatus for replicating a prerecorded magnetic tape, the particle-binder layer of the prerecorded tape is brought into slippage-free intimate contact with the particle-binder layer of the copy tape. As the tapes are moved in a first direction a laser beam impinges upon the particle-binder layer of the copy tape with a spot size of the same order of magnitude as the particles of the particle-binder layer of the copy tape. The laser beam is deflected to traverse a scanning pattern on the particle-binder layer of the copy tape transverse to the movement of the tape to provide rapid localized heating of the copy tape magnetizable particles to a temperature above its Curie point.



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### 3,761,646
### RECORDING AND READING DEVICE WITH HEAD MOVEMENT FOR COMPENSATION OF IRREGULARITIES IN TAPE SPEED

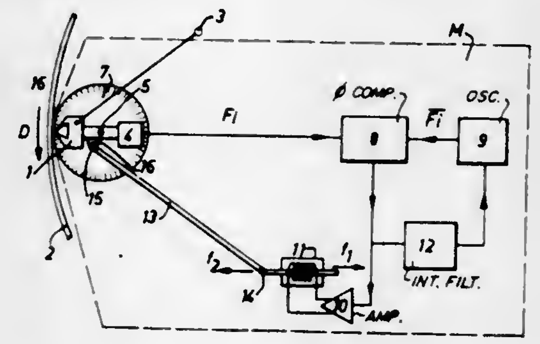
**Jean Pierre Beauviala, 3, Avenue Hache, Grenoble, France**

**Continuation of Ser. No. 43,542, June 4, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,714**

**Claims priority, application France, June 6, 1969, 6918763**

**Int. Cl. G11b** *15/22, 15/52, 21/02*

**U.S. Cl. 179—100.2 K** **12 Claims**



This invention relates to a recording or reading device for electrical signals which are recorded on or read from a record carrier, such as a magnetic tape, which travels past a record and/or read head. The invention is directed to the problem of irregularities in the speed of travel of the record carrier past a record or read head, and provides means for compensating for irregularities in the speed of travel. Such means comprise a pulse generator whose instantaneous frequency is a function of the speed of travel of the record carrier, a master oscillator supplying reference frequency pulses, and a phase comparison device for comparing the two series of pulses and producing a compensating signal. The compensation may be effected by mechanical movement of the record/read head under the control of the output from the phase comparison device, or electronically by a deformation of the time scale of the signals to be recorded or read in order to cause it to conform to instantaneous variations in the speed of the carrier, or by a combination of both of these methods.

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### 3,761,647
### CARTRIDGE FOR DETECTING VIBRATIONS REPRESENTING STEREOPHONIC SOUND

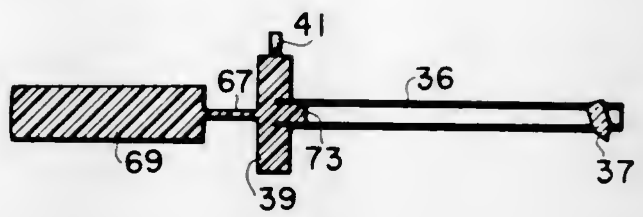
**Mitsuo Nemoto, and Kimiyasu Honma, both of Tokyo, Japan, assignors to Kabushiki Kaisha Audio-Technica, Tokyo, Japan**

**Filed Aug. 13, 1969, Ser. No. 849,767**

**Claims priority, application Japan, Aug. 14, 1968, 43/57408; Feb. 3, 1969, 44/7290**

**Int. Cl. H04r** *11/12*

**U.S. Cl. 179—100.41 K** **11 Claims**



A stereophonic pickup cartridge for reproducing two channel sound from record discs which are cut according to 45°-—45° system, comprises one or more armatures of high magnetic permeability material and mounted on a cantilever which transmits vibrations of a stylus tip, a permanent magnet secured to a cartridge body adjacent the armature so as to provide magnetic excitation thereto, and an electromagnetic current generating arrangement responsive to a change in magnetic flux passing through the armature from the permanent magnet which is caused by vibration of the armature. The electromagnetic arrangement includes two pairs of pole pieces located on opposite sides of and with an inclination of 45° with respect to an imaginary vertical plane passing through the axis of the cantilever so that the pole pieces of each pair extend in directions perpendicular to the respective modulation walls of a sound groove, the pairs of pole pieces forming independent gaps for each channel, and the armatures being positioned to be separately operable within the independent gaps. The pickup cartridge provides good channel separation, reduced equivalent mass of the vibrating system and improved frequency response as well as improved sound groove tracking.

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### 3,761,648
### SINGLE ARM CURRENT COLLECTOR DEVICE FOR ELECTRICALLY DRIVEN VEHICLES

**Gerhard Horstmeier, and Gerhard Moehring, both of Schuettorf, Germany, assignors to Firma August Stemmann OHG, Schuettorf I.H., Germany**

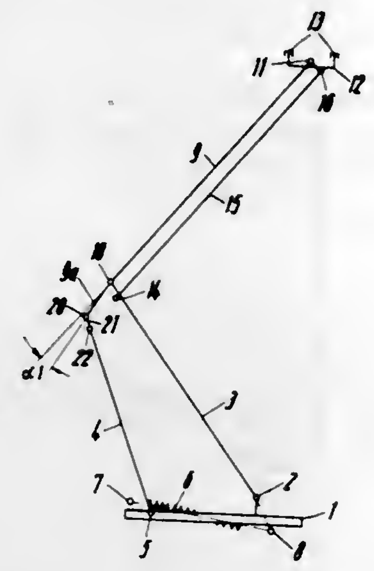
**Filed Nov. 1, 1971, Ser. No. 194,666**

**Claims priority, application Germany, Nov. 21, 1970, P 20 57 325.5**

**Int. Cl. B60l** *5/24*

**U.S. Cl. 191—70** **7 Claims**

An extensible single arm current collector device for electrically driven vehicles, said collector means having pivotally connected scissor arms which are spring biased toward their extended upper or outer position. The device includes means whereby the mechanical advantage between the spring and the scissor arms is progressively changed as the device is collapsed from its upper, extended operative position to its lowermost, retracted but operative position, whereby the contact pressure between the collector device and a trolley wire remains at least generally constant over the range of operative height adjustment of the collector device.



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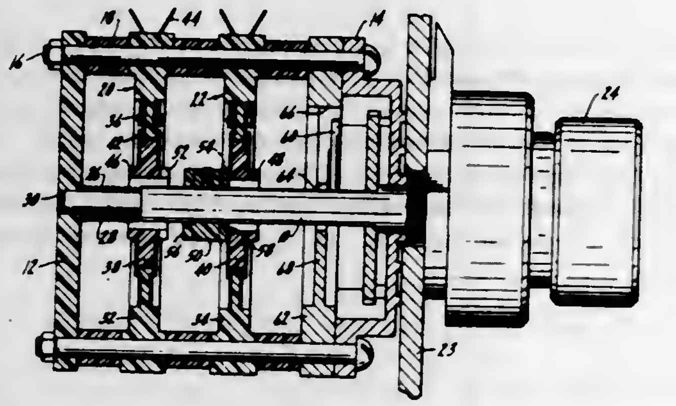
### 3,761,649
### MULTITURN ROTARY SWITCH

**Leo Jedynak, and Vladas Gusaras, both of Madison, Wis., assignors to Oak Industries Inc., Crystal Lake, Ill.**

**Continuation-in-part of Ser. No. 163,626, July 19, 1971, abandoned. This application July 21, 1972, Ser. No. 273,826**

**Int. Cl. H01h** *19/58, 3/32*

**U.S. Cl. 200—14** **27 Claims**



A switch in which rotational movement of the switch shaft is effective to move a selected switch rotor relative to its corresponding stator with axial motion of the shaft or a portion thereof being used for selection of a particular switch rotor. Axial movement of the shaft may be manual, by the operator of the switch, or it may be automatic when the switch has reached a predetermined angular position.

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### 3,761,650
### DIRECT DRIVE AND STOP MECHANISM FOR LOAD TAP CHANGER

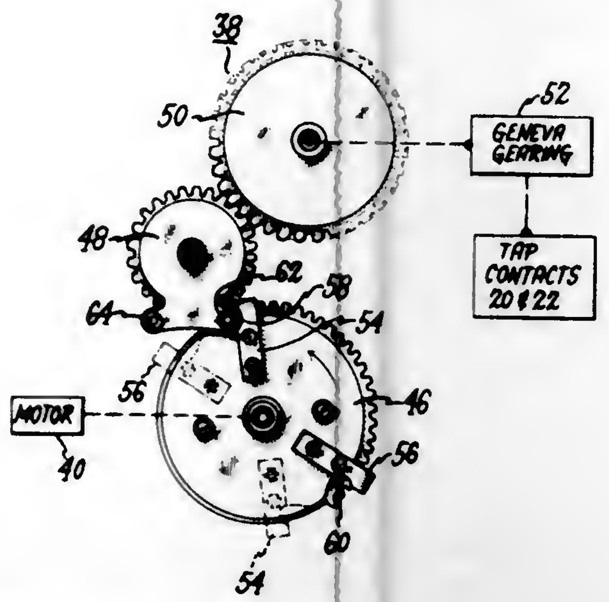
**Howard A. Fohrholtz, Lanesborough, Mass., assignor to General Electric Company, Pittsfield, Mass.**

**Filed May 1, 1972, Ser. No. 249,137**

**Int. Cl. H01h** *3/40*

**U.S. Cl. 200—17 R** **5 Claims**

A direct drive and mechanical stop mechanism for a load tap changer. The direct drive utilizes a partial or mutilated driving gear from which approximately one-half of the teeth have been removed. A pair of arms are provided on the driving gear adjacent the last teeth on each side of the gear which engage pins which are mounted on an intermediate gear. The engagement of the arms with the pins insure proper meshing of the teeth on the driving gear with the teeth on the intermediate gear. A driven gear is rotated 180° by each rotation of the intermediate gear to provide a single tap change through a Geneva gearing mechanism. At the end of each tap change, the drive gear disengages and the motor control stops. To prevent overrun, should the limit switches not operate, a mechanical stop is provided on the driven gear which mechanically stops the gears in either direction when the limits of the tap changer are reached. The stop mechanism provides a plurality of freely rotating washers which are mounted on a shaft which rotates with the driven gear. Each washer is provided with a tab which interferes with the next upper tab. When all of the tabs are lined up in engagement in a spiral fashion, the uppermost tab on the uppermost washer will engage a stop which is fixed to the frame of the tap changer thereby preventing further rotation of the driven gear in that direction.



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### 3,761,651
### GROUNDING DEVICE FOR A POINT IN A CONDUCTIVE CASING

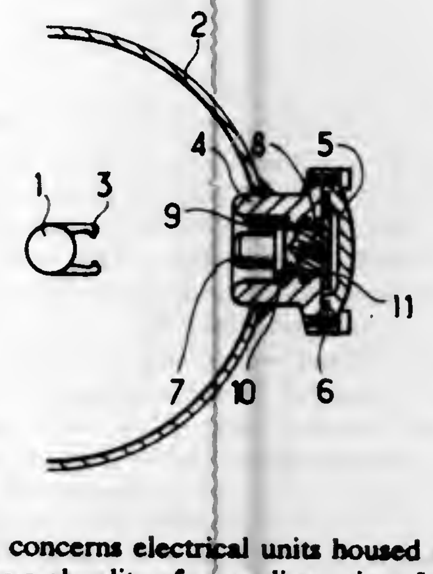
**Jacques Fournier, Lyon, France, assignor to Delle-Alsthom, Villeurbanne, France**

**Filed Mar. 16, 1972, Ser. No. 235,272**

**Claims priority, application France, Mar. 18, 1971, 7109563**

**Int. Cl. H01h** *21/28*

**U.S. Cl. 200—48 R** **12 Claims**



The invention concerns electrical units housed in a metal casing comprising a plurality of grounding points. It is characterized in that only one fixed contact and possibly, one mobile or movable contact end piece are permanently installed, the rest of the grounding device is a detachable assembly which can be used, according to needs, at various grounding points.

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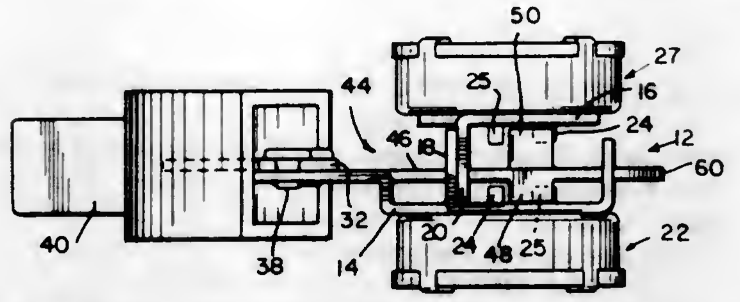
### 3,761,652
### BELL CRANK TYPE OPERATING MEANS FOR SIMULTANEOUSLY ACTUATING INTERLOCKED PAIR OF ELECTRICAL SWITCHES

**Charles L. Burns, Frankfort, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.**

**Filed Jan. 31, 1972, Ser. No. 222,218**

**Int. Cl. H01h** *9/26, 3/46*

**U.S. Cl. 200—50 C** **7 Claims**



A bell crank moves a switch actuator blade between a pair of opposed rotary switches to actuate same.

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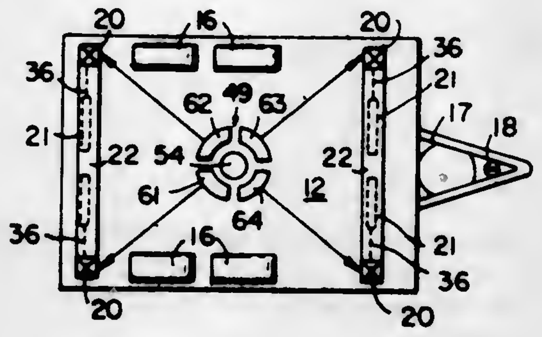
### 3,761,653
### PENDULUM ACTUATED ELECTRICAL SWITCH STRUCTURE

**John Eranosian, Woodside, Calif.**

**Continuation-in-part of Ser. No. 97,774, Dec. 14, 1971, Pat. No. 3,669,409. This application Mar. 17, 1972, Ser. No. 235,612**

**Int. Cl. H01h** *35/02*

**U.S. Cl. 200—61.51** **10 Claims**



A novel pendulum actuated electrical control device is disclosed. The use of such device in a system for stabilizing and controlling the attitude of the vehicle with respect to the underlying terrain when stationary is described.

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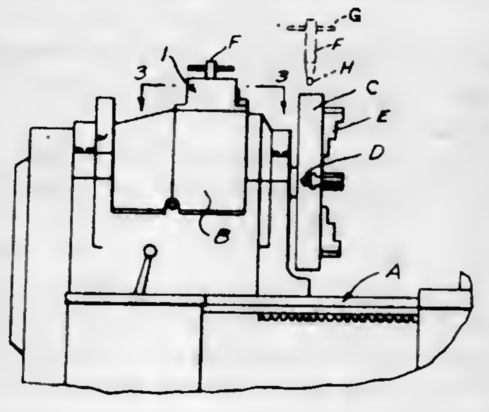
### 3,761,654
### LATHE CHUCK WRENCH SAFETY DEVICE WITH CHUCK KEY ACTUATED MICROSWITCH

**Roy S. Davis, Rt. No. 1, Box 12, Carterville, Ill.**

**Filed May 16, 1972, Ser. No. 253,815**

**Int. Cl. H01h** *3/16*; **F16b** *3/00*

**U.S. Cl. 200—61.58 R** **5 Claims**



A safety device including a switch interposed in the operating circuit of a lathe which requires the withdrawal of the lathe chuck wrench or key from the lathe chuck and its insertion in said device to operate said switch and permit the rotation of the lathe chuck as a safety precaution.

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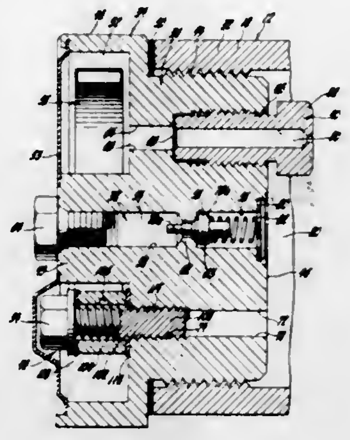
### 3,761,655
### SWITCH ACTUATING BOURDON TUBE WITH MOUNTING BOLT PROVIDING FLUID COMMUNICATION BETWEEN PRESSURE SOURCE AND BOURDON TUBE

**James E. Whelan, and George W. Jackson, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 29, 1972, Ser. No. 310,599**

**Int. Cl. H01h** *35/36*; **G12b** *01/04*; **G01l** *07/04*

**U.S. Cl. 200—81.8** **3 Claims**



A low pressure indicator switch assembly for a pressure vessel of a vehicle air cushion restraint system which includes a body member with a threaded passage communicating with the interior of the pressure vessel. A Bourdon tube has an orificed end portion. A mounting bolt with a threaded shank extends through the orificed end portion and into the threaded passage of the body member to mount the end portion of the Bourdon tube to the body member. The threaded shank of the mounting bolt and the threaded passage of the pressure vessel define therebetween a passage for communicating pressure between the pressure vessel and the Bourdon tube. The assembly further includes contact means which is adapted to be connected with a warning device which is operatively controlled by the Bourdon tube for actuating the warning device when the pressure of the pressure vessel is below a predetermined pressure.

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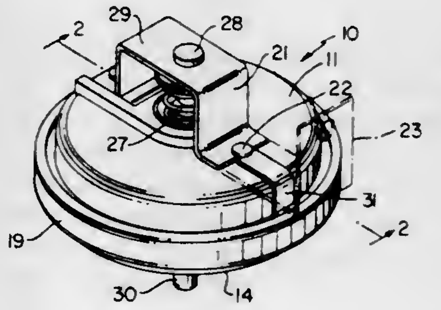
### 3,761,656
### GROUNDING MEMBER FOR WATER LEVEL CONTROL DEVICE

**Thomas M. Buckshaw, and David M. Rosenberg, both of Indiana, Pa., assignors to Robertshaw Controls Company, Richmond, Va.**

**Filed Mar. 9, 1972, Ser. No. 233,227**

**Int. Cl. H01r** *3/04*

**U.S. Cl. 200—83 WM** **6 Claims**



A water level control device having a mounting bracket formed of electrically conductive material and a cover member formed of electrically conductive material that is spaced from the bracket by an electrically non-conductive body member. A conductive strap is carried by the device and is disposed in contact with the bracket and with the metallic cover so that when the bracket is attached to a grounded frame structure of an appliance, the conductive cover will also be grounded.

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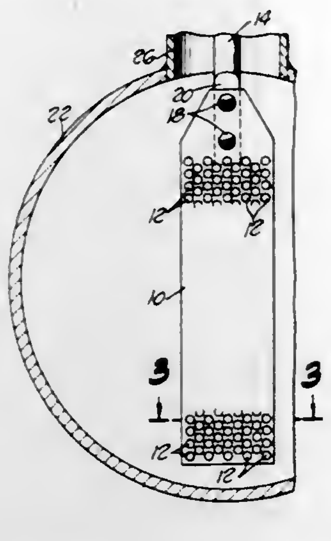
### 3,761,657

### FLOW SWITCH VANE WITH APERTURES COVERING SUBSTANTIALLY THE ENTIRE SURFACE AREA TO MINIMIZE TURBULENCE

**Leonidas C. Miller, 1321 Sombrero Dr., Monterey Pk., Calif.**
**Filed Apr. 14, 1972, Ser. No. 243,934**
**Int. Cl. H01h** *35/40*
**U.S. Cl. 200—81.9 R** **5 Claims**



A sensing device for a switch activated by fluid flow through a pipe. The flowing fluid exerts a force on the device which in turn activates the switch. The device in its preferred form includes a paddle with symmetrically placed apertures which cover substantially the entire effective surface and to allow flow through the body of the paddle to prevent cavitation and turbulence in the fluid. Reduction or elimination of these flow disturbances extends the service life of the paddle and its connection to the flow switch.

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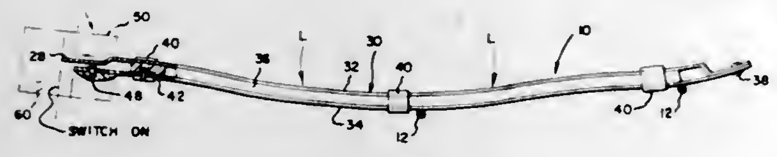
### 3,761,658

### LOAD RESPONSIVE SWITCH

**Winfield Warren Loose, Linglestown, and Frederick Jean Maltais, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.**
**Filed Sept. 17, 1971, Ser. No. 181,499**
**Int. Cl. H01h** *13/16*
**U.S. Cl. 200—85 R** **21 Claims**



A load responsive switch that is responsive, for example, to the weight of an operator or passenger on the seat of an automobile. The switch is actuated by the deflection of a composite beam comprising upper and lower metal strips which are separated by a plastic spacer. At one end of the beam, the ends of the upper and lower strips are connected to each other. At the other end of the beam, the lower strip is fixed to a housing for the switch, and the corresponding end of the upper strip is free. In this manner, when the beam is flexed in response, for example, to the weight of a driver or passenger on the seat of the automobile, the end of the upper strip moves into the switch housing to change the state of the switch. The housing is provided with a slide member movable longitudinally therein, and a cover for closing the upper portion thereof. Two terminals are contained in the housing and the switch is closed when the contact arms of a bus bar mounted in a slot in the slide member engage the terminals. The plastic slide has a central rib frictionally received between fingers on the end of the upper strip. Overtravel of the upper strip is accommodated by movement of the free end thereof relative to the sides of the central rib of the slide member.

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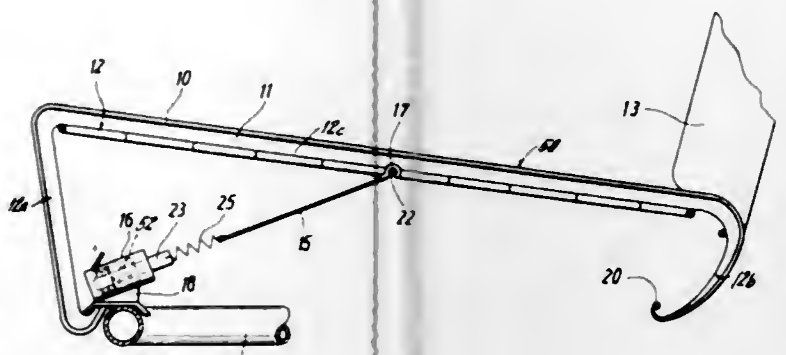
### 3,761,659

### DEVICE FOR INDICATING THE LOADING OF VEHICLE SEAT

**Dieter Eberle, Tamm/Wurttemberg; Dieter Hanselmann, and Hans Prohaska, both of Bietigheim/Wurttemberg, all of Germany, assignors to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Bietigheim, Postfach, Germany**
**Filed Apr. 27, 1972, Ser. No. 248,057**
**Claims priority, application Germany, Apr. 27, 1971, G 71 16 172.3**
**Int. Cl. H01h** *3/14*
**U.S. Cl. 200—85 A** **8 Claims**



A device for indicating a load on a seat such as whether it is occupied by a passenger of a motor vehicle, comprises a seat having an interior spring suspension which flexes downwardly on the load when it is occupied. An indicator pull switch is mounted on a bracket within the interior frame of the seat spring suspension and it includes an actuating member which is engaged by a cable which extends to the spring suspension. The cable is advantageously held under tension produced by a draw spring and it holds the actuating member of the switch in one switch position. When the spring suspension is loaded the tension on the cable is relaxed and the spring actuating member is shifted to another spring position by an internal spring carried by the switch. In another embodiment the cable which is connected to the actuating member is guided through a sleeve guide secured to the spring suspension and its opposite end is looped on an opposite end portion of the seat frame.

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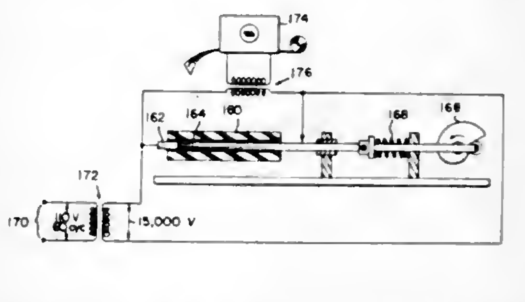
### 3,761,660

### ARC INTERRUPTING COMPOSITION AND APPARATUS

**Paul W. Jones, Lafayette, Ind., assignor to Rostone Corporation, Lafayette, Ind.**
**Continuation-in-part of Ser. No. 59,554, July 30, 1970, abandoned. This application Oct. 20, 1972, Ser. No. 299,431**
**Int. Cl. H01b** *33/04*
**U.S. Cl. 200—144 C** **6 Claims**

An arc interrupting composition for the arc-exposure walls or surfaces of electric circuit interrupting devices. The composition comprises a combination of hydrated alumina and melamine in a binder which may be a thermosetting resin but is preferably a thermoplastic resin which is more reactive to arcing than the melamine. Under arcing conditions, it is believed the binder vaporizes or decomposes violently and the hydrated alumina gives off water of hydration, and that these effects interact to render the melamine more effective and to create improved arc interruption conditions and service life.



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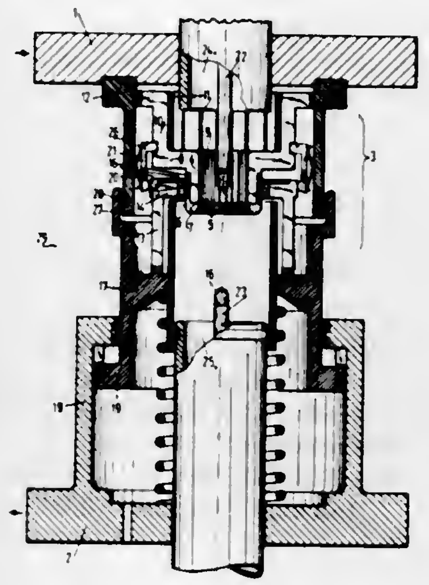
### 3,761,661

### GAS BLAST CIRCUIT-BREAKERS HAVING COOPERATING TUBULAR CONTACT PIECES

**Rintje Boersma, Harmelen, and Gijsbert W. Irik, Bilthoven, both of Netherlands, assignors to N.V. COQ, Utrecht, Netherlands**
**Filed Sept. 1, 1972, Ser. No. 285,574**
**Int. Cl. H01h** *33/14, 33/80*
**U.S. Cl. 200—148 BV** **3 Claims**



A gas blast circuit-breaker having cooperating axially slotted tubular contact pieces which are so formed that at the moment at which said contact pieces are separated from one another a current path is formed which consists of at least three axial portions interconnected by substantially radial portions, the middle one of said axial portions extending nearest the axis of the tubular contact pieces.

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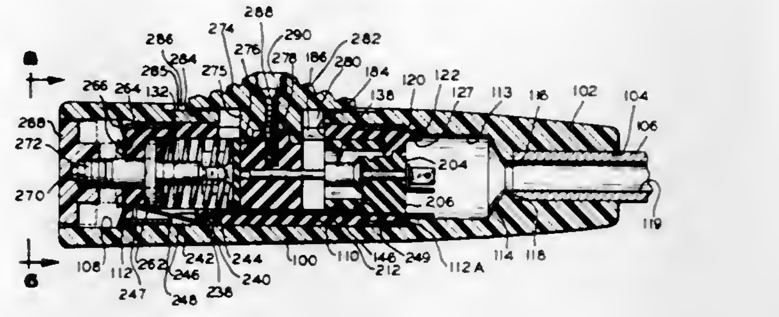
### 3,761,662

### SWITCH HAVING A PAIR OF MANUALLY MOVABLE ACTUATING ELEMENTS

**James A. Charles, Greens Fork, Ind., assignor to Dana Corporation, Toledo, Ohio**
**Continuation-in-part of Ser. No. 847,235, Aug. 4, 1969, abandoned. This application May 19, 1971, Ser. No. 144,965**
**Int. Cl. H01h** *9/00, 15/06, 13/08*
**U.S. Cl. 200—153 D** **18 Claims**

An electric switch is provided having two manually movable actuating elements. The switch contains six contacts, with each of the manually movable elements interrelated with the contacts so the variety of functions can be performed by each of the actuating elements in their energization of a number of electric circuits which may, in turn, control and actuate a series of mechanical or hydraulic components. Such a switch can be very advantageously utilized, for example, mounted on a turn signal lever so as to provide for full operator control of a speed regulator or speed controlling arrangement mounted within the vehicle engine compartment. The two manual elements of the switch comprise a pushbutton mounted in an end of the switch body and a three-position sliding button mounted in the side of the body of the switch.



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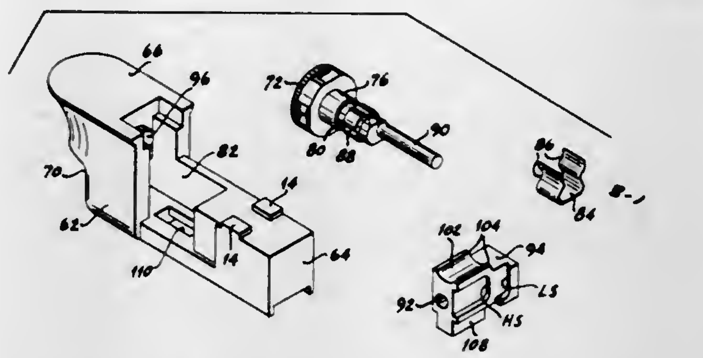
### 3,761,663

### TRIGGER SWITCH WITH SELECTIVE TWO-POSITION TRIGGER-DEPRESSION LIMITING MEANS

**Harry W. Brown, Big Bend, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.**
**Filed Dec. 8, 1971, Ser. No. 206,046**
**Int. Cl. H01h** *13/08*
**U.S. Cl. 200—157** **6 Claims**



A trigger switch for portable tool such as an electric drill, sabre saw or the like having a selector built into the trigger for selecting either of two stop positions to which the trigger can be depressed to obtain different motor speeds. The trigger consists of a slide portion entering within the switch frame and an external finger engaging portion partly offset either below (contour trigger) or above (bathtub trigger) the slide portion. The selector consists of a rotary knob recessed in the finger engaging portion and having an eccentric pin on the end of its shaft that extends into a stop block within the slide portion. In one rotary position, this pin holds the slidable stop block up partly out of the slide portion to abut the switch frame for a first stop position and when rotated to another rotary position the pin retracts this stop block down within the slide portion to clear the switch frame to allow a full depression of the trigger for a second stop position. Placing the trigger return spring between a bore in the offset part of the finger engaging portion and the switch base or frame reduces the overall length. Two spaced catches on the stop block engagable by a conventional lock pin correspond to the two stop positions.

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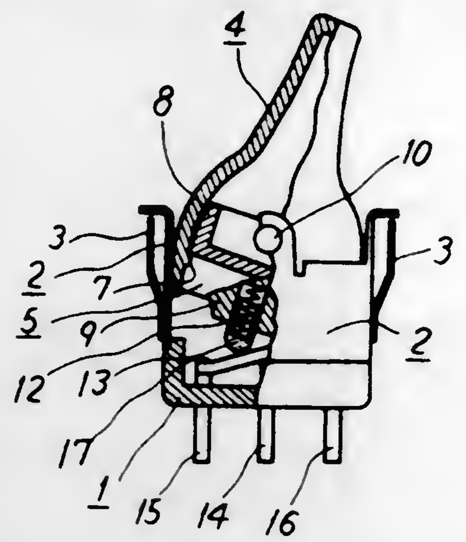
### 3,761,664

### LEVER SWITCH WITH OPERATING LEVER MEANS DETACHABLE FROM MOVABLE CONTACT CARRYING MEMBER ONLY IN NEUTRAL POSITION

**Yasuo Kodaira, Tokyo, Japan, assignor to Nihon Kaiheiki Industrial Company Ltd., Tokyo, Japan**
**Filed Oct. 21, 1971, Ser. No. 191,225**
**Claims priority, application Japan, Oct. 10, 1970, 45/108089**
**Int. Cl. H01h** *3/04, 9/16, 23/24*
**U.S. Cl. 200—172 R** **4 Claims**

A lever switch comprises (a) converter means rotatably supported in a switch receptacle for rocking left-and-right and converting a movable contact plate relative to a stationary contact or contacts, and (b) a lever for actuating said converter means which is formed separately from said converter means. Said lever and said converter means are connected with each other by engaging the upper surface portion of a lug, provided at a lower portion of the inner surface of said lever, with a corresponding surface portion of said converter means so that when the assembly of said lever and said converter means is at the neutral position relative to the switch receptacle said lever can be detached resiliently from said converter means, whereas when the assembly is at either of the rocked end positions said lever cannot be detached from said converter means, by reason of the fact that a lower portion of the outer surface of said lever contacts with the inner wall surface of the receptacle at the same time when the inner lug of said lever engages a corresponding portion of said converter means.



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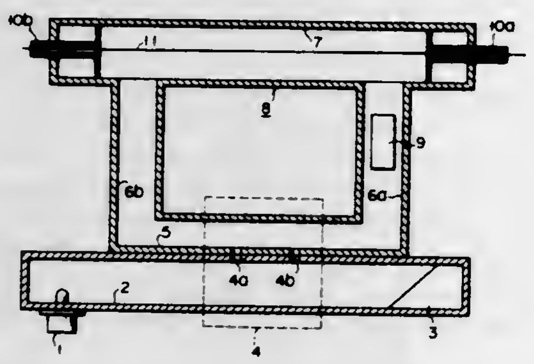
### 3,761,665
### MICROWAVE HEATING APPARATUS WITH LOOPED WAVE GUIDE AND PHASE SHIFTING MEANS

**Tsuguki Nagao, Tokyo; Tomiji Okakura, Yokohama, and Kazunori Hasegawa, Kanagawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan**
**Filed May 25, 1972, Ser. No. 257,017**
**Int. Cl. H05b** *9/06*
**U.S. Cl. 219—10.55** **9 Claims**



A microwave heating apparatus comprises a directional coupler including a main wave guide receiving energy from a microwave oscillator and a supplementary wave guide coupled to the main wave guide and receiving microwave energy therefrom. A heating wave guide preferably provided with a movable short-circuiting plate at both ends is connected to the supplementary wave guide so as to transmit in the TM mode the microwaves generated by the microwave oscillator and conducted thereto through the directional coupler. A variable phase shifter is provided for bringing the microwaves fed back to the supplementary wave guide through the heating wave guide in-phase with the microwaves conducted to said supplementary wave guide from the microwave oscillator.

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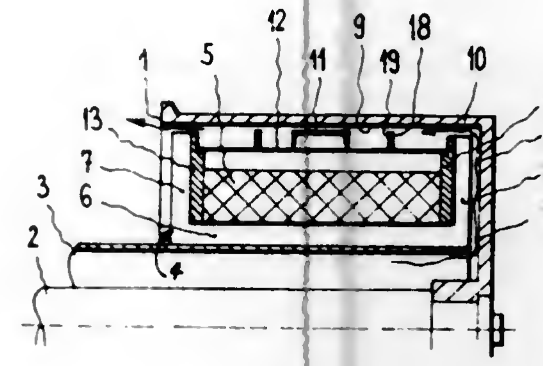
### 3,761,666
### HEATED DRAWROLL FOR DRAW-TWISTING, DRAW-WINDING AND SPIN-DRAW-WINDING MACHINES

Felix Graf, Winterthur; Kurt Hablutzel, Wiesendangen, and Armin Wirz, Dietlikon, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
**Filed Oct. 2, 1972, Ser. No. 294,208**
**Int. Cl. H05b** *5/00*
**U.S. Cl. 219—10.49** **10 Claims**



The temperature gauge is isolated from the induction coil by means of a temperature compensating element which is heated to the temperature of the drawroll so as to eliminate any cooling effect created by the induction coil. The temperature compensating element can be in the form of a short circuit ring which is of greater length than the temperature gauge or in the form of a resistance heating element. In addition, a heat insulating sleeve can also be disposed between the temperature compensating element and the induction coil.

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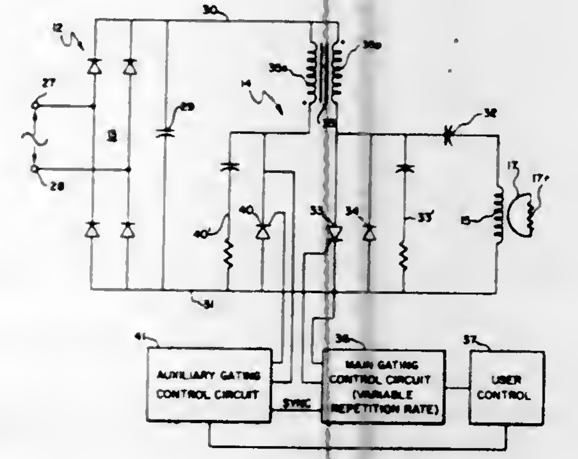
### 3,761,667
### OUTPUT POWER CONTROL OF INDUCTION COOKING INVERTER

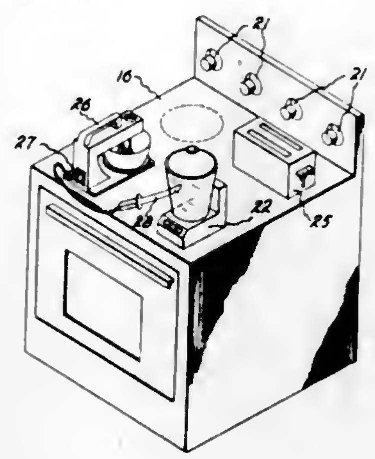
**John P. Walden, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**
**Filed Dec. 27, 1971, Ser. No. 212,295**
**Int. Cl. H05b** *5/04*
**U.S. Cl. 219—10.49** **7 Claims**


AUXILIARY GATING CONTROL CIRCUIT
SYNC
MAIN GATING CONTROL CIRCUIT (VARIABLE REPETITION RATE)
USER CONTROL
30
12
27
28
31
41
36
37

A single-thyristor series resonant inverter used to drive an induction heating coil in a cooking appliance is operated at a variable frequency over a limited ultrasonic range in known manner to obtain high output power control. The low output power range is extended by using the secondary winding of a reset transformer and a series connected auxiliary solid state device to limit the amount of recharge energy supplied to the commutating capacitor by the primary winding during non-oscillating intervals of the inverter.

### 3,761,668
### SMALL ELECTRICAL APPARATUS POWERED BY INDUCTION COOKING APPLIANCES

**John D. Harnden, Jr., and William P. Kornrumpf, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.**
**Filed Mar. 1, 1972, Ser. No. 230,732**
**Int. Cl. H05b** *5/04*
**U.S. Cl. 219—10.49** **5 Claims**



Induction surface cooking units are used to supply voltage to specially modified cordless auxiliary kitchen appliances and other small electrical apparatus, either motorized or resistive, placed on the counter-top cooking surface. In similar fashion a universal energizer unit comprises an inductively coupled receptor coil and rectifier with plug-in receptacles for other equipment.

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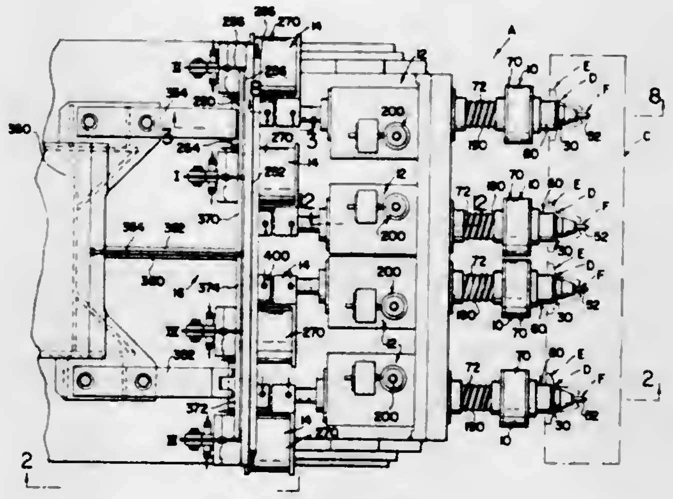
### 3,761,669
### METHOD AND APPARATUS FOR INDUCTIVELY HEATING VALVE SEATS

**Anthony F. Delpaggio, Parma, Ohio, assignor to Park-Ohio Industries, Cleveland, Ohio**
**Division of Ser. No. 151,493, June 9, 1971. This application Dec. 1, 1972, Ser. No. 311,348**
**Int. Cl. H05l** *35/04*
**U.S. Cl. 219—10.57** **5 Claims**



A method and apparatus for simultaneously heating the conical surface of first and second valve seats lying generally in a given plane on an engine component, which method and apparatus comprises mounting two inductors for independent reciprocal and lateral movement with respect to a common frame and biased outwardly therefrom, moving the common frame toward the plane of the valve seats until each is stopped by contacting the engine component, locking the two inductors with respect to the common frame, moving the common frame away from the valve seats to provide the necessary coupling gap, and then energizing the inductors to inductively heat the valve seats preparatory to quench hardening thereof.

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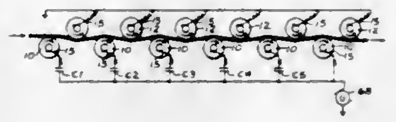
### 3,761,670
### METHOD AND APPARATUS FOR TREATING WORK MEMBERS BY THE APPLICATION OF HIGH FREQUENCY ENERGY

**Mathew A. Slaats, Jasper; Arthur W. Ross, Ferdinand, and James E. Blessinger, Jasper, all of Ind., assignors to Evansville Veneer & Lumber Co., Evansville, Ind.**
**Filed May 8, 1972, Ser. No. 251,126**
**Int. Cl. H05b** *9/02*
**U.S. Cl. 219—10.61** **7 Claims**



A method and apparatus for applying high frequency electrical energy to sheet-like or panel-like work members to develop heat therein for driving off moisture from the work member or for causing the setting of glue therein in which the work member is moved in the direction of its length with longitudinally spaced electrodes in engagement therewith between which high frequency electric current flows through the work piece. Electrical insulating material having high dielectric strength and low loss, and of a noncharring nature, is interposed between the electrodes and the work member, thereby substantially reducing the possibility of arc over along or in the work member and, thus, preventing damage thereto.

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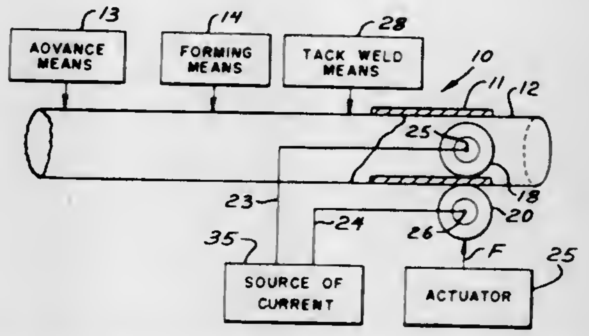
### 3,761,671
### METHOD AND APPARATUS FOR RESISTANCE WELDING UTILIZING APPLICATION OF HIGH PRESSURE

**Paul M. Erlandson, Palos Park, Ill., assignor to Continental Can Company, New York, N.Y.**
**Division of Ser. No. 795,515, Jan. 31, 1969, Pat. No. 3,610,862. This application Aug. 24, 1971, Ser. No. 174,378**
**Int. Cl. B23k** *1/16*
**U.S. Cl. 219—64** **5 Claims**



A method and apparatus are disclosed herein for electrical resistance welding wherein a high pressure is applied by the welding electrodes to the overlapped portions of metallic blanks concurrently as a high current is supplied to the electrodes.

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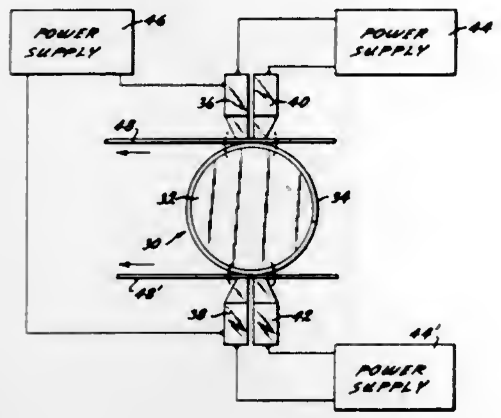
### 3,761,672
### APPARATUS AND METHOD FOR MODIFYING WOUND WIRE DEVICES

**Herbert Baker, Marina Del Rey; David S. Rathje, Culver City, and William T. Butek, Jr., Costa Mesa, all of Calif., assignors to Solatron Enterprises, Inglewood, Calif.**
**Filed May 15, 1972, Ser. No. 253,282**
**Int. Cl. B23p** *1/00*
**U.S. Cl. 219—68** **7 Claims**

A method and apparatus for removing unwanted turns from wound wire segments first brazes foil strips to the unwanted turns at opposed points on the periphery and next passes a high energy electrical discharge between the foil strips. The electrical discharge is of a magnitude and duration sufficient to vaporize the turns of wire between the foil strips. Any unvaporized particles of wire are attached to the foil and can be easily removed. If two pairs of opposing electrodes are positioned adjacent each other, one of the electrodes of each pair can be used for the brazing step and both are used for the vaporizing step.



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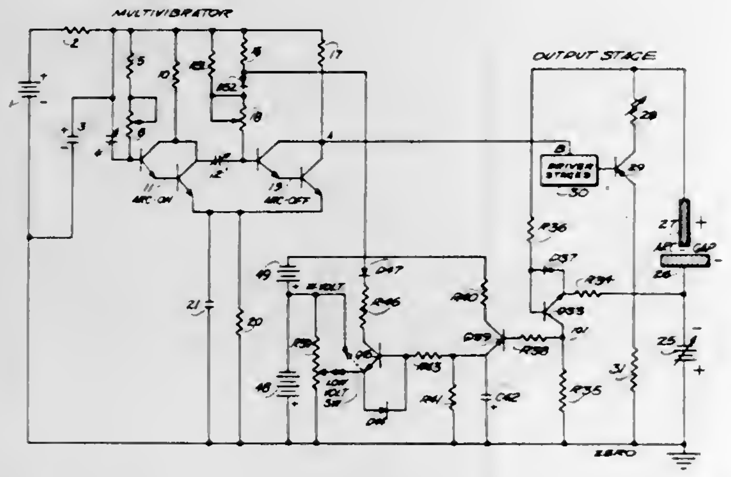
### 3,761,673
### ARC GAP CURRENT MONITOR CIRCUIT

**Kurt H. Sennowitz, Royal Oak, Mich., assignor to Electronic Removal of Metals, Inc., Clawson, Mich.**

**Filed Jan. 11, 1972, Ser. No. 217,005**

**Int. Cl. B23p** *1/08*

**U.S. Cl. 219—69 S** **10 Claims**



An arc gap current monitor circuit for use in an electrical discharge machining apparatus which includes a phase inverter stage connected between the main power supply and the arc gap. The monitor circuit protects the electrode tool and the conductive workpiece from damage due to direct current arcing caused by sludging, coolant loss, or breaking or chipping of the tool electrode. The trigger signal for the monitor circuit is not taken directly from the arc gap, and no resistance-capacitance or diode coupled signal is discharged into the arc gap. The arc gap monitor circuit also provides an automatic delay time during a shorted arc gap condition.

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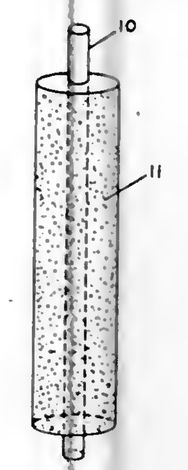
### 3,761,674
### ELECTROSLAG GUIDE NOZZLE

**Stanton F. Bierwith, San Leandro, Calif., assignor to Great Canadian Oil Sands, Limited, Toronto, Canada**

**Filed Mar. 29, 1972, Ser. No. 239,072**

**Int. Cl. B23k** *9/04*

**U.S. Cl. 219—73** **2 Claims**



The present invention relates to a novel consumable guide nozzle suitable for use in the electroslag welding.

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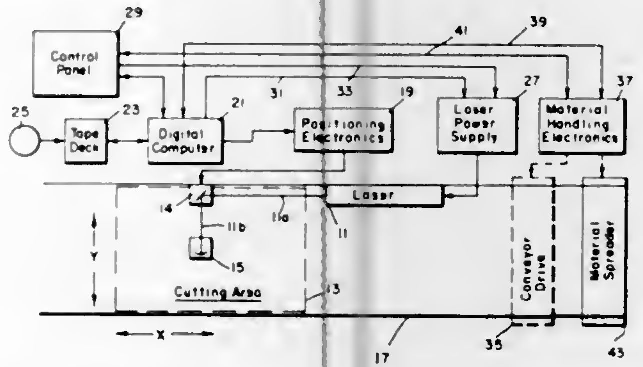
### 3,761,675
### MATERIAL CUTTING AND PRINTING SYSTEM

**William J. Mason, Westlake Village; Douglas W. Wilson, Pacific Palisades; Douglas M. Considine, Miraleste; Felix Jerome Vlosca, Canoga Park, and J. Philip Wade, Simi, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Jan. 19, 1972, Ser. No. 219,007**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 219—121 LM** **15 Claims**



A cloth cutting system wherein cloth is carried in a single layer into a cutting area wherein a laser beam is focused on the cloth and is directed by computer commands to travel within the cutting area so as to cut a plurality of patterns through the cloth rapidly and accurately.

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### 3,761,676
### PORTABLE ELECTRON BEAM WELDING APPARATUS

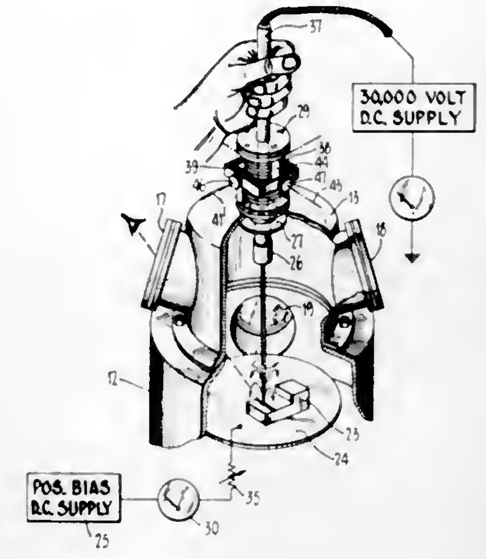
**George C. McFarland, 535 Bobby Dr., Danville, Calif., and Clifford F. Leader, 6946 Fairview Dr., El Cerrito, Calif.**

**Filed May 20, 1971, Ser. No. 137,568**

**Int. Cl. B73k** *15/00*

**U.S. Cl. 219—121 EB** **16 Claims**

An electron beam welding unit is described which enables an operator to directly manipulate the orientation of the electron gun forming the welding beam in order to control the location on a workpiece at which the beam impinges. To this end, the electron gun is mounted within a vacuum chamber on a first portion of its wall which can be moved with respect to the remainder of the vacuum chamber wall. Such first wall portion of the chamber is connected to the remainder of the chamber wall by a flexible bellows which permits the desired movement of the first wall portion while yet assuring integrity of the vacuum within the chamber. A handle for grasping by the operator is provided on the exterior surface of the first wall portion so that the operator can move the wall and, hence, move the electron gun to change the path of its beam.



The electron gun of the unit is in the form of a cartridge which is easily removable for replacement and is provided with a structurally stable electron generating filament. The unit further includes a high voltage power supply which is quite compact and assures low current ripple. The power supply and a full vacuum system for the unit, including an unique valve arrangement, are all housed together with the remainder of the unit to provide a small, portable unit.

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### 3,761,677
### APPARATUS FOR PRODUCING SINGLE CRYSTALS INCLUDING HALOGEN LAMPS ALIGNED WITH THE COMMON MAJOR AXES OF A SPHEROIDAL REFLECTOR PAIR

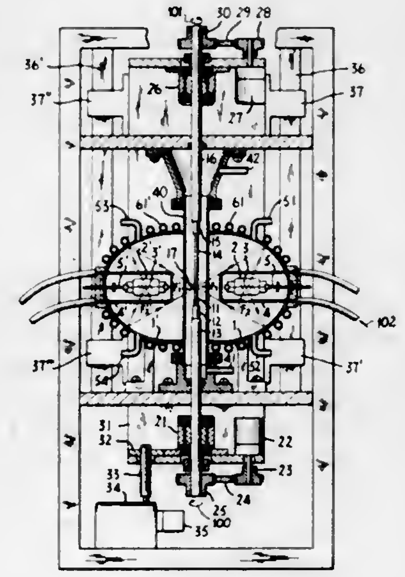
**Takayuki Mizutani, and Tsutomu Yamamoto, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan**

**Filed Feb. 2, 1972, Ser. No. 222,777**

**Claims priority, application Japan, Feb. 6, 1971, 46/4812**

**Int. Cl. H05b** *1/00;* **B01j** *17/08*

**U.S. Cl. 219—349** **6 Claims**



For an apparatus for growing single crystals by the floating zone method, a pair of congruent prolate spheroidal reflectors for radiant energy are disposed outwardly of each other with their major axes aligned and with the distance between their axially inwardly disposed foci being less than the diameter of a molten zone placed at the location of these foci. A pair of congruent halogen lamps for supplying the radiant energy are held inside the respective spheroidal surfaces with their logitudinal axes parallel to the major axes and with the center of each lamp placed, apart from the axially outwardly disposed focus, less than a quarter of the longitudinal dimension of the lamps and a half of the transverse dimension thereof in the directions parallel and perpendicular to the major axes, respectively.

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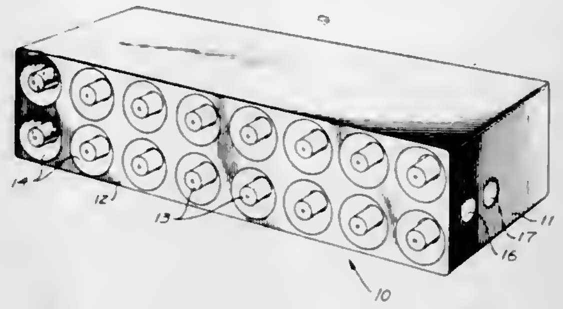
### 3,761,678
### HIGH DENSITY SPHERICAL MODULES

**Paul N. Eckles, Carmichael, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.**

**Continuation of Ser. No. 836;543, June 25, 1969, abandoned. This application May 3, 1971, Ser. No. 139,953**

**Int. Cl. H05b** *1/00;* **F21v** *7/20, 29/00*

**U.S. Cl. 219—343** **7 Claims**



A heat module having a plurality of single-end heat lamps characterized by a monolithic one-piece metal block having an outer reflective face and a plurality of reflective concave cavities formed interiorally of the block and opening through reflective face. The metal block has two rows of reflective cavities with a bore passing between the two rows and adapted to carry a cooling fluid. Each reflective cavity has associated with it a lamp housing channel and means associated with each cavity and its housing channel for supporting and powering an associated heat lamp with the heating filament of each heat lamp being situated within the respective reflective cavity and with the support end of the lamp being located outside the reflective cavity.

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### 3,761,679
### ELECTRODE AIR-HUMIDIFIER

**Hans Hilmar Dall, Egamosevej 8, 8250 Ega, Denmark**

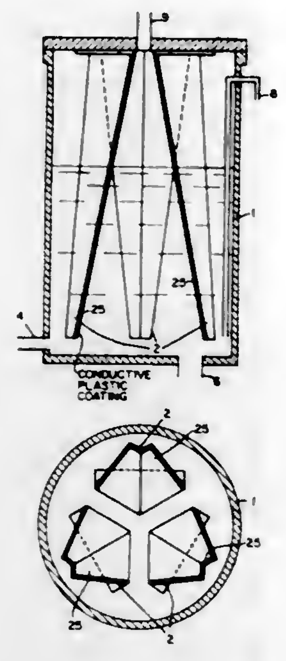
**Filed June 3, 1971, Ser. No. 149,737**

**Claims priority, application Denmark, June 4, 1970, 2930/70**

**Int. Cl. H05b**

**U.S. Cl. 219—288** **5 Claims**

An electrode air humifier for providing a substantially constant rate of steam generation irrespective of variations in the conductivity of the supply water includes a water tank having a water inlet, a steam outlet and a plurality of electrodes downwardly projecting into the water within the tank. The electrodes each have a pair of substantially planar surfaces whose current carrying area progressively increases in an upward direction. The electrodes are positioned so that each planar surface of each electrode faces a different planar surface of an adjacent electrode and the distance between the facing planar surfaces of adjacent electrodes progressively decreases in an upward direction. To avoid precipitation of solid materials onto the electrodes from the water, the surfaces of the electrodes are covered with polytetraflouroethylene uncorporating with electrically conductive pig-



ment. The water level in the tank is controlled in response to current flow to the electrodes.

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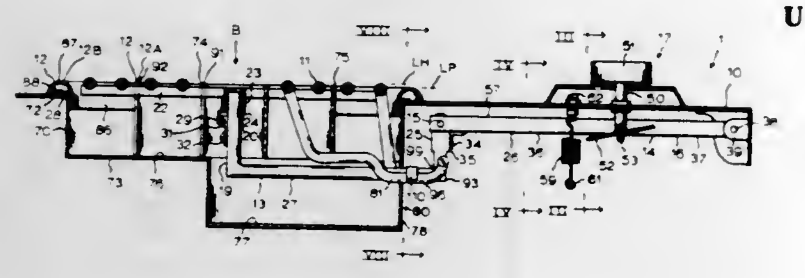
## 3,761,680
## ELECTRIC STOVES

**Benedict Ingrao, 2437 N. 73rd Ave., Elmwood Park, Ill.**
**Continuation-in-part of Ser. No. 693,270, Dec. 26, 1967, Pat. No. 3,578,951. This application May 15, 1972, Ser. No. 253,437**
**Int. Cl. H05b** *3/68*
**U.S. Cl. 219—456** **13 Claims**



Electric stove in which the heating element can be lowered to remove the heat source from the bottom of a pot or pan on the stove. The heating element is lowered at the end of a cooking cycle, or at any other time, to prevent over-cooking, scorching of food, or boil-overs. The stove is provided with a pot support and an integrated heating element. The heating element is supported in a hinged manner and means are provided so that the heating element can be raised on hinged means for cleaning of the stove. Controls are provided to lower the heating element and resilient means are provided to normally hold the horizontal surface level of the heating element slightly above the horizontal surface level of the pot support with the weight of a pot being sufficient to lower the horozintal surface level of the heating element to the horizontal surface level of the pot support. Provided with the resilient means is a limited tilting action of the heating element to insure that all top surface portions of the heating element will contact all bottom portions of a pot on the pot support. Channel means are provided to permit escapement of trapped heated air. And the heating element is supported at its balance center.

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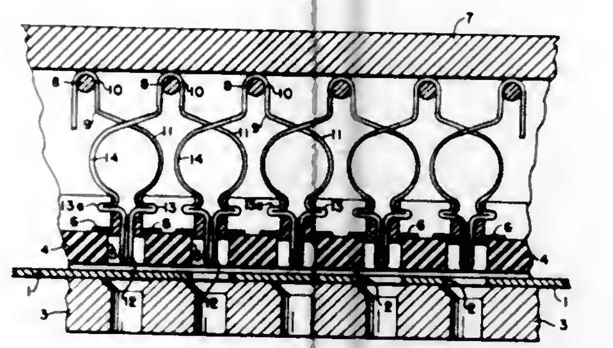
## 3,761,681
## PUNCHED CARD READERS

**Noel Edward Evans, Portsmouth, England, assignor to Sealectro Limited, Farlington, Portsmouth, England**
**Filed Apr. 13, 1972, Ser. No. 243,859**
**Claims priority, application Great Britain, Apr. 8, 1971, 9,090/71**
**Int. Cl. G06k** *7/04*; **G09b** *3/06*; **G06k** *7/06*; **H04q** *1/16*
**U.S. Cl. 235—61.11 C** **5 Claims**



A reader for punched cards or tapes having a plurality of spring mounted probes, one for each hole position. A card or tape is sensed by the probes and when no hole is under the probe, the spring is compressed. When a hole is sensed, the probe enters the hole and two electrical contacts are joined, thereby providing an electrical current which identifies the hole position in a load circuit.

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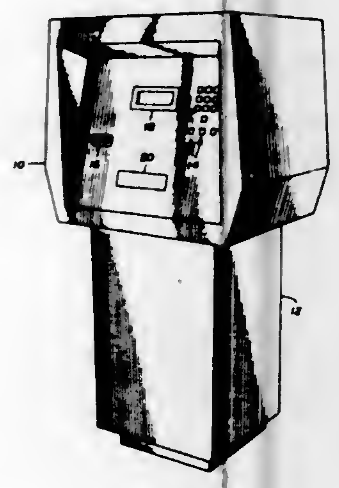
## 3,761,682
## CREDIT CARD AUTOMATIC CURRENCY DISPENSER

**Thomas R. Barnes, Dallas; George R. Chastain, Irving, and Don C. Wetzel, Dallas, all of Tex., assignors to Docutel Corporation, Dallas, Tex.**
**Continuation of Ser. No. 59,150, July 29, 1970. This application Oct. 7, 1971, Ser. No. 187,515**
**Int. Cl. G06k** *17/00*; **B65h** *3/00*
**U.S. Cl. 235—61.7 B** **46 Claims**



A currency dispenser automatically delivers a medium of exchange in packets in response to a coded credit card presented thereto. The coded credit card is presented to the currency dispenser and an initial check is made to determine if the card has the proper format. After checking the credit card format, coded information thereon is evaluated to check the user's identity prior to authorizing him to receive cash from the machine. When each of several additional checks of the credit card code have been completed, the old code is removed and substituted with a new code. The new code contains the same information as the old but updated to reflect an additional currency dispensing transaction. Both the original code and the updated code are scrambled in accordance with a changing key. Scrambling the credit card code after each use thereof minimizes the chance of unauthorized use of the currency dispenser. When the checks of the credit card code indicate the user is entitled to receive the amount of currency he has selected, a storage container for the packets of currency transports the required number of packets by a positive feed drive to a cash drawer. The cash drawer opens to a detent position which allows the customer to then move the drawer to a fully open position to remove his currency. Upon release of the cash drawer, it returns to a partially opened position from which it automatically closes after a preset time limit.

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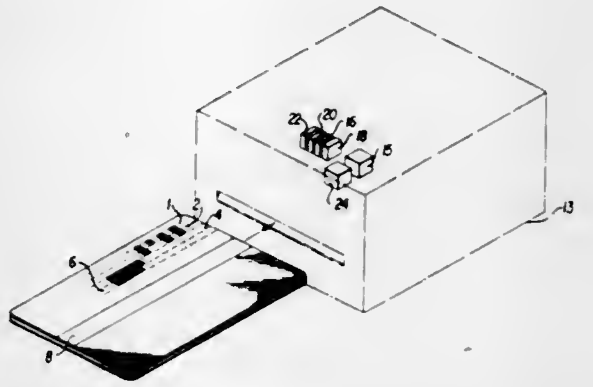
## 3,761,683
## SECURITY SYSTEM

**Steven A. Rogers, 1426 Crowell Rd., Vienna, Va.**
**Filed Nov. 8, 1971, Ser. No. 196,319**
**Int. Cl. G07f** *7/02*; **G06k** *7/08*, *7/14*, *19/08*
**U.S. Cl. 235—61.7 B** **8 Claims**



This invention concerns a pass-key system. It contains a method for reading optical and magnetic data from a small card. The optical data is used to microprogram logic circuitry which manipulates the magnetic information. The said magnetic information consists of a binary code. This code is entered into a shift register by manually pushing the card into its counterpart slot. The code is compared by suitable logic to a similar number stored within a memory either of a counter or random access type. If the codes do or do not compare, provision is made to so indicate. If they do match, then the device is enabled to generate a new random combination, store it and write it on the card as the card is withdrawn from the device.

The optical data is provided on several fixed tracks to control the logic, to provide a location bit and to provide the individual card's memory location if there is more than one user.

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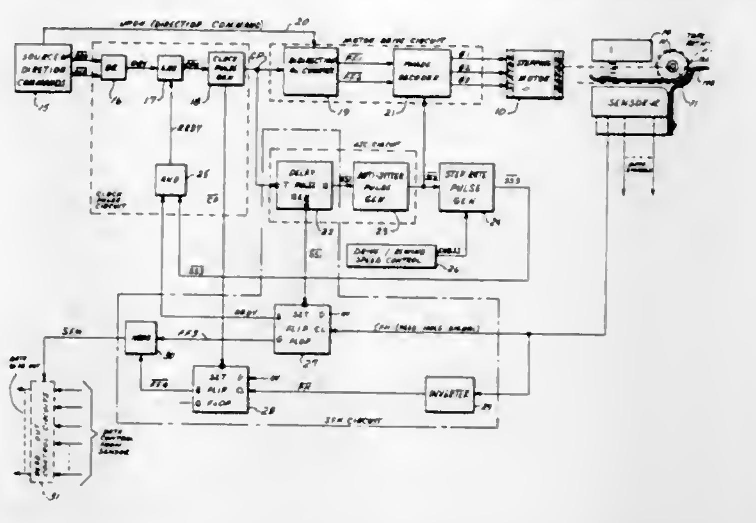
## 3,761,684
## SPROCKET SIGNAL PROCESSOR

**William A. Schrader, Mission Viejo, Calif., assignor to Ex-Cell-O Corporation, Detroit, Mich.**
**Filed Apr. 12, 1972, Ser. No. 243,153**
**Int. Cl. G06k** *7/016*
**U.S. Cl. 235—61.11 R** **7 Claims**

The sprocket signal processor is adapted for record member readers wherein the record member is subject to oscillations or jitter due to its advancement over a sensor. To prevent the recognition of erroneous signals and in particular sprocket hole signals reduced on the record member with the data for controlling the read out of the data, the sprocket signal is processed so as to block out erroneous signals and to provide



only the desired sprocket hole signal for read out purposes, thereby preventing erroneous read out of the record member.

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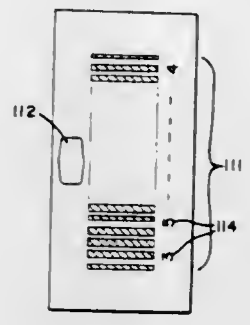
## 3,761,685
## DATA PROCESSING MEANS WITH PRINTED CODE

**Norman Alpert, Scarsdale, N.Y.; Robert M. Berler, Westport, and Nanjundian N. Murthy, W. Redding, both of Conn., assignors to Pitney-Bowes Alpex, Inc., Danbury, Conn.**
**Filed May 24, 1971, Ser. No. 146,044**
**Int. Cl. G06r** *7/10*
**U.S. Cl. 235—61.11 E** **11 Claims**



An electro-optically readable coded document is provided in which the code appears as a compact row of printed bars of two widths separated by spaces of similar widths between the individual bars. The combination of printed bars or lines and associated spaces constitute a binary code that is registered through an electro-optical system, e.g. a hand-held reader. The reader is drawn along the length of the document, and as the printed lines (or bars) and spaces are traversed by the scanning reader, the width of each one of these elements is memorized in terms of a cumulative time count within a responsive electrical system. As the scanner thereafter traverses the space adjacent to the preceding bar, a new time count is generated in the electrical system which then measures the width of the space also in terms of a cumulative time count. The two time counts are compared in order to determine the character of the scanned portion of the encoded information.

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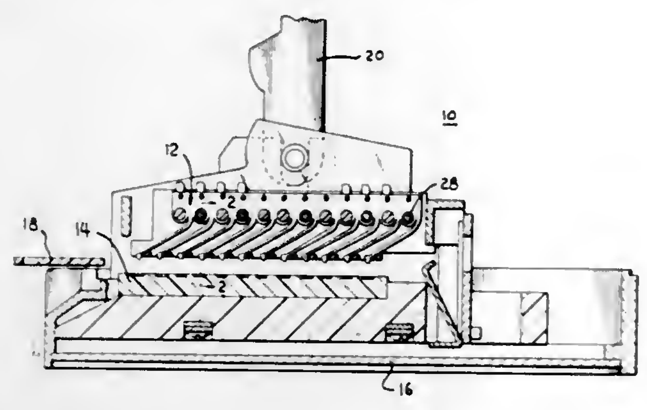
## 3,761,686
## SENSING SPRING ARRANGEMENT FOR CARD READER

**Cornelius William Bosland, Hershey, Pa., assignor to AMP Incorporated, Harrisbrug, Pa.**
**Continuation of Ser. No. 746,783, July 23, 1968, abandoned. This application May 17, 1971, Ser. No. 144,256**
**Int. Cl. G06k** *7/06*; **H01h** *43/08*; **H05b** *39/00*
**U.S. Cl. 235—61.11 C** **10 Claims**

An improved sensing spring arrangement for a card reader. The springs are held in a head and are pre-deflected by precisely located shoulders to given accurate vertical alignment of the tips of the springs. The springs themselves have a tapered configuration so that when deflected the stresses along each spring are approximately uniform and less than the fatigue stress limit of the spring.



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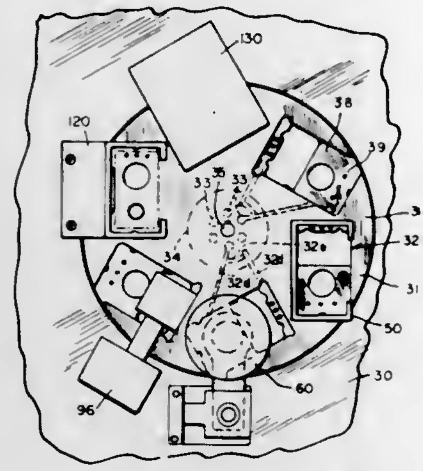
### 3,761,687
### DUAL TICKET READER

**Alan Swett, Milton, and Nunzio Napoleone, Wellesley, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.**

**Filed Jan. 3, 1972, Ser. No. 215,045**
**Int. Cl. B65h** *29/34;* **G06k** *7/08, 7/10*
**U.S. Cl. 235—61.11 E** **17 Claims**



A ticket reader constructed to read magnetically encoded tickets or punch encoded tickets, said reader having a rotatable turret, a vacuum system for controlling the movement of tickets between a ticket feed station, two read stations, one adapted to magnetically read data on a ticket and one adapted to read data punched on a ticket, and a plurality of stations adapted to receive the tickets after they have been read and interpreted.

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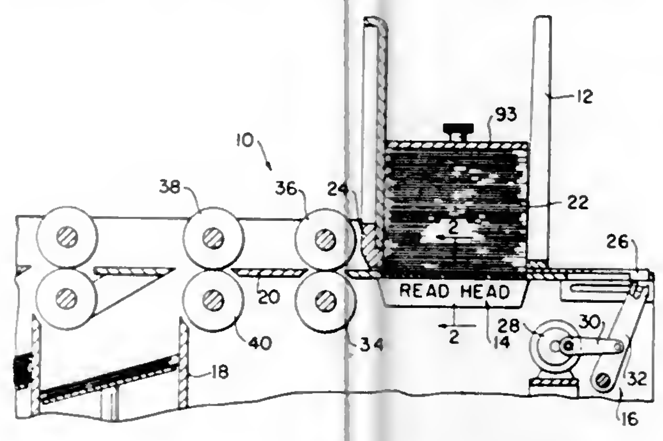
### 3,761,688
### HIGH-SPEED CARD READER

**John W. Cassel, Hatboro, Pa., assignor to The National Cash Register Company, Dayton, Ohio**

**Division of Ser. No. 7,649, Feb. 2, 1970. This application Mar. 30, 1972, Ser. No. 239,810**
**Int. Cl. G02b** *5/14;* **G06k** *7/14*
**U.S. Cl. 235—61.11 E** **1 Claim**

A high-speed card reader including a card feed hopper with a reading station being located directly beneath the hopper and aligned therewith. Because the reading station is aligned with the hopper, the lowermost card in a stack of cards in the hopper can be read while positioned at the bottom of the stack. After being read, the lowermost card is removed by a picker blade, and the next card is read while positioned at the bottom of the stack. All the holes in the card are read simultaneously at the reading station, which is light- operated, and which includes light sources and light sensors which are located on one side of the card being read.



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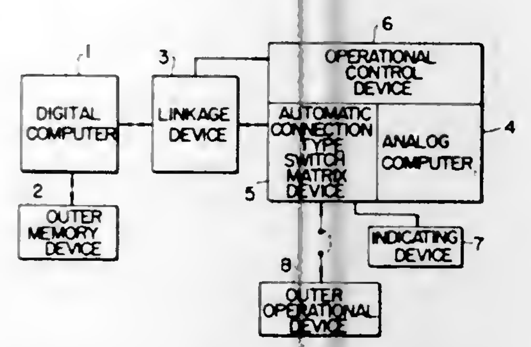
### 3,761,689
### ANALOG-HYBRID COMPUTER USING AN AUTOMATIC CONNECTION TYPE SWITCH MATRIX

**Shigeru Watanabe, Hachioji; Norio Yokozawa, Fuchuu, and Sigenori Kawamura, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Electronics Co., Ltd., both of Tokyo, Japan**

**Filed Feb. 4, 1972, Ser. No. 223,558**
**Claims priority, application Japan, Feb. 5, 1971, 46/4225**
**Int. Cl. G06j** *1/00*
**U.S. Cl. 235—150.5** **3 Claims**



In an analog-hybrid computer, an automatic connection type switch matrix device is installed between the digital computer and the analog computer. The switch matrix device is operated to establish connections among analog operational devices in the analog computer in response to command signals from the digital computer, thereby forming the desired analog operational circuit, and a suitable outer operational device is connected to a free connecting terminal of the switch matrix device.

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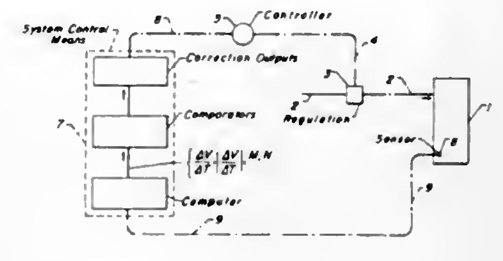
### 3,761,690
### COMPUTER CONTROL OF A PHYSICAL SYSTEM IN WHICH THE MAGNITUDE AND FREQUENCY OF CORRECTIONS ARE SYSTEM DEPENDENT

**John H. Sayles, Arlington Heights, and Allen L. Pekar, Brookfield, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed July 6, 1971, Ser. No. 160,022**
**Int. Cl. G05b** *11/36*
**U.S. Cl. 235—150.1** **10 Claims**

A control system for a physical system which includes a chamber wherein the value of a desired property of the system is to be maintained within predetermined limits of deviation. There is provided regulating means connected to the chamber for regulating the value of the desired property and control means connected to said regulating means for controlling such regulation. Sensing means such as level indication devices, pressure indicating devices, temperature indicating devices, or the like, is connected to the chamber for generating a signal representative of the aforesaid value of said desired property. System control means is connected to the sensor and to the control means for receiving the signals and for generating signals for controlling said system. The system control means includes computer means for computing the change of the value of the desired property with respect to time and for determining a parameter of comparison whose value is a function of the value of said desired property. First comparator means is provided for comparing the rate of the change of the desired property with the parameter of comparison and for activating the control means in response to the comparison. Second comparator means is provided for comparing the actual value of the desired property with limits of deviation and for determining the time at which to activate the control means in response to that comparison.



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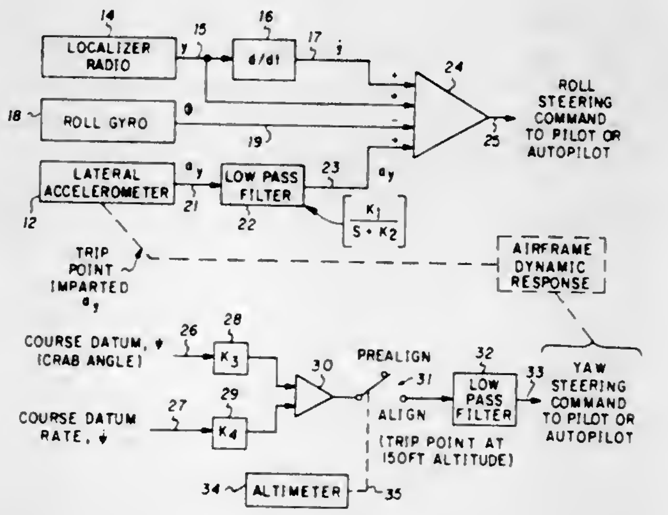
### 3,761,691
### RUNWAY ALIGNMENT SYSTEM UTILIZING A LATERAL ACCELERATION SIGNAL

**Elmer L. Schultz, Marion, Iowa, and Edwin R. Hattendorf, Mission Viejo, Calif., assignors to Collins Radio Company, Dallas, Tex.**

**Filed Nov. 24, 1972, Ser. No. 309,307**
**Int. Cl. G06g** *7/78*
**U.S. Cl. 235—150.22** **8 Claims**



A landing control system utilizing a lateral acceleration signal in formulation of roll steering command such that a decrab maneuver effects a "wing down into the wind" forward slip maneuver, maintaining runway alignment.

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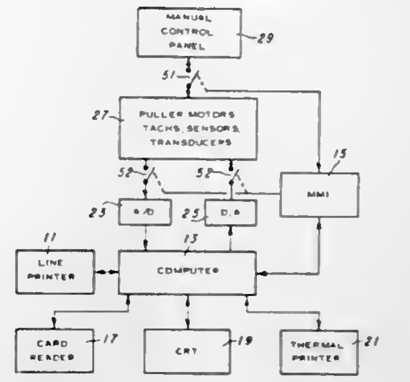
### 3,761,692
### AUTOMATED CRYSTAL PULLING SYSTEM

**Edward G. Cope, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Oct. 1, 1971, Ser. No. 185,790**
**Int. Cl. G06g** *7/58;* **H01l** *7/40*
**U.S. Cl. 235—151.1** **2 Claims**

An automated crystal pulling system utilizes a digital computer to control a Czochralski crystal puller. Crystal pull rate, crystal spin rate, crucible lift rate and crucible spin rate are monitored with tachometers, and the monitored signals are applied to controllers to control the respective motors and provide independent closed control loops, with each controller having a set point signal input from the computer. A sensor detects the output level of the radio frequency generator (induction heater) and applies a signal to a generator controller having a set point input from the computer, providing closed loop temperature control. A temperature control algorithm receives an input from a melt temperature sensor and calculates the set point to the generator controller. A diameter control algorithm receives an input from a crystal diameter sensor and calculates the set point to the crystal pull motor controller. A melt level control algorithm claculates the set point to the crucible lift motor controller to provide a constant melt level. An adaptive control algorithm adjusts melt temperature, via the temperature control algorithm, as required to maintain average pull rate within imposed limits. Crystal specifications are input to the computer via a card reader. Operators are required only to load the charge, read in the specification card, grow the crystal stem, initialize various procedures, and remove the crystal ingot and clean and reload the puller.



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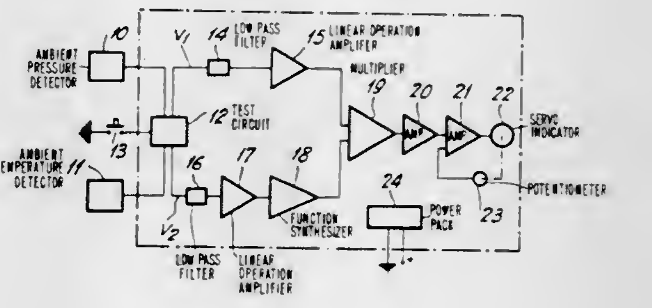
### 3,761,693
### AUTOMATIC MAXIMUM-TORQUE INDICATOR ASSOCIATED WITH A SHAFT AND ITS USE IN HELICOPTERS

**Gerard Fleury, Marseille, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France**

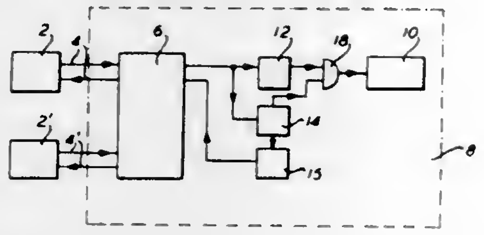
**Filed Mar. 30, 1972, Ser. No. 239,492**
**Claims priority, application France, Apr. 7, 1971, 7112264**
**Int. Cl. G06g** *7/70;* **G01l** *3/06*
**U.S. Cl. 235—151.3** **2 Claims**



A torque indicating system for the aerofoils of a helicopter comprising a pressure and temperature detector feeding, through appropriate electrical circuits, a multiplier operating a pointer.

### 3,761,694
### CASH REGISTER MECHANISM

**Gosta Roland Englund, Stockholm; Claes-Goran Lindelow, Taby, and Bengt Ragnar La Motte, Solna, all of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden**
**Filed May 3, 1971, Ser. No. 139,614**
**Claims priority, application Sweden, May 4, 1970, 6061/70**
**Int. Cl. G06f** *11/00*
**U.S. Cl. 235—153 R** **1 Claim**



A register mechanism operates in conjunction with an information storage unit to (a) allow a transfer to the storage unit of information entered on the keyboards of the register (b) indicate on an audit tape the entered information and that the data has been correctly transferred to the storage unit and (c) indicate on an audit tape the entered data only.

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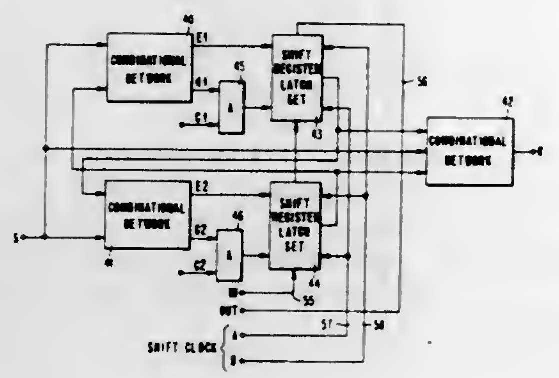
### 3,761,695
### METHOD OF LEVEL SENSITIVE TESTING A FUNCTIONAL LOGIC SYSTEM

**Edward Baxter Eichelberger, Purdy Station, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Oct. 16, 1972, Ser. No. 298,087**
**Int. Cl. G06f** *11/00*
**U.S. Cl. 235—153 AC** **10 Claims**



Level sensitive testing is performed on a generalized and modular logic system that is utilized as an arithmetic/logical unit in a digital computer. Each arithmetic/logical unit of a computer is formed of arrangements of combinational logic networks and storage circuitry. The storage circuitry has the capability for performing scan-in/scan-out operations independently of the system input/output and controls. Using this scan capability, the method of the invention provides for the state of the storage circuitry to be preconditioned and independent of its prior history. Test patterns from an automatic test generator are cycled through the networks of combinational logic and their respective associated storage circuitry for removal through the scan arrangement to determine their fault status.

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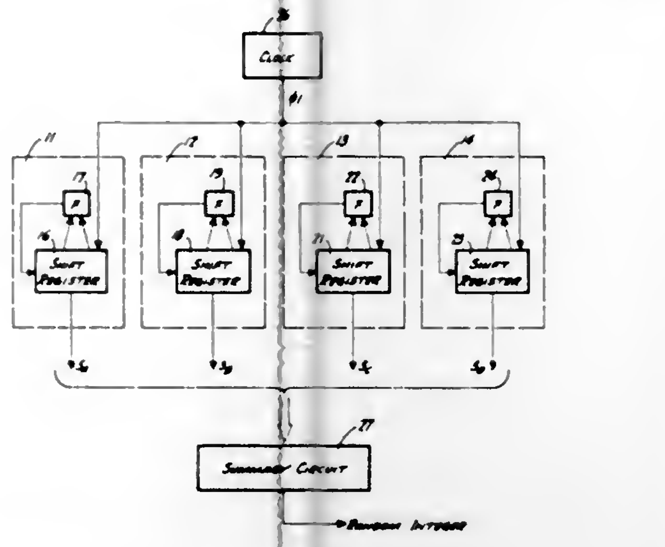
### 3,761,696
### RANDOM INTEGER GENERATOR AND METHOD

**Lewis K. Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.**
**Filed Feb. 16, 1972, Ser. No. 226,700**
**Int. Cl. G06f** *1/02*
**U.S. Cl. 235—152** **15 Claims**



A random integer generator formed of a plurality of pseudo-random generators. Each of the pseudo-random generators is formed of a shift register having feedback to maximize the period of the shift register. The shift registers are of different sequence length and are all simultaneously clocked. After a number of clocking pulses, the number of either ones or zeros in a selected sample size of the shift register outputs are counted and summed, with the sum being a random integer.

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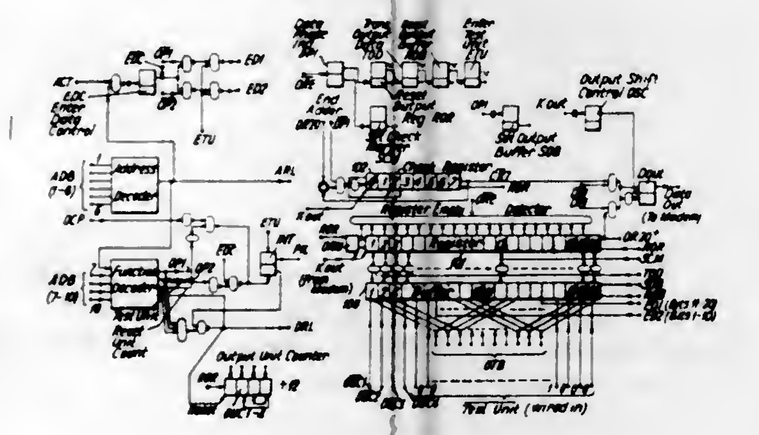
### 3,761,697
### DATA PROCESSOR INTERFACE

**Kenneth Stanley Darton, Harlow; Geoffrey Allen Hunt, Old Harlow, and David William Wright, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.**
**Filed Nov. 17, 1971, Ser. No. 199,690**
**Int. Cl. G06f** *5/04, 15/00*
**U.S. Cl. 235—154** **4 Claims**



An interface is coupled between a 20-bit serial word signalling stem and a 16-bit parallel word data processor. The interface buffers the transmission to an from the line, transfers to and from the processor in pairs of 10-bit half-words, and performs all repetitive functions to limit utilization of the processor.

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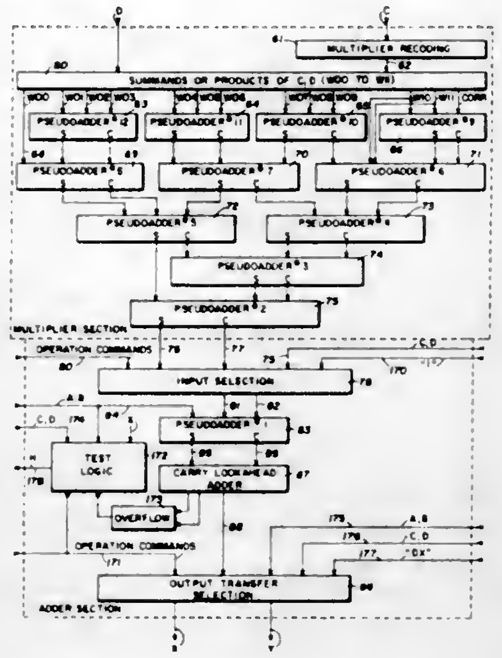
### 3,761,698
### COMBINED DIGITAL MULTIPLICATION SUMMATION

**Charles M. Stephenson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Continuation of Ser. No. 88,209, Nov. 9, 1970, abandoned, which is a continuation of Ser. No. 562,386, July 1, 1966, abandoned. This application Apr. 24, 1972, Ser. No. 247,037**
**Int. Cl. G06f** *7/52, 15/34*
**U.S. Cl. 235—164** **7 Claims**



An arithmetic unit for combined digital multiplication and summation of the form A+B·C using operands A, C and D is disclosed without using discrete intermediate storage of any sum of any particular product. Electrical signals are generated representative of the digital functions A, C and D. A plurality of pseudoadders are connected into a plurality of levels in converging combinational logic paths for producing an ultimate sum from the digital functions C and D and then electrical signals representative of the function A are introduced following the formation of the ultimate sum to form an output signal representative of the sum A and the ultimate sum.

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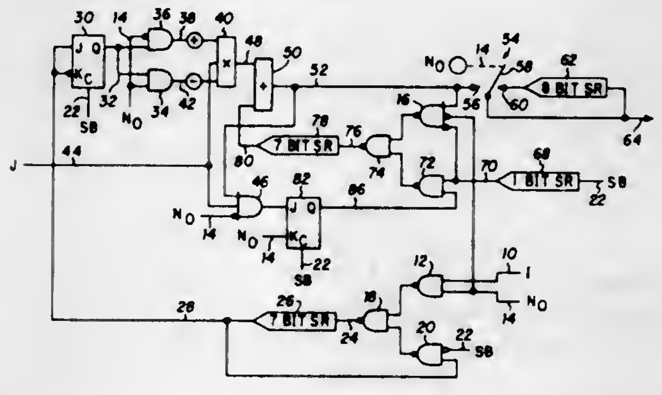
### 3,761,699
### MULTIPLICATION BY SUCCESSIVE ADDITION WITH TWO'S COMPLEMENT NOTATION

**Delaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Co., Dallas, Tex.**
**Filed Mar. 28, 1972, Ser. No. 238,905**
**Int. Cl. G06f** *7/52*
**U.S. Cl. 235—165** **4 Claims**



A multiplying circuit for serial bit words wherein a number of word times equal to the number of bits in the multiplier is required to perform the full multiplication operation. Each bit of the multiplier from the least significant to the most significant is multipled by the multiplicand word individually and after each multiplication the result is added to the previous product divided by 2. If the last or sign bit of the multiplier indicates that is is a negative word, the multiplication at this last word time produces the negative equivalent of the multiplicand which is the last digital word added to produce the final answer. Additional circuitry is utilized for forcing the cumulative product after division by 2 to have a sign bit corresponding to the sign bit of the multiplicand after the occurrence of a logic 1 in a significant bit of the multiplier.

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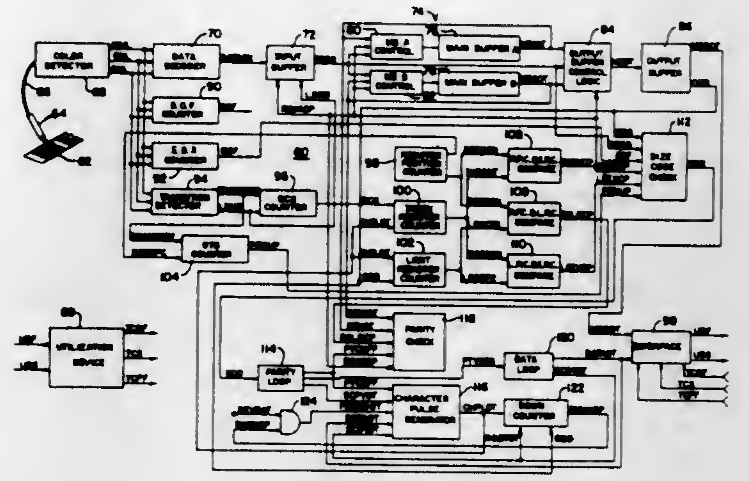
### 3,761,700
### OUTPUT CONTROL LOGIC FOR A CODE READING SYSTEM

**Ramesh S. Patel, Kettering; Robert C. Gilberg, Dayton, and James P. Donohue, Fairborn, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio**
**Filed Dec. 7, 1971, Ser. No. 205,541**
**Int. Cl. G06f** *7/00*
**U.S. Cl. 235—165** **12 Claims**



A system for processing a color bar code read optically from a coded medium is disclosed. The system includes logic for determining the binary code from color signals and storage means for temporarily storing the binary code. Logic is also provided which allows the reading of a double field tag and which checks the parity and the size of the captured message. Further, logic is provided for transmitting the captured message to a utilization device.

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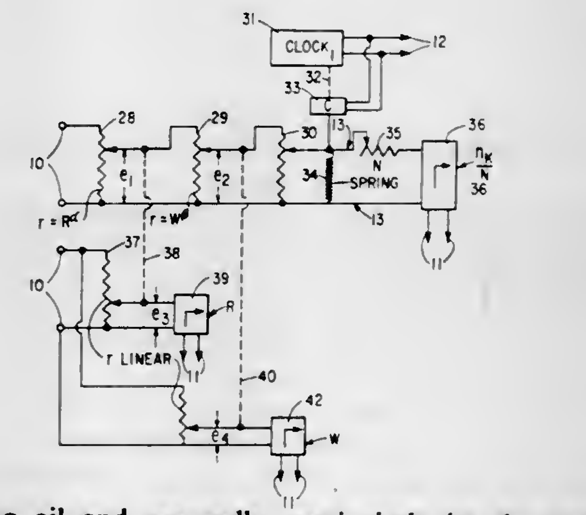
### 3,761,701
### DRILLING COST INDICATOR

**Lawrence B. Wilder, c/o Amoco Production Company, P.O. Box 591, Tulsa, Okla.; Renic P. Vincent, deceased, late of Tulsa, Okla., and Meta Luella Vincent, administratrix, c/o Amoco Production Company, P.O. Box 591, Tulsa, Okla.**
**Continuation-in-part of Ser. No. 874,562, Nov. 6, 1969.**
**Filed July 14, 1971, Ser. No. 162,693**
**Int. Cl. G06g** *7/00, 7/48*
**U.S. Cl. 235—193** **4 Claims**



In drilling oil and gas wells, particularly by the rotary drilling technique, it is necessary periodically to pull the drill string from the well in order to replace a worn bit. The most economic drilling is that in which the type of bit and the drill rig operating conditions are matched to the characteristics of the rock being drilled so that the cost of drilling, between bit changes works out to the lowest possible value per foot. This invention concerns a rig floor drilling cost indicator which is basically an analog computer which graphically shows the fractional wear on the bit, the average cost of drilling per foot, and the incremental cost of drilling a foot of hole. These indications permit the driller or the tool pusher to determine with considerable accuracy both the arrangement for minimal cost drilling, and when to change the bit. Most of the equations solved by this computer are novel.

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## ERRATUM

For Class 235—114 see:
Patent No. 3,761,955

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3,761,702

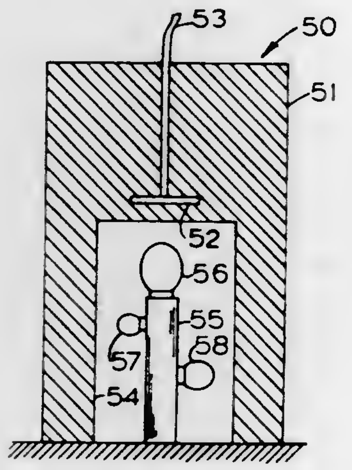
## INTERNALLY ILLUMINATED CANDLE

**Frits J. Andeweg, 7737 Royal Ln., Dallas, Tex.**

**Filed Dec. 27, 1971, Ser. No. 212,107**

**Int. Cl. F21v** *33/00*

**U.S. Cl. 240—2 R** **14 Claims**



An internally illuminated candle burnable from the top having a cavity within wax of the candle and a light structure positioned for illuminating the cavity and diffused passage of light through candle wax. The candle is made to glow with an esthetically pleasing internal light. It has a non-flamable barrier at the base of the wick.

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3,761,703

## APPARATUS FOR ILLUMINATION OF INSTRUMENT FACES

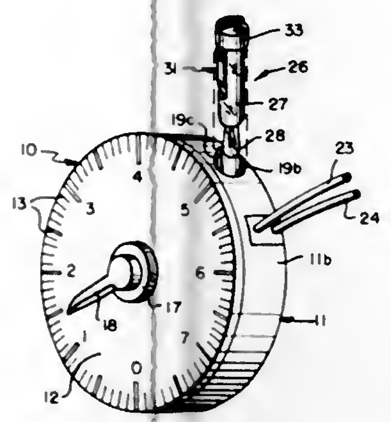
**Willard Mund, Morristown, and Wolfgang Fuhr, North Haledon, both of N.J., assignors to U. S. Radium Corporation, Morristown, N.J.**

**Filed Dec. 23, 1971, Ser. No. 211,344**

**Int. Cl. G01d** *11/28*

**U.S. Cl. 240—2.1** **5 Claims**

A lamp cartridge for insertion in the edge of a light conductive block for distributing light to an instrument or instrument panel. The cartridge includes spring clip contacts along opposite sides thereof for making resiliently biased contact with bus bars in the light block, guides for orienting the clips in relation to an opening in the light block for receiving the cartridge, and an exposed portion facilitating manual insertion or withdrawal of the cartridge with respect to the opening.



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3,761,704

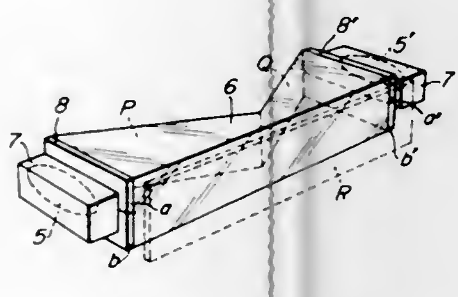
## DIAL ILLUMINATING DEVICE

**Kenzo Takeichi, Hirakata, and Shigeru Hama, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Division of Ser. No. 800,639, Feb. 19, 1969. This application Jan. 6, 1972, Ser. No. 215,943**

**Int. Cl. G01d** *1/28*

**U.S. Cl. 240—2.1** **3 Claims**



A dial illuminating device comprising a light converting member consisting of two transparent light converting elements in the form of trapezoids. The trapezoids, which are in end-to-end relationship, each have a first oblique surface and a second surface which is perpendicular to the ends of the trapezoid. A dial plate is positioned adjacent the second surfaces of the light converting elements. Light sources are mounted adjacent the opposite ends of the light converting member and filter means are interposed between the light sources and the respective ends, each of the filter sources comprising a plurality of transparent color sections. Filtered light from the light sources is irregularly reflected by the oblique surfaces of the light converting elements and is incident on the dial plate.

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3,761,705

## REFLECTIVE LIGHTED MIRROR

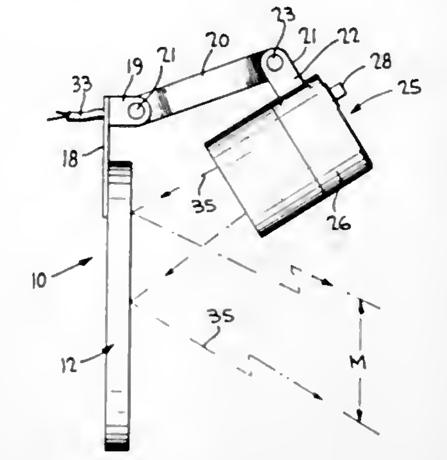
**John Stuart Fleming, Niagara Falls, N.Y., assignor to Floxite Company, Inc., Niagara Falls, N.Y.**

**Filed Aug. 17, 1971, Ser. No. 172,432**

**Int. Cl. F21v** *33/00*

**U.S. Cl. 240—4.2** **1 Claim**

A mirror is arranged to reflect a relatively large area of the observer's head or face and hinged thereto for adjustment at a variety of vertical angles is a directed source of light for casting a definite restricted beam toward the mirror and thence reflected onto a restricted area of the observer's features. Both the restricted nature of the reflected beam and the positioning of the light source with its rear dark end in front of the eyes of the observer serve to shield his eyes from the glare of the light beam. The mirror is preferably of the concave variety.



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3,761,706

## INDICATING SYSTEM FOR INCANDESCENT LAMPS FOR VEHICLES

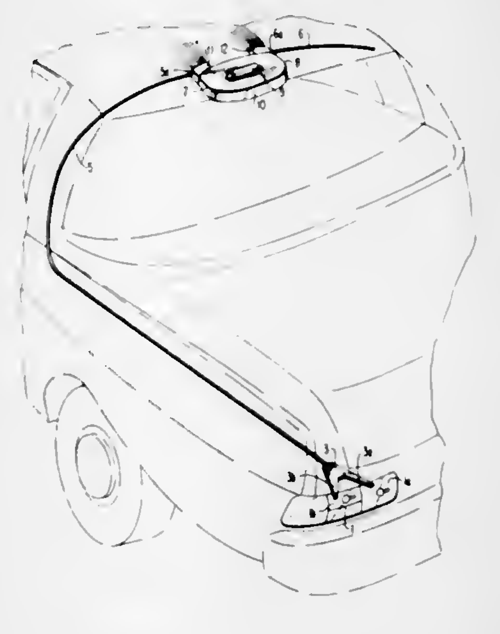
**Egon Frey, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

**Filed June 29, 1971, Ser. No. 157,830**

**Claims priority, application Germany, June 30, 1970, G 70 24 412.1**

**Int. Cl. B60q** *9/00*

**U.S. Cl. 240—8.41** **5 Claims**



An installation for the control of incandescent light bulbs of vehicles, especially of the brake and tail lights of motor vehicles by means of fiber-optical light conductors, whereby one light conductor each is arranged on each vehicle side which adjoins with one end a light source and extends with its other end to the light window of the associated side of a rear ceiling light arranged above the rear window of the vehicle.

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3,761,707

## STIGMATICALLY IMAGING DOUBLE FOCUSING MASS SPECTROMETER

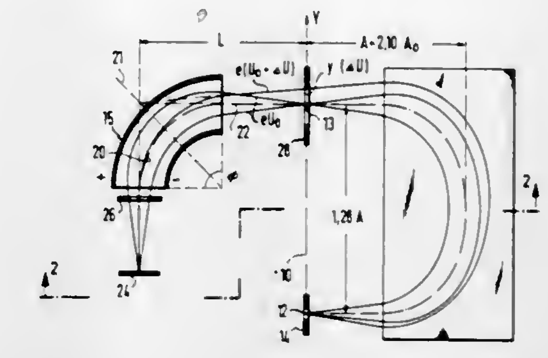
**Helmut J. Liebl, Eching, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany**

**Filed June 21, 1971, Ser. No. 155,061**

**Claims priority, application Germany, June 26, 1970, P 20 31 811.0**

**Int. Cl. H01j** *39/34*; **B01d** *59/44*

**U.S. Cl. 250—41.9 ME** **4 Claims**



To provide for better energy definition in a stigmatically focussing mass spectrometer with directional and energy focussing, the ions to be analysed travel consecutively through an entry diaphragm, a first analyser, a diaphragm to limit the energy range ("energy diaphragm"), a second analyser, (the energy dispersion factor of which is equal but opposite to that of the first analyser) and an exit diaphragm. One analyser is a momentum analyser operating with a wedge-shaped magnetic field, and the other analyser is an energy analyser operating with an electric field. The momentum analyser comprises a magnet having mutually opposite plane pole-piece surfaces which are mutually inclined and have straight edges which are located at the interval $A_0$ parallel to the intersection line of the planes containing the pole-piece surfaces. A device is provided for adjusting the magnetic field intensity $B_A$ at the interval $A = 2.10A_0$ from the intersection line to the value $B_A = {}_{1.35}\, p/Ae$ ($e$ = charge of the ions; $p$ = momentum of the ions to be detected). The diaphragms between which the impulse analyser is placed are arranged on the intersection line with a mutual interval of approximately 1.28 A, and the energy analyser, which forms a stigmatic image of the entry side one of the two diaphragms between which it is arranged upon the exit side one of the two said diaphragms, contains a spherical condenser or a cylindrical condenser through which the ions travel in planes which pass through the cylinder axis.

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3,761,708

## ELECTRON SUPPRESSOR GRID FOR A MASS SPECTROMETER

**Wallace W. Roepke, Hopkins, and Kenneth G. Pung, Chaska, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

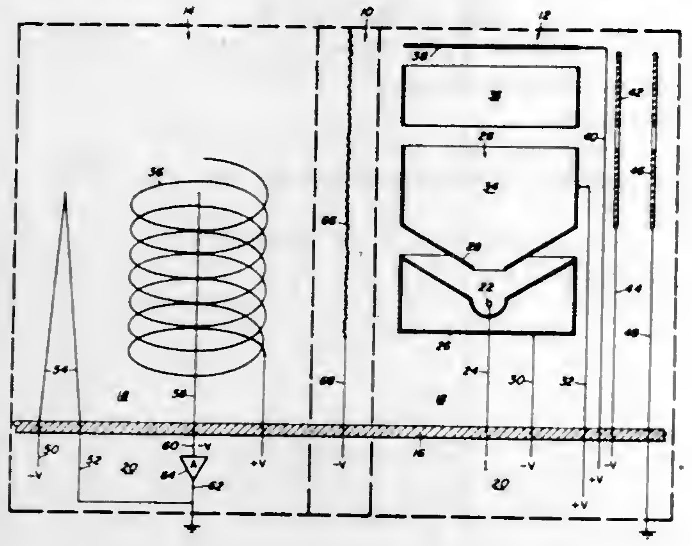
**Continuation-in-part of Ser. No. 86,870, Oct. 20, 1970, abandoned.**

**Filed Oct. 8, 1971, Ser. No. 189,472**

**Int. Cl. H01j** *39/34*

**U.S. Cl. 250—41.9 G** **4 Claims**

A suppressor grid is positioned between an ionizer and 1n ion gauge in a mass spectrometer. The suppressor grid prevents electron interference with the ion gauge for operation at ultrahigh vacuum levels.



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### 3,761,709
### METHOD AND APPARATUS FOR OBSERVING BIOLOGICAL SPECIMENS USING A SCANNING ELECTRON MICROSCOPE

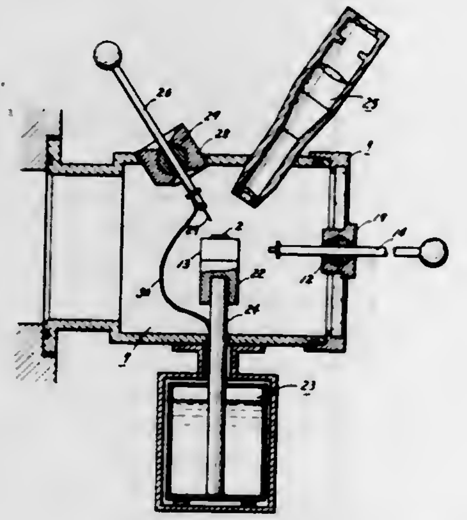
**Yoichi Hasegawa, and Yuji Nagasawa, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 7, 1972, Ser. No. 232,405**

**Claims priority, application Japan, Mar. 16, 1971, 46/17578; Oct. 29, 1971, 46/100577; Nov. 2, 1971, 46/87408**

**Int. Cl. H01j** *37/18*

**U.S. Cl. 250—49.5 B** **6 Claims**



A biological specimen is prepared for electron scanning by plunging it into liquid nitrogen or liquid Freon. The frozen specimen together with its holder is transferred into the pre-evacuation chamber of a scanning electron microscope and treated according to the purpose of observation. When this is completed, the specimen is transferred to the specimen stage in the specimen chamber, the stage being maintained cold. The scanning electron beam is applied and the specimen image is observed.

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### 3,761,710
### COMPLEX THERMOLUMINESCENCE DOSIMETER

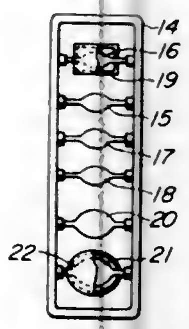
**Tadaoki Yamashita; Osamu Yamamoto, both of Hirakata; Hajimu Oonishi, Neyagawa; Hidetsugu Kawabata, Kobe, and Saburo Kitamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Continuation of Ser. No. 26,676, April 8, 1970, abandoned. This application Feb. 8, 1972, Ser. No. 224,640**

**Int. Cl. G01t** *1/11*

**U.S. Cl. 250—71 R** **3 Claims**

Complex thermoluminescence dosimeter comprising a plurality of thermoluminescent elements secured to a single frame, whereby the accuracy of measurement can be increased and the handling can be simplified. The present dosimeter is in particular useful for a general analysis of ionizing radiations including measurement of neutrons.



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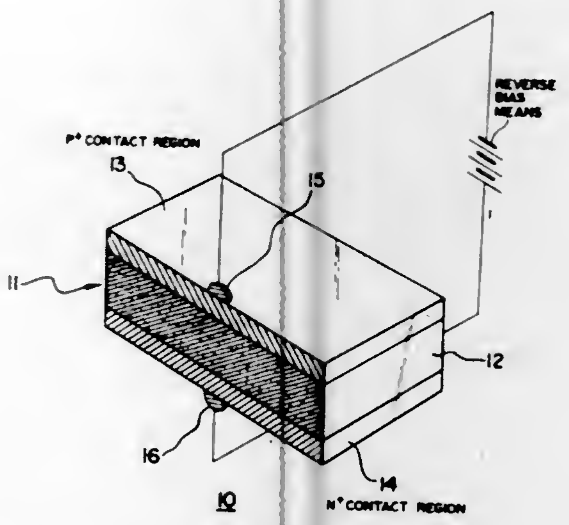
### 3,761,711
### IMPROVED GERMANIUM GAMMA DETECTORS HAVING NON-IDEAL CONTACTS AND DEEP LEVEL INDUCING IMPURITIES THEREIN

**Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Feb. 25, 1972, Ser. No. 229,490**

**Int. Cl. G01t** *1/24*

**U.S. Cl. 250 – 370** **10 Claims**



Improved gamma detectors utilize a nonideal N+ or P+ electrode to provide restricted leakage curent and doping with deep level donor or acceptor-inducing impurities to provide apparent near-intrinsic characteristic and maintain wide depletion regions therein.

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### 3,761,712
### GAUGE FOR DETERMINING THE PERCENTAGE BY WEIGHT OF MOISTURE CONTAINED IN A BULK MATERIAL TRANSPORTED ON A MOVING CONVEYOR

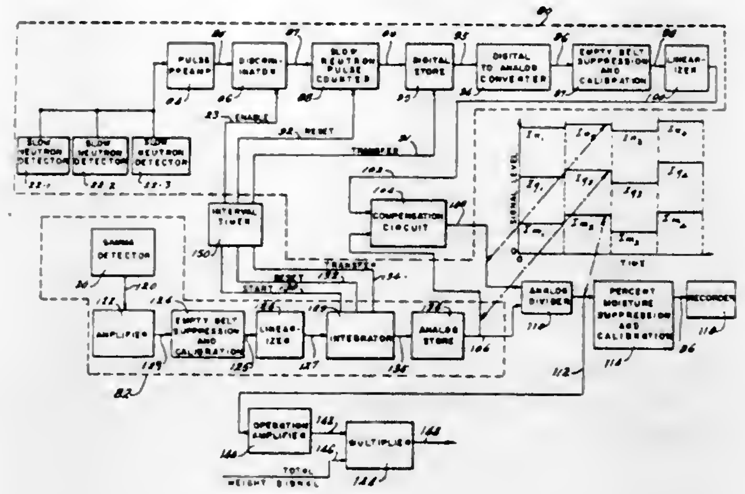
**Paul L. Listerman, Cincinnati, Ohio, assignor to The Ohmart Corporation, Cincinnati, Ohio**

**Filed May 11, 1971, Ser. No. 142,161**

**Int. Cl. Go1n** *23/06*

**U.S. Cl. 250 – 388** **6 Claims**

A moisture gauge including a radiation source for irradiating with fast neutrons and gamma radiation a bulk substance having moisture contained therein, an analog detector responsive to gamma radiation which has interacted with a predetermined fractional cross-sectional area of the bulk substance to produce a first electrical signal of an analog-type, the amplitude of which is correlated to the instantaneous total weight of the bulk substance including contained moisture, and a pulse-type detector which is responsive to slow neutrons generated by the interaction of fast neutrons and hydrogen atoms of the contained moisture in said predetermined fractional cross-sectional area to produce a second electrical signal of a pulse-type, the pulse rate of which is correlated to the weight of the moisture contained in the bulk substance. The electrical signals generated by the pulse-type slow neutron detector and the analog-type gamma detector are separately accumulated for predetermined intervals, with the slow neutron and gamma accumulating intervals being both equal and synchronized and preferably in the range of 20–80 seconds. An electrical circuit divides the successive moisture weight accumulation signals and the successive total weight accumulation signals to provide successive outputs correlated to the percentage by weight of moisture contained in the bulk substance passing through the gauge during the successive accumulation intervals.



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### 3,761,713
### METHOD OF DETECTING LOOSE ROCK

**Robert H. Merrill, Lakewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed July 13, 1971, Ser. No. 162,065**

**Int. Cl. G01v** *9/00*; **G01j** *5/18*

**U.S. Cl. 250 – 341** **1 Claim**

A method of detecting loose rock in excavated passages through subterranean structures by an analysis of thermal conditions at the surfaces of said passages measured with infrared responsive instruments.

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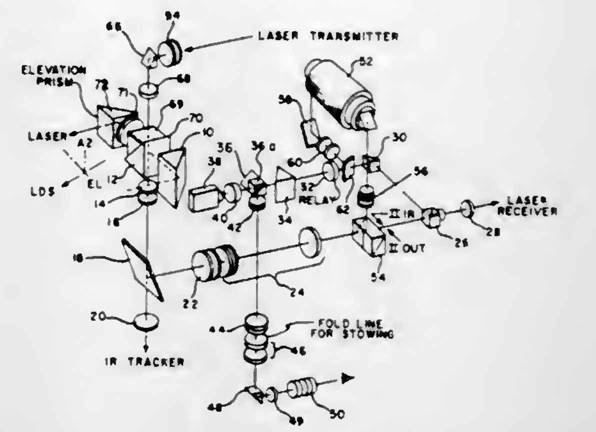
### 3,761,714
### STABILIZED OPTICAL TRACKING DEVICE

**Peter Fernandez, Lackawanna; Seymour Rosin, Massapequa Park, L.I., both of N.Y.; Wright H. Scidmore, Langhorne, Pa., and Gordon H. Sigman, Jr., Delran, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed May 16, 1972, Ser. No. 253,743**

**Int. Cl. G01t** *1/16*

**U.S. Cl. 250 – 348** **14 Claims**



A stabilized optical tracking device is disclosed as capable of assisting an airborne observer in tracking a ground target through highly accurate optical sighting means. A unique feature of the inventive device is the integration into a single optical system of a variety of modular subsystems whereby extreme flexibility in usage is provided.

The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

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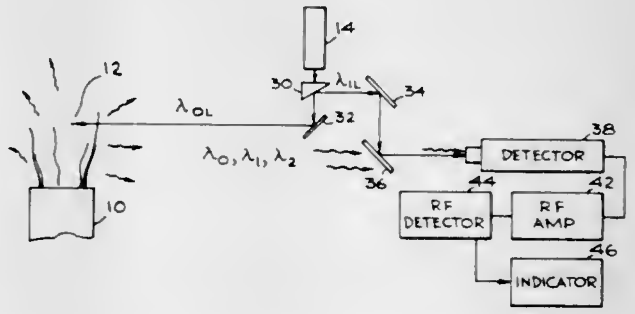
### 3,761,715
### ATMOSPHERIC POLLUTANT SENSING DEVICE

**Robert T. Menzies, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.**

**Continuation-in-part of Ser. No. 80,583, Oct. 14, 1970, abandoned. This application Apr. 21, 1971, Ser. No. 135,929**

**Int. Cl. G01j** *3/00*

**U.S. Cl. 250 – 338** **13 Claims**



It has been found that a laser can provide emissions which are absorbed by pollutants, such as NO, $NO_2$, $N_2O_4$, $SO_2$ and CO. The laser emission is used to resonantly excite the pollutant molecules and then to act as a local oscillator for a superheterodyne radiometer to detect the fluorescence occurring in response to the stimulation.

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### 3,761,716
### OPTICAL WAVEGUIDE MODE DISCRIMINATOR

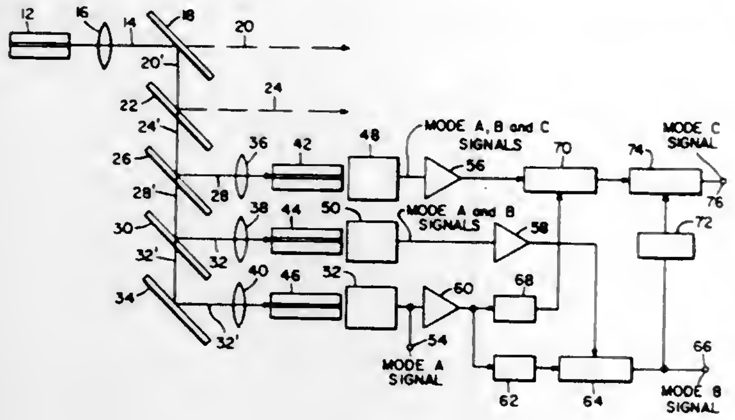
**Felix P. Kapron, R.D. No. 1, Box 139, Elmira, N.Y., and Donald B. Keck, Chequers Cir., Big Flats, N.Y.**

**Filed Jan. 3, 1972, Ser. No. 214,896**

**Int. Cl. H04b** *9/00*; **329** *144*

**U.S. Cl. 250—199** **8 Claims**

Light radiating from a multimode optical waveguide is coupled to the input ends of a plurality of optical waveguide mode discriminators, each of which has a light detector for receiving light radiating from the output thereof. The first mode discriminator propagates only the lowest order mode propagated by the multimode waveguide, the second mode discriminator propagates only the lowest and second lowest order modes, and so on. The amplitudes and phases of the lowest order mode signals provided by the detectors associated with the first and second mode discriminators are equalized and these two equalized signals are coupled to a substracter circuit which cancels the lowest order mode signals and provides a signal representative of the information propagated by the second lowest order mode. In a similar manner the information propagated by higher order modes can be obtained.



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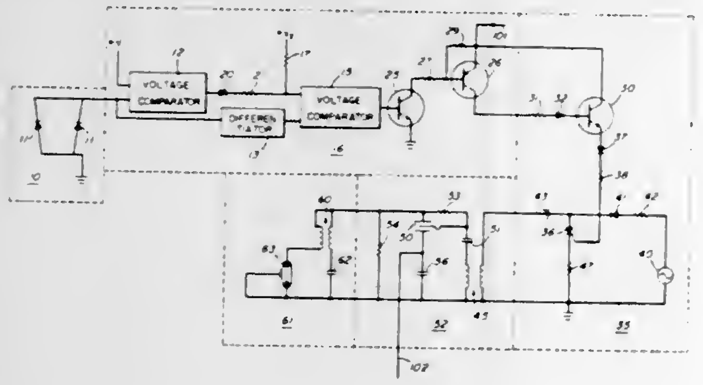
### 3,761,717
### AUTOMATIC SENSITIVITY ADJUSTMENT IN FLASH BLINDNESS PROTECTIVE DEVICE

**Edward W. Jekowski, Brighton, and Kenneth J. Foster, Dedham, both of Mass., assignors to The United States of America as represented by the Secretary of the NaVy, Washington, D.C.**

**Filed May 15, 1972, Ser. No. 253,269**
**Int. Cl. H01j** *39/12*

**U.S. Cl. 250—209 R** **10 Claims**



Automatic sensitivity adjustment for day-night operation in flash blindness protective apparatus is obtained by supplying an electrical signal produced by a light detector in response to transient light through a differentiator circuit to a first comparator which provides an output signal if the differentiated electrical signal exceeds a first predetermined amplitude. If the electrical signal produced by the light detector in response to ambient light exceeds a predetermined maximum at a second comparator, the second comparator supplies an output signal to the first comparator to change the first predetermined amplitude to a second predetermined amplitude. An output signal from the first comparator initiates operation of eye protective measures. An interlock switching circuit provides protection from high voltages when the apparatus is not in use.

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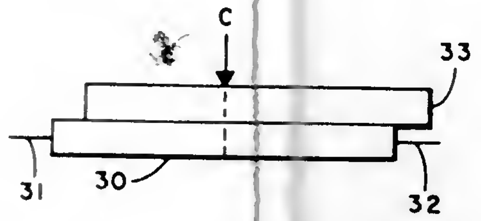
### 3,761,718
### DETECTOR APPARATUS USING SEMICONDUCTOR LAMINAE

**Alan N. Kohn, Brookline; Jack K. Lennard, Framingham; Jay J. Schlickman, Lexington, and Robert A. Weagant, Chelmsford, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.**

**Continuation-in-part of Ser. No. 855,918, Sept. 8, 1969, abandoned. This application Sept. 7, 1972, Ser. No. 287,194**
**Int. Cl. G01j** *3/34*

**U.S. Cl. 250—211 R** **14 Claims**



A new multi-layer semiconductor photo detector arrangement, and scientific instruments embodying the underlying novel principle.

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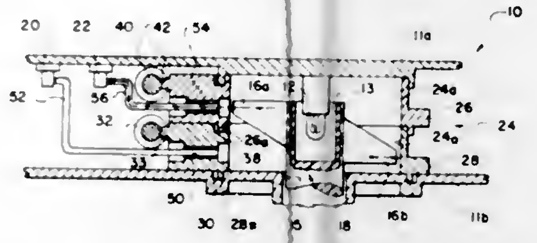
### 3,761,719
### SEQUENCER APPARATUS

**Hans Otto Stoever, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Apr. 28, 1972, Ser. No. 248,515**
**Int. Cl. G02b** *5/14*

**U.S. Cl. 250—227 R** **3 Claims**



Apparatus for sequentially producing a plurality of output control signals to control the operations of particular work stations of an electrographic apparatus, respectively, includes a plurality of light actuable photocells, each such photocell being: (*a*) disposed in a predetermined fixed spaced relationship with respect to the other photocells, and (*b*) adapted when actuated by light to produce an output control signal. The apparatus further includes a source of light; a rotatable light conductive member disposed with respect to the light source to sequentially conduct light from the source to illuminate different positions of a predetermined path; a plurality of light pipes defining light conducting paths, each such pipe being movable to selectable positions relative to the predetermined path and adapted when illuminated to conduct light to a particular photocell to actuate such photocell; and at least one mechanism coupled to the pipes for varying pipe position relative to the predetermined path to thereby adjust the timed sequence of the output signals produced by the photocells.

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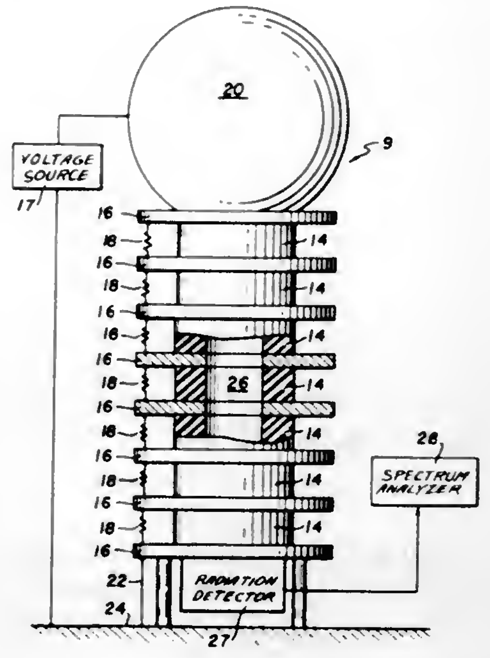
### 3,761,720
### METHOD OF LOCATING DEFECTS IN A HIGH-VOLTAGE INSULATING TUBE

**Joe W. Gray; Geoffrey W. Hartnell, and James C. Legg, all of Manhattan, Kans., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Aug. 30, 1972, Ser. No. 284,782**
**Int. Cl. G01r** *31/08;* **G01t** *1/16*

**U.S. Cl. 250—302** **5 Claims**

Defects causing backstreaming of electrons in a Van de Graaff generator are located by determining the end-point energy of the X-ray spectrum resulting from the stopping of these electrons, taking a ratio of the voltage associated with the end-point energy to the machine-generated voltage, and using this ratio as a fraction of the generator length to determine defect location.



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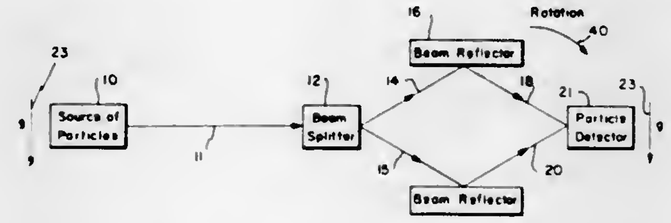
### 3,761,721
### MATTER WAVE INTERFEROMETRIC APPARATUS

**Saul Altshuler, Manhattan Beach, and Lee M. Frantz, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.**

**Filed July 6, 1972, Ser. No. 269,492**
**Int. Cl. H01s** *1/00*

**U.S. Cl. 250—41.3** **17 Claims**



An apparatus is disclosed which makes use of interferometry of the matter waves accompanying particles such as neutral atoms, charged ions or electrons. The apparatus includes a particle source and a beam splitter for splitting the original beam of particles into two beams having accompanying matter waves which are coherent with each other. The two beams are recombined by a pair of beam reflectors, and the resulting interference fringes may be measured by a suitable particle detector. Such an apparatus may be used for measuring variation of the gravitational field or the rate of rotation of the apparatus. In both cases the apparatus is capable of ultra precise measurement of acceleration, of the mass of an object or the rate of rotation. Alternatively, by utilizing charged particles it is possible to measure a magnetic field to obtain a magnetometer of great sensitivity. The apparatus may finally be used to carry out holography by matter waves.

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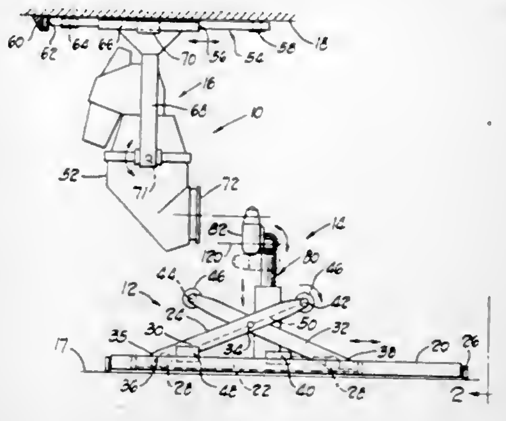
### 3,761,722
### TIRE INSPECTION APPARATUS

**Donald T. Green, Shaker Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio**

**Filed Aug. 18, 1971, Ser. No. 172,741**
**Int. Cl. H01j** *35/16*

**U.S. Cl. 250—490** **7 Claims**

A tire inspection system is disclosed which includes a tire manipulator, an X-ray imaging system and an X-ray source apparatus for directing X-rays through a tire being inspected to the imaging system. The X-ray source apparatus includes a wide-angle X-ray tube surrounded by a movable window member. The window member enables relatively narrow beams of X-rays to be directed through the tire at desired locations. A manipulatable X-ray tube supporting apparatus is provided which includes a projecting member for supporting a two-part X-ray tube housing. One tube housing member is adjustably positionable so that the projecting support member and the X-ray tube can coextend with each other thereby enabling insertion of the tube through the rim of a relatively small tire without interference between the tire rim and the tube support member.



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### 3,761,723
### APPARATUS FOR MEASURING DIMENSIONAL DEVIATIONS

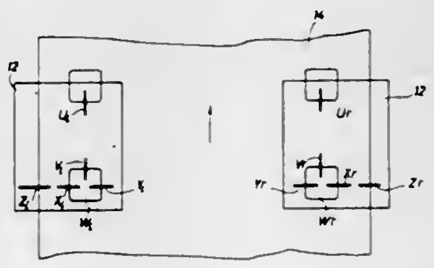
**Etienne Marie DeCock, Hamme, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium**

**Filed June 28, 1971, Ser. No. 157,417**

**Claims priority, application Great Britain, June 29, 1970, 31,345/70**

**Int. Cl. G01b** *7/04*

**U.S. Cl. 250—560** **5 Claims**



Method and apparatus for testing dimension deviations of a travelling web. A light source is provided on one side of the web and rows of fibre optics are provided on the opposite side of the web. The fibre optics terminate in photo-detectors which produce an electric signal if the radiation path from the light source to the corresponding fibres is not intercepted by the web. The photo-detectors may be arranged in a matrix so that according to lines running parallel to the diagonal of the matrix indications may be received about the rate of deviations from standard dimensions.

The method and apparatus are particularly intended for measuring edge perforations in cine film.

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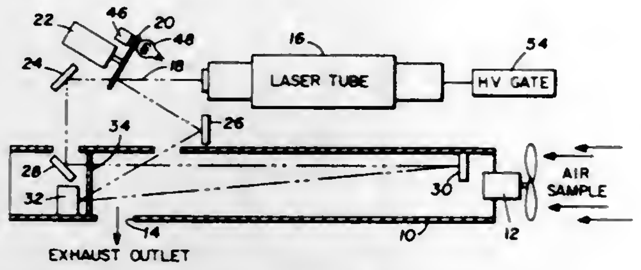
### 3,761,724
### DOUBLE BEAM HYDROCARBON GAS DETECTOR

**James L. Dennis, Dallas, Tex., assignor to Resalab, Incorporated, Dallas, Tex.**

**Filed July 6, 1972, Ser. No. 269,317**
**Int. Cl. G01n** *21/26*

**U.S. Cl. 250—565** **21 Claims**

Hydrocarbon gas in a sample is measured by a double beam detector responding to the transmission of absorption properties of the gas in response to applied radiation from a laser source. Monochromatic light from the laser source is split into two radiation beams, a sample path beam and a reference path beam, and directed to a radiation detector which sequentially responds to the reference energy and the sample energy. A difference in the absorption by the sample path energy with respect to the reference path energy produces two, different level, output signals from the detector. The sample energy signal and reference energy signal are respectively directed to a sample channel circuit and a reference channel circuit. Outputs from the individual circuits are amplified logarithmically and applied to inputs of a differential amplifier wherein the ratio of the sample signal to the reference signal produces a voltage for actuating a meter indicator. For a hydrocarbon gas content in a sample in excess of a predetermined limit, an alarm circuit actuates to give an audible warning of an excessive gas content.



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### 3,761,725

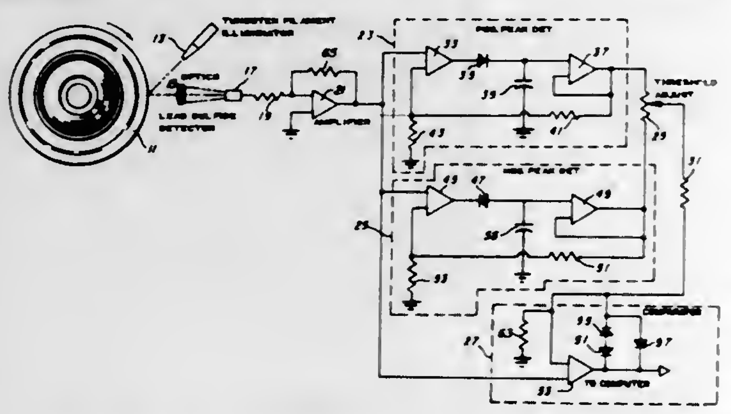
### AUTOMATIC TIRE IDENTIFIER WITH THRESHOLD SETTING PROPORTIONAL TO THE RECEIVED SIGNALS

**Lawrence L. Meyer, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 30, 1971, Ser. No. 214,219**

**Int. Cl. G01n** *21/30*

**U.S. Cl. 250—566** **5 Claims**



An automatic tire identification system starts with a tire having a black code printed on the tire tread. The tread and code are illuminated and the reflected energy is read and detected. The reflected energy from the tire tread and code is differentiated to produce a signal representative of the code read from the tire. The code is then decoded to determine the code printed on the tire tread.

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### 3,761,726

### PHOTOELECTRIC DEVICE FOR MEASURING VARIATIONS IN THE OPTICAL DENSITY OF A MOVING WEB

**Etienne Marie De Cock, Calvarieberg 11, Hamme, Belgium**

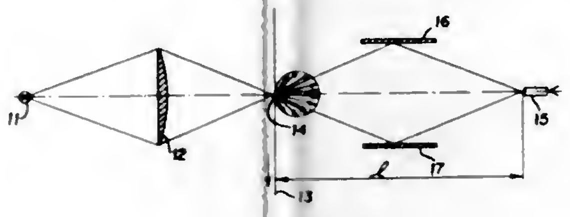
**Filed Oct. 28, 1971, Ser. No. 193,421**

**Claims priority, application Great Britain, Oct. 29, 1970, 51,518/70**

**Int. Cl. G01n** *21/18, 21/30;* **G02b** *5/14*

**U.S. Cl. 250—571** **7 Claims**

A photoelectric device for measuring variations in the optical density of a moving web of radiation diffusing material. The device comprises a phototransistor mounted at one side of the web and a light source mounted at the other side of the web. Between the web and the transistor one or more mirrors are mounted normal to the plane of the web. The location and dimensions of the mirror or mirrors is such that variations in the distance between the web and the detector have substantially no effect on the output of the phototransistor so that the device is insensitive to vibration and tilting of the web.



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### 3,761,727

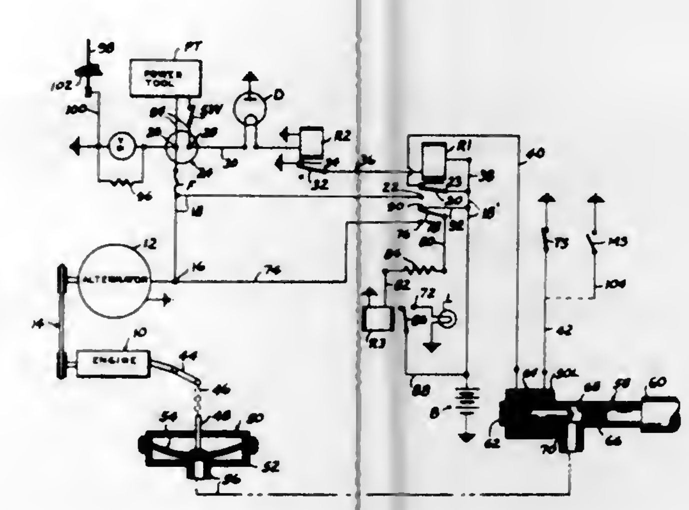
### ALTERNATOR POWER SOURCE

**Raymond R. Santilli, P.O. Box 1032, Oklahoma City, Okla.**

**Filed Mar. 16, 1972, Ser. No. 235,281**

**Int. Cl. H02p** *9/04*

**U.S. Cl. 290—40** **4 Claims**



A power tool operating current is obtained from the alternator of a vehicle engine. A circuit is connected with the vehicle alternator to battery wiring and includes a solenoid operating a vacuum actuated diaphragm for increasing the engine speed and including a relay disconnecting the battery from the circuit when the relay is energized. The relay energizes the solenoid in response to closing the starting switch of a power tool connected with the circuit.

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### 3,761,728

### METHOD OF FORMING DENTAL RESTORATIONS

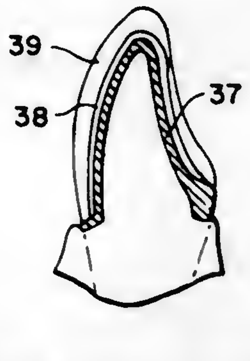
**Jacob Kochavi, c/o Star Dental Laboratories, 718 El Camino, San Mateo, Calif.**

**Division of Ser. No. 61,917, Aug. 7, 1970, Pat. No. 3,716,418. This application July 20, 1972, Ser. No. 273,497**

**Int. Cl. B23p** *17/00*

**U.S. Cl. 29—160.6** **8 Claims**

A restoration is made using an alloy of approximately 80% Ni — 20% Cr employing conventional casting techniques heretofore used with precious metals. After the casting has been cleaned it is heated under vacuum commencing at 1,400°-1,500F. and increasing gradually to approximately 1950°F. The vacuum is released and the casting cooled — a grayish blue colored compound forming on the surface. Porosities and casting defects may be conveniently repaired using ceramic gold paste. The metal may be soldered, to other metal members, whether of the same alloy or gold or any other conventional metal. Porcelain is then applied, again using conventional techniques. The product is characterized by the very good bond of porcelain to metal, extreme dimensional accuracy and relatively low cost of metal.



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### 3,761,729

### ARRANGEMENT FOR PREVENTING EXCESSIVE SPEEDS IN INTERNAL COMBUSTION ENGINES

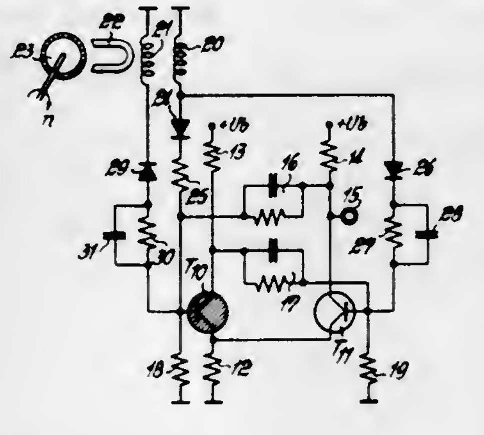
**Gerhard Engel, Stuttgart-Zuffenhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Dec. 16, 1971, Ser. No. 208,679**

**Claims priority, application Germany, Dec. 17, 1970, P 20 62 140.3**

**Int. Cl. H02g** *3/00*

**U.S. Cl. 307—10 R** **5 Claims**



An AC tachometer has two output windings, each connected to one input of the same bistable circuit. A rectifier and filter circuit or a Zener diode is interconnected between each output winding and bistable circuit input. When the voltage at the bistable inputs exceeds a predetermined magnitude, the bistable input flips to the second stable state. A signal resulting from the change in state can be used to cut off fuel supply to stop the engine.

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### 3,761,730

### AUTOMATIC SEAT LATCH UNLOCKING APPARATUS AND CIRCUIT THEREFOR

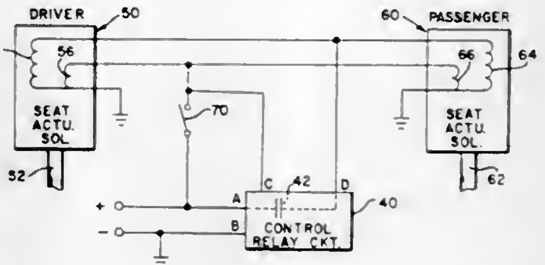
**Thomas A. Wright, Grand Rapids, Mich., assignor to Hi-Ram Inc., Grandville, Mich.**

**Filed July 10, 1972, Ser. No. 270,452**

**Int. Cl. B62d** *45/00*

**U.S. Cl. 307—10 R** **9 Claims**

A solenoid having a pull-in coil and a hold-in coil is adapted to be mounted within the seat back of the front seat of a vehicle such that the plunger associated with the solenoid can be actuated to release the seat locking mechanism. As one of the doors of the vehicle is opened, the solenoid is actuated to unlock the seat-locking mechanism and maintain the mechanism unlocked to allow the seat backs to be moved forward. The pull-in coil is automatically actuated for a predetermined time sufficient to ensure the plunger has been moved to unlatch the locking mechanism after which the pull-in coil is deactuated. The hold-in coil is continuously actuated while the vehicle door is open.



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### 3,761,731

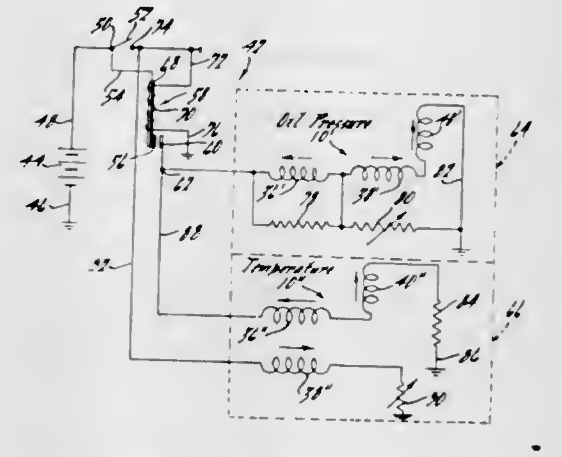
### MOTOR VEHICLE MAGNETIC GAUGE CIRCUITRY WITH TIME DELAY SWITCHING

**James F. Burgett, Garden City, and Lawrence J. Vanderberg, Ann Arbor, both of Mich., assignors to Ford Motor Corporation, Dearborn, Mich.**

**Filed May 22, 1972, Ser. No. 255,609**

**Int. Cl. G01r** *7/00*

**U.S. Cl. 307—10 R** **8 Claims**



Motor vehicle magnetic gauge circuitry is described. The circuitry includes a source of electrical energy, a vehicle ignition switch, time delay switching means, and a magnetic gauge having a plurality of electrical coils. The circuitry may be used to indicate engine oil pressure or temperature or other physical condition. The time delay switching means provides zeroing of the magnetic gauge after the ignition switch is opened and may be used to simulate physical conditions occurring subsequent to the opening of the ignition switch. Preferably, the time delay switching means is a thermal relay.

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### 3,761,732

### ROTATING SONIC ENERGY WAVE

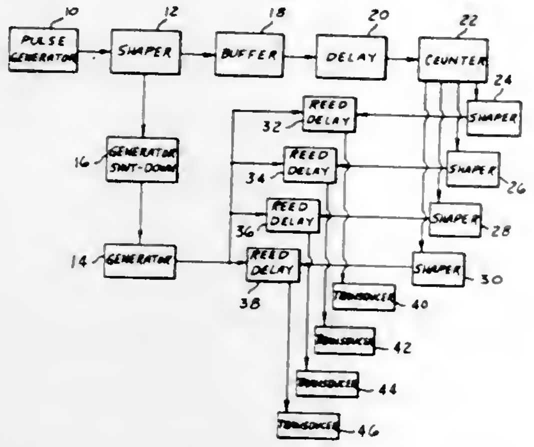
**Henry K. Ratcliff, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.**

**Filed Sept. 15, 1972, Ser. No. 289,500**

**Int. Cl. H02j** *3/14*

**U.S. Cl. 307—41** **15 Claims**

The output of a single sonic generator is rotated to different transducers separately located on a diaphragm of a tank containing cleaning fluid. The rotating of the output to different transducers establishes a ripple action in the cleaning fluid to vary energy levels at any given location within the tank. The varying energy levels allows the gas formed within the fluid to rise to the top of the cleaning fluid in a process called degassing. Rotation of the output may be accomp lished by interrupting the output of the sonic generator and, while the output is interrupted, to switch the connection to another transducer. The switching of the output of the sonic generator from transducer to transducer varies the standing wave pattern, thereby allowing the gas to rise to the surface. The interrupting of the sonic output and the switching action are accomplished by specially designed solid state circuits to obtain optimum performance.



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### 3,761,733
### ARRANGEMENT FOR UNINTERRUPTABLE POWER SUPPLY TO A LOAD FROM TWO OR MORE A.C. POWER SOURCES

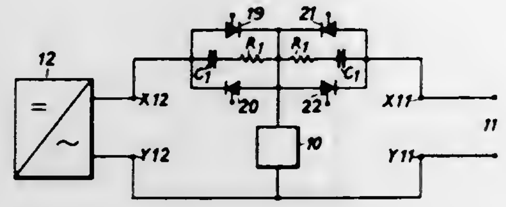
**Tadeusz Wolpert, Vendelso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden**

**Filed Aug. 25, 1972, Ser. No. 283,754**

**Claims priority, application Sweden, Sept. 7, 1971, 11316/71**

**Int. Cl. H02j** *9/00*

**U.S. Cl. 307—64** **9 Claims**



The present invention relates to an arrangement for uninterruptable power supply to a load, for example a data processing equipment. To the load at least two A.C. power supplies are connected each via a pair of antiparallel connected controlled rectifiers, for example thyristors. One rectifier in each pair is brought to its conductive state simultaneously as the corresponding rectifier in all the other pairs and remains in this state as long as the voltage across and the current through the load have the same polarity during one half-period. During the next half-period the other rectifier in all the pairs is brought to its conductive state. Upon failure in one of the power supplies, for example the mains, both the rectifiers in the pair connected to this supply will become blocked and power to the load will be delivered from the other power supply or supplies via the other controlled rectifier pairs.

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### 3,761,734
### ELECTRONIC CONTROL SYSTEM

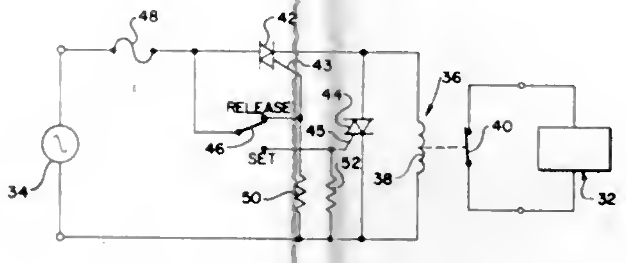
**Roland T. Windecker, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Continuation of Ser. No. 886,635, Dec. 19, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,223**

**Int. Cl. H02h** *7/20*

**U.S. Cl. 307—92** **10 Claims**

An electronic system for effecting fail-safe operation of a selectively operable control system, including a selectively energizable switch which selectively couples the control system to a source of power for rendering the control system operative and inoperative. First and second power switches are connected between a source of power and the selectively energizable switch for supplying energizing and deenergizing signals to the selectively energizable switch to render the control system operative and inoperative respectively. A switch control means controls conduction of the power switches, and a current limiting device is serially connected between the source of power and the selectively energizable switc for disrupting the supply of power to the selectively energizable switch in order to render the control system inoperative, when the switch control means applies energizing signals to effect conduction of one of the power switches while the other power switch remains in an energized state in the absence of the application of a signal thereto causing energization thereof.



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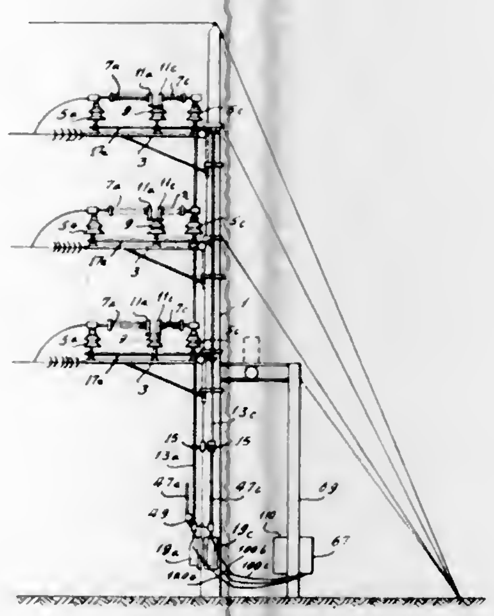
### 3,761,735
### POWER APPARATUS FOR OPERATING ELECTRIC DISCONNECT SWITCHES

**John L. Turner, and Fred L. Diener, both of Fairview Heights, Ill., assignors to Turner Electric Corporation, East St. Louis, Ill.**

**Filed July 6, 1972, Ser. No. 269,467**

**Int. Cl. H01h** *31/00*

**U.S. Cl. 307—112** **35 Claims**



Power apparatus for operating electric transmission line disconnect switches includes an hydraulic motor normally mechanically coupled to the switch, an electrically driven hydraulic pump, an hydraulic pressure accumulator to provide hydraulic pressure in the event of electric power failure, solenoid-actuated valves controlling the admission of hydraulic pressure to the hydraulic motor, and selectively locally or remotely controlled relays for controlling the solenoid-actuated hydraulic motor control valves. Means is provided for uncoupling the switch from the hydraulic actuator to permit manual operation of the switch or remote testing of the power apparatus.

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### 3,761,736
### PROXIMITY SWITCHES

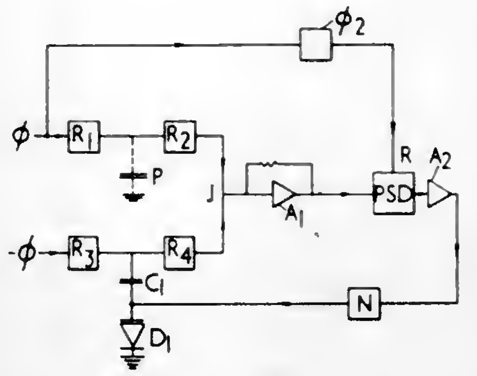
**Gordon Malcolm Edge, and Peter William Lee, both of Cambridge, England, assignors to Godwin Warren Engineering Limited, High Wycombe, Buckinghamshire, England**

**Filed Apr. 10, 1972, Ser. No. 242,629**

**Claims priority, application Great Britain, May 12, 1971, 14,456/71**

**Int. Cl. H01h** *35/00*

**U.S. Cl. 307—116** **6 Claims**



A proximity switch, the sensing portion of which is an insulated electrode whose capacitance can be changed, for example by bringing one's finger close to the electrode, to operate the switch, wherein the charge in capacitance is coupled into a bridge circuit which has a delayed self-balancing action, so that rapid changes in capacitance will operate the switch but long term slow changes in the capacitance will fail to operate the switch.

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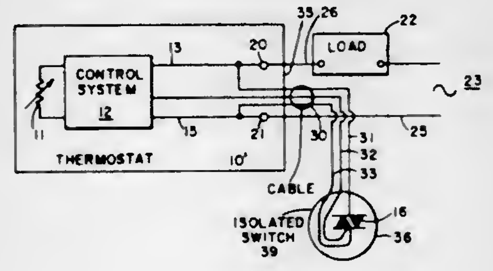
### 3,761,737
### THERMOSTAT WITH THERMALLY ISOLATED SWITCH MEANS

**Nathaniel Robbins, Jr., Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Aug. 23, 1972, Ser. No. 283,014**

**Int. Cl. H01h** *37/10*

**U.S. Cl. 307—117** **11 Claims**



A solid state type of thermostat that utilizes a switch means, such as a triac, for control of a remote ambient temperature altering means is disclosed in a number of possible applications. The solid state switch means or triac generates sufficient heat so that it requires isolation from the balance of the thermostat. In the present invention, the switch is isolated by placing it on a cable and inserting it into a hollow wall, in a conduit stub, or into a conventional mounting box within the wall.

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### 3,761,738
### REMOTE CONTROL ELECTRICAL CIRCUIT

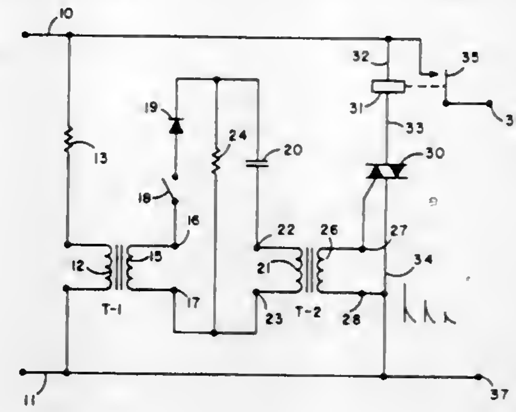
**Andrew F. Kay, Del Mar, and Sam Messin, Solana Beach, both of Calif., assignors to Switchpack Systems, Inc., Solana Beach, Calif.**

**Filed Sept. 27, 1971, Ser. No. 183,842**

**Int. Cl. H01h** *47/32*

**U.S. Cl. 307—140** **7 Claims**

The invention disclosed involves an electrical control circuit wherein a relatively low voltage is used to control a relatively high voltage and includes switching means in the low voltage circuit and means responsive to said switching means for generating a low voltage pulse upon closing said switch, and switching means in the high voltage circuit responsive to the low voltage pulse to become conductive.



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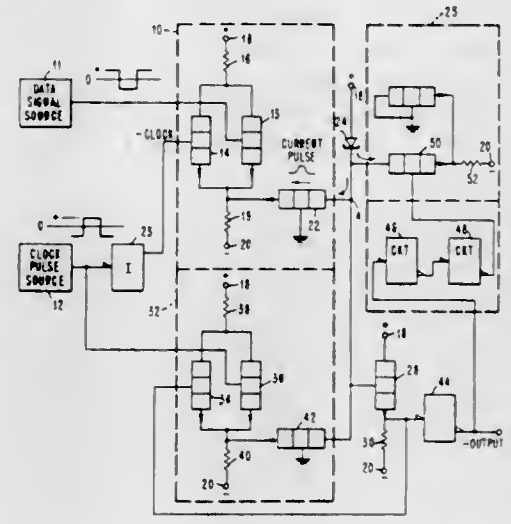
### 3,761,739
### NON-METASTABLE ASYNCHRONOUS LATCH

**Don G. East, Poughkeepsie; Donald G. Fugere, Wappingers Falls; Virgil R. Householder, Cold Spring, and George C. Ling, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 23, 1972, Ser. No. 265,857**

**Int. Cl. H03k** *17/00*

**U.S. Cl. 307—206** **5 Claims**



This specification describes an asynchronous latch employing a tunnel diode to prevent the latch from entering what is referred to as a metastable state. The synchronous latch relies on the coincidental occurrence of at least two signals that occur randomly with respect to one another. When one of the pulses is rising while the other is falling the latch being unable to decipher the situation enters a metastable state and produces an output signal that falls halfway between its usual latched and unlatched outputs. The tunnel diode is used to detect an overlap in the transitions of the two signals and to activate the latch to prevent the occurrence of this metastable state.

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### 3,761,740
### FREQUENCY DETECTOR

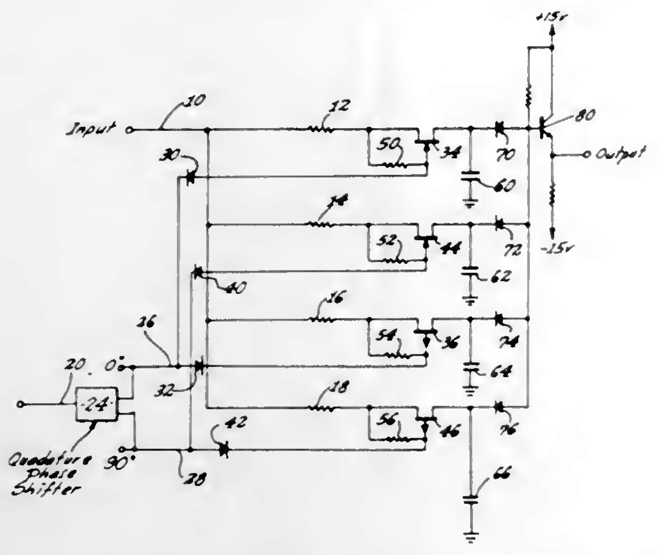
**Joel A. Naive, LaJolla, Calif., assignor to Wavetek, San Diego, Calif.**

**Continuation of Ser. No. 134,957, April 19, 1971, abandoned. This application June 23, 1972, Ser. No. 265,584**

**Int. Cl. H03k** *5/20*

**U.S. Cl. 307—233** **9 Claims**

This invention relates to a system for detecting the presence of a signal having a specified frequency. The input signal is subjected to a plurality of detector stages, each comprised of an electronic switch and a capacitor. The control signals applied to the detector stages are at the frequency to be detected. Each stage has a particular phase displacement relative to all other stages. When the phase of the input signal substantially coincides with that of one of the detector stages an output signal is produced. The plurality of stages are connected to a network wherein the maximum stage output signal establishes the system output amplitude by means of a majority signal selection technique.



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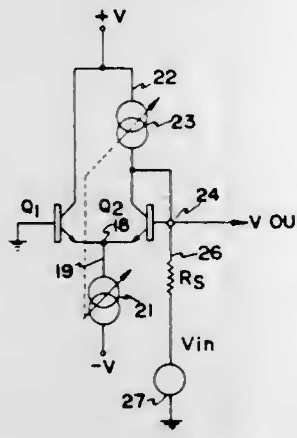
### 3,761,741
## ELECTRICALLY VARIABLE IMPEDANCE UTILIZING THE BASE EMITTER JUNCTIONS OF TRANSISTORS

**Werner H. Hoeft, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.**

**Filed June 21, 1972, Ser. No. 265,217**

**Int. Cl. H03k** *5/00*

**U.S. Cl. 307—237** **11 Claims**



A variable impedance utilizing the diode characteristic of the base-emitter junction of a transistor. The voltage across the base-emitter stays constant so that a control voltage used to change the d.c. emitter current changes the impedance of the junction. When such a diode connected transistor shunts a signal line it attenuates the signal on the signal line. In order to reduce non-linearities in impedance caused by application of the signal, a diode connected transistor has another transistor connected thereto in a differential circuit so that an increase in the emitter current (decrease in impedance) of one due to application of the signal causes a corresponding decrease in emitter current (and increase in impedance) of the other so that the non-linearities cancel out. In another embodiment the two transistors are placed in the feedback loop of a differential amplifier with the impedance of the two transistors serving as the load for the differential amplifier, which further reduces nonlinearities. Several such transistor circuits may be connected in series to provide more junctions and hence a wider range of variable impedance.

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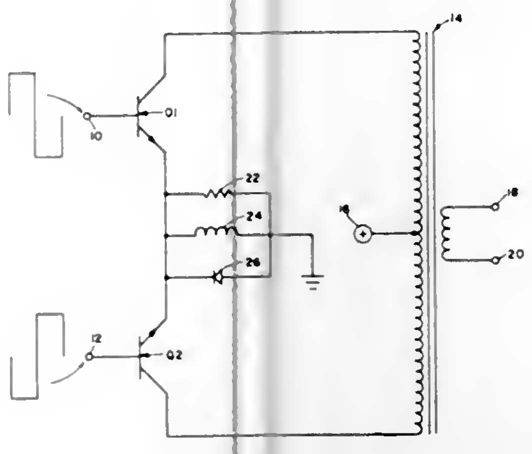
### 3,761,742
## HIGH-FREQUENCY CHOPPER SUPPLY

**Robert J. Titus, and William J. Kelly, both of Sauquoit, N.Y., assignors to Cogar Corporation, Utica, N.Y.**

**Filed Oct. 1, 1971, Ser. No. 185,703**

**Int. Cl. H03k** *17/00*

**U.S. Cl. 307—240** **6 Claims**



A chopper supply in which two transistors are alternately switched on and off to control opposite-polarity currents to flow through the primary winding of a transformer. The emitters of the two transistors are connected together and an inductor is included in the emitter circuits. The inductor functions to delay the turning on of each transistor until the other has fully turned off.

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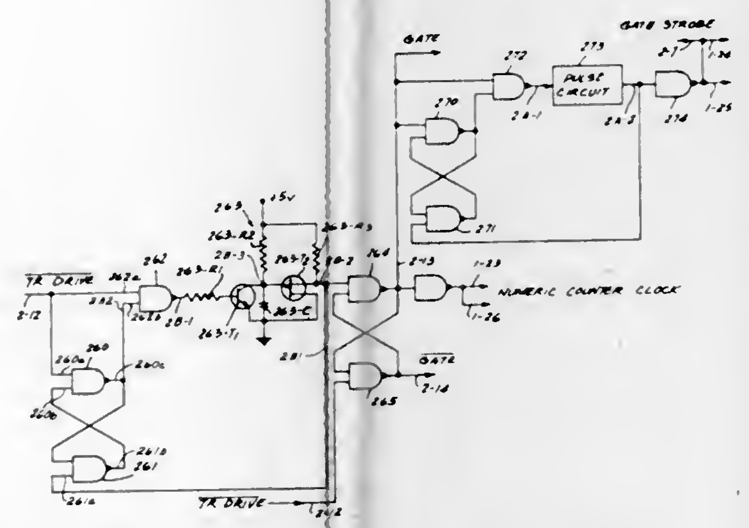
### 3,761,743
## MONOSTABLE CIRCUIT

**Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.**

**Division of Ser. No. 839,971, July 8, 1969, Pat. No. 3,622,763. This application Sept. 30, 1971, Ser. No. 185,076**

**Int. Cl. H03k** *3/26*

**U.S. Cl. 307—273** **1 Claim**



A noise immune monostable circuit generating delayed pulses for digital control circuits such as found in numerical control systems. The timing cycle is initiated in response to a first logic level and interrupted if the input signal shifts to a second logic level. A bistable circuit is reset by the output from the timing circuit and serves to restore the timing circuit to initial condtion, terminating the output pulse from the timing circuit.

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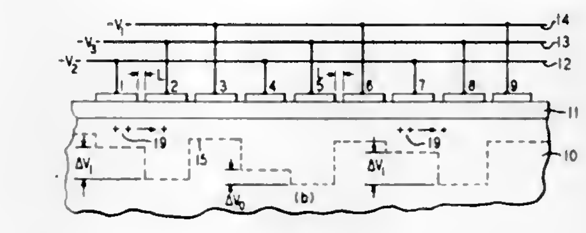
### 3,761,744
## SEMICONDUCTOR CHARGE TRANSFER DEVICES

**George Elwood Smith, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Dec. 2, 1971, Ser. No. 204,239**

**Int. Cl. H01l** *11/14*

**U.S. Cl. 307—304** **10 Claims**



Shift register devices of the type that transfer charge along a semiconductor wafer through the appropriate formation of successive potential wells in the wafer are described. Transferred charge is regenerated by designing the parameters of the device such that, if charge is to be transferred from one storage region to the next, the potential well for causing the transfer is of sufficient value to cause avalanche breakdown; whereas if no charge is to be transferred, the potential well is insufficient to cause avalanche breakdown. Selective breakdown in this manner regenerates the charge being transferred through the production of additional current carriers.

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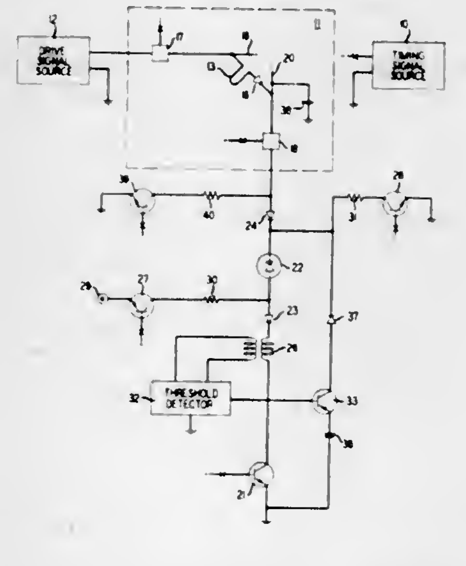
### 3,761,745
## CIRCUIT EMPLOYING CHARGE STORAGE DIODE IN FAST DISCHARGE MODE

**Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Division of Ser. No. 781,167, Dec. 4, 1968, Pat. No. 3,626,213. This application Oct. 23, 1970, Ser. No. 83,633**

**Int. Cl. H03k** *3/33*

**U.S. Cl. 307—319** **8 Claims**



The current output amplitude of a charge storage diode in its reverse conducting condition is absolutely limited by detecting the attainment of a predetermined output level and in response thereto applying an aiding feedback to the diode to terminate the current rapidly by purging the remaining carriers at a much faster rate. This mode of diode operation is employed with current detection in a memory drive circuit and with voltage detection in a sample and hold circuit. One aspect of the fast diode discharge mode is also employed in a time shared sample and hold circuit.

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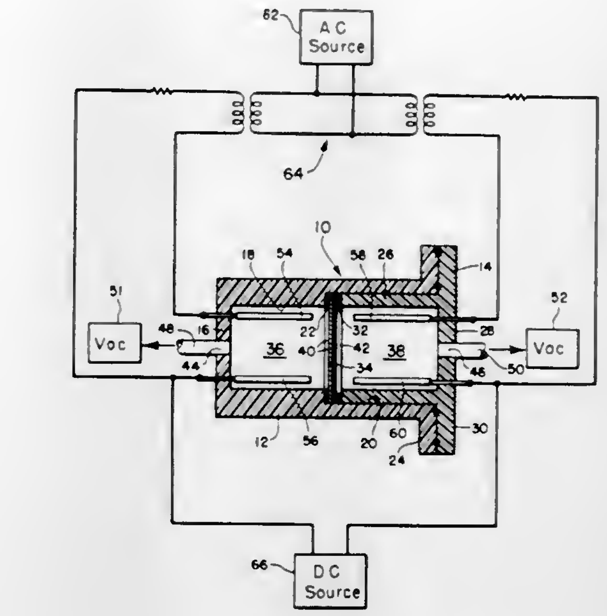
### 3,761,746
## POLING OF FERRO-ELECTRIC SUBSTRATES

**Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Nov. 8, 1971, Ser. No. 196,351**

**Int. Cl. H01v** *7/00*

**U.S. Cl. 310—8** **3 Claims**



Ferro-electric bodies are poled by employing an ionized gas or other medium as a poling electrode.

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### 3,761,747
## LINEAR INDUCTION MOTOR MAGNETIC FIELD ASSEMBLAGE PRODUCING CONSTANT THRUST PER UNIT WIDTH OF THE ARMATURE

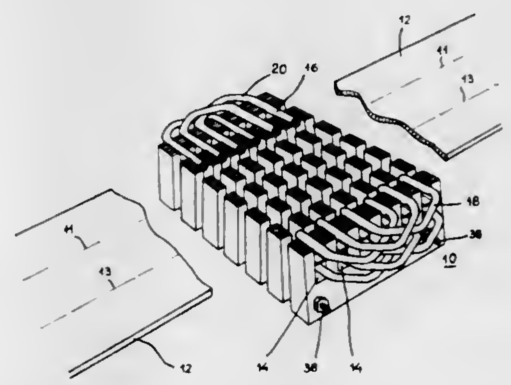
**Andre Allaigre, Poisat, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France**

**Filed May 17, 1972, Ser. No. 254,178**

**Claims priority, application France, May 28, 1971, 7119683**

**Int. Cl. H02k** *41/04*

**U.S. Cl. 310—13** **4 Claims**

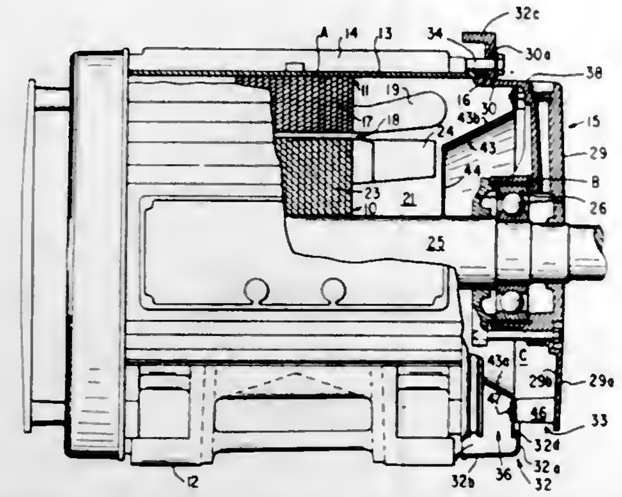


A linear induction motor, polyphase energizable magnetic field assemblage defining a plurality of spaced apart longitudinally extending pole faces energized by a common winding. Each pole face is linked with its proper induced loop current in the armature so that the motor produces a substantially constant reaction force per unit width of the armature permitting homogeneous propelling, braking or tensioning of distinct juxtaposed armature strips.

### 3,761,748
### DYNAMOELECTRIC MACHINE HAVING END SHIELDS FOR IMPROVED VENTILATION

**Frederick W. Baumann, Scotia, and Albert R. Miller, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed July 10, 1972, Ser. No. 270,109**
**Int. Cl. H02k** *9/00*
**U.S. Cl. 310—58** **5 Claims**



A dynamoelectric machine is described wherein the end shields are mounted to the frame by means of a plurality of paced apart rabbet fits. Cooling air enters the machine through inlet openings in the end shield and, after cooling of the end turns of the machine winding, the air is exhausted through the zone between the end shield and the machine frame. The end shield also includes an external deflection flange which directs the exhaust air between fins along the exterior surface of the frame to cool the machine. Preferably, the deflection flange is thickened adjacent the rabbet fits to permit the end shields to be held securely during machining of the pads for the rabbet fits.

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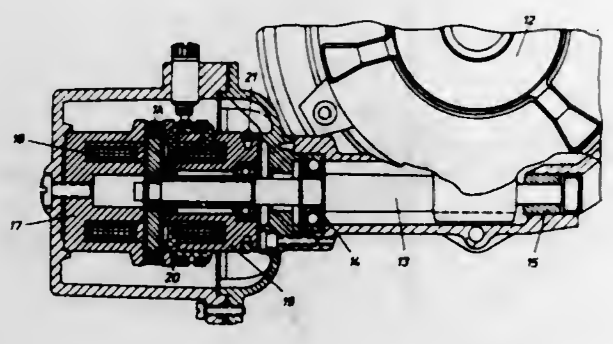
### 3,761,749
### DISK FOR SINGLE-DISK MAGNETIC CLUTCHES

**Willi Hermann Marti, Basel, Switzerland, assignor to Delmoran AG, Basel, Switzerland**

**Filed Dec. 6, 1971, Ser. No. 205,213**
**Claims priority, application Switzerland, Dec. 15, 1970, 18574/70**
**Int. Cl. H02k** *7/10*
**U.S. Cl. 310—78** **8 Claims**



A disk-shaped armature for use in single-disk magnetic friction clutches has a disk-shaped body of iron which carries one or two friction generating facings consisting of sintered metal or metallic gauze impregnated with a synthetic plastic lubricant, such as polytetrafluorethylene. The facings extend beyond the end faces of the body and can form part of relatively thick rings which are recessed into the respective end faces or they may be applied to a single light metal ring which surrounds the body or to discrete light metal rings which are recessed into the respective end faces of the body.

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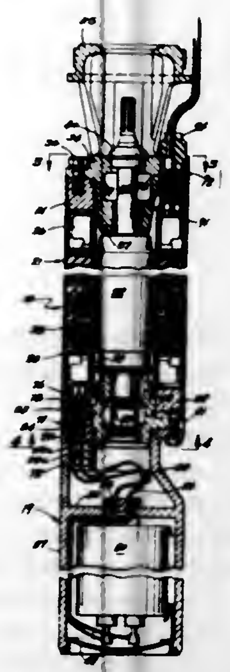
### 3,761,750
### SUBMERSIBLE ELECTRIC MOTOR

**Ronald E. Green, Davenport, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa**

**Continuation of Ser. No. 68,323, Aug. 31, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,100**
**Int. Cl. H02k** *5/10*
**U.S. Cl. 310—87** **1 Claim**



A well casing extends to ground level and has a pump and a submersible single-phase induction motor therein. The motor has main and start windings connected to a three-lead connector at its upper end and a two-lead connector at its lower end. A capacitor may be mounted below the motor and connected via the two-lead connector, or it may be located at ground level and connected via the three-lead connector.

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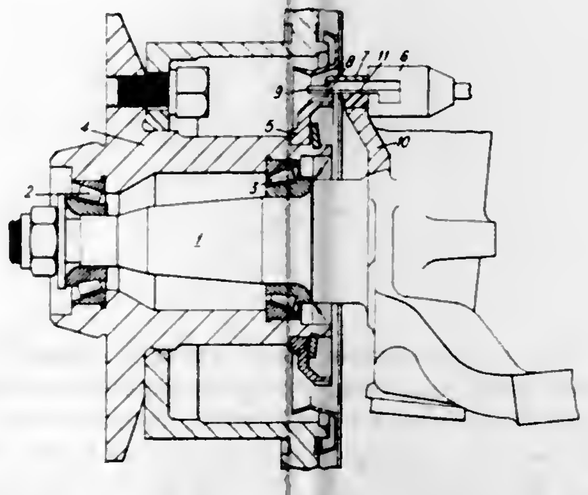
### 3,761,751
### MOUNTING ARRANGEMENT FOR WHEEL SPEED SENSORS

**Werner Fink; Dieter Kircher, both of Frankfurt, and Reinhard Rauschenbach, Langen-Oberlinden, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.**

**Filed Jan. 26, 1972, Ser. No. 220,805**
**Claims priority, application Germany, Mar. 19, 1971, P 21 13 307.3**
**Int. Cl. H02k** *19/20*
**U.S. Cl. 310—168** **8 Claims**



A fixing flange for a speed sensor enables the scanning head to be easily mounted with respect to a tooth disc, said tooth disc being mounted on the wheel hub to provide a unitary structure and the fixing flange is secured to the axle or the kingpin to provide a unitary structure. In one embodiment, the air gap between the magnetic pole pieces carried by the sensor and the outer periphery of the tooth disc is determined by the radius of the toothed disc and the radius of the magnetic pole pieces, the outer periphery of the toothed disc and the outer periphery of the fixing flange being coaxial with respect to the axis of the axle, the sensor being secured to the outer periphery of the fixing flange. In another embodiment, the magnetic pole pieces are covered with a plastic layer having a thickness equal to the desired air gap between the toothed disc and magnetic pole pieces of the sensor. The sensor is mounted to the fixing flange so that the sensor extends therethrough and the plastic layer is in contact with the outer periphery of the toothed disc. During the first rotation, the toothed disc will scrape the plastic layer off of the magnetic pole pieces thereby ensuring the desired air gap.

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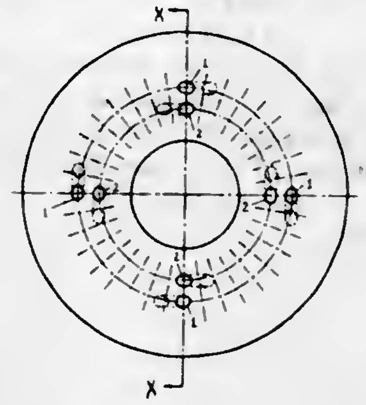
### 3,761,752
### DYNAMOELECTRIC MACHINE WINDING SUPPORT

**Antony Faithfull Anderson, Newcastle upon Tyne, England, assignor to International Research & Development Company Limited, Newcastle upon Tyne, England**

**Filed May 1, 1972, Ser. No. 249,155**
**Int. Cl. H02k** *1/18*
**U.S. Cl. 310—179** **14 Claims**



A multi-phase stationary winding for an alternating current dynamo-electric machine, either of the type having a superconducting rotor winding or the air-gap winding iron-core type, is provided in which the conductors of the winding are helically disposed on a support structure so as to provide adequate mechanical support for the winding and reduce or obviate the problems of end winding support met in conventional alternating current machines of a similar nature.

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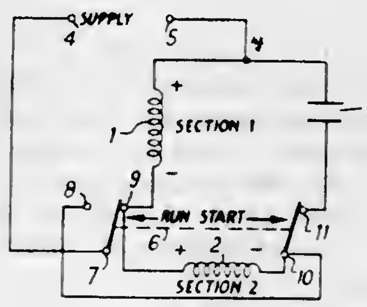
### 3,761,753
### ROTARY ELECTRIC MACHINES

**William Fong, Westbury-on-Trym, Bristol, and Gordon Hindle Rawcliffe, Bristol, both of England, assignors to National Research Development Corporation, London, England**

**Filed Feb. 18, 1972, Ser. No. 227,548**
**Claims priority, application Great Britain, Mar. 12, 1971, 06698/71**
**Int. Cl. H02k** *1/14*
**U.S. Cl. 310—185** **7 Claims**



A single-phase alternating current capacitor-start electric motor with a stator winding wound as two components spaced 90±N° electrically, where N is a small angle but never zero. Both components are energised for running. For starting, one component is energised serially with a capacitor to provide starting torque.

Phase reversal of one component reverses the direction of rotation.

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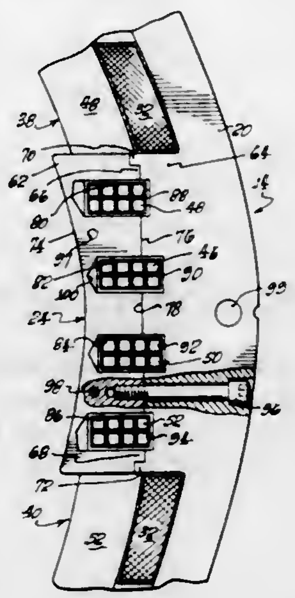
### 3,761,754
### DYNAMOELECTRIC MACHINE FIELD STRUCTURE AND METHOD FOR FORMING

**Walter F. Boesel, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.**

**Continuation of Ser. No. 103,407, Jan. 4, 1971, abandoned. This application Apr. 23, 1972, Ser. No. 237,576**
**Int. Cl. H02k** *1/16*
**U.S. Cl. 310—218** **17 Claims**



A salient pole for a dynamoelectric machine has a pole tip element with a smooth pole face at the air gap and an oppositely disposed attachment face arranged to register at an interface with the mating attachment face of a pole body comprising part of a yoke. Slots to accommodate a compensating winding extend from one or both of the attachment faces of the respective pole elements, the slot in the tip element extending into the pole tip toward the smooth face. The mating faces may be secured together by coating one or both of the faces with a bonding agent and thereafter applying a magnetizing force to draw the tip and body parts together while curing of the bond is proceeding.

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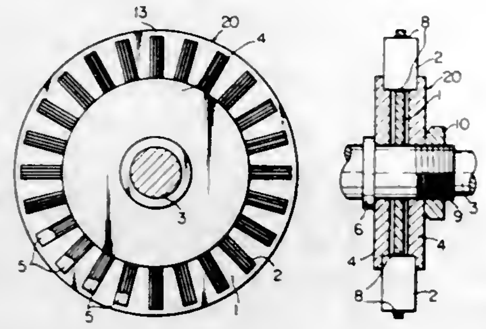
### 3,761,755
### IMPROVED ROTOR

**Seiuemon Inaba; Kanryo Shimizu, and Shigeaki Oyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Fanc Limited, Tokyo, Japan**

**Filed Aug. 18, 1972, Ser. No. 281,643**
**Claims priority, application Japan, Aug. 24, 1971, 46/75999; Aug. 24, 1971, 46/76001**
**Int. Cl. H02k** *1/28*
**U.S. Cl. 310—268** **3 Claims**

An electric pulse motor which has a rotatably supported rotor and a stator assembly including a number of stator elements stationarily arranged around the rotor so that stator teeth of the stator elements axially oppose beyond the rotor via air gaps, the rotor comprising a plurality of rotor teeth, each being consituted by stacking a plurality of laminations, and an index support means provided with a plurality of rotor tooth insert slots arranged therein equiangularly in the circumferential direction of said rotor, said plurality of rotor teeth being inserted in said insert slots of said index support



means and being connected to said index support means by a connecting means.

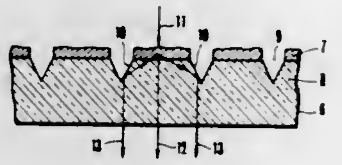
## ERRATUM

For Class 310—8.2 see:
Patent No. 3,761,956

### 3,761,756
### FLUORESCENT SCREENS FOR USE IN CATHODE RAY TUBES

**Kiyoshi Miura, and Yoshifumi Tomita, both of Mobara, Japan, assignors to Hitachi Ltd., Tokyo, Japan**

**Filed Dec. 28, 1971, Ser. No. 213,028**
**Int. Cl. H01j** *29/32*
**U.S. Cl. 313—92 R** **8 Claims**



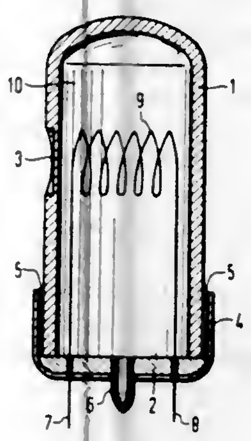
In a fluorescent screen for use in a cathode ray tube used for image formation of the class including a phosphor film coated on the surface of a face plate, there are provided a plurality of hills and valleys on one surface of the face plate, and a phosphor film coated on the tops of the hills. The side walls of the valleys are inclined such that they reflect the light emanated from the phosphor film toward the other surface of the face plate.

### 3,761,757
### INFRARED LAMP WITH SILICON BULB

**Alfred Muhlbauer, Munchen, and Hans Nagorsen, Berlin, both of Germany, assignors to Siemens Aktiengesellschaft, Munich and Erlangen, Germany**

**Filed Dec. 8, 1971, Ser. No. 205,799**
**Claims priority, application Germany, Dec. 10, 1970, P 20 60 839.3**
**Int. Cl. H01j** *5/16, 61/38*
**U.S. Cl. 313—110** **3 Claims**

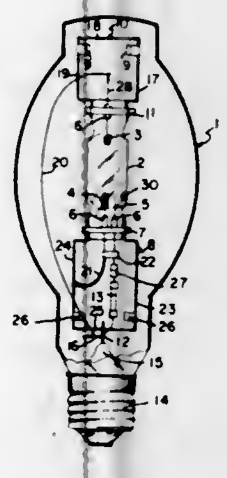
In an infrared lamp instead of a glass or quartz bulb, a tube sealed at one end and consisting of pyrolytically precipitated, polycrystalline silicon is used. It is gas-tight even at a wall thickness of 0.5 mm and mechanically stable even at elevated temperatures, up to 1,300° C. Silicon possesses a distinct filter effect and is permeable only to beams with a wave length greater than 1.1 μ.



### 3,761,758
### METAL HALIDE LAMP CONTAINING MERCURY, LIGHT EMITTING METAL, SODIUM AND ANOTHER ALKALI METAL

**William I. Bamberg, Watertown; Warren C. Gungle, Danvers, and Frederic Koury, Lexington, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.**

**Filed Jan. 27, 1972, Ser. No. 221,222**
**Int. Cl. H01j** *61/18*
**U.S. Cl. 313—229** **2 Claims**



In a metal halide arc discharge lamp having an arc tube fill including mercury, halogen, sodium and a light emitting metal, controlled amounts of cesium, potassium or rubidium are added to the arc tube fill.

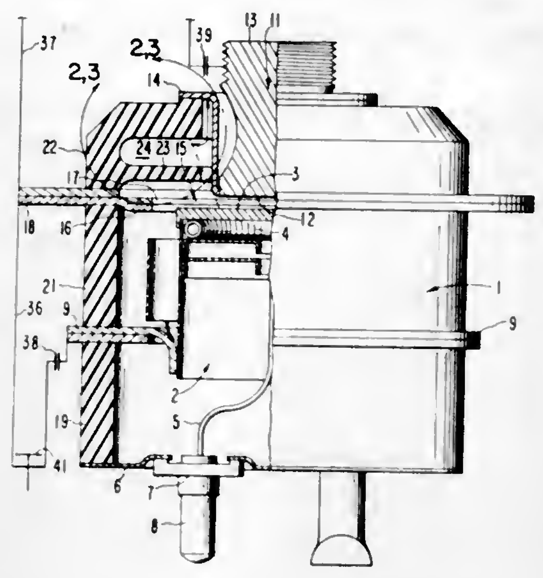
### 3,761,759
### SPEWING SHIELD FOR PLANAR TRIODE TUBES

**Werner Brunhart, and Wendell G. Hardman, both of Salt Lake City, Utah, assignors to Varian Associates, Palo Alto, Calif.**

**Continuation of Ser. No. 111,061, Jan. 29, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,314**
**Int. Cl. H01j** *1/88, 19/44*
**U.S. Cl. 313—326** **5 Claims**

A planar triode tube is disclosed wherein the anode-to-grid insulator includes an inwardly protruding annular spewing shield for shielding the inside of the anode-to-grid insulator from deposit of materials spewed from the cathode, grid and

other portions of the tube. The spewing shield is formed as an integral portion of the anode-to-grid insulator being of one

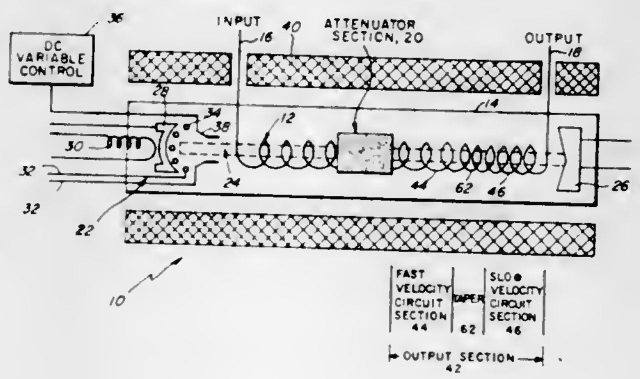


piece unitary construction all of the same material without joints between portions thereof.

### 3,761,760
### CIRCUIT VELOCITY STEP TAPER FOR SUPPRESSION OF BACKWARD WAVE OSCILLATION IN ELECTRON INTERACTION DEVICES

**Robert Harper, Concord; Jeffrey Wong, Boston, and David Zavadil, Newton Center, all of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed July 3, 1972, Ser. No. 268,332**
**Int. Cl. H01j** *25/34*
**U.S. Cl. 315—3.6** **2 Claims**

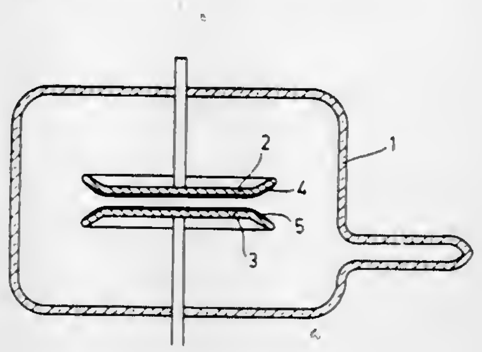


The output section of a helix type traveling wave tube or a transparent type traveling wave tube is provided with velocity step sections dimensioned so that a backward traveling circuit wave on the slow helix section synchronous with the slow space charge beam wave becomes synchronous with the fast space charge beam wave when traveling on the fast helix section. The step taper substantially suppresses backward oscillations which plague traveling wave tube devices. The phenomena provided by the structure of the invention is understood in terms of the coupled mode theory with particular attention to the Kompfner dip condition where the boundary conditions are such that the circuit voltages of the two half waves with different velocities add and the beam voltages cancel. All the RF energy then is transferred into the beam.

### 3,761,761
### DEVICE COMPRISING AN ELECTRIC HIGH VACUUM DISCHARGE TUBE PROVIDED WITH AT LEAST TWO ELECTRODES NOT DESTINED FOR EMISSION, AND DISCHARGE TUBE FOR SUCH A DEVICE

**Antonius Gerardus Johannes Van Oostrom, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed June 18, 1971, Ser. No. 154,348**
**Claims priority, application Netherlands, June 30, 1970, 7009601**
**Int. Cl. H01j** *19/30;* **H01h** *9/30*
**U.S. Cl. 313—311** **2 Claims**



The effects of high field emission upon electrodes and screens in high vacuum tubes or switches is reduced by coating copper electrodes with a thin layer of titanium or zirconium. As a result of this, the allowable field strength is increased.

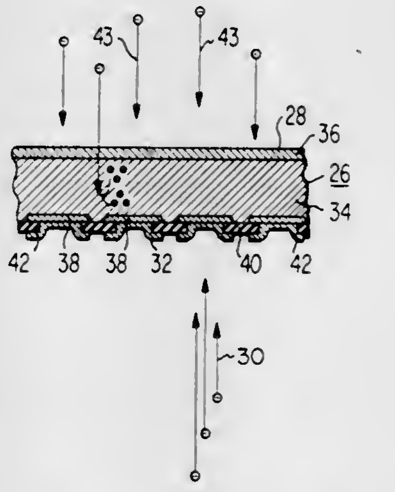
## ERRATUM

For Class 313—110 see:
Patent No. 3,761,957

### 3,761,762
### IMAGE INTENSIFIER CAMERA TUBE HAVING AN IMPROVED ELECTRON BOMBARDMENT INDUCED CONDUCTIVITY CAMERA TUBE TARGET COMPRISING A CHROMIUM BUFFER LAYER

**William Nelson Henry, and William Meigs Kramer, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.**

**Filed Feb. 11, 1972, Ser. No. 225,520**
**Int. Cl. H01j** *31/26*
**U.S. Cl. 315—10** **5 Claims**



An image intensifier camera tube of the type having an image intensifier section for accelerating photoemitted electrons to average energies greater than 1000 electron volts and for focusing the accelerated electrons to one face of a charge storage target which is scanned on its other face by an electron beam. The improvement comprises a buffer layer of chromium on the one face of the target on which the accelerated electrons impinge.

### 3,761,763
### COLOR TELEVISION PICTURE TUBE APPARATUS

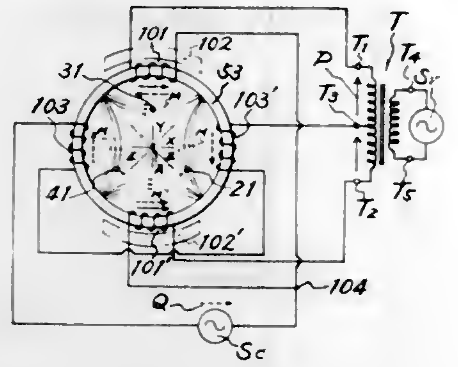
**Sadayoshi Saruta, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan**

**Filed May 10, 1972, Ser. No. 252,091**

**Claims priority, application Japan, May 17, 1971, 46/33482**

**Int. Cl. H01j** *29/50*

**U.S. Cl. 315—13 C** **11 Claims**



A color television picture tube apparatus which displaces the electron beam dispersing position in the plane of the deflection center of the delta gun shadow mask type color cathode-ray tube in which three electron guns are positioned respectively at the vertices of an equilateral triangle so that the beam spot from each electron gun is incident upon each vertex of the equilateral triangle on the screen of the cathode-ray tube, by supplying the correcting current to be superposed on the deflection current to the deflection coil.

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### 3,761,764
### PIEZO-ELECTRICALLY INDUCED HYDRAULIC MOVEMENT OF A MAGNETRON TUNING ELEMENT

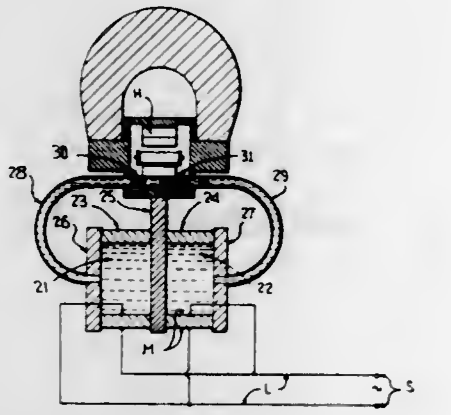
**Michael Barry Brady, Maldon, England, assignor to English Electric Valve Company Limited, Chelmsford, England**

**Filed Feb. 18, 1972, Ser. No. 227,366**

**Claims priority, application Great Britain, Mar. 17, 1971, 7,144/71**

**Int. Cl. H01j** *25/50*

**U.S. Cl. 315—39.61** **7 Claims**



The tuning member of a magnetron is moved hydraulically by liquid which is moved by a piezo-electric element. The piezo-electric element forms part of a chamber containing the liquid, the tuning member being moved by the movement of the liquid in a conduit, of relatively small bore, in communication with the chamber. There may be two chambers and two conduits, providing a push-pull arrangement for moving the tuning member.

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### 3,761,765
### CRT DISPLAY SYSTEM WITH CIRCLE DRAWING

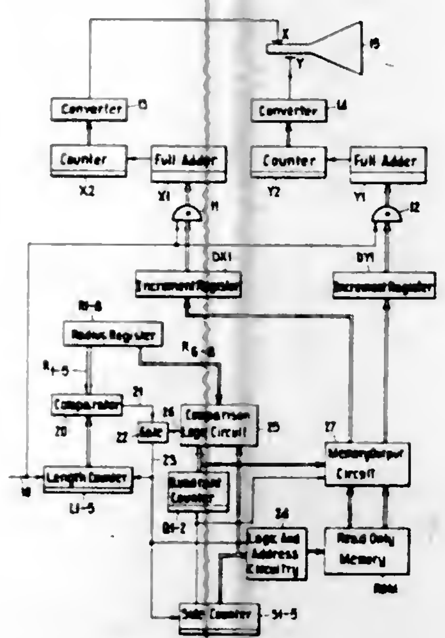
**James Robert Machin, Maidstone; John Matthew Colston, Gravesend, and David John Jibb, Chatham, all of England, assignors to Elliott Brothers Limited, London, England**

**Filed June 12, 1972, Ser. No. 262,075**

**Claims priority, application Great Britain, June 11, 1971, 27,430/71**

**Int. Cl. H01j** *29/70*

**U.S. Cl. 315—23** **10 Claims**



A display system of the CRT type wherein a desired curved line is produced from signals representing the co-ordinates of points spaced along the lengths of the lines to be displayed including means for generating signals representing the co-ordinates of points spaced along the lengths of a succession of adjoining straight lines each of which is of a predetermined length and at a predetermined angle such that the display produced from said signals approximates to a desired curved line. In a particular arrangement the display produced is a many-sided polygon and thus approximates to a circle.

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### 3,761,766
### ELECTRONIC INDICIA DISPLAY SYSTEM

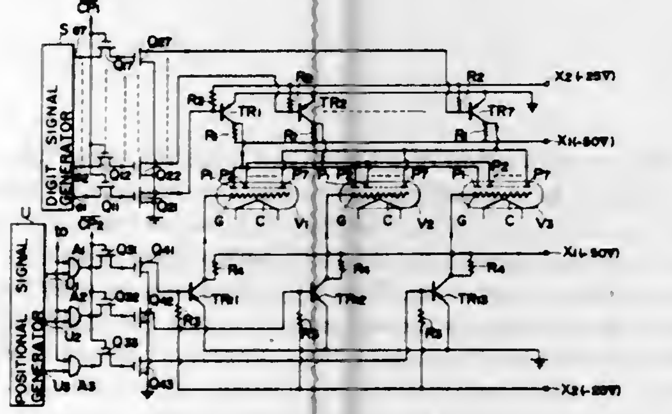
**Isao Hatano; Akira Nagano, both of Otkuni-gun, Kyoto-fu, and Kazuaki Urasaki, Fushimi-ku, Kyoto-syi, Kyoto-fu, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan**

**Filed Nov. 26, 1971, Ser. No. 202,474**

**Claims priority, application Japan, Nov. 25, 1970, 45/104275**

**Int. Cl. H01j** *17/36;* **G09b** *13/00*

**U.S. Cl. 315—84.6** **13 Claims**



An electronic indicia display system having a plurality of figure indicating discharge tubes wherein an improvement is made to eliminate unnecessary luminance of one or more anode segments which results from the pulse deformation. To this end, the generation and termination of either the input signal to the anodes or the input signal to the grid of the tube is delayed and accelerated, respectively, with respect to the other input signal.

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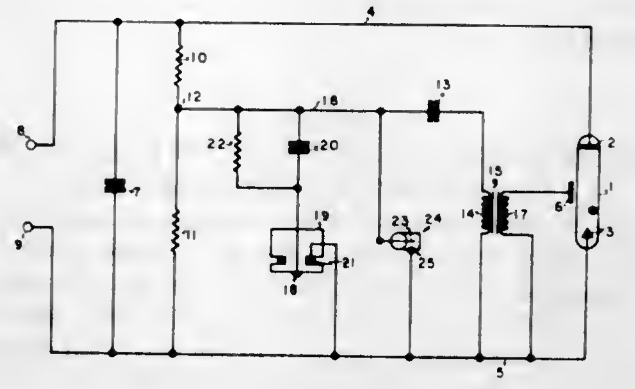
### 3,761,767
### APPARATUS FOR CONTROLLING THE DISCHARGE OF A CAPACITOR

**Robert H. Wallace, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Dec. 28, 1970, Ser. No. 101,779**

**Int. Cl. H05b** *37/00*

**U.S. Cl. 315—241 P** **8 Claims**



A flash tube triggering capacitor and triggering transformer primary winding are connected in series across a power supply resistor to charge the capacitor. A bypass capacitor is connected in series with the terminals of a hot shoe across the resistor, and the terminals of a PC connector are also connected across the resistor. The completion of an electrical path between either the hot shoe terminals or the PC terminals discharges the triggering capacitor into the primary winding to fire a flash tube.

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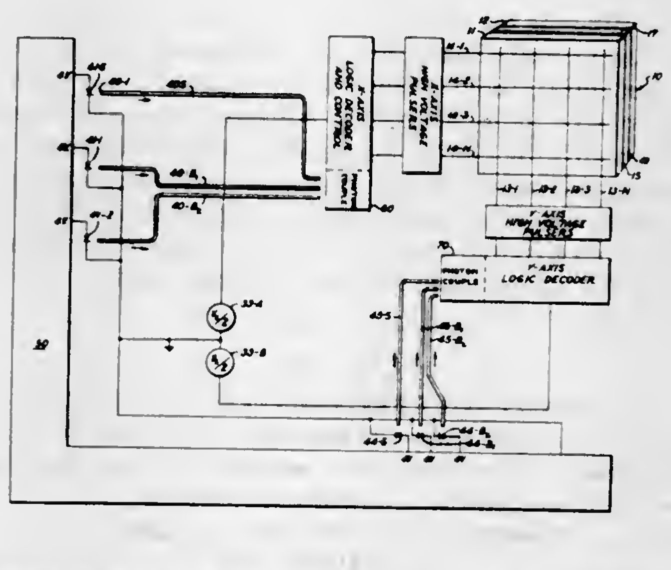
### 3,761,768
### HIGH VOLTAGE INTERFACE ADDRESS CIRCUIT AND METHOD FOR GAS DISCHARGE PANEL

**Larry J. Schmersal, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation-in-part of Ser. No. 851,131, July 18, 1969, Pat. No. 3,628,088. This application Dec. 10, 1971, Ser. No. 206,800**

**Int. Cl. H05b** *37/00*

**U.S. Cl. 315—169 TV** **1 Claim**


X-AXIS LOGIC DECODER AND CONTROL
X-AXIS HIGH VOLTAGE PULSERS
PHOTON COUPLE
Y-AXIS HIGH VOLTAGE PULSERS
PHOTON COUPLE
Y-AXIS LOGIC DECODER
10
11
12
13
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70

There is disclosed an interface circuit for converting low voltage logic signal voltage pulses to high voltage discharge manipulating voltage pulses for a gas discharge display/memory device. The interface circuit is connected such that the output thereof is referenced to the sustaining voltage for the panel. An optical coupled in a multiplex system is used to isolate the low voltage logic source from the high voltage operating circuit and reduce the number isolators for this system.

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### ERRATUM

For Class 315—3.6 see:
Patent No. 3,761,760

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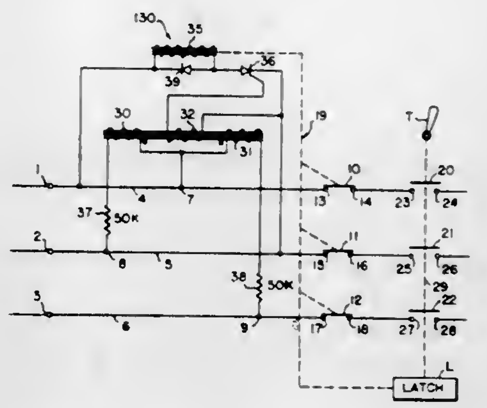
### 3,761,769
### SAFETY DEVICES FOR ELECTRICAL APPARATUS OF MEDICAL AND OTHER TYPES

**Arthur Gilbert Billin, Penfield, N.Y., assignor to Sybron Corporation, Rochester, N.Y.**

**Filed Sept. 10, 1972, Ser. No. 279,447**

**Int. Cl. H02h** *3/28*

**U.S. Cl. 317—18 D** **5 Claims**



Medical, dental or other apparatus contacting living beings is connected to its source of electrical energy by a safety device which, upon connection to the source, prevents energization of the apparatus if, when the connection is made, faults such as transposed connections, and/or discontinuity in the connections, exist. The safety device includes a differential transformer having a center-tapped primary connected to the hot, neutral, and ground wires of the apparatus, and a normally-closed switch controlling the continuity of the wires. Fault causes the transformer's secondary to produce a voltage, which is used to fire an SCR, which opens the switch.

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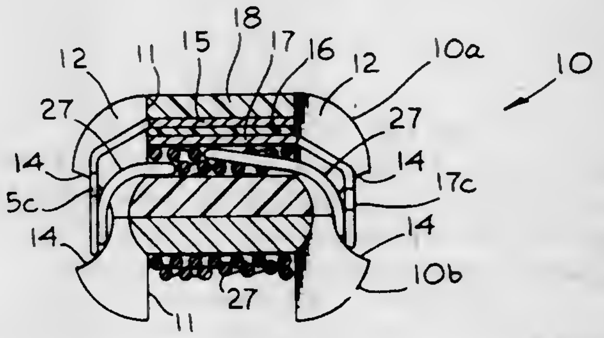
### 3,761,770
### COMBINED COMPONENT AND INTERCONNECTION MODULE AND METHOD OF MAKING

**Sergio A. Alessio, Elmhurst; Weichien Chow, Park Forrest, both of Ill.; Mario Kosem, Willoughby Hills, Ohio, and Charles F. Valach, Western Springs, Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.**

**Division of Ser. No. 48,317, June 22, 1970, Pat. No. 3,703,033. This application Mar. 20, 1972, Ser. No. 235,993**

**Int. Cl. H05k** *1/04*

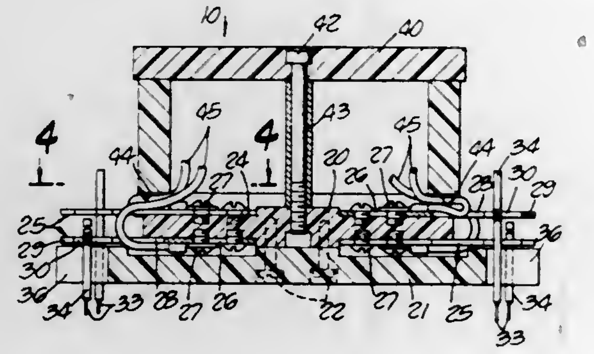
**U.S. Cl. 317—101 CC** **5 Claims**



A combined component and interconnection module having a plurality of components, such as integrated circuit modules, directly mounted to and electrically connected with an interconnection pattern so as to avoid the need for the conventional printed circuit board or other external means normally required to provide interconnections between these components. The interconnection pattern is formed using computer-controlled winding apparatus to form wire loops in predetermined slots of a core in a predetermined sequence, the wire loops on one side of the core being cut to permit the remaining loops to provide the desired interconnection pattern. The components of the combined module are mechanically and electrically connected to the core and interconnection pattern by component terminals which pass into respect core slots for soldering to loop wire portions therein. Selected component terminals also may be advantageously adapted to serve as output terminals for the resulting combined module. Power busses may additionally be incorporated within the combined module. A number of advantageous assemblies for these combined modules are also disclosed.

### 3,761,771
### TERMINAL BOARD FOR EXPEDITING RESTORATION OF PHONE SERVICE OVER A SEVERED COMMUNICATION CABLE

**John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.**
**Filed Mar. 6, 1972, Ser. No. 232,143**
**Int. Cl. H02b** *1/20*; **H01r** *9/08*
**U.S. Cl. 317—118** **16 Claims**

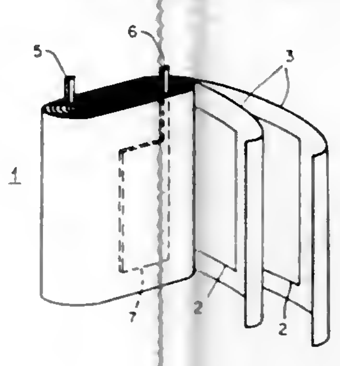


A terminal board for expediting the temporary restoration of phone service following severance of a cable. The board provides rows of tip and ring solderless terminal strips along either edge designed to cut through insulation and making gripping contact with a conductor as an incident to forcibly inserting a conductor along a slit at the outer free end of the resilient terminal strips. Each terminal strip is connected to a contact of a patching cable coupling connected with a second terminal board similarly connected with the conductor pairs of the other severed cable end.

### 3,761,772
### ELECTRICAL CAPACITOR

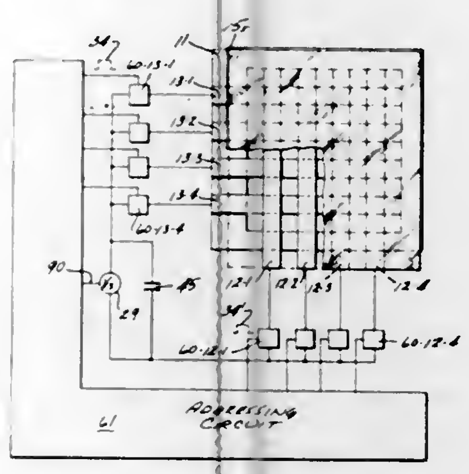
**Masaru Suzuki; Katumasa Sagarifuji, both of Otsu; Toshiya Yoshiii, Kyoto; Yasuo Saito, Kusatsu-shi; Takeo Fusayama, and Takeshi Hashimoto, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan**
**Filed Jan. 26, 1973, Ser. No. 327,073**
**Claims priority, application Japan, Feb. 15, 1972, 47/15208**
**Int. Cl. H01g** *3/175*
**U.S. Cl. 317—258** **4 Claims**

An oil-impregnated electrical capacitor, the dielectric spacer of which comprises a bi-axially oriented polypropylene film having at least one surface laminated with a propylene-ethylene copolymer layer, surface roughened by embossing, having 0.5 – 7.0 wt percent of ethylene units based on the total weight of the copolymer.



### 3,761,773
### INTERFACING CIRCUITRY SYSTEM FOR MULTIPLE GASEOUS DISPLAY/MEMORY UNIT

**William E. Johnson, and Larry J. Schmersal, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**
**Continuation-in-part of Ser. No. 699,170, Jan. 19, 1968, Pat. No. 3,618,071. This application July 12, 1971, Ser. No. 161,853. The portion of the term of this patent subsequent to Nov. 2, 1988, has been disclaimed.**
**Int. Cl. H05b** *39/00*
**U.S. Cl. 315—169** **3 Claims**

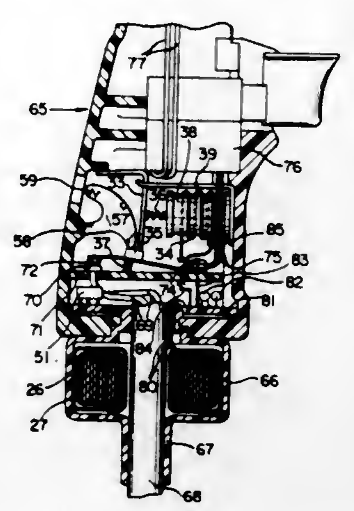


An interface circuit and method for multiple discharge gaseous display/memory panels utilizing the time-amplitude or voltage sensitive characteristics of individual discharge units in a multiple panel to control the status of individual units without effecting the status of other individual discharge units. A low level voltage signal from an addressing logic system is translated into a high voltage unidirectional pulse which is added to a periodic alternating voltage at selected times to rapidly modify the charge storage at a selected discharge unit to control on and off states of selected discharge units. The sustaining voltage has a preferred frequency of about 50 KH, to about 100 KH, and an unidirectional voltage pulse duration of about 0.5 microsecond to about 5 microseconds.

### 3,761,774
### GROUND FAULT PROTECTIVE APPARATUS

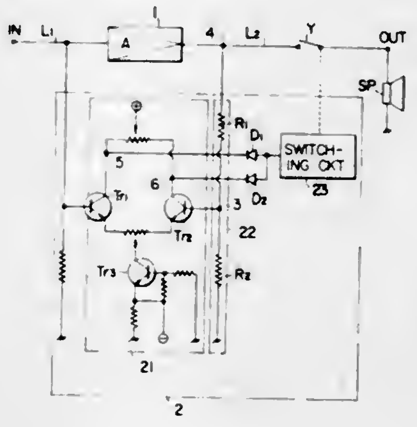
**Charles L. Laughinghouse, Linthicum, Md., and Walter H. Vogelsberg, Carversville, Pa., assignors to The Black and Decker Manufacturing Company, Towson, Md.**
**Filed Mar. 20, 1970, Ser. No. 21,367**
**Int. Cl. H02h** *3/16*
**U.S. Cl. 317—18 A** **4 Claims**

Simplified apparatus for disconnecting an electric appliance from the source of current upon the occurrence of a fault to ground through the tool. The apparatus may be located within the housing of the appliance or, preferably, at the connector which is inserted into a line voltage receptacle so that the entire appliance including its power cord is protected. The apparatus includes sensing means such as a differential transformer for detecting a difference in current between the two power lines leading to the appliance, resonant circuit means for producing a signal corresponding to such a difference, and circuit interruption means controlled by a semi-conductive switch which responds to the detected signal. Rectifying means are also provided to enable the apparatus to function regardless of the direction of current through the power lines to the appliance.



### 3,761,775
### PROTECTIVE CIRCUIT

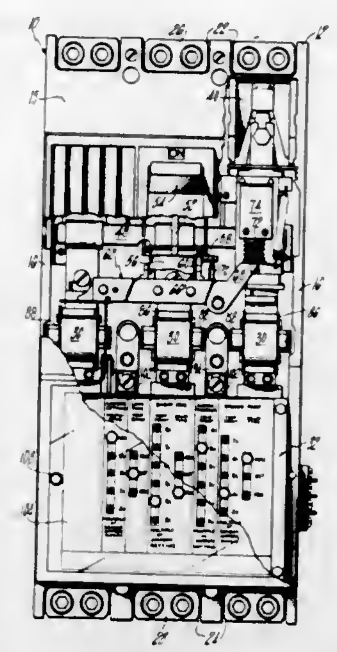
**Akio Ozawa, Tokyo, and Seijiro Fujie, Yokohama, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan**
**Filed Nov. 16, 1971, Ser. No. 199,207**
**Claims priority, application Japan, Nov. 16, 1970, 45/113492 (utility model)**
**Int. Cl. H02h** *3/28, 7/20*
**U.S. Cl. 317—27 R** **3 Claims**



A protective circuit for protecting an output circuit and a load circuit of a signal amplifier from abnormal conditions and including a differential amplifier for detecting the abnormal conditions of the output circuit and the load circuit. The circuit is particularly useful for protection of an output-condenser-less amplifier.

### 3,761,776
### MULTI-PHASE ELECTRIC CIRCUIT BREAKER

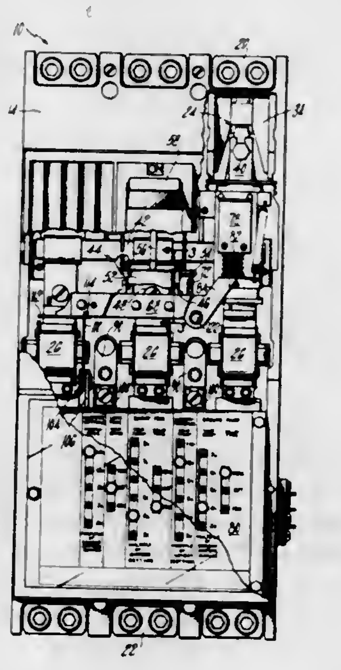
**Henry G. Willard, Wethersfield, Conn., assignor to General Electric Company, New York, N.Y.**
**Filed Dec. 26, 1972, Ser. No. 318,397**
**Int. Cl. H02h** *1/00*
**U.S. Cl. 317—33 R** **9 Claims**



A low profile molded case for a multi-phase electric circuit breaker compactly houses a static trip control unit and current transformers by displacing a portion of each phase conductor strap into nestable and operative relationship with the transformers and the static units and by modifying the trip mechanism.

### 3,761,777
### ELECTRIC CIRCUIT BREAKER WITH ELECTRONIC TRIP CONTROL UNIT

**Henry G. Willard, Wethersfield, and Vincent P. Acampora, Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.**
**Filed Dec. 26, 1972, Ser. No. 318,398**
**Int. Cl. H02h** *1/00*
**U.S. Cl. 317—33 R** **8 Claims**



An electric circuit breaker is provided with a static or electronic trip control unit adapted for easy removal and replacement during periodic on-site and remote maintenance and testing at controlled current levels. The modular static trip control unit is a standardized interchangeable component operative to effect movement of the trip bar to its tripping position upon the occurrence of preselected electrical conditions and removably mounted in the casing for easy removal and replacement during periodic maintenance and testing of the accuracy of these units for detecting such electrical conditions. A fail-safe interlock is operatively connected to the trip bar of the circuit breaker and is responsive to removal of the interchangeable unit to cause movement of the trip bar to its tripping position and retention thereof in the tripping position while the interchangeable unit is absent from the circuit breaker.

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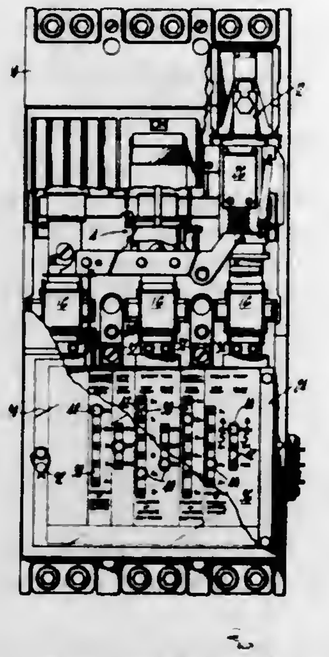
### 3,761,778
### STATIC TRIP CONTROL UNIT FOR ELECTRIC CIRCUIT BREAKER

**Henry G. Willard, Wethersfield, Conn., assignor to General Electric Company, New York, N.Y.**

**Filed Jan. 2, 1973, Ser. No. 320,579**
**Int. Cl. H02h** *1/00*
**U.S. Cl. 317—33 R** **10 Claims**



A solid state trip control unit for an electric circuit breaker is provided with field adjustable tripping characteristics by the utilization of individual selector knobs for numerous control characteristics. The unit includes a printed circuit board having separate circuit patterns on opposite sides thereof and a plurality of switching terminals fixedly connected to one of the printed circuit patterns and adapted to be selectively interconnected to conductors of the other printed circuit patterns by means of individual connector switches controlled by the positioning selector knobs. The solid state circuitry includes a fail-safe interconnection between the circuit patterns on opposite sides of the board in the event of improper or ineffective connection by the movable conductor switch and permits full visability of the setting on the trip unit while providing tamper proof isolation thereof.

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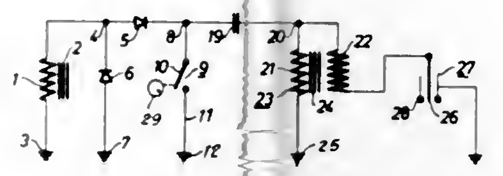
### 3,761,779
### FLYWHEEL MAGNETO IGNITION APPARATUS OPERATING WITH CAPACITIVE IGNITION EFFECT

**Hans Thorsten Henrik Carlsson, Amal, Sweden, assignor to Aktiebolaget Svenska Elektromagneter, Amal, Sweden**

**Filed July 5, 1972, Ser. No. 269,131**
**Claims priority, application Sweden, July 5, 1971, 8698/71**
**Int. Cl. F23g** *3/00*
**U.S. Cl. 317—81** **5 Claims**

A flywheel magneto ignition system includes a generator coil about which a magnetic field rotates, a first diode connecting a capacitor and the primary winding of an ignition coil to said generator coil, a second diode connected across said generator coil for conducting current pulses blocked by said first diode, a spark plug of the surface type connected in circuit with the secondary winding of the ignition coil, and a control member actuated in respnse to flywheel rotation for controlling current flow to the capacitor and primary winding, the control member being synchronized with the rotating field to initiate charging of the capacitor when a voltage pulse conducted by the second diode has just reached its maximum potential.



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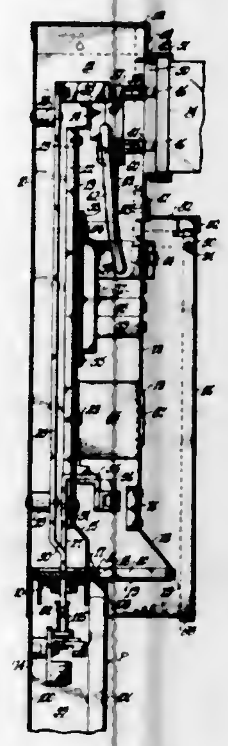
### 3,761,780
### POWER OUTLET BOX AND SEPARABLE PEDESTAL

**Merle A. Plummer, North Hollywood, Calif., assignor to Myers Electric Products, Inc., Montebello, Calif.**

**Filed May 2, 1972, Ser. No. 249,512**
**Int. Cl. H02b** *5/02*
**U.S. Cl. 317—120** **10 Claims**



Assembly consisting of separable pedestal and structurally mated electric outlet box, the latter having dependently projecting bayonet inserts which automatically form a circuit with the pedestal installations upon the box being located on top, the bayonets being part of internal, longitudinally upstanding, bus bars which simultaneously form structural supports for the box. The pedestal alone can first be permanently located at a site projecting out of the ground and its internal attachment lugs there connected to underground power lines. A group of such pedestals can thus be installed upon initially laying out a mobile home park, housing tract, or industrial park, and the flat top capped with a temporary hood. Individual outlet boxes containing circuit breakers, etc., adapted to individual requirements of each home or shop can later be assembled and installed as the particular requirements become known. Each pedestal has top-opening guide slots and aligned spring jaws therebeneath for insertion of the bayonet inserts from the box. Due to the structural support provided by the bayonet-tipped bus bars, the outlet box can be mounted offcenter to the pedestal, and service conduits brought out through apertures in its projecting bottom wall, without interference from the pedestal.

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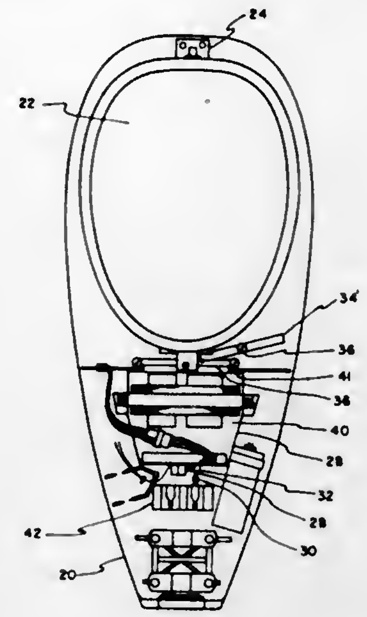
### 3,761,781
### POWER-PAD UNIT FOR LUMINAIRES

**John Richard Dean, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Mar. 20, 1972, Ser. No. 236,495**
**Int. Cl. H02b** *1/04*
**U.S. Cl. 317—120** **6 Claims**



A removable power pad is disclosed for use in supporting critical power components of a luminaire such as ballasts and capacitors. Plug and socket connectors are used to complete connections between the power pad and the power supply. A safety lock is provided to hold the power pad in place in the luminaire so that it will not fall out prematurely and injure a workman after a primary latch is released.

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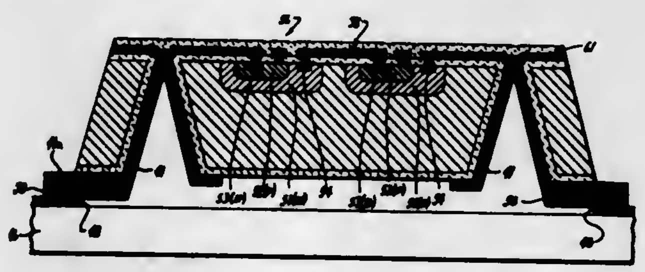
### 3,761,782
### SEMICONDUCTOR STRUCTURE, ASSEMBLY AND METHOD

**Albert P. Youmans, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.**

**Continuation of Ser. No. 796,142, Feb. 3, 1969, abandoned.**
**This application May 19, 1971, Ser. No. 145,039**
**Int. Cl. H01l** *3/00, 5/00*
**U.S. Cl. 317—234 R** **7 Claims**



The semiconductor structure consists of a semiconductor body having first and second major surfaces with the devices being formed in one surface and with the lead structure making contact to the devices being carried by the one surface. Contact is made to the devices solely from the second major surface or back side of the semiconductor body by conducting means extending through the body and making contact with the lead structure. In the assembly, the semiconductor body is mounted upon a substrate having a surface which carries a lead structure and means is provided for connecting the conducting means extending through the semiconductor body to the lead structure carried by the substrate. The method is one which is utilized for making the structure and assembly and principally consists of the steps required for making the holes in the semiconductor body through which the conducting means can extend to the lead structure carried by the first major surface of the semiconductor body and the steps which are required for connecting the conducting means to the lead structure carried by the substrate.

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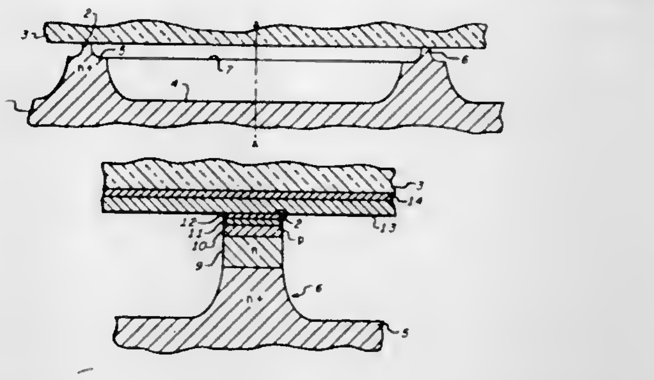
### 3,761,783
### DUEL-MESA RING-SHAPED HIGH FREQUENCY DIODE

**Harry Kroger, Sudbury, and Curtis N. Potter, Holliston, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Feb. 2, 1972, Ser. No. 222,771**
**Int. Cl. H01l** *3/00, 5/00*
**U.S. Cl. 317—234 R** **7 Claims**



High frequency diodes are manufactured by methods in which extended dual means are formed upon semiconductor or other substrates, one mesa incorporating the active junction and another supporting the active mesa in reduced parasitic capacitive relation, with the substrate supporting the combination of mesas and with an efficient heat sink cooperating with the active mesa. Novel ring shaped diodes made according to the method feature a high degree of circular symmetry and therefore freedom from burn out, thermal compression bonding being used to perfect the bond between the active mesa and a diamond heat sink. Symmetry of the diode is assured by use of a photoresist mask generation technique employing a reduced rate of evaporation of the photoresist solvent.

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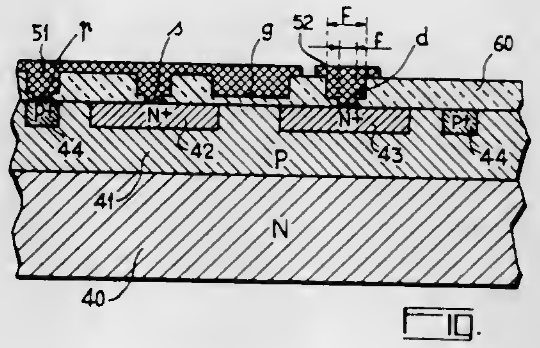
### 3,761,784
### SEMI-CONDUCTOR STRAIN GAUGE DEVICE WITH FIELD EFFECT TRANSISTOR SYMMETRICAL PAIRS

**Christian Jund, Paris, France, assignor to Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique, Paris, France**

**Filed June 13, 1972, Ser. No. 262,336**
**Claims priority, application France, June 29, 1971, 7123627**
**Int. Cl. H01l** *11/00, 15/00*
**U.S. Cl. 317—235 R** **7 Claims**



Strain gauge comprising two pairs of field effect transistors integrated into the same substrate, and occupying positions disposed in symmetrical pairs vis-a-vis a substrate point, the channels of two symmetrical transistors being parallel with one another.

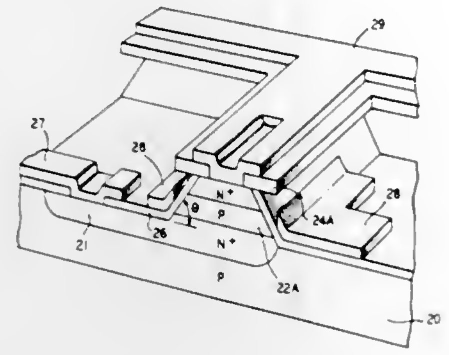
### 3,761,785
### METHODS FOR MAKING TRANSISTOR STRUCTURES

**Bernard Roger Pruniaux, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Apr. 23, 1971, Ser. No. 136,851**

**Int. Cl. H01l** *11/00*

**U.S. Cl. 317—235** **13 Claims**



A high frequency field effect transistor is made by first epitaxially growing semiconductor channel and drain layers over a source layer. An oxide layer is formed on the upper drain layer which acts as a mask during etching of the epitaxial layers. Anisotropic etching of the semiconductor forms a mesa configuration of the channel and drain layers which is overlapped by the upper oxide layer. Metal is then evaporated onto the mesa from a point opposite the oxide layer. The overhanging oxide layer masks part of the mesa, particularly the drain layer, to define precisely the area covered by the evaporated gate contact, as required for high frequency operation. Other embodiments are also described.

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### 3,761,786
### SEMICONDUCTOR DEVICE HAVING RESISTORS CONSTITUTED BY AN EPITAXIAL LAYER

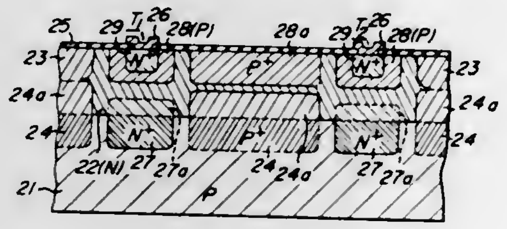
**Ichiro Imaizumi; Atsuo Hotta, both of Kokubunji; Michio Suzuki, Hachioji, and Masami Ozawa, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Aug. 30, 1971, Ser. No. 176,152**

**Claims priority, application Japan, Sept. 7, 1970, 45/777670**

**Int. Cl. H01l** *19/00*

**U.S. Cl. 317—235 R** **4 Claims**



A semiconductor device having resistors is disclosed, which comprises a p-type silicon substrate, first high impurity concentration p-type regions disposed in superficial portions of the substrate, an n-type silicon epitaxial layer disposed on top of the substrate and of the first high impurity concentration p-type regions, p-type out-diffusion regions occupying portions of the epitaxial layer and contiguous to the respective first high impurity concentration regions, and a second high impurity concentration p-type region occupying a superficial portion of the epitaxial layer and reaching the out-diffusion regions to thereby isolate portions of the epitaxial layer contiguous to the respective out-diffusion regions.

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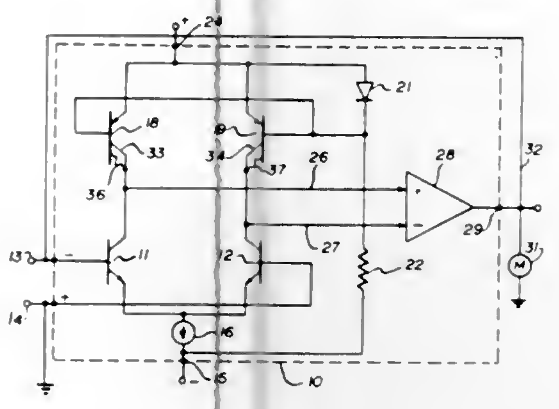
### 3,761,787
### METHOD AND APPARATUS FOR ADJUSTING TRANSISTOR CURRENT

**Walter Richard Davis, Tempe, and James E. Solomon, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.**

**Filed Sept. 1, 1971, Ser. No. 176,818**

**Int. Cl. H01l** *19/00*

**U.S. Cl. 317—235** **11 Claims**



Two matched lateral PNP current sources supplying operating currents to a monolithic integrated operational amplifier circuit each are comprised of transistors with segmented collector rings. The collector segments are interconnected with the collector conductors by fusible metal links which may be burned out or melted by supplying a pulse of high current through the fusible links. By selectively melting these links, the relative currents supplied by the two current sources may be adjusted during the measuring and probing of the integrated circuit chip prior to its packaging.

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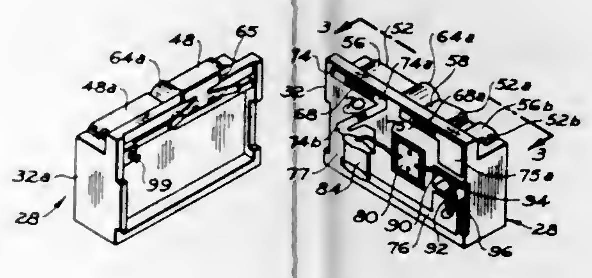
### 3,761,788
### ELECTRONIC SWITCH MODULE WITH CERAMIC CASE

Benjamin H. Matthews, Peninsula, and Jules W. Rhine, Bedford, both of Ohio, assignors to Lucerne Products, Inc., Northfield, Ohio

Filed Aug. 10, 1971, Ser. No. 170,496

Int. Cl. H02p *5/16*

U.S. Cl. 318—345 4 Claims



A compact electronic switch module for controlling an electric motor, with the switch module including a sectional switch case mounting various of the switch circuit components thereon, with at least one section of the switch case comprising ceramic material providing a support for components of the switch circuit. The ceramic section facilitates the manufacture and assembly of the switch circuitry which includes solid state switching means, and provides a heat sink for the switching means, as well as facilitating soldering operations on the switch circuitry.

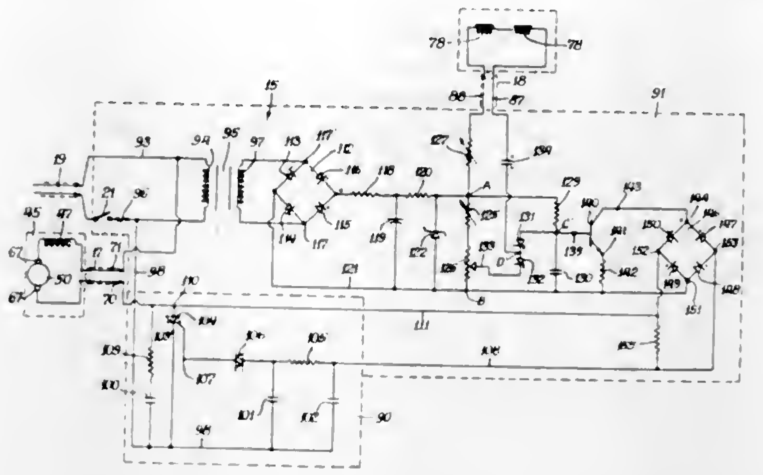
### 3,761,789
### TOOL CARRIER AND SPEED CONTROL THEREFOR

**Lewis E. Krafft, Elgin, and John Battin, Mount Prospect, both of Ill., assignors to said Krafft, by said Battin**

**Continuation of Ser. No. 89,928, Nov. 16, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,513**

**Int. Cl. H02p** *5/16*

**U.S. Cl. 318—331** **13 Claims**



A tool carrier having a rotary portion and a control circuit operative to control the same at a selected speed, the control circuit having an output voltage which is a function of the speed of the rotary portion, the rotary portion including means for generating a signal voltage which is fed to the control circuit, where the rectified value thereof operates to vary the output voltage thereof in such a manner that a preselected speed of the rotary portion is maintained over varying load conditions.

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### 3,761,790
### METHOD AND APPARATUS FOR MOVING A SHAFT INTO A PREDETERMINED ANGULAR POSITION

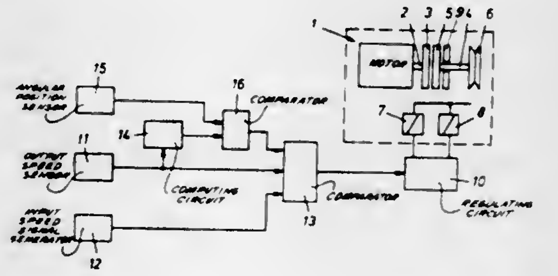
**Heinz Daab, Darmstadt-Arheilgen, Germany, assignor to Quick-Rotan, Becker & Notz KG, Darmstadt, Germany**

**Filed Nov. 4, 1971, Ser. No. 195,757**

**Claims priority, application Germany, Nov. 5, 1970, P 20 54 501.1**

**Int. Cl. H02p** *3/00*

**U.S. Cl. 318—467** **27 Claims**



A method and apparatus through which a moving shaft is stopped in a predetermined angular position. The shaft is driven at a maximum speed through an electrically driven motor. When the shaft is to be stopped at the predetermined angular position, the shaft is decoupled from the motor and an electromagnetic brake is applied. A regulating circuit controls the braking action so that it is dependent on a comparison of the actual output speed of the shaft and a desired input speed, as well as the comparison of a computed braking angle and the predetermined angular position to which the shaft is to be rotated. Position and speed sensors connected to the shaft provide signals representing the instantaneous output position and speed of the shaft.

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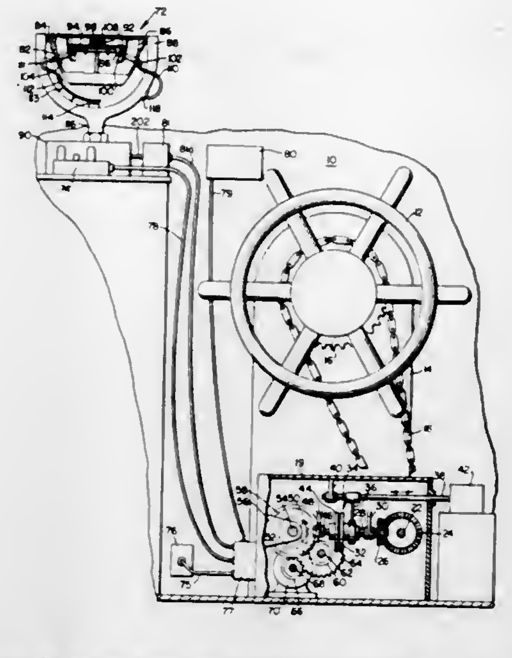
### 3,761,791
### VARIABLE CONDENSER COMPASS AUTOPILOT FOR MARINE VESSELS INCLUDING A REMOTE HELM MOTOR AND A LOCAL FOLLOWUP MOTOR

**Paul Ware, deceased, late of 4131 El Prado Blvd., Coconut Grove, Fla. (by Josephine Varney Ware, executrix)**

**Filed Dec. 10, 1971, Ser. No. 206,775**

**Int. Cl. G05d** *1/00*; **B63h** *25/02*

**U.S. Cl. 318—588** **5 Claims**



Disclosed is a marine autopilot including a magnetic compass. Deviations from the compass setting are sensed by a variable capacitor which forms part of a tuned oscillator circuit. The output frequency of the oscillator is directly proportional to the deviations, and through a detector and amplifier controls the extent of movement of the helm motor. Prior systems included a mechanical feedback from the helm to rebalance the compass. To overcome the length limitations of such mechanical feedback, electrical feedback including a local motor for compass rebalance is provided in this system.

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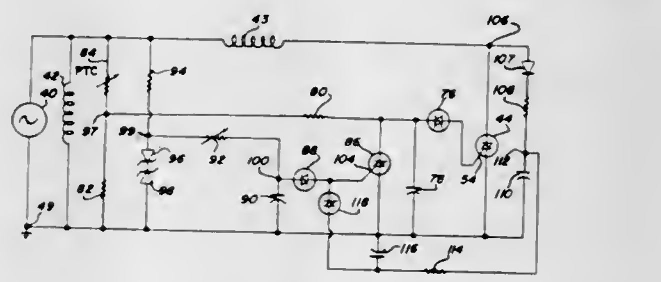
### 3,761,792
### SWITCHING CIRCUIT FOR MOTOR START WINDING

**John A. Whitney, Ft. Wayne; Richard E. Woods, Markle, and William H. Hohman, Bluffton, all of Ind., assignors to Franklin Electric Co. Inc., Bluffton, Ind.**

**Continuation-in-part of Ser. No. 72,675, Sept. 16, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 223,865**

**Int. Cl. H02p** *1/44*

**U.S. Cl. 318—221 E** **45 Claims**



In an AC motor having a main winding and a start winding, a thyristor in series with the start winding uncouples the start winding from an AC power source when the motor reaches a preselected cut-out speed, and recouples the start winding to the AC power source when the motor speed is reduced to a preselected cut-in speed. Various electrical characteristics are utilized to control start winding power removal and reapplication. One embodiment utilizes the change with motor speed of the phase difference of the current through the start winding relative to the applied voltage. Another embodiment utilizes the change with motor speed of the phase difference between the voltage of the start winding or start capacitor versus applied voltage. Finally, an embodiment utilizes the change with motor speed of the magnitude of the voltage induced across the start winding relative to the magnitude of applied voltage.

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### 3,761,793
### DEVICE FOR CONTROLLING SPEED OF ELECTRIC AUTOMOBILE

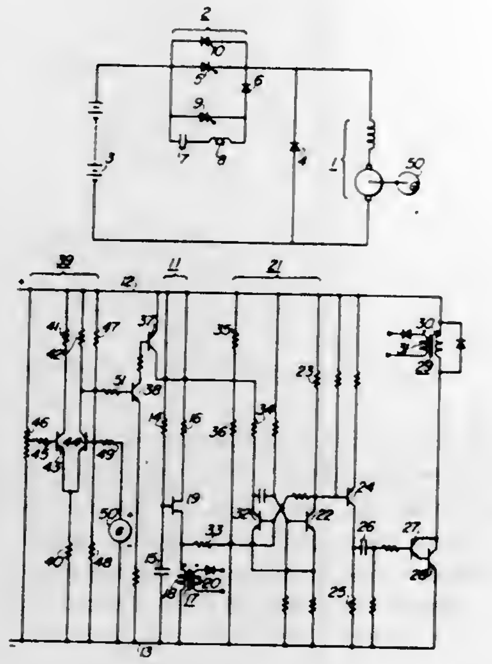
**Shotaro Naito, Katsuta-shi, Japan, assignor to Hitachi Ltd., Tokyo, Japan**

**Filed Mar. 16, 1972, Ser. No. 235,146**

**Claims priority, application Japan, Mar. 19, 1971, 46/15143**

**Int. Cl. H02p** *5/16*

**U.S. Cl. 318—327** **5 Claims**



In an electric automobile, the motor for driving the wheels is powered by an attached battery through a thyristor chopper circuit. The current conduction rate of the chopper circuit is controlled either by the accelerator pedal in case of manual drive or by making a comparison between the actual driving speed and the instructed speed in case of automatic drive so that the manipulation of the automobile is simplified.

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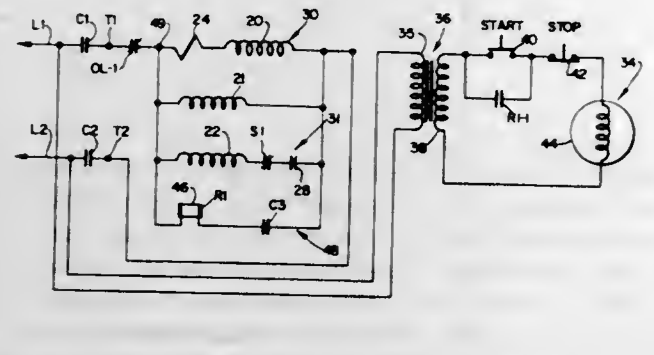
### 3,761,794
### ELECTRIC MOTOR CONTROL CIRCUITS

**John W. Quinlisk, Jr., and Anthony W. Sinagra, both of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.**

**Filed Feb. 16, 1973, Ser. No. 333,036**

**Int. Cl. H02p** *5/16*

**U.S. Cl. 318—472** **8 Claims**



An electric motor control circuit having an interlocking relay which is connected in the motor field winding circuit for energization by the voltage applied to at least part of one motor field winding to close a set of normally open relay contacts that complete a holding circuit around a motor start switch. The interlocking relay is connected in series with a set of normally closed motor overload contacts between the motor input terminals so that opening of the motor overload contacts or a power failure de-energizes the interlocking relay. De-energization of the interlocking relay opens the relay contacts to de-energize a motor starting contactor for disconnecting the motor field circuit from the line.

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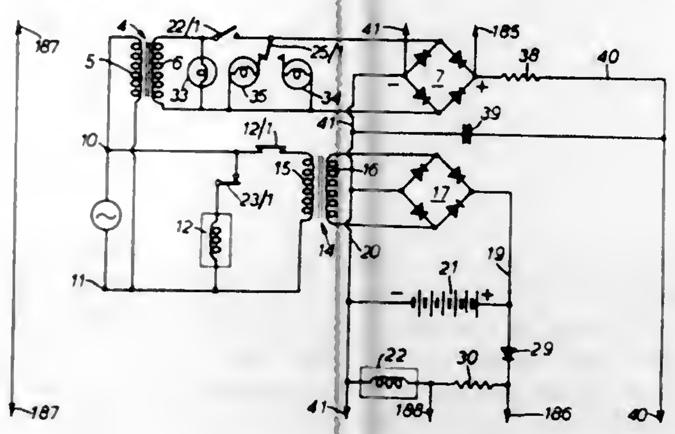
### 3,761,795
### BATTERY CHARGING APPARATUS

**Dennis Albert Clayton, Gawsworth, and George William Foster, Bolton, both of England, assignors to Legg (Industries) Limited, Wolverhampton, Staffordshire, England**

**Filed Jan. 13, 1972, Ser. No. 217,572**

**Int. Cl. H02j** *7/10*

**U.S. Cl. 320—20** **25 Claims**



Automatic electric battery charging apparatus includes means for tempararily interrupting the charging current for periods, referred to as open-circuit intervals, the duration of each of which depends on the fall of battery voltage during the open-circuit interval. A capacitor responsive to the duration of the open-circuit intervals is provided. The capacitor is alternately charged and discharge, through at least one constant current device, respectively during successive open-circuit intervals, from a predetermined high limiting state in one direction. If, during a subsequent open-circuit interval after the capacitor has been partially discharged it fails to be recharged to the high limit at least a phase of the charge is terminated.

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### 3,761,796
### INVERTER WITH CONTROLLED RECTIFIERS AND A REGULABLE DIRECT VOLTAGE SUPPLY

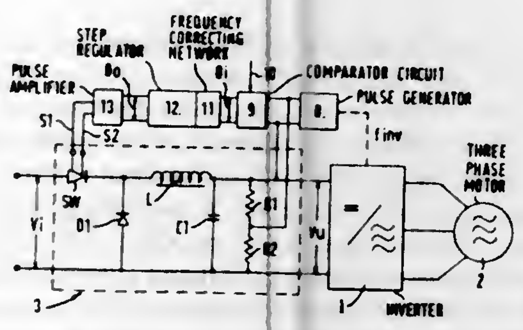
**Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

**Filed May 24, 1972, Ser. No. 256,564**

**Claims priority, application Germany, May 25, 1971, P 21 25 804.8**

**Int. Cl. H02p** *13/22;* **H02m** *3/32*

**U.S. Cl. 321—2** **8 Claims**



An inverter arrangement including controlled rectifiers, the inverter being supplied by a regulatable direct voltage supply which includes an on-off switchable element and a filter. A control circuit connected to the output of the supply generates and directs first control pulses to the switchable element, and a pulse generator also connected to the output of the supply generates and directs second control pulses to control the rectifiers in the inverter. The control circuit includes a step regulator having an amplifier, a feedback path and apparatus for producing an oscillation, the step regulator having the effect of altering both the frequency and the width of the first control pulses when the voltage at the output of the supply changes.

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### 3,761,797
### ELECTRICAL FILTERS

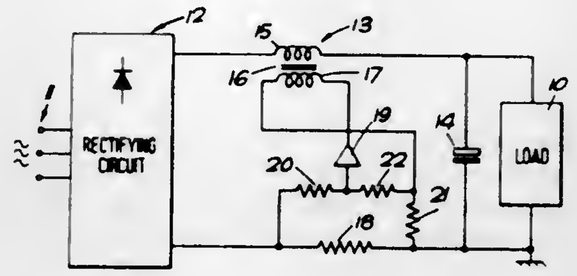
**Frederick Ernest Spooner, Crawley, England, assignor to Brentford Electric Limited, Crawley, Sussex, England**

**Filed Dec. 7, 1971, Ser. No. 205,670**

**Claims priority, application Great Britain, Dec. 8, 1970, 58,290/70**

**Int. Cl. H02m** *1/14*

**U.S. Cl. 321—10** **3 Claims**



A ripple filter in which the magnetic flux in the core of a series choke due to direct current through the primary winding forming the choke is opposed by an equal flux through a secondary winding to keep the core out of saturation. Alternatively or additionally the ripple current is opposed by an antiphase current through a secondary winding on the core in order to reduce the ripple actively.

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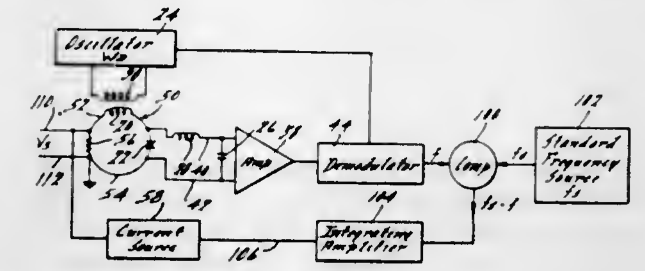
### 3,761,798
### SUPERCONDUCTING CIRCUIT MEANS

**Arnold H. Silver, Farmington, Mich., and James E. Zimmerman, Santa Ana, Calif., assignors to Ford Motor Company, Dearborn, Mich.**

**Division of Ser. No. 809,320, March 21, 1969, Pat. No. 3,622,881. This application Mar. 3, 1971, Ser. No. 120,577**

**Int. Cl. G05f** *1/12;* **G01r** *9/26*

**U.S. Cl. 323—1** **6 Claims**



This disclosure relates to a superconducting circuit means that may be utilized as an ultra-high sensitivity voltmeter or a generator generating a voltage having a substantially constant amplitude. It comprises a superconductive material having a weak link positioned therein with means for applying a voltage of unknown magnitude across the weak link. An oscillator has its output coupled to the weak link so that the output signal of the oscillator generates an oscillating current through it. The voltage of unknown magnitude causes an oscillating current to be generated through the weak link with a frequency proportional to the unknown magnitude of the voltage. The weak link mixes the frequency of the two currents and a demodulating means detects the frequency of the oscillating current produced by the voltage of unknown magnitude. When the circuit means is to be employed as a voltmeter, a frequency meter may be connected to the demodulating means which has a scale readable in voltage units. If the circuit means is to be employed as a generator of a voltage having a substantially constant amplitude, a standard frequency may be fed to a comparator that also receives the output from the demodulating means. The output from the comparator may be fed back through suitable means to the weak link and the amplitude of the voltage having a substantially constant magnitude may be read out across a circuit component connected to the superconducting material.

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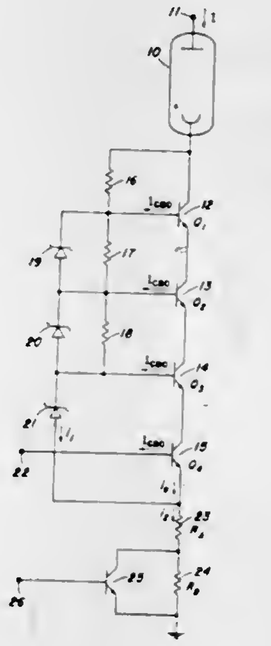
### 3,761,799
### CURRENT STABILIZING CIRCUIT HAVING MINIMAL LEAKAGE CURRENT EFFECTS

**David R. Shuey, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 6, 1971, Ser. No. 204,847**

**Int. Cl. G05f** *1/56*

**U.S. Cl. 323—4** **14 Claims**

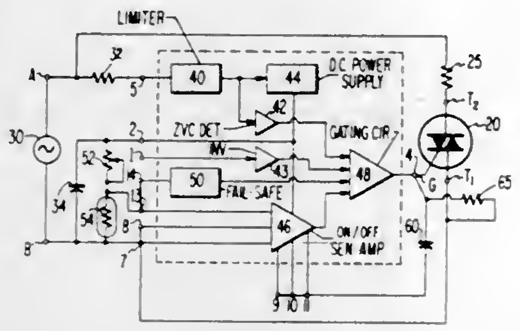


Apparatus for stabilizing the current flowing through a current utilization device is disclosed in accordance with the teachings of the present invention wherein a voltage divider network including a plurality of series connected transistor means is coupled to the current utilization device and a current regulating transistor means is connected to the voltage divider network. A summation of the leakage currents induced in each of the transistor means included in the divider network is supplied to the output electrode of the current regulating transistor by voltage limiting means such that the total current flowing in the output electrode circuit of the current regulating transistor means is substantially equal to the current flowing through the current utilization device. Stabilization of the current flowing in the output electrode circuit results in stabilization of the current flowing through the current utilization device without requiring regulation of the leakage current induced in each of the transistor means included in the voltage divider network. Discrete or continuous modulation of the stabilized current flowing through the current utilization device may be provided.

### 3,761,800

### INTEGRAL CYCLE THYRISTOR POWER CONTROLLER

**Patrick Joseph Howard, Bound Brook, N.J., assignor to RCA Corporation, New York, N.Y.**
**Filed Feb. 2, 1972, Ser. No. 222,784**
**Int. Cl. G05d** *23/24*
**U.S. Cl. 323—18** **11 Claims**



"Half cycling" is the tendency of a thyristor to conduct only during half cycles of the applied alternating current operating voltage and it can occur when the control circuit for the thyristor is in an indeterminate state. In the present circuit such operation is prevented by sensing the rate of change of current flow through the thyristor and using the control signal thereby obtained to operate the control circuit when the control circuit tends to be in an indeterminate state.

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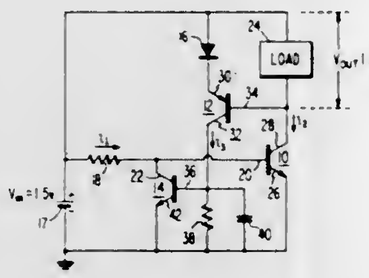
### 3,761,801

### MICROPOWER, LOW-VOLTAGE, REGULATOR CIRCUITS

**Abel Ching Nam Sheng, Morris Plains, N.J., assignor to RCA Corporation, Princeton, N.J.**
**Filed Sept. 5, 1972, Ser. No. 286,084**
**Int. Cl. G05f** *1/56*
**U.S. Cl. 323—22 T** **11 Claims**



Current is supplied to a load through a first transistor. A pair of diodes series connected across the load senses the load voltage. When this voltage exceeds the desired level--the voltage threshold for conduction through the pair of diodes, they place a shunt path across the emitter-to-base circuit of the transistor. This reduces the transistor base current, causing less current to flow to the load and reducing the voltage across the load to the desired level.

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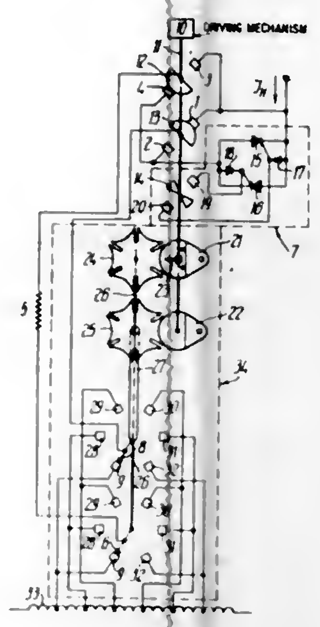
### 3,761,802

### SWITCHING DEVICE FOR TRANSFORMERS HAVING STEPWISE VOLTAGE CONTROL UNDER LOAD

**Alexandr Ivanovich Krasov, ulitsa Schastlivaya, 7b, kv.26, Zaporozhie, U.S.S.R.**
**Filed July 7, 1972, Ser. No. 269,808**
**Int. Cl. G05f** *1/20*
**U.S. Cl. 323—43.5 S** **2 Claims**

A switching device for transformers having stepwise voltage control under load and employed for maintaining a specified level of the output voltage of electric stations and sub-stations, wherein one diagonal of a bridge circuit formed by four switching members includes a load switch, and the other diagonal has included therein the movable contacts of a selector switch associated with the leads of the winding of the transformer, connected in series with a resistor for limiting the current appearing during a switching-over operation, when the controllable output lead of the transformer is connected simultaneously with a pair of the leads of the transformer winding. The switching members and the load switch are so operated, that throughout a switching-over operation the load current of the transformer is continuous, and the switching over of all the currents is effected by the load switch.



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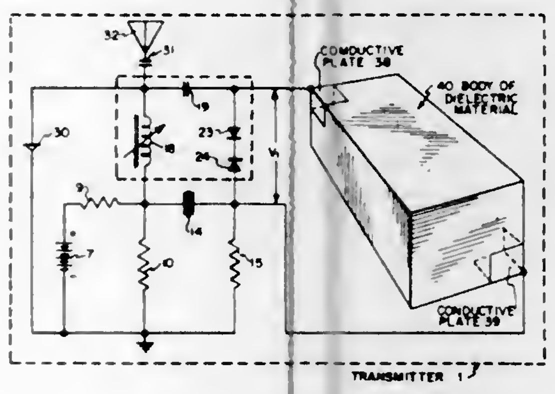
### 3,761,803

### ELECTROSTATIC FIELD STRENGTH MEASURING APPARATUS

**Carlton M. Slough, Richmond, Va., assignor to Texaco, Inc., New York, N.Y.**
**Filed Dec. 23, 1971, Ser. No. 211,211**
**Int. Cl. G01r** *5/28*
**U.S. Cl. 324—32** **8 Claims**



A transmitter, including a crystal controlled oscillator, has a pair of three-sided plates mounted on diagonally opposite corners of a rectangular dielectric body. When placed in an electrostatic field, a static voltage is developed across the plates corresponding to the strength of the electrostatic field. The developed voltage is used to change the amount of capacitance of a tank circuit in the oscillator causing the frequency of a signal provided by the oscillator to change. The signal from the oscillator is transmitted to a receiver which may be remotely located from the electrostatic field. The receiver includes a beat oscillator providing a reference signal having the same frequency as the signal induced by the crystal. A detector compares the frequencies of the reference signal and the received signal to provide a signal having a frequency which is the difference in frequency between the received signal and the reference signal. The frequency of the signal from the detector corresponds to the strength of the electrostatic field. The signal from the detector is applied to an output device, such as a loudspeaker or a meter.

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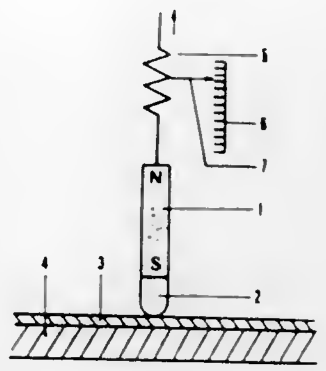
### 3,761,804

### LOW SATURATION POLE PIECE FOR A MAGNETIC THICKNESS GAUGE

**Erich Steingroever, Bonn, Germany, assignor to Elektro-Physik, Hans Nix & Dr.-Ing. E. Steingroever KG., Cologne (Niehl), Germany**
**Filed Feb. 14, 1972, Ser. No. 225,731**
**Claims priority, application Germany, Feb. 15, 1971, P 21 07 076.8**
**Int. Cl. G01r** *33/00*
**U.S. Cl. 324—34 TK** **26 Claims**



A pole piece for magnetic thickness gauges is composed principally of a ferromagnetic material having magnetic saturation of less than 14,000 Gauss in order to increase the linearity of the scale readings when the gauge is measuring a very thin layer.

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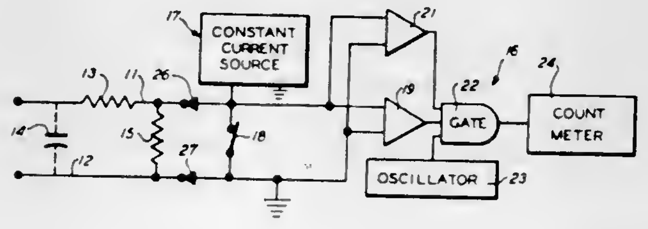
### 3,761,805

### METHODS OF AND SYSTEMS FOR MEASURING CAPACITANCE USING A CONSTANT CURRENT CHARGING TECHNIQUE

**Georg C. E. Dornberger, Phoenix, Ariz., assignor to Western Electric Company, Incorporated, New York, N.Y.**
**Filed June 24, 1971, Ser. No. 156,263**
**Int. Cl. G01r** *11/52, 27/26*
**U.S. Cl. 324—60 C** **3 Claims**



In a constant current charging tenchique for measuring capacitance, a constant current is supplied to a capacitance to be measured and a voltage ramp is produced. Two voltage-level detectors sense the ramp. At a low level on the ramp, a first of the detectors triggers a time-interval meter which begins to count pulses from an oscillator. A second of the detectors stops the counting process when the voltage ramp reaches an upper level. The time measured by the meter is proportional to the value of the capacitance and can be used to calculate the actual value.

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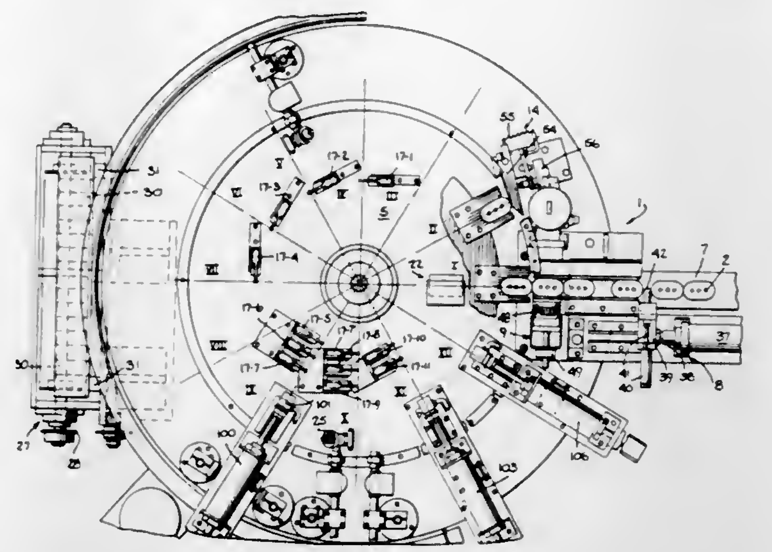
### 3,761,806

### AUTOMATIC CAPACITOR INSPECTION MACHINE

**Carl A. Napor, Glen Ridge; Jaime Lehman, Irvington, and Anthony A. Milana, Toms River, all of N.J., assignors to Kahle Engineering Co., Union City, N.J.**
**Filed May 24, 1972, Ser. No. 256,422**
**Int. Cl. G01r** *11/52, 27/26*
**U.S. Cl. 324—60 C** **20 Claims**



An automatic machine for inspecting electric capacitors is disclosed. The machine includes a rotating turret having a number of capacitor supports which carry the capacitors through a series of automatic test stations. The stations automatically determine a number of characteristics of one or more sections of the capacitors such as voltage retention, terminal to cover insulation value and capacity. The machine marks and rejects capacitors which do not meet preset voltage retention, insulation, and capacity values and also separates acceptable capacitors into a number of separate differently coded groups according to their particular capacitance value range.

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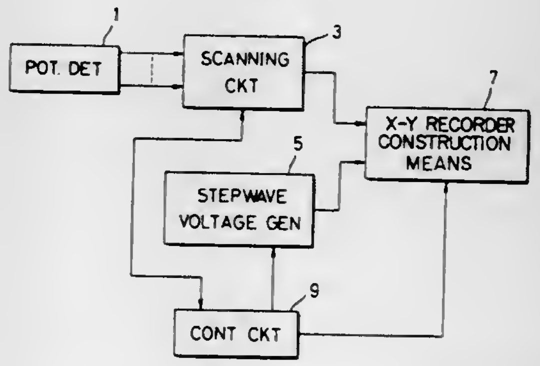
### 3,761,807

### APPARATUS FOR CONSTRUCTING POTENTIAL GRADIENT

**Takao Kobayashi, and Tadahiko Sasaki, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan**
**Filed Aug. 20, 1971, Ser. No. 173,427**
**Int. Cl. G01r** *29/14*
**U.S. Cl. 324—72** **5 Claims**



Apparatus constructing the potential gradient of a potential distribution on conductive paper or the like as measured by a plurality of linearly arranged probes. The probes are scanned so as to selectively apply the voltage between different probes to one input of an X-Y recorder while a synchronized voltage indicating the position of the probes being scanned is applied to another input of the X-Y recorder.

### 3,761,808
### TESTING ARRANGEMENT

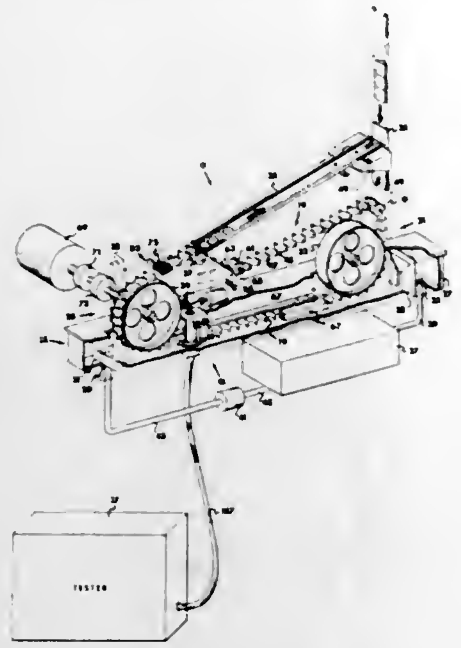
**Robert B. Ryan, Timonium, Md., assignor to AAI Corporation, Cockeysville, Md.**

Continuation of Ser. No. 744,804, July 15, 1968, abandoned.

**Filed July 8, 1970, Ser. No. 56,157**

**Int. Cl. G01r** *15/12, 31/26*

**U.S. Cl. 324—73 R** **6 Claims**



An environmental chamber and test transport apparatus is disclosed for automatically testing a plurality of packaged integrated circuits. A plurality of packaged integrated circuits are fed from a loaded magazine onto a transport tape which carries them into a nonconductive temperature controlled fluid bath to a test station submerged in the bath. As each packaged integrated circuit reaches the test station, its progressive movement is stopped and the circuit package is laterally engaged with a test head having dual rows of oppositely paired contacts each of which is electrically connected to a tester adapted to apply selected electrical signals to selected contacts and sense the result thereof to determine the electrical condition of the integrated circuit placed on the test head. The contacts are upwardly resiliently biased and protrude through the surface of the test head towards each other. Through engagement of the leads of the packaged integrated circuit with the upwardly protruding ends of the resiliently biased test contacts, the ends of the test contacts are displaced laterally in two directions relative to the direction of motion of the packaged integrated circuit, thereby producing a lateral wiping motion that scrapes away or materially reduces an oxide film which may be present on either the packaged integrated circuit leads or the ends of the test contacts, to effect a reliable electrical connection therebetween with minimum impedance which might otherwise be greater from the presence of an oxide film, thereby desirably achieve a more accurate testing operation. When the test operation is completed, the packaged integrated circuit is removed from the test head and again carried by the transport tape away from the test station to an output section where it is collected in an empty magazine.

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### 3,761,809
### NOISE MODULATED ANALOGUE SIGNAL PRESENCE DETECTOR

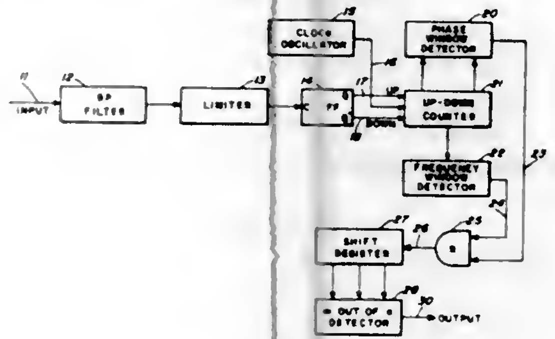
**John A. Lockitt, Hollisten, Mass., and Timothy S. Eller, Romulus, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 27, 1970, Ser. No. 43,257**

**Int. Cl. G01r** *23/16*

**U.S. Cl. 324—77 R** **8 Claims**

A circuit for detecting presence of an analogue signal of unknown frequency in a noise environment. Detection is accomplished by determining and comparing the time variation between successive trailing edge zero crossings of the received signal. The components are a bandpass filter for passing only the frequency bandwidth within which the analogue signal is thought to be; an analogue to digital conversion means which produces a pulse everytime a trailing edge zero crossing occurs; an up-down counter, phase window detector, and frequency window detector which together determine and compare the time variation between successive trailing edge zero crossings and make a signal present or signal not present decision; and a post decision averaging means for averaging the signal present decisions received over a period of time, for providing greater protection against false detection.



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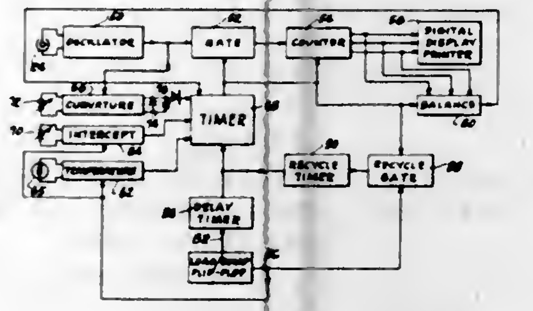
### 3,761,810
### DIGITAL READING MOISTURE TESTER

**George H. Fathauer, Decatur, Ill., assignor to Burrows Equipment Company, Evanston, Ill.**

**Filed Feb. 8, 1971, Ser. No. 113,588**

**Int. Cl. G01r** *27/26, 23/02*

**U.S. Cl. 324—61 R** **19 Claims**



A digital reading grain moisture tester is disclosed in which the frequency of an LC oscillator having as one element a capacitive cell containing a measured weight of the material under test is determined by counting the number of cycles occurring during a period of defined length. Circuitry is provided to vary the length of the counting period to compensate for differences in the physical properties of the grains which may be tested and for variations in the sample temperature. Automatic balance circuitry is provided to compensate for changes in the circuit parameters of the elements within the tester.

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### 3,761,811
### RATE-OF-TURN INDICATOR

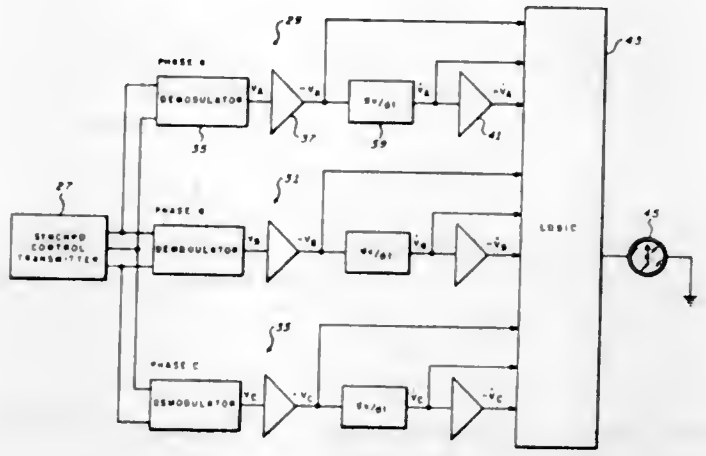
**Albert K. Aberle; Richard J. Arthur, and Tommy R. Welch, all of Charlottesville, Va., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Mar. 5, 1971, Ser. No. 121,331**

**Int. Cl. G01p** *3/48*

**U.S. Cl. 324—173** **5 Claims**

Each of the three phase voltages from a synchro control transmitter is demodulated to provide separate d.c. voltages having amplitudes and polarities indicative of the corresponding transmitter output voltages. Each d.c. voltage is then differentiated and inverted to provide rate-of-change and inverted rate-of-change voltages. The various voltages are then applied to a logic circuit wherein the d.c. voltages are compared. The logic circuit determines the phase voltage having the smallest displacement at any given time and switches the corresponding rate of change signal to a readout device.



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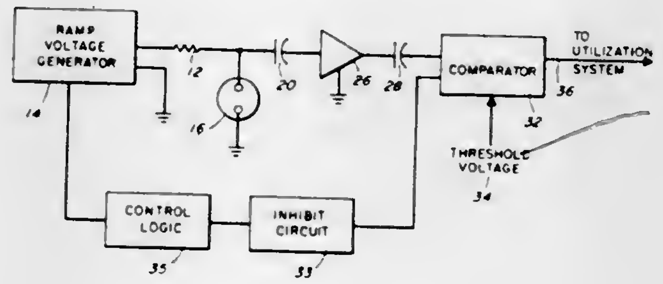
### 3,761,812
### METHOD AND APPARATUS FOR DETECTING ANOMALIES IN A METER MOVEMENT

**William C. Plake, Santa Barbara, Calif., assignor to EG & G, Inc., Bedford, Mass.**

**Filed June 12, 1972, Ser. No. 262,169**

**Int. Cl. G01r** *3/00, 35/00*

**U.S. Cl. 324—74** **7 Claims**



Method for detecting anomalies in the motion of the moving systems of electrical meters and similar devices including the steps of applying a ramp current to the meter movement to develop a ramp voltage across it and detecting perturbations in the ramp voltage. Embodiments of apparatus for practicing the method are also disclosed.

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### 3,761,813
### METHOD OF TELECOMMUNICATION VIA SATELLITE AND SYSTEMS USING THIS METHOD

**Jacques Perrin, Paris, France, assignor to Thomson-CSF, Paris, France**

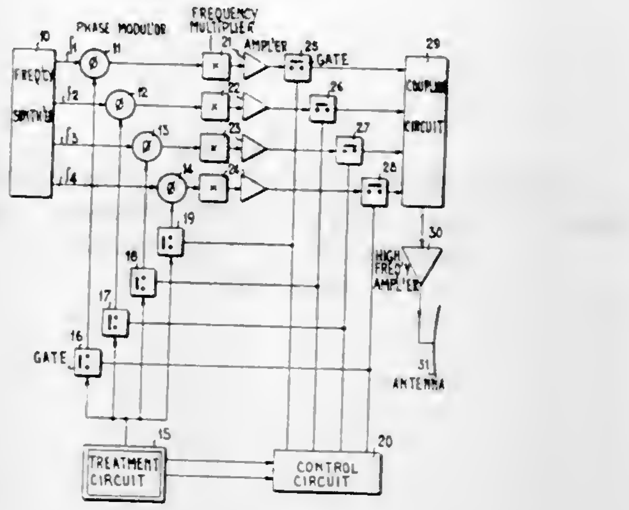
**Filed Mar. 17, 1972, Ser. No. 235,548**

**Claims priority, application France, Apr. 6, 1971, 7112142**

**Int. Cl. H04b** *7/20*

**U.S. Cl. 325—4** **8 Claims**

A method of telecommunication via a stationary active satellite between a ground station and airborne stations, using a time and frequency division multiplex transmission in which the frame duration and that of each signal sample of each link are determined so that, the indirect reception by "multipath effect" is produced beyond the direct reception durations of the successive samples for each link considered. The reception on board is thus obtained by filtering received signals on the frequency link concerned and by making inoperative the receiver beyond the direct reception of the successive samples of the link in question.



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### 3,761,814
### TELECOMMUNICATION SYSTEM WITH TRANSMITTING STATIONS SELECTIVELY OPERABLE AS TEMPORARY REFERENCE STATIONS

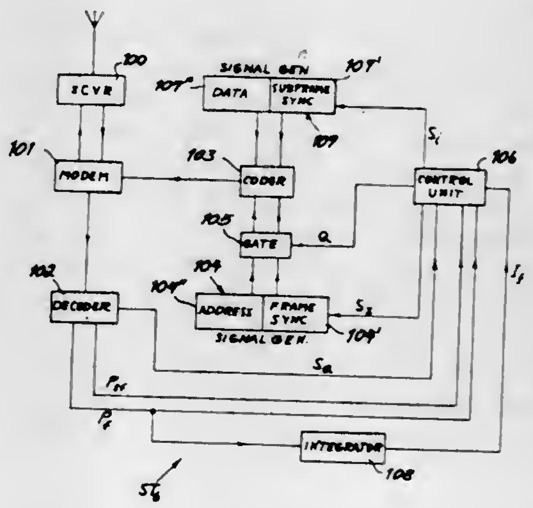
**Gabriele Bernasconi, Luisago, and Isidoro Poretti, Castiglione Olana, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy**

**Filed Dec. 15, 1971, Ser. No. 208,336**

**Claims priority, application Italy, Dec. 17, 1970, 333133 A/70**

**Int. Cl. H04b** *7/14*

**U.S. Cl. 325—4** **9 Claims**



A time-division-multiplex telecommunication system, with a multiplicity of ground stations communicating with one another via satellite, allocates to each ground station one or more subframes in a series of such subframes following one another in cyclic succession to constitute a sequence of signal frames. The first subframe of each frame, designated the reference subframe, serves for the transmission of frame-synchronizing signals from one of the stations of the system operating as a reference station, the latter sending out its address together with the frame-synchronizing code. In every other station, a counter triggered by an incoming frame-synchronizing code determines from that address the subframe allocated to the reference station and, in the one station using the next-following active subframe, generates an internal signal designating that station as a standby station to serve as a reference station if the actual reference station drops out. The standby condition is terminated upon reception of the next frame-synchronizing code but, in the absence of a predetermined number of such codes in successive frames, is converted into a reference condition whereby the affected station takes over the transmission of frame-synchronizing pulses.

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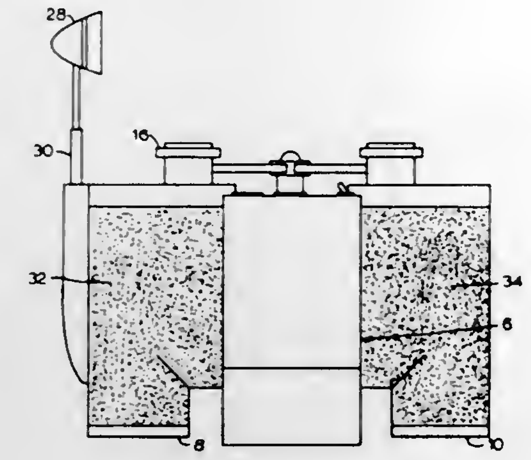
### 3,761,815
## COMBINATION OPTICAL AND RADIO APPARATUS
**Donald W. Bower, 222 Palmetto Dr., Miami Springs, Fla.**
**Filed Mar. 20, 1972, Ser. No. 236,365**
**Int. Cl. H04b** *1/38*
**U.S. Cl. 325—16** **3 Claims**



The combination of an optical viewing instrument and radio device includes at least one refracting telescope connected to a radio device, which includes a radio receiver or a radio receiver-transmitter. The optical instrument and radio device are combined into a single unit that is hand supported with a finger control system for controlling the telescope focusing tubes and the radio on-off, volume and tuning controls. The finger control system allows a user to adjust the visual and audio controls while visually viewing a field of activity and receiving or transmitting audible announcements or instructions from another viewing said field. The apparatus includes a hand supporting portion adjacent the finger control system to allow a user to support the apparatus in relation to his eyes, ears and mouth, as well as control the entire operation of the apparatus by solely using his hands and fingers. The apparatus also includes an adjustable focusing speaker that directs the radio output into one of the user's ears. The apparatus may also include an ear speaker that is insertable into the user's ear.

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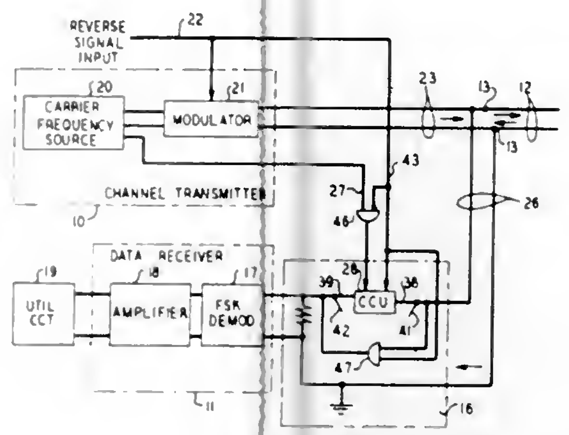
### 3,761,816
## DATA SET EMPLOYING A COMMUTATING CAPACITOR, TRACKING, NOTCH FILTER
**Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**
**Filed Sept. 8, 1972, Ser. No. 287,278**
**Int. Cl. H04b** *1/10;* **H03h** *7/10*
**U.S. Cl. 325—22** **11 Claims**

In a data set in which a transmitter and a receiver are required to work at the same time with respect to a bidirectional signal transmission path for communication to another data set, a commutating capacitor unit, band-rejection filter is coupled in the receiver input to be driven for line signal coupling to the receiver by line signals, and driven for capacitor commutation by a signal from the transmitter. That transmitter signal is derived at any given time to cause the filter to suppress a particular transmitter frequency that otherwise would interfere with normal receiver operation.



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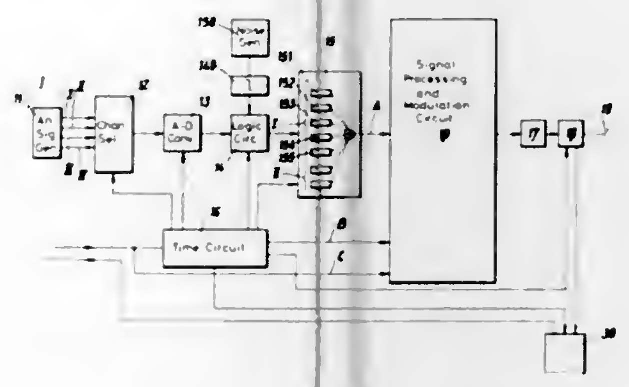
### 3,761,817
## METHOD AND TRANSMISSION SYSTEM FOR TRANSMITTING COMMANDS TO A RADIO GUIDED MISSILE
**Horst Kaltschmidt, Neubiberg; Peter Scholler, Ottobrunn-Riemerling, and Burkhard Flachmann, Munich, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany**
**Filed May 23, 1972, Ser. No. 256,180**
**Int. Cl. H03k** *13/32*
**U.S. Cl. 325—37** **18 Claims**



In a method for the transmission of commands to a radio-guided missile or satellite, analog command bits are coded, in a transmitter, with signals from at least one random generator, and decoded in a receiver, on the missile or satellite, with the signals of the random generator being stored in associated storages in both the transmitter and the receiver, and before the missile or satellite is launched. In accordance with the invention, the random generator supplies multi-digit binary signals which are assigned individually to specific analog command bits, and these signals are stored in storages of the receiver. During transmission of commands, the storage signals are used as reference signals for comparison, by correlation, with each coded signal received by radio and, responsive to a predetermined agreement of the received coded signal with one of the reference signals, the analog command bit, assigned to such reference signal, is generated as a decoded signal. The apparatus includes a transmitting station and a receiving station having corresponding numbers of storages. The storages of the transmitter are connected through a logical circuit to an analog command signal generator, and the outputs of the storages are connected through a signal processing and modulation circuit to a transmitting stage which can be switched by a reversing switch to a transmitting antenna. An umbilical cord connects the ground station to the missile and is connected, in the missile, to a

demodulation and signal processing circuit 20 and to a receiving antenna through an additional reversing switch. The output of the additional reversing switch is conducted, through further reversing switches in parallel with the storages in the missile. Transit storages, corresponding to the missile storages, are provided in association with a summation and comparison circuit and with the output of the demodulation and signal processing circuit. An output signal, corresponding to the analog command signal from the transmitter, is provided when the signals stored in two corresponding storages are identical.

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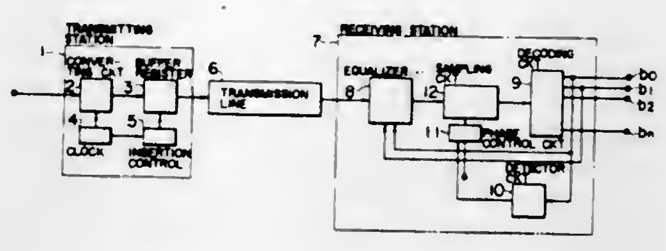
### 3,761,818
## MULTILEVEL SIGNAL TRANSMISSION SYSTEM
**Kimio Tazaki, Tokyo; Hajime Yamamoto, Tokyo; Shigehiko Hinoshita, Yokohama, and Shoji Hagiwara, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Fujitsu Limited, Kawasaki, Japan**
**Filed Apr. 27, 1972, Ser. No. 248,282**
**Claims priority, application Japan, Apr. 30, 1971, 46/29082**
**Int. Cl. H04l** *27/02, 15/00*
**U.S. Cl. 325—38 A** **11 Claims**



Apparatus for transmitting a signal in the form of a multilevel signal is disclosed which is adapted for correction of variations in sampling time of the multilevel signal. In particular, the multilevel signal transmission system transmits a multilevel signal as it is or with a reference level signal of a predetermined level inserted before transmission in the multilevel signal with a predetermined period. After transmission along a line, the received signal waveform is sampled on the receiving side of the transmission line at a predetermined sampling time to detect a level error between the level of the sampled received signal waveform and a predetermined correct level of the signal to be transmitted. The correlation of the detected level error of the sampled signal with a level difference signal between the sampled signal and a neighboring signal (or with a signal representing the polarity of the level difference signal) is determined to thereby control the sampling time.

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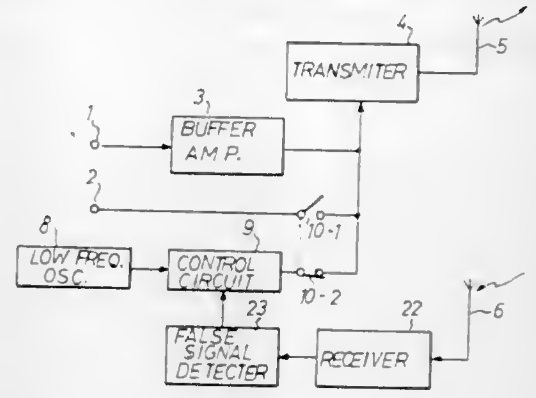
### 3,761,819
## BROADCAST SYSTEM FOR A CONTROL SIGNAL UNDER PROTECTION AGAINST SPURIOUR TRIGGERING
**Masao Fukata, 2-10-14, Shimorenjaku, Mitaka-shi, Tokyo, Japan**
**Filed Dec. 28, 1971, Ser. No. 212,926**
**Claims priority, application Japan, Dec. 28, 1970, 45/126331**
**Int. Cl. H04b** *1/00*
**U.S. Cl. 325—64** **9 Claims**

A broadcast system for a control signal under protection against spurious triggering caused by a false signal which is similar to the control signal. A monitoring device is provided at an appropriate position in the service area of the broadcast system for detecting the false signal before spurious triggering of the receiving side of the broadcast system caused by the false signal. The monitoring device transmits a false indication signal to the sending side in response to the false signal. The sending side transmits a spurious trigger protection signal in response to the false indication signal, only when the control signal is not being transmitted, for checking erroneous detection of the false signal by the receiving side. The signal configuration of the spurious trigger protection signal may be determined so that erroneous detection of the false signal by the receiving side is automatically eliminated. A spurious trigger protection signal detector may be further provided at the receiving side for performing the above checking function.



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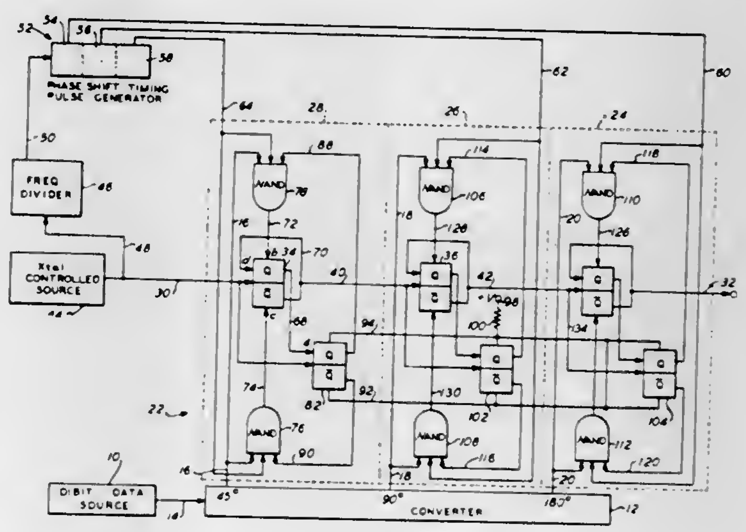
### 3,761,820
## PHASE SHIFT MODULATOR
**Norman Nieson, Massapequa, and Edward M. Barbach, Smithtown, both of N.Y., assignors to The Singer Company, Little Falls, N.J.**
**Filed Mar. 20, 1972, Ser. No. 236,044**
**Int. Cl. H04b** *1/06*
**U.S. Cl. 325—163** **11 Claims**



The phase shift of a carrier frequency as a function of data information is achieved by applying a first frequency signal to a multistage frequency divider to produce a reduced frequency output signal that constitutes the carrier frequency. Each stage of the frequency divider includes a binary device which is switched between its two stable states by the signal passing therethrough. The phase of the signal at each stage can be changed by 180° by changing the stable state of the stage independently of the signal passing therethrough with the resulting amount of phase shift of the carrier signal being determined by the location of the stage in the frequency divider. One or more of the stages can have their stable states so changed to produce the required phase shift of the carrier signal. A serial data train is sequentially decoded to provide one or more signals indicative of the decoded data which signals are gated to one or more of the frequency divider stages to switch their stable states so that the carrier frequency is phase shifted as a function of the serial data train.

### 3,761,821

### SYSTEMS FOR PROCESSING AND GENERATING FREQUENCY MODULATED SIGNALS

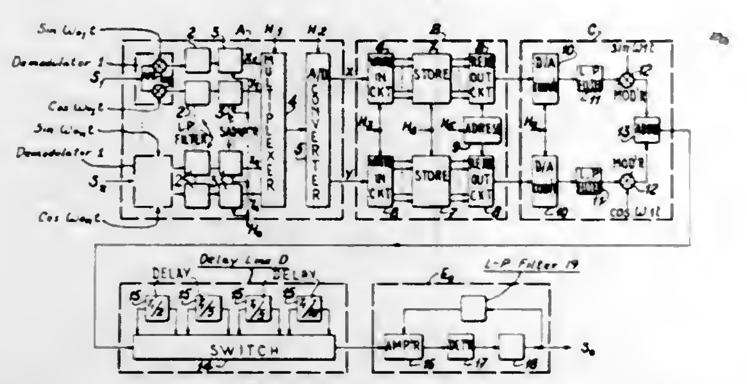
**Jean Bertheas, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed Oct. 7, 1971, Ser. No. 187,408**

**Claims priority, application France, Oct. 16, 1970, 7037459**

**Int. Cl. H04b** *1/00*

**U.S. Cl. 325—496** **13 Claims**



A system for signal processing using matched filtering after a time compression is provided wherein several signal ($S_1,..S_n$) are simultaneously processed through a multichannel system. Each signal is successively frequency translated, transformed into splitted complex signal components, further sampled, multiplexed and then quantized. Apparatus is provided for time-compression and a multiplex transmission of the said quantized signal components which are then reconverted, in a transfer unit, into an analog signal translated in the frequency band of a matched filter. Each of the functional units being controlled in accordance with the rythms ($H_0$, ... $H_n$) dictated by signals of a control source. The matched filter produces a mutual correlation function between the filter input signal and a time-compressed replica of the transmitted signal waveform at the said filter output. An output unit thereafter produces the processed signal. The system can be utilized to effect matched filtering of signals coming from panoramic sonar equipment with multiple preformed channels.

### 3,761,822

### MULTIPLE RECEIVER SELECTION SYSTEM

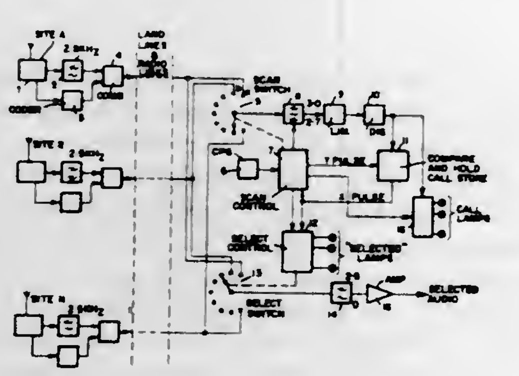
**John Bernard Richardson, and Anthony Keith Sharpe, both of Cambridge, England, assignors to Pye Limited, Cambridge, England**

**Filed Feb. 2, 1971, Ser. No. 112,108**

**Claims priority, application Great Britain, Feb. 5, 1970, 5,517/70**

**Int. Cl. H04b** *1/06*

**U.S. Cl. 325—301** **4 Claims**



The invention provides apparatus for selecting from a plurality of receiving stations, each station simultaneously receiving radio frequency signals containing identical information, the signal with the best signal-noise ratio. At each receiving station a control signal is generated, the frequency of which is determined by the signal-noise ratio of the radio signal received by that station. These signals are fed from the respective receiving stations to a central control which monitors the incoming control signals and selects the signal with the best signal-noise ratio.

### 3,761,823

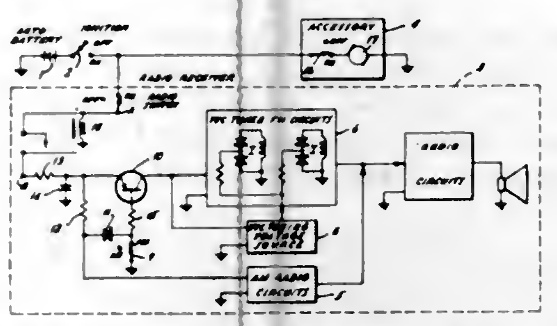
### AUTOMOTIVE RADIO RUNDOWN NOISE ELIMINATOR

**Wayne C. Harris, Ambler, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.**

**Filed July 27, 1971, Ser. No. 166,516**

**Int. Cl. H04b** *1/10*

**U.S. Cl. 325—313** **5 Claims**



A circuit is incorporated into an electronically tuned radio receiver for eliminating rundown noise. As the power supply voltage in an electronically tuned radio receiver declines, the radio does not merely fade away, it also has its tuning swept thereby producing an undesirable sound, herein termed "rundown noise." This can occur in electronically tuned solid state radio receivers that employ very large power supply filter capacitors which will operate the radio for a short period of time after the primary power supply has been terminated. In automotive systems the existence of an electric-motor-containing accessory, such as a heater or air conditioner, may produce rundown noise. If the motor is running while the radio is in operation, turning the ignition switch off removes power to the system but the electric motor, while coasting to a stop, acts as a d-c generator thereby supplying a declining voltage to the radio. The circuit of this invention terminates radio operation abruptly when the power supply voltage drops below a predetermined value.

### 3,761,824

### PULSE FREQUENCY DIVIDER

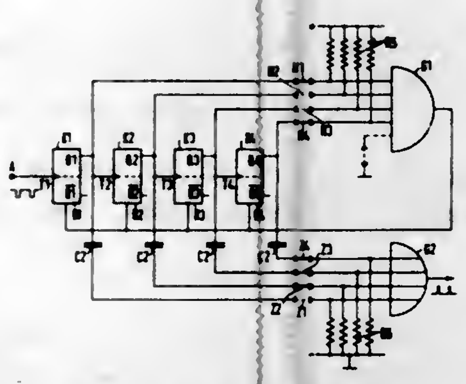
**Reinhard Stark, and Gunther Steinmuller, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany**

**Filed Nov. 23, 1971, Ser. No. 201,474**

**Claims priority, application Germany, Nov. 25, 1970, P 20 57 903.7**

**Int. Cl. H03k** *21/00*

**U.S. Cl. 328—39** **5 Claims**



A frequency divider has an AND gate having an output connected in common to the reset inputs of a chain circuit of bistable flip flops. The frequency divider drives a presettable number of pulses of an input pulse train from the flip flops via a selector switch connected to their outputs. The outputs of the flip flops are connected to the inputs of the AND gate via preselectable circuit connections for setting the denominator of the number of pulses.

### 3,761,825

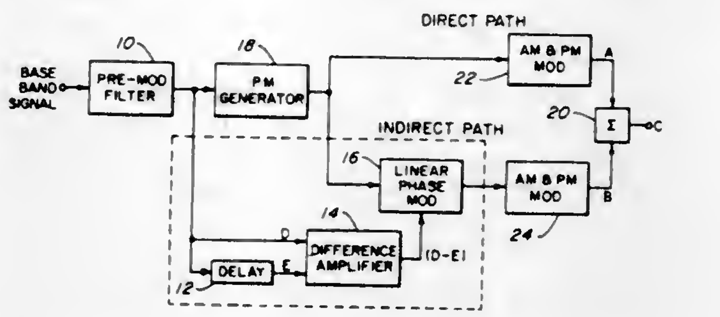
### MULTIPATH SIMULATOR FOR MODULATED R.F. CARRIER SIGNALS

**Eugene R. Hill, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 14, 1972, Ser. No. 280,615**

**Int. Cl. H03k** *17/02;* **G01s** *9/00*

**U.S. Cl. 328—71** **16 Claims**



A multipath simulator which delays a baseband signal and then translates this delay to the modulated RF signal. This is done by producing a difference signal which is the difference between the delayed and undelayed baseband signals. The undelayed baseband signal first modulates the RF carrier directly. This modulated RF carrier is then divided into two branches. The difference signal is then used to modify the modulation on one of these branches to make it appear as if it had been modulated by the delayed baseband signal. The linear sum of these two RF signals is a signal which simulates the effects of multipath on modulated RF carrier signals.

### 3,761,826

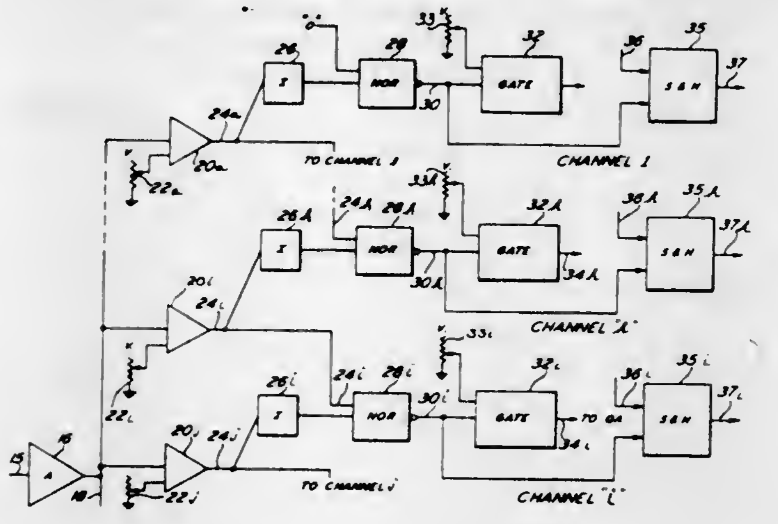
### MULTICHANNEL PROGRAMMER

**Richard Douglas Lowe, Mountain View, Calif., assignor to Electronic Associates Inc., Long Branch, N.J.**

**Filed Oct. 13, 1972, Ser. No. 297,236**

**Int. Cl. H03k** *17/30, 17/76*

**U.S. Cl. 328—105** **10 Claims**



A multichannel programmer in which the channels are switched on one at a time under the control of a sweep signal. Each channel comprises a comparator (except for the first channel), a NOR circuit, an inverter, a gate and a sample and hold circuit. Each comparator compares an individual threshold with the sweep and the output thereof is applied to the NOR circuit. The other input to the NOR circuit is coupled through an inverter to the comparator output in the next succeeding channel in the sequence. The NOR circuit switches on the gate and the sample and hold from the time the sweep crosses the respective threshold until the sweep crosses the threshold of the next succeeding channel in the sequence.

### 3,761,827

### SWITCHING DEVICE FOR MEASURING ELECTRICAL CURRENTS AND VOLTAGES

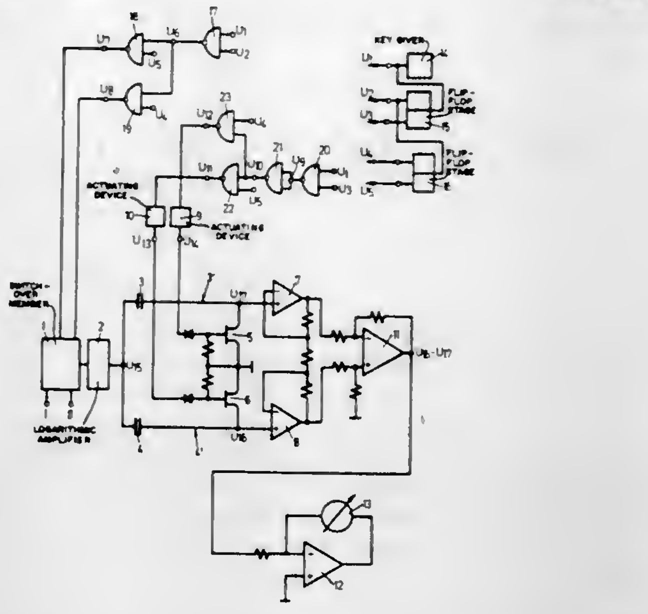
**Gabriel A. A. Tchang, Stockholm, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany**

**Filed Nov. 22, 1971, Ser. No. 200,694**

**Claims priority, application Germany, Dec. 5, 1970, P 20 59 924.0**

**Int. Cl. H03k** *5/18, 5/20*

**U.S. Cl. 328—105** **8 Claims**



A switching device is used for measuring electrical voltages and/or currents or their differences, particularly for measured values produced in the photometry from tests and comparative tests. The invention is particularly characterized in that values which are to be measured or compared are transformed into a sequence of impulses consisting of impulses following each other alternately in time sequence and having amplitudes corresponding to the measured values. The sequence of impulses, possibly after amplification, is further treated in two separate channels. The treatment consists in that when an impulse of the sequence is present which corresponds to one measured value in one or the other channel, the potential of the impulse sequence in that channel is shifted in the same direction by the corresponding amplitude value. The impulse sequences thus shifted are transmitted to a difference former.

### 3,761,828

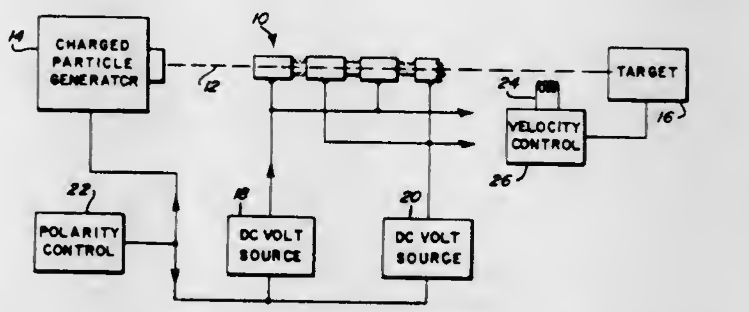
### LINEAR PARTICLE ACCELERATOR WITH COAST THROUGH SHIELD

**Jesse I. Pollard, Box 167, Conyngham, Pa., and Jesse I. Pollard, II, Box 7181, University, Miss.**

**Filed Dec. 10, 1970, Ser. No. 96,929**

**Int. Cl. H01j** *23/00, 29/00*

**U.S. Cl. 328—227** **8 Claims**

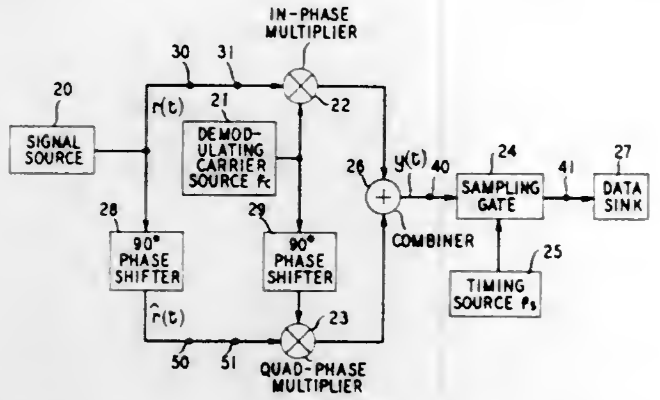


Charged particles injected into an energy beam, are accelerated by electric fields established in gaps between tubular electrodes through which the particles pass. Alternate gaps between the electrodes are enclosed by tubular shields through which the particles coast between the accelerating fields. The electrodes are charged by d.c. sources of opposite polarity.

### 3,761,829
### COHERENT DIGITAL DEMODULATOR

**David Adams Spaulding, Colts Neck, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed June 1, 1972, Ser. No. 258,609**
**Int. Cl. H03k** *9/02*
**U.S. Cl. 329—104** **7 Claims**



A digital coherent demodulator for signals pulse-amplitude modulated in the passband of data transmission systems multiplies sampled values of quadrature-related components of received data-channel signals by the respective sampled values of sines and cosines of the demodulating carrier wave and combines these two products to form a sampled baseband signal from which the transmitted data is recoverable. All samples are taken at twice the highest baseband frequency rather than at twice the highest passband frequency. The usual requirement for a low-pass filter to eliminate double-frequency components generated in the conventional demodulation process is also avoided.

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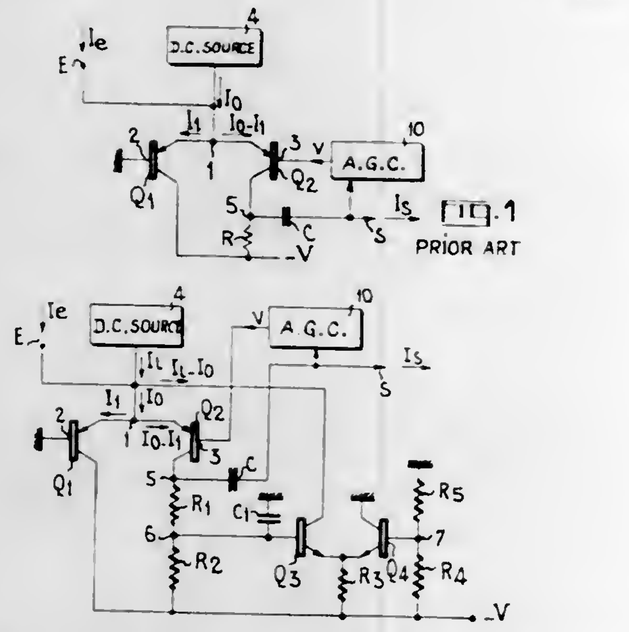
### 3,761,830
### VARIABLE-GAIN LOW-NOISE AMPLIFIER

**Claude Claverie, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed Feb. 14, 1972, Ser. No. 225,735**
**Claims priority, application France, Nov. 2, 1971, 7139217**
**Int. Cl. H03g** *3/30*
**U.S. Cl. 330—29** **2 Claims**



A transistorized variable-gain amplifier amplifies an alternating input current $I_e$ to deliver an alternating current $I_s$ of constant amplitude. For this purpose the alternating input current is amplified proportionately to the variations in the current $I_s$ about the desired output value. Moreover, in order to increase the signal-to-noise ratio, the input direct current added to the alternating current $I_e$, is made proportional to the amplitude of $I_e$; the current $I_s$ is separated from the amplified direct current, so as to be directed to the output of the amplifier.

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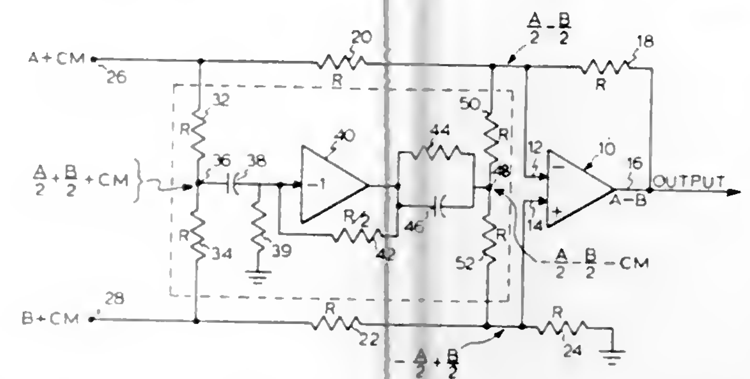
### 3,761,831
### COMMON MODE REJECTION MEANS FOR DIFFERENTIAL CIRCUITS

**Roy P. Foerster, Thousand Oaks, Calif., assignor to The Bunker-Rambo Corporation, Oak Brook, Ill.**

**Continuation of Ser. No. 860,636, Sept. 24, 1969, abandoned.**
**This application Feb. 28, 1972, Ser. No. 230,150**
**Int. Cl. H03f** *1/00*
**U.S. Cl. 330—69** **7 Claims**



Electronic circuit apparatus for increasing the common mode rejection capability of a differential circuit. The circuit apparatus is comprised of a network which algebraically operates on first and second input signals, each comprised of an input information component and a common mode noise component, to cancel the common mode noise components and isolate the input information components for application to the differential circuit. Significantly, first and second input signal paths through the network are formed of passive components, thus permitting the paths to be easily balanced. The only active components in the network are contained within a common mode signal path which need not be balanced, but merely stable. As a consequence, prior art problems caused by unequal phase delays in first and second input signal paths are avoided.

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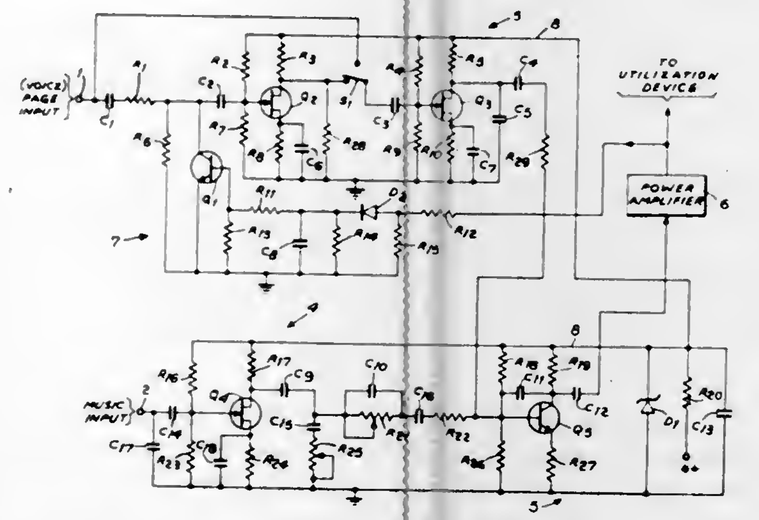
### 3,761,832
### PREAMPLIFIER FOR MUSIC AND VOICE

**David E. Blattenberger, Harrisburg, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed July 21, 1971, Ser. No. 164,724**
**Int. Cl. H03f** *3/68*
**U.S. Cl. 330—30 R** **2 Claims**



There is disclosed a preamplifier for both music and voice that will enable achieving the best quality for both music and voice. The preamplifier includes an amplifier circuit for music whose components are adjusted or selected to provide the desired music quality and a distinct amplifier circuit for voice whose components are adjusted or selected to provide the desired voice quality. The output of these two distinct amplifier circuits are coupled to a common amplifier stage prior to being coupled to a common power amplifier. With this arrangement, a simplified automatic gain control circuit driven by the output signal of the power amplifier can be provided for the voice amplifier circuit.

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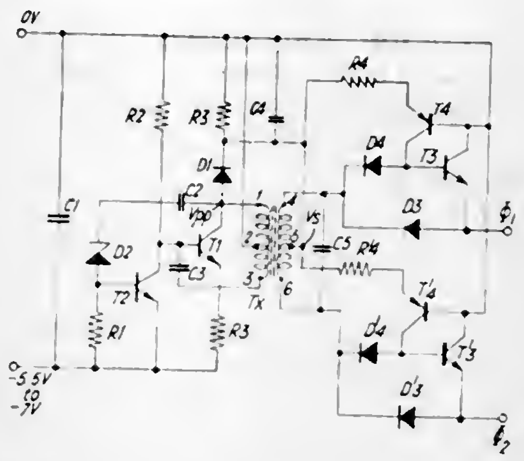
### 3,761,833
### AMPLITUDE STABILIZED L.C. OSCILLATOR WITH OUTPUT CIRCUITS FOR PRODUCING SEMI-SINUSOIDAL CLOCK PULSES

**Heinz Bernhard Mader, Weinfelden, Switzerland, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Aug. 14, 1972, Ser. No. 280,601**
**Claims priority, application Great Britain, Sept. 2, 1971, 40941/71**
**Int. Cl. H03b** *3/02, 5/12*
**U.S. Cl. 331—45** **6 Claims**



This self-oscillating clock driver circuit generates two half-sinusoidal, non-overlapping phases of output intended primarily for driving two-phase MOST circuits in a quick-step push-button dial telephone. A Hartley oscillator, modified to include an amplitude stabilization circuit, drives a pair of transistor output circuits which in turn drive the capacitive loads in a push-pull manner. The clock driver arrangement also functions as a master oscillator in the subscriber handset to provide the push-button tone frequencies.

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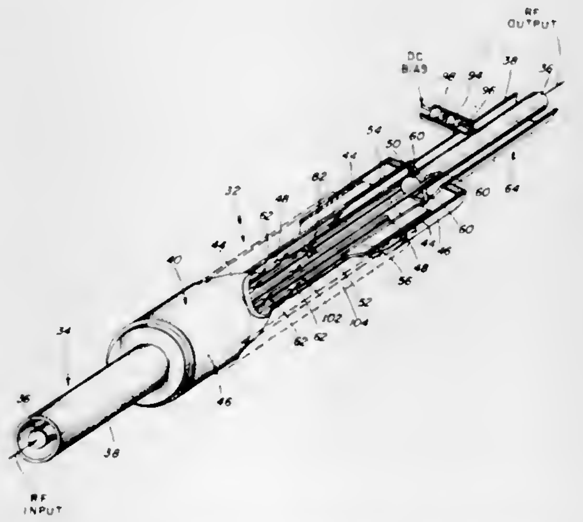
### 3,761,834
### COMPOSITE WAVE AMPLIFIER

**Kenneth W. Dudley, Sudbury; George H. MacMaster, Waltham, and Lawrence J. Nichols, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed Oct. 20, 1971, Ser. No. 190,840**
**Int. Cl. H03f** *15/00*
**U.S. Cl. 330—61 A** **6 Claims**



A solid state composite wave amplifier is disclosed, having a corporate fed TEM mode linear RF structure with numerous transmission lines in parallel. Negative resistance devices such as the IMPATT type diode are mounted between each transmission line to provide a plus and minus mode configuration of the RF energy with the in-phase energy being transmitted axially along the lines. Cylindrical inner and outer resistor structures selectively absorb the radiated out-of-phase energy and assure the desired propagation mode orientation. A compact hybrid structure is provided for combining large numbers of negative resistance devices with equal RF voltage, power and impedance characteristics. Input and output transitions, such as balun transformers are utilized for the two-port transmission amplifier. A single-port reflection type amplifier also incorporated the invention.

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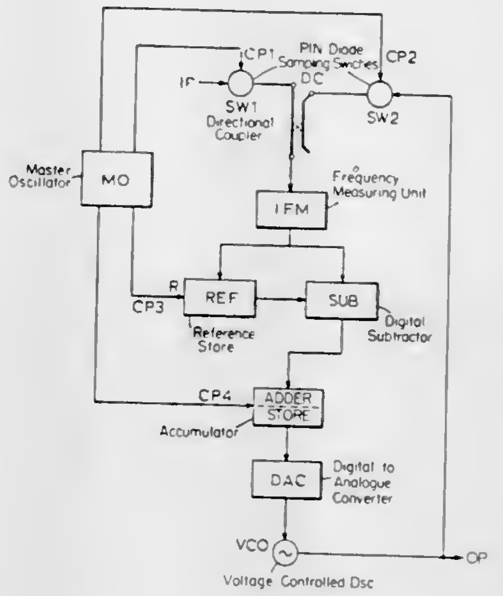
### 3,761,835
### AUTOMATIC FREQUENCY CONTROL SYSTEM

**John Michael William Cook, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 14, 1971, Ser. No. 189,210**
**Claims priority, application Great Britain, Oct. 19, 1970, 49,471/70**
**Int. Cl. H03b** *3/04*
**U.S. Cl. 331—1 A** **5 Claims**



The present invention relates to an automatic frequency control (AFC) system for controlling the frequency of an oscillator.

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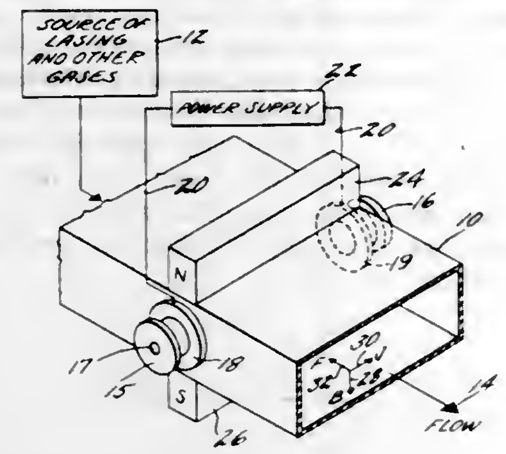
### 3,761,836
### MAGNETICALLY COMPENSATED CROSS FIELD FLOWING GAS LASER

**Edward A. Pinsley, North Palm Beach, Fla.; Albert W. Angelbeck, East Hartford, and Carl J. Buczek, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Continuation of Ser. No. 877,320, Nov. 17, 1969, abandoned.**
**This application Jan. 7, 1972, Ser. No. 216,302**
**Int. Cl. H01s** *3/22, 3/09*
**U.S. Cl. 331—94.5** **2 Claims**

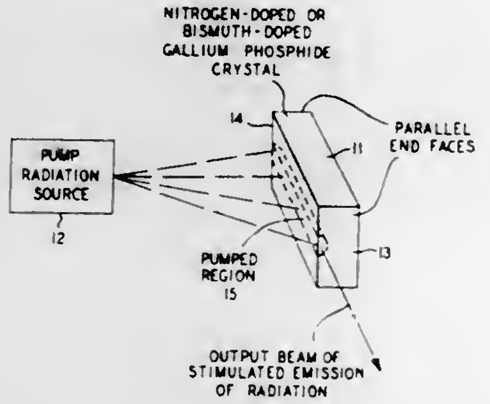
A flowing gas laser having an electric discharge plasma with the electric field oriented transversely with respect to the flow of gases therethrough is provided with a magnetic field which is oriented transversely with respect to both the flow and the electric field to overcome the forces of flowing gases thereon.



## 3,761,837
## LASERS IN INDIRECT-BANDGAP SEMICONDUCTIVE CRYSTALS DOPED WITH ISOELECTRONIC TRAPS

**Robert Francis Leheny, Little Silver; Ralph Andre Logan, Morristown; Robert Edward Nahory, Lincroft, and Kerry Lee Shaklee, Sea Bright, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed Oct. 8, 1971, Ser. No. 187,631**
**Int. Cl. H01s** *3/00*
**U.S. Cl. 331—945 H** **1 Claim**


NITROGEN-DOPED OR BISMUTH-DOPED GALLIUM PHOSPHIDE CRYSTAL
14
11
PARALLEL END FACES
PUMP RADIATION SOURCE
12
PUMPED REGION
15
13
OUTPUT BEAM OF STIMULATED EMISSION OF RADIATION

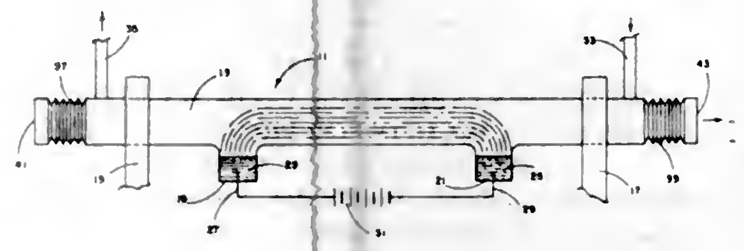
There are disclosed lasers in indirect-bandgap semiconductive crystals, such as gallium phosphide crystals containing isoelectronic traps such as those provided by nitrogen or bismuth, in which low-threshold, high-gain stimulated emission of coherent radiation is obtained. It was previously believed that stimulated emission in indirect-bandgap materials was unlikely. In contrast to similarly-composed electroluminescent devices, such a laser typically has an optical resonator provided along the junction plane. An experimental embodiment is a superradiant laser that is optically pumped by coherent light along a line extending to an edge of the crystal.

## 3,761,838
## ROOM TEMPERATURE CO LASER

**Mani L. Bhaumik, Pasadena; Don D. Diem, Lakewood, and Michael M. Mann, Redondo Beach, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.**

**Filed Sept. 11, 1970, Ser. No. 71,348**
**Int. Cl. H01s** *3/22*
**U.S. Cl. 331—94.5** **6 Claims**

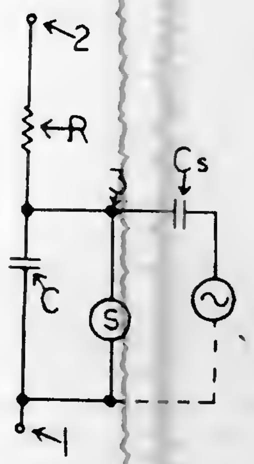
A high efficiency, high power carbon monoxide laser continuously operable at room temperature utilizing as a gaseous mixture 0.50 to 5.0 torr of CO, 25 to 500 torr He, 2 to 50 torr $N_2$ and 0.010 to 2 torr of $O_2$ or NO. The efficiency of the laser at room temperature can be further improved by adding 1 to 5.0 torr xenon to the gaseous mixture. Additionally, the efficiency can be further improved by utilizing mercury vapor in the gaseous discharge.



## 3,761,839
## SYNCHRONOUS FIRING CIRCUIT

**Henry N. Switsen, 11319 Vanowen St., N. Hollywood, Calif.**

**Filed June 14, 1971, Ser. No. 152,699**
**Int. Cl. H03k** *3/02*
**U.S. Cl. 331—107 R** **5 Claims**

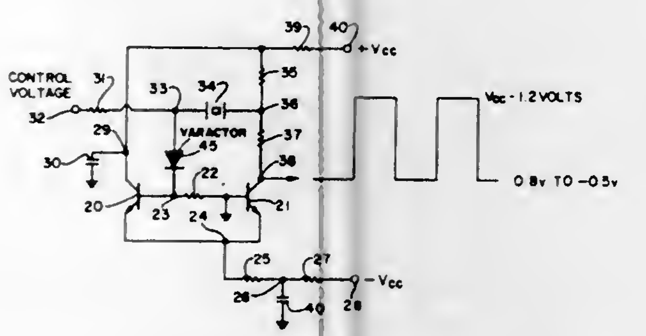


A circuit for modifying a standard Resistance-Capacitance charging circuit, commonly referred to as R.C. circuits, so as to make them more likely to reach a required voltage at only certain phases of the charging voltage, when that charging voltage contains a ripple component.

## 3,761,840
## VOLTAGE CONTROLLABLE CRYSTAL DIGITAL CLOCK

**Gordon F. Bremer, St. Petersburg, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.**

**Filed July 21, 1972, Ser. No. 274,117**
**Int. Cl. H03b** *5/36*
**U.S. Cl. 331—116 R** **9 Claims**

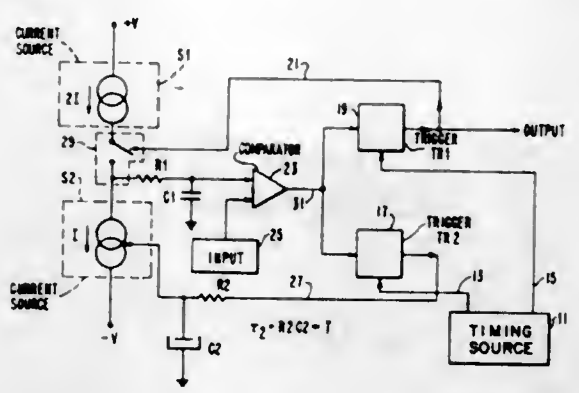


A TTL (transistor-transistor-logic) compatible voltage controllable crystal digital clock having a relatively wide linear frequency control range with relatively small control voltage range. A quartz crystal in series with a voltage variable reactance is coupled in a regenerative loop of an oscillator circuit. A control voltage varies the capacitance of the voltage variable reactance resulting in a phase shift around the regenerative loop and changing the frequency of oscillation of the circuit.

## 3,761,841
## SERVOBALANCED DELTA MODULATOR

**Christian Augustin Jacquart, Carros, France, assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Feb. 15, 1972, Ser. No. 226,473**
**Claims priority, application France, Feb. 25, 1971, 7107550**
**Int. Cl. H03k** *13/22*
**U.S. Cl. 332—11 D** **1 Claim**

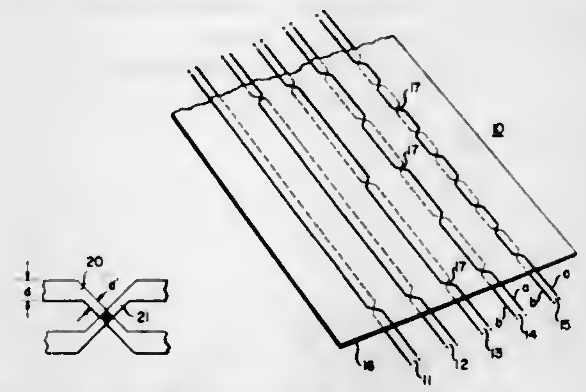


Idle channel noise is reduced in a delta modulator encoding at a rate 1/*T* by sampling the modulator output at the same rate 1/*T* but time delayed by $\tau$ seconds and by modifying the feedback integrator output by an amount $\Delta I \leq I\sqrt{2T/\tau 2}$, where *I* is the amount of the integrator incrementing step and $1/\tau_2$ is the upper frequency cutoff of the modifying means, $\tau_2$ being greater than *T*.

## 3,761,842
## TWISTED PAIR FLAT CONDUCTOR CABLE WITH MEANS TO EQUALIZE IMPEDANCE AND PROPAGATION VELOCITY

**William Bentley Gandrud, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed June 1, 1972, Ser. No. 258,530**
**Int. Cl. H01p** *3/02*
**U.S. Cl. 333—1** **6 Claims**



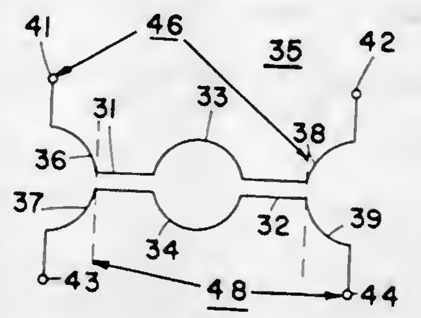
The use of so-called paired flat cable in interconnection work is attractive because of mass termination and rearrangement cost benefits. Flat cable has been supplied with differing twist lengths to meet crosstalk problems, but present such designs also exhibit an unacceptable difference from pair to pair of characteristic impedance and propagation velocity.

The present invention eliminates these differences by recognizing that the capacitance at each crossover point of a twisted pair can be controlled by making a crossover smaller in area for pairs with shorter twist lengths and larger for those with longer twist lengths. The capacitance per unit length and, by the same mechanism, the impedance and propagation velocities are thus equalized among the pairs of the flat cable.

## 3,761,843
## FOUR PORT NETWORKS SYNTHESIZED FROM INTERCONNECTION OF COUPLED AND UNCOUPLED SECTIONS OF LINE LENGTHS

**Joseph D. Cappucci, Wayne, N.J., assignor to Merrimac Industries, Inc., W. Caldwell, N.J.**

**Filed May 16, 1972, Ser. No. 253,862**
**Int. Cl. H01p** *5/14*
**U.S. Cl. 333—10** **43 Claims**

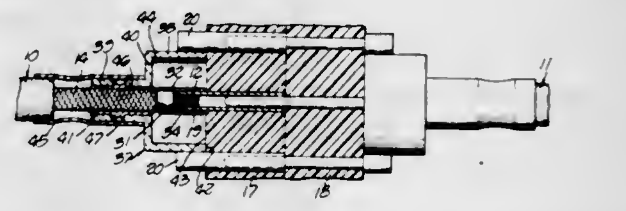


A circuit building block for simulating quarter wave length four-port devices is disclosed. The building block includes two sections each made from a pair of coupled lines which are substantially equal in length and have substantially equal phase velocity in the even and odd modes of excitation. The pairs of coupled lines each have an even mode impedance of $Z_e$ and an odd mode impedance of $Z_o$. The characteristic impedance of the line $Z_t$ is equal to $\sqrt{Z_eZ_o}$. A pair of uncoupled lines interconnects the pairs of coupled lines in series. The uncoupled lines each have a characteristic impedance of $Z_t$. Another pair of uncoupled lines is connected to each unconnected end of the pairs of coupled lines to provide phase correction. The disclosure also teaches how to use the basic circuit to provide functions normally provided by other structures. The disclosure also teaches the use of a four-port device for impedance matching and phase shifting.

## 3,761,844
## IMPEDANCE-MATCHING APPARATUS FOR CONNECTING CO-AXIAL CABLES THROUGH SEPARABLE CONNECTORS OR MULTIPLE PIN TYPE

**Larry R. Reeder, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**

**Filed Feb. 2, 1972, Ser. No. 222,810**
**Int. Cl. H03h** *7/38;* **H01r** *13/10, 17/18*
**U.S. Cl. 333—33** **16 Claims**



Electrical connector blocks of conventional type each have an array of parallel metal pins. Such connector blocks are rendered suitable for connecting matched impedance co-axial cables, by means of metallic shield-conductors of this invention. The connection of each co-axial cable to its respective connector block employs a first electrical connection between the central conductor of the cable and one of the pins in the array. The shield-conductor employs a second electrical connection between the metal sheath of the cable and employs additional electrical connections to other adjacent pins in the array. A projecting portion of the central conductor extends beyond the end of the metal sheath to its electrical connection with its pin, and the inner surface of a portion of the metallic shield-conductor partially or totally encircles that projecting portion and its joined pin. A dielectric sleeve within said inner surface also encircles the projecting portion of the central conductor and its joined pin. The inner surface of the shield-conductor is sized and shaped so that the impedance between it and the central conductor through the dielectric sleeve is substantially the same as that of the co-axial cable itself.

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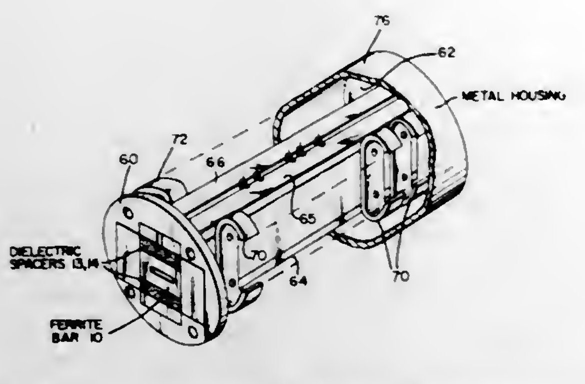
### 3,761,845
## FABRICATION METHOD AND APPARATUS USING FERRITE FOR SHIFTING PHASE OF AN ELECTROMAGNETIC WAVE

James S. Ajioka, and William R. Barten, both of Fullerton, Calif., assignors to Hughes Aircraft Corporation, Culver City, Calif.

**Filed July 27, 1972, Ser. No. 275,841**

**Int. Cl. H01p** *1/32*

**U.S. Cl. 333—24.1** **3 Claims**



The present invention relates to an apparatus and method of manufacture of a simple and inexpensive ferrite phase shifter. It is economical to have the ferrite bar with its concommitant longitudinal rectangular hole for the high dielectric constant insert to be fired in the desired shape but it is rather difficult to hold the high tolerance of flatness required to fit the precision waveguide housing normally used. The "as fired" ferrite bars are often slightly warped or have a slight twist and likewise the hole generally follows the distortions of the entire ferrite bar, i.e., the hole is not perfectly straight. From the electrical point of view, a slight warpage in the bar is not in itself detrimental. It is undesirable only because it cannot be accurately fitted to the waveguide housing. These and other problems are circumvented by wrapping a metallic foil around a composite structure comprised of the ferrite bar and side spacers of low dielectric constant to form the phase shifter.

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### 3,761,846
## IMPEDANCE-MATCHING RESISTOR

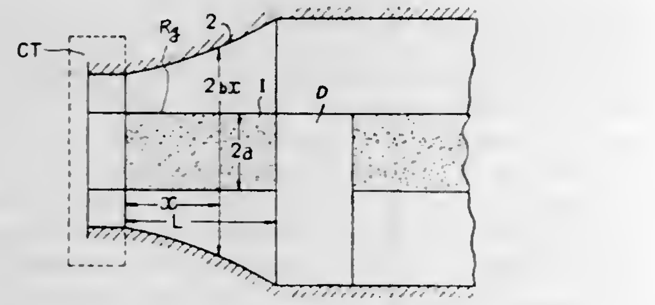
Kiyoshi Tsuboi, Setagaya-ku, Tokyo-to, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo-to, Japan

**Filed May 3, 1971, Ser. No. 139,326**

**Claims priority, application Japan, May 4, 1970, 45/37458**

**Int. Cl. H03h** *7/38*

**U.S. Cl. 333—33** **5 Claims**



An impedance-matching resistor connected between two transmission paths of different characteristic impedances $Z_0$ and $(Z_0 + Rg)$ by the use of a series-impedance Rg, in which the impedance-matching resistor is formed into a transmission line, such as a coaxial line or a strip line, and a characteristic impedance Zch of the transmission line is varied so as to meet with a condition $(Z_0 + x/L \cdot Rg)$ at a medium point spaced by a distance $x$ from the input of one of said two transmission paths, the above mentioned one of the two transmission paths having the characteristic impedance $Z_0$.

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### 3,761,847
## DRIVE MECHANISM FOR ELECTRICAL SWITCHES

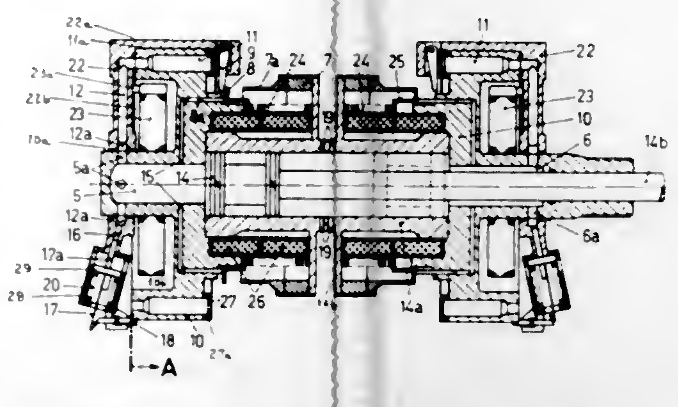
Harald Strubin, Neuenhof, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

**Filed Sept. 8, 1972, Ser. No. 287,285**

**Claims priority, application Switzerland, Sept. 23, 1972, 13843/72**

**Int. Cl. H01h** *39/00*

**U.S. Cl. 335—1** **9 Claims**



A double-acting drive mechanism for actuating the contacts of an electrical switch between open and closed position includes a cylinder having a double-acting piston therein and a piston rod extending through one end of the cylinder for connection to the contact actuating mechanism of the switch. Each end of the cylinder is closed by a stationary member having a flanged portion provided with one or more circular rows of cartridge chambers serving as a magazine and which communicate with the corresponding end of the cylinder, and a latch-releasable spring-driven rotary member carrying a firing pin is mounted on each end closure member for the cylinder for rotation in a step-by-step manner around the row of cartridge chambers so as to fire the cartridges in succession.

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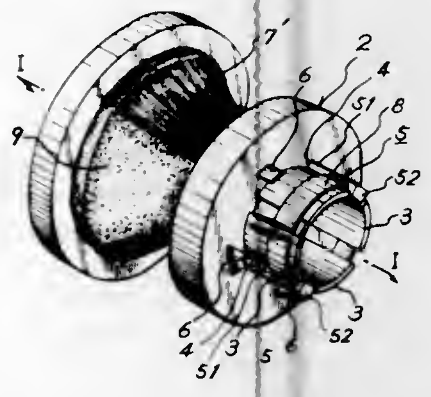
### 3,761,848
## MEANS SECURING A DEFLECTION YOKE TO THE NECK OF A CATHODE RAY TECHE

Katsuyoshi Sugiura, Yokohama, Kanagawa, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

**Filed Jan. 2, 1973, Ser. No. 320,478**

**Int. Cl. H01f** *7/00*

**U.S. Cl. 335—210** **5 Claims**



A deflection yoke having hook members which retains a clamp band from outside and is projected from the rear face of the flanged part provided at the tapered smaller end portion of a horn type bobbin.

### 3,761,849
## DEFLECTION COIL ASSEMBLY

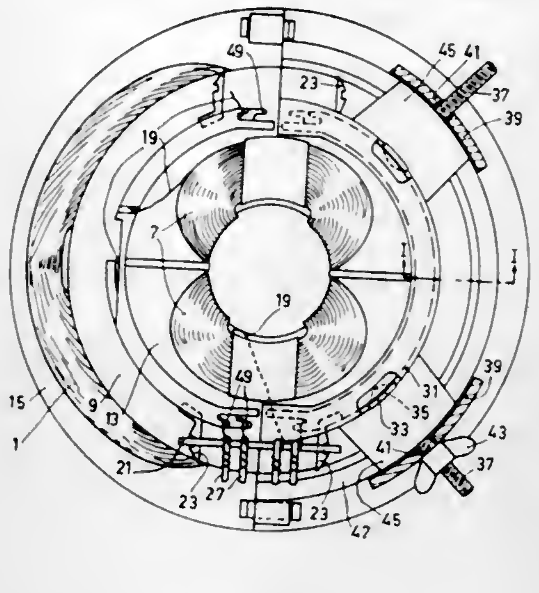
Martin Clemens Van Der Heijde, and Adriaan Jacob Groothoff, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

**Filed Sept. 9, 1971, Ser. No. 179,127**

**Claims priority, application Netherlands, Sept. 12, 1970, 7013513**

**Int. Cl. H01f** *7/00*

**U.S. Cl. 335—210** **7 Claims**



A deflection coil assembly having two pairs of saddle coils between which a flared insulating body having a flange at its narrow end is provided, said flange being provided with circumferential grooves in which connecting wires extend from the coils to the connecting plates secured to the flange.

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### 3,761,850
## PERMANENT MAGNETIC FLUX CIRCUIT AND AN ACTUATING MEMBER WITH ADJUSTING MEANS

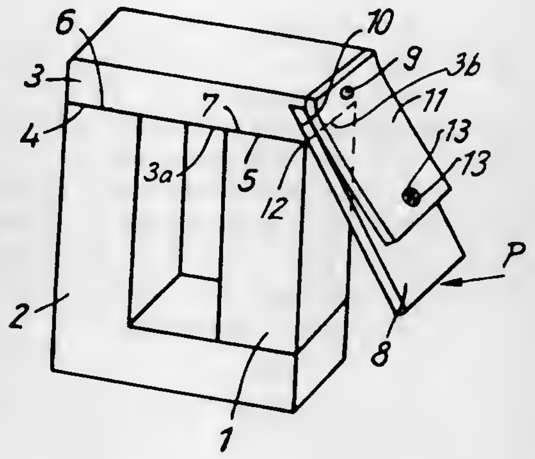
Hans Schindler, Egelsbach, Germany, assignor to Braun Aktiengesellschaft Patentabteilung, Postfach, Germany

**Filed Feb. 2, 1972, Ser. No. 222,954**

**Claims priority, application Germany, Feb. 28, 1971, P 21 42 293.5**

**Int. Cl. H01f** *7/08*

**U.S. Cl. 335—229** **6 Claims**



A magnetic igniter has a magnet and an armature which, in the closed position, closes the magnetic flux circuit; in the open position, the armature interrupts the magnetic flux circuit; a resilient operating member is connected to the armature, and extends from the magnet at an angle, and adjusting means are operative to pretension the operating member by reducing said angle.

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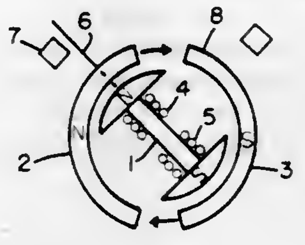
### 3,761,851
## SECTOR MOTOR, DIRECT MOTION ROTARY ACTUATOR

Victor Nelson, 25, Dix Hills, N.Y.

**Continuation of Ser. No. 85,415, Oct. 30, 1970, abandoned. This application June 19, 1972, Ser. No. 263,951**

**Int. Cl. H01f** *7/08*

**U.S. Cl. 335—253** **4 Claims**



A two-pole armature located between two field poles provides a direct motion rotary actuator with high starting torque and angular rotation over substantially any angle angle than 180°180°Latching, non-latching, fail-safe return return motion, torque are torque are of few of the many of modes.

Rotary actuators Rotary widely used widely used providing angular providing angular predetermined over predetermined angles. common most common called are called rotary solenoids since linear convert linear solenoid rotary motion. Rotary motion. have solenoids number a limitations of limitations characteristics even though even have they the93 been the subject of intensive development used are large in large quantities. Rotary inefficient are noisy. Starting torque is low and ending torque is high just the opposite to that of and ideal device. idea device.

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### 3,761,852
## DEVICE FOR SEPARATING GAS BUBBLES FROM A LIQUID

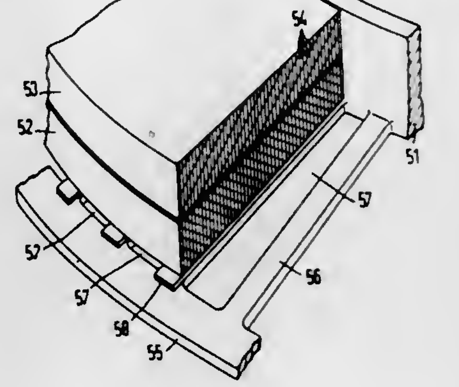
Cord Albrecht, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin/Munich, Germany

**Continuation of Ser. No. 53,316, July 8, 1970, abandoned, which is a division of Ser. No. 753,646, Aug. 19, 1968, abandoned. This application Apr. 30, 1972, Ser. No. 257,990**

**Claims priority, application Germany, Aug. 22, 1967, P 16 19 918.1**

**Int. Cl. B01d** *53/00*

**U.S. Cl. 336—58** **10 Claims**



Described is a device for separating gas bubbles contained in a liquid from said liquid. The device comprises several plates extending essentially parallel to each other and provided with openings. The plates are arranged above each other and are placed diagonally to the direction of the gas bubble movement in the liquid. The openings of one plate are displaced from the openings of the adjacent plates. The openings on the plate sides which face into the movement direction of the bubbles, are enclosed by material protrusions. The areas of those plate sides which lie between these openings are designed as coherent gas collecting and diverting areas. The device is particularly useful in superconducting magnetic coils.

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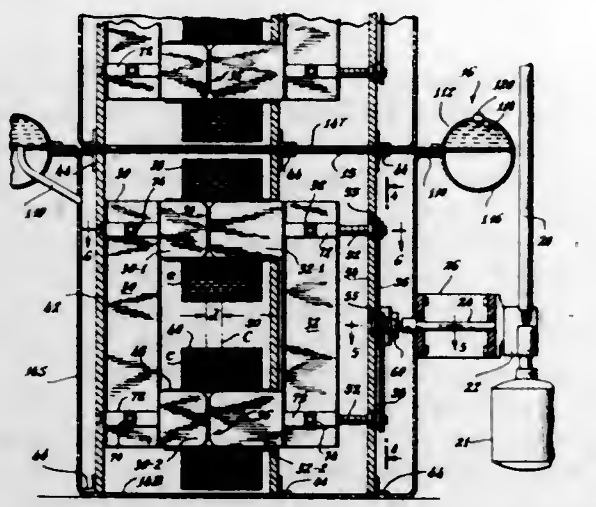
### 3,761,853
### MECHANICALLY VARIABLE MODULAR HIGH REACTIVITY POWER INDUCTOR FOR HIGH A. C. VOLTAGE RESONANT TESTING OF CAPACITIVE LOADS

**Richard F. Schutz, and Stanley G. Peschel, both of Brewster, N.Y., assignors to Hipotronics, Inc., Brewster, N.Y.**

**Filed Nov. 13, 1972, Ser. No. 305,867**

**Int. Cl. H01f** *21/06*

**U.S. Cl. 336—58** **23 Claims**



A mechanically variable high reactivity power inductor is described for high A.C. voltage testing capacitive loads, such as high voltage electrical power transmission cables, large capacitors, or groups of capacitors, and transmission and generation equipment.

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### 3,761,854
### OVERCURRENT RELEASE OF ELECTRIC SWITCH IN PARTICULAR OF SWITCH BREAKER

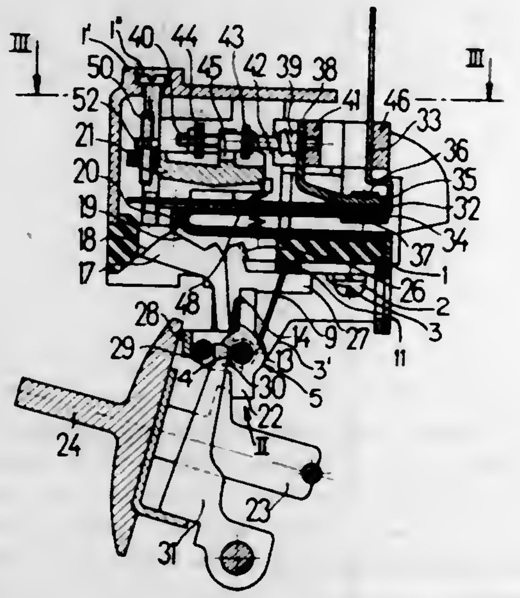
**Tadeusz Kubiak, and Jan Jagiello, both of Lodz, Poland, assignors to Lodzkie Zaklady Aparatury Elektrycznej, Lodz, Poland**

**Filed Apr. 23, 1971, Ser. No. 136,749.**

**Claims priority, application Poland, Apr. 30, 1970, 140335**

**Int. Cl. H01h** *71/16*

**U.S. Cl. 337—71** **3 Claims**



A circuit breaker provided with a thermal and electromagnetic element has two levers and two torsion springs. The torsion springs are prestressed and exert on the levers oppositely-directed forces, whereby the force exerted by the first torsion spring on the first lever is greater than the force exerted by the second torsion spring on the second lever. The levers act as the force-transmitting members of the breaker.

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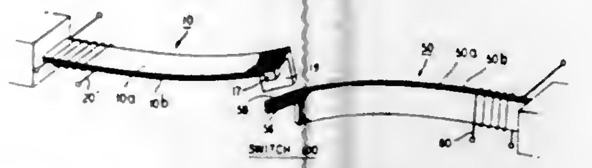
### 3,761,855
### LATCHING SWITCH

**Mark Allan Townsend, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Apr. 27, 1972, Ser. No. 248,043**

**Int. Cl. H01h** *61/00*

**U.S. Cl. 337—78** **9 Claims**



A latching switch comprising two normally electrically isolated contact elements which mechanically latch to complete an electrical connection when deflected in a prearranged sequence in substantially orthogonal directions. Each element of the switch is comprised of a bimetal, deflection thereof being effected electrothermally.

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### 3,761,856
### THERMAL WARNING OR PROTECTION DEVICE

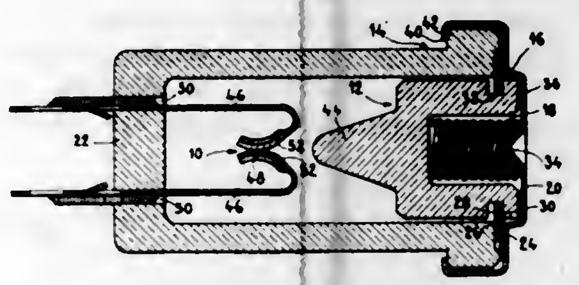
**Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France**

**Filed Apr. 18, 1972, Ser. No. 245,079**

**Claims priority, application France, Apr. 29, 1971, 71 15344**

**Int. Cl. H01h** *37/76*

**U.S. Cl. 337—409** **4 Claims**



A thermal protection device comprises an electric switch mounted in a holder and a contact element movable in the holder into operating engagement with the switch. The contact element is spring-biassed into engagement with the switch but is normally held out of engagement by a washer which abuts against a shoulder formed on each of the contact element and the holder. The washer is fusible at a known temperature and melts at this temperature to allow the contact element to be urged into engagement with the switch.

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### 3,761,857
### RESISTANCE WIRE TEMPERATURE SENSOR AND METHOD OF MAKING SAME

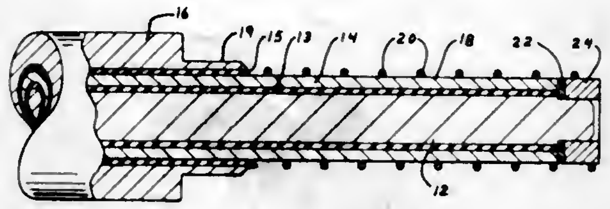
**John T. M. Carlson, Edina, and Gerald P. Lawson, Blaine, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.**

**Filed Oct. 4, 1971, Ser. No. 186,001**

**Int. Cl. H01c** *7/00*

**U.S. Cl. 338—30** **8 Claims**

A resistance temperature sensor adapted to be produced in a semiautomated manner and which is extremely rugged in construction. The basic lead and support element is made in long lengths and then trimmed to stock lengths and the resistance wire is then mounted and enclosed. The exact overall length of the resistance sensor can be altered to a particular customer's requirements by trimming the lead and support assembly without substantially affecting the calibration of the resistance sensor. The sensor is constructed so that it is extremely rugged and insensitive to handling, and at the same time gives high accuracy.



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### 3,761,858
### VARIABLE RESISTOR ASSEMBLY WITH COMPOSITE CIRCUITS

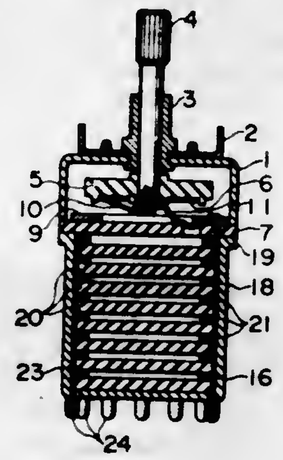
**Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Oct. 2, 1972, Ser. No. 293,936**

**Claims priority, application Japan, Oct. 7, 1971, 46/79196**

**Int. Cl. H01c** *1/16*

**U.S. Cl. 338—48** **3 Claims**



A variable resistor assembly with composite circuits in which electrical circuits are previously arranged in set blocks for combination with the variable resistor assembly in order to effect reduction in manpower and automation during assembly, wherein desired composite electrical circuits are arranged on each wafer and are integrally combined with the variable resistor assembly in set blocks using a few connecting lines as possible.

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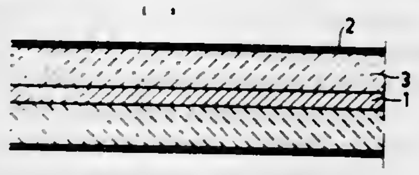
### 3,761,859
### HEATING ELEMENT HAVING A HIGH HEATING CURRENT

**Jean Baldy, Saint Cyr L'Ecole, and Patrick Coville, Le Val D'Albian, both of France, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed July 27, 1971, Ser. No. 166,548**

**Int. Cl. H01c** *1/02*

**U.S. Cl. 338—238** **2 Claims**



A heating element having a high heating current. The element has a wire resistor surrounded by insulating material consisting of a mixture of a pulverulent oxide and boron nitride.

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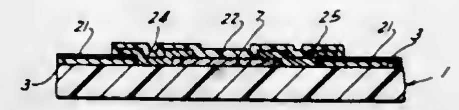
### 3,761,860
### PRINTED CIRCUIT RESISTOR

**Shoji Ogasawara; Hideo Aizawa; Yoshimi Kamijo; Mikio Miyajima, and Sadao Igarashi, all of Yukigaya-cho, Ohta-ku, Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan**

**Division of Ser. No. 831,042, June 6, 1969, abandoned. This application May 20, 1970, Ser. No. 51,028**

**Int. Cl. H01c** *1/14*

**U.S. Cl. 338—262** **5 Claims**



A printed circuit resistor is formed by applying resistive paste between two conducting areas and forming an oxidation protecting film over the exposed surface of the resistive material. The conducting areas are so shaped that the thickness of the resistive layer is substantially uniform throughout.

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### ERRATUM

For Class 338—36 see:
Patent No. 3,761,958

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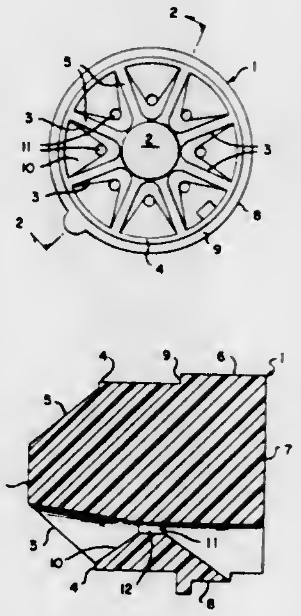
### 3,761,861
### CONDUCTIVE SHUNT FOR CIRCULAR LEAD PATTERN DEVICES

**Richard J. Bailey, Tonawanda, N.Y., assignor to GTI Corporation, Pittsburgh, Pa.**

**Filed June 29, 1972, Ser. No. 267,402**

**Int. Cl. H01r** *31/08*

**U.S. Cl. 339—19** **8 Claims**



A shunt for an integrated circuit having leads disposed on the circumference of a circle has a wheel-shaped cross section with a hole for a lead between each pair of spokes and is formed from a conductive elastomer.

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### 3,761,862
### DUAL VOLTAGE DROP LIGHT

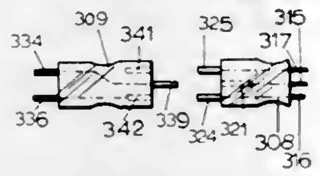
**Joseph Spiteri, 6613 E. Lake Rd., Erie, Pa.**

**Filed May 17, 1971, Ser. No. 144,125**

**Int. Cl. H01r** *11/02*

**U.S. Cl. 339—28** **6 Claims**

A trouble light for use on two different voltages. The light has an incandescent lamp having two filaments. One of the filaments is connected to terminals so that it can be connected to a first source of voltage, such as 120 volts A.C. The second filament is connected to two terminals so that it can be connected to a second source of voltage, such as, for example, 12 volts. A cord is connected to the terminals. The cord terminates in a first plug. The first plug has pins for plugging into a socket. The adapter has a second female plug adapted to be received in a power supply. Clip leads are connected to the wires in the first plug for connecting to a battery. The construction of the lamp disclosed herein is such that it will prevent an electrical shock to the user since the exposed plugs and terminals are not connected to the power source.



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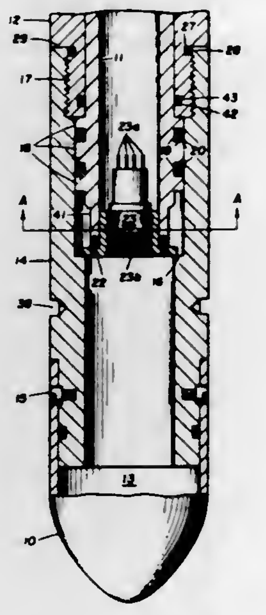
### 3,761,863
## APPARATUS FOR COUPLING LOGGING CABLE TO BOREHOLE TOOL

**Andrew J. D. Straus, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Oct. 18, 1971, Ser. No. 190,027**

**Int. Cl. H01r** *13/54*

**U.S. Cl. 339—28** **2 Claims**



Apparatus is provided for coupling a logging cable to a borehole tool. The logging cable is coupled to a cable head which in turn is connected to the borehole tool by way of a hollow, cylindrical mandrel and a concentrically mounted, freely rotatable ring. One end of the mandrel is threaded into the cable head. The other end of the mandrel is inserted into a receptacle in one end of the borehole tool, and the ring is threaded to that end to couple the cable to the borehole tool.

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### 3,761,864
## ELECTRICAL CONTACT AND RECEPTACLE

**Luther M. Sheldon, Cranston, R.I., assignor to General Electric Company, Providence, R.I.**

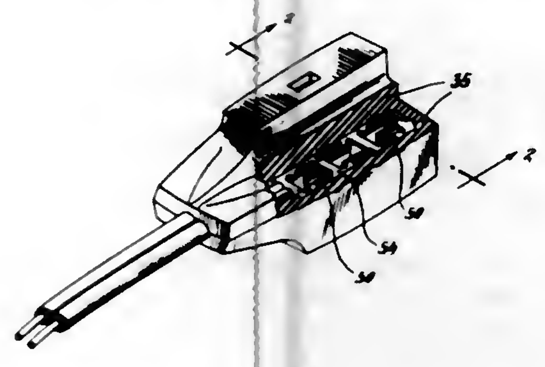
**Continuation-in-part of Ser. No. 577,466, Sept. 6, 1966, abandoned. This application June 29, 1971, Ser. No. 158,072**

**Int. Cl. H01r** *13/48*

**U.S. Cl. 339—59 M** **7 Claims**

An electrical contact is provided capable of numerous make and break electrical connections, which contact has a relatively shallow depth and is adapted to receive an elongated power blade or electrical contact to be gripped. The shallow dimension of the contact is generally normal to the longitudinal axis of the prong to receive power.

The contact is preferably formed from a sheet of metal by displacing metal out of the plane of said sheet to serve as contact cams to frictionally engage the power prong. The cam makes contact with the prong end preferably after the prong end has passed through the plane of the sheet from which the contact was formed.



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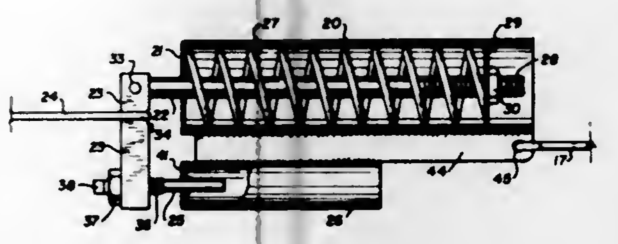
### 3,761,865
## SAFETY DEVICE FOR CABLES SUPPORTING ELECTRICAL WIRES

**Galen D. Bomgaars, 1785 S. Bryant St., Denver, Colo., and Arlo B. Van Veldhuizen, Rt. 1, Box 199, Hull, Iowa**

**Continuation-in-part of Ser. No. 61,877, Aug. 7, 1970, abandoned. This application June 8, 1972, Ser. No. 260,889**

**Int. Cl. H01r** *33/34*

**U.S. Cl. 339—60 R** **18 Claims**



A breakaway connector is attached to a pole to release a cable supporting electrical wires extending to a building, upon excessive pull on the cable, caused by high winds, ice accumulation, accident or the like. A disconnect is provided in each of the electrical wires adjacent the pole, so that the wires will be disconnected, when the cable is released, thereby preventing charged electrical wires from lying on the ground. The breakaway connector includes a pivotal detent bar which is longitudinally shiftable towards the cable against the bias of a relatively heavy compression spring. The cable is connected to the detent bar by a ring looped over an upright portion of the bar. Cable tension on the ring tends to both rotate and longitudinally shift the bar. Under normal cable load conditions, the bar engages stop means to prevent its rotation; however, excessive pull on the cable longitudinally shifts the bar away from the stop means to allow its rotation which, in turn, releases the ring and cable from the detent bar. Each disconnect for a wire includes a female clip having a socket and a male clip having a stub which is split longitudinally and is provided with pipe threads, on the inside, while an Allen screw for adjustment along the threads adjusts the friction fit between the stub and the socket. A plastic cover which extends beyond each clip and protects the connection from weather is attached to the female clip, so that it will remain with the female clip, when the clips separate. This prevents a short between the female clips of several disconnected wires, after separation.

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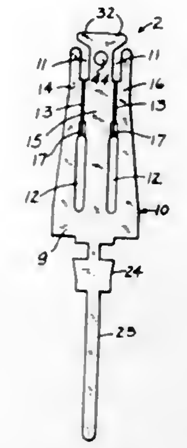
### 3,761,866
## CLIP TERMINAL

**William S. Sedlacek, Chicago, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.**

**Filed Oct. 6, 1971, Ser. No. 186,916**

**Int. Cl. H01r** *11/20*

**U.S. Cl. 339—97 P** **6 Claims**



A clip type terminal for engaging an insulated solid conductor has a body with a notch and a narrower conductor-receiving slot at the base of the notch. The notch and slot divide the body into parallel arms that are cantilevered from a common base. The bottom of the notch has opposed coplanar edge portions that intersect the sides of the slot and the sides of the notch each at right angles, whereby those edge portions provide cutters that slice insulation from an insulated conductor that is forced from the notch into the slot.

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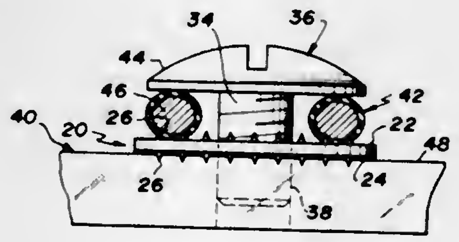
### 3,761,867
## INSULATION AND OXIDE PIERCING CONTACT MEANS

**John J. Churla, Belle Mead, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.**

**Filed Jan. 19, 1972, Ser. No. 219,079**

**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—98** **6 Claims**



Contact means for improving the contact between acjacent conductive members comprising a substantially flat, multiple toothed member having a selectively proportioned slotted aperture arranged to permit the contact means to be disposed about a binding post or similar fastening element. The toothed projections which may be disposed on at least a portion of either one or both surfaces of the contact means are selectively dimensioned to bit into and engage the adjacent conductive surface of one or more conductors urged thereagainst as the contact means is interposed between the conductor and the adjacent conductive member. The contact means may be formed either as discrete, single apertured members, or as multi-apertured members wherein the apertures are selectively spaced preferably to bridge two or more adjacently disposed binding posts or the like. The contact means may be provided in strip form and selectively scored or recessed to enable convenient separation of the interconnected members.

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### 3,761,868
## CLIP CONNECTOR TERMINAL FOR ONE OR MORE INSULATED CONDUCTORS

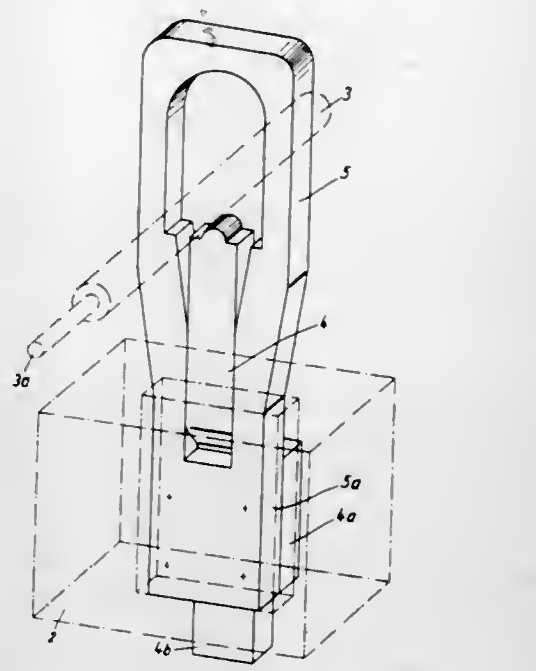
**Gustav Krone, and Joachim Rott, both of Berlin, Germany, assignors to Krone Kommanditgesellschaft, Berlin-Zehlendorf, Germany**

**Filed Aug. 21, 1970, Ser. No. 65,918**

**Claims priority, application Germany, Aug. 22, 1969, P 19 42 882.1**

**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—98** **2 Claims**



The metal contact assembly of a clip connector terminal includes a wire yoke having leg portions and a contact element disposed in the plane of the yoke, flanked by said leg portions and forming a unitary structure with said yoke. Each side of the contact element and each leg portion is provided with a sharp edge; a sharp edge of the contact element and a sharp edge of the yoke leg cooperate to cut through the insulation of an inserted conductor on diametrically opposed sides thereof and to maintain a continuous electric contact with said conductor.

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### 3,761,869
## CONNECTOR

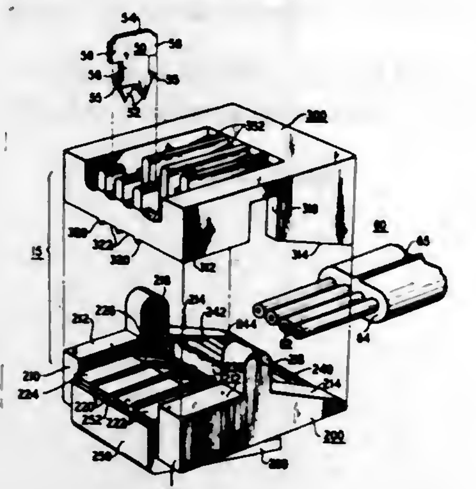
**Edwin Charles Hardesty, Perry Hall, Md.; Charles Louis Krumreich, Indianapolis, Ind.; Albert Eugene Mulbarger, Jr., Indianpolis, Ind., and Stephen William Walden, Indianapolis, Ind., assignors to Western Electric Company, Incorporated, New York, N.Y., by said Hardesty and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Krumreich, Mulbarger and Walden**

**Continuation-in-part of Ser. No. 33,211, April 30, 1970. This application Mar. 8, 1972, Ser. No. 232,803**

**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—99 R** **10 Claims**

The connector is adapted to terminate a cord having a multiplicity of insulated conductors arranged in a spaced linear array. The connector comprises a pair of shaped dielectric members that when joined together include means for clamping the cord therebetween and a multiplicity of ducts for respectively accommodating the individual insulated conductors exposed by the removal of the insulating jacket from the end of the cord. One of the connector members includes a ledge adjacent to the forward end of the ducts against which the ends of the conductors are trimmed. A multiplicity of openings exposed to the exterior of the connector respectively communicate with the ducts, and an individual blade terminal is inserted in each opening. Each blade terminal includes barbs that lock it in place and tangs that pierce the insulation of and make electrical contact with the conductor in the associated duct. An edge of each terminal is exposed to the exterior of the connector and serves as the external contact surface.



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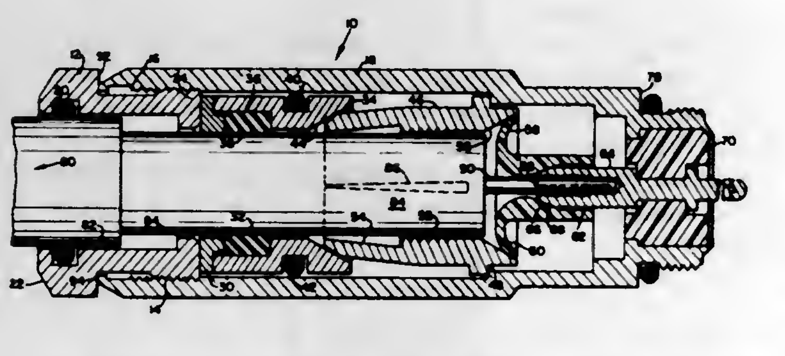
### 3,761,870
### CO-AXIAL CONNECTOR INCLUDING POSITIVE CLAMPING FEATURES FOR PROVIDING RELIABLE ELECTRICAL CONNECTIONS TO THE CENTER AND OUTER CONDUCTORS OF A CO-AXIAL CABLE

**Gary D. Drezin, Pleasant Valley; Edward C. Quackenbush, Staatsburg, and Alfred E. Ericson, Pleasant Valley, all of N.Y., assignors to Tidal Sales Corporation, Poughkeepsie, N.Y.**

**Filed July 26, 1972, Ser. No. 275,424**
**Int. Cl. H01r** *17/04*

**U.S. Cl. 339—177 R** **12 Claims**



This disclosure relates to a co-axial connector assembly especially adapted to provide electrical contact to both the center and outer conductors of a co-axial cable. The connector assembly employs a clamping arrangement for both the outer and center conductors of the co-axial cable which utilizes spring tension in order to follow "cold flow" changes and maintain good electrical connection to both the outer and center conductors of the co-axial cable.

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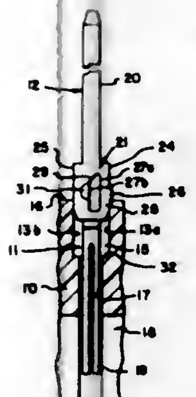
### 3,761,871
### ELECTRICAL CONNECTOR

**Lucas Gerardus Christianus Teurlings, Frederik Hendriklaan 120, 's-Hertogenbosch, Netherlands**

**Filed May 15, 1972, Ser. No. 253,040**
**Claims priority, application Netherlands, May 28, 1971, 7107381**
**Int. Cl. H01r** *9/08*

**U.S. Cl. 339—221 R** **3 Claims**

An electrical contact has a portion for securing the contact in a rectangular aperture in a housing, the contact securing portion being a flat flexible plate slotted to define a spring arm and having a projection on a flat side of the plate such that when the contact is inserted into the associated aperture the spring arm and the projection engage two adjacent walls and force the contact securing portion into engagement with a second two adjacent walls thus positioning the contact accurately in the housing.



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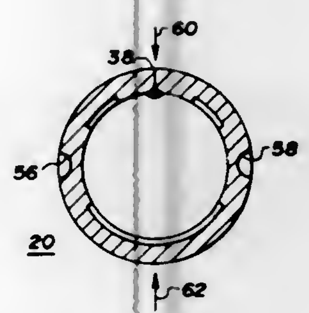
### 3,761,872
### BRAZED SEAM FERRULE

**John W. Ebinger, Hillsdale, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.**

**Filed Jan. 20, 1972, Ser. No. 219,272**
**Int. Cl. H01r** *11/08*

**U.S. Cl. 339—276 T** **2 Claims**



A brazed seam generally elongate tubular sleeve for use preferably as an improved crimpable ferrule. Selectively formed, spaced recesses are provided within the interior surface of the ferrule, and selectively positioned exterior recesses are provided for establishing weakened areas to enhance the crimping characteristics of the ferrule. Web portions disposed adjacent the rows of interior recesses serve to restrict the flow of excess brazing material from the seam into the interior recesses. Coupling means which may include an apertured tongue or the like may be attached to, or formed integrally with, the ferrule to permit its attachment to a further member.

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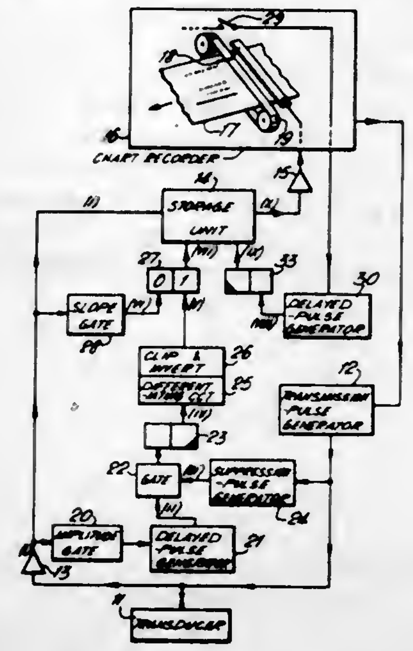
### 3,761,873
### SONAR APPARATUS

**Peter Roy Hopkin, Hadleigh, Benfleet, England, assignor to Smiths Industries Limited, London, England**

**Filed Dec. 21, 1971, Ser. No. 210,446**
**Claims priority, application Great Britain, Dec. 24, 1970, 61,305/70**
**Int. Cl. G01s** *9/68*

**U.S. Cl. 340—3 R** **13 Claims**

Sonar apparatus includes a storage unit having a multiplicity of discrete storage locations that serve to store representation of echo-information samples taken from the echo-reception waveform of a combined receiving-transmitting transducer. Writing of sample representations into the store covers a short period up to receipt of the echo from the bottom of the water, and reading out of the representations, at a slower rate, to the continuously-circulating stylus of a chart recorder via an otherwise closed isolation gate is triggered from the recorder to commence with a selectively-variable phasing in the stylus circulation. With the sampling frequency used, the writing-in period is longer than required to fill the storage unit to capacity and only those samples occurring in a fixed interval up to receipt of the bottom echo, and corresponding to a predetermined partial range down to the bottom, are as a result retained for subsequent read out and expanded-scale recordal. In a modified construction writing is initiated from the transmission pulse and continues until the expiry of a selectively-variable period of time determined by a monostable circuit. The sample representations are stored in an array of capacitors or in digital form in one or more shift registers and where a single shift register is used, may be entered by clocking in samples taken from a waveform which is derived by pulse-frequency modulation to have a mark-to-space ratio in accordance with received-echo amplitude.



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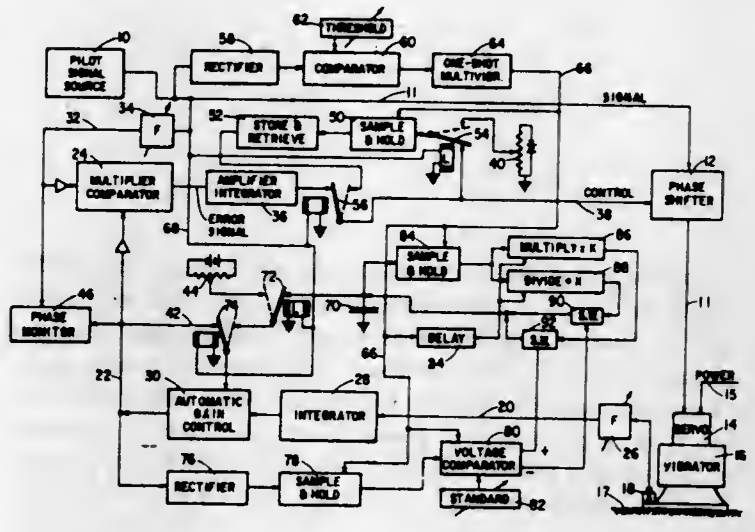
### 3,761,874
### AUTOMATIC PRESETTING OF VIBRATOR PHASE-LOCK CIRCUITS

**Ralph A. Landrum, Jr., Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.**

**Filed June 26, 1972, Ser. No. 266,186**
**Int. Cl. G01v** *1/16*

**U.S. Cl. 340—17** **5 Claims**



In seismic geophysical surveying using one or more servo-controlled vibrators as the source of varying-frequency wave energy, phase-locking of the vibrator output to the input pilot wave form is essential to the proper compositing of both sequentially received waves and simultaneous inputs by two or more vibrators. By the present invention, the phase lock-in time during which non-coherent signals may be produced is minimized by automatically sampling the phase and the gain errors shortly following each signal initiation, and using the samples to update the preset values for each subsequent signal generation.

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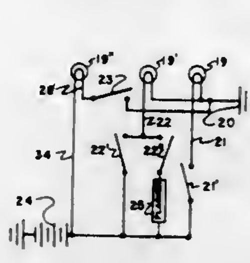
### 3,761,875
### COMBINATION AUTOMOTIVE WARNING DEVICE

**Richard H. Camp, P.O. Box 62, Haines, Oreg.**

**Filed Nov. 19, 1971, Ser. No. 203,096**
**Int. Cl. B60g** *1/22*

**U.S. Cl. 340—67** **2 Claims**



The combination automotive warning device includes a fixture and a controlling means for controlling a deceleration indicating apparatus. The electric control means for controlling deceleration indicating apparatus comprises a bolt having a metal shaft connected by a suitable wire with a decelerator indicating lamp, an adjusting head, and a threaded shaft provided about the upper portions of the metal shaft, the threaded shaft being made of an electrically insulating material and being operable to replace an idler adjusting screw of a carburetor of a vehicle, the lamp having its remaining wire connected to a suitable source of electrical energy. The fixture comprises a fixture operable to be mounted on the rearwardmost end of a vehicle, the fixture including a base assembly having a base plate and walls operable to divide the base plate into regions, a lens portion fastened to the base assembly having a suitably colored lens for a region indicating backing-up of a vehicle, a suitably colored lens for a region indicating stopping and turning of a vehicle, and a suitably colored lens for a region indicating deceleration of a vehicle.

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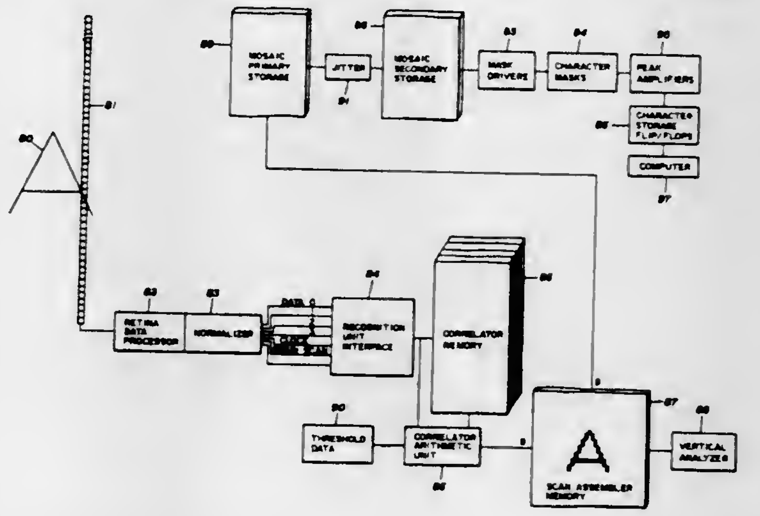
### 3,761,876
### RECOGNITION UNIT FOR OPTICAL CHARACTER READING SYSTEM

**Larry Paul Flaherty, and William Alton Hale, both of Dallas, Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.**

**Filed July 28, 1971, Ser. No. 166,802**
**Int. Cl. G06k** *9/06*

**U.S. Cl. 340—146.3 MA** **13 Claims**



A recognition unit accepts normalized character data from a multicell, single columnar retina across which a character image is scanned and converts the serial stream of digital character data into a parallel format for each scan and then correlates the data by comparing each cell with a composite of the surrounding cells to establish a black or white digital signal for each cell position. The signals are stored in a matrix array which is vertically analyzed to locate the character dependent cells. The character data is then shifted into a storage matrix and applied to a plurality of digital character masks for selection of the character represented by the data.

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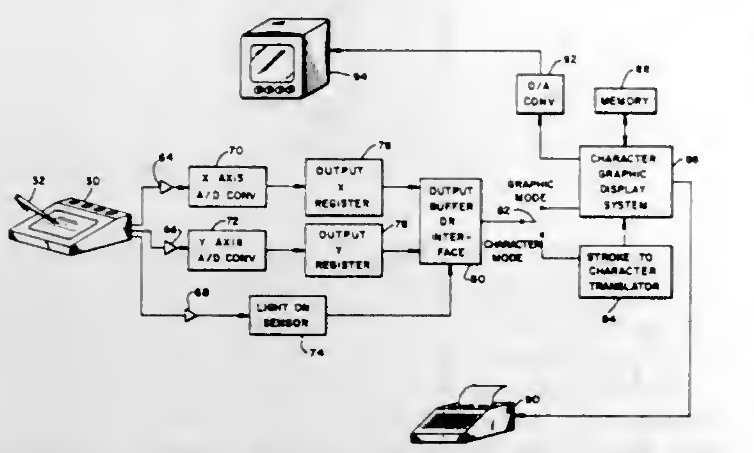
### 3,761,877
## OPTICAL GRAPHIC DATA TABLET
**Olaf H. Fernald, 44 Hundreds Cir., Wellesley, Mass.**
**Filed Dec. 21, 1970, Ser. No. 100,217**
**Int. Cl. G08b** *5/00*
**U.S. Cl. 340—146.3 SY** **16 Claims**



An optical graphic data tablet operated with a light pen is provided for use as a computer input terminal. A light position sensing device detects the position of a light pen moved by the operator over a transparent plate and generates analog electrical output signals corresponding to the position of the light spot on the plate. The analog signals are converted to corresponding digital signals for use with a computer display terminal or the like. A digital position indicator is provided on the tablet cabinet for direct digital display of the stylus position so that the operator can verify the exact position before transmitting data to the computer.

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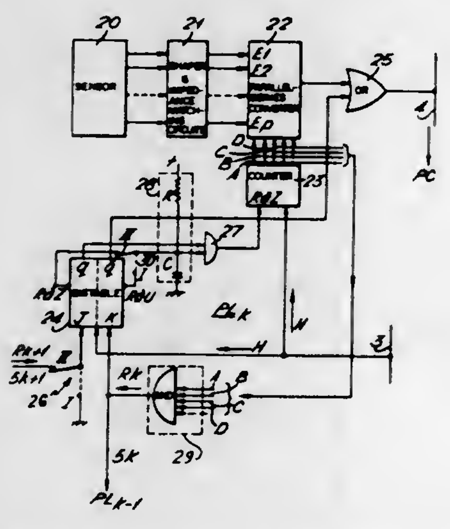
### 3,761,878
## INSTALLATION FOR READING AT A DISTANCE INFORMATION IN LOCAL STATIONS
**Philippe Georget, Montrouge, and Michel Gauthier, Bagneux, both of France, assignors to Compteurs Schlumberger, Montrouge, France**
**Filed Feb. 11, 1972, Ser. No. 225,403**
**Claims priority, application France, Feb. 12, 1971, 7104782**
**Int. Cl. H04q** *01/32, 9/14*
**U.S. Cl. 340—150** **9 Claims**



The installation is intended for reading at a distance information contained in local stations connected in cascade, and is particularly applicable to the remote reading of meters. The installation comprises a central station having a clock signal generator and a device for receiving and/or recording the information, each connected to the various local stations by a common conductor. In each local station there is a parallel to series conversion device, synchronised by the clock signals, and having its parallel inputs connected to the local source of information and its serial output connected to one of the two inputs of a logic blocking circuit; a pulse counter to which are applied the clock signals; and a bistable flip flop. This flip flop has two inputs, one of which is an unblocking input and is connected to the preceding local station and the other of which is a blocking input and is connected to the output of the pulse counter and to the following local station. The flip flop also has a trigger input to which are applied the clock signals, and an output connected to the second input of the blocking circuit, the other output being connected to the reset to zero terminal of the pulse counter. The output of the blocking circuit is connected to the receiving and/or recording device of the central station.

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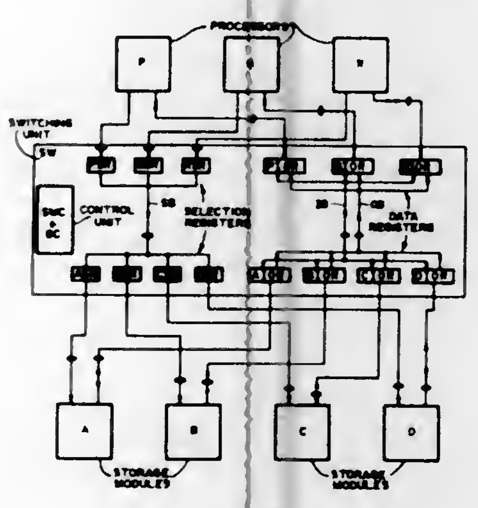
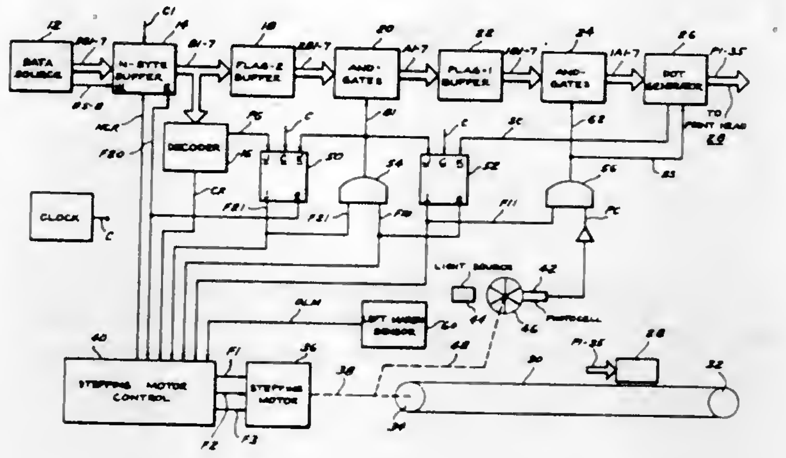
### 3,761,879
## BUS TRANSPORT SYSTEM FOR SELECTION INFORMATION AND DATA
**Johan Rudolf Brandsma, and Benny Louisa Angelina Waumans, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed May 8, 1972, Ser. No. 250,990**
**Claims priority, application Netherlands, May 12, 1971, 7106491**
**Int. Cl. G06f** *3/00, 9/18*
**U.S. Cl. 340—172.5** **3 Claims**



A switching unit and a computer system comprising such a switching unit so as to enable processor to converse with a free storage module of a group of processors and storage modules at substantially any given moment. The switching unit comprises a common selection bus for transporting selection information from a processor to a storage module, and a common input and output bus for transporting data between a processor and a storage module. The switching unit furthermore comprises priority circuits so as to deal with simultaneously received requests for the same bus in a given sequence. According to the invention the switching unit comprises registers for storing selection information and/or data, said registers being connected after and eventually also before the relevant common bus.

### 3,761,880
## VARIABLE SPEED PRINTER
**Albert M. Kritz, Monsey, and Maurice J. Epstein, Ardsley, both of N.Y., assignors to Computer Transceiver Systems, Inc., Paramus, N.J.**
**Filed Mar. 3, 1972, Ser. No. 231,638**
**Int. Cl. G06k** *15/10*
**U.S. Cl. 340—172.5** **10 Claims**



A variable speed printer has a printing head driven opposite a record medium which is controllably energized to print graphics (symbols, characters and/or numerics) sequentially transmitted from a multicharacter buffer storage which sequentially receives representations of the characters. The print head is driven at a speed related to the number of characters stored in the buffer storage and is energized to print the character then being transmitted from the buffer storage whenever one of a plurality of particular instantaneous positions of the print head is sensed by a sensing means which also initiates the making available of the next character in the buffer storage for transmission.

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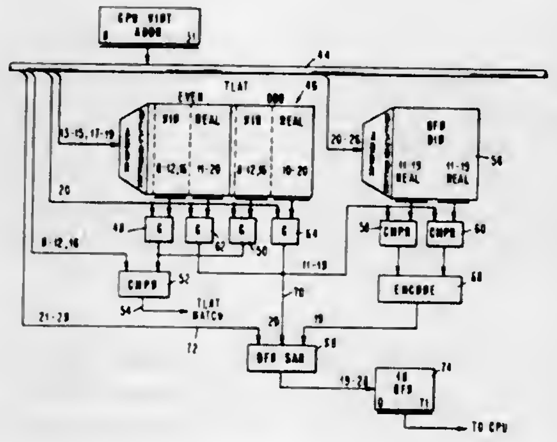
### 3,761,881
## TRANSLATION STORAGE SCHEME FOR VIRTUAL MEMORY SYSTEM
**David W. Anderson, Poughkeepsie; Richard N. Gustafson, Hyde Park; Paul E. Kaminsky, Kingston, and Joseph A. Wetzel, New Paltz, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed June 30, 1971, Ser. No. 158,180**
**Int. Cl. G06f** *3/00*
**U.S. Cl. 340—172.5** **2 Claims**



A virtual memory system comprising a main storage and a smaller high speed buffer. Both main storage and the buffer are real-address-oriented. Current virtual-to-real address translations are retained in a Translation Look Aside Table (TLAT) and real addresses of data stored in the buffer are maintained in a buffer directory. The CPU-provided virtual address causes access to the TLAT and to the buffer directory The virtual address stored in the word accessed from the TLAT is compared to the virtual address from the CPU and the real addresses accessed from the TLAT and the buffer directory are compared to each other. If both comparisons are equal, the data is accessed from the buffer.

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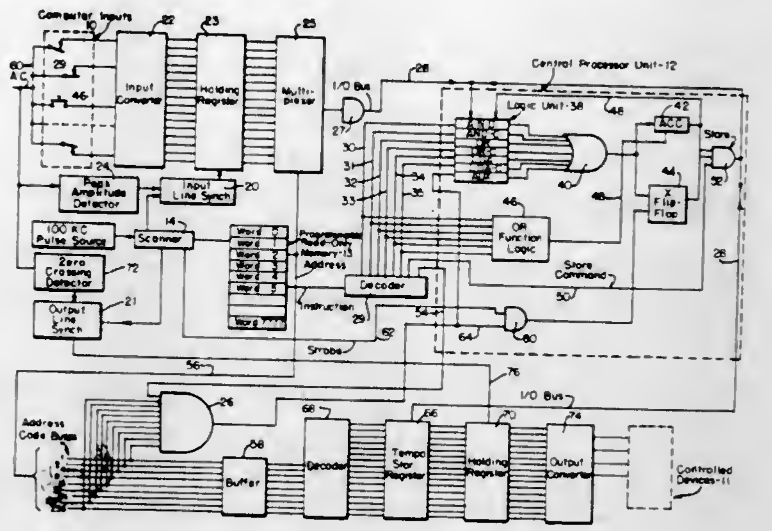
### 3,761,882
## PROCESS CONTROL COMPUTER
**Peter G. Bartlett; Donald E. Henry, both of Davenport, Iowa, and Thomas Murrell, Urbana, Ill., assignors to Struthers-Dunn, Inc., Pitman, N.J.**
**Filed Dec. 1, 1971, Ser. No. 203,570**
**Int. Cl. G06f** *3/06*
**U.S. Cl. 340—172.5** **10 Claims**



A solid state process control computer for continually controlling a plurality of outputs in dependence upon the conditions of a plurality of continually variable input parameters. The controller includes a memory capable of storing a large number of multi-bit words each comprising both an address and an instruction. The memory is scanned on a word-by-word basis at high speed. A central processing means is provided and a data input/output bus is connected both to the input and the output of the central processing means. As each word in the memory is scanned, the instruction portion of each scanned word selectively either enables the central processing means to receive data from input/output bus or it enables the input/output bus to receive data from the central processing means. The address portion of each scanned word in the memory operatively connects any one of a plurality of registers to the input/output bus. A register may either be connected so as to be responsive to an input parameter or it may be connected so as to control an output device. The memory comprises a matrix having a large plurality of intersections each including a fused diode. The placing of a word in the memory is accomplished by selectively open circuiting one or more of the fused diodes corresponding respectively to the different bits of each word in the memory.

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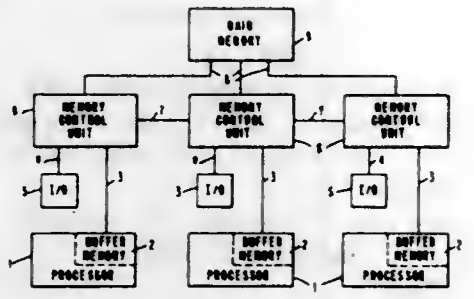
### 3,761,883
## STORAGE PROTECT KEY ARRAY FOR A MULTIPROCESSING SYSTEM
**Joseph A. Alvarez, Monrovia; Robert P. Barner, Jr., Rockville, and Robert J. Hallett, College Park, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Jan. 20, 1972, Ser. No. 219,361**
**Int. Cl. G11c** *7/00;* **G08b** *29/00*
**U.S. Cl. 340—172.5** **3 Claims**

A mechanism is described which retains a copy of a selected portion of the storage protect keys at each local storage buffer in a multiprocessing system. The mechanism reduces the amount of hardware required to retain the keys at the local buffer but allows for immediate modification of a key upon execution of a set storage key instruction.



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### 3,761,884
### ARRANGEMENT FOR SYNCHRONIZING A NUMBER OF CO-OPERATING COMPUTERS

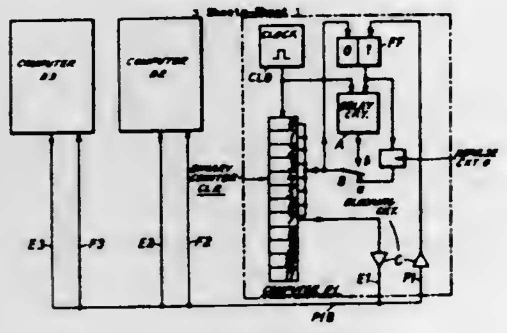
**Oleg Avsan, Huddinge, and Agnar Vidar Grodal, Farsta, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden**

**Filed Nov. 4, 1971, Ser. No. 195,682**

**Claims priority, application Sweden, Nov. 20, 1970, 15702/70**

**Int. Cl. G06f** *15/16*

**U.S. Cl. 340—172.5** **3 Claims**



A synchronizing apparatus in a data system comprising a number of individual computers each of which includes a binary counter. The synchronization implies that a predetermined value should be stored in certain positions in counters in all the computers. A synchronizing signal is sent on a common line interconnecting all the computers from the computer which operates more rapidly than the other computers of the system and when reaching the predetermined value in the associated counter, this signal being fed is all the other counters in order to set these counters to such predetermined value.

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### 3,761,885
### COMPUTER SYSTEM COMPRISING A STORAGE CONFIGURATION WITH ACCESS PRIOR TO ULTIMATE ADDRESS CALCULATION

**Jean Joseph Marie Dudok Van Heel, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

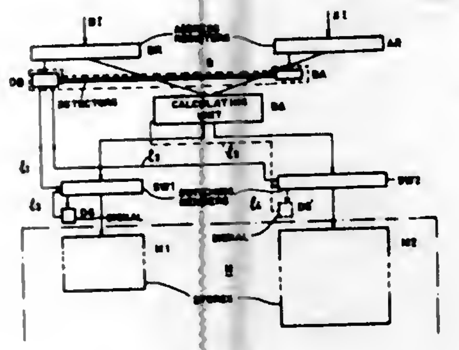
**Filed Feb. 16, 1972, Ser. No. 226,917**

**Claims priority, application Netherlands, Feb. 20, 1971, 7102289**

**Int. Cl. G11c** *7/00*

**U.S. Cl. 340—172.5** **3 Claims**

In order to allow a request for access to a given store in a computer system having a storage configuration comprising a number of stores to be made before an ultimate address has been calculated from a number of address components, an unused address space (void) is defined between each store of the configuration and possibly also above the store of the highest order. A result of an address calculation which is situated in a void causes a cancellation of the relevant previously made request for access. It will never be necessary to change a request for access to a given store into a request for access to another store.



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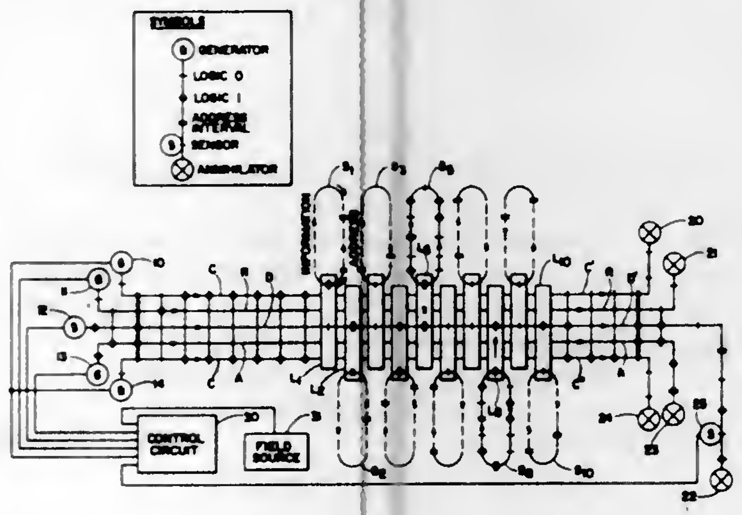
### 3,761,886
### CONTENT ADDRESSABLE DISCRETE DOMAIN MASS MEMORY

**Werner Erich Kluge, Kanata, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada**

**Filed Dec. 7, 1972, Ser. No. 313,097**

**Int. Cl. H01f** *10/00;* **G11b** *5/00*

**U.S. Cl. 340—172.5** **4 Claims**



A magnetic bubble mass memory which combines a plurality of storage loops with bubble logic to provide direct interrogation and manipulation of the stored information, without the requirement for external read and write access facilities associated with each loop. With random access, the memory can provide continuous output of the data information.

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### 3,761,887
### INTERVAL COUNTING CIRCUIT AND METHOD

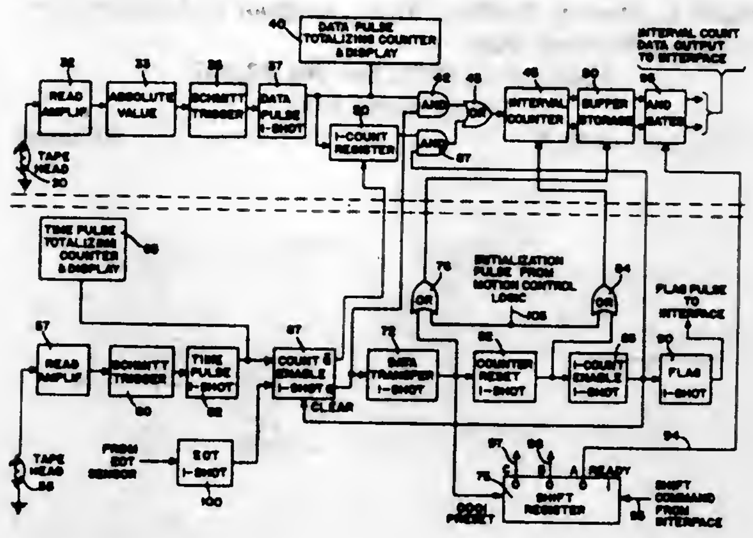
**Dennis L. Foster, and James D. Hoeffel, both of Dayton, Ohio, assignors to Dayton Electronic Products Company, Dayton, Ohio**

**Filed Dec. 13, 1972, Ser. No. 314,827**

**Int. Cl. G06f** *3/06, 7/28;* **H03k** *5/20*

**U.S. Cl. 340—172.5** **4 Claims**

Method and apparatus for transferring data pulses occurring within successive time intervals from one system to another, such as from a magnetic tape to a computer, by applying data pulses to an interval counter during each time interval, reading the contents of the interval counter to a buffer storage device upon receipt of a timing pulse, resetting the interval counter in preparation for receiving data pulses in the next time interval, employing a temporary storage counter to receive any data pulses occurring during the time data is transferred from the interval counter and it is reset, and transferring the contents of the temporary storage register to the interval counter. This method and apparatus prevents inaccurate counting of the total number of pulses received by insuring that data pulses are not missed or counted twice during the transition from one time interval to another.


DATA PULSE TOTALIZING COUNTER & DISPLAY
INTERVAL COUNT DATA OUTPUT TO INTERFACE
READ AMPLIF
ABSOLUTE VALUE
SCHMITT TRIGGER
DATA PULSE 1-SHOT
1-COUNT REGISTER
AND
OR
INTERVAL COUNTER
BUFFER STORAGE
AND GATES
TAPE HEAD
TIME PULSE TOTALIZING COUNTER & DISPLAY
INITIALIZATION PULSE FROM MOTION CONTROL LOGIC
FLAG PULSE TO INTERFACE
CLEAR
SHIFT REGISTER
SHIFT COMMAND FROM INTERFACE

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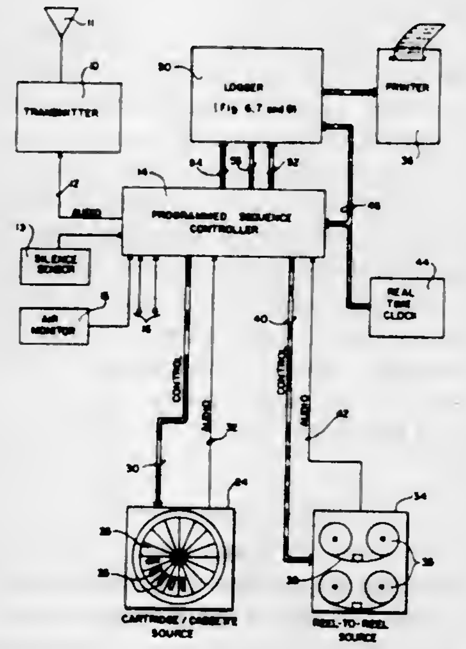
### 3,761,888
### BROADCAST STATION LOGGER AND PRINTOUT SYSTEM

**Gary M. Flynn, Atlanta, Ga., assignor to Broadcast Products, Inc., Rockville, Md.**

**Filed Aug. 3, 1972, Ser. No. 277,492**

**Int. Cl. G06k** *3/00;* **G05b** *19/00*

**U.S. Cl. 340—172.5** **12 Claims**



A system for providing a printed log of program materials broadcast by a broadcast station, wherein data taken from a clock, from a programmed sequence controller, and from recorded program material sources is assembled and printed in the real time sequence in which the various source materials were commenced, the disclosure further including means for efficiently tagging the recorded sources with the data necessary to provide a complete printed log.

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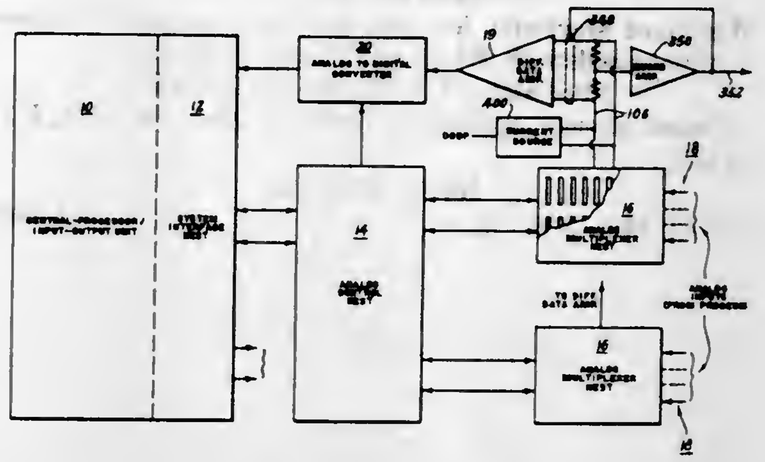
### 3,761,889
### COMPUTER DIRECTED PROCESS CONTROL SYSTEM WITH ANALOG INPUT MULTIPLEXER

**Donald O. Hallee, and Robert Menot, both of North Easton, Mass., assignors to The Foxboro Company, Foxboro, Mass.**

**Filed Feb. 24, 1972, Ser. No. 228,976**

**Int. Cl. G06f** *3/00, 15/46*

**U.S. Cl. 340—172.5** **31 Claims**



An industrial process control system including a digital computer arranged in a time-share configuration to perform calculations respecting a plurality of process conditions, and to produce corresponding command signals for respective process operators such as valves and the like. The system includes an analog multiplexer comprising a plurality of individual printed circuit switch cards each carrying a number of switch circuits adapted to be connected to corresponding analog measurement points. The computer sends to a multiplexing control unit, instructions identifying a specific analog point to be sampled, or identifying a sequential group of points to be sampled. The control unit operates in cooperation with circuitry on the switch cards to carry out procedures incident to sampling the identified analog points, converting the signal to digital format, and signalling the processor that the data is ready for transfer. The system is arranged to permit different types of switch cards, such as relay and solid-state switches, to be intermixed as desired, or changed in the field, without requiring accommodating changes in hardware or in computer software.

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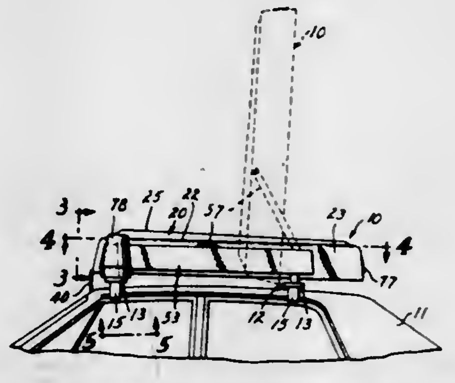
### 3,761,890
### VARIABLE COPY COMMAND APPARATUS

**Robert W. Fritts, and Harold C. Zeman, both of 3M Center, St. Paul, Minn.**

**Continuation-in-part of Ser. No. 47,387, June 18, 1970. This application May 25, 1972, Ser. No. 256,911**

**Int. Cl. B60q** *1/00*

**U.S. Cl. 340—135** **10 Claims**



Apparatus comprising in combination a variable copy command apparatus including an enclosed container that may be moved between an upright position, that will permit oncoming motorists to view the copy message, and a lower position to decrease the air drag on the vehicle. The enclosed container includes a movable transparent copy web, having a plurality of copy messages thereon, and reflective means behind the copy web to provide relatively brilliant daytime and night-time viewing of the copy message. The container further includes traffic control lamps to provide illuminated animation to the copy message.

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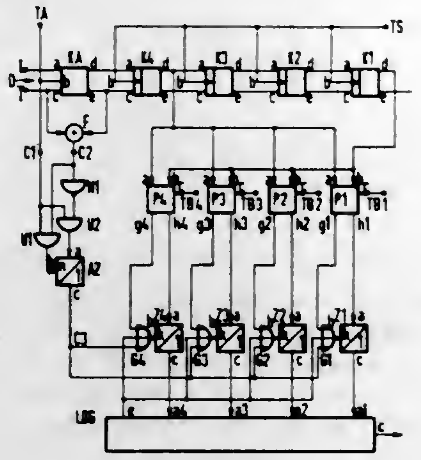
### 3,761,891
### CIRCUIT ARRANGEMENT FOR SYNCHRONIZING TRANSMITTERS AND RECEIVERS IN DATA TRANSMISSION SYSTEMS

Wernhard Markwitz, Munich, Germany, assignor to Siemens **Aktiengesellschaft, Berlin and Munich, Germany**
**Filed Mar. 17, 1972, Ser. No. 235,680**
**Claims priority, application Germany, Mar. 18, 1971, P 21 13 018.7**
**Int. Cl. H04l** *7/00*
**U.S. Cl. 340—146.1 D** **6 Claims**



A circuit arrangement for synchronizing transmitters and receivers in data transmission systems to facilitate the transfer of blocks of data constituted by information bits and parity bits is described. In the receiver the bits are serially entered into a shift register. A testing circuit is provided which, after supplying a testing clock signal, emits an output signal when the bits in the shift register pertain to the same data block. Testing circuits may be individually connected to stages in the shift register, and the testing signals are generated responsive to the presence of information or parity bits in the various register stages. Clock generators are provided for producing data block clock signals with as many block clock signals being produced as there are possible positions in the data blocks. The block clock signals are supplied to the testing circuits as testing clock signals via outputs of the clock generators. The testing circuit outputs are connected to counter inputs, and the counter outputs are connected to a logic circuit. The logic circuit determines the correct block clock signal in relation to the counter output signal.

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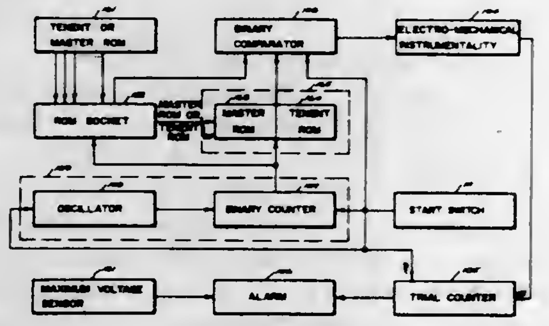
### 3,761,892
### ELECTRONIC LOCKING SYSTEM

**Robert Joseph Bosnyak, 261 Howes Ct., Los Gatos, Calif., and John W. Chu, 1055 Hudson Ave., Sunnyvale, Calif.**
**Filed July 19, 1971, Ser. No. 163,767**
**Int. Cl. H04g** *3/00*
**U.S. Cl. 340—149 A** **18 Claims**



An electronic locking system utilizes a circuit to compare read-only-memories. Identical read-only-memories constitute a portable "key" and a fixed "lock" which are instantaneously compared electronically so that a determination of identity will initiate a locking or unlocking operation.

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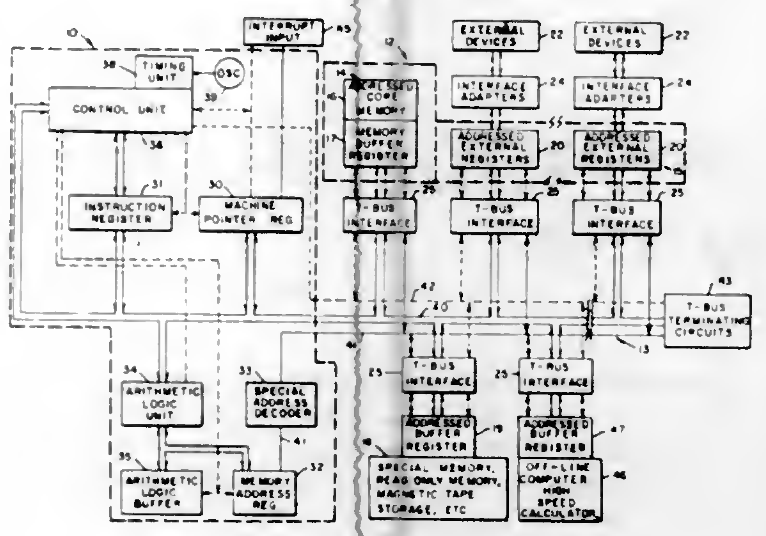
### 3,761,893
### DIGITAL COMPUTER

**Richard E. Morley, Bedford, Mass., assignor to Modicon Corporation, Bedford, Mass.**
**Filed July 2, 1970, Ser. No. 52,047**
**Int. Cl. G06f** *3/00*
**U.S. Cl. 340—172.5** **8 Claims**



Hardware registers which are addressed in the same manner as the main core memory and exchange data with external devices. The computer has no dedicated registers used as the accumulator, program counter and program counter save. Rather, addressed registers in the main core memory are used for these functions. Preferably, there are a plurality of each group comprising a dedicated computational machine. The computational machine which is being operated is specified by a dedicated machine pointer register.

Mass memory, additional computers, as well as input and output devices may be connected to the addressed hardware registers to provide unlimited system expansion. Program instructions may be placed in an addressed hardware register in response to external events.

The main core memory provided contains all possible addresses in the ten bit address word of the computer. When an addressed hardware register is connected to the computer, it becomes responsive to the central processing unit, rather than the identically addressed core position. The core position is reactivated when the hardware register is disabled by events either external or internal to the computer. This dual addressing scheme is controlled by two priority levels.

All address registers and all dedicated machine registers are connected in parallel to a half duplex transfer bus which provides for transfers between any registers connected thereto under control of a central processing unit.

All cycles of the computer are identical and comprise three timing states.

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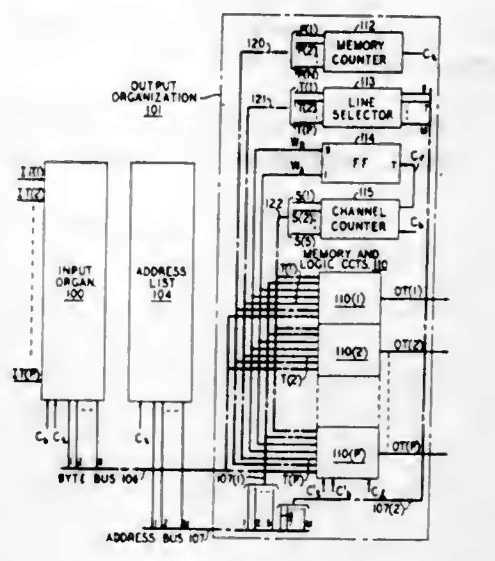
### 3,761,894
### PARTITIONED RAMDOM ACCESS MEMORIES FOR INCREASING THROUGHPUT RATE

**Randolph John Pilc, Holmdel, and Gabriel Gary Schlanger, West Orange, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed May 12, 1972, Ser. No. 252,848**
**Int. Cl. H04j** *3/00*
**U.S. Cl. 340—172.5** **8 Claims**

Multiplexed words on the data bus of a time-division switch are written into a random access memory system and thereafter distributed to predefined time slots on selected lines. To increase the throughput of the memory system, two

sets of memories are assigned to each line, each memory having a storage area dedicated to each of the several time slots on the line. During each time-division frame consecutive ones of the data words on the bus are each written into an appropriate one of the storage areas in consecutive ones of the memories in one set. At the same time data is read out from the memories in the other set into the time slots on the line, all of the storage areas dedicated to a time slot being read out simultaneously.



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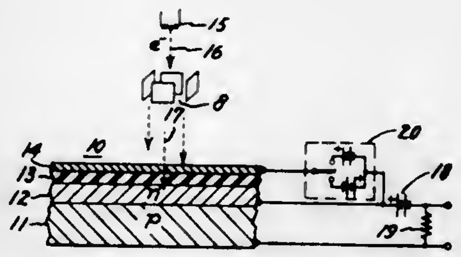
### 3,761,895
### METHOD AND APPARATUS FOR STORING AND READING OUT CHARGE IN AN INSULATING LAYER

**George W. Ellis, Burnt Hills; George E. Possin, and Ronald H. Wilson, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.**
**Filed Mar. 17, 1971, Ser. No. 125,133**
**Int. Cl. G11c** *5/02, 11/34, 13/04*
**U.S. Cl. 340—173 CR** **20 Claims**



An electron beam addressable memory is disclosed in which information is stored as an electric charge in a multilayered memory target. The multilayered memory comprises a conductive layer, an insulating layer having a plurality of charge storage sites, a layer of n-type and a layer of p-type semiconductor material having a p-n junction therebetween. The method of writing causes charge to be stored at selected sites in the insulating layer. The method of reading causes the current through the p-n junction, which is reverse biased, to vary in magnitude depending upon whether or not the beam impinges on a charged site. The read and write electron beams are preferably of the same energy and a different voltage is applied to the conductive layer during reading than is applied during writing. In another embodiment, the conducting layer is omitted and the effect of different voltages applied to the conducting layer is produced by secondary emission from the insulating layer.

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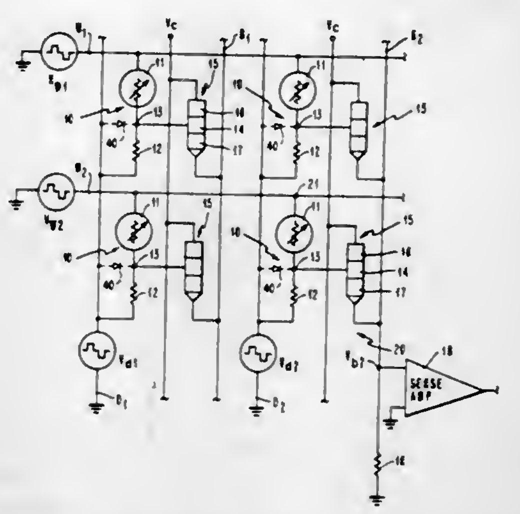
### 3,761,896
### MEMORY ARRAY OF CELLS CONTAINING BISTABLE SWITCHABLE RESISTORS

**Evan E. Davidson, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Filed Apr. 18, 1972, Ser. No. 245,221**
**Int. Cl. G11c** *11/34, 5/02, 7/00*
**U.S. Cl. 340—173 R** **13 Claims**



A monolithic semiconductor memory array in which the cells comprise a voltage divider circuit formed by a fixed resistor in series with a variable switchable bistable resistor settable to either a high or a low resistance state respectively in response to the application of a pair of electrical potentials of opposite polarities.

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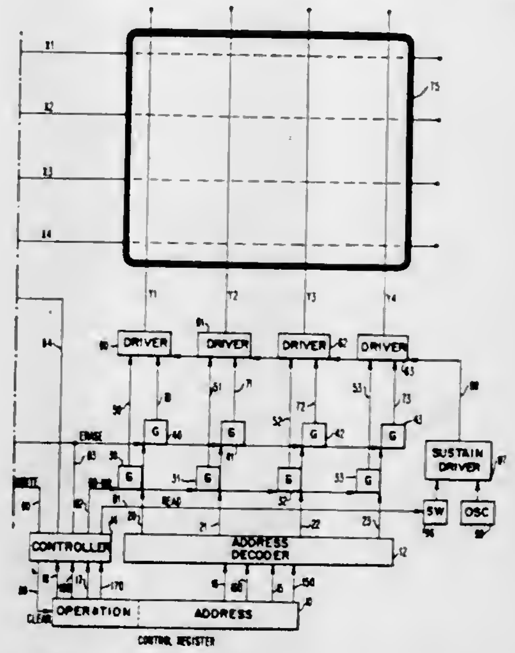
### 3,761,897
### GAS CELL MEMORY SYSTEM WITH ELECTRICAL READOUT

**Donald D. Tech, South Chelmsford, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.**
**Continuation of Ser. No. 837,573, June 30, 1969, abandoned.**
**This application June 23, 1972, Ser. No. 268,218**
**Int. Cl. G11c** *7/00, 11/28;* **H05b** *41/00*
**U.S. Cl. 340—173 PL** **17 Claims**



A gas cell memory includes a gas panel with X and Y coordinate lines disposed on opposite sides of the gas panel to form an array of gas cells at the coordinate intersection. Information selectively may be written, sustained, read or erased in vertically disposed registers. Information is read from the registers electronically, instead of optically, (1) by applying a sinusoidal signal and a pulse signal to provide a composite signal, equal to or greater than the sustain level, to a selected

Y line and (2) sensing all of the X lines for the presence of a signal. A signal coupled from the Y line through a gas cell in the binary one state to the associated X line indicates a binary one, and the absence of such a signal indicates a binary zero.

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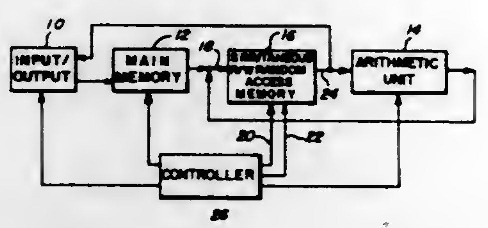
### 3,761,898
### RANDOM ACCESS MEMORY

**Henry C. Pao, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.**

**Filed Mar. 5, 1971, Ser. No. 121,377**
**Int. Cl. G11c** *11/40*
**U.S. Cl. 340—173 R** **22 Claims**



A random access memory, suitable for monolithic integrated circuit fabrication, having the ability to simultaneously write therein binary data applied thereto and read therefrom binary data previously written therein. Each bit of such binary data stored by the random access memory is stored in a binary storage cell, each such cell having independent read and write addressing circuitry. Binary data is written into selected ones of a plurality of binary storage cells by establishing in such selected cells a relative voltage polarity. Binary data is read from selected binary storage cells by sensing the relative polarity of the voltage established therein.

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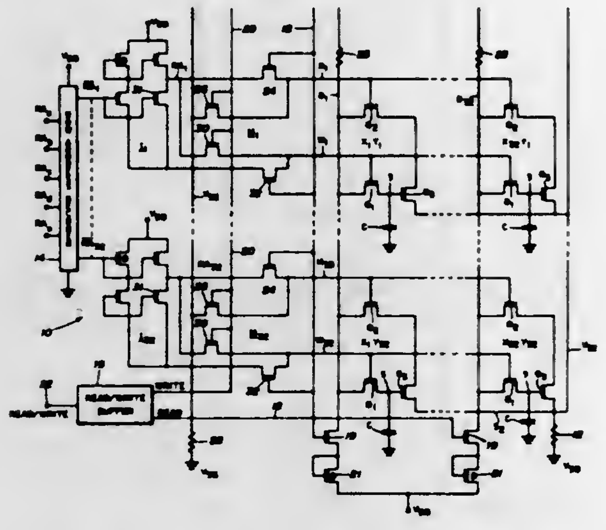
### 3,761,899
### DYNAMIC RANDOM ACCESS MEMORY WITH A SECONDARY SOURCE VOLTAGE TO REDUCE INJECTION

**Vernon George McKenny, Garland, and Robert M. Donnely, Dallas, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.**

**Filed Dec. 2, 1971, Ser. No. 204,056**
**Int. Cl. G11c** *5/00, 7/00, 11/24*
**U.S. Cl. 340—173 R** **3 Claims**



Dynamic random access memory utilizing MOSFET transistors formed on a single semiconductor chip is described. The integrated circuit has internal circuits, including storage cells arrayed in rows and columns, and interface circuits, including address decoders, etc., for connecting the internal circuits to control circuitry external of the integrated circuit. A primary drain voltage terminal and a primary source voltage terminal are provided for the integrated circuit and are used for the interface circuit. Circuit means formed on the chip establishes a secondary source voltage that is nearer the primary drain voltage than the primary source voltage. The secondary source voltage is used for the internal circuits and reduces loss of data due to injection from the internal circuits.

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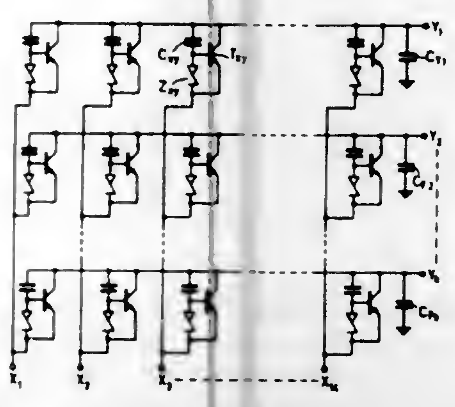
### 3,761,900
### CAPACITIVE MATRIX STORE

**Wolfdietrich Georg Kasperkovitz, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.**

**Filed Nov. 22, 1971, Ser. No. 200,791**
**Claims priority, application Netherlands, Nov. 27, 1970, 7017342**
**Int. Cl. G11c** *11/24, 11/40*
**U.S. Cl. 340—173 CA** **5 Claims**



A capacitive matrix store comprising a two-dimensional array of crosspoint elements, each of which comprises a capacitive storage element, each crosspoint element, constructed as a two-pole comprising a transistor which is provided with an emitter region, a base region and a collector region, the emitter region of said transistor forming one pole and the collector region forming the other pole of the crosspoint element, the capacitive storage element in each crosspoint element being partly or entirely formed by the collector-base capacitance of the transistor.

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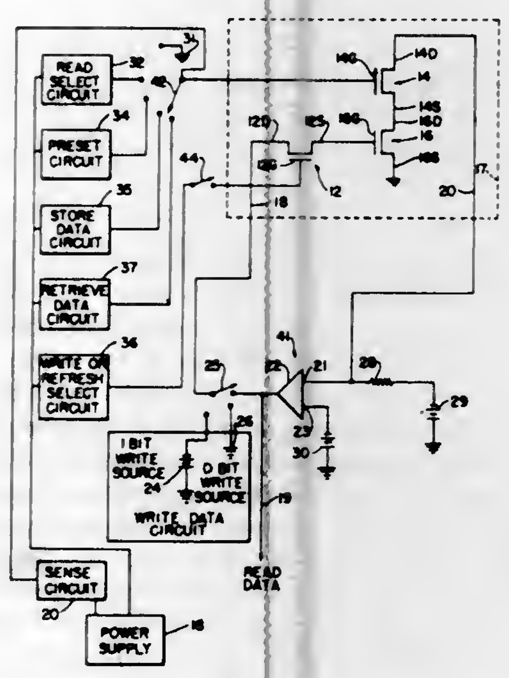
### 3,761,901
### NONVOLATILE MEMORY CELL

**Nicholas E. Aneshansley, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio**

**Filed June 28, 1972, Ser. No. 266,999**
**Int. Cl. G11c** *11/40*
**U.S. Cl. 340—173 R** **13 Claims**



The present invention relates to a nonvolatile memory cell which includes a fixed threshold write transistor, a fixed threshold storage transistor and an alterable threshold read transistor therein. The gate electrode of the fixed threshold storage transistor is connected to a write or refresh select circuit through the write transistor. The drain electrode of the fixed threshold storage transistor is connected to a read data circuit through the read transistor. Read select, preset and store data circuits are connectable to the gate electrode of the alterable threshold read transistor to read volatile information out of the nonvolatile memory cell, or to nonvolatilely store information which is volatilely held within the nonvolatile memory cell, as power is removed from the nonvolatile memory cell.

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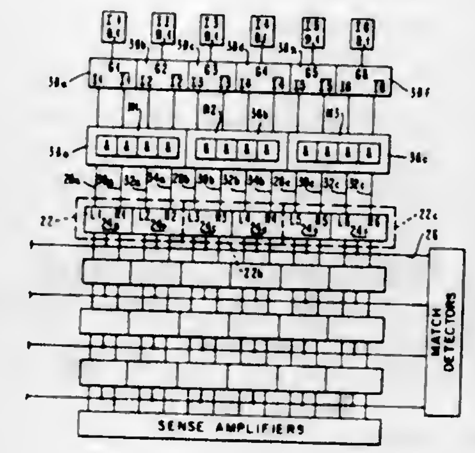
### 3,761,902
### FUNCTIONAL MEMORY USING MULTI-STATE ASSOCIATIVE CELLS

**Arnold Weinberger, Newburgh, N.Y., assignor to International Business Machine Corporation, Armonk, N.Y.**

**Filed Dec. 30, 1971, Ser. No. 214,195**
**Int. Cl. G11c** *11/40, 15/00*
**U.S. Cl. 340—273 FF** **10 Claims**



This specification discloses an associative or functional memory in which storage cells with more than four states are employed to perform logic functions. These multi-state cells can be actually a single multi-state cell or a plurality of bistable or quadrastable cells. They are addressed through their bit lines by a decoder for decoding two or more data bits and are sensed on their word lines by match detectors determining whether or not there is a match condition.

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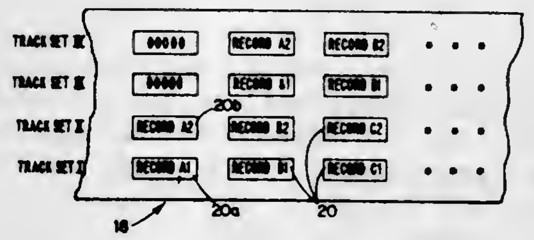
### 3,761,903
### REDUNDANT OFFSET RECORDING

**George L. Bird, Jr., and Way Dong Woo, both of Waltham, Mass., assignors to Kybe Corporation, Waltham, Mass.**

**Filed Nov. 15, 1971, Ser. No. 198,786**
**Int. Cl. G11b** *5/02*
**U.S. Cl. 340—174.1 G** **17 Claims**



Information is recorded on a record medium for recovery without loss due to a defect of the medium by recording the same information in each of two tracks with a longitudinal offset; and upon detection of an error while reading from one track, switching to reread the same item of information from the other track.

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### 3,761,904
### MAGNETIC SWITCHING DEVICES COMPRISING NI-MOFE ALLOY

Gilbert Yukyu Chin, Berkeley Heights, N.J.; William Brightman Grupen, and Thomas Charles Tisone, both of Emmaus, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

**Filed Mar. 18, 1970, Ser. No. 20,597**
**Int. Cl. G11c** *11/12;* **C22c** *19/00*
**U.S. Cl. 340—174 ZB** **1 Claim**

A new family of magnetic alloys containing small amounts of Zr or Be has been developed primarily for use in memories and coincident current switches. These alloys are of particular utility in those applications requiring a terminal heat treatment since they can be optimized to be square looped and essentially nonmagnetostrictive in the heat treated state with coercivities in the range 0.2–3 oersteds. One member of this family, developed for use as the soft magnetic material in the piggyback twistor memory element, has the composition; 80.2 percent nickel, 5.65 percent molybdenum, 0.25 percent zirconium and 0.25 percent manganese.

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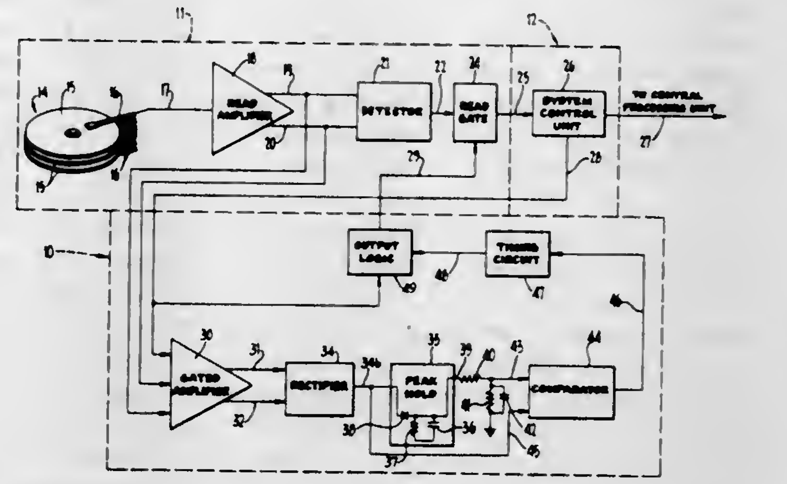
### 3,761,905
### DISC PACK DEFECT DETECTION SYSTEM

**Carl P. Hollstein, Jr., and Robert L. Cloke, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.**

**Filed Aug. 20, 1971, Ser. No. 173,514**
**Int. Cl. G11b** *5/44*
**U.S. Cl. 340—174.1 H** **10 Claims**

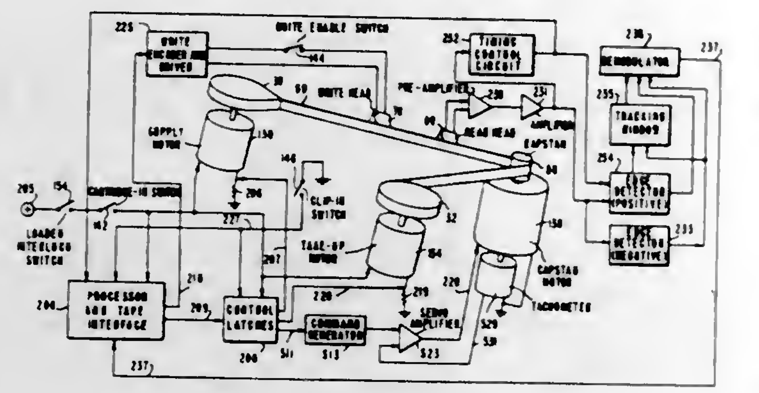


A method and system are described for detecting defective surface areas in magnetic recording discs. Detection is effected during initialization of a disc pack before data is recorded thereon for storage, therby permitting defective areas to be subsequently avoided during data storage. The method includes the steps of producing a reference signal from the readback signal derived from a recording disc during initialization thereof, and of comparing the contemporaneous or instantaneous value of the readback signal with the value of the reference signal to detect any abrupt reduction in the value of the readback signal. The duration of any such reduction is measured, and whenever it exceeds a predetermined time period, a defect signal is developed which interrupts the initialization process and is used to prevent later use of the defective area represented by the abrupt reduction. The system includes amplification, rectification, timing, and output circuits which process the readback signals and produce the defect signals in the manner described. It further includes a peak hold circuit and voltage divider for producing a reference signal based on the peak value of the readback signals but reduced to a fixed percentage thereof. A comparator circuit continuously compares such reference signal with the value of the contemporaneous readback signal for the purpose of detecting any such abrupt reduction in the latter to a value below that of the reference signal.

### 3,761,906
### TAPE SYSTEM

**Leslie P. Finster, Ilion; William J. Kelly, Sauquoit; Erich Otto Naegele, Herkimer; Richard J. Petkovsek, Middleville; Trevor D. Reader, New Hartford; Warren A. Reynolds, Ilion; Torkjell Sekse, Utica; Ernesto G. Sevilla, Herkimer, and William A. Sours, Sauquoit, all of N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.**

**Filed Jan. 8, 1971, Ser. No. 104,931**
**Int. Cl. G11b** *5/02*
**U.S. Cl. 340—174.1 A** **62 Claims**



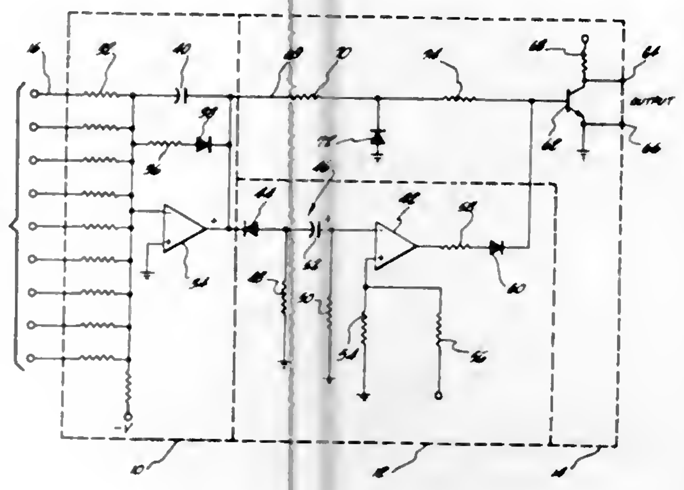
A tape system having a loader for properly positioning a tape cartridge. The cartridge includes an internal supply reel which is adapted to rotate freely within the cartridge housing when the cartridge is mounted, by means of the loader, onto the supply drive spindle. A spring in the supply drive spindle forces the supply reel to assume a free rotation orientation. The position of the cartridge within the loader is such that lowering the loader causes an eyelet attached to the recording tape in the supply reel of the cartridge to be affixed to a clasp attached to a permanent leader element coupled to the tape deck take-up reel. A plurality of electromechanical sensors on the tape deck is responsive to loading and locking steps to initiate specific electronic actions relating to the tape drive and the data control functions performed by the system processor. The tape is guided past the read/write heads by two pairs of double-post guides. Changes in the tape speed are controlled by a DC command generator which includes a smoothing circuit for controlling a gradual change from one tape speed to another. A tracking window is provided for correctly recovering phase-modulated data from the tape even as the tape speed varies. A control circuit is provided for verifying the presence of a data block.

### 3,761,907
### WARNING SIGNAL MULTIPLEXER CIRCUIT

**Cyral M. Walsh, Sherman Oaks, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.**

**Filed Aug. 3, 1972, Ser. No. 277,645**
**Int. Cl. H03k** *5/00;* **G08b** *23/00*
**U.S. Cl. 340—213 R** **11 Claims**

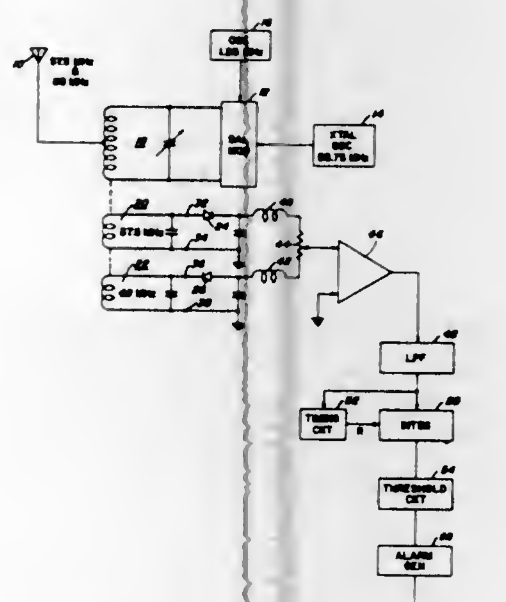
A multiplexer circuit monitors the state of several input signals and provides output control signals indicative of any change of state of the input signals. Input terminals are coupled to apply the respective input signals to be monitored to a summing circuit which provides a sum signal having a voltage level indicative of the collective state of the monitored signals. A voltage-to-time increment converter circuit operates to provide an enabling pulse having a selected width in response to certain changes in the voltage level of the sum signal. The enabling pulse provided by the converter circuit is applied to operate a gating circuit to provide desired output control signals.



### 3,761,908
### OBJECT DETECTION SYSTEM

**John B. Gehman, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.**

**Filed Dec. 20, 1971, Ser. No. 209,982**
**Int. Cl. G08b** *13/24*
**U.S. Cl. 340—258 R** **6 Claims**

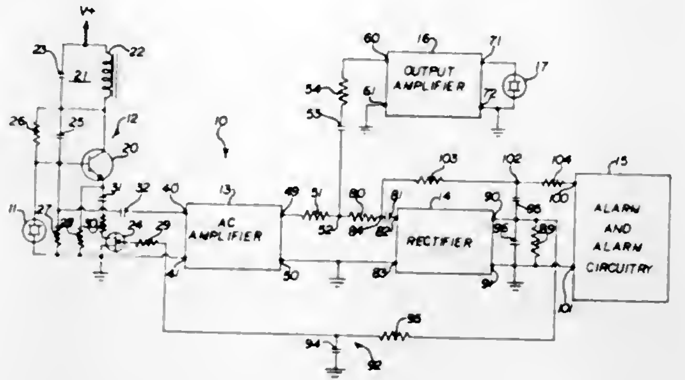


An intrusion detection system is described wherein an antenna establishes a sensing field in the area to be secured. The field having at least two different principal frequencies in the VHF band. These frequencies are generated by heterodyning (double sideband modulation) or by frequency modulation. The cyclic variations in the frequency (frequency shift) or the amplitude variations in the generated signals due to an intruder perturbing the sensing field and are detected by monitoring each frequency and determining the frequency differential or amplitude differential therebetween. The frequency or amplitude differential signal is processed to indicate the presence of an intruder, as by producing an alarm output.

### 3,761,909
### INTRUSION ALARM SYSTEM

**John C. Schweitzer, and Terry E. Tuttle, both of Grand Junction, Colo., assignors to Delta Products, Inc., Grand Junction, Colo.**

**Filed Dec. 30, 1971, Ser. No. 213,910**
**Int. Cl. G08b** *13/16*
**U.S. Cl. 340—258 A** **15 Claims**

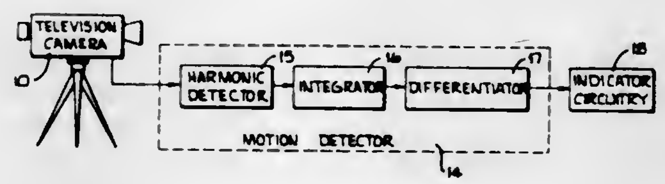


An intrusion alarm system includes separate transmitting and receiving transducers. The system detects the presence of an intruder in a protected area by generating carrier waves in the area and sensing the modulation of the carrier waves reflected from the intruder. The system uses the receiving transducer as a frequency control device to generate an oscillatory signal of controlled amplitude at the resonant frequency of the receiving transducer. The transmitting transducer is excited by the oscillatory signal, thereby carrier waves are generated by the transmitting transducer at the resonant frequency of the receiving transducer.

### 3,761,910
### DETECTOR OF MOTION IN A SCANNED FIELD

**Jovan V. Vidovic, Belgrade, Yugoslavia, assignor to Quality Engineering Associates Inc., Indianapolis, Ind.**

**Filed Mar. 2, 1972, Ser. No. 231,315**
**Int. Cl. G08b** *13/22*
**U.S. Cl. 340—258 R** **12 Claims**



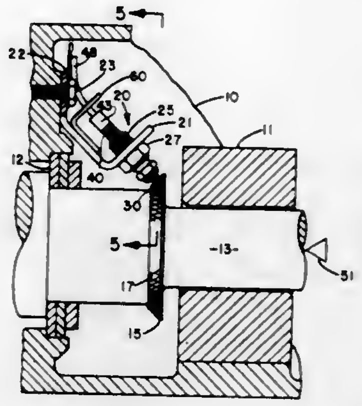
A circuit for use with a scanning device, such as a television camera, detects motion in the area viewed by the scanning device. The circuit detects changes in the levels of one or more of the harmonics of the scanning frequency in the output of the scanning device. When such a change is detected an alarm is triggered.

### 3,761,911
### SHAFT DISLOCATION DETECTOR

**Clayton D. Hiltz, 102 Coolidge Rd., North Syracuse; Gordon L. Mount, Gulf Bridge Rd., West Monroe, and James W. Endress, 715 Scarboro Dr., Syracuse, all of N.Y.**

**Filed Feb. 7, 1972, Ser. No. 223,989**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 340—271** **5 Claims**

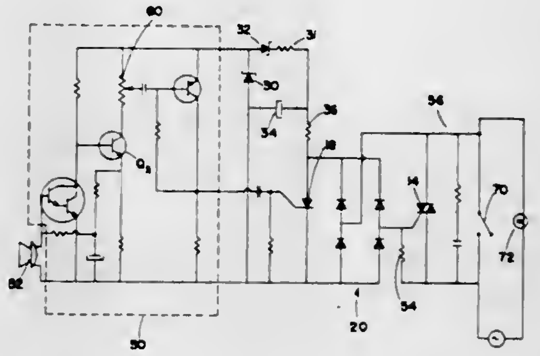
A high speed rotating shaft is provided with an abrading collar. A contact assembly is mounted with the contacts thereof in juxtaposition to the collar. Upon displacement of the shaft from normal operating position, the collar abrades away one contact thus opening the detector circuit.



### 3,761,912
### BURGLAR DETERRENT TIMING SWITCH

**Joseph C. Stettner, and James H. Ott, both of Akron, Ohio, assignors to Novar Electronics Corporation, Barberton, Ohio**

**Filed May 20, 1971, Ser. No. 145,134**
**Int. Cl. G08b** *13/16;* **H03k** *17/56*
**U.S. Cl. 340—276** **14 Claims**



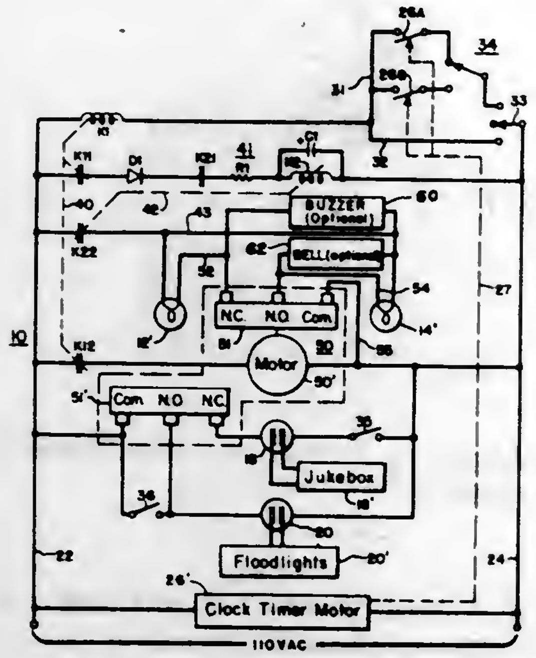
A burglar deterrent switch for installation in a conventional manual switch box for controlling room lights. An electronic sound responsive timing switch illuminates the room lights for a selected period of time in response to the occurrence of a sound and then turns the lights off for another selected period of time. The timing switch has a triac which is shunted across the manual light switch. The gate of the triac is controlled by an SCR connected in a bridge rectifier for controlling the triac gate current. The gate of the SCR is connected to the output of an amplifier and is switched on by sound incident upon a sound transducer connected to the input of the amplifier. A timing circuit means is also connected across the SCR and comprises a pair of voltage reference diodes connected parallel to a capacitance for fixing the voltage to which the capacitance may charge and having a resistance series connected to the parallel diodes and capacitance.

### 3,761,913
### TAVERN AND LOUNGE CLOSING SYSTEM

**Joseph L. Williams, 5313 S. Kimbark, Chicago, Ill.**

**Filed Sept. 23, 1971, Ser. No. 183,079**
**Int. Cl. G08b** *1/00*
**U.S. Cl. 340—309.5** **3 Claims**

A system for automatically (or manually) informing the patrons and employees of a tavern, lounge or the like of the approach of closing and for aiding in persuading the patrons to leave before the closing hour wherein a long period (24 hour) timer is employed to activate a relay-capacitor intermediate energization unit coupled by a short period timer, first to a first electric sign (e.g. "Last Call") for a period and then to a second electric sign (e.g., "Bar Closed"), the short period timer may also at the time of energizing the second sign disconnect current from a juke box or the like and connect current to a flood or house light to encourage customer departure.



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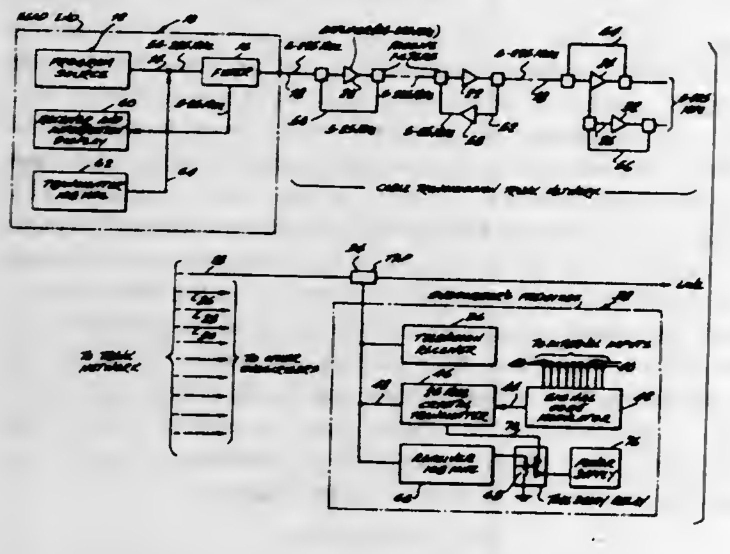
### 3,761,914
### ALARM SYSTEM

**George F. Hardy, Huntington, L. I., and Morton E. David, New York, both of N.Y., assignors to Bell Television, Inc. and Holmes Electric Protective Co., both of New York, N.Y., part interest to each**

**Continuation of Ser. No. 863,563, Oct. 3, 1969. This application Mar. 10, 1972, Ser. No. 233,823**

**Int. Cl. H04m** *11/04*

**U.S. Cl. 340—310** **10 Claims**



An alarm system for use in conjunction with a community antenna television system which includes the concept of bypassing the amplifiers along the transmission lines of the community antenna television and including an arrangement for determining the existence of fire, intrusion, and other types of emergency conditions and sending back across the community antenna television system a coded signal to a receiver at the central office of the community antenna television system. There is provided a further arrangement for ascertaining at the central office whether the system is in operating condition or not.

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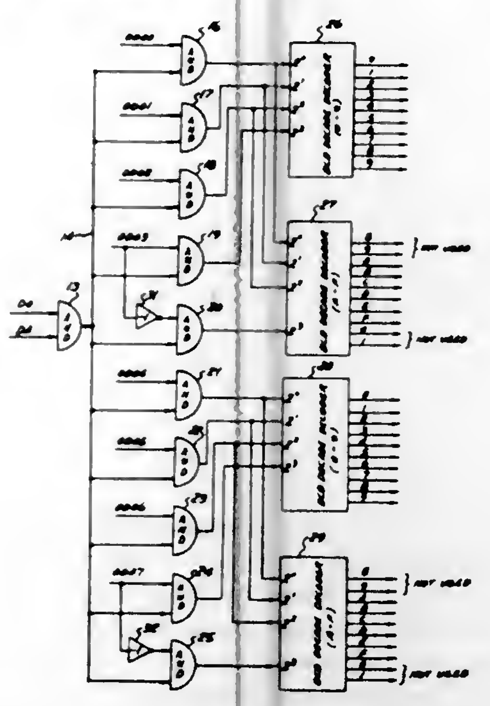
### 3,761,915
### OUTPUT COMMAND DECODER FOR NUMERICAL CONTROL EQUIPMENT

**Hubert B. Henegar, and Robert J. Patterson, both of Detriet, Mich., assignors to The Bendix Corporation, Southfield, Mich.**

**Filed Apr. 26, 1972, Ser. No. 249,448**

**Int. Cl. H03r** *13/00*

**U.S. Cl. 340—347 DD** **10 Claims**



The invention is directed to a system for decoding output commands from a computer utilized with a numerical control system. When a command is to be directed to a particular external device controlled by the N/C system, an eight bit word is addressed to a decoding system. The decoding system then decodes the eight bit word to actuate the particular device to be controlled. Hence, only one address need be utilized to control 256 external devices. The address is that of the decoding system. The invention thus preserves substantial address capacity in the computer of the N/C system and thereby greatly increases the flexibility of the system.

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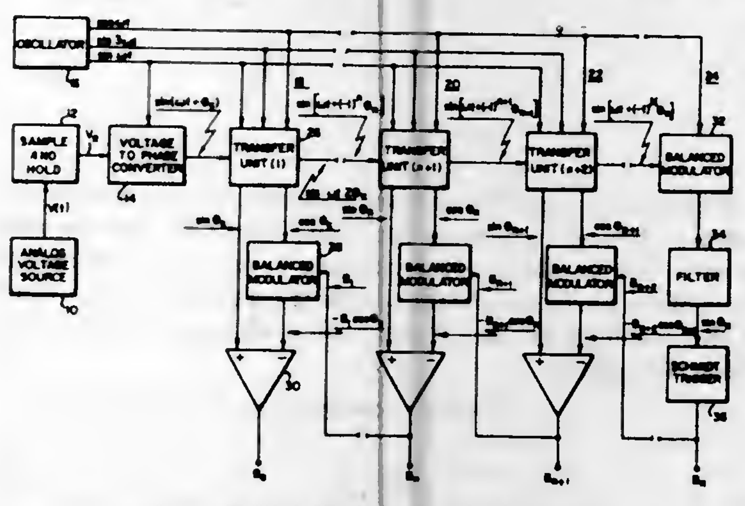
### 3,761,916
### ANALOG TO DIGITAL CONVERTER

**James Schenck, 119 Commonwealth Ave., Boston, Mass.**

**Filed Feb. 28, 1972, Ser. No. 229,887**

**Int. Cl. H03k** *13/02*

**U.S. Cl. 340—347 AD** **20 Claims**



An analog to digital converter that is capable of megabit conversion rates operates in the phase domain. The analog voltage to be digitized is first transformed into a corresponding phase angle by angle modulating a high frequency carrier and the conversion is performed on this angle. The output of each stage of the converter is monitored and applied to the next higher order stage to control transitions in that stage. By

this means, the conversion accuracy is made independent of the number of bits in the converted signal and is limited only by the accuracy of the stage generating the lowest order bit. Both binary and Gray code representations can be obtained simultaneously.

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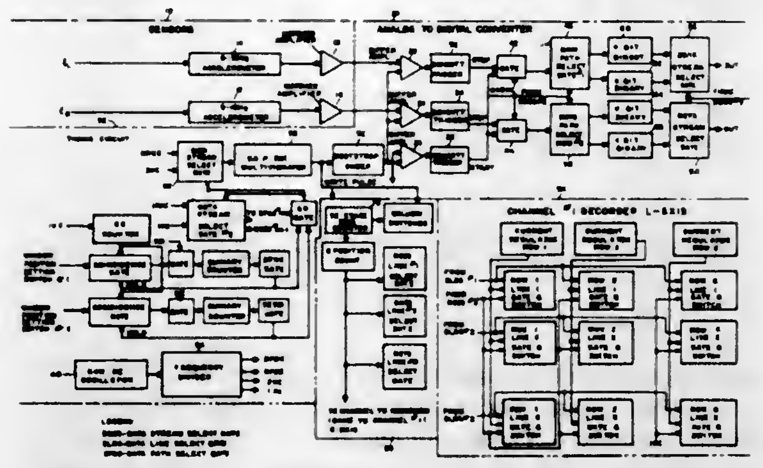
### 3,761,917
### GUN RUGGED RECORDER

**Eugene A. Brown, East Northport, and Robert L. Archer, Woodbury, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed May 15, 1972, Ser. No. 253,044**

**Int. Cl. H03r** *13/20;* **Ho4l** *15/34;* **G01b** *15/08*

**U.S. Cl. 340—347 AD** **10 Claims**



An on-board electronic system for providing and recording acceleration profile data during the firing and launch of an artillery projectile, wherein the system comprises: means for sensing acceleration; means for taking time-window samples of the data generated by said acceleration sensing means, said time-window samples each having a duration proportional to the magnitude of the acceleration data received during the sample; means for converting the data contained within the time-window samples into digital form; a matrix of current sensitive, light emissive pulsers; means for encoding the digital data onto said pulser matrix; and high-speed photographic film placed in close proximity to said pulser matrix, wherein said film serves as a recording medium for the information contained in said matrix.

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### 3,761,918
### CONCURRENT ENTRY PREVENTING SYSTEM

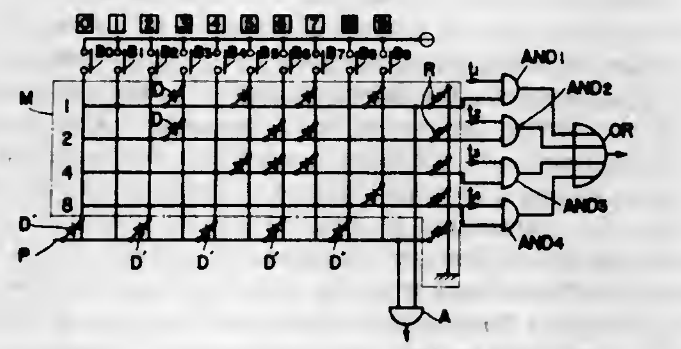
**Isao Hatano; Akira Nagano, both of Otokuni-gun, Kyoto-fu, and Kazuaki Urasaki, Fushimi-ku, Kyoto-shi, Kuoto-fu, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan**

**Filed Mar. 10, 1971, Ser. No. 122,666**

**Claims priority, application Japan, Mar. 10, 1970, 45/20302**

**Int. Cl. H04q** *3/00*

**U.S. Cl. 340—365 E** **13 Claims**



A concurrent entry preventing system for use in electronic calculating machines capable of preventing the erroneous arithmetic operation performed by the calculating machine. To this end, means is provided for yielding a warning signal indicative of the fact that two or more character keys are concurrently operated in a wrong course. This warning signal comprises the logical product of a signal indicative of operation of one of such characters by a signal indicative of operation of one or more of the remaining character keys, if the both character keys are concurrently operated.

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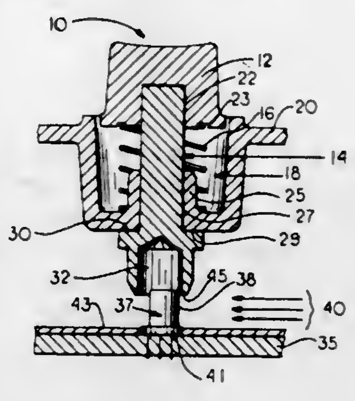
### 3,761,919
### RADIATION SENSITIVE KEYBOARD

**Paul L. Baumann, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.**

**Filed Aug. 14, 1972, Ser. No. 280,379**

**Int. Cl. G06f** *3/02*

**U.S. Cl. 340—365 P** **14 Claims**



A radiation sensitive keyboard device having a plurality of photosensitive receptors mounted on a base member along with a plurality of light sources, and a plurality of manually actuatable key assemblies, each reciprocably carried in a plurality of recesses in a mounting plate and each associated to a different receptor. Each key assembly has a stem portion, a key top mounted on one end and a shield mounted on the other end for blocking light to the associated receptor when the key assembly is actuated. The base member has a resilient layer for providing a substantially light-tight seal with the proximal end of each shield and an initial cushion stop therefor when the key assembly associated thereto is actuated. Each key assembly is provided with a biasing means for providing a restoring force tending to urge the key assembly in a direction away from the associated receptor.

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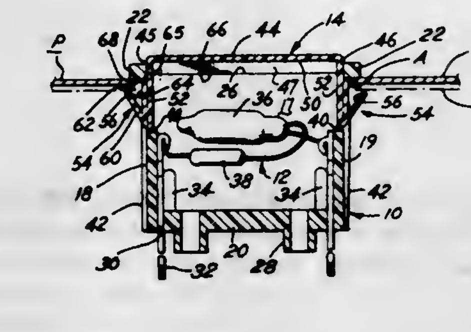
### 3,761,920
### INDICATOR LIGHT ASSEMBLY HAVING LATCHING LENS

**Neal Houbolt, and Dominic Bucciferro, both of Joliet, Ill., assignors to Jemco Engineering Co., Minooka, Ill.**

**Filed Sept. 20, 1971, Ser. No. 181,668**

**Int. Cl. G08b** *5/00*

**U.S. Cl. 340—381 R** **15 Claims**

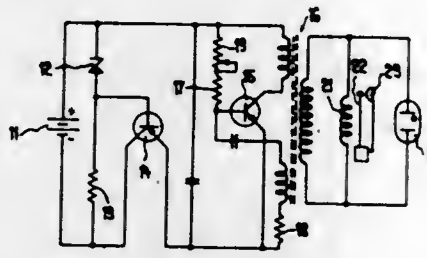


A panel mounted indicator light assembly including a housing and a lens wherein latching means are formed integrally with the lens. The latching means latches the lens and the housing together and also latches the lens and the housing to the panel upon which the assembly is to be mounted.

### 3,761,921
## VIGILANCE TESTING AND WARNING APPARATUS

**Karl Adler, Grenchen, Germany; George Ducommun, Feldbrunnen, and Rene Jenni, La Neuveville, both of Switzerland, assignors to Bivlatur S.A., Geneva, Switzerland**

Continuation of Ser. No. 852,558, Aug. 25, 1969, abandoned.
**Filed Nov. 29, 1971, Ser. No. 202,941**
**Claims priority, application Switzerland, Aug. 29, 1968, 13096/68**
**Int. Cl. A61b** *3/00*
**U.S. Cl. 340—421** **10 Claims**



A vigilance testing and warning apparatus allowing a flicker - fusion test and comprising a flickering luminous indicator, means for adjusting the flicker frequency and means for producing an acoustical signal when the frequency falls below a limit value, this acoustical signal indicating that vigilance of the tested person is below an allowable level.

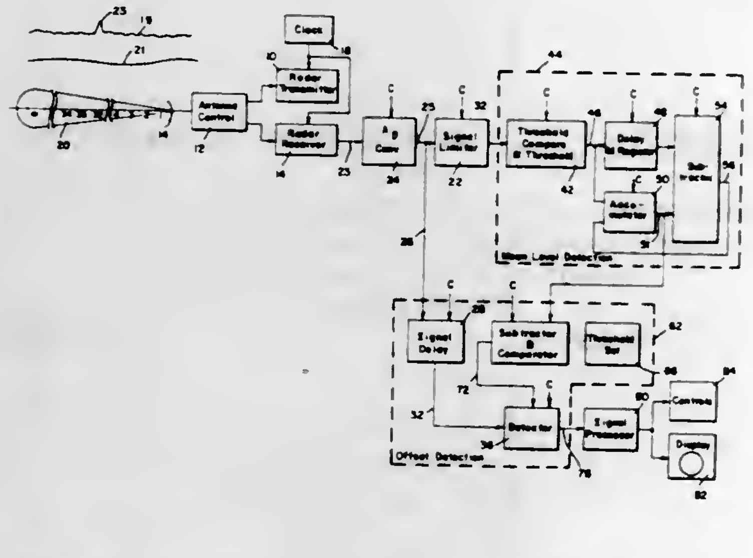
## ERRATA

For Classes 340—365 A and 340—147 T see:
Patents Nos. 3,761,944 and 3,761,945

### 3,761,922
## DIGITAL MEAN LEVEL DETECTOR

**Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed Oct. 12, 1971, Ser. No. 188,435**
**Int. Cl. G01s** *7/34*
**U.S. Cl. 343—5 DP** **7 Claims**

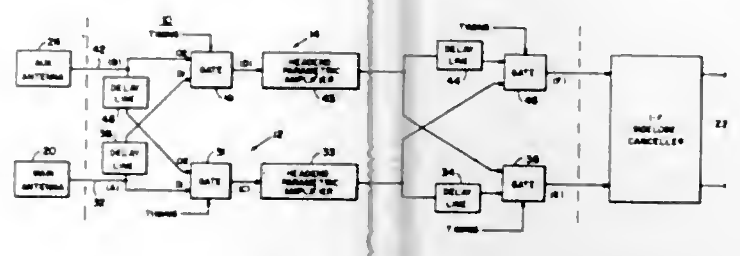


A digital mean level detector that processes the digital radar data so that the mean or RMS noise level is accurately determined and selected offset threshold levels can be varied to provide highly accurate and reliable signal detection. The system first provides mean level detection of the digital input signal which is applied to a threshold compare circuit having a plurality of thresholds such as two, for example. The output signals of the threshold compare circuit are encoded and sent both to a delay register and to an accumulator, with the outputs of both being applied to a subtractor for eliminating the oldest signal of a moving window sum held in the accumulator. The signal at the output of the subtractor is applied to the accumulator where it is added to the present signal at the output of the threshold compare circuit. At each range bin, the accumulated sum is then compared with an expected count representing the mean level of the noise for the selected number of range bins. The difference, representative of a predetermined error of the input noise level, is then adjusted and used to correct a signal detector having an offset threshold as determined by selected detection codes.

### 3,761,923
## RADAR SIDE LOBE CANCELLER INPUT EQUALIZER

**John W. Downie, Dewitt, N.Y., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Sept. 1, 1972, Ser. No. 285,944**
**Int. Cl. G01s** *7/02*
**U.S. Cl. 343—5 R** **4 Claims**

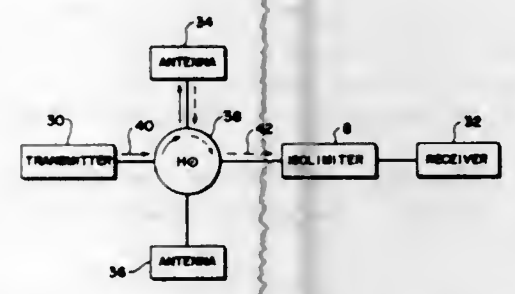


The radar side lobe canceller input equalizer provides interfaces at both inputs and outputs of the main and auxiliary receiver headends. These interfaces are time-division multiplexed so that each channel is alternately used to consecutively transmit simultaneous time increments of the two signals. The signals are restored to their original channel prior to coupling into the side lobe canceller. The amplitude versus frequency characteristics of these output signal portions are no longer dependent on the individual characteristic of each head-end, but on a matched combination of both.

### 3,761,924
## ISOLIMITER

**Joseph W. McGowan, Spring Lake Hgts., N.J., assignor to the United States of America as represented by the Secretary of the Army**

**Filed Sept. 14, 1972, Ser. No. 289,020**
**Int. Cl. G01s** *9/02*; **H01p** *1/32*
**U.S. Cl. 343—5 R** **3 Claims**



A ferrite isolator is combined with a ferrite-varactor limiter waveguide section to absorb reflected power without affecting microwave power signals incident to the ferrite limiter. A single magnet biases the ferrite limiter to subsidiary resonance and the ferrite isolator to main resonance. The combined isolator-limiter or isolimiter is used in a dual antenna radar system having a switched four-port circulator so that a signal from the transmitter is directed by the circulator to the selected one of the two antennas and radiated signal energy that is reflected back from the selected antenna is directed by the circulator through the isolimiter to the receiver where any spikes reflected by the varactor-limiter are absorbed by the isolator whereby varactor reflected spikes do not reach the other of the two antennas. The isolimiter affords receiver protection and isolation in one unit no larger than the limiter.

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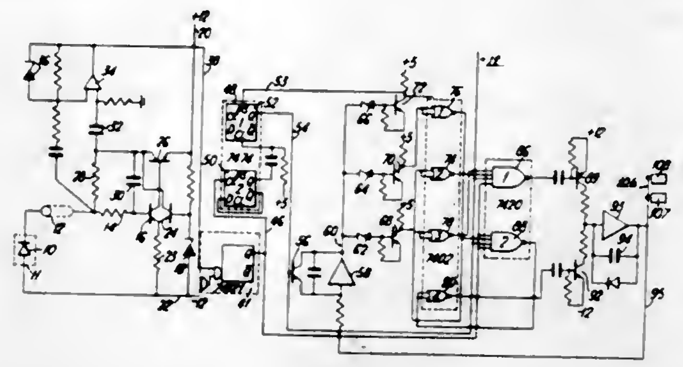
### 3,761,925
## DOPPLER SPEED METER

**David Rooksby Bollard, North Fambridge, England, assignor to Pye Limited, Cambridge, England**

**Filed Sept. 29, 1970, Ser. No. 76,367**
**Claims priority, application Great Britain, Oct. 9, 1969, 49,615/69; Feb. 10, 1970, 6,415/70**
**Int. Cl. G01s** *9/46*
**U.S. Cl. 343—8** **22 Claims**

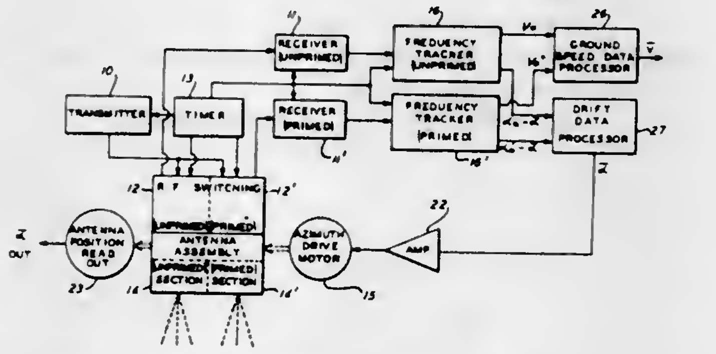


Radar apparatus for measuring a Doppler shift between the frequencies of a transmitted radar signal and a reflected radar signal comprises means to provide a difference signal having a frequency equal to that of the Doppler shift, means to select those cycles of the difference signal that have an amplitude above a predetermined limit and a period within predetermined limits of a mean period derived from the periods of previously selected cycles, means to provide pulsiform signals, each pulsiform signal corresponding to a respective selected cycle and having an algebraic sign dependent on the period of said respective cycle compared to said mean period, and means to integrate the pulsiform signals whereby to provide an output indicative of the Doppler shift.

### 3,761,926
## METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF DOPPLER VELOCITY MEASUREMENT OVER THE SEA

**France B. Berger, North Haledon, N.J., assignor to The Singer Company, Little Falls, N.J.**

**Filed Dec. 21, 1971, Ser. No. 210,352**
**Int. Cl. G01s** *9/46*
**U.S. Cl. 343—9** **13 Claims**

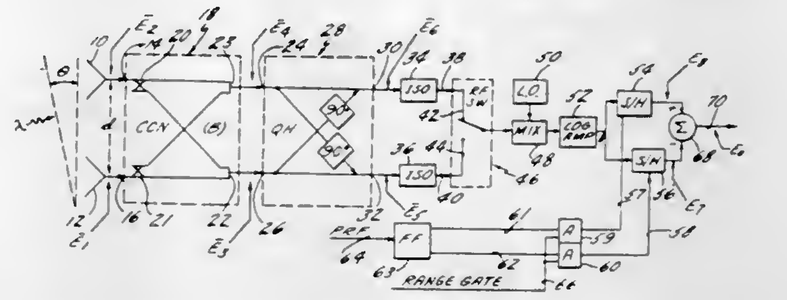


Velocity readings of airborne Doppler radar over water generally yield a value different from that obtained over land. These values include a component known as an "over water shift" and another component referred to as the "water motion effect." These components differ in various radar systems depending upon such variables as the frequency and polarization of the transmitted electromagnetic signal, and the angle with respect to the horizontal axis of the beam of radiation formed by the antenna, i.e., the "looking angle" of the antenna. Substantially, true velocity of an aircraft above water with respect to ground is measurable through the utilization of a radar system with two operation modes; one having at least one of the above variables different from the other. Each mode provides a different apparent velocity from the other. The apparent velocities of the two modes are combined in such a manner as to produce a true velocity based upon the known relationships of the various parameters and the apparent velocities.

### 3,761,927
## RF PHASE DETECTED INTERFEROMETER RADAR

**Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed Mar. 20, 1972, Ser. No. 236,046**
**Int. Cl. G01s** *3/46, 9/02*
**U.S. Cl. 343—16 R** **2 Claims**

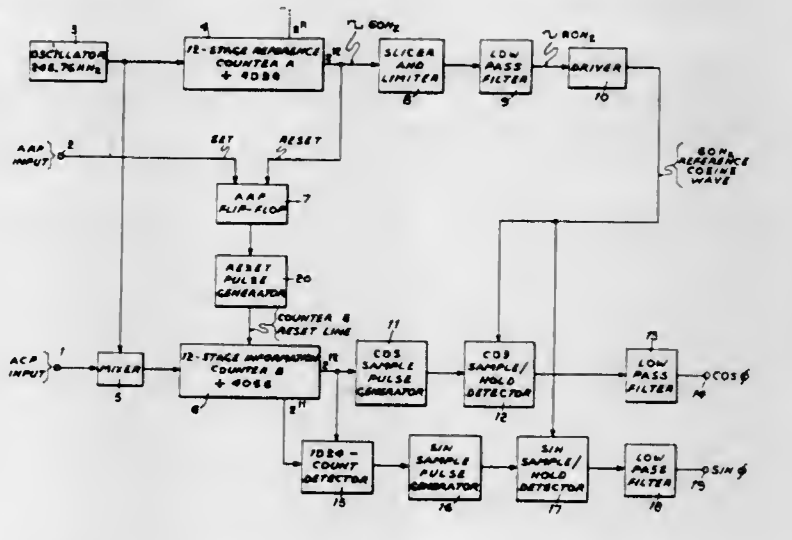


Two elements of a duplex interferometer antenna each feed respective ports of a cross coupling network, the output of which is applied to a quadrature hybrid used as an RF phase detector. The phase detector outputs are alternately sampled on a PRF basis, heterodyned to an intermediate frequency and processed through a signal logarithmic IF amplifier which is also sampled on an alternate basis, one of the alternate outputs being subtracted from the other to achieve a ratio.

### 3,761,928
## SIMPLIFIED DIGITAL TO SIN/COS CONVERTER

**Weldon W. Greutman, Hicksville, Ohio, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Dec. 13, 1971, Ser. No. 207,250**
**Int. Cl. G01s** *9/06*
**U.S. Cl. 343—16 R** **9 Claims**



The invention provides a conversion arrangement, particularly applicable to radar, for converting digital information representative of the rotational (azimuthal) position of the radar antenna to sine and cosine of azimuth waveforms for use in a display such as a plan position indicator. A frequency oscillator standard is coupled to an *n*-stage reference counter the square wave output of which is subsequently filtered to provide a reference cosine wave of predetermined frequency. Azimuth change pulses representative of the antenna positional rotation are mixed with the frequency oscillator standard and coupled to a second *n*-stage or *n*-bit counter operating in like manner to the reference counter. The content of the second counter is advanced with respect to the reference counter by one count per azimuth change pulse, the second counter in turn serving to generate cosine and sine sampling pulses. These pulses sample the reference cosine wave to provide an output signal which when filtered derives cosine $\phi$ and sine $\phi$ positional information signals respectively. System reference is obtained by presetting the second *n*-stage counter to equal the reference counter in dependence upon each received azimuth reference pulse.

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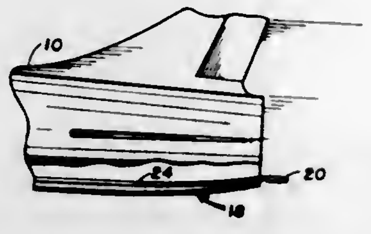
## 3,761,929
## RADAR SPOOF

**Theodore Wyatt, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Feb. 24, 1971, Ser. No. 118,539**
**Int. Cl. G01s**
**U.S. Cl. 343—18 B** **4 Claims**



A method and preferred means for utilizing a heat thrust engine exhaust to ignite and distribute a combustible mixture rich in ionizable material, thereby producing an engine exhaust capable of confusing radar or infrared tracking systems. More particularly, a slurry typically composed of a hydrocarbon fuel and an ionizable substance is injected into the tailpipe section of an aircraft to produce an engine exhaust having a radar and infrared return greater than that of the aircraft, thereby decoying the unfriendly detection or tracking system away from the aircraft and allowing the aircraft to undertake evasive action to avoid the weaponry associated with the detection or tracking system.

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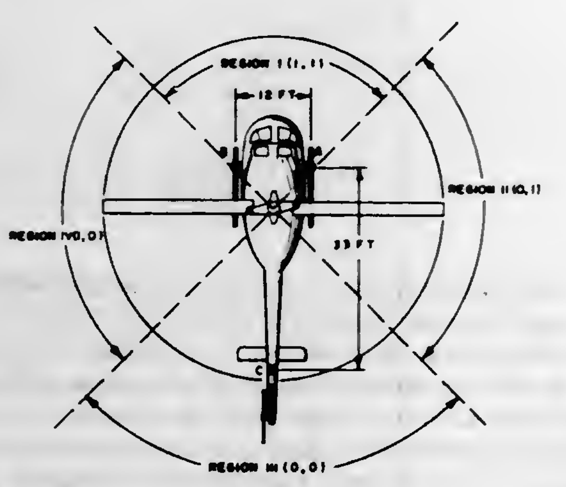
## 3,761,930
## APPARATUS FOR AN AIRCRAFT PROXIMITY WARNING SYSTEM

**David B. Bennett, Minneapolis; Charles P. Harman, Roseville, and Robert J. Follen, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.**

**Filed June 23, 1971, Ser. No. 155,747**
**Int. Cl. G01s** ***3/50***
**U.S. Cl. 343—113 R** **2 Claims**



The azimuth quadrant of an intruder aircraft is determined with a triangulation technique which makes use of the arrival times of cooperative signals from the intruder aircraft. The signals from the intruder are received by three antennas and depending on the antenna arrival times, logic signals are generated which set a pair of flip-flops to one of four states (1,1), (0,1), (0,0) or (1,0) indicating that the intruder is in the front, right, rear, or left quadrant, respectively.

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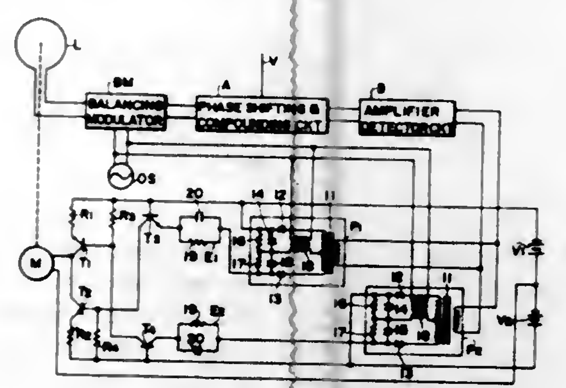
## 3,761,931
## AUTOMATIC DIRECTION FINDERS

**Chosaku Hisatsu, Chigasaki, Japan, assignor to Nippon Oceanics Institute, Ltd., Fujisawa City, Japan**

**Filed Sept. 23, 1970, Ser. No. 74,548**
**Int. Cl. G01s** ***3/14***
**U.S. Cl. 343—121** **2 Claims**



In a wireless direction finder there are provided a loop antenna and a vertical antenna, a circuit means for effecting a balanced modulation of one of the output signals of these antennas with a given modulation frequency and for combining the modulated signal with the other of the antenna output signals, a detector circuit for detecting the output signal from the circuit means, a phase detector circuit to effect phase detection of the output signal from the detector circuit in accordance with the modulation frequency, a DC motor for rotating the loop antenna, a DC source having a mid-point connected to one terminal of the DC motor, a pair of control transistors respectively connected between the other terminal of the DC motor and opposite poles of the DC source, and a pair of transistors controlling the ON and OFF operations of the control transistors in accordance with the output of the phase detector circuit.

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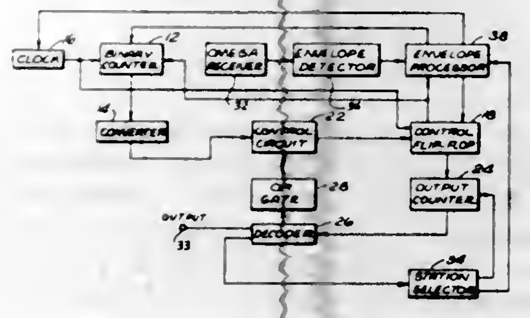
## 3,761,932
## COMMUTATOR GENERATOR FOR RADIO NAVIGATION RECEIVER ALIGNMENT

**Yoshiaki Fujimoto, Torrance, Calif., assignor to Northrop Corporation, Los Angeles, Calif.**

**Filed Nov. 22, 1971, Ser. No. 200,685**
**Int. Cl. H04l** ***7/00***
**U.S. Cl. 178—69.5 R** **5 Claims**



A commutator generator for generating a plurality of station gating signals each having different gate time. A resettable binary counter provides output timing signals which are gated with the commutator generator output signals. Control circuitry selects the number of pulses to be elapsed before changing the state of an output counter, as well as resetting the binary counter. The output counter, in turn, is coupled to a decoder which produces the commutator generator output signals. A station selector initially sets the output counter to one of the station gates. Further, a station envelope is coupled to an envelope processor to initially enable the resettable counter.

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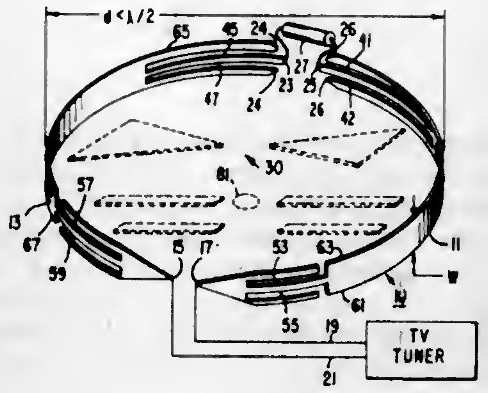
## 3,761,933
## LOOP ANTENNA WITH DISTRIBUTED IMPEDANCE NEAR THE TERMINATING GAP

**Paul Joseph Smalser, Deptford, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Sept. 21, 1972, Ser. No. 290,801**
**Int. Cl. H01q** ***11/12***
**U.S. Cl. 343—740** **5 Claims**



A low cost, physically small loop antenna is provided. The loop antenna is characterized by a metal band arranged in a loop having a pair of separated gaps, one of which is a feed gap and the other an impedance terminating gap. A resistance is coupled across the impedance termination gap. The metal bands have slots therein near the terminating gap to provide a distributed reactance near the terminated gap.

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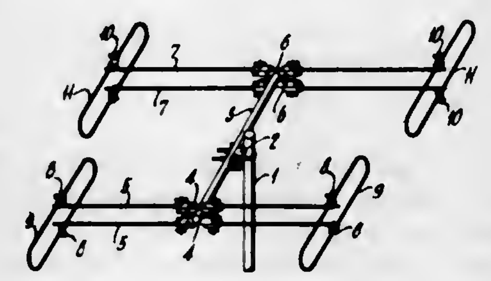
## 3,761,934
## TWO-ELEMENT RECEIVING ANTENNA WITH CRITICALLY SPACED END SECTIONS

**Koichi Terakawa, Tarumi-ku, Kobe, Japan, assignor to DX Antenna Company, Limited, Kobe, Japan**

**Filed May 8, 1972, Ser. No. 251,360**
**Int. Cl. H01q** ***9/00***
**U.S. Cl. 343—752** **2 Claims**



A two-element antenna having front and rear antenna elements arranged in parallel relationship. Perpendicular elements on the ends of the front and rear elements with the rear ends of the perpendicular elements of the front antenna element being spaced from one to five percent of the wave-length of the received frequency from the front ends of the perpendicular elements on the rear antenna element.

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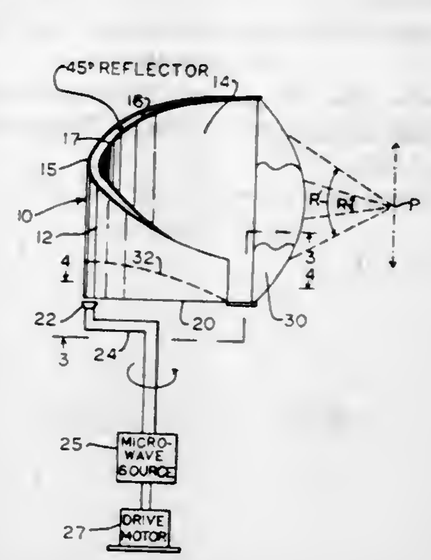
## 3,761,935
## WIDE ANGLE MICROWAVE SCANNING ANTENNA ARRAY WITH DISTORTION CORRECTION MEANS

**Richard J. Silbiger, Dix Hills; Lawrence N. Finch, II, Great Neck, and Ralph W. Logan, West Islip, all of N.Y., assignors to Republic Electronic Industries, Inc., Huntington Station, N.Y.**

**Filed Mar. 6, 1972, Ser. No. 232,149**
**Int. Cl. H01q** ***19/06***
**U.S. Cl. 343—754** **8 Claims**



A wide angle microwave scanning antenna array includes an assembly of two stationary, parallel, concentric, spaced cylindrical surfaces providing a path for microwaves. A rotating waveguide feeds microwave energy into one end of the assembly and a flat focusing lens at the output end of the assembly radiates the microwaves in a scanning plane and focuses the waves at a point moving in the plane. A helical mirror in the assembly reflects the microwaves from the input to the lens at the output. To correct for distortion and increase the angular range of distortion free scanning, a cylindrical corrector lens is located in the assembly between the input and the mirror.

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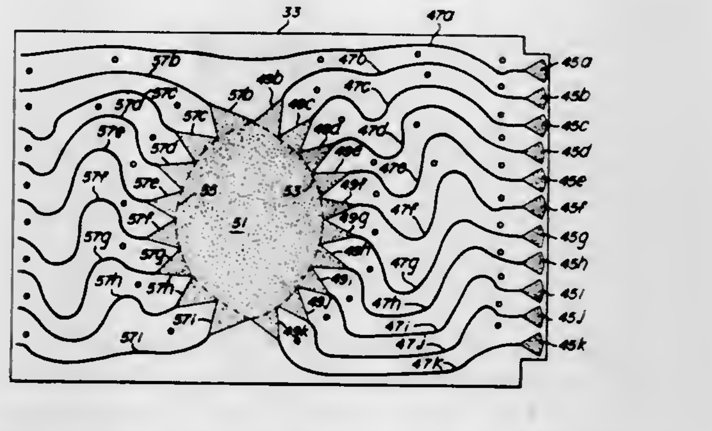
## 3,761,936
## MULTI-BEAM ARRAY ANTENNA

**Donald H. Archer; Robert J. Prickett, both of Santa Barbara, Calif., and Curtis P. Hartwig, Lexington, Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed May 11, 1971, Ser. No. 142,149**
**Int. Cl. H01q** ***14/06***
**U.S. Cl. 343—754** **3 Claims**



A multi-beam array antenna assembly is disclosed, such assembly being adapted to form a plurality of simultaneously existing beams of radio frequency energy, each one of such beams having the gain of the entire antenna aperture and a different scan angle. The preferred embodiment of the contemplated assembly is fabricated, using printed circuit techniques and matching sections on a dielectric substrate, to form an array of antenna elements and constrained electrical paths for radio frequency energy between each one of the antenna elements and a number of feed ports. The electrical length of each one of such paths is adjusted so as to focus radio frequency energy in each one of the desired beams at a different feed port. The preferred embodiment also illustrates a multi-beam array antenna assembly having antenna elements spaced to increase the scan angle of each desired beam.

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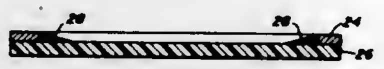
### 3,761,937
### RADIO FREQUENCY TRANSMITTING APPARATUS HAVING SLOTTED METALLIC RADIO FREQUENCY WINDOWS

**Gus P. Tricoles, San Diego, and Eugene L. Rope, El Cajon, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.**

**Filed May 11, 1972, Ser. No. 252,399**
**Int. Cl. H01q** *1/42*
**U.S. Cl. 343—770** **11 Claims**



A slot antenna or radome having increased bandwidth capability may be made of a metallic sheet which is curved in the case of a radome, or flat in the case of the side of a waveguide, the sheet has a plurality of slots with edges which are beveled toward each other from the outer surface of the sheet, such that the metallic walls of the window are thin and approach the skin depth for the highest frequency of radio frequency waves which are to be transmitted. With longer wavelengths the electromagnetic field penetrates through the thin edge so that the window is effectively larger, thereby providing improved transmittance over a broad bandwidth.

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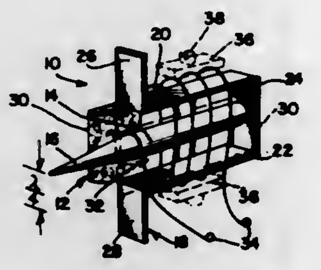
### 3,761,938
### FERRITE DIPOLE ANTENNA RADIATOR

**Frank Reggia, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Nov. 30, 1972, Ser. No. 310,735**
**Int. Cl. H01q** *13/00*
**U.S. Cl. 343—785** **10 Claims**



A ferrite rod is positioned between two parallel foil conductor strips. The strips terminate in perpendicular tabs which form a half-wavelength dipole antenna. Electromagnetic energy is coupled from free space to the ferrite rod by the dipole tabs. The energy propagates down the rod until reflected by a short circuit section connecting the ends of the conductor strips, opposite the tabs. After reflection, the energy propagates in a reverse direction. A coil carrying high frequency A.C. modulates the phase of the energy during propagation in both directions through the ferrite. When the energy is reflected back to the dispole tabs, the phase modulated energy is radiated to free space.

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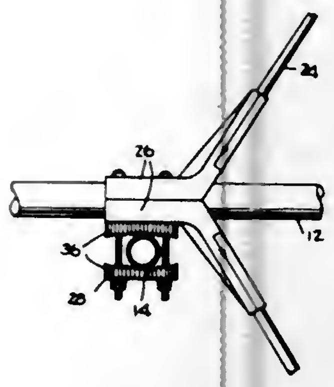
### 3,761,939
### ANTENNA BRACKET

**Everette Tyler Bryant, Jr., Newberry, S.C., assignor to C/P Corporation, Columbia, S.C.**

**Filed Feb. 18, 1971, Ser. No. 116,416**
**Int. Cl. H01q** *9/44*
**U.S. Cl. 343—809** **18 Claims**



An antenna bracket comprising an angled member of insulating material having first and second legs. The first leg has a channel which is adapted to mate with a portion of a support member, and the second leg has at least one bore adapted to receive an end of an antenna element. A terminal assembly is provided within a chamber in the second leg and is adapted to have the ends of the antenna element and of a lead-in wire electrically connected thereto. A fan dipole antenna assembly is also disclosed.

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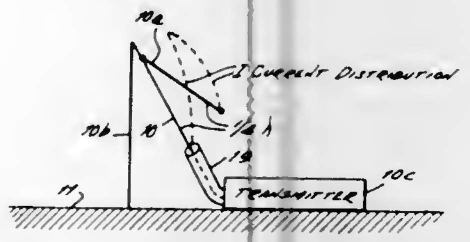
### 3,761,940
### MEANS FOR DIRECTING ELECTROMAGNETIC WAVE ENERGY AT A VERY LOW ANGLE ABOVE THE HORIZON

**R. Lee Hollingsworth, 186 Secatogue Ln., West, West Islip, N.Y.**

**Continuation-in-part of Ser. Nos. 172,581, Feb. 12, 1962, Pat. No. 3,289,208, and Ser. No. 684,873, Nov. 21, 1967, abandoned. This application Dec. 10, 1969, Ser. No. 870,607**
**Int. Cl. H01q** *21/00*
**U.S. Cl. 343—826** **2 Claims**

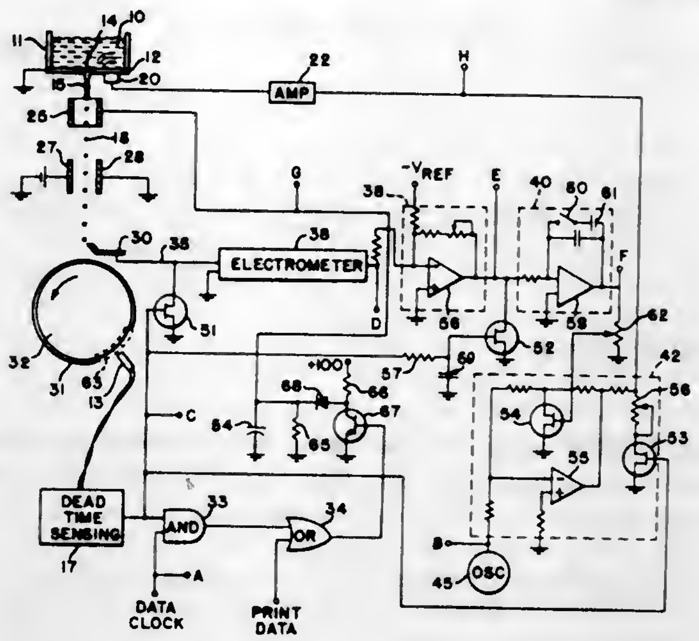


The present invention comprises substantially vertical electromagnetic radiators which are arranged to have the maximum current mode at the top of one or more radiators to direct the wave energy along the ground plane without radiating energy directly towards the sky, which are . . . as well known . . . reflected back to Earth to cause interference. The invention also includes means comprising a single or multiple wavelength vertical antenna whereby the second 90 electrical degrees of each 180 electrical degrees is shielded from radiation to avoid high angle radiation. While the aforesaid means provides wave concentration along the ground towards the horizon, additional arrangement of radiators are associated to concentrate this ground wave energy in less than 360° from the point of transmission as desired.

### 3,761,941
### PHASE CONTROL FOR A DROP GENERATING AND CHARGING SYSTEM

**John A. Robertson, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio**

**Filed Oct. 13, 1972, Ser. No. 297,284**
**Int. Cl. G01d** *18/00*
**U.S. Cl. 346—1** **11 Claims**



There is disclosed a phase control system for a jet drop generator wherein the phase of drop generation is adjusted by adjusting the amplitude of a stimulating disturbance applied to the jet. A time varying electrical signal, preferably a binary or ON/OFF signal, is applied to a charging electrode located near the point of drop formation, so that newly forming drops are charged or uncharged in correspondence to the signal. During normal operation as a recording device, the charged drops pass through an electrical deflection field for deflection into an appropriately placed catcher. Drops which are uncharged pass undeflected through the deflection field and deposit on a recording sheet. During non recording or dead times a calibrating signal is applied to the charging electrode and the charge carried away by the drops formed during that period is measured by an electrometer connected to the catcher. This measurement provides an indication of the phase of drop generation relative to the phase of the calibrating signal. Deviations of this relative phase from a desired relative phase are corrected by adjusting the amplitude of the drop stimulating disturbance.

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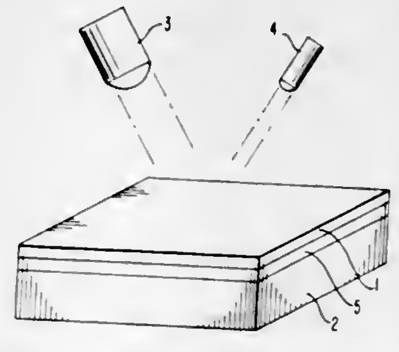
### 3,761,942
### LOW ENERGY THERMOCHROMIC IMAGE RECORDING DEVICE

**Max R. Lorenz, Mahopac, and Rangaswamy Srinivasan, Ossining, both of N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.**

**Filed July 28, 1971, Ser. No. 166,879**
**Int. Cl. G01d**
**U.S. Cl. 346—1** **3 Claims**



A thermochromic recording device is prepared from reversible photochromic materials. The photochromic material, dissolved in a plastic matrix, is coated onto a substrate. The coating is exposed to light radiation to produce a color therein. The colored layer or film can be rapidly written upon with low energy lasers or light emitting diodes to effect a visible image. Spots having 3 $\mu$ diameters can be recorded with energies as low as 0.043 nanojoules/$\mu^2$.

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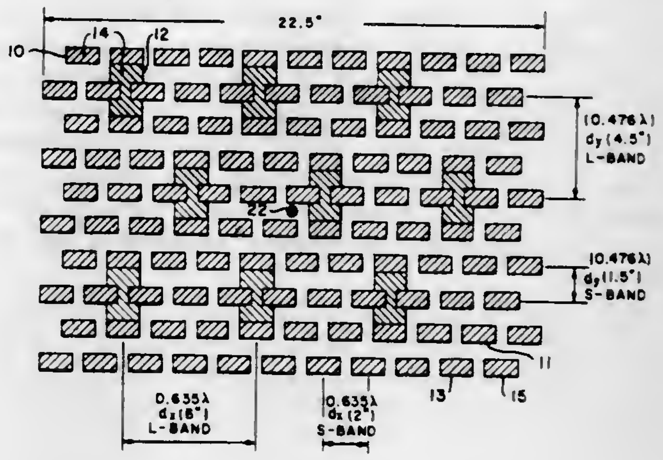
### 3,761,943
### DUAL-BAND ARRAY ANTENNA

**W. Harold Harper, Oxon Hill; William L. Thrift, Waldorf, and Robert E. Hailey, Jr., Forestville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 21, 1972, Ser. No. 273,915**
**Int. Cl. H01q** *13/00*
**U.S. Cl. 343—776** **5 Claims**



A unitary antenna comprising two different arrays. The first is a group of waveguide antenna elements in alternately displaced rows forming a triangular grid structure and the second is another group of waveguide antenna elements forming a triangular grid structure within the first grid structure. The two groups of elements are dielectrically loaded, are polarized to radiate orthogonally to each other, and are designed to radiate at different frquency bands.

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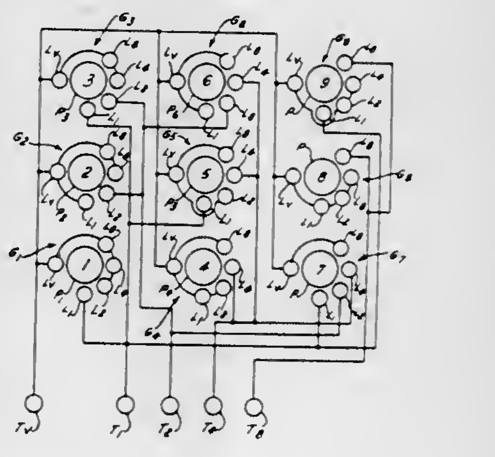
### 3,761,944
### BINARY CODE GENERATOR

**Takemi Shimojo, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan**

**Filed Jan. 14, 1972, Ser. No. 217,907**
**Claims priority, application Japan, Jan. 22, 1971, 46/1863; Mar. 8, 1971, 46/12344**
**Int. Cl. H04l** *15/06*
**U.S. Cl. 340—365 A** **2 Claims**



A binary code generator for generating a plural bit binary code from keyboard input data comprises a printed circuit including a plurality of conductive lead groupings arranged in registration with a plurality of pushbuttons on a keyboard frame. The circuit board includes a plurality of electrical terminals one of which is operatively electrically connected to a voltage source and the others of which are selectively operatively electrically connected to the lead patterns forming the conductive lead groupings in accordance with the binary code to be generated. Upon actuation of the pushbutton switch all of the lead patterns in the conductive lead grouping associated with that pushbutton are electrically connected together whereby selected ones of the output terminals are electrically connected to the voltage source thereby to produce a binary output code.

The keyboard is formed of a single integral sheet of resilient material and includes a plurality of conductive resilient contacts normally spaced from the conductive lead groupings on the circuit board. In a preferred embodiment each of the lead patterns in a lead grouping comprises a plurality of radially extending branches and the contact member is formed with a contact surface in the form of a continuous generally circular rim adapted upon depression of its associated pushbutton to bridge a sufficient number of lead branches in the associated lead grouping to provide effective and reliable switching under all conditions. The contacts are electrically and structurally separated from each other by raised strips formed integral on the resilient keyboard sheet and secured by appropriate means to the circuit board, those strips being effective to reliably maintain independent actuation of individual pushbuttons.

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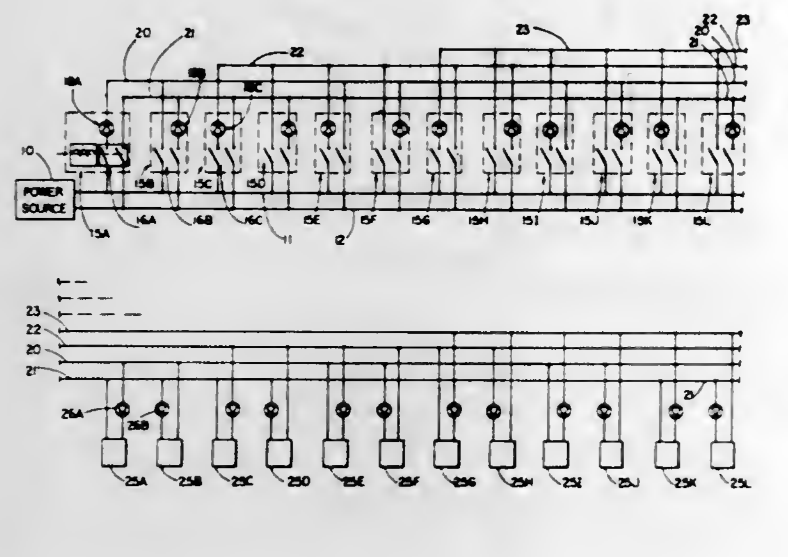
### 3,761,945
## MINI-WIRE CONTROL-SYSTEM
**Gary W. Engle, 24752 San Doval Ln., Mission Viejo, Calif.**
**Filed May 18, 1972, Ser. No. 254,582**
**Int. Cl. H04q** *5/06*
**U.S. Cl. 340—147 T** **7 Claims**



The present invention relates to a control system that uses a minimal number of distribution lines for interconnecting signal producing circuitry and signal utilization devices. In this way a large plurality of utilization devices may be activated by a suitable number of controllers in the signal producing circuitry; and the actual number of distribution lines is appreciably smaller than either the number of controllers or the number of utilization devices.

Various types of signal producing controllers are shown; and a plurality of utilization devices and their interconnections are discussed, the utilization devices being "tuned" to be activated only by suitably associated control signals.

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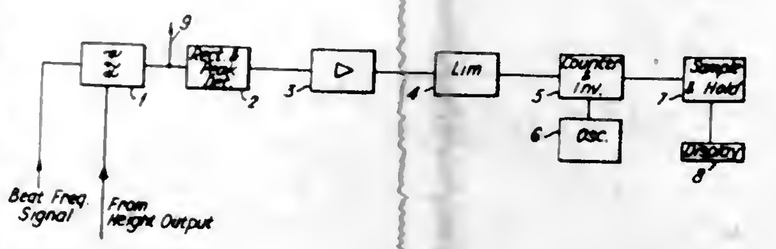
### 3,761,946
## RADIO ALTIMETER WITH RATE OF HEIGHT CHANGE INDICATION
**Rolf Johannessen, Harlow, and Joseph Mun, Bishops Sturtford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.**
**Filed Jan. 24, 1972, Ser. No. 219,963**
**Claims priority, application Great Britain, Jan. 22, 1971, 2,923/71**
**Int. Cl. G01s** *9/24, 9/44*
**U.S. Cl. 343—12 A** **10 Claims**



An FM/CW radio altimeter of the type which measures altitude as a function of the beat frequency signal resulting from mixing of the received energy against a portion of the transmitted signal. A circuit is included for determining the rate of change of altitude with time. A portion of the beat frequency signal is bandpass filtered and differentiated to reset a digital counter driven by a timing oscillator. The count is sampled and displayed and gives a measure of the rate of change of height of the aircraft. The dh/dt output is itself inherently digital and may therefore be presented in a counter type display. The rate of change signal is derived without differentiating or otherwise processing the output signal of the overall device as fed to a height display.

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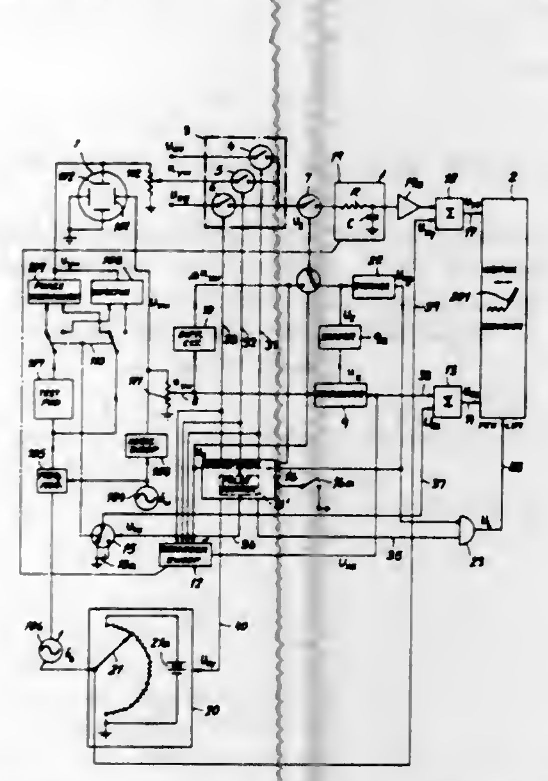
### 3,761,947
## DISPLAY CONVERTER FOR RECORDING MULTIPLICITY OF OSCILLOSCOPE TRACES
**Klaus Volkmann, Reutlingen-Sodelfingen, and Rudolf Dick, Eningen u.a., both of Germany, assignors to Wandel u. Goltermann K. G., Muhleweg, Germany**
**Filed Sept. 11, 1972, Ser. No. 288,097**
**Claims priority, application Germany, Sept. 9, 1971, P 21 45 034.0**
**Int. Cl. G01d** *5/00*
**U.S. Cl. 346—33 R** **18 Claims**



An oscilloscope, serving to display the traces of different output voltages of a test circuit representing at least two circuit parameters (amplitude and phase) in various test-frequency bands, is coupled to a graphic recorder through a converter including a source of triangular sweep voltage for the x-deflection of the stylus of the recorder. The cadence of this sweep voltage is substantially lower than that of a triangular scanning voltage (wobble frequency) serving for the exploration of each band, a comprator in the converter generating a coincidence signal upon detecting a match between the two triangular frequencies to pass a sample of the output voltage for deflecting the stylus in the y-direction. Whenever the monotonically varying sweep voltage over- or undershoots the range of the scanning voltage derived from the oscilloscope input, the prolonged absence of the coincidence signal gives rise in the converter to an end-of-sweep signal which, upon every third occurrence, causes a switchover to a different parameter and/or frequency band. The switchover in the oscilloscope input is accompanied by a modification of the basic horizontal and/or vertical control voltage for the stylus so that the new trace is inscribed on a different portion of the paper sheet serving as a recording medium. Each recording cycle includes a high-speed first period for the registration of an upper reference line, a low-speed second period for the inscription of the trace and a high-speed third period for the registration of a lower reference line.

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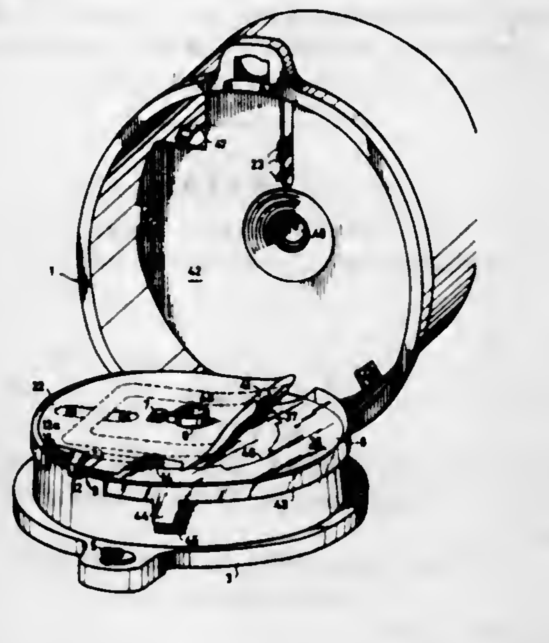
### 3,761,948
## RECORDING INSTRUMENT FOR TWO DIAGRAM SHEETS
**Karl Voegtlin, Villingen; Hans Zimmerman, Schwenningen, and Karl Doerner, Villingen, all of Germany, assignors to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany**
**Filed Dec. 6, 1972, Ser. No. 312,519**
**Claims priority, application Germany, Dec. 7, 1971, P 21 60 510.7**
**Int. Cl. G01d**
**U.S. Cl. 346—44** **17 Claims**



A recording instrument for a motor car, has a cylindrical casing containing measuring means driven to measure speed and mileage and other parameters, and a casing lid housing a clockwork rotating a first diagram sheet in a first recording plane and a second diagram sheet in a second axially spaced recording plane. A carrier for first recording means is pivotally mounted on the casing lid, and is tiltable to and from a recording position located between the first and second diagram sheets so that the first recording means records on the first diagram sheet when coupled with and driven by the measuring means in the closed position of the casing lid. Second recording means driven by other measuring means in the cylinder casing, record on the second diagram sheet. When the casing lid is opened, and the carrier is angularly displaced out of the recording position, the two diagram sheets can be easily assembled and inspected.

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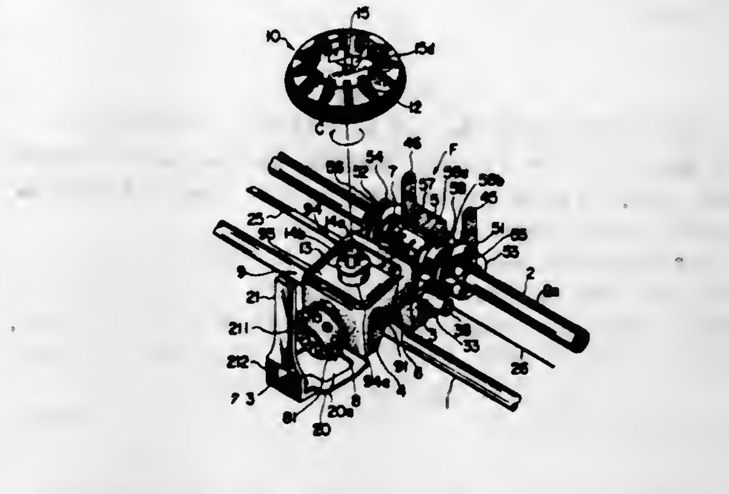
### 3,761,949
## DEPRESSOR BAR TYPE RECORDING APPARATUS
**Takefumi Hasebe, and Arata Takizawa, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Tokyo, Japan**
**Filed July 24, 1972, Ser. No. 274,446**
**Claims priority, application Japan, July 29, 1971, 46/67538; July 29, 1971, 46/67537; July 29, 1971, 46/67536**
**Int. Cl. G01d** *15/16*
**U.S. Cl. 346—46** **7 Claims**



A depressor bar type chart recording apparatus of the type having a dotting apparatus axially slidable on a rotating drive shaft and being activated by the rotating drive shaft to sequentially impress different colored ink dots upon the chart at selected axial locations. The dotting apparatus has a slide tube rotating with the drive shaft and carrying a dotting cam and a sequencing cam. The frame for the dotting apparatus includes a sliding portion coupled to the slide tube for axial motion therewith, and a swinging portion pivoted to the sliding portion and having a cam follower engaging the dotting cam for causing the swinging portion to be pivoted. A dotting shaft is carried by the swinging portion of the frame, and has at one end a dotting wheel with circumferentially spaced dotting needles brought into contact with the chart as the frame swings, and at the other end sequencing means engaging the sequencing cam and intermittently rotating the dotting needles into position for contacting the chart. A plate is pivotally mounted on the swinging frame portion, and carries an inkpad shell which is rotated along with the dotting shaft and is brought into contact with the dotting wheels as the plate moves inertially upon movement of the swinging frame portion.

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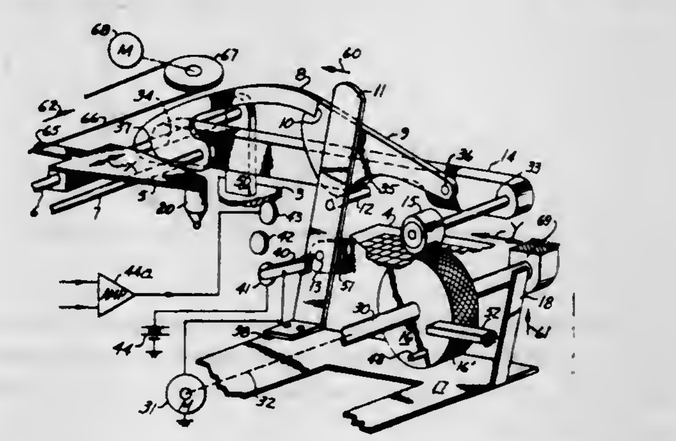
### 3,761,950
## X-Y PLOTTER
**John O. Yeiser, Mission Viejo, Calif., assignor to Milton Roy Company, St. Petersburg, Fla.**
**Filed Aug. 17, 1970, Ser. No. 64,467**
**Int. Cl. G01d** *9/38*
**U.S. Cl. 346—68** **9 Claims**



A chart recording instrument having electromechanical servos which move a pen or stylus in the X-direction along a paper chart, and move the chart with respect to the pen in the Y-direction. A novel mechanism provides for ease in loading and unloading charts, and for accurate relocation of the chart, whereby a chart can be removed from the machine and then replaced accurately without disturbing any of the gain or zero control settings. Thus a curve can be recorded, the chart removed, and then put back to record another curve in the same family. These functions are controlled by a three-position lever which lifts and lowers the pen, raises and lowers pinch rollers in the Y-axis chart drive system, controls a pair of chart positioning stops, and switches appropriate positioning voltages to the servos.

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### 3,761,951
## ELECTROSTATIC IMAGE FORMING APPARATUS
**Eiichi Inoue; Keizo Yamaji; Hiroshi Tanaka, and Takashi Saito, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Toyko, Japan**

**Division of Ser. No. 800,962, Feb. 20, 1969, Pat. No. 3,653,064. This application Dec. 16, 1971, Ser. No. 208,785**

**Claims priority, application Japan, Feb. 25, 1968, 43/11875; Feb. 27, 1968, 43/12739; Feb. 27, 1968, 43/12740**

**Int. Cl. G03g** *5/02, 13/00, 15/00*

**U.S. Cl. 346—74 ES** **9 Claims**

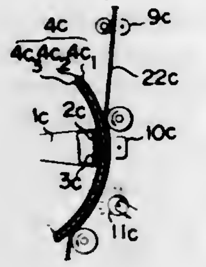

Image-forming apparatus includes an electron beam generator responsive to image-defining excitation signals to apply a pattern of electron beams to a plate. The plate thereupon emits radiation in pattern according with the electron beam pattern.

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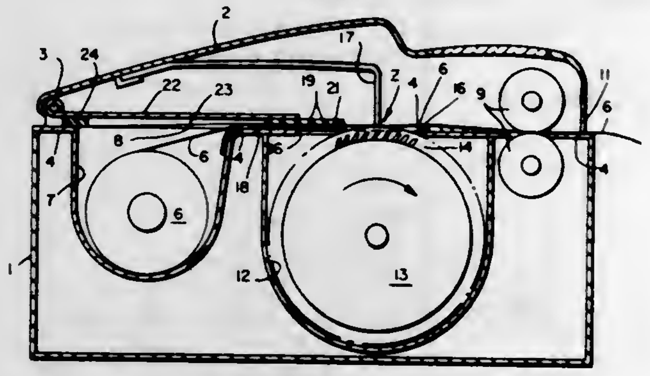
### 3,761,952
## ELECTROLYTIC RECORDER WITH PERFORATE SHEET ADJACENT RECORDING ZONE
**Frederick W. Simpkins, Hudson, Mass., assignor to Alden Research Foundation, Westboro, Mass.**

**Filed May 30, 1972, Ser. No. 257,824**

**Int. Cl. G01d** *15/06, 11/26*

**U.S. Cl. 346—74 E** **9 Claims**



A facsimile recorder with a web compartment for a roll of moist electrolytic recording paper drawn along a path through a recording zone at the opening of a second compartment for a marking electrode has an apertured non-conductive sheet overlying the opening to prevent contact between the electrode and web outside the recording zone and to pass moisture to the electrode so as to prevent accumulation of recording by-products on the electrode.

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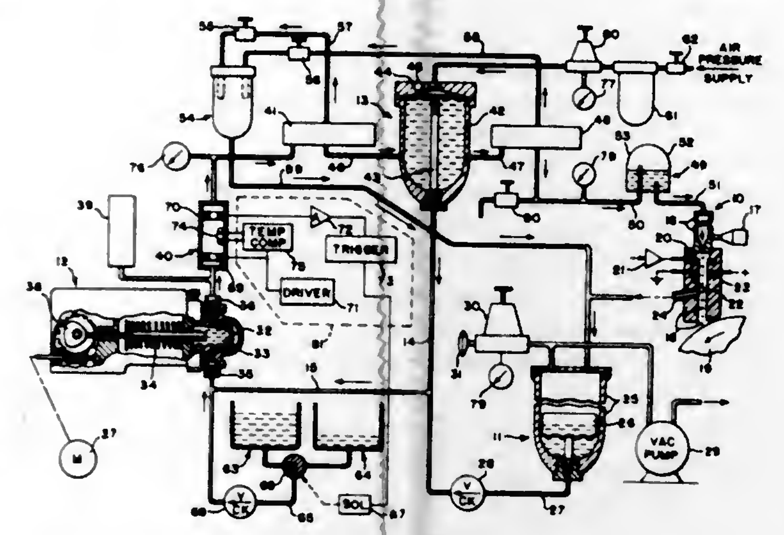
### 3,761,953
## INK SUPPLY SYSTEM FOR A JET INK PRINTER
**Gaylord A. Helgeson, and Lysle D. Cahill, Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio**

**Filed Oct. 24, 1972, Ser. No. 299,900**

**Int. Cl. G01d** *15/18*

**U.S. Cl. 346—75** **16 Claims**



There is disclosed an ink recirculation and replenishment system for use in combination with an ink jet printer. Ink which is formed into drops but not deposited on the print receiving member is collected in a vacuum tank and thereafter recirculated by a reciprocating pump at a steady volumetric rate. There is a pressure tank for regulating pressure of the pumped ink and returning excess ink directly to the pump. Means are provided for supplying an ink replenishment liquid to the system as well as fresh ink in volumetric amounts as required to replace fluid lost by printing and by evaporation. The replenishment liquid contains a solvent, which in the case of aqueous base ink will be water, and other agents for preventing deterioration of the recirculated ink. A depletion sensor, preferably a conductivity probe, is provided for automatic control of replenishment liquid addition.

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## ERRATA

For Class 346—1 see:
Patents Nos. 3,761,941 and 3,761,942

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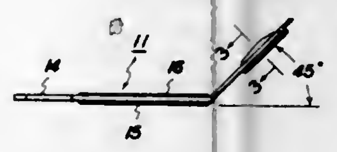
### 3,761,954
## STYLUS
**Richard C. Hansen, Penfield, and Ved K. Gulati, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Oct. 6, 1971, Ser. No. 187,032**

**Int. Cl. G01d** *15/06*

**U.S. Cl. 346—139 C** **5 Claims**



A stylus which includes a conductive blank and at least three conductive wires soldered onto the blank to form the writing tip of the stylus. The wires are placed parallel to each other and the tip ends thereof are so aligned that they form a line transverse to the direction of the travel of the stylus as it travels over a recording medium. The wires are preferably bonded to each other and held in a predetermined spatial relationship by a cured epoxy resin.

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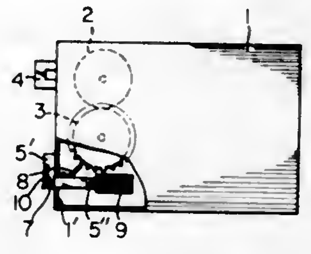
### 3,761,955
## SET NUMERAL CHANGING DEVICE IN AN AUTOMATION COUNTER
**Kazuyoshi Ozaki, 9-1 Asahigaokacho, Suita, Japan**

**Filed Mar. 12, 1973, Ser. No. 340,265**

Claims priority, application Japan, Sept. 29, 1972, 47/98457

**Int. Cl. G06c**

**U.S. Cl. 235—114** **2 Claims**



In an automation counter of the type having a plurality of setting wheels and the same number of elongate push-buttons as the number of said setting wheels for operating said setting wheels respective to change the set numerals indicated thereby, each of said elongate push-buttons consists of two separate sections, i.e., a front section and a rear section, and said front section is pivotally connected to said rear section, so that it may be normally held in a folded position substantially parallel to the front face of a counter casing when not in use but be turned to an operative position in alignment with said rear section only when it is to be used, whereby the pushing concurrently of two adjacent push-buttons is avoided in the set numeral changing operation.

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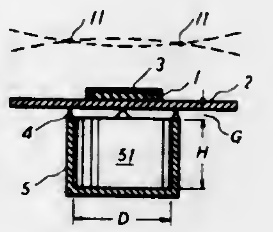
### 3,761,956
## SOUND GENERATING DEVICE
**Naoki Takahashi, Yokohama; Hiroshi Mori, Sagamihara, and Hiroshi Ueki, Yokohama, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan**

**Filed Sept. 20, 1971, Ser. No. 181,720**

**Claims priority, application Japan, Oct. 27, 1970, 45/93944; Oct. 1, 1970, 45/96934; Oct. 1, 1970, 45/96935; Oct. 1, 1970, 45/96936**

**Int. Cl. H04r** *17/00*

**U.S. Cl. 310—8.2** **1 Claim**



A piezoelectric sound generator having a diaphragm carrying the piezoelectric element and at least one resonant chamber spaced from said diaphragm with the wall of said chamber being coincident with a node circle on the diaphragm.

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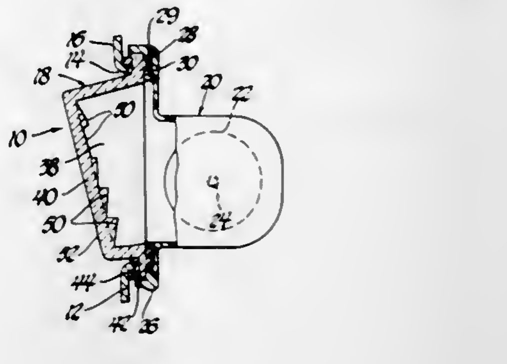
### 3,761,957
## DIRECT FILAMENT LAMP ASSEMBLY
**Robert O. Jarrett, deceased, late of Anderson, Ind. (by Helen M. Jarrett, executrix), assignor to General Motors Corporation, Detroit, Mich.**

**Filed Sept. 13, 1971, Ser. No. 180,024**

**Int. Cl. H01k** *1/30;* **H01j** *5/16*

**U.S. Cl. 313—110** **3 Claims**



A lens for a direct filament lamp assembly incorporates spaced rows of horizontal flutes having constantly varying prism angles which compensate for differing focal distances from the filament to the lens and varying angles between the emerging light rays and the lens normal thereby producing an illumination pattern of desired horizontal and vertical intensity.

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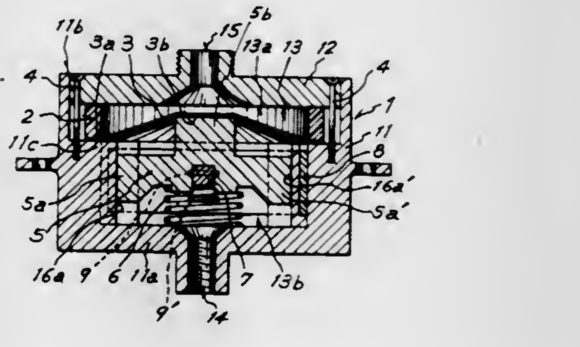
### 3,761,958
## PRESSURE SWITCH
**Seishiro Nishira, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan**

**Filed Feb. 15, 1973, Ser. No. 332,728**

**Claims priority, application Japan, Feb. 18, 1972, 47/20167**

**Int. Cl. H01c** *13/00*

**U.S. Cl. 338—36** **14 Claims**

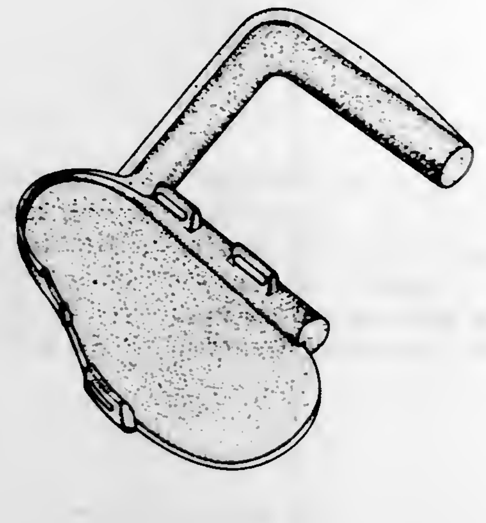


A pressure switch comprising a housing having an internal cavity which is divided into a high pressure chamber and a low pressure chamber by a flexible diaphragm, a moving yoke which forms part of a magnetic path and moves in accordance with a motion of the said diaphragm, a galvano-magnetro effect device which is provided in said magnetic path and is exposed to a magnetic flux which varies in accordance with movement of the said moving yoke, wherein a switching circuit operates with the function of the said galvano-magnetro effect device.

# DESIGNS

## SEPTEMBER 25, 1973

**228,426**
**MAST CLIMBING DEVICE OR SIMILAR ARTICLE**
**William J. Price, 3823 E. Lake Way, Redwood City, Calif. 94062; Richard W. Cooper, 1000 Ignatio Blvd., Apt. 51, Novato, Calif. 94947; and Robert A. Gates, 4018 Bennett Valley Road, Santa Rosa, Calif. 95403**
**Filed Apr. 7, 1971, Ser. No. 132,266**
**Term of patent 7 years**
**Int. Cl. D2—*04***
**U.S. Cl. D2—317**



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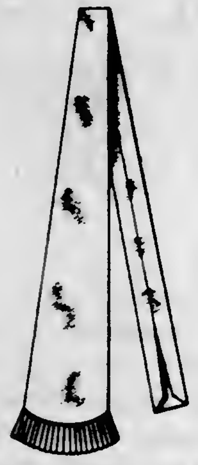
**228,427**
**NECKTIE**
**Arline P. Green, 639 Colebrook Road, Philadelphia, Pa. 19115**
**Filed Sept. 9, 1971, Ser. No. 179,267**
**Term of patent 14 years**
**Int. Cl. D2—*07***
**U.S. Cl. D2—351**



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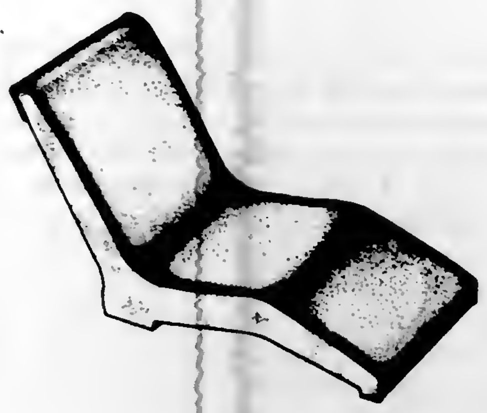
**228,428**
**LOUNGE SEAT**
**Henry A. Wilson, 1001 Central, Miamisburg, Ohio 45342, and Elmer R. Long, Jr., 301 Ives Lane, Kettering, Ohio 45429**
**Filed Feb. 9, 1972, Ser. No. 225,026**
**Term of patent 14 years**
**Int. Cl. D6—*01***
**U.S. Cl. D6—37**



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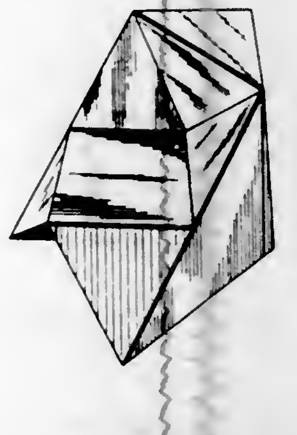
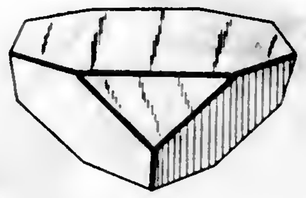
**228,429**
**CHAIR**
**Zvi Hecker, 122 Arlington Ave., Montreal 217, Quebec, Canada**
**Filed Sept. 9, 1971, Ser. No. 179,270**
**Claims priority, application Israel Mar. 21, 1971**
**Term of patent 14 years**
**Int. Cl. D6—*02***
**U.S. Cl. D6—47**



**228,430**
**TABLE**
**Zvi Hecker, 122 Arlington Ave., Montreal 217, Quebec, Canada**
**Filed Sept. 9, 1971, Ser. No. 179,269**
**Claims priority, application Israel Mar. 21, 1971**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—146**



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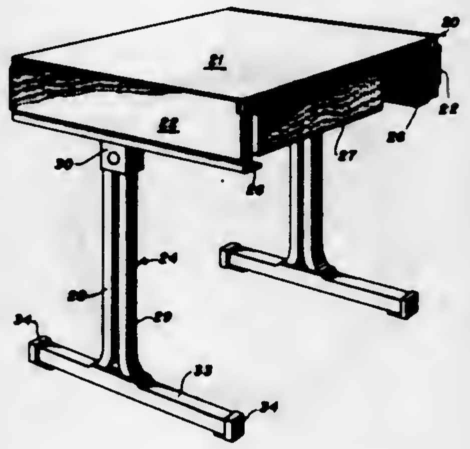
**228,431**
**DESK**
**Carl W. Sundberg and Montgomery Ferar, Southfield, and Chester J. Barecki, Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.**
**Filed Aug. 11, 1971, Ser. No. 171,027**
**Term of patent 14 years**
**Int. Cl. D6—*04***
**U.S. Cl. D6—158**



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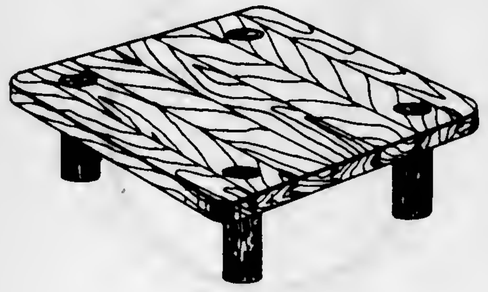
**228,432**
**LOW TABLE**
**Eason Cross, Jr., 2309 Glasgow Road, Alexandria, Va. 22307**
**Filed Mar. 25, 1971, Ser. No. 128,207**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—177**



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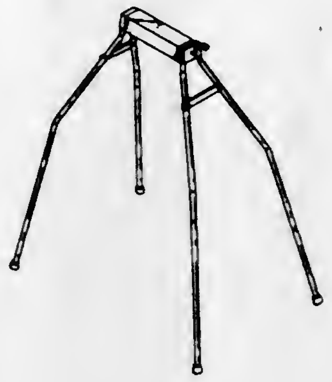
**228,433**
**FRAME FOR SWINGS**
**David Saint, Elverson, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.**
**Filed Oct. 13, 1971, Ser. No. 189,066**
**Term of patent 14 years**
**Int. Cl. D6—*06***
**U.S. Cl. D6—191**



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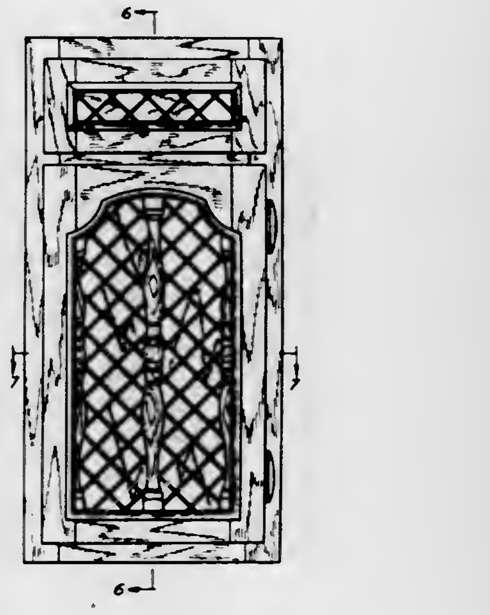
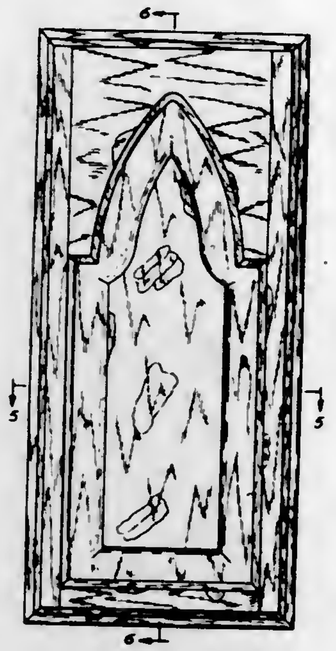
**228,434**
**COMBINED DRAWER FRONT AND CABINET DOOR PANEL**
**Howard E. Patron, West Islip, N.Y., assignor to Homecraft Products, Inc., Brooklyn, N.Y.**
**Filed Nov. 8, 1971, Ser. No. 196,878**
**Term of patent 14 years**
**Int. Cl. D6—*06***
**U.S. Cl. D6—192**



### 228,435
### FURNITURE PANEL OR THE LIKE

Howard E. Patron, West Islip, N.Y., assignor to The Thomas Holmes Corporation, Jenkintown, Pa.
Filed Nov. 8, 1971, Ser. No. 196,879
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



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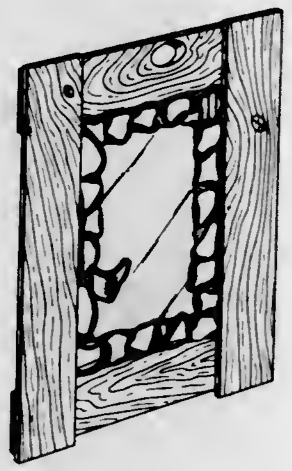
### 228,436
### MIRROR

Edward Salven, 12940 Burbank Blvd., Van Nuys, Calif. 91401
Filed July 15, 1971, Ser. No. 163,120
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



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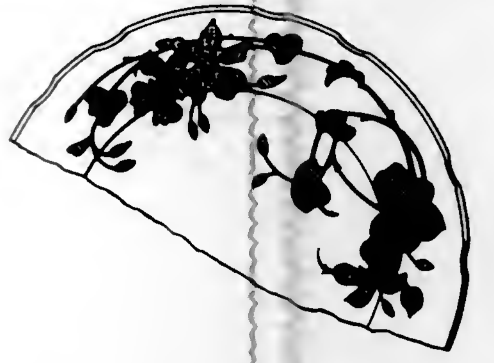
### 228,437
### PLATE OR SIMILAR ARTICLE

Marie Helene Isabella Antonia von Boch-Galhau, 3 von-Boch-Str., D-6641 Britten, Saar, Germany
Filed May 7, 1971, Ser. No. 141,457
Claims priority, application Germany Feb. 19, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—32



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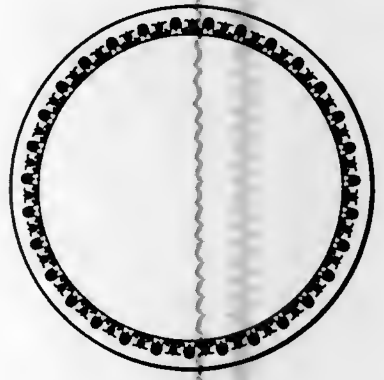
### 228,438
### PLATE OR THE LIKE

Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 21, 1971, Ser. No. 182,568
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36



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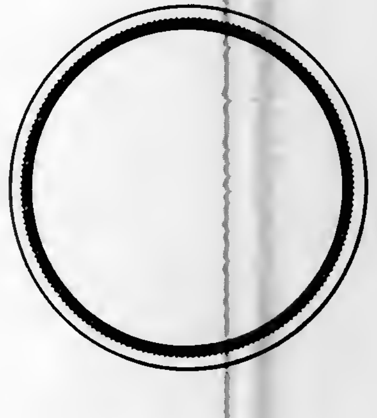
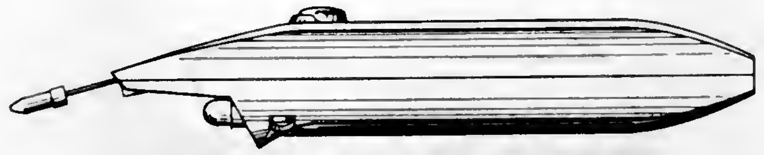
### 228,439
### PLATE OR THE LIKE

Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 21, 1971, Ser. No. 182,570
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36



### 228,440
### ELECTRIC SOLDERING IRON

Robert T. Mestrovic, Chicago, and William M. Walton, Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.
Filed Sept. 8, 1971, Ser. No. 178,856
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



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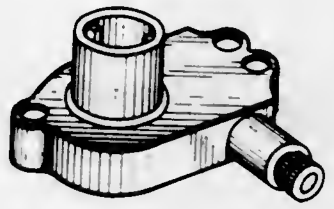
### 228,441
### WINDOW OPERATOR OR SIMILAR ARTICLE

Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc., New Hampton, Iowa
Filed Oct. 2, 1972, Ser. No. 293,778
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—153



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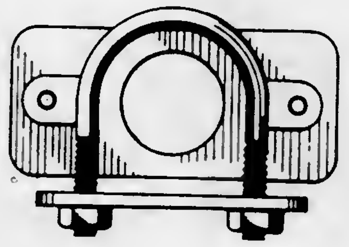
### 228,442
### FUEL LINE FITTING RETAINER ASSEMBLY

Lawrence R. Edwards, 102N 550E, Lafayette, Ind. 47905
Filed Oct. 4, 1971, Ser. No. 186,588
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



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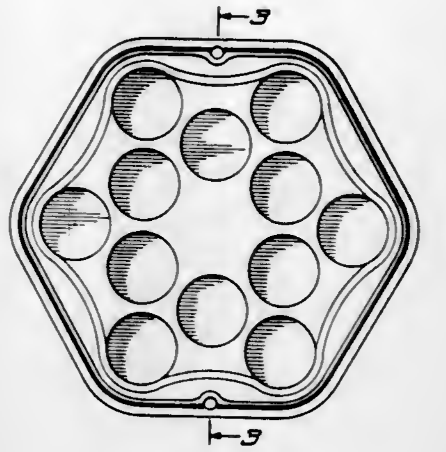
### 228,443
### INSULATED CONTAINER

Kenneth A. Mitchell, 4704 Stevens Ave. S., Minneapolis, Minn. 55409
Original design application June 26, 1970, Ser. No. 23,686. Divided and this application Mar. 8, 1971, Ser. No. 122,273
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—179



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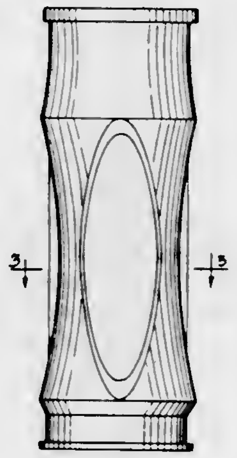
### 228,444
### CAN OR SIMILAR ARTICLE

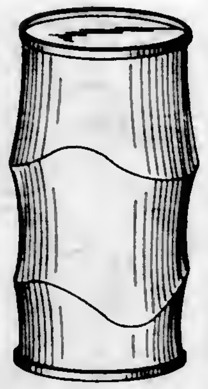
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 153,132
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



**228,445**

### CAN OR SIMILAR ARTICLE

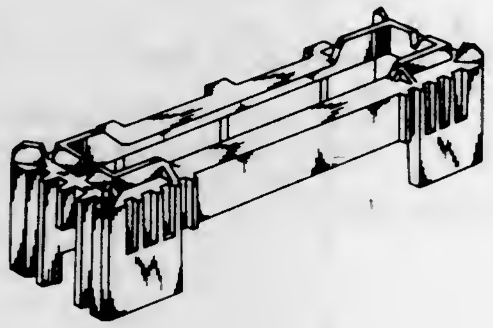
Thomas R. Stanley, Downers Grove, and Dexter M. Bystedt, Clarendon Hills, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Apr. 17, 1972, Ser. No. 245,035
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



**228,446**

### END CUSHIONING COVER FOR PACKAGES OR THE LIKE

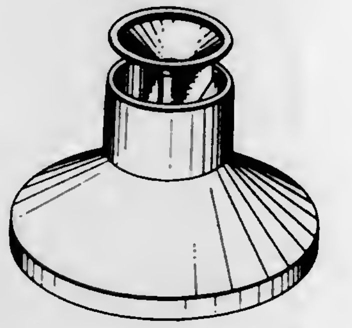
Anthony N. Paone, Syracuse, N.Y., assignor to SCM Corporation
Filed Dec. 13, 1971, Ser. No. 207,711
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—254



**228,447**

### DISPENSING CLOSURE OR SIMILAR ARTICLE

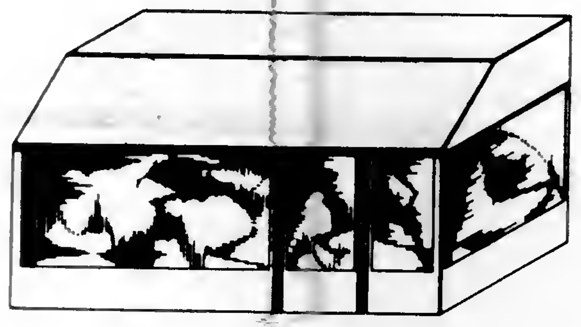
Alan Glazer, Brett Lane, R.F.D. 2, Bedford, N.Y. 10506
Filed Sept. 18, 1972, Ser. No. 289,985
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—279



**228,448**

### DETACHABLE SCREENED ROOM FOR A TRAVEL TRAILER

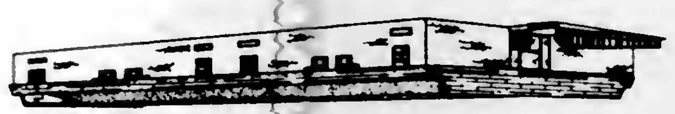
Ferris A. J. Beauchamp, 1822 Iris St., Ottawa 5, Ontario, Canada
Filed May 5, 1970, Ser. No. 22,826
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



**228,449**

### MOTEL BUILDING

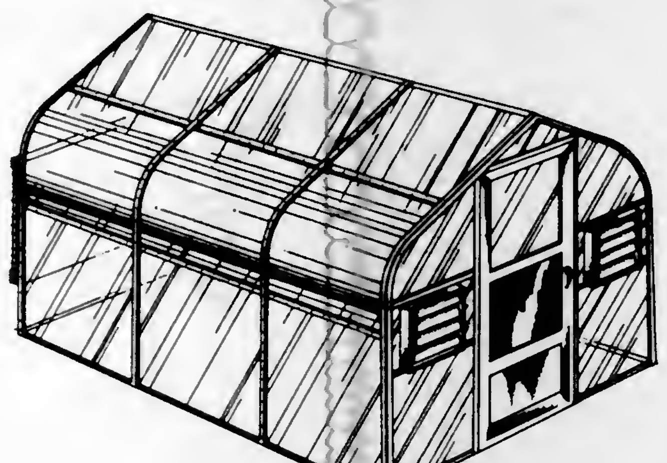
Howard L. Schwartz, Miami Beach, Fla., assignor to United Inns Mfg. Corp., Kansas City, Mo.
Filed Apr. 24, 1972, Ser. No. 247,227
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



**228,450**

### HORTICULTURAL GROWING UNIT

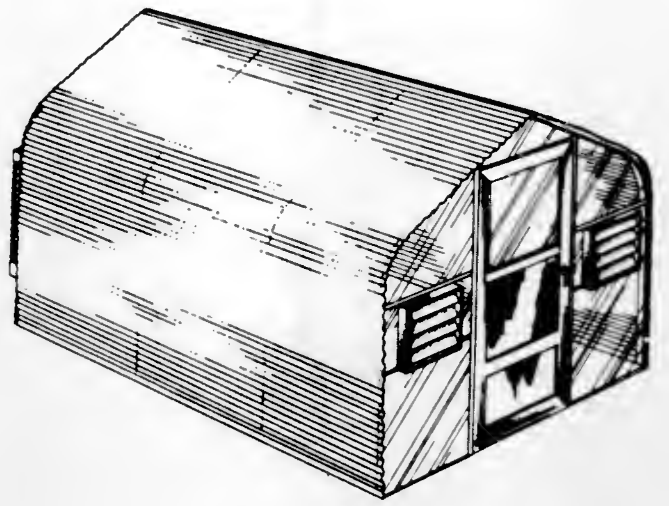
Don J. Flickinger, Phoenix, Ariz., assignor to Hydroculture, Inc.
Filed June 15, 1972, Ser. No. 263,265
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



**228,451**

### HORTICULTURAL GROWING UNIT

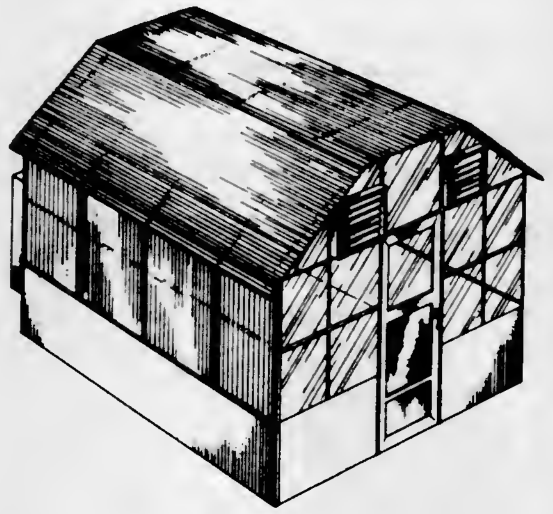
Don J. Flickinger, Phoenix, Ariz., assignor to Hydroculture, Inc.
Filed June 15, 1972, Ser. No. 263,266
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



**228,452**

### HORTICULTURAL GROWING UNIT

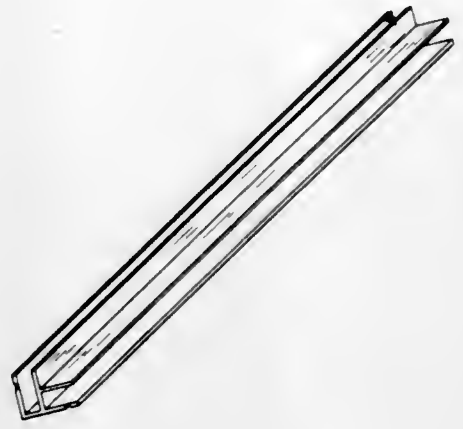
Don J. Flickinger, Phoenix, Ariz., assignor to Hydroculture, Inc.
Filed June 15, 1972, Ser. No. 263,267
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



**228,453**

### EXTRUDED ALUMINUM CHANNEL

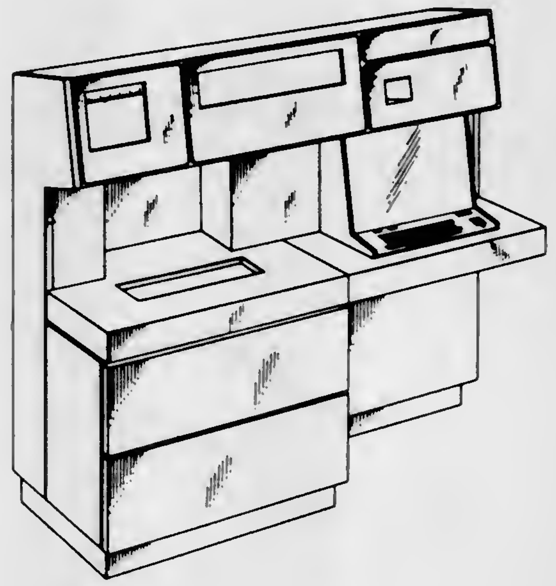
Philip A. Greer, Lake Oswego, Oreg. (Box 172, Alamo, Calif. 94507)
Filed Jan. 25, 1971, Ser. No. 109,743
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



**228,454**

### COMBINED CONTROL AND DISPLAY MODULE FOR AN AUTOMATED CHEMISTRY APPARATUS

Henry E. Amar, Bronxville, N.Y., Herman G. Diebler, North Haledon, N.J., and Jack Isreeli, Mamaroneck, George Payne, Bedford Hills, and William J. Smythe, Tarrytown, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed June 9, 1972, Ser. No. 261,560
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C

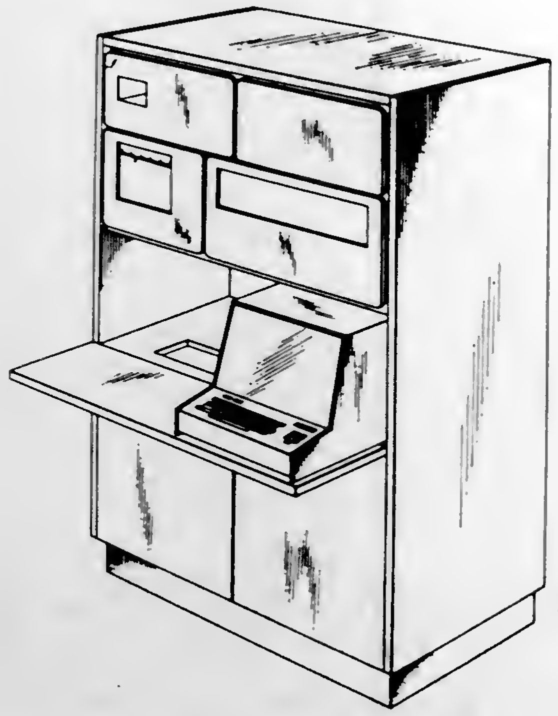


**228,455**

### COMBINED CONTROL AND DISPLAY MODULE FOR AN AUTOMATED CHEMISTRY APPARATUS

Henry E. Amar, Bronxville, N.Y., Herman G. Diebler, North Haledon, N.J., and Jack Isreeli, Mamaroneck, George Payne, Bedford Hills, and William J. Smythe, Tarrytown, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 9, 1972, Ser. No. 261,562
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C



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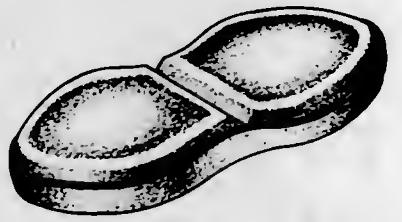
**228,456**

### PHARMACEUTICAL TABLET

Fred C. Ninger, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 13, 1971, Ser. No. 207,710
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D16—3



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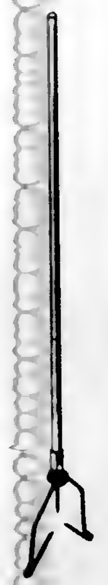
**228,457**

### FISH GAFF

Eldon V. Brower, Rte. 1, Box 58,
Pierceton, Ind. 46562

Filed Sept. 10, 1971, Ser. No. 179,609
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



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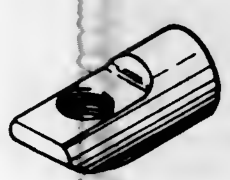
**228,458**

### PLUMBING FITTING

Kenneth Alan Ogilvie, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Aug. 26, 1971, Ser. No. 175,424
Claims priority, application Great Britain Mar. 20, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



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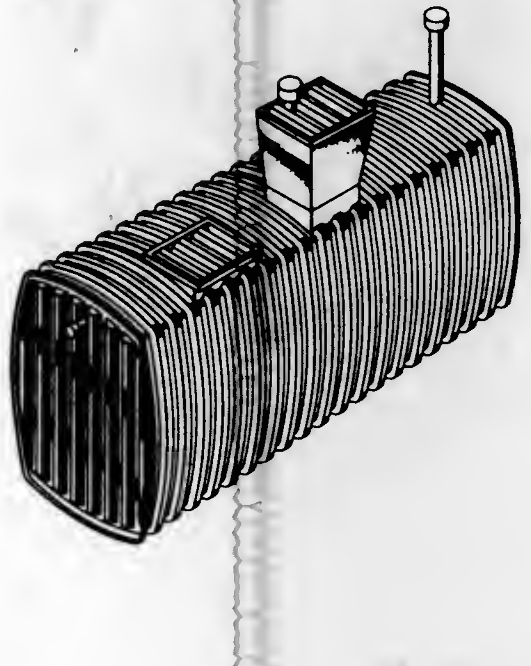
**228,459**

### AERATION SEPTIC TANK

James Estes and George A. Laird, Santa Ana, Calif., assignors to Aeration Septic Tank Company, Gunnison, Colo.

Filed Sept. 28, 1971, Ser. No. 184,658
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



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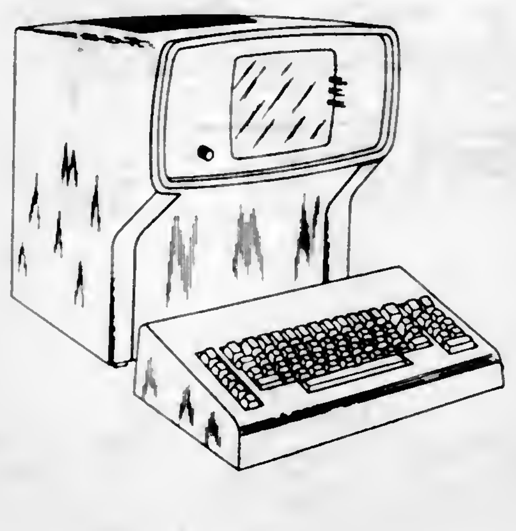
**228,460**

### COMBINED KEYBOARD INPUT TERMINAL AND OUTPUT DISPLAY TERMINAL THEREFOR

Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, James J. La Due, Wappingers Falls, and John J. Natoli, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,774
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



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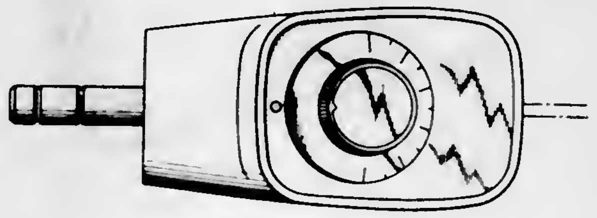
**228,461**

### THERMOSTATIC ELECTRIC CONNECTOR PLUG

Melvin H. Boldt, Glenview, Ill., assignor to National Presto Industries, Inc., Eau Claire, Wis.

Filed Oct. 21, 1971, Ser. No. 191,581
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



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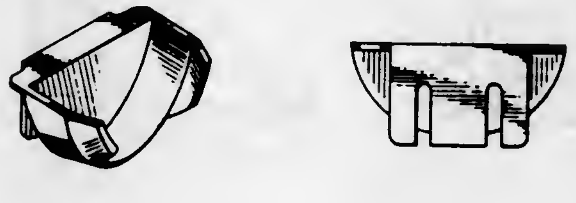
**228,462**

### TELEPHONE HANDSET HOOK OR SIMILAR ARTICLE

Richard R. Bailey, 2203 Muret, Irving, Tex. 75060

Filed June 21, 1971, Ser. No. 155,389
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



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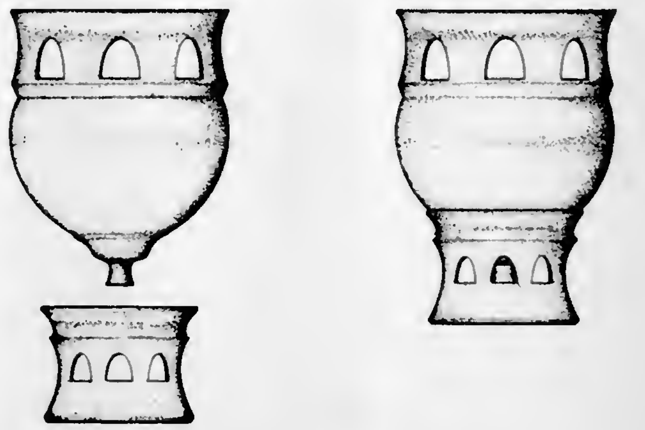
**228,463**

### COMBINED FLOWER POT AND BASE

Gregory D. Fox and Vincent J. Fox, both of 910 N. Huntington St., San Fernando, Calif. 91340

Filed Dec. 11, 1972, Ser. No. 314,126
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



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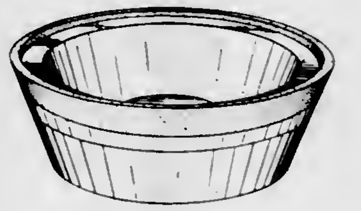
**228,464**

### GRINDING WHEEL OR SIMILAR ARTICLE

René Liechti, Biel, Switzerland, assignor to Diametal AG, Biel, Switzerland

Filed Sept. 20, 1971, Ser. No. 182,300
Claims priority, application Switzerland Apr. 14, 1971
Term of patent 7 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 R



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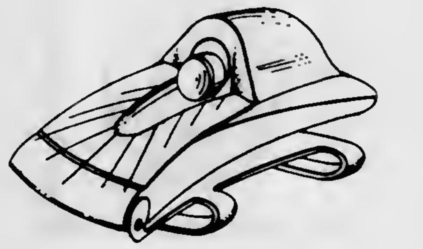
**228,465**

### FLASHLIGHT ATTACHMENT FOR A WRIST WATCH BAND

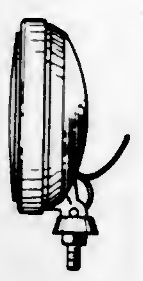
John F. Louis, 12713 Kornblum Ave., Hawthorne, Calif. 90250

Filed Mar. 4, 1971, Ser. No. 121,249
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



### 228,466
### AUXILIARY LIGHT FOR AUTOMOBILES

Pierre Cibie, 150 Avenue de Wagram 75017,
Paris, France
Filed Nov. 6, 1972, Ser. No. 304,294
Claims priority, application France July 18, 1972
Term of patent 14 years
Int. Cl. D26—*06, 03*
U.S. Cl. D48—32 R



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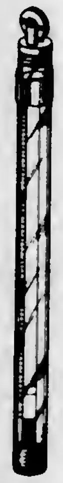
### 228,467
### MAGNETIC TESTER

Lester R. Moskowitz, Philadelphia, Pa., assignor to
Oxy Metal Finishing Corporation
Filed Aug. 21, 1970, Ser. No. 24,627
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 R



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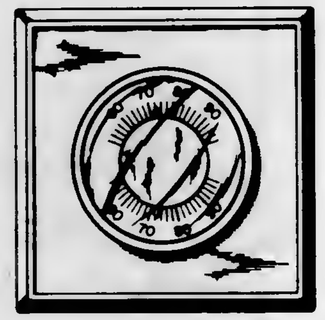
### 228,468
### THERMOSTAT

Norbert Thomas Wolfe, Minnetonka, Minn., assignor to
Honeywell Inc., Minneapolis, Minn.
Filed Feb. 12, 1971, Ser. No. 115,150
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R



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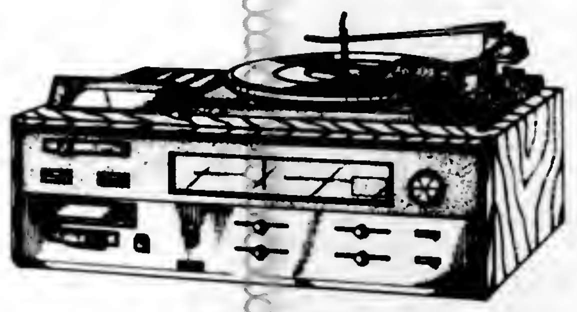
### 228,469
### COMBINED AMPLIFIER, TUNER, PHONOGRAPH AND CASSETTE PLAYER

Naoki Tominaga, Moriguchi-shi, Osaka, Japan, assignor
to Sanyo Electric Co., Ltd., Moriguchi-shi, Osaka,
Japan
Filed June 28, 1971, Ser. No. 157,800
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



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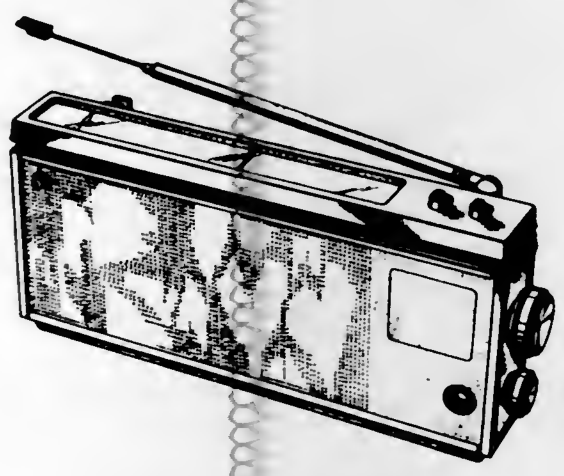
### 228,470
### RADIO RECEIVER

Katsuhiko Makino, Osaka, Japan, assignor to Matsushita
Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Aug. 4, 1971, Ser. No. 169,153
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



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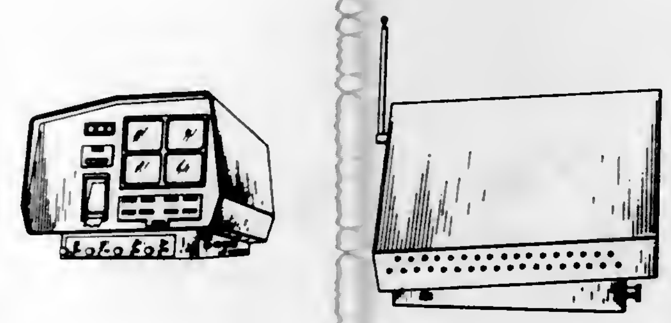
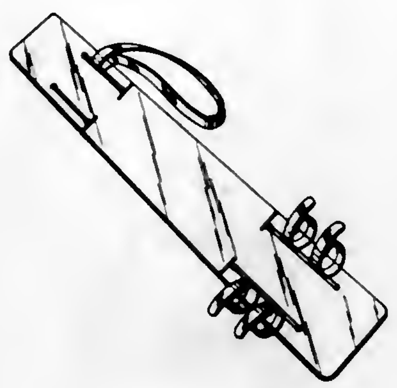
### 228,471
### ELECTROCARDIOGRAM AND HEART RATE MONITOR

Thomas P. Harper, Decatur, Ala., assignor to
Care Electronics, Inc.
Filed Dec. 22, 1969, Ser. No. 20,595
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



### 228,472
### INFANT RESTRAINER FOR FLUOROSCOPIC EXAMINATION AND THE LIKE

David L. Tayman, Arnold, Md.; by Nancy E. Tayman,
Terrace Gardens, Arnold, Md. 21146, administratrix
of David L. Tayman, deceased
Filed June 21, 1971, Ser. No. 155,383
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 H



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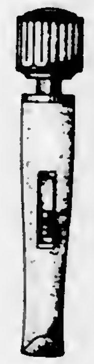
### 228,473
### MASSAGER

Yasuhiro Koshido and Kiyoteru Kamiya, Tokyo, Japan,
assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 14, 1972, Ser. No. 244,329
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 T



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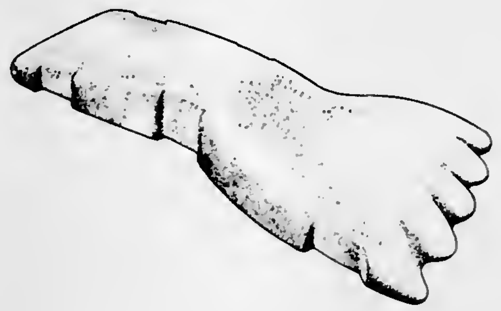
### 228,474
### ARM SUPPORT USED FOR INTRAVENOUS FEEDING

Joseph A. La Barber, Kern City, Calif., assignor to
Hy-Jeanie Products, Inc., Englewood, Colo.
Filed Nov. 1, 1972, Ser. No. 302,978
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1 J



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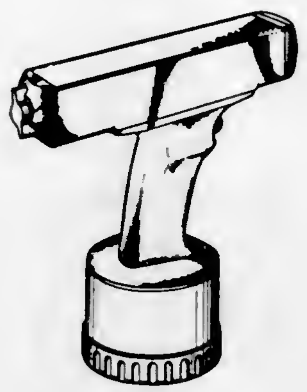
### 228,475
### CASE FOR BATTERY POWERED ORTHOPEDIC SURGICAL DRILL

Meyer Fishbein, 12020 Saltair Place,
Los Angeles, Calif. 90049
Filed Sept. 7, 1971, Ser. No. 178,544
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



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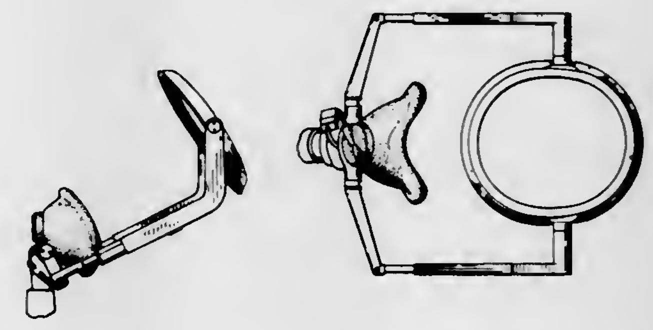
### 228,476
### COMBINED OXYGEN MASK AND HOLDER

James F. Ferguson, Independence, and William C. Wissmueller, Kansas City, Mo., assignors to Puritan-Bennett
Corporation, Kansas City, Mo.
Filed Sept. 21, 1971, Ser. No. 182,577
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 G



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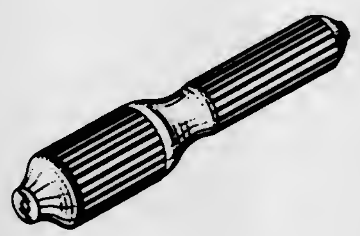
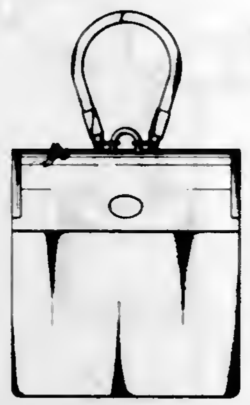
### 228,477
### COMBINED HANDLE, BATTERY AND MOTOR HOUSING FOR AN ELECTRIC SAFETY RAZOR OR SIMILAR ARTICLE

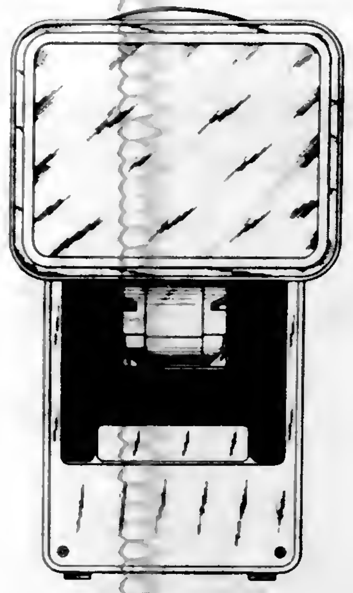
Glen R. Sulisky, 2325 W. 13 Mile Road,
Royal Oak, Mich. 48073
Filed Sept. 28, 1971, Ser. No. 184,649
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



**228,478**
## LOCK ON TAG
**Sadayoshi Yonai, Tokyo, Japan, assignor to Imaizumi Co., Ltd., Tokyo, Japan**
**Filed Sept. 17, 1971, Ser. No. 181,650**
**Term of patent 14 years**
**Int. Cl. D20—*99***
**U.S. Cl. D96—8 A**



**228,479**
## FILM STRIP VIEWER
**William L. Lawson, Forest Hills, and Venerio J. Rigolini, Brooklyn, N.Y., assignors to Whitehouse Products, Inc., Brooklyn, N.Y.**
**Filed Oct. 2, 1970, Ser. No. 25,303**
**Term of patent 14 years**
**Int. Cl. D16—*02***
**U.S. Cl. D61—1 N**



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# LIST OF PATENTEES
TO WHOM
## PATENTS WERE ISSUED ON THE 25TH DAY OF SEPTEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Matsumoto, Kunio, to Toyo Jozo Kabushiki Kaisha. Process for the production of cephalexin. 3,761,354, Cl. 195-29.000.
- Abe, Toshio; Sato, Kanro; Knoaka, Masami; and Marita, Takamichi, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing semiconductor devices. 3,761,328, Cl. 148-188.000.
- Aberle, Albert K.; Arthur, Richard J.; and Welch, Tommy R., to Sperry Rand Corporation. Rate-of-turn indicator. 3,761,811, Cl. 324-173.000.
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  - Budzinski, David A.; Sorkin, Jack L.; and Charogoff, Clarence, 3,760,724.
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- Adler, Robert, to Zenith Radio Corporation. Poling of ferro-electric substrates. 3,761,746, Cl. 310-8.000.
- Adornetto, Anthony V., to Akens-Adornetto Industries, Inc. Trash compactor attachment. 3,760,718, Cl. 100-227.000.
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  - Kromrey, Robert V., 3,761,048.
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  - Gaub, Walter; Von Konig, Anita; Moll, Franz; Muller-Bardorff, Wolfgang; and Saleck, Wilhelm, 3,761,278.
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- Airta, Koshei. Chips for use in automatic dispensing machines. 3,760,924, Cl. 194-4.00f.
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  - Ogasawara, Shoji; Aizawa, Hideo; Kamijo, Yoshimi; Miyajima, Mikio; and Igarashi, Sadao, 3,761,860.
- Ajinomoto Co., Inc.: *See—*
  - Yoshida, Ryonosuke; Maeda, Itsutoshi; Akiba, Hitoshi; and Usuba, Yasunori, 3,761,223.
- Ajioka, James S.; and Barten, William R., to Hughes Aircraft Corporation. Fabrication method and apparatus using ferrite for shifting phase of an electromagnetic wave. 3,761,845, Cl. 333-24.100.
- Akens-Adornetto Industries, Inc.: *See—*
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- Akers, Alvin: *See—*
  - Bochan, John; Akers, Alvin; and Morey, Everett D., 3,760,612.
- Akhobadze, Vakhtang Noevich: *See—*
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- Albanese, Thomas. Under-fixture valve. 3,760,836, Cl. 137-360.000.
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  - Simpkins, Frederick W., 3,761,952.
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- Alfa-Laval Bergedorfer Eisenwerke GmbH: *See—*
  - Hofmann, Gerhard; and Bassing, Friedrich Wilhelm, 3,760,849.
- Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, to Melle-Bezons. Hydrogenation of aromatic nitro compounds. 3,761,521, Cl. 260-580.000.
- Alice Jewelry Co.: *See—*
  - Di Stefano, Vincent, 3,760,604.
- Allaigre, Andre, to Merlin Gerin, Societe Anonyme. Linear induction motor magnetic field assemblage producing constant thrust per unit width of the armature. 3,761,747, Cl. 310-13.000.
- Allen, Robert F.: *See—*
  - Genesky, Leonard G.; Kottler, Franklin D.; and Allen, Robert F., 3,761,170.
- Allied Chemical Corporation: *See—*
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- Allison, John S.: *See—*
  - Pearse, Thomas R.; and Allison, John S., 3,760,545.
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  - Wolk, Ronald H.; Chervenak, Michael C.; and Alpert, Seymour B., 3,761,393.

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- Alps Electric Co., Ltd.: *See—*
  - Ogasawara, Shoji; Aizawa, Hideo; Kamijo, Yoshimi; Miyajima, Mikio; and Igarashi, Sadao, 3,761,860.
  - Shimojo, Takemi, 3,761,944.
- Alston, Russell M.; Watson, John R.; and Westbrook, James E., to Conrac Corporation. Traffic usage encoder. 3,761,618, Cl. 179-8.00a.
- Alto Corporation: *See—*
  - Schmidt, Albert S., Sr.; Irving, Frank M., Jr.; Andrus, Ronald G.; and Any, Sherwood F., 3,760,553.
- Altshuler, Saul; and Frantz, Lee M., to TRW Inc. Matter wave interferometric apparatus. 3,761,721, Cl. 250-327.000.
- Aluminum Company of America: *See—*
  - Dunn, Lloyd G.; Morran, James R.; and Peters, Donald L., 3,760,751.
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- Alvarez, Joseph A.; Barner, Robert P., Jr.; and Hallett, Robert J., to International Business Machines Corporation. Storage protect key array for a multiprocessing system. 3,761,883, Cl. 340-172.500.
- Alza Corporation: *See—*
  - Higuchi, Takeru; and Leeper, Harold M., 3,760,804.
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- Amberg, Stephen W.; Heyne, Clarence A.; Lang, Stewart M.; and Meincer, John H., to Owens-Illinois, Inc. Composite container article. 3,760,968, Cl. 215-12.00r.
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- Automobiles Peugeot: *See—*
  - Decouzon, Georges; Misseri, Marcel; and Chalesle, Andre, 3,760,649.
- Auvil, Harvey S.; and Schmidt, Lawrence D., to Allied Chemical Corporation. Re-entrainment charging of preheated coal into coking chambers of a coke oven battery. 3,761,360, Cl. 201-40.000.
- Avco Corporation: *See—*
  - Cronstedt, Val, 3,761,205.
  - Silverstein, Stanley M.; and Strautman, Victor, 3,761,201.
- Avery, Julian Miles. Magnesium production from a molten oxide slag in the presence of hydrogen. 3,761,247, Cl. 75-67.000.
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- Avery Products Corporation: *See—*
  - Van Arnam, Donald E.; and Marovich, Frank A., 3,760,660.
- Avsan, Oleg; and Grodal, Agnar Vidar, to Telefonaktiebolaget L M Ericsson. Arrangement for synchronizing a number of co-operating computers. 3,761,884, Cl. 340-172.500.
- Azure, Leo L., Jr., to Automata Corporation. Document feeding mechanism. 3,761,079, Cl. 271-116.000.
- Babcock & Wilcox Company, The: *See—*
  - Durrant, Oliver W., 3,760,776.
- Baccus, James A.: *See—*
  - Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,760,546.
- Backderf, Richard H.; Antlfinger, George J.; and Bodzash, Maynard C., to Goodrich, B. F., Company, The. Polymers of acrylic ester and vinyl halide monomers with alkyd monomers. 3,761,435, Cl. 260-22.0cb.
- Backhurst, John Rayner; Goodridge, Francis; Pleischmann, Martin; and Oldfield, John Wilfred, to National Research Development Corporation. Packed bed electrochemical cell including particulate bipolar electrode separated by non-conducting particles. 3,761,83, Cl. 204-268.000.
- Bader, Banjamin B., to Columbia Broadcasting System, Inc. Stereo-quadraphonic matrix system with matrix or discrete sound reproduction capability. 3,761,628, Cl. 179-1.0gq.
- Bader, Eberhard, to Motoren- und Turbinen Union Muenchen GmbH. Device for metering ignition fuel to the ignition unit of an afterburner associated with a turbojet engine. 3,760,590, Cl. 60-261.000.
- Bader, Horst, to Eckardt, J. C., AG. Pressure-medium operated rectangular wave generator. 3,760,847, Cl. 137-824.000.
- Badin, Elmer J., to Cities Service Oil Company. Process for the formation of phosphoramidates. 3,761,545, Cl. 260-984.000.
- Baer Electric Company, Inc.: *See—*
  - Sharar, Donald R., 3,760,626.
- Baessler, Konrad; and Mayer, Kurt, to Farbwerke Hoechst Aktiengesellschaft. Process for preparing sulfided platinum on carbon catalysts 252/439.000. 3,761,425, Cl.
- Baessler, Lee R.; Pisarski, Lech; and Glassner, Harvey F., to Humetrics Corporation. Method and apparatus for automatic analysis of brain wave signals. 3,760,796, Cl. 128-2.10b.
- Bahnsen, Erwin B., to Steiner American Corporation. Liquid expressing apparatus. 3,760,615, Cl. 68-248.000.
- Bahnsen, Erwin B., to Steiner American Corporation. Automatic towel winding machine. 3,761,032, Cl. 242-67.100.
- Bailey, Richard J., to GTI Corporation. Conductive shunt for circular lead pattern devices. 3,761,861, Cl. 339-19.000.
- Bajek, Walter A.; and McLaughlin, James H., to Universal Oil Products Company. Combination column reboiler heat input and octane control process. 3,761,358, Cl. 196-132.000.
- Baker, Herbert; Rathje, David S.; and Butek, William T., Jr., to Solatron Enterprises. Apparatus and method for modifying wound wire devices. 3,761,672, Cl. 219-68.000.
- Baker, James G., to Polaroid Corporation. Reflex camera and viewer with a folded optical path. 3,760,704, Cl. 95-42.000.
- Bakker, Martin B.: *See—*
  - Harlow, Justin E., III; Swann, Richard C. G.; Penton, Jack I.; and Bakker, Martin B., 3,761,327.
- Balassa, Leslie L., to Balchem Corporation. Pesticidal phosphorothioate compositions and methods of preparing them. 3,761,589, Cl. 424-200.000.
- Balchem Corporation: *See—*
  - Balassa, Leslie L., 3,761,589.
- Balderson, Inc.: *See—*
  - Birk, Billy D., 3,760,883.
- Baldwin, Roger A.; and Cheng, Ming T., to Kerr-McGee Corporation. Process for oxidation of 4-nitroso-m-cresol. 3,761,527, Cl. 260-622.00r.
- Baldy, Jean; and Coville, Patrick, to U.S. Philips Corporation. Heating element having a high heating current. 3,761,859, Cl. 338-238.000.
- Ballard, Norman D., to United Aircraft Corporation. Adaptive spark detection system for an electrochemical machining apparatus. 3,761,380, Cl. 204-228.000.
- Balme, Maurice; and Ducloux, Maurice, to Rhone-Poulenc S.A. Process for the preparation of molding powders of heat-stable anhydride polycondensates. 3,761,445, Cl. 260-47.0cp.
- Balmer, Robert T.: *See—*
  - Soto, Ricardo J.; and Balmer, Robert T., 3,760,645.
- Balzer, Norbert Raymond, to Park-Ohio Industries, Inc. Method for inductively heating and quenching elongated workpieces. 3,761,325, Cl. 148-153.000.
- Bamberg, William I.; Gungle, Warren C.; and Koury, Frederic, to GTE Sylvania Incorporated. Metal halide lamp containing mercury, light emitting metal, sodium and another alkali metal. 3,761,758, Cl. 313-229.000.
- Banner, Philip M. Automatic trim tab means for marine craft. 3,760,758, Cl. 114-66.50p.
- Barbach, Edward M.: *See—*
  - Nieson, Norman; and Barbach, Edward M., 3,761,820.
- Barber, Joseph J., to Houdaille Industries, Inc. Monostable circuit. 3,761,743, Cl. 307-273.000.
- Barner, Robert P., Jr.: *See—*
  - Alvarez, Joseph A.; Barner, Robert P., Jr.; and Hallett, Robert J., 3,761,883.
- Barnes Engineering Company: *See—*
  - McHenry, Thomas F., 3,761,318
- Barnes, Thomas R.; Chastain, George R.; and Wetzel, Don C., to Docutel Corporation. Credit card automatic currency dispenser. 3,761,682, Cl. 235-61.70b.
- Barnette, Stanley Ronald. Method of making plastic article with a substantially enveloped core. 3,761,554, Cl. 264-69.000.
- Barnum, John J.; deceased (by Kieffer, James M.; assignee), to Sybron Corporation. Washing machine transfer valve. 3,760,825, Cl. 134-560.000.
- Barraya, Pierre Charles Henri. Showcase. 3,760,521, Cl. 40-152.000.
- Barstow, Ormond E.; and Parth, William H., to Dow Chemical Company, The. Coulometric analyzer. 3,761,376, Cl. 204-195.00r.
- Barten, William R.: *See—*
  - Ajioka, James S.; and Barten, William R., 3,761,845.
- Barthel, Curtis Wallace, Jr. Harness assembly for exerciser and walker devices. 3,761,082, Cl. 272-70.000.
- Bartlet, Dietrich, to Ruhrkohle Aktiengesellschaft. Method for cleaning coal. 3,760,942, Cl. 209-44.000.
- Bartlett, Peter G.; Henry, Donald E.; and Murrell, Thomas, to Struthers-Dunn Inc. Process control computer. 3,761,882, Cl. 340-172.500.
- Barton, George C.: *See—*
  - Stapleton, Peter L.; Millar, George; Hartshorn, Frank; and Barton, George C., 3,760,445.
- BASF Wyandotte Corporation: *See—*
  - Kan, Peter T.; and Cenker, Moses, 3,761,502.
- Basham, Raymond B., to Electronic Monitors, Inc. Respiration monitoring apparatus and method. 3,760,794, Cl. 128-2.00r.
- Basin, Genrikh Maxovich; Gorenshtein, Ilya Vladimirovich; Lemberg, Mark Eleazarovich; Linetsky, Semen Grigorievich; Myasoed, Anatoly Eliseevich; and Zanis, Yakov Benediktovich. Method of liberation of pure nitrogen and oxygen from air. 3,760,596, Cl. 62-29000.
- Baskas, Morris J., to Dentipressions Inc. Disposable mixing syringe. 3,760,503, Cl. 32-17.000.
- Bassing, Friedrich Wilhelm: *See—*
  - Hofmann, Gerhard; and Bassing, Friedrich Wilhelm, 3,760,849.
- Bath, James G.; and Cahill, Steven P., to Honeywell Information Systems Inc. Free flight print system for a serial printer. 3,760,926, Cl. 197-55.000.
- Batt, John A.: *See—*
  - Hulse, Charles O.; and Batt, John A., 3,761,295.
- Battin, John: *See—*
  - Krafft, Lewis E.; and Battin, John, 3,761,789.
- Bauknecht, Gunter: *See—*
  - Hadam, Wilhelm; and Bauknecht, Gunter, 3,760,610.
- Baumann, Frederick W.; and Miller, Albert R., to General Electric Company. Dynamoelectric machine having end shields for improved ventilation. 3,761,748, Cl. 310-58.000.
- Baumann, Gerald W.; Groom, Jay L., Jr.; and Lammers, Gerald B., to International Business Machines Corporation. Fluid bearing having discrete holes formed by vortex restrictors. 3,761,002, Cl. 226-97.000.
- Baumann, Paul L., to Singer Company, The. Radiation sensitive keyboard. 3,761,919, Cl. 340-365.00p.
- Baurle, Horst; Veil, Karl; Hamma, Karlmann; and Mann, Egon, to Bosch, Robert, C.m.b.H. and Zahnradfabrik Friedrichshafen AG. Drive arrangement with braking system. 3,761,141, Cl. 303-21.00f.
- Baxendale, Ralph W.: *See—*
  - Miller, Warren '.; and Baxendale, Ralph W., 3,761,273.
- Baxter, Howard Arthur; and Young, Paul Edwin, to Bell Telephone Laboratories, Incorporated. Apparatus for aligning and joining tubular members. 3,761,005, Cl. 228-4.000.
- Baxter Laboratories, Inc.: *See—*
  - Berger, ARthur; and Borgaes, Edeltraut E., 3,761,478.
  - Louderback, Allan L.; Youhne, Young; and Fontana, Anthony J., 3,761,226.

- Bayer Aktiengesellschaft: *See—*
  - Hoffmann, Hellmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 3,761,479.
  - Margotte, Dieter; Vernaleken, Hugo; and Peilstocker, Gunter, 3,761,440.
  - Moritz, Karl-Ludwig; and Taube, Carl, 3,761,462.
  - Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,761,490.
- Beatrice Foods Co.: *See—*
  - Schlies, Edward L.; Weaver, Harrison; Haun, John W.; and Hensel, Dwight L., 3,760,791.
- Beatty, John W., to General Electric Company. Means for reducing eddy current heating of a tank in electric apparatus. 3,761,599, Cl. 174-15.00r.
- Beauviala, Jean Pierre. Recording and reading device with head movement for compensation of irregularities in tape speed. 3,761,646, Cl. 179-100.20r.
- Beck, Edward: *See—*
  - Bedo, Alfred; and Beck, Edward, 3,761,053.
- Becker & Van Hullen Niederrheinische Maschinenfabrik: *See—*
  - Hutter, Wilhelm, 3,761,337.
- Becker, Klaus; and Sprung, Hartwig, to Demag Aktiengesellschaft. Monorail. 3,760,737, Cl. 104-89.000.
- Becker, Rudolf, to Linde Aktiengesellschaft. Short term storage of natural gas. 3,760,597, Cl. 62-47.000.
- Bedo, Alfred; and Beck, Edward, to Sno-Trik Company. High pressure valve. 3,761,053, Cl. 251-88.000.
- Beecham Group Limited: *See—*
  - Mullan, Noel Austin; and Overell, Brian G., 3,761,585.
- Beeson, Robert J.: *See—*
  - Richards, David O.; Beeson, Robert J.; and Kissell, Ronald E., 3,761,342.
- Behn, Sheldon P., to Super Laundry Machinery Company, Inc. Laundry folding machine with static electricity dissipating means. 3,761,071, Cl. 270-61.000.
- Behrenz, Wolfgang: *See—*
  - Hoffmann, Hellmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 3,761,479.
- Belcher, Samuel L., to Owens-Illinois, Inc. Pallet. 3,760,741, Cl. 104-135.000.
- Belisle, Brice. Combined card game apparatus and playing cards. 3,761,094, Cl. 273-148.00a.
- Bell & Howell Company: *See—*
  - Henriksen, Elmer C., 3,761,167.
- Bell Canada-Northern Electric Research Limited: *See—*
  - Kluge, Werner Erich, 3,761,886.
- Bell, Edwin A.; and Padden, Thaddeus F., to Cities Service Oil Company. Suction oil decanter. 3,760,944, Cl. 210-110.000.
- Bell Ko-On Co., Ltd.: *See—*
  - Utsumi, Jihachiro, 3,761,168.
- Bell, Stanley C.; and Conklin, George L., to American Home Products Corporation. Method of preparation of quinazoline compounds. 3,761,476, Cl. 260-251.0qb.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Baxter, Howard Arthur; and Young, Paul Edwin, 3,761,005.
  - Chin, Gilbert Yukyu; Grupen, William Brightman; and Tisone, Thomas Charles, 3,761,904.
  - Condon, Joseph Henry, 3,761,816.
  - Gandrud, William Bentley, 3,761,842.
  - Hardesty, Edwin Charles; Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William (said Krumreich, Mulbarger and Walden assors. to), 3,761,869.
  - Leheny, Robert Francis; Logan, Ralph Andre; Nahory, Robert Edward; and Shaklee, Kerry Lee, 3,761,837.
  - Lewis, Theras Gordon; and Vachon, Patrick Alban, 3,761,624.
  - Limb, John Ormond, 3,761,613.
  - Pilc, Randolph John; and Schlanger, Gabriel Gary, 3,761,894.
  - Pruniaux, Bernard Roger, 3,761,785.
  - Smith, George Elwood, 3,761,744.
  - Spaulding, David Adams, 3,761,829.
  - Townsend, Mark Allan, 3,761,855.
  - Waaben, Sigurd G., 3,761,745.
- Bell Television, Inc.: *See—*
  - Hardy, George F.; and David, Morton E., 3,761,914.
- Bellinger, Horst: *See—*
  - Nosler, Heinz Gunter; Wessendorf, Richard; and Bellinger, Horst, 3,761,419.
- Benbenek, Waldyn J.; Grosso, Frank A.; and Wellspeak, James G. Lee, to Clark-Aiken Company. Electrostatic layboy with underlap system. 3,761,074, Cl. 241-46.000.
- Benderovsky, Vladimir Valerianovich; Schepotiev, Alexandr Ivanovich; Yastrebov, Igor Alexandrovich; and Vergiliev, Oleg Mikhailovich. Mechanism for transporting an information carrier. 3,761,037, Cl. 242-201.000.
- Bendix Corporation, The: *See—*
  - Henegar, Hubert B.; and Patterson, Robert J., 3,761,915.
  - Lewis, Richard L.; Ewald, Jerome T.; and Shields, Martin A., 3,761,140.
  - Myers, Lawrence R., 3,760,693.
  - Ratcliff, Henry K., 3,761,732.
  - Shupe, David M.; and Sawatari, Takeo, 3,761,154.
  - Strom, Charles E.; and Le Blanc, Leo J., Jr., 3,761,256.
  - Taplin, Lael B., 3,760,846.
- Benner, Jean-Rene, to Merlin Gerin, Societe Anonyme. Conveyor track switch actuated by a linear motor. 3,760,739, Cl. 104-132.000.
- Bennett, David B.; Harman, Charles P.; and Follen, Robert J., to Honeywell Inc. Apparatus for an aircraft proximity warning system. 3,761,930, Cl. 343-113.00r.
- Bennett, Frederic C.; and Bennett, Sandra J. Door protector device. 3,761,119, Cl. 92-346.000.
- Bennett, Sandra J.: *See—*
  - Bennett, Frederic C.; and Bennett, Sandra J., 3,761,119.
- Benoy, Gaston Jacob: *See—*
  - Vandenberghe, Antoon Leon; Willems, Jozef Frans; Pollet, Robert Joseph; Benoy, Gaston Jacob; and Van Doorselaer, Marcel Karel, 3,761,277.
- Benway, Ernest A.: *See—*
  - Tobbe, William F.; Benway, Ernest A.; Simko, David M.; Gallagher, Bernard J.; and Boylan, John, 3,761,052.
- Berger, ARthur; and Borgaes, Edeltraut E., to Baxter Laboratories, Inc. Uracil ureas. 3,761,478, Cl. 260-256.40c.
- Berger, France B., to Singer Company, The. Method and apparatus for improving the accuracy of doppler velocity measurement over the sea. 3,761,926, Cl. 343-9.000.
- Berger, Rolf, to Eumuco Aktiengesellschaft fur Maschinenbau. Conveying device for a drop forging press. 3,760,957, Cl. 214-1.0bb.
- Bergholtz, Niels Rudolf, to AB Ludvig Svensson. Apparatus [method] for treating textile material with a circulating liquid. 3,760,614, Cl. 68-189.000.
- Berler, Robert M.: *See—*
  - Pert, Norman A.; Berler, Robert M.; and Murthy, Nanjundian N., 3,761,685.
- Bernasconi, Gabriele; and Poretti, Isidoro, to Societa Italiana Telecomunicazioni Siemens S.p.A. Telecommunication system with transmitting stations selectively operable as temporary reference stations. 3,761,814, Cl. 325-4.000.
- Beroza, Morton: *See—*
  - McGovern, Terrence P.; Beroza, Morton; and Ladd, Thyril L., 3,761,584.
- Berry, Pierre Rene; and Fernandez, Roman, to Societe d'Etudes Verrieres Appliquees. Door check. 3,760,455, Cl. 16-53.000.
- Bertheas, Jean, to Thomson-CSF. Systems for processing and generating frequency modulated signals. 3,761,821, Cl. 325-496.000.
- Besemann, Alfred, to Peters, Werner H. K., Maschinenfabrik GmbH. Apparatus for grooving and/or longitudinally cutting a continuous web. 3,760,697, Cl. 93-58.20r.
- Besnard, Jean-Claude, to Saint-Gobain Industries. Photochromic window with capillary flow control. 3,761,165, Cl. 350-312.000.
- Bessen, Irwin I.; and Farrey, Harold E. Reducing re-evaporation of vacuum vapor deposited coatings. 3,761,302, Cl. 117-71.00m.
- Bestenreiner, Friedrich: *See—*
  - Wick, Richard; and Bestenreiner, Friedrich, 3,761,609.
- Bhaumik, Mani L.; Diem, Don D.; and Mann, Michael M., to Northrop Corporation. Room temperature colaser. 3,761,838, Cl. 331-94.500.
- Bier, David A., to PPG Industries, Inc. Glass cutting using a direct-current torque motor. 3,760,997, Cl. 225-2.000.
- Bieri, Hans. Rotary outlet valve for metallurgical ladles. 3,760,992, Cl. 222-512.000.
- Bierwith, Stanton F., to Great Canadian Oil Sands, Limited. Electroslag guide nozzle. 3,761,674, Cl. 219-73.000.
- Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Boron hydrides as reduction sensitizers in developing-out silver halide emulsions. 3,761,275, Cl. 96-107.000.
- Billault, Pierre: *See—*
  - Boudet, Jean; Wajs, Georges; Gomond, Gerard; and Billault, Pierre, 3,761,208.
- Billin, Arthur Gilbert, to Sybron Corporation. Safety devices for electrical apparatus of medical and other types. 3,761,769, Cl. 317-18.00d.
- Billingsley, James E. Vehicle snowplow with three-point quick connect hitch. 3,760,516, Cl. 37-42.00r.
- Bingham, Seymour P., to Stone & Webster Engineering Corporation. Segregation process using metallic iron as reductant. 3,761,245, Cl. 75-82.000.
- Binkert, Charles E., to Kolodziej, A.A. Food patty turning device. 3,761,120, Cl. 294-8.000.
- Bio/Data Corporation: *See—*
  - Sokol, Michael; and Kent, Frederick M., 3,760,639.
- Bird, George L., Jr.; and Woo, Way Dong, to Kybe Corporation. Redundant offset recording. 3,761,903, Cl. 340-174.10g.
- Birk, Billy D., to Balderson, Inc. Quick hitch assembly. 3,760,883, Cl. 172-273.000.
- Birks, Albert S., to Automation Industries, Inc. Ultrasonic nondestructive material tester. 3,760,634, Cl. 73-67.80r.
- Bishop, Dolloff F.: *See—*
  - Schuk, Walter W.; Pressley, Thomas A.; and Bishop, Dolloff F., 3,760,829.
- Bishop, Jerald W.: *See—*
  - Stewart, Edward T.; and Bishop, Jerald W., 3,760,595.
- Bisson, Edmund L., to United States of America, Army. Weapon system for a set in-flight digital time fuze with muzzle action. 3,760,732, Cl. 102-70.20r.
- Bither, Tom Allen, Jr., to Du Pont de Nemours, E. I., and Company. Palladium phosphide chalcogenides. 3,761,572, Cl. 423-303.000.
- Biviator S.A.: *See—*
  - Adler, Karl; Ducommun, George; and Jenni, Rene, 3,761,921.
- Bixler, Kenneth D.: *See—*
  - Reifers, Richard F.; and Bixler, Kenneth D., 3,761,011.
- Blaauw, Andrew, to Case, J. I., Company. Spring formed worm gear for snow blower spount drive. 3,760,517, Cl. 37-43.00r.

- Black and Decker Manufacturing Company, The: *See—*
  - Ehrlich, Stephen J.; Dwyer, John R., Jr.; and Klein, Henry, 3,760,570.
  - Laughinghouse, Charles L.; and Vogelsberg, Walter H., 3,761,774.
- Black Clawson Company, The: *See—*
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- Blackwell, Druce, to TRW Inc. Laser light pulse monitoring system. 3,761,185, Cl. 356-229.000.
- Blaise, Christian; Lochon, Pierre; and Neel, Jean, to Societe Anonyme dite: Aquitaine Total Organico. Polythiazoles and method of preparation from diphenols and dihalide dibenzothiazolic compounds. 3,761,447, Cl. 260-49.000.
- Blakeley, James, to Victaulic Company of Canada Ltd. Pipe to flange couplings. 3,761,114, Cl. 285-111.000.
- Blakeslee, G. S., & Co.: *See—*
  - Vilen, Erik O.; and Zygas, Vytas, 3,760,936.
- Blattenberger, David E., to International Telephone and Telegraph Corporation. Preamplifier for music and voice. 3,761,832, Cl. 330-30.00r.
- Blessinger, James E.: *See—*
  - Slaats, Mathew A.; Ross, Arthur W.; and Blessinger, James E., 3,761,670.
- Bleuer, Keith T. Tampon applicator assembly. 3,760,808, Cl. 128-263.000.
- Blinow, Igor, to Polaroid Corporation. Combined lost-motion and supplemental torque mechanism. 3,760,703, Cl. 95-42.000.
- Bloch, Herman S., to Universal Oil Products Company. Dehydrogenation with a multicomponent catalyst. 3,761,531, Cl. 260-668.00b.
- Blomberg, Peter Erik, to Aktiebolaget Electrolux. Tiltable air-cooled absorption refrigeration apparatus of the inert gas type. 3,760,602, Cl. 62-490.000.
- Blount, Elmo M.; and Prueger, Nicolas J., to Mobil Oil Corporation. Well completion systems. 3,760,876, Cl. 166-57.000.
- Bochan, John; Akers, Alvin; and Morey, Everett D., to General Electric Company. Additive dispensing system. 3,760,612, Cl. 68-17.00r.
- Boden, Wilhelm. Watercraft construction. 3,760,756, Cl. 114-66.50r.
- Bodzash, Maynard C.: *See—*
  - Backderf, Richard H.; Antlfinger, George J.; and Bodzash, Maynard C., 3,761,435.
- Boeing Company, The: *See—*
  - Delfeld, William H., 3,760,920.
- Boersma, Rintje; and Irik, Gijsbert W., to N.V. COQ. Gas blast circuit-breakers having cooperating tubular contact pieces. 3,761,661, Cl. 200-148.0bv.
- Boesel, Walter F., to Garrett Corporation, The. Dynamoelectric machine field structure and method for forming. 3,761,754, Cl. 310-218.000.
- Bogardus, Rodger E., to Staley, A. E., Manufacturing Company. Stabilized liquid enzyme stain remover. 3,761,420, Cl. 252-171.000.
- Bohn, Francis Lewis: *See—*
  - Williams, Billy G.; and Bohn, Francis Lewis, 3,761,467.
- Boissonnas, Roger: *See—*
  - Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,459.
  - Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,460.
  - Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,461.
- Boldt, Glen R. Engine safety system having safety assembly identifiably operable for each combustion chamber. 3,760,781, Cl. 123-148.00s.
- Boler, Leonard J., to Cherne Industrial, Inc. Combination sewage treatment and cooling system. 3,760,946, Cl. 210-152.000.
- Bollard, David Rooksby, to Pye Limited. Doppler speed meter. 3,761,925, Cl. 343-8.000.
- Bollmann, Helmut: *See—*
  - Kuhl, Adolf; Huber, Hans Dieter; and Bollmann, Helmut, 3,760,497.
- Bolza Schunemann, Hans-Bernhard; and Litchtblau, Heinrich, to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft. Device for webbing a rotary printing press. 3,761,001, Cl. 226-92.000.
- Bombardier Limited: *See—*
  - Perreault, Jules, 3,761,144.
- Bomgaars, Galen D.; and Van Veldhuizen, Arlo B. Safety device for cables supporting electrical wires. 3,761,865, Cl. 339-60.00r.
- Bonanza International, Inc.: *See—*
  - Snyder, Charles F., 3,761,283.
- Bonino, Joseph S.: *See—*
  - Flynn, Joseph C.; Panas, Walter; and Bonino, Joseph S., 3,761,219.
- Boothby, Laura A. Method of self-injection using muscle elevating arm clamp. 3,760,803, Cl. 128-215.000.
- Bor, Maria, nee Szabo: *See—*
  - Tuba, Zoltan; Bor, Maria, nee Szabo; Molnar, Karoly; and Gorog, Sandor, 3,761,496.
- Bordenca, Carl, to SCM Corporation. Diisophorone derivatives and compositions containing same. 3,761,421, Cl. 252-300.000.
- Borg-Warner Corporation: *See—*
  - Gillespie, Daniel C., 3,760,921.
  - Harlin, Lester E., 3,760,478.
  - Korol, Stanley F., 3,760,428.
- Borg-Warner-Stieber GmbH: *See—*
  - Gelbrich, Werner W., 3,760,914.
- Borgaes, Edeltraut E.: *See—*
  - Berger, ARthur; and Borgaes, Edeltraut E., 3,761,478.
- Borgeas, Alexander T. Therapeutic exercising apparatus for torso and body extremities. 3,760,801, Cl. 128-25.00r.
- Borman, Maynard P., to Minnesota Mining and Manufacturing Company. Tape cartridge positioner. 3,761,097, Cl. 274-4.00c.
- Borner, Manfred. Method of making an electromechanical filter. 3,760,471, Cl. 29-25.350.
- Borrel, Philippe; and Lehureau, Jean, to PROGIL. Process for the photopolymerization of unsaturated polyester resins on a liquid metal support. 3,761,561, Cl. 264-298.000.
- Borrow, Antony; Broadbent, Douglas; Carter, Stephen Barnaby; Evans, Gillian Margaret; Hemming, Harold George; Hesp, Barrie; and Parton, Carol, to Imperial Chemical Industries Limited. Antiviral compounds. 3,761,512, Cl. 260-485.00g.
- Bosack, Irwin A.: *See—*
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- Bosch, Robert, Fernsehanlager Gesellschaft mit beschrankter Haftung: *See—*
  - Schneider, Hans-Dieter, 3,761,627.
- Bosch, Robert, G.m.b.H.: *See—*
  - Baurle, Horst; Veil, Karl; Hamma, Karlmann; and Mann, Egon, 3,761,141.
  - Engel, Gerhard, 3,761,729.
  - Fritzsche, Rudolf; Hofer, Friedrich Wilhelm; and Schmid, Rudi, 3,760,830.
  - Meyer, Klaus; and Strelow, Gert, 3,760,782.
- Bose, Robert N. Method and apparatus for controlling the flowliquid. 3,760,599, Cl. 62-49.000.
- Boskovic, Borislav. Heat exchange fluid baffles. 3,760,874, Cl. 165-177.000.
- Bosland, Cornelius William, to AMP Incorporated. Sensing spring arrangement for card reader. 3,761,686, Cl. 235-61.11c.
- Bosnyak, Robert Joseph; and Chu, John W. Electronic locking system. 3,761,892, Cl. 340-149.00a.
- Bossi, Oscar, to Honeywell Information Systems Italia. Serial printer with rotating interposer and plural hammers. 3,760,925, Cl. 197-53.000.
- Boston, Thomas R.: *See—*
  - Stone, Orison W., 3,760,978.
- Botz, Roland, to Plasti-Fiber Formulations, Inc. Bagasse reinforced vinyl roofing composition. 3,761,431, Cl. 260-17.4cl.
- Bouchet, Roland: *See—*
  - Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, 3,761,521.
- Boudet, Jean; Wajs, Georges; Gomond, Gerard; and Billault, Pierre, to Essilor International (Compagnie Generale d'Optique). Production of contact lenses. 3,761,208, Cl. 425-352.000.
- Bovati, Costantino, to Officine Meccaniche di Alme S.p.A. Device for smoothing the surface of turned wood elements. 3,760,537, Cl. 51-145.
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  - Tobbe, William F.; Benway, Ernest A.; Simko, David M.; Gallagher, Bernard J.; and Boylan, John, 3,761,052.
- Bozik, John E.; Ondrey, John A.; and Swift, Harold E., to Gulf Research & Development Company. Process for coupling propylene and isobutylene. 3,761,536, Cl. 260-680.00r.
- Brackemyre, Mark E.: *See—*
  - Van Wyngarden, Roger E.; and Brackemyre, Mark E., 3,760,937.
- Bradley, Daniel Joseph. Electron-optical image tubes and image tube streak cameras. 3,761,614, Cl. 178-7.200.
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  - Timm, Gerald W.; and Bradley, William E., 3,760,812.
- Brady, Michael Barry, to English Electric Valve Company Limited. Piezo-electrically induced hydraulic movement of a magnetron tuning element. 3,761,764, Cl. 315-34.610.
- Brady, W. H., & Co.: *See—*
  - Mrozek, James M.; and Heuser, Elliott G., 3,761,344.
- Brain, Douglas Harold, to J. & P. Coats Limited. Device for automatically guiding material during seam formation. 3,761,073, Cl. 271-45.000.
- Brandsma, Johan Rudolf; and Waumans, Louisa Angelina, to U.S. Philips Corporation. Bus transport system for selection information and data. 3,761,879, Cl. 340-172.500.
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  - Kuhl, Adolf; Huber, Hans Dieter; and Bollmann, Helmut, 3,760,497.
  - Schindler, Hans, 3,761,850.
- Braun, Erich, to Porsche, Dr.-Ing., H.c.F., K.G., Firma. Safety system for two-circuit brake installations of motor vehicles. 3,760,912, Cl. 188-345.000.
- Bremer, Gordon F., to Honeywell Information Systems Inc. Voltage controllable crystal digital clock. 3,761,840, Cl. 331-116.00r.
- Brendel, Gottfried J.; and Shepherd, Lawrence H., Jr., to Ethyl Corporation. Novel chemical compositions and their preparation and uses. 3,761,528, Cl. 260-633.000.
- Brenden, Donald Wilford. Adapter apparatus for a portable sewage disposal system. 3,760,430, Cl. 4-114.000.
- Brennan, Edward J.: *See—*
  - Weik, Kirby B.; and Brennan, Edward J., 3,761,124.
- Brennan, Francis P. Box and corner clamp retaining box to form. 3,760,465, Cl. 24-81.0bf.
- Brenneman, John H. Spline and seat connector assemblies. 3,760,547, Cl. 52-586.000.
- Brentford Electric Limited: *See—*
  - Spooner, Frederick Ernest, 3,761,797.

Brickwood, David B. L.: *See—*
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Brink, David L.; and Thomas, Jerome F., to University of California, The Regents of the. Method and apparatus for the destructive decomposition of organic wastes without air pollution and with recovery of chemical byproducts. 3,761,568, Cl. 423-207.000.
Brinkmann, Hans: *See—*
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Brock, Ivan R. Tool holder adaptor. 3,760,662, Cl. 82-35.000.
Brode, George L.: *See—*
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Bromer, David J.; and Sastri, Aiyaswami S., to Gillette Company, The. Process for producing an improved cutting tool. 3,761,374, Cl. 204-192.000.
Brothers, Jack, to United States of America, Army. Delayed arming device. 3,760,734, Cl. 102-76.000.
Brouwer, Geert; Van Dam, Jacobus Ignatius; and Lemmens, Jozef Mathias, to U.S. Philips Corporation. Dosing device. 3,760,991, Cl. 222-411.000.
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Brown, Cicero C. Automated pipe-handling slips. 3,760,469, Cl. 24-263.0dq.
Brown, Dale H., to General Electric Company. Method of thermal exhaust and system therefor. 3,760,869, Cl. 165-30.000.
Brown, Eugene A.; and Archer, Robert L., to United States of America, Army, mesne. Gun rugged recorder. 3,761,917, Cl. 340-347.0ad.
Brown, Gordon P. Mount sealing apparatus. 3,760,483, Cl. 29-200.00b.
Brown, Harry W., to Cutler-Hammer, Inc. Trigger switch with selective two-position trigger depression limiting means. 3,761,663, Cl. 200-157.000.
Brown, Richard L., to Midway Manufacturing Company. Shooting gallery apparatus in which a programmed robot competes with the operator. 3,761,088, Cl. 273-101.200.
Brownstein, Henry J., to Hysan Corporation. Disposable urinal strainer with supporting and positioning means for holding a solid chemical material. 3,760,429, Cl. 4-109.000.
Bruene, Warren B., to Collins Radio Company. Digital method and means for frequency shift keying. 3,761,625, Cl. 178-66.00a.
Brumbaugh, Allen D., to United States of America, Army. Automated selective wash method and apparatus. 3,760,630, Cl. 73-28.000.
Brunhart, Werner; and Hardman, Wendell G., to Varian Associates. Spewing shield for planar triode tubes. 3,761,759, Cl. 313-326.000.
Brunner, Fred William, to Manning's Inc. Food cooking apparatus. 3,761,290, Cl. 99-330.000.
Brusacoram, Albert V. All terrain vehicle. 3,760,763, Cl. 115-1.00r.
Brush Wellman, Inc.: *See—*
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Bryan, James W. Dispensing container. 3,760,985, Cl. 222-136.000.
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Buchheit, Otto Karl, to Moeller & Neumann GmbH. Entry rollway for cooling beds for rod rolling mills. 3,760,931, Cl. 198-127.000.
Buchmeier, Heinz. Turret for assembly on a machine tool as a machining unit. 3,760,655, Cl. 74-826.000.
Buchner, Norman E. Spring resistant type exercising device. 3,761,083, Cl. 272-83.004.
Buckley, David L., to Air Logistics Corporation. Rotary disc having adjustable ice chip cutters. 3,761,133, Cl. 299-25.000.
Buckshaw, Thomas M.; and Rosenberg, David M., to Robertshaw Controls Company. Grounding member for water level control device. 3,761,656, Cl. 200-83.0wm.
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Budinger, William D.; and Mc Laughlin, Paul F., to Rodel Inc. Nip pressure measurement. 3,760,637, Cl. 73-141.00r.
Budzinski, David A.; Sorkin, Jack L.; and Charogoff, Clarence, to Addressograph-Multigraph Corporation. Fast-set plastisol ink. 3,760,724, Cl. 101-426.000.
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Bunten, Paul H. Air cooling apparatus. 3,760,601, Cl. 62-240.000.
Burch, A. Robert, to Burch Controls, Inc. Industrial robot. 3,760,956, Cl. 214-1.0bb.
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Burg, Fred G., to Houdaille Industries, Inc. Machine tool having tool changer. 3,760,490, Cl. 29-568.000.
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Burkhart, Ernest O. Multiple tape apparatus. 3,761,096, Cl. 274-4.00f.
Burns, Charles L., to Mallory, P. R., & Co., Inc. Bell crank type operating means for simultaneously actuating interlocked pair of electrical switches. 3,761,652, Cl. 200-50.00c.
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Busking, Bob E., to Shell Oil Company. Floating structure with rotatable templet for connecting guide lines thereto. 3,760,875, Cl. 166-.500.
Bustin, Franz, to Mobil Oil Corporation. Method of embossing thin, limp plastic film, and disposable and embossed plastic bag product. 3,760,940, Cl. 206-58.000.
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Cailley, Jean-Pierre, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). High discharge rate electric cells and batteries. 3,761,314, Cl. 136-13.000.
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Callihan, Clayton D.; Srinivasan, Vadake R.; and Dunlap, Charles E., to Louisiana State University Foundation, The. Comestible, digestible protein from cellulose. 3,761,355, Cl. 195-33.000.
Callihan, Clayton D. Preparation of water-soluble derivatives of cellulose, and compositions thereof. 3,761,465, Cl. 260-231.000.
Callister, Richard M.; and Langer, Robert J., to Masabi Jobbers, Inc. Blast-hole liner. 3,760,727, Cl. 102-24.00r.
Calow, John R. B.; Small, Norman J. H.; and Bull, Brian. Lubricant compositions. 3,761,404, Cl. 252-39.000.
Calvert, Rodney K., to Mead Corporation, The. Packaging machine. 3,760,555, Cl. 53-48.000.
Camco, Incorporated: *See—*
McGowen, Harold E., Jr.; and Tausch, Gilbert H., 3,760,832.

Camp, Richard H. Combination automotive warning device. 3,761,875, Cl. 340-67.000.
Campbell, Allen B., to Mesta Machine Company. Shear for steel strip and the like. 3,760,677, Cl. 83-600.000.
Campbell, Alvin Edward, to GTE Automatic Electric Laboratories Incorporated. Plug jack nut tool. 3,760,659, Cl. 81-90.00c.
Campbell, John E., to Polaroid Corporation. Self-developing photographic film unit with liquid trap and an alkali neutralizing spacer element. 3,761,269, Cl. 96-76.00r.
Campbell, Morris C. Invertible dual purpose tray holder. 3,760,996, Cl. 224-48.00r.
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Carini, George F.; Hommel, Ernest M.; and Twigger, James R., to Hommel, O., Company, The. Ceramic coating compositions for continuous cleaning surfaces. 3,761,293, Cl. 106-48.000.
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Carlsson, Hans Thorsten Henrik, to Aktiebolaget Svenska Elektromagneter. Flywheel magneto ignition apparatus operating with capacitive ignition effect. 3,761,779, Cl. 317-81.000.
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Carr, Kelly B., to Carr Engineering Corporation. Chipless round hole cutter. 3,761,192, Cl. 408-22.000.
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Castner, Charles S.; and Schorr, Auguste J., to Schuyler Development Corporation. Dispensing bottles with pump means for simultaneous dispensing. 3,760,986, Cl. 222-137.000.
Castoe, John H., to Applied Power Industries, Inc. Caster and camber adjustment tool. 3,760,628, Cl. 72-458.000.
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Chandler, Roy L., to Red Ant Products, Inc. Cycle carrier. 3,760,965, Cl. 214-450.000.
Chapman, Arthur S., to Hughes Aircraft Company. Vernier azimuth gimbal suspension system. 3,761,163, Cl. 350-301.000.
Charles, James A., to Dana Corporation. Switch having a pair of manually movable actuating elements. 3,761,662, Cl. 200-153.00d.
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Child, Edward T.; Messing, Donald A.; Suggitt, Robert M.; and Liden, Thomas M., to Texaco Inc. Jet fuel and motor fuel production by hydrofining and two-stage hydrocracking. 3,761,395, Cl. 208-89.000.
Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., to Chevron Research Company. Process for making moresque yarn from polymer film. 3,761,552, Cl. 264-37.000.
Chin, Gilbert Yukyu; Grupen, William Brightman; and Tisone, Thomas Charles, to Bell Telephone Laboratories, Incorporated. Magnetic switching devices comprising Ni-Mo-Fe alloy. 3,761,904, Cl. 340-174.0zb.
Chin-Chih, Chuang. Pencil with self-refilling cartridges. 3,761,188, Cl. 401-57.000.
Choux, Antoine E.; and Gaudard, Pierre. Flower stand for holding pots in one of two alternative positions. 3,760,534, Cl. 47-39.000.
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Chupp, John P., to Monsanto Company. Phytotoxic use of N-(1-cycloalken-1-yl)ureas and thioureas. 3,761,241, Cl. 71-120.000.

Churla, John J., to Thomas & Betts Corporation. Insulation and oxide piercing contact means. 3,761,867, Cl. 339-98.000.
Ciba-Geigy AG: *See—*
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  Haricht, Ernst; and Nibls, Bernard, 3,761,494.
  Riethmann, Jean; Gremmelmaier, Claude; and Scheck, Leo, 3,761,472.
Cibin, Egidio. Self-erecting crane to be towed by a truck. 3,760,953, Cl. 212-46.00a.
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Cincinnati Milacron-Heald Corporation: *See—*
  Robillard, Edward G.; and Uhtenwoldt, Herbert P., 3,760,539.
C.I.T.-Compagnie Industrielle des Telecomunications: *See—*
  Monin, Claude, 3,761,640.
Cities Service Company: *See—*
  Newcombe, Jack, 3,761,443.
Cities Service Oil Company: *See—*
  Badin, Elmer J., 3,761,545.
  Bell, Edwin A.; and Padden, Thaddeus F., 3,760,944.
  Kerschner, Paul M.; and Marcellis, Alphonso W., 3,761,434.
Clark, Earl D., to Ohio Art Company, The. Tracing device. 3,760,505, Cl. 33-18.00r.
Clark-Aiken Company: *See—*
  Benbenek, Waldyn J.; Grosso, Frank A.; and Wellspeak, James G. Lee, 3,761,074.
Claverie, Claude, to Thomson-CSF. Variable-gain low-noise amplifier. 3,761,830, Cl. 330-29.000.
Clayton, Dennis Albert; and Foster, George William, to Legg (Industries) Limited. Battery charging apparatus. 3,761,795, Cl. 320-20.000.
Clemons, Cecil I.: *See—*
  Thorson, Sheldon E.; Clemons, Cecil I.; and Viola, Vito, 3,760,722.
Clinton Watch Company: *See—*
  Wein, Irving L., 3,760,585.
Cloke, Robert L.: *See—*
  Hollstein, Carl P., Jr.; and Cloke, Robert L., 3,761,905.
Clopay Corporation: *See—*
  Gossling, Robert C., 3,760,664.
Clucker, Richard V.; and Kennedy, Roland R., to Harsco Corporation. Control system for refuse handling apparatus. 3,760,962, Cl. 214-83.300.
Clutter, Barry F.: *See—*
  Drummond, Glenn R.; and Clutter, Barry F., 3,760,754.
Cogar Corporation: *See—*
  Finster, Leslie P.; Kelly, William J.; Naegele, Erich Otto; Petrovsek, Richard J.; Reader, Trevor D.; Reynolds, Warren A.; Sekse, Torkjell; Sevilla, Ernesto G.; and Sours, William A., 3,761,906.
  Titus, Robert J.; and Kelly, William J., 3,761,742.
Cole, Edward L.; Hess, Howard V.; and Franz, William F., to Texaco Inc. Regeneration of decoked alkaline sulfite pulp liquor. 3,761,349, Cl. 162-36.000.
Coleman, John R., Jr.; and Plummer, Mark A., to Marathon Oil Company. Hydrocarbon extraction process using micellar systems. 3,761,401, Cl. 208-311.000.
Collin, Gerd: *See—*
  Wegener, Otto; Louis, Heinrich; Oberkobusch, Rudolf; and Collin, Gerd, 3,761,387.
Collingwood, George H.: *See—*
  Schuettler, Ralph W.; Turner, Garland L.; and Collingwood, George H., 3,760,579.
Collins Radio Co.: *See—*
  Sather, Delaine C., 3,761,699.
Collins Radio Company: *See—*
  Bruene, Warren B., 3,761,625.
  Schultz, Elmer L.; and Hattendore, Edwin R., 3,761,691.
Collins, Stephen: *See—*
  De Milt, Kenneth E.; Collins, Stephen; and Scholer, Henry Gardner, 3,760,717.
Colman, Robert, to General Alarm Corporation. Automatic telephone alarm system responsive to answering of the called telephone. 3,761,632, Cl. 179-5.00p.
Colombo, Gregory R., to Ideal Security Hardware Corporation. Cross bolt deadlock. 3,760,619, Cl. 70-104.000.
Colston, John Matthew: *See—*
  Machin, James Robert; Colston, John Matthew; and Jibb, David John, 3,761,765.
Colt Industries Operating Corporation: *See—*
  Marsh, Keith D., 3,760,786.
Columbia Broadcasting System, Inc.: *See—*
  Bader, Banjamin B., 3,761,628.
Columbia Products Company: *See—*
  Butler, James Oscar, Jr.; and Shepherd, Bob G., 3,760,524.
Colvert, James H.: *See—*
  Reynolds, David L.; Youngblood, Douglas J.; Parker, Levi C.; and Colvert, James H., 3,761,394.
Colvin, Alex D., to Ford Motor Company. Gas flow control system for an analytical instrument. 3,760,831, Cl. 137-117.000.
Commercial Solvents Corporation: *See—*
  Purcell, Robert F.; Hunsucker, Jerry H.; and Sausaman, David K., 3,761,339.
Compagnie de Saint-Gobain: *See—*
  Hanton, Daniel, 3,761,209.
Compagnie Francaise de Raffinage: *See—*
  De Gramont, Arnaud Marie Jose; Maurin, Jean; and Weisang, Joseph Edouard, 3,761,532.
Compteurs Schlumberger: *See—*
  Georget, Philippe; and Gauthier, Michel, 3,761,878.
Computer Transceiver Systems, Inc.: *See—*
  Kritz, Albert H.; and Epstein, Maurice J., 3,761,880.
Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Data set employing a commutating capacitor, tracking, notch filter. 3,761,816, Cl. 325-22.000.
Conibear, Frank. Frame for animal trap. 3,760,531, Cl. 43-90.000.
Conklin, George L.: *See—*
  Bell, Stanley C.; and Conklin, George L., 3,761,476.
Conner, Algie J., to Universal Oil Products Company. Process for the production of gasoline and low molecular weight hydrocarbons. 3,761,391, Cl. 208-76.000.
Conrac Corporation: *See—*
  Alston, Russell M.; Watson, John R.; and Westbrook, James E., 3,761,618.
Conrad, Herbert M.; and Ashe, Hilary, to Conrad Laboratories, Inc. Method for detection of opium derivatives in urine. 3,761,227, Cl. 23-230.00b.
Conrad Laboratories, Inc.: *See—*
  Conrad, Herbert M.; and Ashe, Hilary, 3,761,227.
Considine, Douglas M.: *See—*
  Mason, William J.; Wilson, Douglas W.; Considine, Douglas M.; Viosca, Felix Jerome; and Wade, J. Philip, 3,761,675.
Construzioni Meccaniche Lonati di Lonati Francesco: *See—*
  Lonati, Francesco, 3,760,608.
Continental Can Company: *See—*
  Erlandson, Paul M., 3,761,671.
Continental Can Company, Inc.: *See—*
  Galitz, Raymond F., 3,760,928.
Continental Carbon Company: *See—*
  Dahmen, Karel R.; and Crull, William B., 3,761,577.
Continental Oil Company: *See—*
  Every, Richard L., 3,761,136.
Conveyor Systems, Inc.: *See—*
  Schneider, Walter M., 3,760,932.
Cook, Charles Calvin; and Haynsworth, Erwin Mathew. Process for producing land-fill compositions. 3,761,239, Cl. 71-33.000.
Cook, Jay E. Table tennis practice and game equipment. 3,761,085, Cl. 273-30.000.
Cook, John Hayward, to English Numbering Machines Limited. Electrical impulse counter with shockproofing mechanism. 3,761,015, Cl. 235-91.00a.
Cook, John Michael William, to U.S. Philips Corporation. Automatic frequency control system. 3,761,835, Cl. 331-1.00a.
Coon, Arthur Delbert; Sheehan, Gerard Martin; and Dupree, Paul Montgomery, to American Cyanamid Company. Purification of titanium sulfate solutions. 3,761,298, Cl. 106-300.000.
Cope, Edward G., to Texas Instruments, Incorporated. Automated crystal pulling system. 3,761,692, Cl. 235-151.100.
Corby, Bernard: *See—*
  Chu, Pe Tsi; Corby, Bernard; James, Andre Ernest; Le Blanc, Robert; and Milewski, Andrzej Tadeusz, 3,761,638.
Cornelius Company, The: *See—*
  Tracy, Gene A., 3,760,835.
Corneliusen, Philip R. Antislip attachments for snow footgear. 3,760,513, Cl. 36-2.5ab.
Corrugated Packing, The: *See—*
  Nicholson, Terence Peter, 3,761,102.
Corse, Louis, to Chambon Automation. Stroboscopic device. 3,761,177, Cl. 356-23.000.
Cory, John H. Cabinet with elevator support platform. 3,761,152, Cl. 312-7.0tv.
Cosmopolitan Textile Company, Limited: *See—*
  Wildeman, Aro Edgar, 3,760,607.
Coupek, Jiri: *See—*
  Lim, Drahoslav; Coupek, Jiri; and Lubomir, Lochmann, 3,761,529.
Coville, Patrick: *See—*
  Baldy, Jean; and Coville, Patrick, 3,761,859.
Cox, Clinton; Pechonick, John, Jr.; and Zylstra, Peter, Jr., to United States of America, Air Force. Method of impregnating microcracks in chromium plating. 3,761,303, Cl. 117-71.00m.
Crabtree, Willie A.: *See—*
  Thiess, George H.; and Crabtree, Willie A., 3,760,582.
Crain Cutter Company: *See—*
  Crain, Millard, Jr., 3,760,499.
Crain, Millard, Jr., to Crain Cutter Company. Apparatus for cutting plugs from carpets. 3,760,499, Cl. 30-130.000.
Crawford Fitting Company: *See—*
  Shendure, Ashok S., 3,761,117.
Crest, Hazel: *See—*
  Foster, Herbert G., Jr.; Crest, Hazel; and Frederick, Charles D., 3,761,284.
Creusot-Lorre: *See—*
  Lippmann, Jean Pierre, 3,761,582.
Critchfield, Frank E.: *See—*
  Ward, Robert J.; and Critchfield, Frank E., 3,761,439.

Crommett, Donald L.: *See—*
  Hershey, Elmer E.; and Crommett, Donald L., 3,760,954.
Crompton & Knowles Corporation: *See—*
  Parkinson, Edward J., 3,761,211.
Cronstedt, Val, to Avco Corporation. Easily maintainable gas turbine engine. 3,761,205, Cl. 417-407.000.
Crossman, Richard L.; Fisher, Richard R.; and Kofor, Harry T., to Goodyear Aerospace Corporation. Inflated air bearing. 3,760,899, Cl. 180-125.000.
Crouzet: *See—*
  Jullien-Davin, Jean, 3,760,644.
Crowson, David Lamar. Sonic teeth-cleaning apparatus and method. 3,760,799, Cl. 128-24.00a.
Cruckshank, Ira G. Expansible shelf addition. 3,760,744, Cl. 108-64.000.
Crull, William B.: *See—*
  Dahmen, Karel R.; and Crull, William B., 3,761,577.
Csepeli Tervezo Intezet: *See—*
  Illyes, Sandor; and Kapas, Otto, 3,760,632.
Cucuz, Ranko; Verduzco, Miguel A.; and Zavodny, George, Jr., to LaSalle Steel Company. Process for surface finishing of metals. 3,760,488, Cl. 29-557.000.
Cumberland Engineering Company, Inc.: *See—*
  Peterson, Russell I., Jr., 3,760,673.
Cummins, Phil F. Remote controlled helicopter transport device and method. 3,761,040, Cl. 244-2.000.
Curtis, Burnell P., Jr.; Fannin, Loyd W.; Paulik, Frank E.; and Price, Jerry L., to Monsanto Company. Hydrogen iodide. 3,761,579, Cl. 423-486.000.
Curtis Noll Corporation: *See—*
  Light, Arthur, 3,761,320.
Cutler-Hammer, Inc.: *See—*
  Brown, Harry W., 3,761,663.
Cywin, Allen, to United States of America, Interior. Disposal of waste heat. 3,760,868, Cl. 165-1.000.
Daab, Heinz, to Quick-Rotan Becker & Notz KG. Method and apparatus for moving a shaft into a predetermined angular position. 3,761,790, Cl. 318-467.000.
Daffron, Vernon M., to Wagner Electric Corporation. Control valve. 3,760,841, Cl. 137-493.000.
Dahl, Eugene L.: *See—*
  Hanks, James V.; and Dahl, Eugene L., 3,760,916.
Dahl, Rolf. Process of making polyurethane pressure-sensitive adhesive tape. 3,761,307, Cl. 117-122.00p.
Dahlgren, Wallace L. Animal trap. 3,760,530, Cl. 43-88.000.
Dahmen, Karel R.; and Crull, William B., to Continental Carbon Company. Secondary combustion process and apparatus for the manufacture of carbon black. 3,761,577, Cl. 423-450.000.
Dahms, Ronald H.: *See—*
  Anderson, George J.; and Dahms, Ronald H., 3,761,448.
Daigo, Hiroshi: *See—*
  Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Sugiura, Kiyohiko, 3,761,436.
Daimler-Benz Aktiengesellschaft: *See—*
  Frankle, Gerard, 3,760,783.
  Frey, Egon, 3,761,706.
  Zick, Manfred, 3,760,706.
Daiwa Boseki Kabushiki Kaisha: *See—*
  Kihara, Hidetoshi; Urifu, Tohoru; Yuasa, Osamu; and Ejiri, Satoki, 3,760,577.
D'Alessandro, William J.; and Brode, George L., to Union Carbide Corporation. Thermosetting friction compositions and friction elements thereof containing an acrylimide resin. 3,761,441, Cl. 260-37.00n.
Dall, Hans Hilmar. Electrode air-humidifier. 3,761,679, Cl. 219-288.000.
Damon Corporation: *See—*
  Campbell, Stephen P., Jr., 3,760,809.
Damon, Paul H.: *See—*
  Cichoski, Sylvester A.; Damon, Paul H.; Golembeski, Ronald J.; and Lawler, William P., 3,761,335.
Dana Corporation: *See—*
  Charles, James A., 3,761,662.
Danfoss A/S: *See—*
  Jensen, Arne, 3,761,796.
Danieli & C., S.p.A.: *See—*
  Poran, Michael, 3,760,670.
Daniels, Dennis, to U.S. Amada, Ltd. Unitized ram drive for a punch press. 3,760,676, Cl. 83-590.000.
Daniels, Edward G., to Upjohn Company, The. Process for producing an esterase. 3,761,356, Cl. 195-62.000.
Dankel, Douglas D.: *See—*
  Webster, J. Vincent; and Dankel, Douglas D., 3,760,884.
Danki Onkyo Co., Ltd.: *See—*
  Saroia, Sadayoshi, 3,761,763.
Danner, Paul L.: *See—*
  Docherty, Donald B.; and Danner, Paul L., 3,761,107.
Dargent, Bruno M., to Hamilton Watch Company. Integrated circuit solid state watch. 3,760,584, Cl. 58-50.00r.
Darton, Kenneth Stanley; Hunt, Geoffrey Allen; and Wright, David William, to International Standard Electric Corporation. Data processor interface. 3,761,697, Cl. 235-154.000.
Daughtry, Albert E. Bait-fish rig. 3,760,525, Cl. 43-44.200.
Daussan, Henri Jean. Apparatus for the fabrication of mold linings such as hot top sections for ingot molds. 3,760,865, Cl. 164-160.000.
David, Morton E.: *See—*
  Hardy, George F.; and David, Morton E., 3,761,914.
Davidson, Evan E., to International Business Machines Corporation. Memory array of cells containing bistable switchable resistors. 3,761,896, Cl. 340-173.00r.
Davidson, James R., to Xerox Corporation. Manifold web handling. 3,761,174, Cl. 355-16.000.
Davis Aircraft Products Company, Inc.: *See—*
  Higuchi, Nori, 3,760,464.
Davis, Roy S. Lathe chuck wrench safety device with chuck key actuated microswitch. 3,761,654, Cl. 200-61.58r.
Davis, Steven S., to Envirotech Corporation. Pressure filter. 3,760,945, Cl. 210-143.000.
Davis, Walter Richard; and Solomon, James E., to Motorola, Inc. Method and apparatus for adjusting transistor current. 3,761,787, Cl. 317-235.000.
Dawson, Robert Louis, to Du Pont de Nemours, E. I., and Company. Epoxy polyurethane prepolymer compositions which are self-curing upon application of heat. 3,761,452, Cl. 260-77.5ap.
Dayton Electronic Products Company: *See—*
  Foster, Dennis L.; and Hoeffel, James D., 3,761,887.
De Cock, Etienne Marie, to Agfa-Gevaert N.V. Apparatus for measuring dimensional deviations. 3,761,723, Cl. 250-560.000.
De Cock, Etienne Marie. Photoelectric device for measuring variations in the optical density of a moving web. 3,761,726, Cl. 250-571.000.
De Gramont, Arnaud Marie Jose; Maurin, Jean; and Weisang, Joseph Edouard, to Compagnie Francaise de Raffinage. Ortho dialkyl benzene preparation via dehydrocyclization process. 3,761,532, Cl. 260-673.500.
De Haye, John J.: *See—*
  Puckett, William R.; Kelly, John H.; Overall, Robert E.; and De Haye, John J., 3,760,589.
de LaJarte, Guy; and de Saint Palais, Jacques, to Entreprise de Recherches et d'Activites Petrolieres (Elf). Spoon for plugging cased petroleum production wells. 3,760,877, Cl. 166-164.000.
De Mauriac, Richard Arthur; and Gaugh, Wilbur Seth, to Eastman Kodak Company. Photothermographic element 56 096/114.100. 3,761,279, Cl. .
De Milt, Kenneth E.; Collins, Stephen; and Scholer, Henry Gardner, to Mil-Pac Systems, Inc. Shredder-compactor. 3,760,717, Cl. 100-98.00r.
de Saint Palais, Jacques: *See—*
  de LaJarte, Guy; and de Saint Palais, Jacques, 3,760,877.
De Sio, Frederick Carl; and Werner, Walter Myers, to AMP Incorporated. Method and connector having conductive elastomeric material encircled by a continuous layer of insulation in intimate contact therewith. 3,761,602, Cl. 174-73.0sc.
De Stefano, Richard J.: *See—*
  Lepore, Donald A.; Puttbach, Richard C.; and De Stefano, Richard J., 3,761,292.
De Stevens, George: *See—*
  Mizzoni, Renat Herbert; and De Stevens, George, 3,761,592.
Dean, John Richard, to International Telephone and Telegraph Corporation. Power-pad unit for luminaires. 3,761,781, Cl. 317-120.000.
Dear, Robert E. Z.: *See—*
  Woolf, Cyril; Dear, Robert E. Z.; and Young, David E., 3,761,501.
Decouzon, Georges; Misseri, Marcel; and Chalesle, Andre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Automotive safety steering systems. 3,760,649, Cl. 74-492.000.
Deere & Company: *See—*
  Kleckner, Richard Merle; and Kress, James Henry, 3,760,691.
  Wetrich, Peter Donald; Madson, Lyle Robert; and Weissenfluh, Wesley Walter, 3,760,918.
Deering, Edwin Naul; and Jones, Wickliffe, to Jones, R. A., & Company, Incorporated. Apparatus for erecting cartons. 3,761,072, Cl. 271-12.000.
Deering Milliken Research Corporation: *See—*
  Kimble, Victor W., 3,761,341.
  Klein, Norman E., 3,761,340.
Deggendorfer Werft and Eisenbau GmbH: *See—*
  Guetlhuber, Friedrich, 3,760,870.
Del Giudice, Matthew. Drill jig. 3,761,193, Cl. 408-115.000.
Delbag-Lustsilter Gesellschaft mit beschrankter Haftung: *See—*
  Neumann, Gerhard Max; and Wittemeier, Hans-Joachim, 3,760,568.
Delfeld, William H., to Boeing Company, The. Power shaft coupling and uncoupling mechanism. 3,760,920, Cl. 192-93.00r.
Delic, Miladln. Auto humidifier and steam injection device. 3,761,019, Cl. 237-12.300.
Delle-Alsthom: *See—*
  Fournier, Jacques, 3,761,651.
Delmoran AG: *See—*
  Marti, Willi Hermann, 3,761,749.
DeLong, Jon C.: *See—*
  Ruthel, Walter W.; DeLong, Jon C.; and Evans, Richard I., 3,761,384.
  Ruthel, Walter W.; and DeLong, Jon C., 3,761,385.
Delpaggio, Anthony F., to Park-Ohio Industries, Inc. Method and apparatus for inductively heating valve seats. 3,761,669, Cl. 219-10.570.
Delta Products, Inc.: *See—*
  Schweitzer, John C.; and Tuttle, Terry, 3,761,909.
Demag Aktiengesellschaft: *See—*
  Becker, Klaus; and Sprung, Hartwig, 3,760,737.

Schumacher, Peter; Hug, Werner; Spetzler, Edgar; and Terlaak, Dieter, 3,760,960.

DeMauriac, Richard A.; and Landholm, Richard A., to Eastman Kodak Company. Photographic element, composition and process. 3,761,270, Cl. 96-77.000.

Denhart, William L.: *See—*
Over, David J.; Denhart, William L.; and McKee, Thomas J., 3,760,561.

Denki Onkyo Co., Ltd.: *See—*
Nishira, Seishiro, 3,761,958.
Sugiura, Katsuyoshi, 3,761,848.

Denning, Ralph Murch, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State of Defense in Her Britannic Majesty's Government of the. Gas turbine engine. 3,761,042, Cl. 244-53.00r.

Dennis, James L., to Resalab, Incorporated. Double beam hydrocarbon gas detector. 3,761,724, Cl. 250-565.000.

Dennison Manufacturing Company: *See—*
Swett, Alan; and Napoleone, Nunzio, 3,761,687.

Dentipressions Inc.: *See—*
Baskas, Morris J., 3,760,503.

DeProux, Jacques Roland: *See—*
Torrens, Christian; DeProux, Jacques Roland; and Picard, Michel, 3,760,719.

DeRamaix, Maurice Antoine, to Agfa-Gevaert N.V. Photographic bleach composition. 3,761,260, Cl. 96-60.00r.

Descary, J. Gilbert: *See—*
Truxa, Leslie; and Descary, J. Gilbert, 3,760,685.

Deszyck, Edward J., to Morris, Philip, Incorporated. Preparation of reconstituted tobacco. 3,760,815, Cl. 131-140.00c.

Detroit Sales Co.: *See—*
Goulder, Roy C., 3,761,008.

Deutsch Gold- und Silber-Scheideanstaldt vormals Roessler: *See—*
Kabisch, Gerhard; and Trube, Rudolf, 3,761,581.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Koberstein, Edgar; Lussling, Theodor; Noll, Ewald; Suchsland, Helmut; and Weigert, Wolfgang, 3,761,424.
Schreyer, Gerd; Theissen, Ferdinand; Wieberg, Otto; and Weigert, Wolfgang, 3,761,580.

Dexter, John B. External carriage adapter for aircraft parachute flare. 3,760,682, Cl. 89-1.50d.

Di Frank, Frank J.; Greiwe, Daniel L.; and Skudlarek, Walter R., to Owens-Illinois, Inc. Method and apparatus for collecting, stacking and handling sheet material. 3,761,078, Cl. 271-18.000.

Di Grasso, Leonard: *See—*
Good, William E.; Di Grasso, Leonard; and Hoffman, James D., 3,761,101.

Di Stefano, Vincent, to Alice Jewelry Co. Earring with threadably adjustable means for gradual piercing of lobe. 3,760,604, Cl. 63-12.000.

Diamond International Corporation: *See—*
Reifers, Richard F.; and Bixler, Kenneth D., 3,761,011.

Dicic, Zoran, to General Electric Company. Liquid cooling system for a rotating member. 3,760,603, Cl. 62-505.000.

Dick, Clarence R.: *See—*
Schneider, James G.; Dick, Clarence R.; and Ham, George E., 3,761,522.

Dick, Rudolf: *See—*
Volkmann, Klaus; and Dick, Rudolf, 3,761,947.

Dickerson, Richard T.: *See—*
Sun, Yun Chung; and Dickerson, Richard T., 3,761,534.

Dickey, Charles R. Non-aqueous solutions of magnesium salts. 3,761,411, Cl. 252-42.700.

Dickie, Ray A.; Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Electrodeposition of coating materials comprising particulate elastomers. 3,761,371, Cl. 204-181.000.

Didier, Wm., Mfg. Co.: *See—*
Foster, Douglas E., 3,760,571.

Dieckmann, Edward R. Balance board game. 3,761,084, Cl. 273-1.00r.

Diem, Don D.: *See—*
Bhaumik, Mani L.; Diem, Don D.; and Mann, Michael M., 3,761,838.

Diener, Fred L.: *See—*
Turner, John L.; and Diener, Fred L., 3,761,735.

Diet, Jean: *See—*
Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, 3,761,521.

Dieterman, Alfred Johannes: *See—*
Hey, Denis; and Dieterman, Alfred Johannes, 3,761,423.

Diforte, Mariano P., Jr. 55 Life belt. . 3,760,442, Cl. 9-316.000.

Dilar, Inc.: *See—*
Shahan, James F.; and Hofmann, Richard D., 3,760,859.

Dille, Roger M.: *See—*
McCoy, Drew E.; McEachern, Robert M.; and Dille, Roger M., 3,761,409.

Dillon, Janus J., to Food Equipment, Inc. Eviscerate waste handling system. 3,760,457, Cl. 17-11.000.

Dingli, Paul: *See—*
Labee, Francis A. M.; Preston, Edward George; Dingli, Paul; Hirsh, Ivan Y.; and Dyett, Derek Henry, 3,760,672.

Dirni, Andrianus Petrus, to U.S. Philips Corporation. Pressing device. 3,761,220, Cl. 425-407.000.

Dittrich, Wolfgang M.; and Gohde, Wolfgang H. Flow-through chambers for photometers to measure and count particles in a dispersion medium. 3,761,187, Cl. 356-246.000.

Ditz-Crane: *See—*
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,760,856.

Docherty, Donald B.; and Danner, Paul L. Furniture-carrying device. 3,761,107, Cl. 280-34.00b.

Docutel Corporation: *See—*
Barnes, Thomas R.; Chastain, George R.; and Wetzel, Don C., 3,761,682.

Doebel, Karl J.; and Francis, John E., to Ciba-Geigy Corporation. 3-Dibromomethylphthalic anhydride. 3,761,493, Cl. 260-346.300.

Doerman, Eryk Stefan, to Molins Limited. Testing of cigarettes and other similar rod-like articles. 3,760,631, Cl. 73-45.100.

Doerner, Karl: *See—*
Voegtlin, Karl; Zimmermann, Hans; and Doerner, Karl, 3,761,948.

Dohrmann Divisions, Envirotech Corporation: *See—*
Christensen, Mark Victor, 3,760,773.

Dolan, Donald T.: *See—*
Krallinger, Robert E.; Dolan, Donald T.; Wittmer, Kenneth; and Terrell, Jerry W., 3,761,610.

Dollarhide, Francis E., to Dow Chemical Company, The. Consolidation of particulate materials located in earthen formations. 3,760,880, Cl. 166-276.000.

Dominion Engineering Works, Limited: *See—*
Truxa, Leslie; and Descary, J. Gilbert, 3,760,685.

Donnelly, Robert M.: *See—*
McKenny, Vernon George; and Donnelly, Robert M., 3,761,899.

Donohue, James P.: *See—*
Patel, Ramesh S.; Gilberg, Robert C.; and Donohue, James P., 3,761,700.

Donovan, Rodney Edward: *See—*
Green, John William; and Donovan, Rodney Edward, 3,761,137.

Dornberger, Georg C. E., to Western Electric Company, Incorporated. Methods of and systems for measuring capacitance using a constant current charging technique. 3,761,805, Cl. 324-60.00c.

Douglass, Frank Irvin, to AMP Incorporated. Panel mounted electrical terminal. 3,760,496, Cl. 29-629.000.

Dow Chemical Company, The: *See—*
Barstow, Ormond E.; and Parth, William H., 3,761,376.
Dollarhide, Francis E., 3,760,880.
Gunsher, Jeffrey A., 3,761,543.
Kurihara, Norman H.; and Bublitz, Donald E., 3,761,475.
McGregor, Stanley D., 3,761,486.
Schneider, James G.; Dick, Clarence R.; and Ham, George E., 3,761,522.
Sun, Yun Chung; and Dickerson, Richard T., 3,761,534.

Dowell, Frederick Sidney; and Fisher, Ronald, to Dunlop Company Limited, The. Composite articles. 3,761,231, Cl. 29-195.00c.

Downie, John W., to United States of America, Army, mesne. Radar side lobe canceller input equalizer. 3,761,923, Cl. 343-5.00r.

Drehman, Lewis E.; Farha, Floyd E., Jr.; and Johnson, Marvin M., to Phillips Petroleum Company. Pretreatment of dehydrogenation feeds with group VIII metal oxides. 3,761,539, Cl. 260-683.300.

Drezin, Gary D.; Quackenbush, Edward C.; and Ericson, Alfred E., to Tidal Sales Corporation, mesne. Co-axial connector including positive clamping features for providing reliable electrical connections to the center and outer conductors of a co-axial cable 3,761,870, Cl. 339-177.00r.

Drummond, Glenn R.; and Clutter, Barry F., to Koppers Company, Inc. Modular unit for a floating dock system. 3,760,754, Cl. 114-.50f.

Drushel, Robert W., to Ex-Cell-O Corporation. Voltage surge electronic control circuit and method. 3,761,366, Cl. 204-129.200.

Du Pont de Nemours, E. I., and Company: *See—*
Bigelow, John Howard, 3,761,275.
Bither, Tom Allen, Jr., 3,761,572.
Dawson, Robert Louis, 3,761,452.
Gupta, Kashmiri L., 3,761,230.
Haglid, Frank R., 3,761,518.
Heckrotte, Robert Sherwood; and Scott, John Alexander, 3,761,559.
Seney, John Seymour, 3,761,029.

Duarte, Manuel G.: *See—*
Duarte, Ruben G.; and Duarte, Manuel G., 3,761,216.

Duarte, Ruben G.; and Duarte, Manuel G. Dough press. 3,761,216, Cl. 425-214.000.

Duckworth, Lenoward K., to Stevens, J. P., & Co., Inc. Panty hose garment having antistatic properties. 3,760,611, Cl. 66-177.000.

Ducloux, Maurice: *See—*
Balme, Maurice; and Ducloux, Maurice, 3,761,445.

Ducommun, George: *See—*
Adler, Karl; Ducommun, George; and Jenni, Rene, 3,761,921.

Dudley, Kenneth W.; MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Composite wave amplifier. 3,761,834, Cl. 330-61.00a.

Dummer, Robert E., to Bucyrus-Erie Company. Synchronized control system for telescoping booms. 3,760,688, Cl. 91-412.000.

Dunlap, Charles E.: *See—*
Callihan, Clayton D.; Srinivasan, Vadake R.; and Dunlap, Charles E., 3,761,355.

Dunlop Company Limited, The: *See—*
Dowell, Frederick Sidney; and Fisher, Ronald, 3,761,231.

Dunlop Holdings Limited: *See—*
Grossett, Alfred Harry, 3,760,858.

Dunn, Lloyd G.; Morran, James R.; and Peters, Donald L., to Aluminum Company of America. Container body and a method of forming the same. 3,760,751, Cl. 113-120.00h.

Dunn, William M. Method of making a composite heavy-duty bushing. 3,761,257, Cl. 75-208.00r.

Dupree, Paul Montgomery: *See—*
Coon, Arthur Delbert; Sheehan, Gerard Martin; and Dupree, Paul Montgomery, 3,761,298.

Durrant, Oliver W., to Babcock & Wilcox Company, The. System for controlling the injection of an inert gas into the air supplied a burner to inhibit the formation of NO$_x$. 3,760,776, Cl. 122-459.000.

Dwyer, John R., Jr.: *See—*
Ehrlich, Stephen J.; Dwyer, John R., Jr.; and Klein, Henry, 3,760,570.

Dx Antenna Company, Limited: *See—*
Terakawa, Koichi, 3,761,934.

Dyett, Derek Henry: *See—*
Labee, Francis A. M.; Preston, Edward George; Dingli, Paul; Hirsh, Ivan Y.; and Dyett, Derek Henry, 3,760,672.

Dynamit Nobel Aktiengesellschaft: *See—*
Kemper, Gustav-Wilhelm, 3,761,111.
Richter, Ulf, 3,761,007.
Wienand, Michael; Brinkmann, Hans; Rheinfeld, Peter; and Juch, Ernst, 3,761,555.

E. F. Industries, Inc., mesne: *See—*
Hanson, Ivor G.; Herbst, George; and Lewis, Jerry M., 3,761,004.

Eads, Harold O.; and Robison, James W., to Ames, O. Hedge shears. 3,760,500, Cl. 30-268.000.

East, Don G.; Eugene, Donald G.; Householder, Virgil R.; and Ling, George C., to International Business Machines Corporation. Non-metastable asynchronous latch. 3,761,739, Cl. 307-206.000.

Eastman Kodak Company: *See—*
De Mauriac, Richard Arthur; and Gaugh, Wilbur Seth, 3,761,279.
DeMauriac, Richard A.; and Landholm, Richard A., 3,761,270.
Evans, Francis John, 3,761,276.
Fields, Gary D., 3,761,171.
Fleming, James C.; and Shea, Michael D., 3,761,263.
Genesky, Leonard G.; Kottler, Franklin D.; and Allen, Robert F., 3,761,170.
Gilman, Paul Brewster, Jr.; Raleigh, Ronald George; and Merrigan, Joseph Andrew, 3,761,267.
Letzer, Edward K., 3,761,172.
Lidel, Darrel D., 3,761,299.
Miller, Warren J.; and Baxendale, Ralph W., 3,761,273.
Milton, Kirby Mitchell, 3,761,266.
Stoever, Hans Otto, 3,761,719.

Eberle, Dieter; Hanselmann, Dieter; and Prohaska, Hans, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Device for indicating the loading of vehicle seat. 3,761,659, Cl. 200-85.00a.

Ebinger, John W., to Thomas & Betts Corporation. Brazed seam ferrule. 3,761,872, Cl. 339-276.00t.

Ebuchi, Satoru; and Kazama, Takeo, to Okano Valve Seizo Kabushiki Kaisha. Freeze seal for sodium valves. 3,761,055, Cl. 251-214.000.

Eckardt, J. C., AG: *See—*
Bader, Horst, 3,760,847.

Eckles, Paul N., to Aerojet-General Corporation. High density spherical modules. 3,761,678, Cl. 219-343.000.

Eder, Ulrich; and Lorenz, Hans Peter, to Schering AG. Process for the preparation of hexahydroindan-4-carboxylic acid ester derivatives. 3,761,507, Cl. 260-468.00g.

Edge, Gordon Malcolm; and Lee, Peter William, to Warren, Godwin, Engineering Limited. Proximity switches. 3,761,736, Cl. 307-116.000.

Edinger, Ladislav Leslie. Self-illuminating tongue depressor and the like. 3,760,798, Cl. 128-16.000.

Edwards, Laurren C., Sr.: *See—*
Overcast, Cecil L.; Johnson, James D.; and Edwards, Laurren C., Sr., 3,760,900.

Edwards, Robert E.; and McKee, Donald H., to Moffitt, Roy M. Company, The. High pressure plate washer. 3,760,824, Cl. 134-144.000.

EG & G, Inc.: *See—*
Plake, William C., 3,761,812.

Egleme, Paul E., to Norton Company. Saw blade. 3,760,789, Cl. 125-17.000.

Egtvedt, Robert B., to Wolverine World Wide, Inc. Rivet spike for a shoe. 3,760,514, Cl. 36-67.00r.

Ehrhardt, Benonie C., to Allis-Chalmers Corporation. Transmission shift control. 3,760,647, Cl. 74-485.000.

Ehrlich, Stephen J.; Dwyer, John R., Jr.; and Klein, Henry, to Black and Decker Manufacturing Company, The. Centrifugally responsive brake for rotary tool. 3,760,570, Cl. 56-10.800.

Eichelberger, Edward Baxter, to International Business Machines Corporation. Method of level sensitive testing a functional logic system. 3,761,695, Cl. 235-153.0ac.

Eichenhofer, Josef, to Automatic Bar Feed Ltd. Pneumatic bar feeder control for multiple spindle screw machines. 3,760,661, Cl. 82-2.700.

Eidinov, Sergei Matveevich: *See—*
Ljibarsky, Efim Matveevich; Igunkin, Nikolai Vasilievich; and Eidinov, Sergei Matveevich, 3,760,504.

Eig, Merrill, to United States of America, Army. Non-metallic rotary bands. 3,760,736, Cl. 102-93.000.

Eilertson, Earl E., 1/3 each to Eilertson, Eugene E. and Vie, Arnold M. Extinguishing ashtray. 3,760,817, Cl. 131-235.00r.

Eilertson, Eugene E.: *See—*
Eilertson, Earl E., 3,760,817.

Ejiri, Satoki: *See—*
Kihara, Hidetoshi; Urifu, Tohoru; Yuasa, Osamu; and Ejiri, Satoki, 3,760,577.

Electrodics Incorporated: *See—*
Tirrell, Charles E., 3,761,369.

Electronic Associates Inc.: *See—*
Lowe, Richard Douglas, 3,761,826.

Electronic Monitors, Inc.: *See—*
Basham, Raymond B., 3,760,794.

Electronic Removal of Metals, Inc.: *See—*
Sennowitz, Kurt H., 3,761,673.

Elektro-Physick, Hans Nix & Dr.-Ing. E. Steingroever KG: *See—*
Steingroever, Erich, 3,761,804.

Elias, James A.; and Hook, Rollin E., to Armco Steel Corporation. Columbium treated, low carbon steel. 3,761,324, Cl. 148-36.000.

Elkhart Bridge & Iron, Inc.: *See—*
Campbell, William J. M., 3,761,109.

Eller, Timothy S.: *See—*
Lockitt, John A.; and Eller, Timothy S., 3,761,809.

Elliott Brothers (London) Limited: *See—*
Machin, James Robert; Colston, John Matthew; and Jibb, David John, 3,761,765.

Elliott, Charles Henry. Aluminum-production apparatus. 3,761,379, Cl. 204-225.000.

Ellis, George W.; Possin, George E.; and Wilson, Ronald H., to General Electric Company. Method and apparatus for storing and reading out charge in an insulating layer. 3,761,895, Cl. 340-173.60r.

Emery Industries (Canada) Ltd., mesne: *See—*
Hey, Denis; and Dieterman, Alfred Johannes, 3,761,423.

Emhart Corporation: *See—*
McIntyre, Daniel, 3,760,557.

Endo, Takaya: *See—*
Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, 3,761,274.

Endress, James W.: *See—*
Hiltz, Clayton D.; Mount, Gordon L.; and Endress, James W., 3,761,911.

Enfo Entwicklungs- und Forschungs-AG: *See—*
Rehsteiner, Fritz H., 3,760,848.

Engel, Gerhard, to Bosch, Robert, G.m.b.H. Arrangement for preventing excessive speeds in internal combustion engines. 3,761,729, Cl. 307-10.00r.

Engle, Gary W. Mini-wire control-system. 3,761,945, Cl. 340-147.00t.

English Electric Valve Company Limited: *See—*
Brady, Michael Barry, 3,761,764.
Wreathall, William Michael, 3,761,615.

English Numbering Machines Limited: *See—*
Cook, John Hayward, 3,761,015.

Englund, Gosta Roland; Lindelow, Claes-Goran; and La Motte, Bengt Ragnar, to Svenska Dataregister AB. Cash register mechanism. 3,761,694, Cl. 235-153.00r.

Ensign-Bickford Company, The: *See—*
Zilcosky, Hector Joseph, 3,761,329.

Entreprise de Recherches et d'Activites Petrolieres (Elf): *See—*
de LaJarte, Guy; and de Saint Palais, Jacques, 3,760,877.

Entwisle, John Hubert; Scrutton, Anthony; and Moss, Keith Graham, to Imperial Chemical Industries, Limited. Stripping of coated titanium electrodes. 3,761,312, Cl. 134-2.000.

Entwisle, John Hubert; Scrutton, Anthony; and Moss, Keith Graham, to Imperial Chemical Industries, Limited. Stripping of coated titanium electrodes. 3,761,313, Cl. 134-3.000.

Envirotech Corporation: *See—*
Davis, Steven S., 3,760,945.

Epoch Company Ltd.: *See—*
Matsumoto, Teruo, 3,760,511.

Epstein, Irving. Releasable hook. 3,761,122, Cl. 294-83.000.

Epstein, Maurice J.: *See—*
Kritz, Albert H.; and Epstein, Maurice J., 3,761,880.

Epton, Roger; McLaren, John Vincent; and Thomas, Trevor Henry, to Koch-Light Laboratories, Limited. Bonding of enzymes to polymeric materials. 3,761,357, Cl. 195-63.000.

Eranosian, John. Pendulum actuated electrical switch structure. 3,761,653, Cl. 200-61.510.

Erazier, George E., to Carborundum Company, The. Electrode nipple drilling machine. 3,761,191, Cl. 408-13.000.

Erdely, Alexander; and Capps, David B., to Parke, Davis & Company. 3-(5-Chloro-2-pyridyl)rhodanine and 3-(5-chloro-2-pyridyl)-5-(lower alkyl) rhodanines. 3,761,485, Cl. 260-294.80d.

Erfeling, Arthur, to Lohmann-Apparatebau Kommanditgesellschaft. Floor grate in cages or batteries of cages for keeping poultry. 3,760,769, Cl. 119-78.000.

Ericson, Alfred E.: *See—*
Drezin, Gary D.; Quackenbush, Edward C.; and Ericson, Alfred E., 3,761,870.

Erlandson, Paul M., to Continental Can Company. Method and apparatus for resistance welding utilizing application of high pressure. 3,761,671, Cl. 219-64.000.

Ernst, Alfred. Method and apparatus for producing shear pins for use in a hardness testing apparatus. 3,760,487, Cl. 29-407.000.

Ernst, Alfred. Durometer. 3,760,635, Cl. 73-82.000.

Ernst, Robert R., to Sybron Corporation. Method and apparatus for continuous ethylene oxide sterilization. 3,761,224, Cl. 21-58.000.

Errede, Louis A., to Minnesota Mining and Manufacturing Company. Toxicant compositions for aquatic use. 3,761,238, Cl. 71-67.000.

Eschborn, Heinrich Winter; and Schuster, Wilhelm. Method of producing metal particles. 3,761,548, Cl. 264-8.000.

Eskeli, Michael. Compressing centrifuge. 3,761,195, Cl. 415-1.000.
Espasa, Arcadio. Device for imparting reciprocatory motion to a moving element. 3,760,641, Cl. 74-57.000.
Espino, Ramon L.; Sherwin, Martin B.; and Sugerman, Gerald, to Chem Systems, Inc. Butane cracking. 3,761,538, Cl. 260-683.00r.
Essilor International (Compagnie Generale d'Optique): *See—*
Boudet, Jean; Wajs, Georges; Gomond, Gerard; and Billault, Pierre, 3,761,208.
Esso Production Research Company: *See—*
Kiel, Othar M., 3,760,881.
Esso Research and Engineering Company: *See—*
Jervis, Graham James; and Robson, Robert, 3,761,405.
Scott, John; and Winn, Russell Edward, 3,760,448.
Ungar, Israel S.; and Scher, Herbert I., 3,761,338.
Eta A.G. Ebauches Farbrik: *See—*
Stamm, Heinrich, 3,760,642.
Etablissments Carpano & Pons S.A.: *See—*
Mimeur, Robert, 3,761,105.
Etat Francais: *See—*
Joyard, Maurice L.; and Latapie, Jean, 3,760,652.
Ethyl Corporation: *See—*
Brendel, Gottfried J.; and Shepherd, Lawrence H., Jr., 3,761,528.
Napolitano, John P., 3,761,520.
Wall, Henry H., Jr., 3,761,361.
Eue, Ludwig: *See—*
Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,761,490.
Eugene, Donald G.: *See—*
East, Don G.; Eugene, Donald G.; Householder, Virgil R.; and Ling, George C., 3,761,739.
Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
Berger, Rolf, 3,760,957.
Evans, Arthur. Machine for cleaning semiconductive wafers. 3,760,822, Cl. 134-99.000.
Evans, Donald: *See—*
Welch, William; Evans, Donald; Neely, Ned; and Lockhart, Bruce, 3,760,967.
Evans, Francis John, to Eastman Kodak Company. Photographic element containing monodispersed unfogged silver halide grains, chemically sensitized internally and externally. 3,761,276, Cl. 96-108.000.
Evans, Gillian Margaret: *See—*
Borrow, Antony; Broadbent, Douglas; Carter, Stephen Barnaby; Evans, Gillian Margaret; Hemming, Harold George; Hesp, Barrie; and Parton, Carol, 3,761,512.
Evans, Noel Edward, to Sealectro Limited. Punched card readers. 3,761,681, Cl. 235-61,11c.
Evans, Norol T., to Hughes Aircraft Company. Digital mean level detector. 3,761,922, Cl. 343-5.0dp.
Evans Products Company: *See—*
Wolak, Thomas J., 3,760,536.
Evans, Richard I.: *See—*
Ruthel, Walter W.; DeLong, Jon C.; and Evans, Richard I., 3,761,384.
Evansville Veneer & Lumber Co.: *See—*
Slaats, Mathew A.; Ross, Arthur W.; and Blessinger, James E., 3,761,670.
Eversmann, Werner: *See—*
Rohl, Hermann; Eversmann, Werner; Hegenberg, Peter; and Hellemanns, Gerhard, 3,761,517.
Evertz, Egon: *See—*
Schmit, Damjan; and Evertz, Egon, 3,761,321.
Every, Richard L., to Continental Oil Company. Method of transporting sulfur by pipeline. 3,761,136, Cl. 302-66.000.
EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.h. Firma: *See—*
Schmidt, Gerhard; Ritter, Klaus; and Gott, Hans (said Schmidt and said Ritter assors. to), 3,760,851.
Ewald, Jerome T.: *See—*
Lewis, Richard L.; Ewald, Jerome T.; and Shields, Martin A., 3,761,140.
Ex-Cell-O Corporation: *See—*
Drushel, Robert W., 3,761,366.
Schrader, William A., 3,761,684.
Exatest Messtechnik GmbH: *See—*
Kubisiak, Helmut; and Sorgenicht, Dietrich, 3,761,182.
Excelermatic, Inc.: *See—*
Kraus, Charles E., 3,760,646.
Exmet Corporation: *See—*
Felsenthal, Robert M., 3,760,470.
Ezaki, Norio: *See—*
Tsuruoka, Takashi; Shomura, Takashi; Ezaki, Norio; Akita, Eiichi; Inoue, Shigeharu; Fukatsu, Shunzo; Amano, Shoichi; Watanabe, Hiroshi; and Niida, Taro, 3,761,588.
Fairchild Camera and Instrument Corporation: *See—*
Weckler, Gene P., 3,761,326.
Faith, William T., Jr.: *See—*
Noe, Frederick F.; and Faith, William T., Jr., 3,761,353.
Falize, Claude: *See—*
Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, 3,761,521.
Falk, David O.: *See—*
Norton, Charles J.; and Falk, David O., 3,760,879.
Fannin, Loyd W.: *See—*
Curtis, Burnell P., Jr.; Fannin, Loyd W.; Paulik, Frank E.; and Price, Jerry L., 3,761,579.
Farbwerke Hoechst Aktiengesellschaft: *See—*
Baessler, Konrad; and Mayer, Kurt, 3,761,425.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Herwig, Walter; and Freund, Gunter, 3,761,450.
Radscheit, Kurt; Stache, Kelkheim Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,761,464.
Farcilli, Andre: *See—*
Warnant, Julien; and Farcilli, Andre, 3,761,591.
Farha, Floyd E., Jr.: *See—*
Drehman, Lewis E.; Farha, Floyd E., Jr.; and Johnson, Marvin M., 3,761,539.
Farnden, Robert W.; Silverstone, Roger; and Hendricks, John E., to Industrial Electronic Engineers, Inc. Multiposition rear projection display apparatus. 3,761,169, Cl. 353-25.000.
Farrey, Harold E.: *See—*
Bessen, Irwin I.; and Farrey, Harold E., 3,761,302.
Fathauer, George H., to Burrows Equipment Company. Digital reading moisture tester. 3,761,810, Cl. 324-61.00r.
Fedco, Inc.: *See—*
Morine, Richard L.; and Hokes, James J., 3,760,989.
Federal Tool & Plastics, a division of UCA Corporation: *See—*
Ostrowsky, Efrem M., 3,760,988.
Felsenthal, Robert M., to Exmet Corporation. Apparatus and method for producing expanded metal. 3,760,470, Cl. 29-6.100.
Ferguson, Eric Tapley, to U.S. Philips Corporation. Hydrostatic radial bearing. 3,761,149, Cl. 308-122.000.
Ferguson, Harry, Limited, mesne: *See—*
Rolt, Anthony P. R.; and Gardner, Derek, 3,760,922.
Ferguson, Milton A. Parts cleaning apparatus. 3,760,823, Cl. 134-141.000.
Ferm, Richard L., to Chevron Research Company. Process for preparing synthetic aggregate. 3,761,291, Cl. 106-28.000.
Fernald, Olaf H. Optical graphic data tablet. 3,761,877, Cl. 340-146.3sy.
Fernandez, Peter; Rosin, Seymour; Scidmore, Wright H.; and Sigman, Gordon H., Jr., to United States of America, Army. Stabilized optical tracking device. 3,761,714, Cl. 250-348.000.
Fernandez, Roman: *See—*
Berry, Pierre Rene; and Fernandez, Roman, 3,760,455.
Ferrero, Aldo. Composition for making macaroon-type baked products. 3,761,281, Cl. 99-94.000.
Ferrier, Ted L., Jr. Combined magazine receptacle for used blades and protective cover for safety razor heads having blades therein. 3,760,938, Cl. 206-16.0bc.
Ferris, Donald L.; and Zincone, Robert, to United Aircraft Corporation. Helicopter rotor with redundant load carrying capability. 3,761,199, Cl. 416-134.000.
Ferris, Leslie M.: *See—*
Mailen, James C.; and Ferris, Leslie M., 3,761,564.
Ferro Corporation: *See—*
Meek, William H., 3,761,519.
Fether, Kenneth B.; Brickwood, David B. L.; and Sampson, Peter Steer, to Imperial Tobacco Group Limited. Tobacco cartridge for pipe-like smoking device. 3,760,814, Cl. 131-3.000.
Fiberglas Canada Limited: *See—*
Shutt, Thomas Clifford, 3,761,294.
Fichte, Frank: *See—*
Vollrath, Karl-Hans; Paul, Wolfgang; and Fichte, Frank, 3,761,077.
Fields, Gary D., to Eastman Kodak Company. Negative-positive, positive-positive exposure station. 3,761,171, Cl. 355-3.000.
Fierstine, Burton A., 1/2 to Shively Bros., Inc. Fluid devices. 3,761,206, Cl. 418-16.000.
Filmamatic Corporation, mesne (formerly Kimball & Associates, Inc.): *See—*
Miller, William S., 3,760,705.
Finch, Lawrence N., II: *See—*
Silbiger, Richard J.; Finch, Lawrence N., II; and Logan, Ralph W., 3,761,935.
Findlay, John A. Epoxidized hydrocarbon acid esters having juvenile hormone activity. 3,761,495, Cl. 260-348.00a.
Fink, Werner; Kircher, Dieter; and Rauschenbach, Reinhard, to ITT Industries, Inc. Mounting arrangement for wheel speed sensors. 3,761,751, Cl. 310-168.000.
Finkl, A., & Sons Co.: *See—*
Finkl, Charles W., 3,761,242.
Finkl, Charles W., to Finkl, A., & Sons Co. Method of treating molten metal by gas purging through a porous plug. 3,761,242, Cl. 75-13.000.
Finley, Carl E.: *See—*
Lapins, Daniel W.; and Finley, Carl E., 3,761,222.
Finster, Leslie P.; Kelly, William J.; Naegele, Erich Otto; Petrovsek, Richard J.; Reader, Trevor D.; Reynolds, Warren A.; Sekse, Torkjell; Sevilla, Ernesto G.; and Sours, William A., to Cogar Corporation. Tape system. 3,761,906, Cl. 340-174.10a.
Firestone Tire & Rubber Company, The: *See—*
Kibler, Richard W., 3,760,578.
Firestone Tire & Rubber Company, The, mesne: *See—*
Rothert, Horst; and Karasiak, Wolf, 3,761,059.
Fischer, Artur: *See—*
Fischer, Artur; and Muller, Jean-Nicolas (said Muller assor. to said), 3,760,802.

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Fischer, Artur; and Muller, Jean-Nicolas, said Muller assor. to said Fischer, Artur. Supporting device for fractured tubular bones. 3,760,802, Cl. 128-92.0bc.
Fish, William M., to Aluminum Company of America. Anti-pollution method. 3,760,565, Cl. 55-71.000.
Fisher, Delbert J.: *See—*
Grote, James E.; and Fisher, Delbert J., 3,760,715.
Fisher, Howard M., to Pennsylvania Engineering Corporation. Metallurgical vessel drive. 3,760,654, Cl. 74-661.000.
Fisher, Richard R.: *See—*
Crossman, Richard L.; Fisher, Richard R.; and Kofor, Harry T., 3,760,899.
Fisher, Ronald: *See—*
Dowell, Frederick Sidney; and Fisher, Ronald, 3,761,231.
Flachmann, Burkhard: *See—*
Kaltschmidt, Horst; Scholler, Peter; and Flachmann, Burkhard, 3,761,817.
Flaherty, Larry Paul; and Hale, William Alton, to Recognition Equipment Incorporated. Recognition unit for optical character reading system. 3,761,876, Cl. 340-146.3ma.
Fleming, James C.; and Shea, Michael D., to Eastman Kodak Company. Diazotype compositions and photographic processes. 3,761,263, Cl. 96-49.000.
Fleming, John Stuart, to Floxite Company, Inc. Reflective lighted mirror. 3,761,705, Cl. 240-4.200.
Fleury, Gerard, to Societe Nationale Industrielle Aerospatiale. Automatic maximum-torque indicator associated with a shaft and its use in helicopters. 3,761,693, Cl. 235-151.300.
Florjancic, Peter. Closure device. 3,760,696, Cl. 92-129.000.
Floxite Company, Inc.: *See—*
Fleming, John Stuart, 3,761,705.
Fluid Devices Limited: *See—*
Larner, Donald Alexander, 3,760,843.
Flynn, Gary M., to Broadcast Products, Inc. Broadcast station logger and printout system. 3,761,888, Cl. 340-172.500.
Flynn, Joseph C.; Panas, Walter; and Bonino, Joseph S., to Wheaton Industries. Dual mold clamping apparatus. 3,761,219, Cl. 425-249.000.
FMC Corporation: *See—*
Lancelot, Charles J.; and MacKellar, Donald G., 3,761,412.
Mesiah, Raymond N., 3,761,474.
Foard, James H. Jr.: *See—*
Shortlidge, Donald L.; Christensen, James; and Foard, James H. Jr., 3,760,498.
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Fohrhaltz, Howard A., to General Electric Company. Direct drive and stop mechanism for load tap changer. 3,761,650, Cl. 200-17.00r.
Follen, Robert J.: *See—*
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Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Rotary electric machines. 3,761,753, Cl. 310-185.000.
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Foster, Douglas E., to Didier, Wm., Mfg. Co. Reciprocating sickle assembly. 3,760,571, Cl. 56-298.000.
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Fox, Charles L., Jr., to Research Corporation. Silver sulfadiazine used in the treatment of burns. 3,761,590, Cl. 424-228.000.
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Fritzsche, Rudolf; Hofer, Friedrich Wilhelm; and Schmid, Rudi, to Bosch, Robert, G.m.b.H. Flow regulating valve for pressure fluids. 3,760,830, Cl. 137-101.000.
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Fujimoto, Yoshiaki, to Northrop Corporation. Commutator generator for radio navigation receiver alignment. 3,761,932, Cl. 343-179.000.
Fujimura, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Light exposure apparatus for forming fluorescent screens of color picture tubes. 3,760,698, Cl. 95-1.000.
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- Fulcher, Junis H. Storm protector for exposed glass and the like. 3,760,541, Cl. 52-203.000.
- Furkert, Herbert, to Chemiebau Dr. A. Zieren GmbH & Co. KG. Process for the cracking of ammonium sulfate. 3,761,575, Cl. 423-356.000.
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- Gardiner, Terence Edward Gouvenot, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Bladed rotors. 3,761,200, Cl. 416-220.000.
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- Gardner-Denver Company: *See—*
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- Garlock Inc.: *See—*
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- Gates, Paul, to Applied Power Inc. Dynamic modulator. 3,760,840, Cl. 137-493.000.
- Gates Rubber Company, The: *See—*
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- Gatti, Anthony R., to Shell Oil Company. Sulfide precipitated catalysts. 3,761,397, Cl. 208-143.000.
- Gaub, Walter; Von Konig, Anita; Moll, Franz; Muller-Bardorff, Wolfgang; and Saleck, Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Silver halide element containing a benzimidazoline-Z-thione-N,N'-dicarbonic acid ester stabilizing agent. 3,761,278, Cl. 96-109000.
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- Geiger, Joseph A. Easy-opening device for sheet metal containers and the like and method of producing such devices. 3,760,752, Cl. 113-121.00c.
- Gelbrich, Werner W., to Borg-Warner-Stieber GmbH. Roller type freewheel clutch. 3,760,914, Cl. 192-45.000.
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- Genesky, Leonard G.; Kottler, Franklin D.; and Allen, Robert F., to Eastman Kodak Company. Projection lamp mounting apparatus. 3,761,170, Cl. 353-87.000.
- Georget, Philippe; and Gauthier, Michel, to Compteurs Schlumberger. Installation for reading at a distance information in local stations. 3,761,878, Cl. 340-150.000.
- Geri, Sergio; Miglierina, Angelo; and Ceccato, Giovanni, to Montecatini Edison S.p.A. Vulcanizable fluorinated polymer compositions, process for vulcanization, and vulcanized elastomer obtained therefrom. 3,761,454, Cl. 260-80.770.
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- Gibson, John C.; Fuchs, Siegfried H.; and Vaniman, Robert S., to GTE Automatic Electric Laboratories, Incorporated. Trunk circuit identification. 3,761,635, Cl. 179-18.0fh.
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- Giese, Ralf; Korner, Paul; and Rauthmann, Axel, to Ford Motor Company. Safety seat with a safety belt, in particular for motor vehicles. 3,761,127, Cl. 297-389.000.
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  - Sastri, Aiyaswami S., 3,761,373.
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- Gilsinger, Frederick M., to Simmons Company. Positive clutch with dual releasing cams. 3,760,919, Cl. 192-89.00a.
- Giraud, Francois L., to LTV Aerospace Corporation, mesne. Transportation installation, particularly for passengers. 3,760,738, Cl. 104-150.000.
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- Gladstone, Shaul, to Witco Chemical Corporation. Cuprous thiocyanate dentrifrice composition. 3,761,583, Cl. 424-48.000.
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- Gleason, Patrick J., to Lumco Manufacturing Company. Cutting tool assembly. 3,760,475, Cl. 29-97.000.
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- Glorisi, Frank. Safety system for swimming pool. 3,760,432, Cl. 4-172.130.
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- Goulder, Roy C., to Detroit Sales Co. Expansion arbor. 3,761,008, Cl. 279-2.000.
- Gower, Gordon E. Human body power converter. 3,760,905, Cl. 185-2.000.
- Grable, Donovan B., to Wasteland Reclamation Corporation. Apparatus and method for repositioning earthen material. 3,761,132, Cl. 299-7.000.
- Grace, W. R., & Co.: *See—*
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- Graf, Felix; Hablutzel, Karl; and Wirz, Armin, to Rieter Machine Works, Ltd. Heater drawroll for draw-twisting, draw-winding and spin-draw-winding machines. 3,761,666, Cl. 219-10.490.
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- Graven, Robert M. Pen light, a graphical input device for a computer. 3,761,620, Cl. 178-18.000.
- Gray, Joe W.; Hartnell, Geoffrey W.; and Legg, James C., to United States of America, Atomic Energy Commission. Method of locating defects in a high-voltage insulating tube. 3,761,720, Cl. 250-302.000.
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- Green, Donald T., to Picker Corporation. Tire inspection apparatus. 3,761,722, Cl. 250-490.000.
- Green, John William; and Donovan, Rodney Edward, to Westinghouse Brake and Signal Company, Limited. Braking equipment. 3,761,137, Cl. 303-3.000.
- Green, Ronald E., to Red Jacket Manufacturing Company. Submersible electric motor. 3,761,750, Cl. 310-87.000.
- Greenwood, Arthur R.; and Vesily, Kenneth D., to Universal Oil Products Company. Continuous reforming-regeneration process. 3,761,390, Cl. 208-65.000.
- Greever, James E., to Carrier Corporation. Method of making soldered joints. 3,760,481, Cl. 29-157.30r.
- Greiff-Werke Gustav Winkler KG: *See—*
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- Griffin, Dana K.; and Wilson, John R. Dust mop with throw away mopping element. 3,760,450, Cl. 15-229.00b.
- Griffith, Edward G., to Kearney & Trecker Corporation. Tool storage and identification system. 3,760,489, Cl. 29-568.000.
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- Groening, Franklin E., to PPG Industries, Inc. Preparation of titanium carbide. 3,761,576, Cl. 423-440.000.
- Groom, Jay L., Jr.: *See—*
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  - Van Der Heijue, Martin Clemens; and Groothoff, Adriaan Jacob, 3,761,849.
- Grosbard, Gregory. Magnetically suspended rotor assembly. 3,761,148, Cl. 308-10.000.
- Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Multi-accumulator hydraulic suspension system. 3,761,110, Cl. 280-124.00f.
- Grossett, Alfred Harry, to Dunlop Holdings Limited. Pneumatic tires. 3,760,858, Cl. 152-361.000.
- Grossman, Leonard N.; and Brigham, Donald A., to General Electric Company. Process for controlling surface area of ceramic powders. 3,761,547, Cl. 264-.500.
- Grosso, Frank A.: *See—*
  - Benbenek, Waldyn J.; Grosso, Frank A.; and Wellspeak, James G. Lee, 3,761,074.
- Grote, James E.; and Fisher, Delbert J. Machine for slicing sausage and applying the slices to pizza in a predetermined pattern. 3,760,715, Cl. 99-450.100.
- Groudel, Charles; Giraudeau, Yves; and Geantet, Jean-Claude, to Societe Surgerienne de Constructions Mecaniques. Emergency stop device for an engine supplied by the injection of liquid fuel. 3,760,784, Cl. 123-198.00d.
- Grove, Leroy K. Electromagnet for brakes and clutches. 3,760,909, Cl. 188-138.000.
- Grupen, William Brightman: *See—*
  - Chin, Gilbert Yukyu; Grupen, William Brightman; and Tisone, Thomas Charles, 3,761,904.
- Gruppo Lepetit S.p.A.: *See—*
  - Maggi, Nicola, 3,761,468.
- GTE Automatic Electric Laboratories Incorporated: *See—*
  - Campbell, Alvin Edward, 3,760,659.
  - Gibson, John C.; Fuchs, Siegfried H.; and Vaniman, Robert S., 3,761,635.
  - Lind, Paul U., 3,761,642.
- GTE Sylvania Incorporated: *See—*
  - Bamberg, William I.; Gungle, Warren C.; and Koury, Frederic, 3,761,758.
- GTI Corporation: *See—*
  - Bailey, Richard J., 3,761,861.
- Gueret, Herve; and Advenier, Pierre, to Societe des Procedes Modernes d'Injection SOPROMI. Electromagnetic injectors for internal combustion engines. 3,761,023, Cl. 239-585.000.
- Guetlhuber, Friedrich, to Deggendorfer Werft and Eisenbau GmbH. Cooler construction for circulating controlled amounts of heat carrier from a reaction vessel. 3,760,870, Cl. 165-35.000.
- Guier, William. Apparatus for supporting pipe tongs. 3,760,658, Cl. 81-57.340.
- Gulati, Ved K.: *See—*
  - Hansen, Richard C.; and Gulati, Ved K., 3,761,954.
- Gulf Research & Development Company: *See—*
  - Bozik, John E.; Ondrey, John A.; and Swift, Harold E., 3,761,536.
  - Bryson, Millard C.; Stauffer, Harry C.; and Torkos, Thomas M., 3,761,388.
  - McKinney, Joel D.; and Paraskos, John A., 3,761,399.
- Gungle, Warren C.: *See—*
  - Bamberg, William I.; Gungle, Warren C.; and Koury, Frederic, 3,761,758.
- Gunsher, Jeffrey A., to Dow Chemical Company, The. Polyphosphorus esters. 3,761,543, Cl. 260-929.000.

Gupta, Kashmiri L., to Du Pont de Nemours, E. I., and Company. Autoclave pressure control system. 3,761,230, Cl. 23-290.000.

Gurman, Marvin: *See—*
Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,760,546.

Gusaras, Vladas: *See—*
Jedynak, Leo; and Gusaras, Vladas, 3,761,649.

Gustafson, Richard N.: *See—*
Anderson, David W.; Gustafson, Richard N.; Kaminsky, Paul E.; and Wetzel, Joseph A., 3,761,881.

Guth, Lauren W., to General Electric Company. Dish-washing machine rack adjustment assembly. 3,761,153, Cl. 312-351.000.

Guttmann, Stephan: *See—*
Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,459.
Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,460.
Pless, Janos; Guttmann, Stephan; and Boissonnas, Roger, 3,761,461.

Haase, Robert L., to Aero Wash Systems, Inc. Pressure wash control system. 3,760,982, Cl. 222-63.000.

Hablutzel, Karl: *See—*
Graf, Felix; Hablutzel, Karl; and Wirz, Armin, 3,761,666.

Hack, Helmuth: *See—*
Schafer, Werner; Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,761,490.

Hackmann, Johannes Thomas; and Kuipers, Johannes, to U.S. Philips Corporation. Methods of controlling nematodes and fungi using 3,4-dichlorofuroxan. 3,761,593, Cl. 424-272.000.

Hadam, Wilhelm; and Bauknecht, Gunter, to Stoll, H., and Company. Method and apparatus for data transmission in knitting machines. 3,760,610, Cl. 66-154.00a.

Haddock, Ernest, to Shell Oil Company. Herbicidal alanine derivatives. 3,761,508, Cl. 260-471.00a.

Haditsch, Karl, to McDowell-Wellman Engineering Company. Load compensated car dumper clamp. 3,760,961, Cl. 214-55.000.

Haede, Werner: *See—*
Radscheit, Kurt; Stache, Kelkheim Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,761,464.

Haeussler, Ernst. Device for mounting wall plates. 3,760,542, Cl. 52-235.000.

Hagenah, Hans-Gerhard, to Union Sils, van de Loo & Co. Pedal for bicycles. 3,760,653, Cl. 74-594.400.

Hagiwara, Shoji: *See—*
Tazaki, Kimio; Yamamoto, Hajime; Hinoshita, Shigehiko; and Hagiwara, Shoji, 3,761,818.

Haglid, Frank R., to Du Pont de Nemours, E. I., and Company. 2-Hydroxy-4-methylsulfinyl-butyric acid and derivatives. 3,761,518, Cl. 260-535.00r.

Hagstrom, Arthur A., to Teletype Corporation. Web metering mechanism. 3,761,000, Cl. 226-37.000.

Hahn, Erich: *See—*
Trankner, Werner; Hahn, Erich; Hahn, Werner; and Tillig, Helmut, 3,760,700.

Hahn, Werner: *See—*
Trankner, Werner; Hahn, Erich; Hahn, Werner; and Tillig, Helmut, 3,760,700.

Haile, Ernest. Foot-operated chord xylophone. 3,761,598, Cl. 84-444.000.

Hailey, Robert E., Jr.: *See—*
Harper, W. Harold; Thrift, William L.; and Hailey, Robert E., Jr., 3,761,943.

Halcon International, Inc.: *See—*
Khoobiar, Sargis, 3,761,516.

Hale, William Alton: *See—*
Flaherty, Larry Paul; and Hale, William Alton, 3,761,876.

Hall, Edwin M., Jr., to General Electric Company. Hose storage system for a washing appliance. 3,760,838, Cl. 137-355.170.

Hall, Jon. Multiple purpose field increasing optical device. 3,761,162, Cl. 350-255.000.

Hall, Robert N., to General Electric Company. Germanium gamma detectors having non-ideal contacts and deep level inducing impurities therein. 3,761,711, Cl. 250-370.000.

Hallee, Donald O.; and Menot, Robert, to Foxboro Company, The. Computer directed process control system with analog input multiplexer. 3,761,889, Cl. 340-172.500.

Hallett, Robert J.: *See—*
Alvarez, Joseph A.; Barner, Robert P., Jr.; and Hallett, Robert J., 3,761,883.

Halliburton Company: *See—*
Hershey, Elmer E.; and Crommett, Donald L., 3,760,954.

Ham, George E.: *See—*
Schneider, James G.; Dick, Clarence R.; and Ham, George E., 3,761,522.

Hama, Shigeru: *See—*
Takeichi, Kenzo; and Hama, Shigeru, 3,761,704.

Hamano, Toyosaburo: *See—*
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,760,867.

Hamilton, John M. Field formation display device. 3,760,520, Cl. 40-102.000.

Hamilton Tool Company, The: *See—*
Huffman, Harold W.; and Wilmer, James A., 3,761,300.

Hamilton Watch Company: *See—*
Dargent, Bruno M., 3,760,984.

Hamm, Alton B. Rotary dredge cutter-head having spaced guard members. 3,760,518, Cl. 37-57.000.

Hamma, Karlmann: *See—*
Baurle, Horst; Veil, Karl; Hamma, Karlmann; and Mann, Egon, 3,761,141.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 3,761,479.

Hammerstrom, Kenneth O. Door for hangars and other structures. 3,760,861, Cl. 160-184.000.

Hammond, James C.; Jamerson, Charles D., Jr.; and Kiefer, Michael E., to Trienco, Inc. Apparatus for generating, purifying and delivering hydrogen for analyzers and the like. 3,761,382, Cl. 204-266.000.

Hamnett, Jack Smith: *See—*
Muir, Eric Thomas; Hamnett, Jack Smith; and Majury, Ronald Alfred, 3,760,657.

Hamren, Glen C. Flip type casting float. 3,760,527, Cl. 43-44.880.

Handelman, Philip. Position indicating temporary buoy consisting of a telescopic collapsible pole. 3,760,441, Cl. 9-8.00r.

Hanig, Gerndt: *See—*
Lowicki, Norbert; and Hanig, Gerndt, 3,761,570.

Hanks, James V.; and Dahl, Eugene L., to Horton Manufacturing Company, Inc. Single position fluid operated clutch. 3,760,916, Cl. 192-67.00r.

Hannart, Joseph: *See—*
Alphonse, Jean Alfred; and Hannart, Joseph, 3,761,483.

Hanselmann, Dieter: *See—*
Eberle, Dieter; Hanselmann, Dieter; and Prohaska, Hans, 3,761,659.

Hanseman, Carl, to Technicolor, Inc. Video monochrom to color conversion. 3,761,607, Cl. 178-5.40r.

Hansen, George E.: *See—*
Staffin, Herbert Kenneth; Henley, Ernest J.; and Hansen, George E., 3,760,800.

Hansen, Richard C.; and Gulati, Ved K., to Xerox Corporation. Stylus. 3,761,954, Cl. 346-139.00c.

Hanson, Gene Richard: *See—*
Scheitein, George Edward; and Hanson, Gene Richard, 3,761,116.

Hanson, Ivor G.; Herbst, George; and Lewis, Jerry M., to E. F. Industries, Inc., mesne. Assembly for explosively bonding together metal layers and tubes. 3,761,004, Cl. 228-3.000.

Hanson, Marlin M.: *See—*
Lo, David S.; Hanson, Marlin M.; Kaske, Alan D.; and Manikowski, Donald M., 3,761,155.

Hansson, Alphonse. Treatment of leather. 3,761,304, Cl. 117-76.00r.

Hansson, Hans John Olof, to Hansson, Lars Jan Herman and Andersson, Anders Walter. Seals for rotary and axially movable shafts. 3,761,099, Cl. 277-37.000.

Hansson, Lars Jan Herman: *See—*
Hansson, Hans John Olof, 3,761,099.

Hanton, Daniel, to Compagnie de Saint-Gobain. Manufacture of rigid phenol-aldehyde foams. 3,761,209, Cl. 425-4.00c.

Hanzawa, Teruo: *See—*
Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, 3,761,274.

Hara, Atsushi; and Ohno, Yoshitaka, to Nippon Kokan Kabushiki Kaisha. Apparatus for examining the inner surface of pipes. 3,761,623, Cl. 178-68.000.

Hara, Tohru; and Asao, Ichiro, to Matsushita Electric Industrial Company, Limited. Process for manufacturing a ternary material. 3,761,306, Cl. 117-106.00a.

Hardesty, Edwin Charles; Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, said Hardesty assor. to Western Electric Company, Incorporated and said Krumreich, Mulbarger and Walden assors. to Bell Telephone Laboratories, Icorporated. Connector. 3,761,869, Cl. 339-99.00r.

Hardman, Wendell G.: *See—*
Brunhart, Werner; and Hardman, Wendell G., 3,761,759.

Hardy, George F.; and David, Morton E., 50% to Bell Television, Inc. and 50% to Holmes Electric Protective Co. Alarm system. 3,761,914, Cl. 340-310.000.

Haricht, Ernst; and Nibls, Bernard, to Ciba-Geigy Corporation. 5-(2-Methylene-acyl-benzofuran-2-carboxylic acids and pharmaceutically acceptable salts thereof. 3,761,494, Cl. 260-346.20r.

Harlin, Lester E., to Borg-Warner Corporation. Method for assembling a rotary sliding vane compressor. 3,760,478, Cl. 29-156.40r.

Harlow, Justin E., III; Swann, Richard C. G.; Penton, Jack I.; and Bakker, Martin B., to International Telephone and Telegraph Corporation. Planar silicon gate MOS process. 3,761,327, Cl. 148-187.000.

Harman, Charles P.: *See—*
Bennett, David B.; Harman, Charles P.; and Follen, Robert J., 3,761,930.

Harnden, John D., Jr.; and Krnrumpf, William P., to General Electric Company. Small electrical apparatus powered by induction cooking appliances. 3,761,668, Cl. 219-10.430.

Harnisch, Heinz: *See—*
Hinz, Arnulf; and Harnisch, Heinz, 3,761,573.

Harnischfeger Corporation: *See—*
Gordon, Richard O., 3,760,591.
Johnston, Roger L., 3,760,689.

Harper, Robert; Wong, Jeffrey; and Zavadil, David, to Raytheon Company. Circuit velocity step taper for suppression of backward wave oscillation in electron interaction devices. 3,761,760, Cl. 315-3.600.

Harper, W. Harold; Thrift, William L.; and Hailey, Robert E., Jr., to United States of America, Navy. Dual-band array antenna. 3,761,943, Cl. 343-776.000.

Harris, Edward T.: *See—*
Harris, Harlan N.; and Harris, Edward T., 3,760,907.

Harris, Harlan N.; and Harris, Edward T. Braking device for carriage type drafting machines. 3,760,907, Cl. 188-43.000.

Harris, Wayne C., to Philco-Ford Corporation. Automotive radio rundown noise eliminator. 3,761,823, Cl. 325-313.000.

Harrison, Robert S.; and Marcum, Harold E., to Ford Motor Company. Carburetor throttle valve positioner. 3,760,785, Cl. 123-198.0db.

Harsco Corporation: *See—*
Clucker, Richard V.; and Kennedy, Roland R., 3,760,962.

Hartman, Robert B., to Remington Arms Company, Inc. Archery bow arrow rest. 3,760,788, Cl. 124-41.000.

Hartnell, Geoffrey W.: *See—*
Gray, Joe W.; Hartnell, Geoffrey W.; and Legg, James C., 3,761,720.

Hartshorn, Frank: *See—*
Stapleton, Peter L.; Millar, George; Hartshorn, Frank; and Barton, George C., 3,760,445.

Hartwig, Curtis P.: *See—*
Archer, Donald H.; Prickett, Robert J.; and Hartwig, Curtis P., 3,761,936.

Hartwig, Walter J., to Allis-Chalmers Corporation. Structural member having differential temperature control means and combination of such structural member with horizontal stripper for grate conveyor. 3,760,872, Cl. 165-120.000.

Haruna, Takashi: *See—*
Usuii, Keizaburo; and Haruna, Takashi, 3,761,112.

Hascic, Wladimir: *See—*
Schwab, Johann; Hascic, Wladimir; and Furnsinn, Manfred, 3,761,060.

Hasebe, Takebumi; and Takizawa, Arata, to Yokogawa Electric Works. Depressor bar type recording apparatus. 3,761,949, Cl. 346-46.000.

Hasegawa, Kazunori: *See—*
Nagho, Tsuguki; Okakura, Tomiji; and Hasegawa, Kazunori, 3,761,665.

Hasegawa, Yoichi; and Nagasawa, Yuji, to Nihon Denshi Kabushiki Kaisha. Method and apparatus for observing biological specimens using a scanning electron microscope. 3,761,709, Cl. 250-442.000.

Hashimoto, Sei; Nakatani, Keizo; Suzuki, Shoji; Daigo, Hiroshi; and Sugiura, Kiyohiko, to San-Abbott Limited. Catalytic conversion of aminoalkyl lactams to diazabicycloalkenes. 3,761,436, Cl. 260-25.00a.

Hashimoto, Shinsuke: *See—*
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,760,867.

Hasimoto, Takeshi: *See—*
Suzuki, Masaru; Sagarieuil, Katumasa; Yoshiikyoto, Toshiya; Saito, Yasuo; Fosayama, Takeo; and Hasimoto, Takeshi, 3,761,772.

Hassler, Andreas. Method for loading and drying of ceramic products prior to baking. 3,760,508, Cl. 34-38.000.

Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co. Electronic indicia display system. 3,761,766, Cl. 315-84.600.

Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co. Concurrent entry preventing system. 3,761,918, Cl. 340-365.00e.

Hattendore, Edwin R.: *See—*
Schultz, Elmer L.; and Hattendore, Edwin R., 3,761,691.

Haugen, Haakon; and Chafetz, Harry, to Texaco Inc. Sulfurized calcium alkylphenolate lubricants. 3,761,414, Cl. 252-42.700.

Haun, John W.: *See—*
Schlies, Edward L.; Weaver, Harrison; Haun, John W.; and Hensel, Dwight L., 3,760,791.

Hauni-Werke Korber & Co. KG: *See—*
Wochnowski, Waldemar, 3,760,816.

Haupin, Warren E.; and Racunas, Bernard J., to Aluminum Company of America. Preparation of alkali metal chloride melt for use in electrolysis of aluminum chloride. 3,761,365, Cl. 264-67.000.

Hawes, Frederick L.; and Kubat, Michael S., to Tetra Plastics, Incorporated. Sealing gasket with elongated internal stiffner. 3,760,544, Cl. 52-468.000.

Hawkyard, Thomas W. Peepshows. 3,760,939, Cl. 206-46.0am.

Hawthorne, Vaughn T., to Keystone Industries, Inc. Hydraulic cushioning unit. 3,760,955, Cl. 213-43.000.

Hayman, Nigel Ward: *See—*
Thom, Derek Walter; and Hayman, Nigel Ward, 3,761,556.

Haynsworth, Erwin Mathew: *See—*
Cook, Charles Calvin; and Haynsworth, Erwin Mathew, 3,761,239.

Hays, Kenneth Scott; and Lawson, Gustaf Rudolph, to AMP Incorporated. Wiring raceway. 3,761,603, Cl. 174-101.000.

Hazell, William J., to Powers Regulator Company. Pneumatic carrier system. 3,761,039, Cl. 243-19.000.

Heckler & Koch GmbH: *See—*
Gohring, Manfred, 3,760,522.

Heckrotte, Robert Sherwood; and Scott, John Alexander, to Du Pont de Nemours, E. I., and Company. Opposed flow spinneret blanketer. 3,761,559, Cl. 264-237.000.

Hegenberg, Peter: *See—*
Rohl, Hermann; Eversmann, Werner; Hegenberg, Peter; and Hellemanns, Gerhard, 3,761,517.

Hehl, Karl. Injection molding machine. 3,761,198, Cl. 425-192.000.

Hehl, Karl. Injection molding machine convertible to several different assembly configurations. 3,761,214, Cl. 425-192.000.

Heiba, El-Ahmadi Ibrahim; and Srinivasan, Sundaresa, to Mobil Oil Corporation. Method of removing hydrogen sulfide from gases. 3,761,569, Cl. 423-724.000.

Heinzel, Paul H.; and Winkler, Alexander. Seaming tape for floor and ground coverings. 3,760,454, Cl. 16-16.000.

Heinzer, Hans, to Schweizerische Industrie-Gesellschaft. Method and machine for packing similar articles into tubular wrappings. 3,760,559, Cl. 53-178.000.

Helgesen, Peter E.: *See—*
Sauer, Gilbert F.; and Helgesen, Peter E., 3,760,548.

Helgeson, Gaylord A.; and Cahill, Lysle D., to Mead Corporation, The. Ink supply system for a jet ink printer. 3,761,953, Cl. 346-75.000.

Hellemanns, Gerhard: *See—*
Rohl, Hermann; Eversmann, Werner; Hegenberg, Peter; and Hellemanns, Gerhard, 3,761,517.

Hemming, Harold George: *See—*
Borrow, Antony; Broadbent, Douglas; Carter, Stephen Barnaby; Evans, Gillian Margaret; Hemming, Harold George; Hesp, Barrie; and Parton, Carol, 3,761,512.

Hemmings, Keith Reginald, to British Leyland Truck and Bus Division Limited. Motor vehicle bodies. 3,761,108, Cl. 280-106.50r.

Hempelmann, Heinz J., to Richard & Trute Tool & Die Corporation. Workstock blanking apparatus. 3,760,623, Cl. 72-336.000.

Henderson, Raymond G., to A-T-O Inc. Liquid supply and recirculation means for partitioned clothes drum. 3,760,613, Cl. 68-143.000.

Hendricks, John E.: *See—*
Farnden, Robert W.; Silverstone, Roger; and Hendricks, John E., 3,761,169.

Henegar, Hubert B.; and Patterson, Robert J., to Bendix Corporation, The. Output command decoder for numerical control equipment. 3,761,915, Cl. 340-347.0dd.

Henkel & Cie G.m.b.H.: *See—*
Nosler, Heinz Gunter; Wessendorf, Richard; and Bellinger, Horst, 3,761,419.

Henley, Ernest J.: *See—*
Staffin, Herbert Kenneth; Henley, Ernest J.; and Hansen, George E., 3,760,800.

Henriksen, Elmer C., to Bell & Howell Company. Projector for automatically threading, rewinding, and indexing a plurality of film spools and a magazine for use therewith. 3,761,167, Cl. 352-124.000.

Henrion, Michel Andre Robert, to International Standard Electric Corporation. Interface between analog or digital lines and a pulse code modulation circuit. 3,761,637, Cl. 179-15.0at.

Henry, Donald E.: *See—*
Bartlett, Peter G.; Henry, Donald E.; and Murrell, Thomas, 3,761,882.

Henry, William Nelson; and Kramer, William Leigs, to RCA Corporation. Image intensifier camera tube having an improved electron bombardment induced conductivity camera tube target comprising a chromium buffer layer. 3,761,762, Cl. 315-10.000.

Hensel, Dwight L.: *See—*
Schlies, Edward L.; Weaver, Harrison; Haun, John W.; and Hensel, Dwight L., 3,760,791.

Herbst, George: *See—*
Hanson, Ivor G.; Herbst, George; and Lewis, Jerry M., 3,761,004.

Hershey, Elmer E.; and Crommett, Donald L., to Halliburton Company. Railway coupling apparatus. 3,760,954, Cl. 213-69.000.

Herweh, John E., to Armstrong Cork Company. Phosphorus-containing sulfonylchlorides. 3,761,544, Cl. 260-947.000.

Herwig, Walter; and Freund, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Salts of polycarboxylic acids as nucleating agents in polyesters. 3,761,450, Cl. 260-75.00t.

Hesp, Barrie: *See—*
Borrow, Antony; Broadbent, Douglas; Carter, Stephen Barnaby; Evans, Gillian Margaret; Hemming, Harold George; Hesp, Barrie; and Parton, Carol, 3,761,512.

Hess, Howard V.: *See—*
Cole, Edward L.; Hess, Howard V.; and Franz, William F., 3,761,349.

Hess, Wolfgang: *See—*
Rath, Heinrich Bernhard; and Hess, Wolfgang, 3,760,908.

Heuser, Elliott G.: *See—*
Mrozek, James M.; and Heuser, Elliott G., 3,761,344.

Hey, Denis; and Dieterman, Alfred Johannes, to Emery Industries (Canada) Ltd., mesne. Production of wet process phosphoric acid. 3,761,423, Cl. 252-358.000.

Heyne, Clarence A.: *See—*
Amberg, Stephen W.; Heyne, Clarence A.; Lang, Stewart M.; and Meincer, John H., 3,760,968.

Hi-Ram, Inc.: *See—*
Wright, Thomas A., 3,761,730.

Hichs, Thomas W. Live bait holder. 3,760,529, Cl. 43-41.000.

Hickey, William P. Tank, filter and deproteinator for marine life. 3,760,767, Cl. 119-3.000.

Hicks, Thomas W. Holder for live shrimp or the like. 3,760,526, Cl. 43-44.400.

- High, Gerald Stanfield, to Sherwin-Williams Company, The. Composition and method of coating oily surfaces with water reducible paint. 3,761,433, Cl. 260-22.00a.
- Higuchi, Nori, to Davis Aircraft Products Company, Inc. Safety buckle. 3,760,464, Cl. 24-77.00r.
- Higuchi, Takeru; and Leeper, Harold M., to Alza Corporation. Osmotic dispenser employing magnesium sulphate and magnesium chloride. 3,760,804, Cl. 128-260.000.
- Higuchi, Takeru, to Alza Corporation. Osmotic dispenser with collapsible supply container. 3,760,805, Cl. 128-260.000.
- Hill, Eugene R., to United States of America, Navy. Multipath simulator for modulated R.F. carrier signals. 3,761,825, Cl. 328-71.000.
- Hiltz, Clayton D.; Mount, Gordon L.; and Endress, James W. Shaft dislocation detector. 3,761,911, Cl. 340-271.000.
- Hine, Gordon Leslie, to Broadbent, Thomas & Sons, Limited. Centrifugal machines. 3,760,950, Cl. 210-373.000.
- Hinoshita, Shigehiko: *See—*
  - Tazaki, Kimio; Yamamoto, Hajime; Hinoshita, Shigehiko; and Hagiwara, Shoji, 3,761,818.
- Hinz, Arnulf; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Production of granular alkali metal tripolyphosphate of high abrasion resistance and high apparent density. 3,761,573, Cl. 423-315.000.
- Hipotronics, Inc.: *See—*
  - Schutz, Richard F.; and Peschel, Stanely G., 3,761,853.
- Hirano, Chikafusa: *See—*
  - Nakamura, Hisashi; Hisi, Masao; Terada, Toshimichi; and Hirano, Chikafusa, 3,761,611.
- Hirata, Hiroshi, to Minolta Camera Co., Ltd. Overlap photographing device in a cinecamera. 3,761,166, Cl. 352-91.000.
- Hiromoto, Takeshi: *See—*
  - Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,760,867.
- Hirsch, Arnold J. Dental veneer structures. 3,760,502, Cl. 32-8.000.
- Hirsch, Arnold Lippert: *See—*
  - Julian, Percy Lavon; and Hirsch, Arnold Lippert, 3,761,469.
- Hirsh, Ivan Y.: *See—*
  - Labee, Francis A. M.; Preston, Edward George; Dingli, Paul; Hirsh, Ivan Y.; and Dyett, Derek Henry, 3,760,672.
- Hisatsu, Chosaku, to Nippon Oceanics Institute, Ltd. Automatic direction finders. 3,761,931, Cl. 343-121.000.
- Hisi, Masao: *See—*
  - Nakamura, Hisashi; Hisi, Masao; Terada, Toshimichi; and Hirano, Chikafusa, 3,761,611.
- Hitachi Electronics Co., Ltd.: *See—*
  - Nakamura, Hisashi; Hisi, Masao; Terada, Toshimichi; and Hirano, Chikafusa, 3,761,611.
  - Watanabe, Shigeru; Yokozawa, Norio; and Kawamura, Sigenori, 3,761,689.
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  - Nakamura, Hisashi; Hisi, Masao; Terada, Toshimichi; and Hirano, Chikafusa, 3,761,611.
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- Hnatek, Josef A. Vee belt manufacture. 3,761,558, Cl. 264-231.000.
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- Hoehn, Hans; and Chasin, Mark, to Squibb, E. R., & Sons, Inc. Hydrazines of pyrazolopyridine carboxylic acids and esters. 3,76[illegible],487, Cl. 260-295.50b.
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- Hoff, Dale R.: *See—*
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- Hoffert, Franklin D., to Hydrocarbon Research Inc. Process for the controlled reduction of iron ores in a helical heating zone. 3,761,244, Cl. 75-26.000.
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- Hoffman, William B. Auxiliary bicycle brake handle. 3,760,648, Cl. 74-489.000.
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- Hofmann, Richard D.: *See—*
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- Hoke, Donald Irvin, to Lubrizol Corporation, The. Quaternized N-aminoalkyl acrylamide polymers in flocculation of suspended solids from water. 3,761,407, Cl. 210-54.000.
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- Holiday Recreation Products, Inc.: *See—*
  - Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,760,546.
- Holler, Howard V.; and Youngman, Edward A., to Shell Oil Company. Polymerization process and products. 3,761,458, Cl. 260-89.70n.
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- Holmes Electric Protective Co.: *See—*
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  - Ruthel, Walter W.; and DeLong, Jon C., 3,761,385.
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- Hopkin, Peter Roy, to Smiths Industries, Limited. Sonar apparatus. 3,761,873, Cl. 340-3.00r.
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  - Burg, Fred G., 3,760,490.

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- Howard, Patrick Joseph, to RCA Corporation. Integral cycle thyristor power controller. 3,761,800, Cl. 323-18.000.
- Huang, Joseph M. G., to NL Industries, Inc. Method of extracting pectin. 3,761,463, Cl. 260-209.500.
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  - Kuhl, Adolf; Huber, Hans Dieter; and Bollmann, Helmut, 3,760,497.
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- Hulse, Charles O.; and Batt, John A., to United Aircraft Corporation. Directionally solidified refractory oxide eutectic. 3,761,295, Cl. 106-73.400.
- Hulse, Lauren L., to Memorex Corporation. Xerographic toner composition. 3,761,413, Cl. 252-62.100.
- Humetrics Corporation: *See—*
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- Hunt, Marion Paul; and Buy, Alexander, to Interlake, Inc. Method of producing high tensile strength steel strapping. 3,761,323, Cl. 148-12.000.
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- Hurd, Stanley E., to Motch & Merryweather Machinery Company, The. Article decelerator for air conveyor. 3,761,134, Cl. 302-31.000.
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- Hutter, Wilhelm, to Becker & Van Hullen Niederrheinische Maschinenfabrik. Process and device for separating the press boards pressed on loading plates in a press especially a daylight press. 3,761,337, Cl. 156-247.000.
- Hyde, Robert W., to Pryde Inc. Float valve. 3,760,839, Cl. 137-414.000.
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  - Wolk, Ronald H.; Chervenak, Michael C.; and Alpert, Seymour B., 3,761,393.
- Hynes, Pierce Charles. Lifesaving systems for escaping from high buildings in the case of fires or other emergencies. 3,760,901, Cl. 182-7.000.
- Hyosaka, Alfred M., to Speed-O-Print Business Machines Corporation. Rollers. 3,760,616, Cl. 68-248.000.
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- I-T-E Imperial Corporation: *See—*
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- Iech, Donald D., to International Business Machines Corporation. Gas cell memory system with electrical readout. 3,761,897, Cl. 340-173.0pl.
- Igarashi, Sadao: *See—*
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- Imanaka, Hiroshi: *See—*
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  - Entwisle, John Hubert; Scrutton, Anthony; and Moss, Keith Graham, 3,761,313.
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- Inaba, Seiuemon; Ito, Kohei; Shimizu, Kanryo; and Amemiya, Youichi, to Fujitsu Limited. Electro-hydraulic pulse motor. 3,760,687, Cl. 91-39.000.
- Inaba, Sliolmon; Shimizu, Kanryo; and Oyama, Shigeaki, to Fujitsu Limited and Fujitsu Fanuc Limited. Rotor. 3,761,755, Cl. 310-268.000.
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- Information Storage Systems, Inc.: *See—*
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- Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color photographic material. 3,761,274, Cl. 96-100.000.
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- Ioffe, Benyamin Alexandrovich. Method of segregating bodies, according to their orientation, having pronounced dielectric properties in an alternating electrostatic field, and apparatus for performing same. 3,760,980, Cl. 221-157.000.
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- Itek Corporation: *See—*
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- Ito, Kohei: *See—*
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- Jacobs, Justin M., Jr.; and Stafford, Neil S. Highly improved transportation system. 3,760,740, Cl. 104-130.000.
- Jacquart, Christian Augustin, to International Business Machines Corporation. Servobalanced delta modulator. 3,761,841, Cl. 332-11.00d.
- Jaeggi, Kurt, to Givaudan Corporation. Process for the manufacture of meat flavors. 3,761,287, Cl. 99-140.00r.
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- Jarrett, Robert O.; deceased (by Jarrett, Helen M.; executrix), to General Motors Corporation. Direct filament lamp assembly. 3,761,957, Cl. 313-110.000.
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  - Larson, Charles L., 3,761,080.
- Jedynak, Leo; and Gusaras, Vladas, to Oak Industries, Inc. Multiturn rotary switch. 3,761,649, Cl. 200-14.000.
- Jeffreys, George A. Process for converting organic waste to humus. 3,761,237, Cl. 71-9.000.
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- Jennings, William H. Animal fat cleaning composition and method. 3,761,499, Cl. 260-424.000.
- Jensen, Arne, to Danfoss A/S. Inverter with controlled rectifiers and a regulable direct voltage supply. 3,761,796, Cl. 321-2.000.
- Jervis, Graham James; and Robson, Robert, to Esso Research and Engineering Company. Anti-oxidants. 3,761,405, Cl. 252-51.50r.
- Jessop, Kenneth Gilbert, to Stelmo Limited. Table for concrete casting. 3,761,046, Cl. 249-18.000.
- Jetsew, Inc.: *See—*
  - Rockepath, John L., 3,760,748.
- Jibb, David John: *See—*
  - Machin, James Robert; Colston, John Matthew; and Jibb, David John, 3,761,765.
- Johannessen, Rolf; and Mun, Joseph, to International Standard Electric Corporation. Radio altimeter with rate of height change indication. 3,761,946, Cl. 343-12.00a.
- Johansen, Rolf J., to Kamyr AB. Strainer device in vessels for treating cellulosic pulp. 3,760,948, Cl. 210-342.000.
- Johnson, Algie M.: *See—*
  - Overcast, Cecil L.; Johnson, James D.; and Edwards, Laurren C., Sr., 3,760,900.
- Johnson, Allan G.: *See—*
  - Ford, John R.; and Johnson, Allan G., 3,761,368.
- Johnson, Gordon B.: *See—*
  - Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., 3,761,552.
- Johnson, James D.: *See—*
  - Overcast, Cecil L.; Johnson, James D.; and Edwards, Laurren C., Sr., 3,760,900.
- Johnson, Marvin M.: *See—*
  - Drehman, Lewis E.; Farha, Floyd E., Jr.; and Johnson, Marvin M., 3,761,539.
- Johnson, Olin B.: *See—*
  - Dickie, Ray A.; Johnson, Olin B.; and Labana, Santokh S., 3,761,371.
- Johnson, Peter Raymond: *See—*
  - Williams, Eric Farmer; Turner, Thomas David; and Johnson, Peter Raymond, 3,761,142.
- Johnson, William E.; and Schmersal, Larry J., to Owens-Illinois, Inc. Interfacing circuitry system for multiple gaseous display/memory unit. 3,761,773, Cl. 315-169.000.
- Johnston, Leroy I. Extension type holder for food handling implements. 3,760,501, Cl. 30-322.000.
- Johnston, Roger L., to Harnischfeger Corporation. Control system for automatically sequencing operation of a plurality of hydraulic pumps for supplying a plurality of hydraulic actuators. 3,760,689, Cl. 91-412.000.
- Jones, Learoy H., Jr.; and Butler, Joel F. Apparatus for lifting and moving containers. 3,760,966, Cl. 214-750.000.
- Jones, Paul W., to Rostone Corporation. Arc interrupting composition and apparatus. 3,761,660, Cl. 200-144.00c.
- Jones, R. A., & Company, Incorporated: *See—*
  - Deering, Edwin Naul; and Jones, Wickliffe, 3,761,072.
- Jones, Robert J., to TRW Inc. Nitroso perfluoro addition polymers. 3,761,453, Cl. 260-78.50r.
- Jones, Wickliffe: *See—*.
  - Deering, Edwin Naul; and Jones, Wickliffe, 3,761,072.
- Jones, William W.; and McCaulley, Frank D. Camper boat apparatus. 3,760,764, Cl. 115-1.00r.

- Jordan, Wilmer C. Electric heating means for fuel vaporization in internal combustion engines. 3,760,780, Cl. 123-122.00f.
- Joyard, Maurice L.; and Latapie, Jean, to Etat Francais. Indexing arrangement. 3,760,652, Cl. 74-527.000.
- Juch, Ernst: *See—*
  - Wienand, Michael; Brinkmann, Hans; Rheinfeld, Peter; and Juch, Ernst, 3,761,555.
- Julia, Marc, to Rhone-Poulenc S.A. Cyano-carboxy-cyclopropane derivatives useful as intermediates in the preparation of chrysanthemic acid. 3,761,505, Cl. 260-464.000.
- Julian, Percy Lavon; and Hirsch, Arnold Lippert, to Ciba-Geigy AG. Process for the manufacture of steroid chlorohydrins. 3,761,469, Cl. 260-239.55a.
- Jullien-Davin, Jean, to Crouzet. Variable speed stepwise power feed device. 3,760,644, Cl. 74-112.000.
- Jund, Christian, to Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique. Semi-conductor strain gauge device with field effect transistor symmetrical pairs. 3,761,784, Cl. 317-235.00r.
- Jurina, Nicolo, to I.C.O.S. Impresa Costruzioni Opere Specializzate S.p.A. Building of underground partition walls. 3,760,594, Cl. 61-39.000.
- Kaartinen, Niilo H., to Packard Instrument Company, Inc. Method and apparatus for providing fractional interaction between gases and liquids. 3,761,228, Cl. 23-232.00r.
- Kabisch, Gerhard; and Trube, Rudolf, to Deutsch Gold- und Silber-Scheideanstaldt vormals Roessler. Process for the production of hydrogen peroxide. 3,761,581, Cl. 423-589.000.
- Kabushiki Kaisha Audio-Technica: *See—*
  - Nemoto, Mitauo; and Honma, Kimiyasu, 3,761,647.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
  - Kawamura, Eiji; and Taki, Hiroyuki, 3,760,896.
- Kabushiki Kaisha Ricoh: *See—*
  - Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Usui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,761,259.
- Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
  - Suzuki, Ikuo, 3,761,189.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Fujita, Kinji, 3,760,580.
  - Kawamura, Yoshikazu, 3,760,482.
  - Tsuruishi, Yuki, 3,760,583.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
  - Kihara, Hidetoshi; Urifu, Tohoru; Yuasa, Osamu; and Ejiri, Satoki, 3,760,577.
- Kaesser, Glenda F.; and Zavertnik, Marshall G., to Killark Electric Manufacturing Company. Removable flame-proof potted fitting. 3,761,601, Cl. 174-52.00r.
- Kahelin, Edward W. Spring type ball throwing booster. 3,760,787, Cl. 124-16.000.
- Kahle Engineering Co.: *See—*
  - Napor, Carl A.; Lehman, Jaime; and Milana, Anthony A., 3,761,806.
- Kaiser, Gunter; and Zimmer, Erich, to Kernforschusanlage Julich Gesellschaft mit beschrankter Haftung. Reacting metal oxides with a sulfate and pyrosulfate mixture. 3,761,563, Cl. 423-5.000.
- Kaiser Industries Corporation: *See—*
  - Mahin, William E.; and Parlee, Norman A. D., 3,761,246.
- Kali und Salz GmbH: *See—*
  - Singewald, Arno; and Fricke, Gunter, 3,760,941.
- Kaltschmidt, Horst; Scholler, Peter; and Flachmann, Burkhard, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method and transmission system for transmitting commands to a radio guided missile. 3,761,817, Cl. 325-37.000.
- Kamata, Masamoto: *See—*
  - Fujii, Seiji; Kuwamoto, Hiroshi; Kamata, Masamoto; and Ishida, Masayuki, 3,760,621.
- Kamijo, Yoshimi: *See—*
  - Ogasawara, Shoji; Aizawa, Hideo; Kamijo, Yoshimi; Miyajima, Mikio; and Igarashi, Sadao, 3,761,860.
- Kaminsky, Igor Vasilievich; Romanenko, Anatoly Mikhailovich; Pimenov, Alexeevich; Markovsky, Grigory Fedorovich; Sinichenko, Anatoly Afanasievich; and Levchenko, Nikolai Ivanovich. Apparatus for manufacturing sacks from a hose of thermally joined material.3,760,558, Cl. 53-183.000.
- Kaminsky, Paul E.: *See—*
  - Anderson, David W.; Gustafson, Richard N.; Kaminsky, Paul E.; and Wetzel, Joseph A., 3,761,881.
- Kamyr AB: *See—*
  - Johansen, Rolf J., 3,760,948.
- Kan, Peter T.; and Cenker, Moses, to BASF Wyandotte Corporation. Preparation of liquid carbodiimide-containing organic polyisocyanates. 3,761,502, Cl. 260-453.00p.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Saito, Kazuo; and Okami, Shoji, 3,761,456.
- Kapas, Otto: *See—*
  - Illyes, Sandor; and Kapas, Otto, 3,760,632.
- Kapp & Co., Werkzeugmeschinenfabrik: *See—*
  - Rue, Georg, 3,761,070.
- Kapron, Felix P.; and Keck, Donald B. Optical waveguide mode discriminator. 3,761,716, Cl. 250-199.000.
- Karasiak, Wolf: *See—*
  - Rothert, Horst; and Karasiak, Wolf, 3,761,059.
- Kaske, Alan D.: *See—*
  - Lo, David S.; Hanson, Marlin M.; Kaske, Alan D.; and Manikowski, Donald M., 3,761,155.
- Kasperkovitz, Wolfdietrich Georg, to U.S. Philips Corporation. Capacitive matrix store. 3,761,900, Cl. 340-173.0ca.
- Katchman, Arthur; and Summers, Robert M., to General Electric Company. Stabilized polyphenylene ethers. 3,761,541, Cl. 260-874.000.
- Katzakian, Arthur, Jr.: *See—*
  - Lou, Richard L.; Katzakian, Arthur, Jr.; and Burket, Stanley C., 3,761,330.
- Kaufman, Martin H. High molecular weight polyalkylaryl ethers. 3,761,449, Cl. 260-61.000.
- Kawabata, Hidetsogu: *See—*
  - Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsogu; and Kitamura, Saburo, 3,761,710.
- Kawabata, Minoru, to Toyoda Koki Kabushiki Kaisha. Pure fluid control element. 3,760,828, Cl. 137-809.000.
- Kawahara, Osamu: *See—*
  - Shimamoto, Tsugio; Fujita, Masahiko; Matsukura, Yoshiharu; Kawahara, Osamu; and Sakagami, Mamoru, 3,760,969.
- Kawamura, Eiji; and Taki, Hiroyuki, to Kabushiki Kaisha Komatsu Seisakusho. Steering device for endless tracked vehicles. 3,760,896, Cl. 180-6.700.
- Kawamura, Sigenori: *See—*
  - Watanabe, Shigeru; Yokozawa, Norio; and Kawamura, Sigenori, 3,761,689.
- Kawamura, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Method of adjusting frequency of tuning fork type vibrator. 3,760,482, Cl. 29-169.500.
- Kay, Andrew F.; and Messin, Sam, to Switchpack Systems, Inc. Remote control electrical circuit. 3,761,738, Cl. 307-140.000.
- Kazama, Takeo: *See—*
  - Ebuchi, Satoru; and Kazama, Takeo, 3,761,055.
- Kearney & Trecker Corporation: *See—*
  - Griffith, Edward G., 3,760,489.
  - Kielma, Ervin J.; and Schabowski, Albin J., 3,760,472.
  - Lohneis, Earl R., 3,760,958.
  - Zankl, Frank; and Lohneis, Earl R., 3,760,491.
- Keck, Donald B.: *See—*
  - Kapron, Felix P.; and Keck, Donald B., 3,761,716.
- Keeler, Miner S., II. Video playback unit in inaccessible container. 3,761,643, Cl. 179-100.20s.
- Keizer, Weichert Eimert, to N.V. Hollandse Signaalapparaten. Packing machine. 3,760,560, Cl. 53-162.000.
- Kelarakis, Jack N. Storm window assembly. 3,760,860, Cl. 160-179.000.
- Keller, Klaus. Method of hardening the surface of workpieces made of iron and steel. 3,761,370, Cl. 204-164.000.
- Kelly, Donald A. Variable speed vapor turbine. 3,761,197, Cl. 415-159.000.
- Kelly, John H.: *See—*
  - Puckett, William R.; Kelly, John H.; Overall, Robert E.; and De Haye, John J., 3,760,589.
- Kelly, Timothy A. Two-way hingeless ventilator. 3,760,707, Cl. 98-2.180.
- Kelly, William J.: *See—*
  - Finster, Leslie P.; Kelly, William J.; Naegele, Erich Otto; Petrovsek, Richard J.; Reader, Trevor D.; Reynolds, Warren A.; Sekse, Torkjell; Sevilla, Ernesto G.; and Sours, William A., 3,761,906.
  - Titus, Robert J.; and Kelly, William J., 3,761,742.
- Kelsey-Hayes Company: *See—*
  - Good, William E.; Di Grasso, Leonard; and Hoffman, James D., 3,761,101.
- Kemp, Willard E.; and Tomlin, Jerry B., to ACF Industries, Incorporated. Sealing means for valve structure. 3,760,833, Cl. 137-246.220.
- Kemper, Gustav-Wilhelm, to Dynamit Nobel Aktiengesellschaft. Device for the absorption of impact energy especially for automotive vehicles. 3,761,111, Cl. 280-150.0ab.
- Kendall, Patrick D. Automotive anti-theft and safety device. 3,760,898, Cl. 180-114.000.
- Kennedy, Mervyn R., to Relton Corporation. Audible time measuring with discriminating sound for beats within a group. 3,760,681, Cl. 84-484.000.
- Kennedy, Roland R.: *See—*
  - Clucker, Richard V.; and Kennedy, Roland R., 3,760,962.
- Kent, Frederick M.: *See—*
  - Sokol, Michael; and Kent, Frederick M., 3,760,639.
- Kernforschusanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
  - Kaiser, Gunter; and Zimmer, Erich, 3,761,563.
- Kerr, John, to National Research Development Corporation. Thrust bearing. 3,761,151, Cl. 308-160.000.
- Kerr-McGee Corporation: *See—*
  - Baldwin, Roger A.; and Cheng, Ming T., 3,761,527.
- Kerschner, Paul M.; and Marcellis, Alphonso W., to Cities Service Oil Company. Petroleum hydrocarbon compositions. 3,761,434, Cl. 260-22.00r.
- Keystone Industries, Inc.: *See—*
  - Hawthorne, Vaughn T., 3,760,955.
- Khoobiar, Sargis, to Halcon International, Inc. Process for producing unsaturated acids from the corresponding unsaturated aldehydes. 3,761,516, Cl. 260-530.00n.
- Kibler, Richard W., to Firestone Tire & Rubber Company, The. Nylon tire cards. 3,760,578, Cl. 57-140.00c.
- Kiefer, Michael E.: *See—*

Hammond, James C.; Jamerson, Charles D., Jr.; and Kiefer, Michael E., 3,761,382.

Kieffer, James M.: *See—*

Barnum, John J., 3,760,825.

Kiel, Othar M., to Esso Production Research Company. Treatment of wells with fluids containing complexes. 3,760,881, Cl. 166-308.000.

Kielma, Ervin J.; and Schabowski, Albin J., to Kearney & Trecker Corporation. Spindle change mechanism for a multiple spindle head machine. 3,760,472, Cl. 29-40.000.

Kiemle, Horst: *See—*

Roess, Dieter; and Kiemle, Horst, 3,761,159.

Kienzle Apparate G.m.b.H.: *See—*

Voegtlin, Karl; Zimmermann, Hans; and Doerner, Karl, 3,761,948.

Kihara, Hidetoshi; Urifu, Tohoru; Yuasa, Osamu; and Ejiri, Satoki, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for cleaning spinning chamber in ringless spinning machine. 3,760,577, Cl. 57-56.000

Kiknadze, Gennady Iraklievich: *See—*

Gassiev, Iran Alexandrovich; Kiknadze, Gennady Iraklievich; Garsevanishvili, Georgy Nikolaevich; and Akhobadze, Vakhtang Noevich, 3,761,351.

Killark Electric Manufacturing Company: *See—*

Kaesser, Glenda F.; and Zavertnik, Marshall G., 3,761,601.

Kim, Sin Ho: *See—*

Munjat, Francis S.; and Kim, Sin Ho, 3,761,350.

Kimble, Victor W., to Deering Milliken Research Corporation. Apparatus for guiding a strip to a support surface. 3,761,341, Cl. 156-446.000.

Kinberg, Benjamin; and Mayer, Richard J. Means for providing a semipermanent iridescent display. 3,761,343, Cl. 161-6.000.

King, Arthur S. Method and apparatus for treating carbureted mixtures. 3,761,062, Cl. 261-1.000.

Kinjo, Hisao: *See—*

Ozawa, Keiji; Takashima, Seiichi; and Kinjo, Hisao, 3,761,604.

Kirby, Russell B., Jr.; and Wing, Stephen C., to Minnesota Mining and Manufacturing Company. Method of casting in thin-walled molds. 3,760,864, Cl. 164-126.000.

Kircher, Dieter: *See—*

Fink, Werner; Kircher, Dieter; and Rauschenbach, Reinhard, 3,761,751.

Kirsch, Robert J. Universally adjustable box tool. 3,760,663, Cl. 82-35.000.

Kissell, Ronald E.: *See—*

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Kitamura, Saburo: *See—*

Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsogu; and Kitamura, Saburo, 3,761,710.

Kitazaki, Toshiro: *See—*

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Kitzner, Ernest W.: *See—*

Allison, William D.; and Kitzner, Ernest W., 3,760,643.

Klass, Donald L.; and Landahl, Carl D., to Institute of Gas Technology. Method for odorizing cryogenic liquids. 3,761,232, Cl. 44-52.000.

Kleckner, Richard Merle; and Kress, James Henry, to Deere & Company. Step variable displacement hydraulic motor. 3,760,691, Cl. 91-492.000.

Klein, Henry: *See—*

Ehrlich, Stephen J.; Dwyer, John R., Jr.; and Klein, Henry, 3,760,570.

Klein, Norman E., to Deering Milliken Research Corporation. Adjustable automatic tire belt doffer. 3,761,340, Cl. 156-397.000.

Kleinbeck, Erwin F.; and Pilgram, Heinz, R., to International Business Machines Corporation. Method of and apparatus for manufacturing of a magnetic storage disk. 3,761,333, Cl. 156-64.000.

Kluge, Werner Erich, to Bell Canada-Northern Electric Research Limited. Content addressable discrete domain mass memory. 3,761,886, Cl. 340-172.500.

Knapsack Aktiengesellschaft: *See—*

Hinz, Arnulf; and Harnisch, Heinz, 3,761,573.

Sennewald, Kurt; Vogt, Wilhelm; and Glaser, Hermann, 3,761,513.

Knight Engineering & Molding Co.: *See—*

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Knoaka, Masami: *See—*

Abe, Toshio; Sato, Kanro; Knoaka, Masami; and Marita, Takamichi, 3,761,328.

Knudsen, James K.: *See—*

Perrington, Kenneth J.; Vogelgesang, Peter J.; and Knudsen, James K., 3,761,311.

Kobayashi, Hiroshi: *See—*

Matsui, Kiyoshi; Osiyama, Hiroichi; and Kobayashi, Hiroshi, 3,760,600.

Kobayashi, Takao; and Sasaki, Tadahiko, to Iwatsu Electric Co., Ltd. Apparatus for constructing potential gradient. 3,761,807, Cl. 324-72.000.

Koberstein, Edgar; Lussling, Theodor; Noll, Ewald; Suchsland, Helmut; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalysts for the oxidation of alkenes. 3,761,424, Cl. 252-437.000.

Koch, Friedhelm, to Maschinenfabrik Koppern & Co. KG. Roller-type press. 3,760,477, Cl. 29-124.000.

Koch-Light Laboratories, Limited: *See—*

Epton, Roger; McLaren, John Vincent; and Thomas, Trevor Henry, 3,761,357.

Kochavi, Jacob. Method of forming dental restorations. 3,761,728, Cl. 29-160.600.

Kodaira, Yasuo, to Nihon Kaiheiki Industrial Company Ltd. Lever switch with operating lever means detachable from movable contact carrying member only in neutral position. 3,761,664, Cl. 200-172.00r.

Kofor, Harry T.: *See—*

Crossman, Richard L.; Fisher, Richard R.; and Kofor, Harry T., 3,760,899.

Kohn, Alan N.; Lennard, Jack K.; Schlickman, Jay J.; and Weagant, Robert A., to Honeywell Inc. Detector apparatus using semiconductor laminae. 3,761,718, Cl. 250-211.00r.

Kohsaka, Masanobu: *See—*

Miyairi, Norimasa; Miyoshi, Toshio; Kohsaka, Masanobu; Ikoshima, Koichi; and Imanaka, Hiroshi, 3,761,587.

Koike, Saburo: *See—*

Suzuki, Sohei; Koike, Saburo; and Aiba, Fumio, 3,761,130.

Kolf, Gunther: *See—*

Wolff, Erich; Lassig, Wolfgang; Seelig, Eckart; and Kolf, Gunther, 3,761,280.

Kolodziej, A.A.: *See—*

Binkert, Charles E., 3,761,120.

Komatsu, Noriyuki. Method of making leather gloves. 3,760,425, Cl. 2-169.000.

Kondo, Hirosi. Spring pressure accumulation spray device. 3,761,022, Cl. 239-333.000.

Konig, Gustav. Structural assembly. 3,760,551, Cl. 287-189.36d.

Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.: *See—*

Van Goudoever, Sebastian; and Jansse, Leonard, 3,760,862.

Konishiroku Photo Industry Co., Ltd.: *See—*

Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, 3,761,274.

Shinozaki, Akira, 3,761,175.

Kontz, Robert F., to Owens-Illinois, Inc. Overload arm for mold. 3,761,212, Cl. 425-154.000.

Koppers Company, Inc.: *See—*

Drummond, Glenn R.; and Clutter, Barry F., 3,760,754.

Korner, Paul: *See—*

Giese, Ralf; Korner, Paul; and Rauthmann, Axel, 3,761,127.

Korol, Stanley F., to Borg-Warner Corporation. Water closet tank. 3,760,428, Cl. 4-18.000.

Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, to Toyo Soda Manufacturing Co., Ltd. Graft polymer of vinyl chloride and method of producing same. 3,761,542, Cl. 260-878.00r.

Kosem, Marion: *See—*

Alessio, Sergui A.; Chow, Weichien; Kosem, Marion; and Valach, Charles F., 3,761,770.

Koshihara, Atsuo. Safety device. 3,760,910, Cl. 188-180.000.

Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. End cutter head. 3,760,476, Cl. 29-105.00a.

Kottler, Franklin D.: *See—*

Genesky, Leonard G.; Kottler, Franklin D.; and Allen, Robert F., 3,761,170.

Kough, John K.; Martin, Otis M.; and Miller, Silas N., to Ditz-Crane. Building panel enclosures for valley and hip structures. 3,760,856, Cl. 144-323.000.

Koury, Frederic: *See—*

Bamberg, William I.; Gungle, Warren C.; and Koury, Frederic, 3,761,758.

Kowalski, John L., to Honeywell Information Systems Inc. Semiautomatic assembly system for mounting electronic components on circuit boards. 3,760,484, Cl. 29-203.00b.

Koyama, Kenji: *See—*

Matsumoto, Yoshito; Koyama, Kenji; and Takeda, Yasuko, 3,761,586.

Krafft, Lewis E.: *See—*

Krafft, Lewis E.; and Battin, John (said Battin assor. to said), 3,761,789.

Krafft, Lewis E.; and Battin, John, said Battin assor. to said Krafft, Lewis E. Tool carrier and speed control therefor. 3,761,789, Cl. 318-331.000.

Kraftwerk Union Aktiengesellschaft: *See—*

Michel, Rupprecht, 3,760,774.

Krallinger, Robert E.; Dolan, Donald T.; Wittmer, Kenneth; and Terrell, Jerry W., to Graphic Sciences, Inc. High speed fascimile systems. 3,761,610, Cl. 178-6.000.

Kramer, Richard R.: *See—*

Canning, William P.; and Kramer, Richard R., 3,760,973.

Kramer, William Leigs: *See—*

Henry, William Nelson; and Kramer, William Leigs, 3,761,762.

Krasov, Alexandr Ivanovich. Switching device for transformers having stepwise voltage control under load. 3,761,802, Cl. 323-43.50s.

Kraus, Charles E., to Excelermatic, Inc. Rotary motion transmitting device. 3,760,646, Cl. 74-200.000.

Kreis, Philipp. Fast-action valve. 3,761,056, Cl. 251-255.000.

Kress, James Henry: *See—*

Kleckner, Richard Merle; and Kress, James Henry, 3,760,691.

Kritz, Albert H.; and Epstein, Maurice J., to Computer Transceiver Systems, Inc. Variable speed printer. 3,761,880, Cl. 340-172.500.

Krnrumpf, William P.: *See—*

Harnden, John D., Jr.; and Krnrumpf, William P., 3,761,668.

Kroger, Harry; and Potter, Curtis N., to Sperry Rand Corporation. Dual-mesa ring-shaped high frequency diode. 3,761,783, Cl. 317-234.00r.

Kromrey, Robert V., to Aerojet-General Corporation. Molds for ablative injectors. 3,761,048, Cl. 249-146.000.

Krone, Gustav; and Rott, Joachim, to Krone Kommanditgesellschaft. Clip connector terminal for one or more insulated conductors. 3,761,868, Cl. 339-98.000.

Krone Kommanditgesellschaft: *See—*

Krone, Gustav; and Rott, Joachim, 3,761,868.

Krumreich, Charles Louis: *See—*

Hardesty, Edwin Charles; Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, 3,761,869.

Kubat, Michael S.: *See—*

Hawes, Frederick L.; and Kubat, Michael S., 3,760,544.

Kubiak, Tadeusz; and Jagiello, Jan, to Lodzkie Zaklady Aparatury Elektrycznej. Overcurrent release of electric switch in particular of switch breaker. 3,761,854, Cl. 337-71.000.

Kubicek, Louis A., to Burr-Ban Tool Service Company. Extension tool holder. 3,761,104, Cl. 279-19.700.

Kubisiak, Helmut; and Sorgenicht, Dietrich, to Exatest Messtechnik GmbH. Measuring the diameter of shaped object and correcting measurement for slight displacements of object along either of two orthogonal optic axes. 3,761,182, Cl. 356-160.000.

Kuhl, Adolf; Huber, Hans Dieter; and Bollmann, Helmut, to Braun Aktiengesellschaft. Dryshaver with a catch electrode for attracting beard stubble. 3,760,497, Cl. 30-41.600.

Kuhnlenz, Karl-Heinz: *See—*

Jakob, Fritz; Tesar, Gerold; and Kuhnlenz, Karl-Heinz, 3,760,598.

Kuipers, Johannes: *See—*

Hackmann, Johannes Thomas; and Kuipers, Johannes, 3,761,593.

Kulp, Jack H., to Royal Industries, Inc. Typing machine. 3,760,850, Cl. 140-93.00a.

Kunkle, Gerald E., to PPG Industries, Inc. Method of making sheet glass. 3,761,236, Cl. 65-83.000.

Kuntz, John B.; and Spinola, Anthony A., to United States Steel Corporation. Method of quenching slag. 3,761,243, Cl. 75-24.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Tanaka, Takashi; Yusa, Haruhiko; and Ochiai, Yukihiro, 3,761,455.

Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Polycyanodithiino aromatic N-heterocyclic compounds. 3,761,475, Cl. 260-250.00r.

Kurokawa, Junji: *See—*

Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Usui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,761,259.

Kustusch, Paul W. Hydromechanical elastomeric force amplifier. 3,760,588, Cl. 60-54.50r.

Kuwamoto, Hiroshi: *See—*

Fujii, Seiji; Kuwamoto, Hiroshi; Kamata, Masamoto; and Ishida, Masayuki, 3,760,621.

Kybe Corporation: *See—*

Bird, George L., Jr.; and Woo, Way Dong, 3,761,903.

Kyowa Kakko Kogyo Co., Ltd.: *See—*

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La Motte, Bengt Ragnar: *See—*

Englund, Gosta Roland; Lindelow, Claes-Goran; and La Motte, Bengt Ragnar, 3,761,694.

La Spisa, Ronald J.; and Woods, Gary W., to United States of America, Army. Automatic elevation recovery system for cannons. 3,760,684, Cl. 89-37.00c.

Labana, Santokh S.: *See—*

Dickie, Ray A.; Johnson, Olin B.; and Labana, Santokh S., 3,761,371.

Labee, Francis A. M.; Preston, Edward George; Dingli, Paul; Hirsh, Ivan Y.; and Dyett, Derek Henry, to Molins Limited. Rod making machines. 3,760,672, Cl. 83-310.000.

LacRocca, Michael S. Wheel alignment gauging apparatus. 3,760,507, Cl. 33-203.170.

Ladd, Thyril L.: *See—*

McGovern, Terrence P.; Beroza, Morton; and Ladd, Thyril L., 3,761,584.

Laflaquiere, Regis: *See—*

Le Chatelier, Jacques; and Laflaquiere, Regis, 3,760,576.

Lamb, Glentworth: *See—*

Addor, Roger Williams; and Lamb, Glentworth, 3,761,492.

Lammers, Gerald B.: *See—*

Baumann, Gerald W.; Groom, Jay L., Jr.; and Lammers, Gerald B., 3,761,002.

Lancelot, Charles J.; and MacKellar, Donald G., to FMC Corporation. Polyelectrolyte builder and detergent compositions. 3,761,412, Cl. 252-550.000.

Land, Edwin H.; and Chen, Richard J., to Polaroid Corporation. Self-developing photographic film assemblage. 3,761,268, Cl. 96-76.00c.

Landahl, Carl D.: *See—*

Klass, Donald L.; and Landahl, Carl D., 3,761,232.

Landholm, Richard A.: *See—*

DeMauriac, Richard A.; and Landholm, Richard A., 3,761,270.

Landrum, Ralph A., Jr., to Amoco Production Company. Automatic presetting of vibrator phase-lock circuits. 3,761,874, Cl. 340-17.000.

Lang, Alphonse Gregory, Jr., to Ceramic Magnetics, Inc. Magnetic head assembly. 3,760,494, Cl. 29-603.000.

Lang, Stewart M.: *See—*

Amberg, Stephen W.; Heyne, Clarence A.; Lang, Stewart M.; and Meincer, John H., 3,760,968.

Lang, Thomas Norman. Stabilising apparatus for ships and the like. 3,760,759, Cl. 114-126.000.

Langer, Robert J.: *See—*

Callister, Richard M.; and Langer, Robert J., 3,760,727.

Langworthy, Colin George; and Webb, Edwin James, to Masson Scott Thrissell Engineering Limited. Web slitting apparatus. 3,760,675, Cl. 83-482.000.

Lapins, Daniel W.; and Finley, Carl E., to Olin Corporation. Propane-piezoelectric ignition system. 3,761,222, Cl. 431-191.000.

Larinoff, Michael W., to Hudson Products Corporation. Apparatus for condensing exhaust steam from a steam turbine power plant. 3,760,871, Cl. 165-110.000.

Larkin, Sam. Apparatus for making sand molds. 3,760,866, Cl. 164-200.000.

Larner, Donald Alexander, to Fluid Devices Limited. Multi-way directional fluid flow control valve arrangement. 3,760,843, Cl. 137-596.150.

Larson, Charles L., to Jeddeloph Bros. Sweed Mills, Inc. Sheet stacking apparatus. 3,761,080, Cl. 271-209.000.

LaSalle Steel Company: *See—*

Cucuz, Ranko; Verduzco, Miguel A.; and Zavodny, George, Jr., 3,760,488.

Lassig, Wolfgang: *See—*

Wolff, Erich; Lassig, Wolfgang; Seelig, Eckart; and Kolf, Gunther, 3,761,280.

Latapie, Jean: *See—*

Joyard, Maurice L.; and Latapie, Jean, 3,760,652.

Latoria, Joseph: *See—*

Latoria, Phillip J.; and Latoria, Joseph, 3,760,540.

Latoria, Phillip J.; and Latoria, Joseph. Pre-cast concrete building panels. 3,760,540, Cl. 52-125.000.

Laughinghouse, Charles L.; and Vogelsberg, Walter H., to Black and Decker Manufacturing Company, The. Ground fault protective apparatus. 3,761,774, Cl. 317-18.00a.

Law, Andrew B.: *See—*

Lewis Sheldon N.; Miller, George A.; and Law, Andrew B., 3,761,488.

Lawler, William P.: *See—*

Cichoski, Sylvester A.; Damon, Paul H.; Golembeski, Ronald J.; and Lawler, William P., 3,761,335.

Lawson, Gerald P.: *See—*

Carlson, John T. M.; and Lawson, Gerald P., 3,761,857.

Lawson, Gerald P.; and Carlson, John T. M., to Rosemount Inc. Extruder pressure transmitter. 3,760,638, Cl. 73-395.000.

Lawson, Gustaf Rudolph: *See—*

Hays, Kenneth Scott; and Lawson, Gustaf Rudolph, 3,761,603.

Le Blanc, Leo J., Jr.: *See—*

Strom, Charles E.; and Le Blanc, Leo J., Jr., 3,761,256.

Le Blanc, Robert: *See—*

Chu, Pe Tsi; Corby, Bernard; James, Andre Ernest; Le Blanc, Robert; and Milewski, Andrzej Tadeusz, 3,761,638.

Le Chatelier, Jacques; and Laflaquiere, Regis, to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Societe Francaise. Spinning frame having bowl spindles. 3,760,576, Cl. 57-34.00r.

Leader, Clifford F.: *See—*

McFarland, George C.; and Leader, Clifford F., 3,761,676.

Leaf, Ronn J.: *See—*

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Lear Siegler, Inc.: *See—*

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Leblanc, Conrad L., to Foster Grant Co., Inc. Strap length adjustment device. 3,760,466, Cl. 24-200.000.

Ledeen Flow Control Systems, Inc.: *See—*

Tupker, Willem E., 3,760,480.

Lederer, George H. Lid inspection means. 3,760,929, Cl. 198-19.000.

Lee, Jae Yoon. Method and apparatus for separating blood constituent components. 3,761,408, Cl. 210-23.000.

Lee, Peter William: *See—*

Edge, Gordon Malcolm; and Lee, Peter William, 3,761,736.

Lee, Raymond, Organization, Inc., The: *See—*

Nelson, Frank, 3,761,090.

Sakihara, Richard S., 3,760,998.

Smitherman, John B., 3,761,113.

Leeper, Harold M.: *See—*

Higuchi, Takeru; and Leeper, Harold M., 3,760,804.

Leeper, Harold M., to Alza Corporation. Helical osmotic dispenser with non-planar membrane. 3,760,806, Cl. 128-260.000.

Legg (Industries) Limited: *See—*

Clayton, Dennis Albert; and Foster, George William, 3,761,795.

Legg, James C.: *See—*

Gray, Joe W.; Hartnell, Geoffrey W.; and Legg, James C., 3,761,720.

Leheny, Robert Francis; Logan, Ralph Andre; Nahory, Robert Edward; and Shaklee, Kerry Lee, to Bell Telephone Laboratories, Incorporated. Lasers in indirect-bandgap semiconductive crystals doped with isoelectronic traps. 3,761,837, Cl. 331-94.50h.

Lehman, Jaime: *See—*

Napor, Carl A.; Lehman, Jaime; and Milana, Anthony A., 3,761,806.

Lehureau, Jean: *See—*

Borrel, Philippe; and Lehureau, Jean, 3,761,561.

- Leinoff, David. Composite fun pelt and method of making same and fur coat. 3,760,424, Cl. 2-65.000.
- Leinonen, Aarno Olavi; and Riekkinen, Asko Sakari. Wire catching device for a continuous wire spooler. 3,761,030, Cl. 242-25.00a.
- Lemberg, Mark Eleazarovich: *See—*
  - Basin, Genrikh Maxovich; Gorenshtein, Ilya Vladimirovich; Lemberg, Mark Eleazarovich; Linetsky, Semen Grigorievich; Myasoed, Anatoly Eliseevich; and Zanis, Yakov Benediktovich, 3,760,596.
- Lemmens, Jozef Mathias: *See—*
  - Brouwer, Geert; Van Dam, Jacobus Ignatius; and Lemmens, Jozef Mathias, 3,760,991.
- Lennard, Jack K.: *See—*
  - Kohn, Alan N.; Lennard, Jack K.; Schlickman, Jay J.; and Weagant, Robert A., 3,761,718.
- Leonard, Richard L.: *See—*
  - Carey, Donald F.; Leonard, Richard L.; and Orofino, Thomas A., 3,760,949.
- Lepore, Donald A.; Puttbach, Richard C.; and De Stefano, Richard J., to Litton Systems, Inc. Simulated emerald gemstone. 3,761,292, Cl. 106-42.000.
- Leroy, Marcel; and Thiebaut, Albert. Rotary-piston engine. 3,760,777, Cl. 123-8.450.
- Lesher, George Y., to Sterling Drug Inc. N,N'-alkylenebic (4-substituted benzamides). 3,761,509, Cl. 260-471.00c.
- Letzer, Edward K., to Eastman Kodak Company. Color analyzing photographic printer. 3,761,172, Cl. 355-3.000.
- Levchenko, Nikolai Ivanovich: *See—*
  - Kaminsky, Igor Vasilievich; Romanenko, Anatoly Mikhailovich; Pimenov, Alexeevich; Markovsky, Grigory Fedorovich; Sinichenko, Anatoly Afanasievich; and Levchenko, Nikolai Ivanovich, 3,760,558.
- Lewer, Gregory S., to Minnesota Mining and Manufacturing Company. Automatic exposure control for copy machine. 3,761,176, Cl. 355-83.000.
- Lewis, G. B., Company: *See—*
  - Olson, Elmer E., 3,760,934.
- Lewis, Jerry M.: *See—*
  - Hanson, Ivor G.; Herbst, George; and Lewis, Jerry M., 3,761,004.
- Lewis, Richard L.; Ewald, Jerome T.; and Shields, Martin A., to Bendix Corporation, The. Hydraulically actuated adaptive braking system using a single fluid. 3,761,140, Cl. 303-21.00f.
- Lewis Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm & Haas Company. 3-Isothiazolones 56 260/302.00a. 3,761,488, Cl. .
- Lewis, Theras Gordon; and Vachon, Patrick Alban, to Bell Telephone Laboratories, Incorporated. Time division signal transfer network. 3,761,624, Cl. 179-15.0aa.
- Leyde, Warren L.: *See—*
  - Maxey, Carl; Montague, Grant R.; Leyde, Warren L.; and Bryan, Eugene L., 3,760,667.
- Licata, William H., to United States of America, Navy. Guidance system for straight running vehicles. 3,760,755, Cl. 114-23.000.
- Lidel, Darrel D., to Eastman Kodak Company. Treating polymeric surfaces. 3,761,299, Cl. 117-34.000.
- Liden, Thomas M.: *See—*
  - Child, Edward T.; Messing, Donald A.; Suggitt, Robert M.; and Liden, Thomas M., 3,761,395.
- Lieb, Walter. Multi-cylinder crankshaft machine, in particular a reciprocating pump or compressor. 3,760,694, Cl. 92-73.000.
- Liebl, Helmut J., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Stigmatically imaging double focusing mass spectrometer. 3,761,707, Cl. 250-294.000.
- Light, Arthur, to Curtis Noll Corporation. Abrasion-resistant alloy steel. 3,761,320, Cl. 148-3.000.
- Lim, Drahoslav; Coupek, Jiri; and Lubomir, Lochmann, to Ceskoslovenska akademie ved. Method of purifying alkali metal alkoxides. 3,761,529, Cl. 260-643.00a.
- Limb, John Ormond, to Bell Telephone Laboratories, Incorporated. Dual mode video encoder. 3,761,613, Cl. 178-7.100.
- Lind, Paul U., to GTE Automatic Electric Laboratories, Incorporated. Touch-calling tone generator. 3,761,642, Cl. 179-90.00k.
- Lind, Wilton H.; and Campbell, Robert W., to Chevron Research Company. Preparation of potassium terephthalate. 3,761,515, Cl. 260-515.00p.
- Linda, Josef; Rosberg, Frantisek; and Marsalek, Jaroslav, to Tos Hostivar narodni podnik. Axial fluid-film bearing. 3,761,150, Cl. 308-160.000.
- Linde Aktiengesellschaft: *See—*
  - Becker, Rudolf, 3,760,597.
  - Jakob, Fritz; Tesar, Gerold; and Kuhnlenz, Karl-Heinz, 3,760,598.
- Lindelow, Claes-Goran: *See—*
  - Englund, Gosta Roland; Lindelow, Claes-Goran; and La Motte, Bengt Ragnar, 3,761,694.
- Lindner, Ernst: *See—*
  - Radscheit, Kurt; Stache, Kelkheim Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,761,464.
- Lindquist, Jonas T., to Oxy-Dry Sprayer Corporation. Apparatus for supplying powder. 3,760,990, Cl. 222-371.000.
- Linetsky, Semen Grigorievich: *See—*
  - Basin, Genrikh Maxovich; Gorenshtein, Ilya Vladimirovich; Lemberg, Mark Eleazarovich; Linetsky, Semen Grigorievich; Myasoed, Anatoly Eliseevich; and Zanis, Yakov Benediktovich, 3,760,596.
- Ling, George C.: *See—*
  - East, Don G.; Eugene, Donald G.; Householder, Virgil R.; and Ling, George C., 3,761,739.
- Linville, Creath W. Connector. 3,760,468, Cl. 24-261.00c.
- Lippmann, Jean Pierre, to Creusot-Lorre. Method and apparatus for controlling the degree of preparation of raw material for cement. 3,761,582, Cl. 423-659.000.
- Listerman, Paul L., to Ohmart Corporation, The. Gauge for determining the percentage by weight of moisture contained in a bulk material transported on a moving conveyor. 3,761,712, Cl. 250-388.000.
- Litchtblau, Heinrich: *See—*
  - Bolza Schunemann, Hans-Bernhard; and Litchtblau, Heinrich, 3,761,001.
- Litton Systems, Inc.: *See—*
  - Lepore, Donald A.; Putthach, Richard C.; and De Stefano, Richard J., 3,761,292.
- Ljibarsky, Efim Matveevich; Igunkin, Nikolai Vasilievich; and Eidinov, Sergei Matveevich. Parallelometer. 3,760,504, Cl. 32-63.000.
- Lo, David S.; Hanson, Marlin M.; Kaske, Alan D.; and Manikowski, Donald M., to Sperry Rand Corporation. Faraday effect page composer for holographic memory system. 3,761,155, Cl. 350-3.500.
- Lochon, Pierre: *See—*
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- Lockhart, Bruce: *See—*
  - Welch, William; Evans, Donald; Neely, Ned; and Lockhart, Bruce, 3,760,967.
- Lockitt, John A.; and Eller, Timothy S., to United States of America, Navy, mesne. Noise modulated analogue signal presence detector. 3,761,809, Cl. 324-77.00r.
- Lodzkie Zaklady Aparatury Elektrycznej: *See—*
  - Kubiak, Tadeusz; and Jagiello, Jan, 3,761,854.
- Logan, Ralph Andre: *See—*
  - Leheny, Robert Francis; Logan, Ralph Andre; Nahory, Robert Edward; and Shaklee, Kerry Lee, 3,761,837.
- Logan, Ralph W.: *See—*
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  - Erfeling, Arthur, 3,760,769.
- Lohneis, Earl R.: *See—*
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- Lohneis, Earl R., to Kearney & Trecker Corporation. Clamping tool changer mechanism and actuating mechanism for a machine tool. 3,760,958, Cl. 214-1.0bd.
- Lohr, Thomas E., to Allied Chemical Corporation. Safety belt buckle. 3,760,467, Cl. 24-230.0al.
- Lonati, Francesco, to Construzioni Meccaniche Lonati di Lonati Francesco. Thread cutting and retaining device for circular knitting machines. 3,760,608, Cl. 66-240.00s.
- Loose, Winfield Warren; and Maltais, Frederick Jean, to AMP Incorporated. Load responsive switch. 3,761,658, Cl. 200-85.00r.
- L'Oreal: *See—*
  - Vogt, Gunther, 3,760,819.
- Lorenz, Hans Peter: *See—*
  - Eder, Ulrich; and Lorenz, Hans Peter, 3,761,507.
- Lorenz, Max R.; and Srinivasan, Rangaswamy, to International Business Machines Corporation. Low energy thermochromic image recording device. 3,761,942, Cl. 346-1.000.
- Lortz, Don C. Blanching apparatus. 3,760,714, Cl. 99-404.000.
- Los, Marinus, to American Cyanamid Company. 2-Dodecahydro-8β-(t-butoxy or benzyloxy)-8αβ-lower alkyl-2-oxo-phenanthrene-alkanoic acids. 3,761,514, Cl. 260-514.500.
- Lou, Richard L.; Katzakian, Arthur, Jr.; and Burket, Stanley C., to Aerojet-General Corporation. Filler rich powder and method of making. 3,761,330, Cl. 149-21.000.
- Louderback, Allan L.; Youhne, Young; and Fontana, Anthony J., to Baxter Laboratories, Inc. Sickle-cell diagnostic test. 3,761,226, Cl. 23-230.00b.
- Louis, Heinrich: *See—*
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- Louisiana State University Foundation, The: *See—*
  - Callihan, Clayton D.; Srinivasan, Vadake R.; and Dunlap, Charles E., 3,761,355.
- Lowe, Richard Douglas, to Electronic Associates Inc. Multichannel programmer. 3,761,826, Cl. 328-105.000.
- Lower, Donald W. Combination optical and radio apparatus. 3,761,815, Cl. 325-16.000.
- Lowicki, Norbert; and Hanig, Gerndt, to Grillo-Werke Aktiengesellschaft. Process for removing sulfur compounds from gas. 3,761,570, Cl. 423-225.000.
- LTV Aerospace Corporation, mesne: *See—*
  - Giraud, Francois L., 3,760,738.
- Lubomir, Lochmann: *See—*
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  - Hoke, Donald Irvin, 3,761,407.
- Lucas, Bernard Henry: *See—*
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- Lucerne Products, Inc.: *See—*
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- Lumco Manufacturing Company: *See—*
  - Gleason, Patrick J., 3,760,475.

- Lussling, Theodor: *See—*
  - Koberstein, Edgar; Lussling, Theodor; Noll, Ewald; Suchsland, Helmut; and Weigert, Wolfgang, 3,761,424.
- Luthar, Prem Chandra. Device for lubricating wheel flanges of railway vehicles. 3,760,904, Cl. 184-3.00r.
- Lutz, David E., to Minicube System, Inc. Container. 3,760,970, Cl. 220-4.00f.
- M M Industries, Inc.: *See—*
  - Meyer, Maurice J., 3,761,087.
- Machacek, Joseph F.: *See—*
  - McClanahan, Robert Milton; and Machacek, Joseph F., 3,761,331.
- Machin, James Robert; Colston, John Matthew; and Jibb, David John, to Elliott Brothers (London) Limited. CRT display system with circle drawing. 3,761,765, Cl. 315-23.000.
- Machine Tools Limited: *See—*
  - Goodwin, David, 3,760,686.
- MacKellar, Donald G.: *See—*
  - Lancelot, Charles J.; and MacKellar, Donald G., 3,761,412.
- MacKinnon, Malcolm, to Shell Oil Company. Venting for molten sulphur tankcars. 3,760,977, Cl. 220-39.00r.
- MacLennan, Alastair S., to Ford Motor Company. Variable pumping system for a propeller fan. 3,760,779, Cl. 123-41.050.
- MacManus, John. Turntable device. 3,760,745, Cl. 108-139.000.
- MacMaster, George H.: *See—*
  - Dudley, Kenneth W.; MacMaster, George H.; and Nichols, Lawrence J., 3,761,834.
- Mader, Heinz Bernhard, to International Standard Electric Corporation. Amplitude stabilized D.C. oscillator witb output circuits for producing semi-sinusoidal clock pulses. 3,761,833, Cl. 331-45.000.
- Madson, Lyle Robert: *See—*
  - Wetrich, Peter Donald; Madson, Lyle Robert; and Weissenfluh, Wesley Walter, 3,760,918.
- Maeda, Itsutoshi: *See—*
  - Yoshida, Ryonosuke; Maeda, Itsutoshi; Akiba, Hitoshi; and Usuba, Yasunori, 3,761,223.
- Maggi, Nicola, to Gruppo Lepetit S.p.A. Rifamycin. 3,761,468, Cl. 260-239.30p.
- Mahin, William E.; and Parlee, Norman A. D., to Kaiser Industries Corporation. Process of preconditioning a chamber and deoxidizing a metal therein. 3,761,246, Cl. 75-46.000.
- Mailen, James C.; and Ferris, Leslie M., to United States of America, Atomic Energy Commission. Separation of californium from other actinides. 3,761,564, Cl. 423-5.000.
- Majury, Ronald Alfred: *See—*
  - Muir, Eric Thomas; Hamnett, Jack Smith; and Majury, Ronald Alfred, 3,760,657.
- Makara, Satoshi; Kitazaki, Toshiro; and Inaba, Masao, to Nippon Electric Company, Limited. Phase error correction system for a video tape recorder. 3,761,605, Cl. 178-5.4cd.
- Maldeis, Lewis Fritts; and Shideler, Aubrey Meredith, to Martin-Marietta Corporation. Apparatus for rapidly coating surfaces with wet, particulate materials. 3,760,933, Cl. 198-128.000.
- Mallin, Sidney. Air displacement deodorizer for toilet tanks and the like. 3,760,433, Cl. 4-228.000.
- Mallory, P. R., & Co., Inc.: *See—*
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- Malmaison, Rueil: *See—*
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- Maltais, Frederick Jean: *See—*
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- Mambretti, Giancarlo. Machine for processing plastic materials. 3,761,217, Cl. 425-224.000.
- Mammau, Ernest E. Method and apparatus for minimizing the fouling of a livestock area and permitting aeration and ventilation at a water receptacle. 3,760,771, Cl. 119-75.000.
- Mang, Oswald Karl Clarence. Atmospheric chloride detection apparatus. 3,761,377, Cl. 204-195.00r.
- Manikowski, Donald M.: *See—*
  - Lo, David S.; Hanson, Marlin M.; Kaske, Alan D.; and Manikowski, Donald M., 3,761,155.
- Mann, Egon: *See—*
  - Baurle, Horst; Veil, Karl; Hamma, Karlmann; and Mann, Egon, 3,761,141.
- Mann, Michael M.: *See—*
  - Bhaumik, Mani L.; Diem, Don D.; and Mann, Michael M., 3,761,838.
- Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, to Agfa-Gevaert N.V. Photographic elements containing ultraviolet-absorbing polymers. 3,761,272, Cl. 96-84.00r.
- Manning's Inc.: *See—*
  - Brunner, Fred William, 3,761,290.
- Mansell, Ivor. Elastomeric forming die. 3,760,622, Cl. 72-57.000.
- Mansfield, Edward Harry. Water filter connection means. 3,760,951, Cl. 210-449.000.
- Manske, Richard: *See—*
  - Reynolds, James R.; and Manske, Richard, 3,760,897.
- Mantelet, Jean, to Moulinex, Societe Anonyme. Thermal warning or protection device. 3,761,856, Cl. 337-409.000.
- Manthey, Horst: *See—*
  - Silberkuhl, Wilhelm Johannes; and Manthey, Horst, 3,760,549.
- Mao, George W., to Gould Inc. Mold coating. 3,761,047, Cl. 249-115.000.
- Marathon Oil Company: *See—*
  - Coleman, John R., Jr.; and Plummer, Mark A., 3,761,401.
  - Norton, Charles J.; and Falk, David O., 3,760,879.
  - Plummer, Mark A., 3,761,403.
  - Sterrett, Eugene L., 3,760,971.
- Marcellis, Alphonso W.: *See—*
  - Kerschner, Paul M.; and Marcellis, Alphonso W., 3,761,434.
- Marchiando, Michael A., to United States of America, Army. Self-leveling anti-disturbance device. 3,760,733, Cl. 102-70.20r.
- Marconi Company, Limited, The: *See—*
  - Monger, Kenneth Sydney; and Wallis, Frank, 3,761,181.
- Marcum, Harold E.: *See—*
  - Harrison, Robert S.; and Marcum, Harold E., 3,760,785.
- Marewitz, Wernhard, to Siemens Aktiengesellschaft. Circuit arrangement for synchronizing transmitters and receivers in data transmission systems. 3,761,891, Cl. 340-146.10d.
- Margotte, Dieter; Vernaleken, Hugo; and Peilstocker, Gunter, to Bayer Aktiengesellschaft. Pigmented polycarbonates with improved properties. 3,761,440, Cl. 260-37.0pc.
- Marion, James E.; and Scanland, Joseph E., to Roper Corporation. Missile deflector system for rotary mower. 3,760,572, Cl. 56-320.200.
- Marita, Takamichi: *See—*
  - Abe, Toshio; Sato, Kanro; Knoaka, Masami; and Marita, Takamichi, 3,761,328.
- Mark, Morris. Folding game board hinge assembly 016/137.000. 3,760,456, Cl. .
- Markovsky, Grigory Fedorovich: *See—*
  - Kaminsky, Igor Vasilievich; Romanenko, Anatoly Mikhailovich; Pimenov, Alexeevich; Markovsky, Grigory Fedorovich; Sinichenko, Anatoly Afanasievich; and Levchenko, Nikolai Ivanovich, 3,760,558.
- Marosi, Istvan; and Volgyes, Frigyes, to Ipari Epulettervezo Vallalat. Large-size metal-framed tower. 3,761,067, Cl. 261-111.000.
- Marovich, Frank A.: *See—*
  - Van Arnam, Donald E.; and Marovich, Frank A., 3,760,660.
- Marsalek, Jaroslav: *See—*
  - Linda, Josef; Rosberg, Frantisek; and Marsalek, Jaroslav, 3,761,150.
- Marsh, Keith D., to Colt Industries Operating Corporation. Redundant throttle return system. 3,760,786, Cl. 123-198.0db.
- Marshall, Donald E. Method for producing laundry products. 3,761,549, Cl. 264-15.000.
- Marshall, Richard Carlile; and Steer, William Stuart, to Odhams (Watford) Limited. Printing presses. 3,760,720, Cl. 101-157.000.
- Marti, Willi Hermann, to Delmoran AG. Disk for single-disk magnetic clutches. 3,761,749, Cl. 310-78.000.
- Martin, Gerald; Baccus, James A.; and Gurman, Marvin, to Holiday Recreation Products, Inc. Modular roof construction. 3,760,546, Cl. 52-555.000.
- Martin, Otis M.: *See—*
  - Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,760,856.
- Martin-Marietta Corporation: *See—*
  - Maldeis, Lewis Fritts; and Shideler, Aubrey Meredith, 3,760,933.
- Martinmaas, Werner W. Steering apparatus for a self-propelled vehicle. 3,760,895, Cl. 180-5.00r.
- Maruyama, Yutaka: *See—*
  - Nakanishi, Michio; Munakata, Tomohiko; Maruyama, Yutaka; and Setoguchi, Shinro, 3,761,481.
- Masabi Jobbers, Inc.: *See—*
  - Callister, Richard M.; and Langer, Robert J., 3,760,727.
- Maschinenfabrik Koppern & Co. KG: *See—*
  - Koch, Friedhelm, 3,760,477.
- Mason, William J.; Wilson, Douglas W.; Considine, Douglas M.; Viosca, Felix Jerome; and Wade, J. Philip, to Hughes Aircraft Company. Material cutting and printing system. 3,761,675, Cl. 219-121.0lm.
- Masson Scott Thrissell Engineering Limited: *See—*
  - Langworthy, Colin George; and Webb, Edwin James, 3,760,675.
- Matejec, Reinhart; Meyer, Rudolf; and Ranz, Erwin, to Agfa-Gevaert Aktiengesellschaft. Testing imagewise distribution of decomposed peroxy compounds in the presence of dye-forming materials and dye intensifying materials of alcohols and ketones. 3,761,265, Cl. 96-48.00r.
- Mathews, Bernard C. Combine with grain bin beneath sieves. 3,760,813, Cl. 130-27.0hf.
- Matsouka, Earl: *See—*
  - Rosenthal, Ben J.; and Matsouka, Earl, 3,760,669.
- Matsuda, Matsuo: *See—*
  - Ogata, Youji; and Matsuda, Matsuo, 3,761,551.
- Matsui, Kiyoshi; Osiyama, Hiroichi; and Kobayashi, Hiroshi, to Hitachi, Ltd. Ice making apparatus. 3,760,600, Cl. 62-137.000.
- Matsukura, Yoshiharu: *See—*
  - Shimamoto, Tsugio; Fujita, Masahiko; Matsukura, Yoshiharu; Kawahara, Osamu; and Sakagami, Mamoru, 3,760,969.
- Matsumoto, Kunio: *See—*
  - Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Matsumoto, Kunio, 3,761,354.
- Matsumoto, Mitsuo; Nishizuka, Yoshihide; and Iwata, Teruo, to Nara Sewing Machine Industrial Co., Ltd. Versatile blind stitch sewing machine. 3,760,747, Cl. 112-178.000.
- Matsumoto, Teruo, to Epoch Company Ltd. Educational device. 3,760,511, Cl. 35-22.00a.
- Matsumoto, Yoshito; Koyama, Kenji; and Takeda, Yasuko, to Chugai Seiyaku Kabushiki Kaisha. Hemostatic agent and the process of preparing same. 3,761,586, Cl. 424-98.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*

- Hori, Harunobu, 3,761,606.
- Mori, Yubi; and Mizu, Kouichi, 3,760,886.
- Oka, Shunzo, 3,761,858.
- Sato, Hosei, 3,760,713.
- Takeichi, Kenzo; and Hama, Shigeru, 3,761,704.
- Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, 3,761,617.
- Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsogu; and Kitamura, Saburo, 3,761,710.

Matsushita Electric Industrial Company, Limited: *See—*
- Hara, Tohru; and Asao, Ichiro, 3,761,306.

Matthews, Benjamin H.; and Rhine, Jules W., to Lucerne Products, Inc. Electronic switch module with ceramic case. 3,761,788, Cl. 318-345.000.

Maurin, Jean: *See—*
- De Gramont, Arnaud Marie Jose; Maurin, Jean; and Weisang, Joseph Edouard, 3,761,532.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
- Liebl, Helmut J., 3,761,707.

Maxey, Carl; Montague, Grant R.; Leyde, Warren L.; and Bryan, Eugene L., to Black Clawson Company, The. Veneer defect detector and clipper control. 3,760,667, Cl. 83-13.000.

Maxwell, James D. Fish net. 3,760,523, Cl. 43-11.000.

Maxwell, Richard F., Jr.; and Tallet, Jose E. Synchronous gated active night sight. 3,761,180, Cl. 356-152.000.

May, Claude H. Vapour generators. 3,760,778, Cl. 123-41.170.

Mayer, Kurt: *See—*
- Baessler, Konrad; and Mayer, Kurt, 3,761,425.

Mayer, Richard J.: *See—*
- Kinberg, Benjamin; and Mayer, Richard J., 3,761,343.

Mayer, Rudolf; and Mueller, Bernhard, to Hopt Electronic GmbH. UHF tuner having 70 detent positions with fine tuning at all positions. 3,760,640, Cl. 74-10.600.

Maymo Figueras, Juan. Process for the preparation of dyeing pigments. 3,761,297, Cl. 106-289.000.

Mc Laughlin, Paul F.: *See—*
- Budinger, William D.; and Mc Laughlin, Paul F., 3,760,637.

McAllister, Owen E., to Morgan Company. Door light unit. 3,760,543, Cl. 52-397.000.

McCaulley, Frank D.: *See—*
- Jones, William W.; and McCaulley, Frank D., 3,760,764.

McClanahan, Robert Milton; and Machacek, Joseph F., to Hunt, Philip A., Chemical Corporation. Bath and method for etching aluminum. 3,761,331, Cl. 156-8.000.

McClosky, James K.: *See—*
- Wilhelm, Harley A.; and McClosky, James K., 3,761,546.

McCoy, Drew E.; McEachern, Robert M.; and Dille, Roger M., to Texaco Inc. Continuous process for the air oxidation of sour water. 3,761,409, Cl. 210-63.000.

McDonnell Douglas Corporation: *See—*
- Smaiko, Joseph S., 3,761,315.

McDowell-Wellman Engineering Company: *See—*
- Haditsch, Karl, 3,760,961.

McEachern, Robert M.: *See—*
- McCoy, Drew E.; McEachern, Robert M.; and Dille, Roger M., 3,761,409.

McFarland, George C.; and Leader, Clifford F. Portable electron beam welding apparatus. 3,761,676, Cl. 219-121.0eb.

McGee, LeLand T. Jack assembly for stabilizing house trailer. 3,760,906, Cl. 188-4.00r.

McGovern, Terrence P.; Beroza, Morton; and Ladd, Thyril L., to United States of America, Agriculture. Phenethyl propionate and eugenol, a potent attractant for the Japanese beetle (Popillia Japonica Newman). 3,761,584, Cl. 424-84.000.

McGowan, Joseph W., to United States of America, Army. Isolimiter. 3,761,924, Cl. 343-5.00r.

McGowen, Harold E., Jr.; and Tausch, Gilbert H., to Camco, Incorporated. Heat controlled gas lift valve. 3,760,832, Cl. 137-155.000.

McGregor, Stanley D., to Dow Chemical Company, The. Aminohalopyridyloxy acids and derivatives thereof. 3,761,486, Cl. 260-294.900.

McHenry, Thomas F., to Barnes Engineering Company. Edge detector utilizing all active junction radiation thermopiles. 3,761,318, Cl. 136-225.000.

McIntyre, Daniel, to Emhart Corporation. Carton partition forming and article handling machine. 3,760,557, Cl. 53-159.000.

McKee, Clyde M.; Scott, Ward; and Shapiro, Sandor. Automatically controlled mirrors. 3,761,164, Cl. 350-307.000.

McKee, Donald H.: *See—*
- Edwards, Robert E.; and McKee, Donald H., 3,760,824.

McKee, James Glen; and Towell, Gordon, to Canadian Industries, Limited. Explosive cartridge. 3,760,728, Cl. 102-24.00r.

McKee, Thomas J.: *See—*
- Over, David J.; Denhart, William L.; and McKee, Thomas J., 3,760,561.

McKenny, Vernon George; and Donnelly, Robert M., to Mostek Corporation. Dynamic random access memory with a secondary source. 3,761,899, Cl. 340-173.00r.

McKenzie, Ross B. Ridge former. 3,760,885, Cl. 172-574.000.

McKinney, Joel D.; and Paraskos, John A., to Gulf Research & Development Company. Two-zone hydrodesulfurization of asphaltic fuel oil. 3,761,399, Cl. 208-210.000.

McKirnan, Robert A., to Knight Engineering & Molding Co. Carafe. 3,760,972, Cl. 220-9.00r.

McLaren, John Vincent: *See—*
- Epton, Roger; McLaren, John Vincent; and Thomas, Trevor Henry, 3,761,357.

McLaughlin, James H.: *See—*
- Bajek, Walter A.; and McLaughlin, James H., 3,761,358.

McLaughlin, Joseph L., Jr., to Itek Corporation. Wide angle, narrow bandwidth laser detection system. 3,761,184, Cl. 356-186.000.

McNeil Laboratories, Incorporated: *See—*
- Schwartz, Norman; and Mohrbacher, Richard J., 3,761,477.

McNichol, David H. Loose leaf paper binding machine. 3,760,444, Cl. 11-1.00r.

Mead Corporation, The: *See—*
- Calvert, Rodney K., 3,760,555.
- Helgeson, Gaylord A.; and Cahill, Lysle D., 3,761,953.
- Robertson, John A., 3,761,941.

Measuring & Process Control Limited: *See—*
- Serry, Victor, 3,760,636.

Meek, William H., to Ferro Corporation. Hydroxy-phenyl formylhydrazides. 3,761,519, Cl. 260-559.00h.

Meeker, Ralph L. Cylinder type soil-sampling auger. 3,760,893, Cl. 175-316.000.

Meier, Ernst, to Interstop A.G. Slide closure for receptacle for molten metals. 3,760,993, Cl. 222-533.000.

Meierhoefer, Eugene J., to American Home Products Corporation. Snap assembled dispensing package and cover. 3,760,987, Cl. 222-153.000.

Meiji Seika Kaisha, Ltd.: *See—*
- Tsuruoka, Takashi; Shomura, Takashi; Ezaki, Norio; Akita, Eiichi; Inoue, Shigeharu; Fukatsu, Shunzo; Amano, Shoichi; Watanabe, Hiroshi; and Niida, Taro, 3,761,588.

Meincer, John H.: *See—*
- Amberg, Stephen W.; Heype, Clarence A.; Lang, Stewart M.; and Meincer, John H., 3,760,968.

Melle-Bezons: *See—*
- Alheritiere, Louis; Gobron, Georges; Falize, Claude; Diet, Jean; Roux, Bernard; and Bouchet, Roland, 3,761,521.

Memorex Corporation: *See—*
- Hulse, Lauren L., 3,761,413.

Mendicino, Frank D., to Union Carbide Corporation. Equilibration of epoxy substituted siloxanes in presence of water and silanol. 3,761,444, Cl. 260-465.00y.

Mendoxa, Fausto Celorio. Disk mill. 3,761,027, Cl. 241-261.300.

Menot, Robert: *See—*
- Hallee, Donald O.; and Menot, Robert, 3,761,889.

Menz, Elsie L., to Xerox Corporation. Imaging process employing charged donor and receiver sheets. 3,761,258, Cl. 96-1.00r.

Menzies, Robert T., to California Institute of Technology. Atmospheric pollutant sensing device. 3,761,715, Cl. 250-338.000.

Merck & Co., Inc.: *See—*
- Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S., 3,761,491.

Merlin Gerin, Societe Anonyme: *See—*
- Allaigre, Andre, 3,761,747.
- Benner, Jean-Rene, 3,760,739.
- Payen, Jean-Pol, 3,760,913.

Merrigan, Joseph Andrew: *See—*
- Gilman, Paul Brewster, Jr.; Raleigh, Ronald George; and Merrigan, Joseph Andrew, 3,761,267.

Merrill, Robert H., to United States of America, Interior. Method of detecting loose rock. 3,761,713, Cl. 250-341.000.

Merrimac Industries, Inc.: *See—*
- Cappucci, Joseph D., 3,761,843.

Mertens, Johann, to Nuclear Waste Systems Company, mesne. Floatable-submersible vessel container. 3,760,753, Cl. 114-.50t.

Mesiah, Raymond N., to FMC Corporation. Purification of crude cyanuric acid. 3,761,474, Cl. 260-248.00a.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
- Kaltschmidt, Horst; Scholler, Peter; and Flachmann, Burkhard, 3,761,817.

Messin, Sam: *See—*
- Kay, Andrew F.; and Messin, Sam, 3,761,738.

Messing, Donald A.: *See—*
- Child, Edward T.; Messing, Donald A.; Suggitt, Robert M.; and Liden, Thomas M., 3,761,395.

Mesta Machine Company: *See—*
- Campbell, Allen B., 3,760,677.

Meyer, John V., to Texas Instruments, Incorporated. Process for making conductive polymers. 3,760,495, Cl. 29-610.000.

Meyer, Klaus; and Strelow, Gert, to Bosch, Robert, G.m.b.H. Ignition circuit. 3,760,782, Cl. 123-148.00e.

Meyer, Lawrence L., to Texas Instruments, Incorporated. Automatic tire identifier with threshold setting proportional to the received signals. 3,761,725, Cl. 250-566.000.

Meyer, Maurice J., to M M Industries, Inc. Frustrum shaped target and projectile. 3,761,087, Cl. 273-95.00r.

Meyer, Rudolf: *See—*
- Matejec, Reinhart; Meyer, Rudolf; and Ranz, Erwin, 3,761,265.

Michal, Eugene J., to American Metal Climax, Inc. Leaching of nickel lateritic ores with waste iron sulfate solutions. 3,761,566, Cl. 423-141.000.

Michel, Rupprecht, to Kraftwerk Union Aktiengesellschaft. Boiler having gas-tight welded furnace walls. 3,760,774, Cl. 122-6.00a.

Micheletti, Ciro, to Societa' per l'Esercizio Dell Istituto Sperimentale Metalli Leggeri. Self-coloring anodic oxidation process for aluminum and its alloys. 3,761,364, Cl. 204-58.000.

Middelhoek, Simon; and Sasso, Giovanni, to International Business Machines Corporation. Procedure for making semiconductor devices of small dimensions. 3,760,492, Cl. 29-571.000.

Middendorf, Roy M., to Tree City Tool & Engineering Co., Inc. Welding apparatus with guide means. 3,761,006, Cl. 228-25.000.

Midway Manufacturing Company: *See—*
- Brown, Richard L., 3,761,088.

Miglierina, Angelo: *See—*
- Geri, Sergio; Miglierina, Angelo; and Ceccato, Giovanni, 3,761,454.

Migliore, Fred J. Chess game apparatus. 3,761,093, Cl. 273-131.0ab.

Mikiya, Toshio. Manifold having plurality of quick connect-disconnect plugs for selectively receiving pressure meter, drain cock, etc. 3,760,842, Cl. 137-557.000.

Mil-Pac Systems, Inc.: *See—*
- De Milt, Kenneth E.; Collins, Stephen; and Scholer, Henry Gardner, 3,760,717.

Milana, Anthony A.: *See—*
- Napor, Carl A.; Lehman, Jaime; and Milana, Anthony A., 3,761,806.

Miles, John R. Response unit. 3,760,509, Cl. 35-9.00r.

Miles, Joseph T. Loss-proof pocket size case. 3,760,459, Cl. 24-3.00h.

Milewski, Andrzej Tadeusz: *See—*
- Chu, Pe Tsi; Corby, Bernard; James, Andre Ernest; Le Blanc, Robert; and Milewski, Andrzej Tadeusz, 3,761,638.

Millar, George: *See—*
- Stapleton, Peter L.; Millar, George; Hartshorn, Frank; and Barton, George C., 3,760,445.

Miller, Albert R.: *See—*
- Baumann, Frederick W.; and Miller, Albert R., 3,761,748.

Miller, George A.: *See—*
- Lewis Sheldon N.; Miller, George A.; and Law, Andrew B., 3,761,488.

Miller, Leonidas C. Flow switch vane with apertures covering substantially the entire surface area to minimize turbulence. 3,761,657, Cl. 200-81.90r.

Miller, Robert A. Bowling ball return track system. 3,761,086, Cl. 273-47.000.

Miller, Silas N.: *See—*
- Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,760,856.

Miller, Warren J.; and Baxendale, Ralph W., to Eastman Kodak Company. Process of preparing radiation sensitive materials. 3,761,273, Cl. 96-94.000.

Miller, William S., to Filmamatic Corporation, mesne (formerly Kimball & Associates, Inc.). Film processing apparatus. 3,760,705, Cl. 95-84.00b.

Milton, Kirby Mitchell, to Eastman Kodak Company. Silver halide emulsions predominantly chloride containing silver halide grains with surfaces chemically sensitized and interiors free from chemical sensitization and the use thereof in reversal processes. 3761,266, Cl. 96-64.000.

Mimeur, Robert, to Etablissments Carpano & Pons S.A. Safety-release ski binding toe-stop member. 3,761,105, Cl. 280-11.357.

Mine Safety Appliances Company: *See—*
- Temple, Ernest E.; and Giebel, Joseph L., 3,760,674.

Minicube System, Inc.: *See—*
- Lutz, David E., 3,760,970.

Minnesota Mining and Manufacturing Company: *See—*
- Borman, Maynard P., 3,761,097.
- Errede, Louis A., 3,761,238.
- Kirby, Russell B., Jr.; and Wing, Stephen C., 3,760,864.
- Lewer, Gregory S., 3,761,176.
- Perrington, Kenneth J.; Vogelgesang, Peter J.; and Knudsen, James K., 3,761,311.

Minolta Camera Co., Ltd.: *See—*
- Hirata, Hiroshi, 3,761,166.

Minolta Camera Kabushiki Kaisha: *See—*
- Tsujimoto, Kayoshi, 3,760,699.
- Yuasa, Yoshio; Naya, Mikio; and Tsuchiyasu, Koichiro, 3,761,183.

Miquel, Jean: *See—*
- Sugier, Andre; Malmaison, Rueil; and Miquel, Jean, 3,761,428.

Misseri, Marcel: *See—*
- Decouzon, Georges; Misseri, Marcel; and Chalesle, Andre, 3,760,649.

Mitani, Toru: *See—*
- Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,761,482.

Mitchell, David S., to Chevron Research Company. Catalyst rejuvenation. 3,761,400, Cl. 208-216.000.

Mitchell, John E., Company: *See—*
- Mitchell, Orville, 3,761,202.

Mitchell, Orville, to Mitchell, John E., Company. Compressor with cross axis. 3,761,202, Cl. 417-269.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
- Fujimura, Takeo, 3,760,698.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
- Ogata, Youji; and Matsuda, Matsuo, 3,761,551.

Miura, Kiyoshi; and Tomita, Yoshifumi, to Hitachi, Ltd. Fluorescent screens for use in cathode ray tubes. 3,761,756, Cl. 313-92.00r.

Miyairi, Norimasa; Miyoshi, Toshio; Kohsaka, Masanobu; Ikoshima, Koichi; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. Antibiotic thiopeptin and process of production. 3,761,587, Cl. 424-117.000.

Miyajima, Mikio: *See—*
- Ogasawara, Shoji; Aizawa, Hideo; Kamijo, Yoshimi; Miyajima, Mikio; and Igarashi, Sadao, 3,761,860.

Miyazaki, Gentaro: *See—*
- Mouri, Katsuo; and Miyazaki, Gentaro, 3,761,608.

Miyazaki, Takeshi; Ishijima, Yoichi; and Sawada, Yoshizo, to Hitachi Metals, Inc. Magnetic alloy having high magnetic permeability and high hardness. 3,761,255, Cl. 75-170.000.

Miyoshi, Toshio: *See—*
- Miyairi, Norimasa; Miyoshi, Toshio; Kohsaka, Masanobu; Ikoshima, Koichi; and Imanaka, Hiroshi, 3,761,587.

Mizu, Kouichi: *See—*
- Mori, Yubi; and Mizu, Kouichi, 3,760,886.

Mizutani, Takayuki; and Yamamoto, Tsutomu, to Nippon Electric Company, Limited. Apparatus for producing single crystals including halogen lamps aligned with the common major axes of a spheroidal reflector pair. 3,761,677, Cl. 219-349.000.

Mizzoni, Renat Herbert; and De Stevens, George. Quinoline derivatives exhibiting growth promoting and anticoccidial effects. 3,761,592, Cl. 424-258.000.

Mlinaric, Tony A., to Ampex Corporation. Magnetic head with demountable face part assembly. 3,761,641, Cl. 179-100.20c.

Mobil Oil Corporation: *See—*
- Blount, Elmo M.; and Prueger, Nicolas J., 3,760,876.
- Bustin, Franz, 3,760,940.
- Heiba, El-Ahmadi Ibrahim; and Srinivasan, Sundaresa, 3,761,569.
- Rollmann, Louis Deane, 3,761,389.
- Straus, Andrew J. D., 3,761,863.

Modicon Corporation: *See—*
- Morley, Richard E., 3,761,893.

Moehring, Gerhard: *See—*
- Horstmeier, Gerhard; and Moehring, Gerhard, 3,761,648.

Moeller & Neumann GmbH: *See—*
- Buchheit, Otto Karl, 3,760,931.

Moffitt, Roy M. Company, The: *See—*
- Edwards, Robert E.; and McKee, Donald H., 3,760,824.

Mohon, Windell N.; Rodemann, Alfred H.; and Oerderian, George, to United States of America, Navy. Holographic colored light pattern simulation. 3,761,156, Cl. 350-3.500.

Mohrbacher, Richard J.: *See—*
- Schwartz, Norman; and Mohrbacher, Richard J., 3,761,477.

Mohri, Yohichi, to Nissan Motor Company, Limited. Temperature sensitive pressure regulator. 3,761,017, Cl. 236-87.000.

Molins Limited: *See—*
- Doerman, Eryk Stefan, 3,760,631.
- Labee, Francis A. M.; Preston, Edward George; Dingli, Paul; Hirsh, Ivan Y.; and Dyett, Derek Henry, 3,760,672.

Moll, Franz: *See—*
- Gaub, Walter; Von Konig, Anita; Moll, Franz; Muller-Bardorff, Wolfgang; and Saleck, Wilhelm, 3,761,278.

Molly, Hans. Axial piston type machine. 3,760,692, Cl. 91-505.000.

Molnar, Karoly: *See—*
- Tuba, Zoltan; Bor, Maria, nee Szabo; Molnar, Karoly; and Gorog, Sandor, 3,761,496.

Monark-Crescent AB: *See—*
- Seidl, Jiri, 3,761,207.

Mondshine, Thomas C.; and Watson, Kenneth E., to NL Industries, Inc. Composition and process for increasing the lubricity of water base drilling fluids. 3,761,410, Cl. 252-8.50c.

Monger, Kenneth Sydney; and Wallis, Frank, to Marconi Company, Limited, The. Method and apparatus for measuring solderability of metal surfaces. 3,761,181, Cl. 356-156.000.

Monin, Claude, to C.I.T.-Compagnie Industrielle des Telecomunications. Telephone dialer with two different pulse rates. 3,761,640, Cl. 179-9.0ok.

Monsanto Company: *See—*
- Anderson, George J.; and Dahms, Ronald H., 3,761,448.
- Chamberlin, John M., 3,761,348.
- Chupp, John P., 3,761,241.
- Curtis, Burnell P., Jr.; Fannin, Loyd W.; Paulik, Frank E.; and Price, Jerry L., 3,761,579.
- Stahlheber, Norman E., 3,761,416.
- Young, Evan Johnson; and Summers, Charles Gene, 3,761,525.

Montague, Grant R.: *See—*
- Maxey, Carl; Montague, Grant R.; Leyde, Warren L.; and Bryan, Eugene L., 3,760,667.

Montecatini Edison S.p.A.: *See—*
- Geri, Sergio; Miglierina, Angelo; and Ceccato, Giovanni, 3,761,454.

Moore, Arthur B. Buffer coil. 3,761,069, Cl. 267-152.000.

Moore, Philip D. Device for teaching time and rhythm. 3,760,680, Cl. 84-483.000.

Moore, Ray D. Plastic fishing worm. 3,760,528, Cl. 43-42.240.

Moore, Robert F., to Grimm, G. H., Co., Inc. Hay tedding machine. 3,760,575, Cl. 56-370.000.

Morey, Everett D.: *See—*
- Bochan, John; Akers, Alvin; and Morey, Everett D., 3,760,612.

Morgan Company: *See—*
- McAllister, Owen E., 3,760,543.

Morgan Construction Company: *See—*

  - Sieurin, Donald, 3,761,003.
- Morgan, Robert H. Treestump removing machine. 3,760,515, Cl. 37-2.00r.
- Mori, Hiroshi: *See—*
  - Takahashi, Naoki; Mori, Hiroshi; and Ueki, Hiroshi, 3,761,956.
- Mori, Toshio: *See—*
  - Otani, Seiya; Iwamura, Takao; Sando, Kiichiro; Akita, Shoichi; Yamamoto, Takeya; Takeuchi, Ikuyoshi; Tsuchiya, Yasuaki; Noguchi, Yoshio; and Mori, Toshio, 3,761,533.
- Mori, Yubi; and Mizu, Kouichi, to Matsushita Electric Industrial Co., Ltd. Electrically-powered device for exerting rotational impact force to a fastener element. 3,760,886, Cl. 173-93.600.
- Morinaga Milk Industry Co., Ltd.: *See—*
  - Nagasawa, Taro; Okonogi, Shigeo; Oizumi, Saburo; and Ohya, Tatsumi, 3,761,285.
- Morine, Richard L.; and Hokes, James J., to Fedco, Inc. Apparatus for dispensing a plurality of discrete quantities of fluent material. 3,760,989, Cl. 222-276.000.
- Moritz, Karl-Ludwig; and Taube, Carl, to Bayer Aktiengesellschaft. Quaternary azo dyestuffs from substituted benzisothiazoles and ammonium containing aromatic carbocyclic couplers. 3,761,462, Cl. 260-158.000.
- Morley, Richard E., to Modicon Corporation. Digital computer. 3,761,893, Cl. 340-172.500.
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- Munjat, Francis S.; and Kim, Sin Ho, to Houghton, E. F., & Company. Thermosetting wet strength resin. 3,761,350, Cl. 162-164.000.
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- Neill, William T.; and Reynolds, Roy, to Applied Power Industries, Inc. Flow control of tilt cab in free fall. 3,761,123, Cl. 296-28.00c.
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- Nelson, Victor. Sector motor, direct motion rotary actuator. 3,761,851, Cl. 335-253.000.
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- Neumann, John W., to Oxy Metal Finishing Corporation, mesne. Container transfer mechanism. 3,760,453, Cl. 15-304.000.
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- Newlove, Brian. Fibre-glass mounding process. 3,761,560, Cl. 264-257.000.
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Paglia, Richard, to Polaroid Corporation. Photographic apparatus with delayed interlock switch. 3,760,701, Cl. 95-11.00r.
Palauro, Dieter K., to Gardner-Denver Company. Reversible piston hammer for percussion tool. 3,760,887, Cl. 173-134.000.
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Perrington, Kenneth J.; Vogelgesang, Peter J.; and Knudsen, James K., to Minnesota Mining and Manufacturing Company. Dual-layer magnetic recording tape. 3,761,311, Cl. 117-239.000.
Perry, Elijah Robert, to I-T-E Imperial Corporation. Above ground gas-insulated pipe type transmission configuration. 3,761,600, Cl. 174-16.00b.
Pert, Norman A.; Berler, Robert M.; and Murthy, Nanjundian N., to Pitney-Bowes Alpex, Inc. Data processing means with printed code. 3,761,685, Cl. 235-61.11e.
Peschel, Stanely G.: *See—*
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- Rasmussen, John O., Jr. Nuclear backscatter analyzer for quantitative analysis using isotope ratio method. 3,761,225, Cl. 23-230.00r.
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- Rath, Heinrich Bernhard; and Hess, Wolfgang, to Girling Limited. Disc brakes for vehicles. 3,760,908, Cl. 188-72.500.
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  - Stancel, Albert Lee, Jr.; and Isom, Warren Rex, 3,761,645.

  - Sterzer, Fred, 3,761,264.
- Reader, Arthur J. Method and apparatus for sorting and distributing mail. 3,760,943, Cl. 209-122.000.
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- Reeder, Larry R., to Raychem Corporation. Impedance-matching apparatus for connecting co-axial cables through separable connectors of multiple pin type. 3,761,844, Cl. 333-33.000.
- Reggia, Frank, to United States of America, Army. Ferrite dipole antenna radiator. 3,761,938, Cl. 343-785.000.
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- Regier, Robert B., to Phillips Petroleum Company. Olefin disproportionation catalyst and process for using same. 3,761,427, Cl. 252-441.000.
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- Reid, Alfred E. Gripping tool with rotatable head. 3,761,121, Cl. 294-26.000.
- Reid, Robert E.; Chen, Ting P.; and Ward, Frank K., to Texaco Inc. Process for preparing bis-(hydroxyalkyl) secondary alkyl amines. 3,761,523, Cl. 260-584.00r.
- Reifers, Richard F.; and Bixler, Kenneth D., to Diamond International Corporation. Food packaging tray. 3,761,011, Cl. 229-2.500.
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- Reynolds, David L.; Youngblood, Douglas J.; Parker, Levi C.; and Colvert, James H., to Texaco Inc. Catalytic cracking of naphtha. 3,761,394, Cl. 208-120.000.
- Reynolds, James R.; and Manske, Richard. Load moving vehicle. 3,760,897, Cl. 180-8.00a.
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- Richards, David O.; Beeson, Robert J.; and Kissell, Ronald E., to Owens-Corning Fiberglas Corporation. Tubular fibrous body and method and apparatus for forming same. 3,761,342, Cl. 156-446.000.
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- Richardson, John Bernard; and Sharpe, Anthony Keith, to Pye Limited. Multiple receiver selection system. 3,761,822, Cl. 325-301.000.
- Richardson, Russell F.; and Richardson, Gregory A., to Richline Company Incorporated, The. Rivet gun. 3,760,627, Cl. 72-391.000.
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- Riethmann, Jean; Gremmelmaier, Claude; and Scheck, Leo, to Ciba-Geigy Corporation. Continuous process for the production of cyanuric chloride. 3,761,472, Cl. 260-248.00c.
- Rietmann, Norman G., to Autoclave Engineers, Inc. Isostatic clamp press. 3,761,574, Cl. 423-405.00h.
- Rifgin, Alfred A.; and Simon, Andrew M., to International Business Machines Corporation. Integral storage container, shipping carton and extraction/insertion mechanism for multi-chip circuit modules. 3,760,486, Cl. 29-278.000.
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  - Puster, Louis M., 3,761,050.
- Robertson, John A., to Mead Corporation, The. Phase control for a drop generating and charging system. 3,761,941, Cl. 346-1.000.
- Robillard, Edward G.; and Uhtenwoldt, Herbert P., to Cincinnati Milacron-Heald Corporation. Wheel dulling sensing circuit. 3,760,539, Cl. 51-165.00r.
- Robinson, James J. Self feeding continuous forming device. 3,760,624, Cl. 72-385.000.
- Robison, James W.: *See—*
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- Robles, Henry. Wheel locking device. 3,760,620, Cl. 70-226.000.
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- Rogers, George W., to Allis-Chalmers Corporation. Vehicle braking system with spring applied parking brake. 3,761,139, Cl. 303-99.000.
- Rogers, Howard G., to Polaroid Corporation. Film assemblage for color diffusion transfer film. 3,761,271, Cl. 86-77.000.
- Rogers, Steven A. Security system. 3,761,683, Cl. 235-61.70b.
- Rohl, Hermann; Eversmann, Werner; Hegenberg, Peter; and Hellemanns, Gerhard, to Chemische Werke Huls Aktiengesellschaft. Process for the continuous production of saturated aliphatic dicarboxylic acids. 3,761,517, Cl. 260-531.00r.
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- Rosenhaupt, Fritz, to Siemens Aktiengesellschaft. Method and apparatus for distortion measurement on data transmission networks. 3,761,626, Cl. 178-69.00a.
- Rosenthal, Ben J.; and Matsouka, Earl, to Rosenthal Manufacturing Company, Inc. Sheet material feeding and cutting apparatus and control system therefor. 3,760,669, Cl. 83-63.000.
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- Rostone Corporation: *See—*
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- Rothert, Horst; and Karasiak, Wolf, to Firestone Tire & Rubber Company, The, mesne. Processing apparatus. 3,761,059, Cl. 259-9.000.
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- Russell, Lewis K., to Signetics Corporation. Random integer generator and method. 3,761,696, Cl. 235-152.000.
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- Ruthel, Walter W.; and DeLong, Jon C., to Hooker Chemical Corporation. Electrode structure. 3,761,385, Cl. 204-290.00f.
- Ryan, Robert B., to AAI Corporation. Testing arrangement. 3,761,808, Cl. 324-73.00r.
- Sagarieuil, Katumasa: *See—*
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- Santilli, Raymond R. Alternator power source. 3,761,727, Cl. 290-40.000.
- Saroia, Sadayoshi, to Danki Onkyo Co., Ltd. Color television picture tube apparatus. 3,761,763, Cl. 315-13.00c.
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- Sastri, Aiyaswami S., to Gillette Company, The. Method for producing an improved cutting tool. 3,761,372, Cl. 204-192.000.
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- Schmitt, Paul F. Visual aid for sportsman gunning. 3,760,735, Cl. 102-87.000.
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  - Finster, Leslie P.; Kelly, William J.; Naegele, Erich Otto; Petrovsek, Richard J.; Reader, Trevor D.; Reynolds, Warren A.; Sekse, Torkjell; Sevilla, Ernesto G.; and Sours, William A., 3,761,906.
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  - Gatti, Anthony R., 3,761,397.
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- Shepherd, Lawrence H., Jr.: *See—*
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- Shieff, Maxwell E. Magnetic checkers game. 3,761,092, Cl. 273-131.0ad.
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  - Tchang, Gabriel A., 3,761,827.
  - Vollmeyer, Werner; and Voss, Hans-Heinrich, 3,761,621.
- Sieurin, Donald, to Morgan Construction Company. Flat chain guide. 3,761,003, Cl. 226-172.000.
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- Simmons, Frank A., to Burgess Vibrocrafters, Inc. Method of fabricating a venture in the passage of a tube. 3,760,479, Cl. 29-157.00c.
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  - Ven Namen, Frederik, 3,761,075.
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- Skotetsch, Paul B. S. Sign letter construction. 3,760,552, Cl. 287-189.36d.
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- Societe Anonyme Automobiles Citroen: *See—*
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- Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
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- Sterzer, Fred, to RCA Corporation. Method of defining a detailed pattern on a surface of a body. 3,761,264, Cl. 96-46.000.
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- Stevenson, William H., III. Rehydration apparatus. 3,760,716, Cl. 99-536.000.
- Stewart, Edward T.; and Bishop, Jerald W. Pipe pulling machine. 3,760,595, Cl. 61-72.500.
- Stier, William F., Sr. Price stamper and stainless steel pad holder. 3,760,721, Cl. 101-334.000.
- Stillions, Frederick K. Combination combustible gas generator-burner. 3,761,221, Cl. 431-18.000.
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- Thiess, George H.; and Crabtree, Willie A., to HMW Industries, Inc., mesne (formerly Hamilton Watch Company). Electronic timepiece with power conserving features. 3,760,582, Cl. 58-50.00r.
- Thiokol Chemical Corporation: *See—*
  - Osborne, Donald W.; and Peterson, Stanley V., 3,760,730.
  - Puckett, William R.; Kelly, John H.; Overall, Robert E.; and De Haye, John J., 3,760,589.
- Thom, Derek Walter; and Hayman, Nigel Ward, to Imperial Chemical Industries Limited. Manufacture of bulked yarn. 3,761,556, Cl. 264-210.00f.
- Thomas & Betts Corporation: *See—*
  - Churla, John J., 3,761,867.
  - Ebinger, John W., 3,761,872.
- Thomas, Ian M., to Owens-Illinois, Inc. 55 Liquid double alkoxides. 3,761,500, Cl. 260-448.0ad.
- Thomas, Jerome F.: *See—*
  - Brink, David L.; and Thomas, Jerome F., 3,761,568.
- Thomas, Trevor Henry: *See—*
  - Epton, Roger; McLaren, John Vincent; and Thomas, Trevor Henry, 3,761,357.
- Thompson, Bernard C. Measuring and dispensing device for granulated materials and the like. 3,760,983, Cl. 222-90.000.
- Thompson, Emil W.: *See—*
  - Gaughan, Gerald E.; Buchanan, Earl H.; and Thompson, Emil W., 3,760,731.
- Thompson, James S. Method of assembling a saw horse and assembly kit therefor. 3,760,903, Cl. 182-181.000.
- Thompson, John T.; and Gillemot, George W. Terminal board for expediting restoration of phone service over a severed communication cable. 3,761,771, Cl. 317-118.000.
- Thompson, Stanley C. Golf club head with sole plate-keel attachment. 3,761,095, Cl. 273-174.000.
- Thomson-CSF: *See—*
  - Bertheas, Jean, 3,761,821.
  - Claverie, Claude, 3,761,830.
  - Perrin, Jacques, 3,761,813.
- Thorson, Sheldon E.; Clemons, Cecil I.; and Viola, Vito, to Singer Company, The. Inking device for a rotary printing member. 3,760,722, Cl. 101-350.000.
- Thrift, William L.: *See—*
  - Harper, W. Harold; Thrift, William L.; and Hailey, Robert E., Jr., 3,761,943.
- Tidal Sales Corporation, mesne: *See—*
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- Tillig, Helmut: *See—*
  - Trankner, Werner; Hahn, Erich; Hahn, Werner; and Tillig, Helmut, 3,760,700.
- Timberlake, Charles, to General Electric Company. Projection system. 3,761,616, Cl. 178-7.50d.
- Timm, Gerald W.; and Bradley, William E., to University of Minnesota, The Regents of the. Implantable spiral wound stimulation electrodes. 3,760,812, Cl. 128-418.000.
- Ting, Lawrence K.: *See—*
  - Plummer, William T.; Salomon, Udo W.; and Ting, Lawrence K., 3,761,179.
- Tirrell, Charles E., to Electrodics Incorporated. Process for the electrolytic reclamation of spent etching fluids. 3,761,369, Cl. 204-151.000.
- Tisone, Thomas Charles: *See—*
  - Chin, Gilbert Yukyu; Grupen, William Brightman; and Tisone, Thomas Charles, 3,761,904.
- Titus, Robert J.; and Kelly, William J., to Cogar Corporation. High-frequency chopper supply. 3,761,742, Cl. 307-240.000.
- Tobbe, William F.; Benway, Ernest A.; Simko, David M.; Gallagher, Bernard J.; and Boylan, John, to Whitey Research Tool Company. Flow plugger valve. 3,761,052, Cl. 251-88.000.
- Toku, Hiroshige: *See—*
  - Nishimura, Tamio; Yoshii, Shin; Toku, Hiroshige; and Nomiya, Bunzo, 3,761,471.
- Tokyo Shibaura Electric Co., Ltd.: *See—*
  - Abe, Toshio; Sato, Kanro; Knoaka, Masami; and Marita, Takamichi, 3,761,328.
  - Nagho, Tsuguki; Okakura, Tomiji; and Hasegawa, Kazunori, 3,761,665.
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- Tomlin, Jerry B.: *See—*
  - Kemp, Willard E.; and Tomlin, Jerry B., 3,760,833.
- Tondato, Carlo F. Mold press. 3,761,215, Cl. 425-193.000.
- Toray Industries, Inc.: *See—*
  - Otani, Seiya; Iwamura, Takao; Sando, Kiichiro; Akita, Shoichi; Yamamoto, Takeya; Takeuchi, Ikuyoshi; Tsuchiya, Yasuaki; Noguchi, Yoshio; and Mori, Toshio, 3,761,533.
  - Suzuki, Masaru; Sagarieuil, Katumasa; Yoshiikyoto, Toshiya; Saito, Yasuo; Fosayama, Takeo; and Hasimoto, Takeshi, 3,761,772.
- Torgov, Igor Vladimirovich: *See—*
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- Torii, Soichi; and Ishikawa, Haruyoshi, to Torii Winding Machine Co., Ltd. Automatic spindle-exchange apparatus on textile machinery. 3,761,028, Cl. 242-18.00a.
- Torii Winding Machine Co., Ltd.: *See—*
  - Torii, Soichi; and Ishikawa, Haruyoshi, 3,761,028.
- Torkos, Thomas M.: *See—*
  - Bryson, Millard C.; Stauffer, Harry C.; and Torkos, Thomas M., 3,761,388.
- Torrens, Christian; DeProux, Jacques Roland; and Picard, Michel, to Societe Industrielle Honeywell Bull (Societe Anonyme). Typeholder element for on-the-fly printing machine. 3,760,719, Cl. 101-111.000.
- Tos Hostivar narodni podnik: *See—*
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- Tovey, Stanley Wallace: *See—*
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- Towell, Gordon: *See—*
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- Townsend, Mark Allan, to Bell Telephone Laboratories, Incorporated. Latching switch. 3,761,855, Cl. 337-78.000.
- Toyo Jozo Kabushiki Kaisha: *See—*
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- Toyoda Koki Kabushiki Kaisha: *See—*
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  - Unno, Kunihiko; and Sugita, Kazuhiko, 3,761,146.
- Tracy, Gene A., to Cornelius Company, The. Index means for removable valve. 3,760,835, Cl. 137-322.000.
- Trageser, Ludwig. Mechanism for simultaneously cutting tensioned bobbin threads as all the needle heads of an automatic embroidering machine. 3,760,749, Cl. 112-252.000.
- Trankner, Werner; Hahn, Erich; Hahn, Werner; and Tillig, Helmut. Single-lens reflex camera. 3,760,700, Cl. 95-10.00b.
- Trapp, Harold D. Drum transporter. 3,760,964, Cl. 214-390.000.
- Trebichavsky, Ctibor: *See—*
  - Zubak, Jan; Trebichavsky, Ctibor; Vahom, Nove Mesto Nad; and Augustin, Jan, 3,761,367.
- Tree City Tool & Engineering Co., Inc.: *See—*
  - Middendorf, Roy M., 3,761,006.
- Tremmel, Robert A., to Oxy Metal Finishing Corporation. Microcracked nickel plating bath and process. 3,761,363, Cl. 204-49.000.
- Tricoles, Gus P.; and Rope, Eugene L., to General Dynamics Corporation. Radio frequency transmitting apparatus having slotted metallic radio frequency windows. 3,761,937, Cl. 343-770.000.
- Trienco, Inc.: *See—*
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- Trixco Inc., mesne: *See—*
  - Muir, Eric Thomas; Hamnett, Jack Smith; and Majury, Ronald Alfred, 3,760,657.
- Tropeano, Joseph C.; and Tropeano, Philip L. Method and apparatus for snow making. 3,761,020, Cl. 239-2.00s.
- Tropeano, Philip L.: *See—*
  - Tropeano, Joseph C.; and Tropeano, Philip L., 3,761,020.
- Trube, Rudolf: *See—*
  - Kabisch, Gerhard; and Trube, Rudolf, 3,761,581.
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  - Trulaske, Arthur W., 3,760,535.
- Trulaske, Arthur W., to True Manufacturing Company, Inc. Self-closing, sliding door assembly. 3,760,535, Cl. 49-379.000.
- Trusselle, William H., to Pneumatic Scale Corporation. Container-filling apparatus. 3,760,853, Cl. 141-146.000.
- Truxa, Leslie; and Descary, J. Gilbert, to Dominion Engineering Works, Limited. Adjustable profile cutter means. 3,760,685, Cl. 90-15.000.
- TRW Inc.: *See—*
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  - Blackwell, Druce, 3,761,185.
  - Jones, Robert J., 3,761,453.
- Tsubakimoto Chain Co., Ltd.: *See—*
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- Tsuboi, Kiyoshi, to Iwasaki Toushinki Kabushiki Kaisha. Impedance-matching resistor. 3,761,846, Cl. 333-33.000.
- Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, to Matsushita Electric Industrial Co., Ltd. DC electroluminescent crossed-grid panel with digitally controlled gray scale. 3,761,617, Cl. 178-7.30d.
- Tsuchiya, Yasuaki: *See—*
  - Otani, Seiya; Iwamura, Takao; Sando, Kiichiro; Akita, Shoichi; Yamamoto, Takeya; Takeuchi, Ikuyoshi; Tsuchiya, Yasuaki; Noguchi, Yoshio; and Mori, Toshio, 3,761,533.
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- Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Camera connected with electronic flash device. 3,760,699, Cl. 95-10.00c.
- Tsukiyasu, Tadashi: *See—*
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- Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Electronic wrist watch with alarm. 3,760,583, Cl. 58-57.500.
- Tsuruoka, Takashi; Shomura, Takashi; Ezaki, Norio; Akita, Eiichi; Inoue, Shigeharu; Fukatsu, Shunzo; Amano, Shoichi; Watanabe, Hiroshi; and Niida, Taro, to Meiji Seika Kaisha, Ltd. Antibiotics and production thereof. 3,761,588, Cl. 424-121.000.
- Tuba, Zoltan; Bor, Maria, nee Szabo; Molnar, Karoly; and Gorog, Sandor, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the acylation of 17β-hydroxysteroides containing an enolizable oxo-group. 3,761,496, Cl. 260-397.400.
- Tudberry, Ronald Owen, to International Computers Limited. Card guage. 3,760,506, Cl. 33-174.00r.
- Tupker, Willem E., to Ledeen Flow Control Systems, Inc. Valve operator and method of making the same. 3,760,480, Cl. 29-157.11r.
- Turner, Carroll G.; and Turner, Robert W. Apparatus for determining speed of a moving object. 3,761,178, Cl. 356-24.000.
- Turner Electric Corporation: *See—*
  - Turner, John L.; and Diener, Fred L., 3,761,735.
- Turner, Garland L.: *See—*
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- Turner, John L.; and Diener, Fred L., to Turner Electric Corporation. Power apparatus for operating electric disconnect switches. 3,761,735, Cl. 307-112.000.
- Turner, Robert W.: *See—*
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- Turner, Thomas David: *See—*
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- Ueki, Hiroshi: *See—*
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- Umazume, Kousuke. Underwater kite device. 3,760,761, Cl. 114-235.00b.
- Ungar, Israel S.; and Scher, Herbert I., to Esso Research and Engineering Company. Texturizing film for the manufacture of high pressure laminates. 3,761,338, Cl. 156-219.000.
- Union Carbide Corporation: *See—*
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  - D'Alessandro, William J.; and Brode, George L., 3,761,441.
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- United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
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- United Kingdom of Great Britain and Northern Ireland, The Secretary of State of Defense in Her Britannic Majesty's Government of the: *See—*
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- Uno, Ken, to Tamura Electric Works, Ltd. Telephone dials. 3,761,639, Cl. 179n90.00d.
- Upjohn Company, The: *See—*
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- Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. 11-Substituted-3,5-seco-a-norandrostan-3-oic acids. 3,761,504, Cl. 260-456.00r.
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- Utsumi, Jihachiro, to Bell Ko-On Co., Ltd. Motion picture display speed shifting device. 3,761,168, Cl. 352-168.000.
- Vachon, Patrick Alban: *See—*
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- Van Der Heijue, Martin Clemens; and Groothoff, Adriaan Jacob, to U.S. Philips Corporation. Deflection coil assembly. 3,761,849, Cl. 335-210.000.
- Van Doorselaer, Marcel Karel: *See—*
  - Vandenberghe, Antoon Leon; Willems, Jozef Frans; Pollet, Robert Joseph; Benoy, Gaston Jacob; and Van Doorselaer, Marcel Karel, 3,761,277.
- Van Goudoever, Sebastian; and Jansse, Leonard, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Method for casting steel ingots. 3,760,862, Cl. 164-55.000.
- Van Heel, Jean Joseph Marie Dudok, to U.S. Philips Corporation. Computer system comprising a storage configuration with access prior to ultimate address calculation. 3,761,885, Cl. 340-172.500.
- Van Hoorn, Marc E. J. Surgical ligating instrument of the endoscope type. 3,760,810, Cl. 128-326.000.
- Van Oostrom, Antonius Gerardus Johannes, to U.S. Philips Corporation. Device comprising an electric high vacuum discharge tube provided with at least two electrodes not destined for emission, and discharge tube for such a device. 3,761,761, Cl. 313-311.000
- Van Veldhuizen, Arlo B.: *See—*
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- Van Venrooy, John J., to Sun Research and Development Co. Preparation of polycyclic aromatic compounds. 3,761,530, Cl. 260-668.00f.
- Van Wyngarden, Roger E.; and Brackemyre, Mark E. Interconnecting storage holder for tape cartridge. 3,760,937, Cl. 206-1.00r.
- Vandenberghe, Antoon Leon; Willems, Jozef Frans; Pollet, Robert Joseph; Benoy, Gaston Jacob; and Van Doorselaer, Marcel Karel, to Gevaert-Agfa N.V. Silver halide emulsion containing a sulpho substituted disulphide as stabilizer. 3,761,277, Cl. 96-109.000.
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- Vaughan, Raymond C., to Carborundum Company, The. Apparatus for producing fibers. 3,761,210, Cl. 425-72.000.
- Veach, Carlos W. Automobile car door lock opener and closer. 3,760,656, Cl. 81-3.000.
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- Walker, Thad O., to Texaco Inc. Aqueous drilling fluid and method of use thereof. 3,760,892, Cl. 175-65.000.
- Wall, Henry H., Jr., to Ethyl Corporation. Production and purification of vinyl chloride. 3,761,361, Cl. 702-158.000.
- Wallace, Robert H., to Honeywell Inc. Apparatus for controlling the discharge of a capacitor. 3,761,767, Cl. 315-241.00p.
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- Walsh, Cyral M., to Lear Siegler, Inc. Warning signal multiplexer circuit. 3,761,907, Cl. 340-213.00r.
- Wang, Ben C., to Wang Computer Products, Inc. Tape transport arrangements. 3,761,035, Cl. 242-182.000.
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- Webster, J. Vincent; and Dankel, Douglas D., to Roper Corporation. Tine for rotary spader. 3,760,884, Cl. 172-555.000.
- Webster, Robert B., to Plastimade, Inc. Apparatus in the form of a kit for home wine making. 3,760,711, Cl. 99-277.100.
- Weckler, Gene P., to Fairchild Camera and Instrument Corporation. Process for making an optimum high gain-bandwidth phototransistor structure. 3,761,326, Cl. 148-175.000.
- Weddington, Willard T. Heated hair comb. 3,760,821, Cl. 132-118.000.
- Weed, William H., to Allied Chemical Corporation. Batch metering device for liquid dyes. 3,760,981, Cl. 222-14.000.
- Wegener, Otto; Louis, Heinrich; Oberkobusch, Rudolf; and Collin, Gerd, to Rutgerswerke Aktiengesellschaft. Process for producing an electrode pitch which can be easily graphitized. 3,761,387, Cl. 208-45.000.
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- Weinberger, Arnold, to International Business Machines Corporation. Functional memory using multi-state associative cells. 3,761,902, Cl. 340-173.0ff.
- Weinert, Eugene P. Cavitation control system. 3,761,196, Cl. 415-117.000.
- Weir, Donald Robert; and Seibt, Willie, to Sherritt Gordon Mines Limited. Production of nickel powder from basic nickel carbonate. 3,761,250, Cl. 75-108.000.
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- Wheeler, Clarence W. Inline water carbonator. 3,761,066, Cl. 261-78.00a.
- Wheeler, Raymond R. Hanger attachment rod. 3,760,995, Cl. 223-85.000.
- Whelan, James E.; and Jackson, George W., to General Motors Corporation. Switch actuating bourdon tube with mounting bolt providing a fluid communication between pressure source and bourdon tube. 3,761,655, Cl. 200-81.800.
- Whipps, George E., to Hunt, Rodney, Company. Slide gate. 3,760,593, Cl. 61-28.000.
- White, Edward A. Shower accessory. 3,761,021, Cl. 239-312.000.
- White, James A., to General Electric Company. Flow-through shutter for oven door window. 3,760,792, Cl. 126-198.000.
- White, James F. Survival knife. 3,760,438, Cl. 7-1.00b.
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- Wienand, Michael; Brinkmann, Hans; Rheinfeld, Peter; and Juch, Ernst, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of thermoplastic plates. 3,761,555, Cl. 264-105.000.
- Wight, Edward M., to Glacier Industries Inc. Confection extrusion nozzle. 3,761,213, Cl. 425-155.000.
- Wildeman, Aro Edgar, to Cosmopolitan Textile Company, Limited. Apparatus for producing stitch bonded fabric. 3,760,607, Cl. 66-85.00a.
- Wilder, Lawrence B.; and Vincent, Renic P.; deceased (Vincent, Meta Luella; administratrix). Drilling cost indicator. 3,761,701, Cl. 235-193.000.
- Wilhelm, Frederick C., to Universal Oil Products Company. Bimetallic catalytic composite. 3,761,426, Cl. 252-439.000.
- Wilhelm, Harley A.; and McClosky, James K., to United States of America, Atomic Energy Commission. Method of making uranium dioxide bodies. 3,761,546, Cl. 264-.500.
- Willard, Henry G., to General Electric Company. Multi-phase electric circuit breaker. 3,761,776, Cl. 317-33.00r.
- Willard, Henry G.; and Acampora, Vincent P., to General Electric Company. Electric circuit breaker with electronic trip control unit. 3,761,777, Cl. 317-33.00r.
- Willard, Henry G., to General Electric Company. Static trip control unit for electric circuit breaker. 3,761,778, Cl. 317-33.00r.
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- Williams, Eric Farmer; Turner, Thomas David; and Johnson, Peter Raymond, to Westinghouse Brake and Signal Company, Limited. Electro-magnetically controlled fluid-pressure systems. 3,761,142, Cl. 303-22.00r.
- Williams, Joseph L. Tavern and lounge closing system. 3,761,913, Cl. 340-309.500.
- Williams, Stanley Austen. Electrode boilers. 3,760,775, Cl. 122-382.000.
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- Wochnowski, Waldemar, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning tobacco. 3,760,816, Cl. 131-140.00r.
- Wolak, Thomas J., to Evans Products Company. Sliding door wheel mounting structure. 3,760,536, Cl. 49-426.000.
- Wolf, Donald G., to Inter Harvest, Inc. Produce package. 3,761,289, Cl. 99-171.0ca.
- Wolff, Erich; Lassig, Wolfgang; Seelig, Eckart; and Kolf, Gunther, to Agfa-Gevaert Aktiengesellschaft. Photographic composition comprising light-sensitive polymer. 3,761,280, Cl. 96-115.00r.
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- Wolk, Ronald H.; Chervenak, Michael C.; and Alpert, Seymour B., to Hydrocarbon Research Inc. High conversion level hydrogenation. 3,761,393, Cl. 208-108.000.
- Wolpert, Tadeusz, to Telefonaktiebolaget L M Ericsson. Arrangement for uninterruptable power supply to a load from two or more A.C. power sources. 3,761,733, Cl. 307-64.000.
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- Wopschall, Paul R. Indicating device. 3,760,766, Cl. 116-135.000.
- Worthington, Robert D. Log splitter for use with vehicles having hydraulic pressure systems. 3,760,854, Cl. 144-193.00a.
- Wreathall, William Michael, to English Electric Valve Company Limited. Temperature image camera with antenna for moving the image in the image plane. 3,761,615, Cl. 178-7.200.
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- Wright, Felix William, to A.P.V. Company Limited, The. Plate heat exchangers. 3,760,873, Cl. 165-166.000.
- Wright, John R. Towel attachment. 3,760,461, Cl. 24-7.000.
- Wright, Thomas A., to Hi-Ram, Inc. Automatic seat latch unlocking apparatus and circuit therefor. 3,761,730, Cl. 307-10.00r.
- Wyatt, Theodore, to United States of America, Navy. Radar spoof. 3,761,929, Cl. 343-18.00b.
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  - Shuey, David R., 3,761,799.
- Yackiw, Charles, to Schlegel Manufacturing Company, The. Pressure-sensitive weatherseal. 3,761,347, Cl. 161-104.000.
- Yagishita, Aisaburo. Plating waste recovery unit. 3,761,381, Cl. 204-238.000.
- Yamaguchi, Tsutomu: *See—*
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- Yamamoto, Tsutomu: *See—*
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- Yamanaka, Toshio; and Nakamura, Shigeji, to Nippon Electric Glass Company, Limited. Marble-like glass material and method of producing the same. 3,761,235, Cl. 65-33.000.
- Yamano, Toshiyuki; and Ito, Yoshio. Cleaning agent for removal of sticky material and method of making same. 3,761,429, Cl. 252-547.000.
- Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsogu; and Kitamura, Saburo, to Matsushita Electric Industrial Co., Ltd. Complex thermoluminescence dosimeter. 3,761,710, Cl. 250-337.000.
- Yastrebov, Igor Alexandrovich: *See—*
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- Yeiser, John O., to Roy, Milton, Company, mesne. X-Y plotter. 3,761,950, Cl. 346-68.000.
- Yih, Roy Y.: *See—*
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- Yonan, Peter A., to Searle, G. D., & Co. 4-Phenyl-1-piperidinealkanonitriles. 3,761,484, Cl. 260-293.750.
- Yoshida, Ryonosuke; Maeda, Itsutoshi; Akiba, Hitoshi; and Usuba, Yasunori, to Ajinomoto Co., Inc. Detergent composition for use in cleaning pile fabrics. 3,761,223, Cl. 8-137.000.
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- Young, Milton R. Rock crusher and grinding mill. 3,761,025, Cl. 241-107.000.
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- Zondek, Klaus. Method of protecting the hulls of marine vessels from fouling. 3,761,334, Cl. 156-71.000.
- Zopf, Edward N. Two wheeled toy device. 3,760,533, Cl. 46-105.000.
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- Fishbein Meyer. Case for battery powered orthopedic surgical drill. 228,475, 9–25–73, Cl. D83—12.
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- Mercadante, Ottorino N., to Corning Glass Works. Plate or the like. 228,439, 9–25–73, Cl. D7—36.
- Mestrovic, Robert T., and W. M. Walton, to Wahl Clipper Corp. Electric soldering iron. 228,440, 9–25–73, Cl. D8—30.
- Mitchell, Kenneth A. Thermo container. 228,443, 9–25–73, Cl. D9—179.
- Moskowitz, Lester R., to Oxy Metal Finishing Corp. Magnetic tester. 228,467, 9–25–73, Cl. D52—6.
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    - Boldt, Melvin H. 228,461.
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    - Conway, Ronald I., Jones, La Due, and Natoli. 228,460.
- Ninger, Fred C., to Warner-Lambert Co. Pharmaceutical tablet. 228,456, 9–25–73, Cl. D16—3.
- Northrup, Lyle M., to Lynor Engineering, Inc. Window operator or similar article. 228,441, 9–25–73, Cl. D8—153.
- Ogilvie, Kenneth Alan, Walker Crosweller & Co. Ltd. Plumbing fitting. 228,458, 9–25–73, Cl. D23—40.
- Oxy Metal Finishing Corp.: *See*—
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- Patron, Howard E., to The Holmes, Thomas, Corp. Furniture panel or the like. 228,435, 9–25–73, Cl. D6—192.
- Patron, Howard E., to Homecraft Products, Inc. Combined drawer front and cabinet door panel. 228,434, 9–25–73, Cl. D6—192.
- Payne, George: *See*—
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- Sulisky, Glen R. Combined handle battery and motor housing for an electric safety razor or similar article. 228,477, 9–25–73, Cl. D95—3.
- Sundberg, Carl W., M. Ferar, and C. J. Barecki, to American Seating Co. Desk. 228,431, 9–25–73, Cl. D6—158.
- Tayman, David L., and D. L. Tayman, deceased, by N. E. Tayman, administratrix. Infant restrainer for fluoroscopic examination and the like. 228,472, 9–25–73, Cl. D83—1.
- Technicon Instruments Corp.: *See*—
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| 212D | 3,760,485 |
| 278 | 3,760,486 |
| 407 | 3,760,487 |
| 557 | 3,760,488 |
| 568 | 3,760,489 |
| | 3,760,491 |
| 571 | 3,760,492 |
| 596 | 3,760,493 |
| 603 | 3,760,494 |
| 610 | 3,760,495 |
| 629 | 3,760,496 |
| **CLASS 30** | |
| 41.6 | 3,760,497 |
| 43.1 | 3,760,498 |
| 130 | 3,760,499 |
| 268 | 3,760,500 |
| 322 | 3,760,501 |
| **CLASS 32** | |
| 8 | 3,760,502 |
| 17 | 3,760,503 |
| 63 | 3,760,504 |
| 74 | 3,760,598 |
| **CLASS 33** | |
| 18R | 3,760,505 |
| 174R | 3,760,506 |
| 203.17 | 3,760,507 |
| **CLASS 34** | |
| 38 | 3,760,508 |
| **CLASS 35** | |
| 9R | 3,760,509 |
| 12P | 3,760,510 |
| 22A | 3,760,511 |
| 48R | 3,760,512 |
| **CLASS 36** | |
| 2.5AB | 3,760,513 |
| 57R | 3,760,514 |
| **CLASS 37** | |
| 2R | 3,760,515 |
| 42R | 3,760,516 |
| 43R | 3,760,517 |
| 57 | 3,760,518 |
| **CLASS 40** | |
| 70R | 3,760,519 |
| 102 | 3,760,520 |
| 152 | 3,760,521 |
| **CLASS 42** | |
| 69B | 3,760,522 |
| **CLASS 43** | |
| 11 | 3,760,523 |
| 24 | 3,760,524 |
| 41 | 3,760,529 |
| 42.24 | 3,760,528 |
| 44.088 | 3,760,527 |
| 44.2 | 3,760,525 |
| 44.4 | 3,760,526 |
| 88 | 3,760,530 |
| 90 | 3,760,531 |
| **CLASS 44** | |
| 52 | 3,761,232 |
| **CLASS 46** | |
| 104 | 3,760,532 |
| 105 | 3,760,533 |
| **CLASS 47** | |
| 39 | 3,760,534 |
| **CLASS 48** | |
| 202 | 3,761,233 |
| **CLASS 49** | |
| 379 | 3,760,535 |
| 426 | 3,760,536 |
| **CLASS 51** | |
| 145R | 3,760,537 |
| 148 | 3,760,538 |
| 165R | 3,760,539 |
| **CLASS 52** | |
| 125 | 3,760,540 |
| 203 | 3,760,541 |
| 235 | 3,760,542 |
| 397 | 3,760,543 |
| 468 | 3,760,544 |
| 529 | 3,760,545 |
| -555 | 3,760,546 |
| 586 | 3,760,547 |
| 593 | 3,760,548 |
| 630 | 3,760,549 |
| 641 | 3,760,550 |
| 758D | 3,760,551 |
| | 3,760,552 |
| **CLASS 53** | |
| 26 | 3,760,553 |
| 32 | 3,760,554 |
| 48 | 3,760,555 |
| 122 | 3,760,556 |
| 159 | 3,760,557 |
| 162 | 3,760,560 |
| 178 | 3,760,559 |
| 183 | 3,760,558 |
| 201 | 3,760,561 |
| 212 | 3,760,562 |
| 329 | 3,760,563 |
| **CLASS 55** | |
| 48 | 3,760,564 |
| 71 | 3,760,565 |
| 222 | 3,760,567 |
| 223 | 3,760,566 |
| 473 | 3,760,568 |
| **CLASS 56** | |
| 10.7 | 3,760,569 |
| 10.8 | 3,760,570 |
| 298 | 3,760,571 |
| 320.2 | 3,760,572 |
| 327A | 3,760,573 |
| 330 | 3,760,574 |
| 370 | 3,760,575 |
| **CLASS 57** | |
| 34R | 3,760,576 |
| 56 | 3,760,577 |
| 140C | 3,760,578 |
| **CLASS 58** | |
| 23A | 3,760,580 |
| 42.5 | 3,760,581 |
| 50R | 3,760,582 |
| | 3,760,584 |
| 57.5 | 3,760,583 |
| 58 | 3,760,585 |
| **CLASS 59** | |
| 11 | 3,760,586 |
| **CLASS 60** | |
| 54.5R | 3,760,588 |
| 54.6E | 3,760,587 |
| 253 | 3,760,589 |
| 261 | 3,760,590 |
| 444 | 3,760,591 |
| 517 | 3,760,592 |
| **CLASS 61** | |
| 28 | 3,760,593 |
| 39 | 3,760,594 |
| 72.5 | 3,760,595 |
| **CLASS 62** | |
| 29 | 3,760,596 |
| 47 | 3,760,597 |
| 49 | 3,760,599 |
| 137 | 3,760,600 |
| 240 | 3,760,601 |
| 490 | 3,760,602 |
| 505 | 3,760,603 |
| **CLASS 63** | |
| 12 | 3,760,604 |
| **CLASS 64** | |
| 9 | 3,760,605 |
| **CLASS 65** | |
| 4 | 3,761,234 |
| 33 | 3,761,235 |
| 83 | 3,761,236 |
| **CLASS 66** | |
| 9A | 3,760,606 |
| 85A | 3,760,607 |
| 140S | 3,760,608 |
| 149R | 3,760,609 |
| 154A | 3,760,610 |
| 177 | 3,760,611 |
| **CLASS 68** | |
| 17R | 3,760,612 |
| 143 | 3,760,613 |
| 189 | 3,760,614 |
| 248 | 3,760,615 |
| | 3,760,616 |
| **CLASS 70** | |
| 1.5 | 3,760,617 |
| 92 | 3,760,618 |
| 104 | 3,760,619 |
| 226 | 3,760,620 |
| **CLASS 71** | |
| 9 | 3,761,237 |
| 33 | 3,761,239 |
| 67 | 3,761,238 |
| 76 | 3,761,240 |
| 120 | 3,761,241 |
| **CLASS 72** | |
| 9 | 3,760,621 |
| 57 | 3,760,622 |
| 336 | 3,760,623 |
| 385 | 3,760,624 |
| 389 | 3,760,625 |
| | 3,760,626 |
| 391 | 3,760,627 |
| 458 | 3,760,628 |
| **CLASS 73** | |
| 5 | 3,760,629 |
| 28 | 3,760,630 |
| 45.1 | 3,760,631 |
| 49.6 | 3,760,632 |
| 66 | 3,760,633 |
| 67.8R | 3,760,634 |
| 82 | 3,760,635 |
| 100 | 3,760,636 |
| 141R | 3,760,637 |
| 395 | 3,760,638 |
| 425.6 | 3,760,639 |
| **CLASS 74** | |
| 10.6 | 3,760,640 |
| 57 | 3,760,641 |
| 112 | 3,760,644 |
| 128 | 3,760,645 |
| 200 | 3,760,646 |
| 432 | 3,760,642 |
| 473SW | 3,760,643 |
| 485 | 3,760,647 |
| 489 | 3,760,648 |
| 492 | 3,760,649 |
| | 3,760,650 |
| 523 | 3,760,651 |
| 527 | 3,760,652 |
| 594.4 | 3,760,653 |
| 661 | 3,760,654 |
| 826 | 3,760,655 |
| **CLASS 75** | |
| 13 | 3,761,242 |
| 24 | 3,761,243 |
| 26 | 3,761,244 |
| 46 | 3,761,246 |
| 67R | 3,761,248 |
| 67 | 3,761,247 |
| 82 | 3,761,245 |
| 101BE | 3,761,249 |
| 108 | 3,761,250 |
| 109 | 3,761,251 |
| 124 | 3,761,253 |
| 134V | 3,761,254 |
| 141 | 3,761,252 |
| 170 | 3,761,255 |
| 208R | 3,761,256 |
| | 3,761,257 |
| **CLASS 81** | |
| 3 | 3,760,656 |
| 3.4 | 3,760,657 |
| 9.2 | 3,760,660 |
| 57.34 | 3,760,658 |
| 90C | 3,760,659 |
| **CLASS 82** | |
| 2.7 | 3,760,661 |
| 35 | 3,760,662 |
| | 3,760,663 |
| 63R | 3,760,664 |
| **CLASS 83** | |
| 9 | 3,760,665 |
| 11 | 3,760,666 |
| 13 | 3,760,667 |
| | 3,760,668 |
| 63 | 3,760,669 |
| 102 | 3,760,670 |
| 155 | 3,760,671 |
| 310 | 3,760,672 |
| 349 | 3,760,673 |
| 370 | 3,760,674 |
| 482 | 3,760,675 |
| 590 | 3,760,676 |
| 600 | 3,760,677 |
| 776 | 3,760,678 |
| **CLASS 84** | |
| 400 | 3,760,679 |
| 444 | 3,761,598 |
| 483 | 3,760,680 |
| 484 | 3,760,681 |
| **CLASS 89** | |
| 1.5D | 3,760,682 |
| 12 | 3,760,683 |
| 37C | 3,760,684 |
| **CLASS 90** | |
| 15 | 3,760,685 |
| 22 | 3,760,686 |
| **CLASS 91** | |
| 39 | 3,760,687 |
| 412 | 3,760,688 |
| | 3,760,689 |
| 484 | 3,760,690 |
| 492 | 3,760,691 |
| 505 | 3,760,692 |
| **CLASS 92** | |
| 48 | 3,760,693 |
| 73 | 3,760,694 |
| 85 | 3,760,695 |
| 129 | 3,760,696 |
| **CLASS 93** | |
| 58.2R | 3,760,697 |
| **CLASS 95** | |
| 1 | 3,760,698 |
| 10B | 3,760,700 |
| 10C | 3,760,699 |
| 11R | 3,760,701 |
| 36R | 3,760,702 |
| 42 | 3,760,703 |
| | 3,760,704 |
| 94R | 3,760,705 |
| **CLASS 96** | |
| 1R | 3,761,258 |
| 1.7 | 3,761,261 |
| 1.8 | 3,761,259 |
| 22 | 3,761,262 |
| 46 | 3,761,264 |
| 48R | 3,761,265 |
| 49 | 3,761,263 |
| 60R | 3,761,260 |
| 64 | 3,761,266 |
| | 3,761,267 |
| 76C | 3,761,268 |
| 76R | 3,761,269 |
| 77 | 3,761,270 |
| | 3,761,271 |
| 84R | 3,761,272 |
| 94 | 3,761,273 |
| 100 | 3,761,274 |
| 107 | 3,761,275 |
| 108 | 3,761,276 |
| 109 | 3,761,277 |
| | 3,761,278 |
| 114.1 | 3,761,279 |
| 115R | 3,761,280 |
| **CLASS 98** | |
| 2.06 | 3,760,706 |
| 2.18 | 3,760,707 |
| 39 | 3,760,708 |
| 40D | 3,760,709 |
| 41SV | 3,760,710 |
| **CLASS 99** | |
| 94 | 3,761,281 |
| 100P | 3,761,282 |
| 107 | 3,761,283 |
| 135 | 3,761,286 |
| 140R | 3,761,287 |
| 141A | 3,761,288 |
| 171CA | 3,761,289 |
| 277.1 | 3,760,711 |
| 289 | 3,760,712 |
| 330 | 3,761,290 |
| 391 | 3,760,713 |
| 404 | 3,760,714 |
| 450.1 | 3,760,715 |
| 536 | 3,760,716 |
| **CLASS 100** | |
| 98R | 3,760,717 |
| 227 | 3,760,718 |
| **CLASS 101** | |
| 111 | 3,760,719 |
| 157 | 3,760,720 |
| 334 | 3,760,721 |
| 350 | 3,760,722 |
| | 3,760,723 |
| 426 | 3,760,724 |
| 471 | 3,760,725 |
| **CLASS 102** | |
| 22 | 3,760,726 |
| 24R | 3,760,727 |
| | 3,760,728 |
| 32 | 3,760,729 |
| 49.4 | 3,760,730 |
| 56 | 3,760,731 |
| 70.2R | 3,760,732 |
| | 3,760,733 |
| 76 | 3,760,734 |
| 87 | 3,760,735 |
| 93 | 3,760,736 |
| **CLASS 104** | |
| 89 | 3,760,737 |
| 105 | 3,760,738 |
| 130 | 3,760,739 |
| | 3,760,740 |
| 135 | 3,760,741 |
| **CLASS 105** | |
| 151 | 3,760,742 |
| 377 | 3,760,743 |
| **CLASS 106** | |
| 42 | 3,761,292 |
| 48 | 3,761,293 |
| 65 | 3,761,294 |
| 73.4 | 3,761,295 |
| 280 | 3,761,291 |
| 283 | 3,761,296 |
| 289 | 3,761,297 |
| 300 | 3,761,298 |
| **CLASS 108** | |
| 64 | 3,760,744 |
| 139 | 3,760,745 |
| **CLASS 112** | |
| 134 | 3,760,746 |
| 178 | 3,760,747 |
| 219B | 3,760,748 |
| 252 | 3,760,749 |
| **CLASS 113** | |
| 120H | 3,760,751 |
| 120K | 3,760,750 |
| 121C | 3,760,752 |
| **CLASS 114** | |
| .5F | 3,760,754 |
| .5T | 3,760,753 |
| 23 | 3,760,755 |
| 66.05P | 3,760,758 |
| 66.5R | 3,760,756 |
| 85 | 3,760,757 |
| 126 | 3,760,759 |
| 206R | 3,760,760 |
| 235B | 3,760,761 |
| 235R | 3,760,762 |
| **CLASS 115** | |
| 1R | 3,760,763 |
| | 3,760,764 |
| **CLASS 116** | |
| 115 | 3,760,765 |
| 135 | 3,760,766 |
| **CLASS 117** | |
| 34 | 3,761,299 |
| 38 | 3,761,300 |
| 71M | 3,761,301 |
| | 3,761,302 |
| | 3,761,303 |

| | |
|---|---|
| 76R | 3,761,304 |
| 105.3 | 3,761,305 |
| 106A | 3,761,306 |
| 122P | 3,761,307 |
| 201 | 3,761,308 |
| 212 | 3,761,309 |
| 217 | 3,761,310 |
| 239 | 3,761,311 |

**CLASS 119**

| | |
|---|---|
| 3 | 3,760,767 |
| 17 | 3,760,768 |
| 48 | 3,760,769 |
| 52B | 3,760,770 |
| 75 | 3,760,771 |
| 157 | 3,760,772 |

**CLASS 122**

| | |
|---|---|
| 4R | 3,760,773 |
| 6A | 3,760,774 |
| 382 | 3,760,775 |
| 459 | 3,760,776 |

**CLASS 123**

| | |
|---|---|
| 8.45 | 3,760,777 |
| 41.05 | 3,760,779 |
| 41.17 | 3,760,778 |
| 122F | 3,760,780 |
| 148E | 3,760,782 |
| 148S | 3,760,781 |
| 179H | 3,760,783 |
| 198DB | 3,760,784 |
| | 3,760,785 |
| | 3,760,786 |

**CLASS 124**

| | |
|---|---|
| 16 | 3,760,787 |
| 41 | 3,760,788 |

**CLASS 125**

| | |
|---|---|
| 17 | 3,760,789 |

**CLASS 126**

| | |
|---|---|
| 92R | 3,760,790 |
| 110 | 3,760,791 |
| 198 | 3,760,792 |
| 391 | 3,760,793 |

**CLASS 128**

| | |
|---|---|
| 2R | 3,760,794 |
| 2.05C | 3,760,795 |
| 2.1B | 3,760,796 |
| 6 | 3,760,797 |
| 16 | 3,760,798 |
| 24A | 3,760,799 |
| 24.1 | 3,760,800 |
| 25R | 3,760,801 |
| 92BC | 3,760,802 |
| 215 | 3,760,803 |
| 260 | 3,760,804 |
| | 3,760,805 |
| | 3,760,806 |
| | 3,760,807 |
| 263 | 3,760,808 |
| 314 | 3,760,809 |
| 326 | 3,760,810 |
| 351 | 3,760,811 |
| 418 | 3,760,812 |

**CLASS 130**

| | |
|---|---|
| 27 1F | 3,760,813 |

**CLASS 131**

| | |
|---|---|
| 3 | 3,760,814 |
| 140C | 3,760,815 |
| 140R | 3,760,816 |
| 235R | 3,760,817 |

**CLASS 132**

| | |
|---|---|
| 1R | 3,760,818 |
| 7 | 3,760,819 |
| 79R | 3,760,820 |
| 118 | 3,760,821 |

**CLASS 134**

| | |
|---|---|
| 2 | 3,761,312 |
| 3 | 3,761,313 |
| 56D | 3,760,825 |
| 99 | 3,760,822 |
| 141 | 3,760,823 |
| 144 | 3,760,824 |

**CLASS 135**

| | |
|---|---|
| 1R | 3,760,826 |
| 46M | 3,760,827 |

**CLASS 136**

| | |
|---|---|
| 13 | 3,761,314 |
| 20 | 3,761,315 |
| 86R | 3,761,316 |
| 100M | 3,761,317 |
| 225 | 3,761,318 |

**CLASS 137**

| | |
|---|---|
| 93 | 3,760,829 |
| 101 | 3,760,830 |
| 117 | 3,760,831 |
| 155 | 3,760,832 |
| 246.22 | 3,760,833 |
| 255 | 3,760,834 |
| 322 | 3,760,835 |
| 355.17 | 3,760,838 |
| 360 | 3,760,836 |
| 398 | 3,760,837 |
| 414 | 3,760,839 |
| 493 | 3,760,840 |
| | 3,760,841 |
| 557 | 3,760,842 |
| 596.15 | 3,760,843 |
| 608 | 3,760,844 |
| 625.66 | 3,760,845 |
| 809 | 3,760,828 |
| 820 | 3,760,846 |
| 824 | 3,760,847 |
| 828 | 3,760,848 |

**CLASS 139**

| | |
|---|---|
| 144 | 3,760,849 |

**CLASS 140**

| | |
|---|---|
| 93A | 3,760,850 |
| 105 | 3,760,851 |

**CLASS 141**

| | |
|---|---|
| 40 | 3,760,852 |
| 146 | 3,760,853 |

**CLASS 144**

| | |
|---|---|
| 193A | 3,760,854 |
| 209A | 3,760,855 |
| 323 | 3,760,856 |

**CLASS 148**

| | |
|---|---|
| 1.5 | 3,761,319 |
| 3 | 3,761,320 |
| 9.5 | 3,761,321 |
| 11.5A | 3,761,322 |
| 12 | 3,761,323 |
| 36 | 3,761,324 |
| 153 | 3,761,325 |
| 175 | 3,761,326 |
| 187 | 3,761,327 |
| 188 | 3,761,328 |

**CLASS 149**

| | |
|---|---|
| 19.91 | 3,761,329 |
| 21 | 3,761,330 |

**CLASS 152**

| | |
|---|---|
| 226 | 3,760,857 |
| 361 | 3,760,858 |
| 415 | 3,760,859 |

**CLASS 156**

| | |
|---|---|
| 8 | 3,761,331 |
| 55 | 3,761,332 |
| 64 | 3,761,333 |
| 71 | 3,761,334 |
| 187 | 3,761,335 |
| 210 | 3,761,336 |
| 219 | 3,761,338 |
| 247 | 3,761,337 |
| 331 | 3,761,339 |
| 397 | 3,761,340 |
| 446 | 3,761,341 |
| | 3,761,342 |

**CLASS 160**

| | |
|---|---|
| 179 | 3,760,860 |
| 184 | 3,760,861 |

**CLASS 161**

| | |
|---|---|
| 6 | 3,761,343 |
| 39 | 3,761,344 |
| 57 | 3,761,345 |
| 93 | 3,761,346 |
| 104 | 3,761,347 |
| 173 | 3,761,348 |

**CLASS 162**

| | |
|---|---|
| 36 | 3,761,349 |
| 164 | 3,761,350 |

**CLASS 164**

| | |
|---|---|
| 55 | 3,760,862 |
| 107 | 3,760,863 |
| 126 | 3,760,864 |
| 160 | 3,760,865 |
| 200 | 3,760,866 |
| 283 | 3,760,867 |

**CLASS 165**

| | |
|---|---|
| 1 | 3,760,868 |
| 30 | 3,760,869 |
| 35 | 3,760,870 |
| 110 | 3,760,871 |
| 120 | 3,760,872 |
| 166 | 3,760,873 |
| 177 | 3,760,874 |

**CLASS 166**

| | |
|---|---|
| .5 | 3,760,875 |
| 57 | 3,760,876 |
| 164 | 3,760,877 |
| 185 | 3,760,878 |
| 275 | 3,760,879 |
| 276 | 3,760,880 |
| 308 | 3,760,881 |

**CLASS 172**

| | |
|---|---|
| 265 | 3,760,882 |
| 273 | 3,760,883 |
| 555 | 3,760,884 |
| 574 | 3,760,885 |

**CLASS 173**

| | |
|---|---|
| 93 6 | 3,760,886 |
| 134 | 3,760,887 |

**CLASS 174**

| | |
|---|---|
| 15R | 3,761,599 |
| 16B | 3,761,600 |
| 18FG | 3,761,638 |
| 52R | 3,761,601 |
| 73SC | 3,761,602 |
| 101 | 3,761,603 |

**CLASS 175**

| | |
|---|---|
| 4.5 | 3,760,888 |
| 6 | 3,760,889 |
| 18 | 3,760,890 |
| 48 | 3,760,891 |
| 65 | 3,760,892 |
| 316 | 3,760,893 |
| 413 | 3,760,894 |

**CLASS 176**

| | |
|---|---|
| 28 | 3,761,351 |
| 57 | 3,761,352 |

**CLASS 178**

| | |
|---|---|
| 5.4CD | 3,761,604 |
| | 3,761,605 |
| | 3,761,609 |
| 5.4SY | 3,761,608 |
| 5.4P | 3,761,606 |
| 5.4R | 3,761,607 |
| 6 | 3,761,610 |
| 6.6A | 3,761,611 |
| 6.8 | 3,761,612 |
| | 3,761,623 |
| 7.1 | 3,761,613 |
| 7.2 | 3,761,614 |
| | 3,761,615 |
| 7.3D | 3,761,617 |
| 18 | 3,761,620 |
| 50 | 3,761,621 |
| 66A | 3,761,625 |
| 66R | 3,761,622 |
| 69A | 3,761,626 |
| 69.5TV | 3,761,627 |

**CLASS 179**

| | |
|---|---|
| 1GQ | 3,761,628 |
| | 3,761,631 |
| 1H | 3,761,630 |
| 1J | 3,761,629 |
| 5P | 3,761,632 |
| 8A | 3,761,618 |
| 15AA | 3,761,624 |
| | 3,761,633 |
| 15AT | 3,761,619 |
| | 3,761,637 |
| 18DA | 3,761,634 |
| 18EB | 3,761,636 |
| 18FH | 3,761,635 |
| 90D | 3,761,639 |
| 90K | 3,761,640 |
| | 3,761,642 |
| 100.2CA | 3,761,644 |
| 100.2C | 3,761,641 |
| 100.2E | 3,761,645 |
| 100.2K | 3,761,646 |
| 100.2S | 3,761,643 |
| 100.41K | 3,761,647 |

**CLASS 180**

| | |
|---|---|
| 5R | 3,760,895 |
| 6.7 | 3,760,896 |
| 8A | 3,760,897 |
| 114 | 3,760,898 |
| 125 | 3,760,899 |

**CLASS 181**

| | |
|---|---|
| 53 | 3,760,900 |

**CLASS 182**

| | |
|---|---|
| 7 | 3,760,901 |
| 103 | 3,760,902 |
| 181 | 3,760,903 |

**CLASS 184**

| | |
|---|---|
| 3R | 3,760,904 |

**CLASS 185**

| | |
|---|---|
| 2 | 3,760,905 |

**CLASS 188**

| | |
|---|---|
| 4R | 3,760,906 |
| 43 | 3,760,907 |
| 72.5 | 3,760,908 |
| 138 | 3,760,909 |
| 180 | 3,760,910 |
| 300 | 3,760,911 |
| 345 | 3,760,912 |

**CLASS 191**

| | |
|---|---|
| 49 | 3,760,913 |
| 70 | 3,761,648 |

**CLASS 192**

| | |
|---|---|
| 45 | 3,760,914 |
| 48.3 | 3,760,915 |
| 67R | 3,760,916 |
| 84C | 3,760,917 |
| 87.11 | 3,760,918 |
| 89A | 3,760,919 |
| 93R | 3,760,920 |
| 107R | 3,760,921 |
| 111B | 3,760,922 |

**CLASS 194**

| | |
|---|---|
| 1G | 3,760,923 |
| 4F | 3,760,924 |

**CLASS 195**

| | |
|---|---|
| 29 | 3,761,353 |
| | 3,761,354 |
| 33 | 3,761,355 |
| 62 | 3,761,356 |
| 63 | 3,761,357 |

**CLASS 196**

| | |
|---|---|
| 132 | 3,761,358 |

**CLASS 197**

| | |
|---|---|
| 53 | 3,760,925 |
| 55 | 3,760,926 |

**CLASS 198**

| | |
|---|---|
| 19 | 3,760,927 |
| | 3,760,928 |
| | 3,760,929 |
| 25 | 3,760,930 |
| 127R | 3,760,932 |
| 127 | 3,760,931 |
| 128 | 3,760,933 |
| 158 | 3,760,934 |
| 173 | 3,760,935 |
| 181 | 3,760,936 |

**CLASS 200**

| | |
|---|---|
| 14 | 3,761,649 |
| 17R | 3,761,650 |
| 48R | 3,761,651 |
| 50C | 3,761,652 |
| 61.51 | 3,761,653 |
| 61.58R | 3,761,654 |
| 81.8 | 3,761,655 |
| 81.9R | 3,761,657 |
| 83WM | 3,761,656 |
| 85A | 3,761,659 |
| 85R | 3,761,658 |
| 144C | 3,761,660 |
| 148BV | 3,761,661 |
| 153D | 3,761,662 |
| 157 | 3,761,663 |
| 172R | 3,761,664 |

**CLASS 201**

| | |
|---|---|
| 32 | 3,761,359 |
| 40 | 3,761,360 |

**CLASS 202**

| | |
|---|---|
| 158 | 3,761,361 |

**CLASS 204**

| | |
|---|---|
| 35N | 3,761,362 |
| 49 | 3,761,363 |
| 58 | 3,761,364 |
| 67 | 3,761,365 |
| 129.2 | 3,761,366 |
| 129.5 | 3,761,367 |
| 129.75 | 3,761,368 |
| 151 | 3,761,369 |
| 164 | 3,761,370 |
| 181 | 3,761,371 |
| 192 | 3,761,372 |
| | 3,761,373 |
| | 3,761,374 |
| | 3,761,375 |
| 195R | 3,761,376 |
| | 3,761,377 |
| 202 | 3,761,378 |
| 225 | 3,761,379 |
| 228 | 3,761,380 |
| 238 | 3,761,381 |
| 266 | 3,761,382 |
| 268 | 3,761,383 |
| 288 | 3,761,384 |
| 290F | 3,761,385 |
| 301 | 3,761,386 |

**CLASS 206**

| | |
|---|---|
| 1R | 3,760,937 |
| 16BC | 3,760,938 |
| 46AM | 3,760,939 |
| 58 | 3,760,940 |

**CLASS 208**

| | |
|---|---|
| 45 | 3,761,387 |
| 59 | 3,761,388 |
| 64 | 3,761,389 |
| 65 | 3,761,390 |
| 76 | 3,761,391 |
| 89 | 3,761,395 |
| 93 | 3,761,392 |
| 108 | 3,761,393 |
| 111 | 3,761,396 |
| 120 | 3,761,394 |
| 143 | 3,761,397 |
| 208 | 3,761,398 |
| 210 | 3,761,399 |
| 216 | 3,761,400 |
| 311 | 3,761,401 |
| 314 | 3,761,402 |
| 317 | 3,761,403 |

**CLASS 209**

| | |
|---|---|
| 3 | 3,760,941 |
| 44 | 3,760,942 |
| 122 | 3,760,943 |

**CLASS 210**

| | |
|---|---|
| 23 | 3,761,408 |
| 52 | 3,761,406 |
| 54 | 3,761,407 |
| 63 | 3,761,409 |
| 110 | 3,760,944 |
| 143 | 3,760,945 |
| 152 | 3,760,946 |
| 169 | 3,760,947 |
| 321 | 3,760,949 |
| 342 | 3,760,948 |
| 373 | 3,760,950 |
| 449 | 3,760,951 |

**CLASS 211**

| | |
|---|---|
| 168 | 3,760,952 |

**CLASS 212**

| | |
|---|---|
| 46A | 3,760,953 |

**CLASS 213**

| | |
|---|---|
| 43 | 3,760,955 |
| 69 | 3,760,954 |

**CLASS 214**

| | |
|---|---|
| 1BB | 3,760,956 |
| | 3,760,957 |
| 1BD | 3,760,958 |
| 6DK | 3,760,959 |
| 35R | 3,760,960 |
| 55 | 3,760,961 |
| 83.3 | 3,760,962 |
| 152 | 3,760,963 |
| 390 | 3,760,964 |
| 450 | 3,760,965 |
| 750 | 3,760,966 |

**CLASS 215**

| | |
|---|---|
| 11C | 3,760,967 |
| 12R | 3,760,968 |
| 37R | 3,760,969 |

**CLASS 219**

| | |
|---|---|
| 10.049 | 3,761,668 |
| 10.49 | 3,761,666 |
| | 3,761,667 |
| 10.55 | 3,761,665 |
| 10.57 | 3,761,669 |
| 10.61 | 3,761,670 |
| 64 | 3,761,671 |
| 68 | 3,761,672 |
| 69S | 3,761,673 |
| 73 | 3,761,674 |
| 121EB | 3,761,676 |
| 121LM | 3,761,675 |
| 288 | 3,761,679 |
| 343 | 3,761,678 |
| 349 | 3,761,677 |
| 456 | 3,761,680 |

**CLASS 220**

| | |
|---|---|
| 4F. | 3,760,970 |
| 9A | 3,760,971 |
| 9R | 3,760,972 |
| 23.8 | 3,760,973 |
| 23.83 | 3,760,974 |
| 31R | 3,760,975 |
| 32 | 3,760,976 |
| 39R | 3,760,977 |
| 115 | 3,760,978 |

**CLASS 221**

| | |
|---|---|
| 157 | 3,760,980 |

**CLASS 222**

| | |
|---|---|
| 14 | 3,760,981 |
| 63 | 3,760,982 |
| 90 | 3,760,983 |
| 95 | 3,760,984 |
| 136 | 3,760,985 |
| 137 | 3,760,986 |
| 153 | 3,760,987 |
| | 3,760,988 |
| 276 | 3,760,989 |
| 330 | 3,760,979 |
| 371 | 3,760,990 |
| 411 | 3,760,991 |
| 512 | 3,760,992 |
| 533 | 3,760,993 |

**CLASS 223**

| | |
|---|---|
| 83 | 3,760,994 |
| 85 | 3,760,995 |

**CLASS 224**

| | |
|---|---|
| 48R | 3,760,996 |

**CLASS 225**

| | |
|---|---|
| 2 | 3,760,997 |
| 38 | 3,760,998 |

**CLASS 226**

| | |
|---|---|
| 15 | 3,760,999 |
| 37 | 3,761,000 |
| 92 | 3,761,001 |
| 97 | 3,761,002 |
| 172 | 3,761,003 |

**CLASS 228**

| | |
|---|---|
| 3 | 3,761,004 |
| | 3,761,007 |
| 4 | 3,761,005 |
| 25 | 3,761,006 |

**CLASS 229**

| | |
|---|---|
| 2.5 | 3,761,011 |
| 19 | 3,761,009 |
| | 3,761,010 |
| 51TS | 3,761,012 |
| 62 | 3,761,013 |

**CLASS 233**

| | |
|---|---|
| 38 | 3,761,014 |

**CLASS 235**

| | |
|---|---|
| 61.11C | 3,761,681 |
| | 3,761,686 |
| 61.11E | 3,761,685 |
| | 3,761,687 |
| | 3,761,688 |
| 61.11R | 3,761,684 |
| 61.7B | 3,761,682 |
| | 3,761,683 |
| 91A | 3,761,015 |
| 114 | 3,761,955 |
| 145R | 3,761,016 |
| 150.1 | 3,761,690 |
| 150.22 | 3,761,691 |
| 150.5 | 3,761,689 |
| 151.1 | 3,761,692 |
| 151.3 | 3,761,693 |
| 152 | 3,761,696 |
| 153AC | 3,761,695 |
| 153R | 3,761,694 |
| 154 | 3,761,697 |
| 164 | 3,761,698 |
| 165 | 3,761,699 |
| | 3,761,700 |
| 193 | 3,761,701 |

**CLASS 236**

| | |
|---|---|
| 87 | 3,761,017 |
| 91 | 3,761,018 |

**CLASS 237**

| | |
|---|---|
| 12.3 | 3,761,019 |

**CLASS 239**

| | |
|---|---|
| 28 | 3,761,020 |
| 312 | 3,761,021 |
| 333 | 3,761,022 |
| 585 | 3,761,023 |

**CLASS 240**

| | |
|---|---|
| 2R | 3,761,702 |
| 2.1 | 3,761,703 |
| | 3,761,704 |
| 4.2 | 3,761,705 |
| 8.41 | 3,761,706 |

**CLASS 241**

| | |
|---|---|
| 23 | 3,761,024 |
| 107 | 3,761,025 |
| 199.12 | 3,761,026 |
| 261.3 | 3,761,027 |

**CLASS 242**

| | |
|---|---|
| 7.02 | 3,761,038 |
| 18A | 3,761,028 |
| | 3,761,029 |
| 25A | 3,761,030 |
| 47.01 | 3,761,031 |
| 67.1 | 3,761,032 |
| 74 | 3,761,033 |
| 78.1 | 3,761,034 |
| 182 | 3,761,035 |
| 183 | 3,761,036 |
| 201 | 3,761,037 |

**CLASS 243**

| | |
|---|---|
| 19 | 3,761,039 |

**CLASS 244**

| | |
|---|---|
| 2 | 3,761,040 |
| 13 | 3,761,041 |
| 53R | 3,761,042 |
| 138R | 3,761,043 |

**CLASS 248**

| | |
|---|---|
| 311 | 3,761,044 |
| 399 | 3,761,045 |

**CLASS 249**

| | |
|---|---|
| 18 | 3,761,046 |
| 115 | 3,761,047 |
| 146 | 3,761,048 |
| 192 | 3,761,049 |

**CLASS 250**

| | |
|---|---|
| 199 | 3,761,716 |
| 209R | 3,761,717 |
| 211R | 3,761,718 |
| 227R | 3,761,719 |
| 282 | 3,761,708 |
| 294 | 3,761,707 |
| 302 | 3,761,720 |
| 327 | 3,761,721 |
| 337 | 3,761,710 |
| 338 | 3,761,715 |
| 341 | 3,761,713 |
| 348 | 3,761,714 |
| 370 | 3,761,711 |
| 388 | 3,761,712 |
| 442 | 3,761,709 |
| 490 | 3,761,722 |
| 560 | 3,761,723 |
| 565 | 3,761,724 |
| 566 | 3,761,725 |
| 571 | 3,761,726 |

**CLASS 251**

| | |
|---|---|
| 14 | 3,761,050 |
| 63 | 3,761,051 |
| 88 | 3,761,052 |
| | 3,761,053 |
| 172 | 3,761,054 |
| 214 | 3,761,055 |
| 255 | 3,761,056 |

**CLASS 252**

| | |
|---|---|
| 8.5C | 3,761,410 |
| 39 | 3,761,404 |
| 42.7 | 3,761,411 |
| | 3,761,414 |

---

| | |
|---|---|
| 51.5R | 3,761,405 |
| 62.1 | 3,761,413 |
| 89 | 3,761,415 |
| 99 | 3,761,416 |
| 106 | 3,761,417 |
| | 3,761,418 |
| 107 | 3,761,419 |
| 171 | 3,761,420 |
| 300 | 3,761,421 |
| | 3,761,422 |
| 358 | 3,761,423 |
| 437 | 3,761,424 |
| 439 | 3,761,425 |
| | 3,761,426 |
| 441 | 3,761,427 |
| 466PT | 3,761,428 |
| 547 | 3,761,429 |
| 550 | 3,761,412 |

**CLASS 254**

| | |
|---|---|
| 28 | 3,761,057 |
| 94 | 3,761,058 |

**CLASS 259**

| | |
|---|---|
| 9 | 3,761,059 |
| 22 | 3,761,060 |
| 185 | 3,761,061 |

**CLASS 260**

| | |
|---|---|
| 2.5B | 3,761,430 |
| 17.4CL | 3,761,431 |
| 19 | 3,761,432 |
| 22CB | 3,761,435 |
| 22A | 3,761,433 |
| 22R | 3,761,434 |
| 29.1R | 3,761,437 |
| 29.6R | 3,761,438 |
| 32.8N | 3,761,439 |
| 37PC | 3,761,440 |
| 37N | 3,761,441 |
| 41B | 3,761,442 |
| 45.6R | 3,761,503 |
| 45.75B | 3,761,443 |
| 46.5Y | 3,761,444 |
| 47CP | 3,761,445 |
| 47EN | 3,761,446 |
| 49 | 3,761,447 |
| 53R | 3,761,448 |
| 61 | 3,761,449 |
| 75T | 3,761,450 |
| 77.5AP | 3,761,452 |
| 77.5CA | 3,761,451 |
| 78.5R | 3,761,453 |
| 80.77 | 3,761,454 |
| 85.1 | 3,761,455 |
| 87.3 | 3,761,456 |
| 88.2C | 3,761,457 |
| 89.7N | 3,761,458 |
| 112.5 | 3,761,459 |
| | 3,761,460 |
| | 3,761,461 |
| 147 | 3,761,544 |
| 158 | 3,761,462 |
| 209.5 | 3,761,463 |
| 210.5 | 3,761,464 |
| 231A | 3,761,465 |
| 239.1 | 3,761,466 |
| 239.3A | 3,761,467 |
| 239.3P | 3,761,468 |
| 239.55A | 3,761,469 |
| 240CA | 3,761,470 |
| 248NS | 3,761,473 |
| 248A | 3,761,474 |
| 248C | 3,761,472 |
| 250R | 3,761,475 |
| | 3,761,477 |
| 251QB | 3,761,476 |
| 251A | 3,761,436 |
| 256.4C | 3,761,478 |
| 256.5R | 3,761,479 |
| | 3,761,480 |
| 268TR | 3,761,481 |
| 287R | 3,761,482 |
| 293.55 | 3,761,483 |
| 293.75 | 3,761,484 |
| 294.8D | 3,761,485 |
| 294.9 | 3,761,486 |
| 295.5 | 3,761,487 |
| 302A | 3,761,488 |
| 304 | 3,761,489 |
| 305 | 3,761,490 |
| 309 | 3,761,491 |
| 327M | 3,761,492 |
| 346.2R | 3,761,494 |
| 346.3 | 3,761,493 |
| 348A | 3,761,495 |
| 397.4 | 3,761,496 |
| 397.45 | 3,761,498 |
| 397.5A | 3,761,497 |
| 424 | 3,761,499 |
| 448AD | 3,761,500 |
| 453AL | 3,761,501 |
| 453P | 3,761,502 |
| 456R | 3,761,504 |
| 464 | 3,761,505 |
| 468G | 3,761,507 |
| 468H | 3,761,506 |
| 471A | 3,761,508 |
| 471C | 3,761,509 |
| 478 | 3,761,510 |
| 482B | 3,761,511 |
| 485G | 3,761,512 |
| 497A | 3,761,513 |
| 514.5 | 3,761,514 |
| 515P | 3,761,515 |
| 530N | 3,761,516 |
| 531R | 3,761,517 |
| 535R | 3,761,518 |
| 559H | 3,761,519 |
| 564F | 3,761,471 |
| 578 | 3,761,520 |
| 580 | 3,761,521 |
| 583P | 3,761,522 |
| 584R | 3,761,523 |
| 614F | 3,761,524 |
| 619A | 3,761,525 |
| 619F | 3,761,526 |
| 622R | 3,761,527 |
| 633 | 3,761,528 |
| 643A | 3,761,529 |
| 668D | 3,761,531 |
| 668F | 3,761,530 |
| 668 | 3,761,616 |
| 673.5 | 3,761,532 |
| 674SA | 3,761,533 |
| 674A | 3,761,534 |
| 676R | 3,761,535 |
| 680R | 3,761,536 |
| 683D | 3,761,537 |
| 683R | 3,761,538 |
| 683.3 | 3,761,539 |
| 683.51 | 3,761,540 |
| 874 | 3,761,541 |
| 878R | 3,761,542 |
| 929 | 3,761,543 |
| 984 | 3,761,545 |

**CLASS 261**

| | |
|---|---|
| 1 | 3,761,062 |
| 41D | 3,761,063 |
| 53 | 3,761,064 |
| 76 | 3,761,065 |
| 78A | 3,761,066 |
| 111 | 3,761,067 |

**CLASS 264**

| | |
|---|---|
| .5 | 3,761,546 |
| | 3,761,547 |
| 8 | 3,761,548 |
| 15 | 3,761,549 |
| 25 | 3,761,550 |
| 33 | 3,761,551 |
| 37 | 3,761,552 |
| 40 | 3,761,553 |
| 69 | 3,761,554 |
| 105 | 3,761,555 |
| 210F | 3,761,556 |
| 228 | 3,761,557 |
| 231 | 3,761,558 |
| 237 | 3,761,559 |
| 257 | 3,761,560 |
| 298 | 3,761,561 |
| 346 | 3,761,562 |

**CLASS 267**

| | |
|---|---|
| 136 | 3,761,068 |
| 152 | 3,761,069 |

**CLASS 269**

| | |
|---|---|
| 59 | 3,761,070 |

**CLASS 270**

| | |
|---|---|
| 61R | 3,761,071 |

**CLASS 271**

| | |
|---|---|
| 12 | 3,761,072 |
| 45 | 3,761,073 |
| 46 | 3,761,074 |
| 53 | 3,761,075 |
| 95 | 3,761,076 |
| 108 | 3,761,077 |
| 116 | 3,761,079 |
| 182 | 3,761,078 |
| 209 | 3,761,080 |

**CLASS 272**

| | |
|---|---|
| 58 | 3,761,081 |
| 70 | 3,761,082 |
| 83R | 3,761,083 |

**CLASS 273**

| | |
|---|---|
| 1R | 3,761,084 |
| 30 | 3,761,085 |
| 47 | 3,761,086 |
| 95R | 3,761,087 |
| 101.2 | 3,761,088 |
| 105R | 3,761,089 |
| 127B | 3,761,090 |
| 130H | 3,761,091 |
| 131AB | 3,761,093 |
| 131AD | 3,761,092 |
| 148A | 3,761,094 |
| 174 | 3,761,095 |

**CLASS 274**

| | |
|---|---|
| 4C | 3,761,097 |
| 4F | 3,761,096 |
| 23R | 3,761,098 |

**CLASS 277**

| | |
|---|---|
| 37 | 3,761,099 |
| 65 | 3,761,100 |
| 96 | 3,761,101 |
| 206R | 3,761,102 |

**CLASS 279**

| | |
|---|---|
| 1J | 3,761,103 |
| 2 | 3,761,008 |
| 19.7 | 3,761,104 |

**CLASS 280**

| | |
|---|---|
| 11.35T | 3,761,105 |
| 11.37E | 3,761,106 |
| 34B | 3,761,107 |
| 106.5R | 3,761,108 |
| 124F | 3,761,110 |
| 124R | 3,761,109 |
| 150AB | 3,761,111 |
| | 3,761,112 |
| 478R | 3,761,113 |

**CLASS 285**

| | |
|---|---|
| 111 | 3,761,114 |
| 185 | 3,761,115 |
| 192 | 3,761,116 |
| 277 | 3,761,117 |

**CLASS 290**

| | |
|---|---|
| 40 | 3,761,727 |

**CLASS 292**

| | |
|---|---|
| 1 | 3,761,118 |
| 346 | 3,761,119 |

**CLASS 294**

| | |
|---|---|
| 8 | 3,761,120 |
| 26 | 3,761,121 |
| 83 | 3,761,122 |

**CLASS 296**

| | |
|---|---|
| 28C | 3,761,123 |

**CLASS 297**

| | |
|---|---|
| 112 | 3,761,124 |
| 216 | 3,761,125 |
| 384 | 3,761,126 |
| 389 | 3,761,127 |
| 408 | 3,761,128 |
| 433 | 3,761,129 |
| 445 | 3,761,130 |
| 456 | 3,761,131 |

**CLASS 299**

| | |
|---|---|
| 7 | 3,761,132 |
| 25 | 3,761,133 |

**CLASS 302**

| | |
|---|---|
| 31 | 3,761,134 |
| 52 | 3,761,135 |
| 66 | 3,761,136 |

**CLASS 303**

| | |
|---|---|
| 3 | 3,761,137 |
| 9 | 3,761,138 |
| | 3,761,139 |
| 21F | 3,761,140 |
| | 3,761,141 |
| 22R | 3,761,142 |

**CLASS 305**

| | |
|---|---|
| 24 | 3,761,143 |
| 27 | 3,761,144 |

**CLASS 307**

| | |
|---|---|
| 10R | 3,761,729 |
| | 3,761,730 |
| | 3,761,731 |
| 41 | 3,761,732 |
| 64 | 3,761,733 |
| 92 | 3,761,734 |
| 112 | 3,761,735 |
| 116 | 3,761,736 |
| 117 | 3,761,737 |
| 140 | 3,761,738 |
| 206 | 3,761,739 |
| 233 | 3,761,740 |
| 237 | 3,761,741 |
| 240 | 3,761,742 |
| 273 | 3,761,743 |
| 304 | 3,761,744 |
| 319 | 3,761,745 |

**CLASS 308**

| | |
|---|---|
| 8.2 | 3,761,145 |
| 9 | 3,761,146 |
| | 3,761,147 |
| 10 | 3,761,148 |
| 122 | 3,761,149 |
| 160 | 3,761,150 |
| | 3,761,151 |

**CLASS 310**

| | |
|---|---|
| 8 | 3,761,746 |
| 8.2 | 3,761,956 |
| 13 | 3,761,747 |
| 58 | 3,761,748 |
| 78 | 3,761,749 |
| 87 | 3,761,750 |
| 168 | 3,761,751 |
| 179 | 3,761,752 |
| 185 | 3,761,753 |
| 218 | 3,761,754 |
| 268 | 3,761,755 |

**CLASS 312**

| | |
|---|---|
| 7TV | 3,761,152 |
| 351 | 3,761,153 |

**CLASS 313**

| | |
|---|---|
| 92R | 3,761,756 |
| 110 | 3,761,757 |
| | 3,761,957 |
| 229 | 3,761,758 |
| 311 | 3,761,761 |
| 326 | 3,761,759 |

**CLASS 315**

| | |
|---|---|
| 3.6 | 3,761,760 |
| 10 | 3,761,762 |
| 13C | 3,761,763 |
| 23 | 3,761,765 |
| 39.061 | 3,761,764 |
| 84.6 | 3,761,766 |
| 169TV | 3,761,768 |
| 169 | 3,761,773 |
| 241P | 3,761,767 |

**CLASS 317**

| | |
|---|---|
| 18A | 3,761,774 |
| 18D | 3,761,769 |
| 27R | 3,761,775 |
| 33R | 3,761,776 |
| | 3,761,777 |
| | 3,761,778 |
| 81 | 3,761,779 |
| 101CC | 3,761,770 |
| 118 | 3,761,771 |
| 120 | 3,761,780 |
| | 3,761,781 |
| 234R | 3,761,782 |
| | 3,761,783 |
| 235R | 3,761,784 |
| | 3,761,785 |
| 235 | 3,761,786 |
| | 3,761,787 |
| 258 | 3,761,772 |

**CLASS 318**

| | |
|---|---|
| 221E | 3,761,792 |
| 327 | 3,761,793 |
| 331 | 3,761,789 |
| 345 | 3,761,788 |
| 467 | 3,761,790 |
| 472 | 3,761,794 |
| 588 | 3,761,791 |

**CLASS 320**

| | |
|---|---|
| 20 | 3,761,795 |

**CLASS 321**

| | |
|---|---|
| 2 | 3,761,796 |
| 10 | 3,761,797 |

**CLASS 323**

| | |
|---|---|
| 1 | 3,761,798 |
| 4 | 3,761,799 |
| 18 | 3,761,800 |
| 22T | 3,761,801 |
| 43.5S | 3,761,802 |

**CLASS 324**

| | |
|---|---|
| 32 | 3,761,803 |
| 34TK | 3,761,804 |
| 60C | 3,761,805 |
| | 3,761,806 |
| 61R | 3,761,810 |
| 72 | 3,761,807 |
| 73R | 3,761,808 |
| 74 | 3,761,812 |
| 77R | 3,761,809 |
| 173 | 3,761,811 |

**CLASS 325**

| | |
|---|---|
| 4 | 3,761,813 |
| | 3,761,814 |
| 16 | 3,761,815 |
| 22 | 3,761,816 |
| 37 | 3,761,817 |
| 38A | 3,761,818 |
| 64 | 3,761,819 |
| 163 | 3,761,820 |
| 301 | 3,761,822 |
| 313 | 3,761,823 |
| 496 | 3,761,821 |

**CLASS 328**

| | |
|---|---|
| 39 | 3,761,824 |
| 71 | 3,761,825 |
| 105 | 3,761,826 |
| | 3,761,827 |
| 227 | 3,761,828 |

**CLASS 329**

| | |
|---|---|
| 104 | 3,761,829 |

**CLASS 330**

| | |
|---|---|
| 29 | 3,761,830 |
| 30R | 3,761,832 |
| 61A | 3,761,834 |
| 69 | 3,761,831 |

**CLASS 331**

| | |
|---|---|
| 1A | 3,761,835 |
| 45 | 3,761,833 |
| 94.5H | 3,761,837 |
| 94.5 | 3,761,836 |
| | 3,761,838 |
| 107R | 3,761,839 |
| 116R | 3,761,840 |

**CLASS 332**

| | |
|---|---|
| 11D | 3,761,841 |

**CLASS 333**

| | |
|---|---|
| 1 | 3,761,842 |
| 10 | 3,761,843 |
| 24.1 | 3,761,845 |
| 33 | 3,761,844 |
| | 3,761,846 |

**CLASS 334**

| | |
|---|---|
| 98 | 3,761,868 |

**CLASS 335**

| | |
|---|---|
| 1. | 3,761,847 |
| 210 | 3,761,848 |
| | 3,761,849 |
| 229 | 3,761,850 |
| 253 | 3,761,851 |

**CLASS 336**

| | |
|---|---|
| 58 | 3,761,852 |
| | 3,761,853 |

**CLASS 337**

| | |
|---|---|
| 71 | 3,761,854 |
| 78 | 3,761,855 |
| 409 | 3,761,856 |

**CLASS 338**

| | |
|---|---|
| 30 | 3,761,857 |
| 36 | 3,761,958 |
| 48 | 3,761,858 |
| 238 | 3,761,859 |
| 262 | 3,761,860 |

**CLASS 339**

| | |
|---|---|
| 19 | 3,761,861 |
| 28 | 3,761,862 |
| | 3,761,863 |
| 59M | 3,761,864 |
| 60R | 3,761,865 |
| 97P | 3,761,866 |
| 98 | 3,761,867 |
| 99R | 3,761,869 |
| 177R | 3,761,870 |
| 221R | 3,761,871 |
| 276T | 3,761,872 |

**CLASS 340**

| | |
|---|---|
| 3R | 3,761,873 |
| 17 | 3,761,874 |
| 67 | 3,761,875 |
| 135 | 3,761,890 |
| 146.1D | 3,761,891 |
| 146.3MA | 3,761,876 |
| 146.3SY | 3,761,877 |
| 147T | 3,761,945 |
| 149A | 3,761,892 |
| 150 | 3,761,878 |
| 172.5 | 3,761,879 |
| | 3,761,880 |
| | 3,761,881 |
| | 3,761,882 |
| | 3,761,884 |
| | 3,761,885 |
| | 3,761,886 |
| | 3,761,887 |
| | 3,761,888 |
| | 3,761,889 |
| | 3,761,893 |
| | 3,761,894 |
| 173CA | 3,761,900 |
| 173CR | 3,761,895 |
| 173FF | 3,761,902 |
| 173PL | 3,761,897 |
| 173R | 3,761,896 |
| | 3,761,898 |
| | 3,761,899 |
| | 3,761,901 |
| 174ZB | 3,761,904 |
| 174.1A | 3,761,906 |
| 174.1G | 3,761,903 |
| 213R | 3,761,907 |
| 258A | 3,761,909 |
| 258R | 3,761,908 |
| | 3,761,910 |
| 271 | 3,761,911 |
| 276 | 3,761,912 |
| 309.5 | 3,761,913 |
| 310 | 3,761,914 |
| 347AD | 3,761,916 |
| | 3,761,917 |
| 347DD | 3,761,915 |
| 365A | 3,761,944 |
| 365E | 3,761,918 |
| 365P | 3,761,919 |
| 381R | 3,761,920 |
| 421 | 3,761,921 |

**CLASS 341**

| | |
|---|---|
| 172.5 | 3,761,883 |
| 174.01H | 3,761,905 |

**CLASS 343**

| | |
|---|---|
| 5DP | 3,761,922 |
| 5R | 3,761,923 |
| | 3,761,924 |
| 8 | 3,761,925 |
| 9 | 3,761,926 |
| 12A | 3,761,946 |
| 16R | 3,761,927 |
| | 3,761,928 |
| 18B | 3,761,929 |
| 113R | 3,761,930 |
| 121 | 3,761,931 |
| 179 | 3,761,932 |
| 740 | 3,761,933 |
| 752 | 3,761,934 |
| 754 | 3,761,935 |
| | 3,761,936 |
| 770 | 3,761,937 |
| 776 | 3,761,943 |
| 785 | 3,761,938 |
| 809 | 3,761,939 |
| 826 | 3,761,940 |

**CLASS 346**

| | |
|---|---|
| 1 | 3,761,941 |
| | 3,761,942 |
| 33R | 3,761,947 |
| 44 | 3,761,948 |
| 46 | 3,761,949 |
| 68 | 3,761,950 |
| 74ES | 3,761,951 |
| 74E | 3,761,952 |
| 75 | 3,761,953 |
| 139C | 3,761,954 |

**CLASS 350**

| | |
|---|---|
| 3.5 | 3,761,154 |
| | 3,761,155 |
| | 3,761,156 |
| 16 | 3,761,157 |
| | 3,761,158 |
| 160R | 3,761,159 |
| 164 | 3,761,160 |
| 218 | 3,761,161 |
| 255 | 3,761,162 |
| 301 | 3,761,163 |
| 307 | 3,761,164 |
| 312 | 3,761,165 |

**CLASS 352**

| | |
|---|---|
| 91 | 3,761,166 |
| 124 | 3,761,167 |
| 168 | 3,761,168 |

**CLASS 353**

| | |
|---|---|
| 25 | 3,761,169 |
| 87 | 3,761,170 |

**CLASS 355**

| | |
|---|---|
| 3 | 3,761,171 |
| | 3,761,172 |
| | 3,761,173 |
| 16 | 3,761,174 |
| 65 | 3,761,175 |
| 83 | 3,761,176 |

**CLASS 356**

| | |
|---|---|
| 23 | 3,761,177 |
| 24 | 3,761,178 |
| 120 | 3,761,179 |
| 152 | 3,761,180 |
| 156 | 3,761,181 |
| 160 | 3,761,182 |
| 175 | 3,761,183 |
| 186 | 3,761,184 |
| 229 | 3,761,185 |
| 241 | 3,761,186 |
| 246 | 3,761,187 |

**CLASS 401**

| | |
|---|---|
| 57 | 3,761,188 |

**CLASS 403**

| | |
|---|---|
| 320 | 3,761,189 |

**CLASS 404**

| | |
|---|---|
| 82 | 3,761,190 |

**CLASS 408**

| | |
|---|---|
| 13 | 3,761,191 |
| 22 | 3,761,192 |
| 115 | 3,761,193 |
| 234 | 3,761,194 |

**CLASS 415**

| | |
|---|---|
| 1 | 3,761,195 |
| 119 | 3,761,196 |
| 159 | 3,761,197 |

**CLASS 416**

| | |
|---|---|
| 134 | 3,761,199 |
| 220 | 3,761,200 |
| 232 | 3,761,201 |

**CLASS 417**

| | |
|---|---|
| 269 | 3,761,202 |
| 371 | 3,761,203 |
| 401 | 3,761,204 |
| 407 | 3,761,205 |

**CLASS 418**

| | |
|---|---|
| 16 | 3,761,206 |
| 121 | 3,761,207 |

**CLASS 423**

| | |
|---|---|
| 5 | 3,761,563 |
| | 3,761,564 |
| 59 | 3,761,565 |
| 141 | 3,761,566 |
| 175 | 3,761,567 |
| 207 | 3,761,568 |
| 224 | 3,761,569 |
| 225 | 3,761,570 |
| 263 | 3,761,571 |
| 303 | 3,761,572 |
| 315 | 3,761,573 |
| 356 | 3,761,575 |

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| | |
|---|---|
| 440 | 3,761,576 |
| 450 | 3,761,577 |
| 463 | 3,761,578 |
| 486 | 3,761,579 |
| 588 | 3,761,580 |
| 589 | 3,761,581 |
| 659 | 3,761,582 |
| CLASS 424 | |
| 48 | 3,761,583 |
| 84 | 3,761,584 |
| 91 | 3,761,585 |
| 98 | 3,761,586 |
| 117 | 3,761,587 |
| 121 | 3,761,588 |
| 200 | 3,761,589 |
| 228 | 3,761,590 |
| 242 | 3,761,591 |
| 258 | 3,761,592 |
| | 3,761,594 |
| 272 | 3,761,593 |
| 273 | 3,761,595 |
| 277 | 3,761,596 |
| 304 | 3,761,597 |
| CLASS 425 | |
| 4C | 3,761,209 |
| 72 | 3,761,210 |
| 131 | 3,761,211 |
| 154 | 3,761,212 |
| 155 | 3,761,213 |
| 192 | 3,761,198 |
| | 3,761,214 |
| 193 | 3,761,215 |
| 214 | 3,761,216 |
| 224 | 3,761,217 |
| 244 | 3,761,218 |
| 249 | 3,761,219 |
| 352 | 3,761,208 |
| 405 | 3,761,574 |
| 407 | 3,761,220 |
| CLASS 426 | |
| 115 | 3,761,285 |
| 516 | 3,761,284 |
| CLASS 431 | |
| 18 | 3,761,221 |
| 191 | 3,761,222 |

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| | | |
|---|---|---|
| D02— | 317 | 228,426 |
| | 351 | 228,427 |
| D06— | 37 | 228,428 |
| | 47 | 228,429 |
| | 146 | 228,430 |
| | 158 | 228,431 |
| | 177 | 228,432 |
| | 191 | 228,433 |
| | 192 | 228,434 |
| | | 228,435 |
| | 242 | 228,436 |
| D07— | 32 | 228,437 |
| | 36 | 228,438 |
| | | 228,439 |
| D08— | 30 | 228,440 |
| | 153 | 228,441 |
| | 235 | 228,442 |
| D09— | 179 | 228,443 |
| | 216 | 228,444 |
| | | 228,445 |
| | 254 | 228,446 |
| | 279 | 228,447 |
| D13— | 1 | 228,448 |
| | | 228,449 |
| | | 228,450 |
| | | 228,451 |
| | | 228,452 |
| | 6 | 228,453 |
| D16— | 2 | 228,454 |
| | | 228,455 |
| | 3 | 228,456 |
| D22— | 22 | 228,457 |
| D23— | 2 | 228,459 |
| | 40 | 228,458 |
| D26— | 5 | 228,460 |
| | 13 | 228,461 |
| | 14 | 228,462 |
| D35— | 3 | 228,463 |
| D37— | 1 | 228,464 |
| D48— | 24 | 228,465 |
| | 32 | 228,466 |
| D52— | 6 | 228,467 |
| | 7 | 228,468 |
| D56— | 4 | 228,469 |
| | | 228,470 |
| D61— | 1 | 228,479 |
| D82— | | 228,476 |
| D83— | | 228,471 |
| | | 228,472 |
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| 2 : | 3,760,876 |
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| 15 : | 3,760,440 |
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| 17 : | 3,760,429 |
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| | 3,761,416 |
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